Go Le minn


# Stientific American. 

# THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS 

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At 128 Fulton street, N. Y. (Sun Buildings.) BY MUNN \& CO.
o. D. MUNN, S. H. WALES, A. M. BEACH.


 sooikn, and Jessey hing.
$\underset{\text { mainder in six }}{\text { TERMS }} \mathbf{\text { months. }}$ a-year,
$\underset{\text { omployed. }}{\underset{\sim}{T} \text { See }}$
Improved Roller Gin.
Some of the finest threads ever spun were of cotton. The sizes in common use in the manufacture of cloths vary from about No. 30 to No. 80 , the higher number being the finest; but in the report of the great Exhibition of 1851, we find notices of yarns exhibited by one British manufacturer of numbers 200,400 and 600. Another exhibited a sample of yarn, which, measured by the same standard, would be numbered 900 . And the very finest, a thread so extremely small that it would require 167 miles to weigh one pound, would number, by the same gauge, over 5,000. There were no silk or linen threads that would compete with these.

The finest cotton yarns ever made were spun by native artists in India, but the fineness is not uniform. Modern cotton machinery produces a thread of greater average fineness, though not as small at some individual points.
Cotton has been raised in China since the thirteenth century; but the Sea Island, or black seed cotton of our country, the finest and most valued cotton used by civilized nations, was imported from Jamaica and Pernambuco, in 1786, and its culture was fairly established in the three succeeding years. The length of its fiber, and more especially its fin eness and peculiarly delicate character, makes it unfit for ginning or separating from the seeds, in the ordinary manner-tearing it by sawsand the machine still in vogue for ginning this material, consists simply of two small rollers of wood. The first gins ever used, even on upland or short-staple cotton, were on a similar principle. The rollers catch the fibers and draw them forcibly through, while the seeds are excluded on account of their size. To make the angle sufficiently great, however, to repel the seed, it is necessary to make the rollers very small in diameter; and the amount of ordinary cotton ginned by one man or woman before the invention of Whitney's saw gin, was only about eight pounds per day. The long-staple is better adapted to this mode of ginning; still an operator without horse power will gin but about twenty-five pounds per day; and with all the power which can be desired, the action is very slow.
Many efforts have been made to invent rapid gins for Sea Island cotton. One planter is reported to have expended $\$ 5,000$ in experiments, and many inventions have been attempted by others with little better success. The great merit of the roller gin is the perfection of the product; it does not rub or damage the staple. The action on the fiber is a simple grasping and pulling. Few of the substitutes have been equally simple in their action; or if so, few or none have siezed the fiber with equally soft fingers. Metallic rollers, pressed together with sufficient force to seize the fine filaments, crush and destroy their texture. The material of the old fashioned rollers is hickory wood, the diameter is but seven-eighths of an inch, and as a consequence, bearings must be provided at intervals of only from 8 to 12 inches, else the rollers would spring apart and allow the entrance and

crushing of the seeds. The difficulties incident to the use of these gins are quite numerous, not the least of which is the very serious tendency to take fire from friction; and charcoal in a very short time
The machine represented in the accompany ing engravings, Figs. 1 and 2 , is the invention of Mr. L. S. Chichester, and was patented on February 3rd, of the present year. It is a roller gin. One roller is steel, the other is iron covered with firm vulcanised india rubber. The surface of the latter gives exactly the desired action on the fiber, but would be very ill-suited to resist seeds. A separate plate, therefore, is provided, the edge of which is near the bite of the rollers, and the seeds, while being stripped, lie in the angle, not between the rollers, but between this plate and the upper roller. By slightly curving upwards the edge of the plate, a much greater angle is made to repel the seed than is secured even by the use of much smaller rollers, in the ordinary manner. To facilitate the action, a slight but rapid movement is given to the plate by device, which will be described below.
Fig. 1 is a perspective view, and Fig. 2 a a steel roller, about 20 inches long, between the bearings, and about one and a quarter inches in diameter. B represents the plate described, and $\mathbf{C}$ the india-rubber roller, three inches in diameter. The plate, $B$, is rigidly fixed upon a shaft, D. On one end of this shaft, $D$, outside the frame, is mounted a cross-piece, as represented, on which are two rollers $\mathrm{D}^{\prime} \mathrm{D}^{\prime}$. A wheel, F , mounted on the shaft of $\mathbf{C}$, is slightly scollopped, or camshaped, on its periphery, as will be observed on close inspection; and these successive elevations and depressions acting on the two rollers, $\mathrm{D}^{\prime} \mathrm{D}^{\prime}$, give to the shaft D , and consequently to the plate $B$, a very rapid and positive vibrating motion, to the extent of nearly one-eighth of an inch at the acting edge. E is a small fan-wheel, which serves to emove any of the fibers which might adhere to $C$, and $G$ is a stiff brush hinged to the points $H$, which serves also to strip the roller A. I, I, are thumb-screws, which serve to
rive A down upon C with any required degree of pressure. J is a table or feeding-board, on which the cotton to be ginned is placed. A ufficient space is left between the edge of $J$ and the face of $B$, to allow the seed to drop through and escape. The roller A is driven simply by "rolling contact" with $\mathbf{C}$, and conequently there can be no difference in the velocity of their surfaces. The upper curved edge of the plate $B$, is about three-eighths of an inch from the bite, or point of contact, of the rollers. On first being pushed forward, he loose fibers of the cotton are drawn through by a simple contact with A, until they are caught by the bite and carefully separated from the seed with just sufficient violence to keep the latter continually turning, an operation which is materially aided by the vibratory movement of B. To in crease the effect of the rollers in pulling the fibers, the surface of $A$ is fluted, as represented in Fig. 1; but the lutings, and, in short, all parts of its acting surface, are kept very highly polished or burnished. This machine has ginned at the rate of 10 pounds per hour, the cotton, as ray be supposed, not only possessing the character, but presenting the appearance of having been cleaned by the ordinary roller gin. The appearance of the fiber when exhibited in the market, is at present a matter of great commercial importance, as the purhasers are mainly in England and France, and are prejudiced against new inventions for this purpose, as they have found the product enerally inferior.
There are no extraordinary difficulties connected with the raising of Sea Island cotton, except the increased trouble of picking and ginning it. Its pods or bolls are smaller than those of the ordinary Mexican, or short taple-cotton; but the main difficulty, as before observed, lies in the ginning. If this or any other gin is completely successful, the price of the goods may be cheapened, and the roduction of fine cotton very much increased. The growth of this plant, originally confined to a few islands on the coast of South Carolina and Georgia, has now been found to succeed over a very large tract of country, including nearly or quite the whole of Florida. Although
partial to sea air, and probably to the employment of salt mud, rushes, \&c., as a dressin it is now raised with profit, under all its disadvantages, at points 150 miles from the sea Mr. Chichester's gin is pronounced by partie familiar with this material, to be the best yet produced. It certainly appears to us the best within our knowledge. We have seen it in operation, ginning the finest varieties, worth one dollar or more per pound, with great rapidity, and performing the operation in a manner absolutely perfect.
For further particulars, address :-" The Union Roller Cotton Gin Co., No. 6 Libertystreet, New-York."

## Nature the Teacher.

Hugh Miller says, in his last great work, "The Testimony of the Rocks," that there is scarce an architectural ornament of the Gothic or Grecian styles which may not be found as fossils existing in the rocks. The Illodendron, says Mr. Miller, was sculptured into gracefully arranged rows of pointed and closely imbricated leaves, similar to those into which the Roman architects fretted the torus of the Corinthian order. The Sigittaria were fluted columns, ornately carved in the line of channeled flutes; the Lepidodendra bore, according to their species, sculptured scales, or lozenges, or egg.like hollows, set in a sort of frame, and relieved into knobs and furrows; all of them furnishing examples of a delicate diaper work, like that so admired in our more ornate Gothic buildings, such as Westminster Abbey, or Canterbury and Chichester Oathedrals, only far more exquisite in their design and finish. No one can rise from the perusal of Mr. Miller's volume, without feeling convinced that it is one of the most interesting and erudite contributions to scientific literature of modern times.

## Niagara Suspension Bridge.

This bridge appears to be a profitable concern. During the past year, ending April, the report of the company, recently publish ed, states that the revenue amounted to $\$ 41,963$, disbursements, $\$ 4,507$, thus showing that the working expenses are but small. The

[Reported officially for the Scientific American.]
LISTOFPATENT CLAIMS
lssued from the United States Patent Offce
for the week ending june $23,1857$.
Gas Ganerators-Napoleon Aubin, of Albany, $N$ gas, nor the introduction of gas mat mane merials for makian minto
retort by means of a charger, nor the demcribed metho
 Ither known, used or
I claim the use of a che
stantially as set forth.
Printing Presses-F. L. Bailey, of Boston, Mass,
claim the combination and arrangement of the nippe
 It do not claime ar aliding platen or plate moving ou
from beneath the type form for the purpose of receivin
a sheet to be printed. a sheet to be printed
But I liaim the sliding carrier or plate $D$, when mad
to move in an indined or vertical direction for th
purpose set forth. purpose set forth.
plate aso chain chin the combination of the sheet carrier
plate prate D, witw ways placed on the platen or vibrating
hrame on which slices. on that it may assume the
positions for receiving the so sheetto be printed, and also
tor giving the impression to the same.
 Y:. I I claim, first, The arrangement of one or more bun
pennats, Hennected with the front of the sail, pasing
up the front thereof, and connete with the yard, and of up the front thereof, and connected with the yard, and of
a crane neck piece İ or is equivalent attached to the
yard to work up and own said pennant or pennant,
substantiall as set substantially as set forth, so that in lowering the yard,
the wind may bee expeliled from the bunt of the sail
towards the sides ji the manner substantially as rep-
resented in fig. 2. resented in fig. 2 . arrangement of the flat blocks, c c
Second, The
through which the reef pennants run on the top of the
yard, substantially as and for the purpose set forth.
[In the many ree fing devices for sails hitherto employ
ed, they have a tendency to gather the bunt or slack of the sail towards the center, and thus it catches the wind
the ter and bulges out, rendering it difficult to to te the reefing
cords. By this improvement, as the yard is lowered, the wind is pressed entirely out of the center of the sail towards the edges, causing it to come snug up to the
yard, in which condition it is easily held, and the reef points or cords tied round the yard to secure it. It is an Polushing RAW Hide Whips-Eugene Blattner, of
Philadelphia. Pa.: Ido
 m, when a simultaneous rotary motion is imparted to the
same, and when they are arranged for joint operation,
substantially in the manner set forth and for the purpose
supcified
 use and application of the apparatus for holding and an
justin the plane iron, substantially as and for the pur
pose described. Grinding Mill-Ezra Coleman, of Philadelphia,
Pa.tirdam aware that concaves have been adjusted ec.
centrically in order to grind finer or coarser, but not to

 substantially as and for the purposes set forth.
The means specified for ornsuring the rotaion of the
oob cuter with the grinder and ditr retention in proper
ptace where the grinder ais adjusted longitudinally, substantially as and for the purposes set forth.
[This mill is very peculiar in its construction both as feed, and that for grinding grain so as to produce flour or
meal. The ribs of the grinding cylinder are so constructed that they cut for one half their length, and act
as mortars or pestles along the other haif, and thereby operate more effectually upon the grain. The concav axis, and can be set to cut faster or slower according to
the power at hand. The grinding cylinder and cob cutter are on the same shaft, and both rotate together, but are independent in their longitudinal adjustment, and the
two are partially separated by an elastic guard, so that or stalk cutters. This mill, as a whole, is a very perfect
machine, occupying but little space, and with a fanner perfectly.]
SAW SEr-Jacob Erdle, of West Bloomfield, N. Y. I I
So not claim feeding the saw teeth to the punch by
means of am pawior hand iirespective of the arrange
ment of the same, for that is a well-known mechanical

 [The devices claimed are very simple and efficient
fcr the purpose of feeding the saw teeth to the punch both ways, and the punch is so adjusted that a perfeet o
true bearing action of the punch on the teeth is obtained to give it the proper set.]
Basker Handuss-Anthony Faas, of Philadel
Pa.: 1 claim basket handles as above described.










 [This valvular arrangement in faucets, while it se-
cures the keeping of them tight by fluid pressure easily cures the keeping of them tight by nuid pressure easily,
prevents them from sticking or becoming fast, and en bles them to endure much longer than other valves, by bviating much friction.]
PUMPs-W. H. Harrison, of Philadelphta, Pa.: I do
not desire to contine myselt to the precise form of vale
or bucket hhown, as the same may be considerably
oraried without changing the result. varied without changing the result.
Neither do chen of two buckets
moved simultane employs the moved simultaneously in different directions.
Hut I claim the combination of the chamber, A, bar-
els a and á valved buckets $H$ and 1 , rock shaft $\mathbf{c}$, lever Rand rods G and $\begin{aligned} & \text {, when the whote are arranged and } \\ & \text { constructed for joint operation, substantially in the man. }\end{aligned}$.
 wand e, the space between which is adjustable by
widges. in , and sioted braces, 1 and m , operating as spe-
cifed.

 buit on trucks running or resting on rails laid in the floor I claim constructing the fronts, A A, with rails, b, cor-
responding to those on the foor, and hinged or pivoted
thper spponding to those on the floor, and hinged or pivoted
thereto for the purpose ot hrowing down the said fronts
t the plain of the floor, and forming a continuous road n the plain or the thoor, and forming a continuous road
or track on thich the truck ocontaing the counters,
goods, \&e., may be readily run out or clear of the build-
ng as descrived.
MANUPACruRE of Iron-WM. Kelly, of Lyon Co.,
y. Iaim blowing the blastsof air, either hot or cold, up and through a mass of inquid iron, the oxygen in the
air combining with the carbon in the iron causing a
greatly incresed heand and boiling commotion in the fluid mass, and decarbonizing and refining the iron.
 Trth I claim the arrangement of the several parts of
But
Bachinery and saw employed in one frame, by which 1
amed an enabed to change and ran the saw carriage n in in or
direction tor saming both ways or if id esired, saw in one
direction, and run the carriage back, as usual, in the
other direction, without sawing, all as represented, and purposes specified.
Borivg Maching-L. B. Lloyd, of Warwick town
ship, Pa, I I claime the combination of spring draw rod
and table. arranged and operating to limit the depth of
Frisising Br BSH HAND Les-Thomas Mitchell, of
Lansingburg N. N. I bination of mechanical devices stot forth and described
in the abovespecincation, constituting a machinito bo be
used for the purposes and in the maner set forth, vize ised for the purposesand and in the manner set forth, vize,
latform $D$, with revolving cutters shaped and operat
 HyDRANT-G. P. Perrine and J. E. Boyle, of Rich.
mond, Va.: We claim the hollow piston rod and nozzel
when so constucted and arranged in combination with cylinders of unequal diameters, and their corresponding
pistons or plungers, that they will be elevated by he
pressure of the water from the supply pipe upon the ressure of the water from the supply pipe upo the the
nder surface of the piston, pand the water withdrawn
herefrom for the purpose specified.
 the pawls above and below the fulcrum of the lever
But we claim the attachment ofthe pawls to the slides
a ${ }^{\text {at, operated as and for the purpose specified. }}$ STRAIGHTENiNG KNifE BLADES-H. Pierce, of Clare
mont, N.H: I Io not claim the device for raising and dropping the weight, and Ido not wish to confine myself to
he rendering of the upper die only adjustable, as that may the rendering of the upper die only adjustable,as that may
be permanent. aud the lower die selfitacommonating
the tapering form of the blade, or both dies may be made the tapering form of the blade, or both dies may be made
adjustable.
but t claim the employment. in conjunction with a
drop weight of seffadjusting dies, in the manner and for rop weight of self.adjusting dies, in the manner and for
the purpose set forth.
 parcing a vitrinitiabere compound on the core before the
ocially an described.
the!mold, in the manner and substan Safety Steam Boilers-W. G. Pike and Isaac R
Scott, of Waltham, Mass: We do not claim regulating Scott, of waltham, Mass: We do not claim regulating
the intensity ot furnace firirs by closing the dampers
the drant
water sand smoke pipes by means of a float within a water chamber.
But we doclaim the described arrangement of the bent
ercury tube, D , with its

 excessive, the fire is is extinguished by the escaping steam,
thereby forming a saty regulating apparatus not re-
quiring the supervision of the attendant.


 valves,
scribed. The ordinary process of hardening axes by plunging some of the water to assume the spheroidal state on the
surface of the metal, which prevents it from equal and sudden cooling, thereby causing soft spots in it. The
object of this improvement is to obviate this difficulty The heated ax to be hardened is confined in a close box having ene or more valves; this box is lowered into a tank of water to a certain depth; the valves are sudden-
y opened and the water rushes in, cooling all parts o the metal suddenly. This is a good improvement, and
 thick and the sliding cup within it of greater diameter
than the candle intended to be used therein, for the pur-
oos set forth. Second, I claim the spur in the bottom of the cup
combined with the tatas on the innide of the top rims for
the purpose of holding the candle in proper position the purpose of holding the candlo in proper position
having space around for the meltod tallow to pass
down into the cup, substantially as described.


Clenanng Rrce-John F. Taylor, of Charleston, S. S .
C.: I do not claim separately the screw, F, for that has ate previously used.
Neither do 1 claim the peculiar form of the vessel, A,
for obth have been previously used for the same or analo-
Eous purposes. gous purposes.
Itcaim the
rotating hatt, crev, $\mathbf{F}$, and cylinder, G, placed on the
, incombination with the spiral projec-
f, formed on the plate, $\mathbf{E}$, and place tions or ledges, b, formed on the plate, E, and placed at
the bottom of the vessel, A, the whole being arranged so
as to operate conjointly, as and for the purpose set forth. as to operate conjointly, as and for the purpose set forth.
[Under the outer husks, rice has a coarse floury coat [Under the outer husks, rice has a coarse floury coat-
ing, which has to be removed to clean it perfectly. Here ing, which has to be removed to clean it perfectly. Here-
tofore this has been done by beetling it in mortars-a slow operation-by which the grains are liable to be bruised and broken. This invention consists in giving motion, by means of a screw cylinder, to a quantity of rice placed
in a proper formed vessel, whereby the kernels are made to rub against one another, and are thus rapidly

$$
\mathrm{CA} \mathrm{C}=\mathrm{m}
$$

CALIGRAPHS-Chas. Thurber, of Worcester, Mass;
do not wish to be undertood as making claim broady
 combination has lorg beenk by universal joints, as suc
ment termed polyran
now simultaneously, an has been entirrys superseded by the the
copying press for taining imprestion copies, and the mode
of operation resulting trom the said combination is sub or operation resulting from the said combination is sub.
stantilly diferent from my invention and ounl not pro.
duce the result for which my said invention was de. signed. I wish to be understood as making claim to the
Nor do
combination of a stylus or tracer with a pen or marker by levers of different lenths connected by jointed rods,
as such a combination has long beenn $k$ nown and em
ployed as a pantograph for copying drawings, so as to re. asoyed as a pantograph for eopying drawings, so as to re.
provoucuce themon an enlarged or reducod scale, and could
not alone achieve the purpose for which my invention is produce themon an enlarged or reduced scale, and could
not anone achieve the purpose for which my invention is
designed. But I claim combining a stylus or tracer with a pen or
marker, by means on lovers sfdiferent Ienthh, ocnnect.
ed by jointed rods, substantially as described that the od by jointed rods, substantially as described, that the
pen or marker may follow accurately, but on a reduced
coale all the mow scale all the movements imparted to the stylus or tracer,
in combination with the connection of this mechanism
with desk or tale, by means of an universal joint, sub.
stantially stantially as described, to give freedom of motion in all
diretcionsto hestyuso tracer and to the pen or marker
whereby apersh can write the usual sized character
by tracin characters of
 or its equivalent for shisting the paper, wherebey the paper is shifted to the distance equal to the space between
two lines, by carrying back the stylus hr tracer prepara.
tory to tracing another line, substantially as set forth.


Nor do 1 claim annular fire chambers in boilers.
Nor dor . 1 iam, irrespective of the arrangement 1 hav



 conver the products of combustian
fire throukh the center of the boiler.
LThe object of this improvement in steam boilers is to
obtain a very large amount of heating surtace with a small body of water, and a proper circulation of the
water, so that no part subjected to a high heat shall be left uncovered with water.]
Preparing India Rubber Cloth-Chas. Winslow,
of Lynn, Mass. Iclaim themethod opreparing elastic
cloth for use by the application theretpof cloth for use by the thapplication ther of poreparing elarstic
in the direction of the shortest diagonal of thes
formed by the threads of the cloth. Fscavating TUNNELs-Chas. Wilson, of Springfield,
Mass.: Id onot claim a single set of one or more rotary
disk cutters applied to a com men disk cutters applied to a common revolving shaf, and
made to pass across a stone, and to take a succession of
chips or cuts from it, essentialy as repesented and de. described. claim the drill, $\mathrm{W}^{\cdot} \mathrm{Y}^{\prime} \mathrm{Y}^{\cdot}$, as the same migh
de used by hand, or in any other machine, and become
 Letters Patent.
I claim first, Forming grooves in stone or other min.
eral substance by means of rolling disk cuters on axis,
 Second, I I claim arranging a series of rolling disk cut.
ters revolving inch amanner as to ut deep aknular
groove into the rock, substantially as specified.
 I, and rotary cutters, to free the annular groove of the
chisp and dirt abraded by zaid cutters, substantially as
and for the purposes specifed and forthe purposes specina bed plate secured in place by the
Fack screws, L2 2 M 2 , or their equivalents, in combination
jat
 and moving
specified.
 of the llass behind the image.
Neither do llaim the reflecting background, such be-
ing well known. But I claim the application of the described ename
ocollodion and albumen pictures on glas, substantially
in the manner and for the purposes specified.
 Y,: I do not claim arranging the air chamber, 0 , so
that it may be turned on the cylinder, and the spout, D
brought in any desired position. tor that has been pre that it may be turned on the cylinder, and the spout,
broughtin any desired position. for that has been pre
viousl done.
But claim connecting the air chamber, $C$, with the
 H, applied to the pump, and arranged relatively with
the several parts as shown and described, tor the purpose
set forth.
[This improvement relates to single-acting cast iron pumps winh and
greatly simplified. The parts are so made relatively that by screwing the follower in chamber is fastene
in any direction.]
 substantially as set forth in in combination with the dif
ferential piston as described.
Second, I claim the air chamber, F, between the pis forth. operating in the manner substantially as se
Third, I claim float valve, w, in combination with the Wo-way-cock, U, whereby, when the water is shut off




But I claim makingthe chamber to receive the charge
in the form of a cartridge partly in the barrel and partly
in the breech, and so much larget than the general bore in the breech, and so much larger than the general bore
of the barrel as to have a shoulder in front to retain the cartridge case thereon till after the discharge, whereby
the joint between the breech and the barrel is brought
near the middle of the chamber, and not in a corher at the joint between the breech and the barrel is brought
near the middle of the chamber, nd not in corher at
the ortreme rear or in front therof and is caused obe
packed by the lateral expansion of an alastic cartridge cane. though I do not claim the clamping lever repre
sented, for securing the barrel to the breech, I claim fur arranged as to be acted upon by the hammer in the act
of cocking the latter, for the purpoe of insuring locking
ohe breech hand barrel together berore the discharge, and
effecting the operation of cocking the hammer and lock. ing the bre ech and barrel by one movement.
Ifurther claim the sight. m, constructed with a round
 penabling it to to be
tions, as set forth.
LIt is difficult to construct breech-loading firearms so oint is lise breech joint tight; after a few shots th joint is liable to leak. This improvement provides a
cartridge case, which serves as a packing to keep the breech joint always tight when the charge is exploded land breech together at the time of discharge.

 at right angles to the partition of the die, both on the
same side of the line drawn through the center of the
die subtantially as and [This invention consists in cutting away every tooth of a tap or die on one side, or cutting away the successiv tooth cuts on cutting screws the stripping clears there better, and in should the dies continue to be turned after a full threa is obtained. By forming the opposite scores of a two par much easier in the screwing operation.]
STEAM W Wristues-Sylvester W. Warren, (assignor to
himeelf and Dexter N. Force, of Brooklyn, N. Y. claim the cap, d, and whisting mouth or mouths, e, con
nected to the steam pipe, substantially as specified. I also claim placing two or more whistling mouths or
edges in the whistle at different distances from the ori tices, for the escape of steam, so as to adapt one whistle
to different pressures, withot changing the position of
any of the parts, substantially as specinfed. Bench PI,ANE-Thos. D. Worrall, of Lowell, Mass.
(assignor to Thos. F. Caldicott, of Charlestown, Mass: plane or jointer, as made with its hande. its wooden
stock to which said handlo is aftixed, and a separate
metallic cutter holder and cutter clamping devices ar metalic cutter holder a and cutter clamping devices a
ranged together, substantially as specified.
 Boring MILLs - Wm. Sellers, of Philadelphia, Pa.: I
claim revolving the face plate of boring or turning mills in a support, as near as convenient to the peri-
phery y thereot, substantiall a a described.
I also claim the adiustable step or center bearing, when his is combined with an outer support, substantially a
described.
 thumb, as set forth the bar, K , constructed as described
Secon, I claim the
and operated by the pin, n , and lever. I, for the purpose and operated the gue and of returning the barrel into inine
of cotinn the thimble, C, and locking it therewith, substan
wialh the thet forth.

 n, in combination with the swivel guide saw bears, m and
arranged and operating in the maner set forth. Coal Cooring Stoves-Conrad Harris and Paul W
Zoiner, of Cincinnati, O . Wood PAR Lon Stoves-Conrad Harris and Paul W.
Zoiner, of Cincinnati, $\mathbf{O}$. Dining Room Stoves-Conrad Harris and Paul W
Zoiner, of Cincinnati, 0 . Coorring SToves-S. W. Gibbs, of Albany. N. Y. Y, (as
signor to North, Chase \& North, of Philadelphia, Pa. SToves $-N$. S. S. Vedder, of Troy, N. M., (assignor to
North, Chase \& North, of Philadelphia, Pa. Sroves-Jacob Beesley \& E. J. Delaney, (assignors to
Cresson, Stuart \& Peterson,) of Philadelphia, Pa.


The Marysville Herald says that the Dowieville Tunnel Co., at Centerville, have found the largest boulder containing gold perhaps ever struck in California. Up to last accounts they had extracted $\$ 17,000$, and had nist 5 .t ascertained its full value. They estimato mount of gold it contains at not less $\$ 100,000$. This boulder is a fair set-off to one from Australia, which the English paper have recently mentioned as being on exhi bition in London, and which weighs-quartz and gold-four hundred pounds, and is valued by some sanguine individual at $\$ 100,000$. It is very rich in gold, but not near so large as the one found at Centerville.

## Antidote to Mosquitoes.

A certain preventive to attacks of mosqui toes, black flies, \&c., is said io be : glycerine 4 ounces, oil of peppermint 2 1-2 drachms, oil of turpentine 4 drachms. The face, neck hands, in fact, all parts exposed, to be rubbed with the mixture. This was given me by an eminent American physician, previous to going into the State of Maine on a hunting expedition. I never knew it used without perfect

Messrs. Editors-In Harper's Weekly for the 20th ult. I observed the following paragraph under the heading of "Domestic Intelligence" :-
"The Secretary of War and the Chiefs of the Bureaus attended, last week, a very interesting and successful experiment, made at the War Department, by Mons. J. B. Richer, formerly of the French army. M. Richer is the inventor of a process to restore putrid meats or fish to a perfectly sound and healthy state. The experiment was tried on a putrid beefsteak and a shad, which were at first so offensive that one could hardly stay in the room. By a hocus. pocus preparation, and sousing the beef and fish in a bucket of water, they came out perfectly fresh. M. Richer, who has made this discovery in New York proposes to sell his invention to our government, and to France and England. For our ment, and tor and our army it might be of great service when provisions become spoiled and none other was to be had. At Sevastopol, it is said, 17,000 men died of cholera from eating spoiled meat."
Although I may be mistaken, it appears to me that this invention of M. Richer consists in the use of pyroligneous acid, or as it was once called, "acid spirit of wood." However it may be, it is well known that this acid has the same properties as the above mentioned discovery, and the modus operandi equally as simple:
It was Monge who originally discovered that pyroligneous acid possessed not only the property of impeding the putrefaction of animal substances, but also of returning such substances to their original freshness after substances to their orrinal decomposition or putrefaction. Mr. William Dinsdale, of Colchester, Eng., made an unsuccessful proposal to the Lords of the Admirality to apply this acid to preserve animal food for the use of the navy in any climate, however warm it may be.
Meat can be preserved any length of time by merely plunging it in pyroligneous acid for a few moments, and drying it in the shade. This effect is partly ascribed to the empyreumatic oil or tar contained in the liquid, and this would account for the use of smoke for preserving hams, fisb, tongues, \&c., as pyroligneous acid is obtained by the destructive distillation of wood. The harder woods, such as oak, beech, ash, and birch are woods
used.
Dr.
Dr. Jarg, of Leipsic, has made numerous experiments with this acid, and recovered quite a number of anatomical preparations from incipient corruption by simply pouring it over them. By smearing pieces of flesh (already in a state of corruption) with empyreumatic oil or tar, he succeeded in restoring them dry and sound. Vauquelin proved that this acid was simply an acetic contamination with empyreumatic oil and bitumen
Pyroligneous acid is a brown transparent vinegar, and has a strong smell. Its acid powers are said to be superior to those of the best wine or malt vinegar, in the proportion of three to two. It has been in use with calico printers for a long time.
By perusing an article on this acid in Pilkington's Mechanics' Own Book, I was led to make several experiments with a view to test the truth of its property of prese rving flesh
from putrefaction, and the result of my exfrom putrefaction, and the result of my ex
periments was to prove it beyond doubt.
periments was to prove it beyond doubt.
Whether pyroligneous acid is the basis M. Richer's invention or not, it is well worth the attention of government, and I believe that any enterprising man would do well to invest a moderate capital in such a business with a view of furnishing our merchant seamen with so necessary an article as fresh meat, especially during long voyages and in warm climates. Geo. W. Bancroft.
Providence, R. I., June, 1857.
[We have witnessed a number of experi. ments with tainted meat, in order to restore it to an agreeable flavor, but none of them were fully successful. We have seen tainted pork and beef boiled in water containing wood charcoal, also in water containing some wood vinegar; but while the process did render some specimens that were very slightly decayed fit to be eaten in the war
camp, when horse flesh is at a preminm, w never saw a single specimen that had pro Harper's that was fit for use. It is our opin ion that the value of Mr. Richer's process, as described, is greatly exaggerated. The preservation of meat by the use of wood vinegar, as described by our correspondent Mr . Bancroft, deserves attention. The smoking of meat is an antiseptic process, in which the crude pyroligneous acid in the smoke plays a similar part to the liquid acid, but n our climate it does not prevent exposed meat from decaying ; the use of the liquid acid, instead of the gas in smoke, may be more effectual.

## (For the Scientific American.)

Ants.-Thetr Senses and Habits.
"Go to the ant, thou sluggard," is advice not only against sluggishness, but is applicable to other things, particularly as it relates to what may be accomplished by the combination of individuals under great disadvantages.
The
The only medium which ants possess for acquiring and imparting information appears to be their antennæ, or feelers, having neither of the two most useful senses for learning which larger animals possess-seeing nor hearing-and if they have the sense of smelling it is very limited. I have placed sugar within half an inch of their trail to a sugar barrel, and they would pass without noticing it until one of them accidentally strayed within touch of it, when others would soon follow by feeling their way. I have placed a thin strip of wood not wider than the length of an ant, across their trail, and it embarrassed them ; they would turn towards each end of it and return, until some bold fellow ventured across it, when the rest followed. I caught a number of them on a chip with sugar on it, placed near their trail, and gently removed it to the opposite side, about a foot off; when they finished their repast they went feeling around in every direction, and often returned even when they had got within two inches of the great thoroughfare where the multitude was passing; they neither saw nor heard them; but,as soon as they struck the trail they took the homeward course, and ceased to return.
The above experiments were made with the small red ants. When they first discovered the sugar those returning from it would extend their antenne to those they met, make one or two short jumps, and the latter would
quicken their pace, as if satisfied with the information.
Whenever ants discover the trail of another tribe in rather suspicious proximity to their own dwellings, if they are of equal size with themselves, they sally out in a body to attack them; but if they are a size or two smallerthe very small ones they never notice-one or two guards take possession of the trail, and cross and recross it with the most unwearied diligence for hours and days together, and wo to all they catch. But scores will pass within one or two inches of a guard without either being aware of the others' presence.
Notwithstanding the want of these senses a community of large ants will explore an area of ten to fifteen acres, and if one of them makes a discovery of food, intelligence of it will be circulated so rapidly that they will form a trail to it in one night, though it be one hundred and fifty yards off. Their sense of feeling is extremely delicate, for by it they can spread an alarm, distinguish a friend from a foe, follow a trail over a smooth floor, and convey any intelligence which may be necessary for them to know. In their wars they are very destructive, and this appears to be a provision of nature to prevent their increase. Two ants of about equal size will fight to the death without yielding. In a regular battle between two tribes it is their custom to carr off the dead and wounded from the field.
H. Pollard.

Lexington, Mo., June, 1857.
[Of all insects, ants seem to have the most perfect powers of communicating with each other, yet they emit no sound, like bees, but only use signs and motions, employing their
attenæ for such purposes; and, as our corres-
pondent states, if they have the power of
vision, it must be very feeble. Still, "if they see not" it is not for want of eyes-these they possess.

## New Motive Agent.

The Baltimore Patriot contains an account of the operation-said to be very successful - of an engine propelled by gas generated from bi-sulphuret of carbon and some other ingredients submitted to heat in a boiler. The Patriot says:-
"We called yesterday afternoon, much to ur gratification, and saw the engine in full, uccessful operation, where it has been working without intermission several days, in Cypress alley, between Pratt and Lombard streets. The engine being merely a model or experimental one has, of course, some imperfections and may be greatly improved, but worked with remarkable precision and egularity. It is calculated for four-horse power, being a common rectilineal or reciprocating steam engine, differing in no material feature from those in general use. The patent novelty consists in the motive power and its application, which wholly supersedes steam. This motor is produced by a compound of de sulphurated bi-sulphuret of carbon, coal tar, and volatile or fixed oil, which, under certain influences of heat, becomes powerfully expansive, and thus gives momentum. Though only a four-horse engine, it was performing the estimated duty of ten horses, and has been so doing since put into operation, nearly a fortnight ago."
After the gas actuates the piston, it is exhausted into an outside or surface condenser, n which it is reduced into liquid condition, and is pumped back into the boiler, being used over and over again. It is the invention of J. C. fr. Salomon, who has devoted years of study and labor in making experiments with gas engines.

## Preserving American Grain

The results of some experiments made in rance in the preservation of grain have but very recently been published. A year ago,
exactly 2175 bushels of American wheat were, exactly 2175 bushels of American wheat were, way of trial, enclosed in two silos of shee and were carefully closed, sealed and covered. The seals were removed in the first week of ast month in presence of two delegates from he War Office, and of several members of the Commission for Military Stores. The grain was then subjected to a strict examination, and unanimously declared to be exactly the same as it was when sealed up. The cost of preserving corn by means of these silos does not exceed 16 cents per $23-4$ bushels, while all danger of loss by fire or vermin is entirely obviated.

Notes on Science and Foreign Inventions.
A Tonnel Boring Machine.-A new steam boring machine for tunnelling through rock has been invented and put into operation by Captain Penrice, of the Royal Engineers, England. It consists of a strong cross head of wrought iron, secured to the outer extremity of the piston road of a horizontal steam engine, and on this cross head there are twenty-four short arms studded with diamond-pointed steel cutters. By the forward stroke of the piston these cutters strike against the rock, and by a self-acting device are then partially rotated, and the piston returns; on the succeeding stroke or blow, the cutters strike a new part of the ock, and so on bore into the rock by an intermittant rotary motion of repeated blows, similar to that given to the chisel in rock drilling by hand. The steam cylinder is so managed as to keep a cushion of steam behind the return movement of the piston. On the forward motion, the mass is stopped by the blow on the rock and a recoil takes place, a differential pressure of steam is then brought to bear upon the reverse face of the piston, and the moving mass is thus to a certain extent balanced between two steam cushions. The engine is secured on a truck, and moves forward to its work on rails. An experimental machine has cut its way into sandstone rock at the rate of twenty inches per hour, making a hole five feet in diameter.

An English engineer is having one construct ed to complete a contract in tunnellin through the Alps. In its construction and operation it differs from Wilson's American tunnelling machine, which cuts into the rock by a series of rotating cutters, and is not subject to the violent concussions attendant on this English one.
The Mediterranean Submarine Tele-grape-An attempt to join Europe with Africa by a telegraph across the Mediterranean was made a short time ago, and as our readers will remember failed either from a lack of sufficient cable at the start, or from its having been laid in wavy lines. The steamer laying it was compelled to stop, and hold the end in deep water for four days, while its attendant steamer was hurrying up a fresh supply. The steamer holding on paddled slowly against the wind or current to relieve the delicate cable as much as possible from strain, but after remaining as nearly stationary as possible for four days and nights, keeping up a constant communication by telegraph with the manufacturers in England, the cable parted, and the whole investment was lost. But this accident has not been allowed to defeat the enterprise; another cable is now being made, which is 920 miles long, and is to be completed on the 30th of October. Before that period arrives, we hope the Atlantic cable will have been successfully laid, and that messages will be flying along it, under the waters of "the great deep."
Cobalt Wire.-In an article in Comptes
Rendus, by M. Sainte Claire Rendus, by M. Sainte Claire Deville, he says: "C obalt is a metal, the most ductile and certainly the most tenacious known. A wire made of it will support twice the weight of one made of iron."
Electrrc Clocess.-A paper was recently read on this subject before the Royal Scottish Society of Arts, by Mr. Henry Kerr, watchmaker, Edinburgh, who exhibited an improved electric clock in action, and explained why such clocks, although they had been made to operate well for a short period, yet as a whole, had hitherto proven failures. This was attributed to the want of a proper mode of breaking and closing the electric circuit, in order to secure permanent action. The improvements in the clock he exhibited were stated to consist in there being a secure electric contact made, withont friction, between the conducting surfaces; in the pendulum being impelled by a lever acting upon it without friction, by the simple force of its gravity ; in the pendulum not acting directly upon the contact spring, bat by the intervention of a delicate lever; in the pendulum being free as it approaches the extremity of its arc of vibration, and during a large part of it; and in the uniform nature of the resistance which the pendulum has to encounter in the making and breaking of the electric circuit.
New Electric Liget.-In a !etter to the editor of the Paris Cosmos, Professor Tyndall says, "Mr. Faraday, I am happy to say, is quite well; he has made known to me a new application of magneto-electricity-the electricity generated by electro-magnetic machines. It consists in the production of electric light which is truly splendid, and which can be immediately employed for illuminating lighthouses."
Wonderful Discoveriss.-At the meeting of the French Academy of Sciences, on the 25th of May, M. Elie De Beaumontannounced the following novelties ; viz., a method of reproducing animal life; a complete solution of the problem of aerial navigation; a project for a universal language; and the discovery of the cause, nature, and an infallible cure for cholera! M. E. de B. is great on the impossible.
An Antique Steamboat Engine.-An engine employed in 1788 to propel a boat at Dalswinton, Scotland, has lately been placed in the museum of the British Patent Office, through the exertions of Mr. Bennett Woodcroft, Superintendent of Specifications. It has two cylinders, four inches in diameter each, and the valves are operated and closed by the old hand gear. It was applied to a
double boat in the year mentioned, the paddle double boat in the year mentioned, the paddle it attained to a speed of five miles per hour.

## Afldu gnnuentions.

## Ports of Steam Engines

J. P. Joule, F.R.S., suggests that it would be very desirable to abandon the practice of using the same port for both the induction and eduction of the steam to and from the cylinder, since by this method the temperature of the exhaust steam is raised by coming in contact with metal which was the instant before heated by the induction steam, and the induction steam is cooled by contact with metal which has just before been exposed to the exhaust steam. No doubt a loss of elegance and compactness would result from employing separate ports, but this would be far overbalanced by the real advantages gained.-London Mechanics' Magazine

## New Leveling scraper.

Chauncey Blakeslee, of Ashtabula, Ohio, is the inventor of the valuable labor-saving device of which two views are given in the ac companying engraving. It is designed to operate on roads, lawns, or in any situations where grading alone is the effect to be produced. It may be used with good effect in leveling and rendering more equable the surface of snow when a path has, as is frequently the case, assumed the character of two deep channels with a hard ridge between them, or when a road has become worn in transverse wave-like ridges or cradle holes. Its operation is very similar to the ordinary scraper except that it is perfectly self-acting in the labor of receiving and discharging the dirt; and although handles, $M$, are provided, as represented, to facilitate any manipulation of the implement desired, the draft of the animals is applied at a point so far forward of the edge of the scraper that no strain is thrown upon the hand under any circumstances, thus avoiding the propensity of the common road scraper, to throw the operator over it when it meets with an obstruction.
A represents the runners or sides of the scrapers, the lower edges of which are shod with stout iron, to resist the wear upon the earth. B represents an inclined back, which carries, by the aid of bolts, $a$, the stout metal lic plate, F , which is the scraper proper. Th bolts, $a$, are inserted through slots, as represented, so that $F$ may be shifted down upon $B$ as its lower edge wears away. C is a board standing perpendicularly or inclined forward above B , to prevent the accumulated earth from falling over the upper edge of $B$. $D$ is a cross brace, and E E are simply clevices to which the animal or animals are attached. G is a kind of gage turning upon a transverse bolt represented near B. The duty of $G$ is to elevate the rear end of the whole scraper to any extent desired, so that the implement shall be supported upon but three points-two near the forward end of the runners, $A$, and the third at the rear extremity of $G$. The lettors HI J and K represent the means em ployed for fixing $G$ in any position desired. I is an arm attached to $G$, and $H$ is a kind of metallic rack fixed on I. J is a stout metallic cross piece, and K is simply a spring which urges I into close contact with J. Support ing the weight of the hinder part of the scraper by the hand and compressing K , the rack, H—and consequently the rage lever, -may be changed to any position desired.
Supposing the plate or scraper, F, to project a certain distance below the bottoms of the runners, $A$, it is easy to find by trial such a position of the gage lever, G, that when on level ground the lower edge of $F$ will be nearly or quite in contact with the earth. This is the ordinary position for work, but it must be somewhat varied to adapt it to different circumstances. Whenever the implement passes over an uneven surface the scraper, F, digs off the elevated parts, and drops the material thus removed in the first depression which presents itself. It would probably bo very efficient in leveling or extinguishing the deep "ruts" or wheel tracks which are alwajs found in most roads, as by properly setting $G$ the plate $F$ would be made to carry constanatly before it a slight accumulation of earth, which would effectu-
ally fill the rut; and a few repetitions of the perately deep and cruel channels of this kind, operation, allowing the soft earth to be well and make the road smooth and uniform. compacted therein after each attempt, would There are many other uses to which the soon entirely obliterate even the most des-l device may be profitably applied, such as

BLAKESLEE'S LEVELING SCRAPER.

eveling mowing land preparatory to rolling, durable and simple, and little liable to get out tc. For some, perhaps for most, purposes. it of order
is desirable to give a curved outline to the Any further information relating thereto lower edge of F , so that the shallow channel may be obtained by addressing the inventor, excavated shall have in no case any perpen- C. Blakeslee, Ashtabula, Ashtabula county, dicular sides. The implement seems very Ohio.

STEPHENS' LATHE FOR JEWELERS.


The accompanying engraving represents a athe for jewellers and watchmakers, which is the subject of two patents granted to Mr Wm . Stephens, of Richmond, Ind. The first, granted on Feb. 20, 1855, is for the peculiar and admirable slide rest seen on the right in Fig. 1, and which having been quite fully pre sented on page 233 of Vol. 10, Scientific American, need not be again dissected. The later invention, a chuck for holding small work, patented March 10 of the present year is the subject more particularly before us.

The headstock or upright, B, supports the cylindrical spur or projection, $C$, which extends horizontally therefrom and carries the small cutter or tool, E , in the cylindrical bar, $D$, the position and motion of which latter is perfectly controlled by the devices intervenng between D and C. F is the head or acting portion of the chuck, and $\mathrm{F}^{\prime}$ is a cylin drical stem containing a hollow or female screw, $\mathrm{F}^{\prime \prime}$, (see fig. 2,) by which it is attached to the ordinary arbor or mandrel. G represents a slot in $F$ of sufficient size to accom-
modate any wheel which may be on the pivot to be finished. H is a small " back center" fitting tightly in a corresponding hole bored precisely in the central line or axis of motion. The front end of this small center is hollowed out in the form of a hollow cone, so that any shaft or pivot pressed into the cavity necessarily assumes an exactly central position. This center, H, may be moved backward or forward to accommodate various lengths of pivot to be turned, but fits suffiently tight in $\mathrm{F}^{\prime}$, to be retained by friction in any position where it may be placed. $K$ and $L$ are accurately finished bars, fitting in dovetail grooves across the face of $F$, and made to slide therein by turning the screws M and N . The ends of these are finished each with a small notch, so that the slides $K$ and $L$ clamp and confine very firmly the pivot near its front end, and allow of its being adjusted with great accuracy. In Figs. 1 and 2, a pivot, 0 , is shown mounted with its projecting end ready to be turned and with a wheel and pinion standing untouched in the opening G. T represents an ordinary hand rest, V, a support therefor, and $W$ and $X$ pinching screws, by slackening which the position of T may be adjusted.

Fig. 3 represents a face plate to take the place of F when any larger work is to be either turned or drilled. S S S represent clamps, by properly adjusting which the work may be firmly held in any desired position on the face plate, either concentric or excentric to the periphery thereof.
As a whole the lathe is very simple, convenient, and admirably adapted to the wants of a very large class of operators. The advantages to be derived from this firm and easily adjusted apparatus, over any of the methods of fixing with cement, must be obvious at a glance.
For further information address the agent, Mr. G. M. Bodine, No. 22 Maiden lane, New York.

The American Nautilus in England.
The American Nautilus, or submarine diving machine, invented by Major Sears, is now at work in London, and a company has been formed to operate with this apparatus. A short time since, a number of scientific gentlemen and engineers were invited to see the Nautilus in operation at the Victoria docks. After the experiments were completed, a repast was given to those present, on which occasion Robert Stephenson, C. E., M. P., made a brief speech, which is not a little flattering to the inventive genius of our countrymen. He stated, that by a careful examination, it appeared to him to possess so many qualifications as a diving bell, (a machine hitherto very confined in its practical operations,) that it might truly be called a universal diving bell. It appeared to him to combine the highest class of mechanical skill, with great ingenuity in detail.
Mr. Bidder, the engineer of the Victoria docks, stated that great difficulty had been experienced at these works in operating with the diving bell, but when the Nautilus was applied, the amount of labor which had previously required three weeks and four days for its execution, was performed in two days and two hours with the same number of men. He also stated, that from his own personal experience in the Nautilus, he was convinced that nearly the same amount of masonry could be done under water as on dry land.
The Nautilus in London was constructed under the superintendence of Mr. J. N. Williamson, an American engineer, who is in charge of it, and whose mechanical skill has been signally displayed in all its arrangements.

The Longest Iron Viaduct in the World. An immense iron bridge has recently been constructed over the river Ebbw, on the line of the Newport, Abergavenny and Hereford Railway, in England. Its hight is 200 feet, and beneath it runs the river and the track of the Monmouthshire Railroad. It consists of ten spans, each 150 feet long, of hollow wrought.iron girders, supported on tall iron columns. With the appr
length of this bridge is 1760 feet

## Sicutific Americam.

NEW YORK, JULY 4, 1857.
Iron Improvements.-Kelly versus Bessemer. Our readers will remember the great excitement that was created when the account of what was called the "Bessemer process" of treating iron was given to the world. We published a description of this process in the first and second numbers of our present volume; and we were then of opinion that Henry Bessemer, of London, was the first inventor of it. But very soon afterwards we were placed in possession of information which convinced us that J. G. Martien, of Newark, N. J., was a prior inventor to Mr. Bessemer, and we stated the grounds we had for entertaining such an opinion on page 21 Not long after that period, however, we received a communication from William Kelly, of the Suwanee Iron Works, Ky., which we published on page 43, in which he claimed priority over all others, as the inventor of this process, and he has at last proved his title to it. In our list of patent claims on another page of this number, it will be observed that he has been granted a patent, although one had been previously issued to Mr . Bessemer for the same invention. When Mr. Kelly's application for a patent came up before the Patent Office for examination, a patent was refused, of course; an interference was then declared, at his request, and the following document will show the action which flowed from it :-
"In the matter of interference between the patent of Henry Bessemer, of London, and the application of William Kelly, of Lyon county, Ky ., for improvements in the manufacture of iron and steel, the hearing of which was fixed for the first Monday in April.
It appears that, by the concurrent testimony of numerous witnesses, Kelly made this invention, and showed it by drawings and experiments as early as 1847, and this testimony ments as early aliable in every respect.
The patent of Bessemer was sealed at London on the 11th of April, 1856, and bears date the 11th of October, 1855.
Priority of invention in this case is awarded to said Kelly, and it is ordered that a patent be issued accordingly, unless an appeal be taken within sixty days from this date."
S. T. Shugert, Acting Commissioner.

## U. S. Patent Office, $\left.\begin{array}{c}\text { April } 13,1857 \text {. }\end{array}\right\}$

Thus the interference has been decided, and Henry Bessemer's American patent is of no more value to him than so much waste paper. According to our patent law, patents are only granted to original inventors, therefore although a patent may have been issued to an inventor, a subsequent applicant who can prove priority to the same invention will be granted one also. The claims of these two patentees may afterwards be contested in any United States Court, but the first inventor will alone be sustained, and the court has the power of annulling the illegitimate patent. This feature of our patent law is of tentimes productive of great injury to inventors, as is evident in the above case. Mr. Bessemer, without the least knowledge of Mr. Kelly's experiments, applied for a patent; it was granted, as it should have been, the invention was new and useful, so far as the Patent
Office was aware. But soon afterwards Mr. William Kelly applies for a patent for the same thing, he proves priority of invention, and a patent is granted to him, which action renders the patent of Bessemer-for which he paid a fee of $\$ 500$ to the Patent Office-worth less. We certainly sympathize with him in this case, and blame Mr. Kelly for negligence in not securing his patent at a much earlier date. He should have applied for one either at the time or soon after he invented the process. Had he done so, and Mr. Bessemer had applied for a patent afterwards, ignorant of prior claims, and had been rejected, he at least could have withdrawn law to be refunded in case of a rejectionnow he loses all. But if Mr. Kelly had obtained a patent in 1847, the probability is tha
a knowledge of his invention being thus rendered accessible, it would have prevented the great expense which subsequent inventors (like Mr. Bessemer) have incurred, not only in applying for a patent, but in making experiments. It is a duty which inventors owe to their brother inventors to apply for patents or their inventions as soon as possible, in order to prevent others incurring unnecessary expense in making experiments, as well as applying for patents. Perhaps they bave never thought of this before; we hope they will not forget it hereafter.
Our patent law, we believe, o ight to be reformed in that particular feature by which Mr. Bessemer's patent has been superseded A certain fixed time should be allowed for an inventor to apply for a patent for his invention, and if he does not do so within that period, if his invention has been publicly used by himself, it should become public property otherwise he should not be allowed to subvert a patent granted to another, who has taken proper measures to put the public in possession of the invention.

American Steam Plowing.
Our attention has been directed again to this subject by a letter from Obed Hussey, of Baltimore, Md., who bas been so instrumental in bringing reaping machines into useful and practical operation, in which he informs us he has made two public successful trials with a steam plow, of his own invention. One of these trials took place at the cattle show of the State Agricultural Society of Maryland, held at Baltimore in 1855. The Committee of the Society appointed to witness the experiment, made a very favorable report, and he was awarded a first-class premium. Four large plows were drawn by the engine, several times across the grounds; and turned furrows, from seven to fourteen inches deep. In October, last year, he again exbibited his steam plow at the cattle show of the State Agricultural Society of Indiana, held at Indianopolis ; and the Committee of that Society a warded him a silver cup and diploma. In this experiment, the engine drew six plows several times across a field of heavy sod, in the presence of a large number of spectators, who gave vent to their feelings of admiration by repeated cheers.
It seems that Mr. Hussey sent us reports of these two experiments, and he thinks we have not done him justice in stating as we have done, in a recent article, that we were not aware of a single such experiment having been made in our country. These reports never reached us, or we certainly would not have omitted to have given him due credit, had we been acquainted with the facts in the respective cases. We were perfectly well aware that a number of model steam plows had been made, but did not know that a single large working one had ever been operated.
His steam plow is now out on the prairies, but it, as yet, has only plowed aboutten acres. The person who has charge of it has found great difficulty in arranging suitable plows to operate satisfactorily; but he believes it will yet be made to perform well, and as far as Mr. Hussey is able-with but feeble resources-he is determined to push forward in making further experiments.
In England and Scotland, steam plowing is no longer a problematical operation-it is a perfect success so far as the working of the plows is concerned-but as yet, it is not so cheap as plowing by horses. Unless such agricultural operations can be performed with steam cheaper than with animal power, of course, it cannot and will not be used. All ppear to be tea bows yetry; appear to be too heavy and bulky; Boydell's, which is stated to be the most successful,
weighs no less than ten tons; and the very lightest of which we have had any published accounts, is no less than five tons in weight. Such gross steam plows will never answer for America. As animal or horse power is cheaper in America than in England, the question naturally arises, if steam plowing cannot compete in that country with horse plowing, in point of economy, how can it do $o$ in America? And if it cannot, what is the use of agitating the subject?
Our country is more favorable for steam
plowing than England. There are hundreds of miles of fertile prairies, where steam plows can operate, without difficulty; whereas, in England, fields of uniform levels are small, "few and far between." Another point of encouragement is, this; the cost of steam plowing in England has been reduced over seventy-five per cent., within a few years, by improvements in the machines; it is now but a very little dearer than horse power; and there can be no doubt, we think, but it will soon be reduced, by further improvements, to cost much less. It would certainly be something to feel proud of, if some of our inventors were to produce the steam plow of the world, after so many experiments have been made on the other side of the Atlantic. They have done so with the reaping machine and the electric telegraph; European inventors were the first in time, but American inventors the first in excellence!
In this place, we take the opportunity to correct an opinion which seems to have become rather general, viz., that some person has offered a prize of $\$ 50.000$ for the first successful American steam plow. No such prize has ever been offered. Mr. Bronson Murray, a farmer in Illinois, offered to subscribe $\$ 500$ towards a prize of $\$ 50,000$, for the first successful steam plow, and he called upon his brother farmers to join bim in raising such a fund, but his call has not been responded to, and thus the matter stands at present.

A Great Engineers' Insitution
We have a great number of distinguished civil engineers in our country, but their reputation is scrapular; they exercise no united influence for the advancement of science, art or useful enterprises. A few years since, an Institution of Civil Engineers was formed in this State ; but after a feeble existence of only two years, we believe, it expired. If we take a look abroad, we will find the Institution of Civil Engineers in London, whose trans actions are not only an honor to themselves but worthy of imitation throughout the world. The members of it are high-toned and jealous of their personal honor as professional men; and they give encouragement to new and great enterprises, by their influence and contributions, and thus assist to bring many new and useful inventions into public use. Men of the highest scientific and mechanical attainments are proud of being connected with it, and they take a deep interest in making all its meetings attractive. Recently, as we find stated in the London Engineer, its members presented Chas. Manly-who had been secretary for eighteen years, and retired on account of his agewith a testimonial, which shows how they do $u p$ things. This consisted of a beautiful timepiece, a silver candelebra, and $£ 2,000$ (about $\$ 10,000$ ) in cash. On the occasion, Mr. Manly stated that he had been a practical mechanic earned his bread when a boy, by daily toil, and had afterwards arisen to merit the confidence of the ablest engineers in England, by making it a rule to be faithful, upright, and industrious in duty, and in the pursuit of knowledge to advance him in his profession.
At that meeting, success to the Great Eastern steamship was toasted, and J. Scott Russel, who was present, stated that he was proud of being its builder ; and "the most remarkable feature," he said, "connected with it was, that a body of men should be found who would subscribe $£ 700,000$ (about three and a half millions of dollars) for an undertaking, the success of which was declared to be ver problematical; but that feeling would probably be diminished when it was known that about three-fourths of the shares in the undertaking were held by members of the Institution of Civil Engineers."
This is a fact of which the public generally has been entirely ignorant, and it at once affords some idea of the wealth and influence of this association. To conceive of the members of a single society capable of subscribing $\$ 2,600,000$ for the building of a steamship is a grand idea of itself. In view of this fact, no wonder J. Scott Russel could use the following language :-" The ship [Great Eastern] was a specimen of what the combined qualities of men could produce, and it impressed upon all beholders the advantages of such upon all beholders the advantages of such
union as the Institution afforded the means to
encourage. United, they could do almost anyhing, and their efforts must benefit their country, and be conducive to their own good.'

## American Wines.

The American grape crop is becoming omething of an institution in our country. In the Great West, especially in Ohio ąnd Missouri, thousands of acres are set apart for the cultivation of the vine, and large quantities of wine are now manufactured annually. It has been demonstrated by numerous experiments that our native grapes produce wines fully as good as the best imported from abroad, and so well aware are the people of Ohio and Missouri of this fact, that most of them prefer their own to the best imported brands. No crop, we have been informed. yields a more profitable return for the care and labor expended upon it, than the grape. One acre produces about four hundred gallons of juice, and the wine sells at a high price, the demand for it being greater than the supply. This very circumstance, however, has led to its adulteration in some cases, as liquids have been sold for the pure native juice of the grape which were but mixtures of logwood, caramel, and a little native wine, to impart its peculiar aroma to the whole. It is greatly to be regretted that any wine manufacturer should do such a thing; but for all this there are a number of Ohio brands much prized by those who have quaffed the juice of the grape in sunny France, on the banks of the Rhine and Douro. The brands of Mr. Yeatman, of Cincinnati, and some others, have a very high reputation in the market.
The soil and the climate of several of our States are very favorable for the cultivation of the grape, and we think that not many years hence, the importation of foreign wines will cease entirely.
In Missouri, a whole county is chiefly devoted to the raising of grapes, with the sole view of manufacturing them into wine; while a Company has been formed there, with a large capital, to manufacture, bottle, store, and sell it. The wine made in Missouri is quite equal to the best in Ohio. The vineyards around Cincinnati are extending rapidly every year ; one horticulturist alone, as we learn from a contemporary, sold one million of cuttings the present season.
Whenever a plentiful supply of good pure native wine is obtained, it will supersede distilled and malted liquors-beverages which are now too commonly used.

Strychnine and Hogs.
A subscriber informs us by letter that he has used strychnine for poisoning wolves in the woods of Arkansas, and made numbers of them "bite the dust." His manner of asing it was by inserting the poison in a piece f meat, and leaving it in the wolf trail. He has had undoubted evidence that hogs someimes eat such poison baits, but it never, to his knowledge, did one of them any harm. He does not believe it will kill hogs, and is therefore of opinion that it may be employed in the manufacture of whiskey, and that hogs may eat the distillery refuse without being killed by it.
Our correspondent refers particularly to the paragraph on page 297, in reference to the charge made and denied, that strychnine had been employed in the manufacture of whiskey in Ohio, because it had been stated that distillers would not use it, as it would kill the hogs which they fed on distillery efuse. If strychnine can be eaten with impunity by hogs, the question naturally arise would not their pork be poisonous? We rather think it would neither be safe nor pleasant food. But strychnine is such a peculiar organic poison that it may be perfectly decomposed in a hog's laboratory, and its flesb, therefore, might be harmless.

The latest news from Europe brought intelligence of the death of Douglas Jerrold, said to be the greatest wit in England, and who was author of the celebrated "Caudle Lectures." He was editor of a weekly paper in London at the time of his decease. In his routh he was a printer, and by dint of genius and hard labor, acquired a high literary reputation

## Copper.

This very important metal was used by the ancients almost to the exclusion of others, except precious metals, but it has within the last century or two been to a great extent superseded by iron, the cheapening of which has proceeded at a far more rapid rate. Ingot copper is now worth by wholesale 28 1-2 cents and pig copper $271-2$ cents per pound, while pig iron is produced, even in this country, at $11-2$ cents, and in Great Britain at 1 cent or less per pound. Iron is liberally distributed by nature, beds or layers of this invaluable metal being found in almost or quite every country in the world, and a sensible quantity being found even in the veins of of every warm-blooded animal, but copper is more sparingly exhibited.

Under a crushing strain cast iron is superior to wrought iron, and both are stronger than copper. Under a tensile strain, copper is intermediate between the two. A bar of wrought iron, one inch square, breaks under tensile strains of 25 to 50 tuns, a similar bar of copper under about 16 tuns, and of cast iron under from 5 to 10 tuns. Copper as ordinarily prepared is both fusible and malleable. When copper is very extensively mixed with zinc or tin, forming brass or bronze, these alloys possess the same properties in this respect. The brass tubes, now in such common use for marine boilers are made by first casting a short, thick, flattish bar, with a small rough hole through its axis, and then drawing it by suitable machinery, and shaping both its exterior and interior surfaces by dies and mandrels until a long, smooth, sound and uniform tube is produced, a mode of manufacture at present impossible with iron. In fact, to the existence of these seamless tubes is probably due in part the introduction of brass tubes into steam engineering, after they had been once pretty generally abandoned for lap-welded iron ones

Copper conducts heat and electricity with about two and a half times the facility of iron, and resists corrosion from atmospheric influences, or the action of sea water, almost inflnitely better. To these latter properties are mainly due the value attached to this metal in practice. As the arts now stand, only about one-thirtieth as much copper as iron is mined. The quantity of copper produced in the world is estimated at about
35,000 tuns per annum, of which the United 35,000 tuns per annum, of which the United
States furnishes 6000 tuns, mostly from native copper, and England 16,000 tuns. Large quantities of this metal in a state of superior purity are exported from Russia. Although our country produces one-sixth the copper of the world, it consumes still more, and invariably stands in the market as a buyer.
This metal is generally found associated either with sulphur or oxygen. Oxyds are rarely worked. Sulphurets are found in Con necticut, New York, Virginia, Maryland, and many other States, as black or gray ore, which, when pure, is 78 per cent copper, but copper pyrites or yellow copper ore is the most common sulphuret. It contains much iron and is of ten mixed with iron pyrites, either of which from their color of ten attract the attention of the ignorant, from a hope that they may prove to be gold. The bulk of the copper produced is from this ore, which is very plenty, but of poor quality. It does not of ten yield more than 12 per cent of copper, and frequently the body of a vein does not contain more than 2 per cent metal, so that the ore has to be assorted, and much rejected after it is mined. This ore occurs in Massachusetts, Vermont, New Hampshire, Maine, New York, New Jersey, Pennsylvania, Virginia, and the gold region generally, also, in Wisconsin, Missouri, Iowa; and, in fact, is diffused like iron, only to a less extent, al most over the whole globe.
Native or pure copper is also pretty widely distributed, but nowhere so plentifully as in the United States. It is found in the Lake Superior region in immense masses, the size and treatment of which must be reserved for a future article. The great source of our foreign supply is Chili. It is imported in the form of sulphuret, which is smelted in and near the principal Atlantic cities. There ar one or more large establishments at this point,
two in Baltimore, and one in Boston, the latter alone, we are informed, producing about two million dollars' worth per annum. The whole importation of copper and brass, aside from the ore referred to, is now less than one million dollkrs' worth per annum. Imported metal is principally sheathing-copper and yellow metal. The duty on copper, in pigs, has been five per cent, but this has been abolished by the new tariff.

## Applying the Waste Heat of Bla

We have received a letter from Mr. Mellen Battell, of Albany, N. Y., in which he informs us that he saw steam generated in a boile by the waste heat from a cupola furnace, in 1826. This date is certainly prior to that of Professor Nott's patent for a like application in 1828. The place where Mr. Battel witnessed this application was in the engineering establishment of James P. Allaire, in this city. In it there was a steam engine of 20 inch stroke and 10 -inch bore, running at the rate of thirty revolutions per minute; it had one boiler 20 feet long, and 30 inches diame ter, using pine wood for fuel, and which worked a blowing cylinder three feet in diameter. There was a cupola furnace in the works, 30 inches in diameter and 8 feet high, over the top of which was placed another boiler two feet in diameter, and 18 feet long, built in temporary brick work. When the cupola furnace was in full blast, its heat passed under this second boiler, and generated steam sufficient to operate the engine and drive the blower. The first boiler, however, had to be used to get up the blast in the furnace, before the waste heat of the furnace was sufficient for generating the steam in the second boiler. The early application of the waste heat of the furnace to get up steam Mr. Battel says was not of much advantage as the molders got through with considerable casting before the waste heat became avail able for steam. How long this arrangement was used he does not know ; he is only aware of the fact, that the waste heat was used for generating the steam for driving the engine while the furnace was in blast. The arrange ment was no doubt very incomplete and of ittle advantage practically.
The use of the waste gases of furnaces for generating steam cannot be economically applied, except in regular iron smelting estabishments, where the blasts are kept in operation continually. Old Jaines P. Allaire, however, deserves credit for his early endeavors to save the waste heat, and apply it to a useful purpose. The statement by Mr. Battel, that pinewood was then used for fuel, puts us in remembrance of the great change which has taken place in the use of coal for steam engines in the past twenty years. In 1836 early all, if not all, the steamboats running on the Hudson river used firewood for fuel -not one employs it now. Locomotive engineers appear to be now in the same transition tate, respecting the change from wood to coal fuel, that our steamboat engineers were rom 1836 to 1840.

## Hoop skirts and Umbrellas

"Whalebone has nearly doubled in price within the past four years, in consequence of he enormous consumption of the article in kirt-hoops. In places where the price was orty or fifty, it is now eighty or ninety cents per pound. The Commercial List of to-day reports a sale of eighty thousand pounds at ninety-five. An umbrella dealer informs us that at retail he has been obliged to pay a dollar and a half a pound for the manufactured article, and the five dollar umbrellas of two months ago are now sold for six. Nor is this all. The braces have become greatly attenuated, being hardly more than half the size they were in the old-fashioned umbrellas, so that the prospect is, we shall be compelled o rely wholly on steel braces, which have xperienced no such appreciation."
The above we copy from an exchange paper. The most common article now employed for skirt-hoops is narrow ribbon, made of brass wire rolled flat between the rollers. It has considerable elasticity, as the rolling process imparts spring to brass. It is not alone the increased demand for hoops that has raised
the price of whalebone, but the decrease in the supply. Steel has been used for umbrella braces, and it possesses the qualities of strength and elasticity requisite for this purpose in an eminent degree; but it has one defect which renders it unfit for such applications hatis, its great liability to rust. The coating o t with varnish does not remedy this defect, because it is soon worn off with the use to which an umbrella is subjected. Neither iron nor steel should be employed in such articles as umbrellas, exposed as they are to the action of water. Brass braces, as substitutes for whalebone, are superior to steel for umbrellas, but a composition of india rubber or gutta percha can be made to answer the purpose better than any of the cheap metals.

English Railroad Accomodations.
Zerah Colburn, known as an exceedingly igorous thinker and clear writer on American railroading, has recently visited England to nspect the British railway system. He writes home to the R. R.Advocate that " there are no brakes on any cars of a passenger train, except on a 'luggage-van' as it is called. And the brakes, such as are used, are pushed against brakes, such as are used, are pushed against them, and the brake apparatus here is bulky, ven clumsy, compared with ours.
"As a general thing there is no bell-cord long the train-and there is no other mode of communication between the engineer and conductor. I cannot find out there is any difficulty in using the bell-cord, except that mong so many roads, all the companies will ot unite in so simple a provision, and hence when their cars are mixed, many are unprovided. You will think this a paltry excuse or the want of a communication so important as that from the train to the engine. For here it is no joke to ride in small close compartments with the car dours locked (for safety!) and no conductor in sight, from one end of a trip to the other. The want of some communication appears to be felt in the minds of some few inventive men, for in every odd number of any English scientific journal, you will see some wonderful scheme for supplying the means. One which I remember was, to fix a large bell over the engineer's head, and to let the conductor shoot at this bell with an arrow, so as to attract attention on the engine ! I believe I have heard an electric telegraph proposed for the same purpose. And another plan was to fix large convex mirrors in front of the engineers in which he should see if anything (e) was the matter with the train behind him. Without prejudice, you will say that such contrivances are as futile as the present
barous.
" There is no such thing as a water-closet in an English car; and the india rubber and some other dealers in the towns, drive quite a trade in a portable article designed to supply the want.

As to speed. There are instances of trains heing in motion at speeds of 60 miles per hour. But for express train travel the average time, excluding stops, is 35 miles per hour-the actual running speed sometime reaching 40 miles-but including stops it is 30 miles an hour. We do quite as well as
this. You must observe, also, that the express or quickest trains here, are the lightest loaded as the price per mile to passengers is very high in these trains. With us, every passenger will take the quickest train he can, especially as the price is all the same. The genera average speed, throughout England, is probably higher than with us-yet the difference is due more to a better state of road here
than to any other cause."

## American Telegraphers.

As an evidence of the growing appreciation of American mechanical skill, the Philadel phia Ledger states that the governments of the three colonies in Australia have commenced the construction of nearly one thousand miles of magnetic telegraph, to be com pleted at the close of the present year, and have selected S. W. McGowan, formerly in charge of the office of the New York, Albany and Buffalo Telegraph, in this city, as superintendent of the construction of the lines intendent of the construction of the lines,
which are to be worked under Morse's patent.

They extend from Melbourne to Sidney, 600 miles; from Melbourne to river Glenely where the line from South Australia, of 230 miles, is met, and from Launceston to Hobart's Town, V an Dieman's Land, 120 miles. Lines from Melbourne to Bendigo, 102 miles and from Melbourne to Balaraat, 108 miles, are just opened. All of the above lines are to be under the supervision of Mr . McGowan, who is commissioned by the home government as Superintendent of Telegraphs in its Australian colonies. The instruments, batteries, materials, \&c., have been ordered from this city, and are to be of the most finished and perfect construction.

Hungary Water
This perfumed liquid is said to take its name from one of the Queens of Hungary, who is reported to have derived great benefit from a bath containing it, at the age of seventy-five. It is composed thus:-Rectified alcohol, one quart ; oil of English rosemary, half an ounce; oil of lemon peel, and oil of half an ounce; oil of lemon peel, and oil of
balm (melissa), of each a quarter of an ounce; oil of mint, seven drops ; spirituous essence of rose, and spirituous essence of orange flowers, of each a quarter pint. After being well mixed it is ready for use.
It will be seen that rosemary is the leading ingredient in the above recipe. There is no doubt that clergymen and orators, while speaking for a lung time, would derive great benefit from perfuming their handkerchiefs with Hungary water or eau de Cologne, as the rosemary they contain excites the mind to a vigorous action, sufficient of the stimulan being inhaled by occasionally wiping the face with a handkerchief wetted with these "waters." Some such property of rosemary was evidently known to Shakspeare, who says, "There's rosemary, that's for remembrance." Now the poet giving us the key, we can understand how it is that perfumes containing rosemary are so universally said to be "so refreshing."

Septimus Piesse.

## Enilghtened Citles.

In the year 1855, the enormous quantity of three thousand millions of cubic feet of gas were consumed in the city of London. In the same year, there were $600,000,000$ cubic feet consumed in New-York, which equals the consumption of London, according to the number of hours gas is required. London has such a smoky and foggy atmosphere, that gas-light is employed during a greater number of hour yearly than in New-York.
The effect of artificial light upon the health of man, is a very interesting subject for investigation by physicians, for undoubtedly its influence is very great.
L. R. Breisach.

A Runaway River-A Deserted Town.
The Nebraskian of the 1st inst. describes a flagrant outrage upon "squatter sovereignty" as having been lately perpetrated by the Missouri, in the vicinity of De Soto, Washington county, in that Territory. The ice gorged in the hend of the river, a few miles above that town, and the water, with a criminal disregard of the rights of De Soto and her ferry privileges, took a short cut across the bend, forcing a channel near Calhoun, Iowa and making De Soto an inland town of Ne braska, some four or five miles from the river, to the infinite disgust of the inhabitants of that city. By this arrangement a few thouand acres of land will be added to the already extensive domains of Nebraska.

## East India Cotton for America

The Liverpool Ti mes states that severa hundred bales of East India cotton have been entered at that port to be shipped to New York. This appears to be like sending coals to New Castle; but this cotton is so very coarse, that we have no American cotton like it, either in poverty of quality or lowness of price; and it is no doubt exported by way of experiment, for making cheap cotton cord, or coarse bagging.

The Pennsylvania Polytechnic Institute in Philadelphia has added to its geological collection a full suite of specimens which illusDelaware counties, Pa .

O. B. D... of N. J.-In order to make your own testi.
mony available in the examination as to the date of your invention, it is necossary that you assigin your entirin in.
terest in the in invention to some other party. The assignee must see that the assignment is on record at the Patent Office.
F. G. F.G., of Md--Your invention might have been
patented about forty years ago, but it it not now. W. B. C... of Mass,. The date of the American patent
should correspond with the Britis pater should correspond with the British patent
back, if the foreiign patent was taken first.
 from a p
second.
w. W. W.C.-We cannot answer your question asitit put to
us. You had better send us a sketch of the device you intend to use. This will present the subbect in a tangible
shape. You cannot produce a perputhal motion ther shape. You cannot produce a perpetual motion, there-
fore, no matter what you have got, it will not come under that head.
G.E., oflll
Cished.. by J. Gowan. Center street, this city.
B. H , of M. T. - We do no
cure a clapboard machine. We have no you can pro


 try devoted exclusivety to chemical science. Such a
work could not be sustained. H. W., of N. Y.-The application of a fan to a straw-
cutting machine for blowing out the dust could not ber cutting machine for bowing out the dust, could not be
rearaded as a patatable devic.. It would be ocsidered
as as similar devince to employ a fan to a a grain separarator, ar other similar machine.
or
E. W. S. . of Iowa.-We do not know Bronson Murray's
Post ofice address, therefore cannot mail your letter to Post Ofice address, therefore cannot mail your leterer to
him.
C. w. w.. of Ga.-Couplings capable of unlocking one car from another when thrown from the tracli are
gettiog to be quite common. There are a number of patentson such devices. If you
a patent can be secured tor it.
in your hominy machine to justify an andis novalty enough patent.
H. C. S., oflll-Bourne's Catechism of the Steam En-
 "syphon," which discharges at the top, is not a sypho according to our views. W. B. Leonara, Hsq, is the
Corresponding Secretary of the American Institute; direct your letter to him.
J. W.C.C. 'of Ky.-There is no such thing as with
drawing a caveat after it is once fied in the Patent Office. The amount paid into the Treasury as eaveat fees is forever retained.
H. \& F., of Philadelphia--Ivory steeped in dilute
muriaticacid isrendered soft and flexibe, but is changed muriaicacidisrenderlow color. It must be washed in
from white to a yellow from white to a yellow color. 1 must be washed in
water a fter it it taken out of the acid, and then exposed wo sunlight, to bleach it.
H G. ... of Ill.-There rock-driling machines. In back volumes of Sor. Am. you will find several illustrations of such machines. There
are gnod inventions for performing this work, but not are
many out of the whole have met with success. vent the needle of the compass on board of ships being attracted by a local mannetic current, is vallaable. A
ring of metal and iron wire gauzo, placed around the ring of metal and iron wire gauze, placed around
needle is now employed for this purpose, and a patent has been rranted for the arrangement. This invention
has been used with success on board of the new steamer has been used with iuccess on board of the new steamer
Vanderbilt, but it has not yet been tried on an ron ship. There is considerable local attraction in all
stamships those of wood or iron-because of the great
 vibrating and heating of saws in passing through hard
 of the wood.
H. W., of $N$
H. W... of N. Y.-.It is our opinion that messages can be
sent through the Atlantic cable

Money received at the Scientific American Ofice
Haccount of Patent offica business for the weak ending on account of Patent 0 ffi
Saturday, June 27 , 1857 :-






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LAP-WELDED IRON BOLLER TUBES--Prose. THOS. PROSSER\& SON, 23 Platt st., N. Y


















## scrience and Art.

Tanning Cotton and Wheel Hubs. In a letter received from Mr. C. B. Stewart, of Danville, Tex., he states that the durability of cotton cloth is greatly increased by being impregnated with tannin. He has tanned cotton cloth for bags, saddle girths, and negro clothing, and found that it lasted much longer than when untanned. The hubs of wheel and axe handles, he also states, are frequently submitted to the tan liquor at the South, and with good results, their durability being promoted by such treatment. He suggests the application of tannin to all cotton fabrics exposed to the weather, such as awnings, the sails of boats, \&c
Many of our coasting schooners and sloops we observe, now use sails tanned with oak bark. They last three times longer, at least, than sail cloth not treated with tannin or some other antiseptic agent.

The Divining Rod a Deception.
The editor of thè Saint Croix Union, published at Stillwater, Minn., says:-" The divining rod is an arrant humbug, and those using it, pretending that there is in the rod a mysterious and unaccountable virtue, are also humbugs. We know what we say, and intend it, too. Not only will a twig of a sweet apple tree point downwards in our hands, but a bifurcated twig of almost any tree will. We can take a twig of a willow or an oak, or hickory, or anything, and hold it in our hands and make it turn forty ways for Sunday. It isn't a stream of water beneath us that does it, either, for we can make it point to a heap of ashes, or rock as hard as a nether millstone. It makes no difference.

We don't deny that water has been frequently found exactly beneath the spot indicated by the divining rod ; this has happened in our case more than once, but it is just as true also that, in numberless other cases that bave come under our observation, men have dug Jong--dug deep-and spent stacks of mysterious rods have pointed, and found no water."
moproved Grist Mill Feeder.
Since large stones, driven by power, at a very high velocity, have, in civilized countries, been employed as substitutes for the smal hand-mills still in use in the Eastern countries and from which we may suppose the hint was derived, more or less difficulty has been found in feeding in the grain uniformly, and in preventing the eye or central hole in the running stone from becoming clogged. The great centrifugal force sometimes induces the grain to accumulate against the sides, and, in most cases, the more or less complex devices employed to shake in the grain, are but poor approximations to a uniform feed.
The mill here represented is the subject of two patents, granted to Messrs. M. and C. Painter, of Owing's Milis, Maryland, the first on June 2nd, 1855, and theother on July 1st, 18563 Both are here represented quite clearly. Each figure is a vertical section, the plane of section in Fig. 2 being taken at right angles to that in Fig. 1. A is the upper or runier stone. C is a frame which serves to support the hopper $D . \quad D^{\prime}$ is a tube leading down from $D$ and extending a short depth into the cup $J$. Neglecting for a moment the action of this cup, which forms the subject of the second patent, we will describe the feeding-tube. $M$ is the upper extremity of the driving-shaft. $L$ is the bail which enables $M$ to support the weight of $A$. The ordinary driver is employed to transmit the motion of M to A , but is not represented, as it might complicate and confuse the drawing. $K$ is the feeding-tube, which is expanded at the top to form a large cup $E$, and is supported by pivots $I$, in an opening in the bar E. The pivots $I$, allow a swinging of $K$ in one direction, and the bar $E$, being free to rotate on the pivots $F$ and $G$, allows it to swing in the other direction, so that it is, in effect, mounted on a universal joint, and swings freely around, but without turning on its axis, as the mill-stone revolves.
$J$ is a cup suspended by wires or slight over its edge. So long as any grain remains ransverse rods in the centre of E . When in in D , it will be continually supplied through action, it is always filled with grain, and by the tube $\mathrm{D}^{\prime}$, and fed uniformly over the edge its swaying alternately in every direction of $J$, at a rate corresponding exactly with the while the tube $\mathrm{D}^{\prime}$ is stationary, compels a revolutions of A.
portion of the grain to be continuously pushed $\quad$ The pivot $F$ is supported on a fixed standard,
PAINTER'S GRIST MILL FEEDER.

as represented, but the pivot at the other, lowered thereon by the aid of a strap, passing xtremity of the bar $E$ is carried in a block $\begin{aligned} & \text { over a pulley, and attached }{ }^{\text {to }} \text { a pin below. }\end{aligned}$

as shown at G, which is free to slide vertically on the upright H , and may be raised and By raising or lowering $G$, the rocking bar E and its attachments are correspondingly affected; and the action of the parts $\mathrm{D}^{\prime} \mathrm{J}$ modified so as to vary the speed at pleasure. This feeder has been thoroughly tried for more than a year past, and will feed with the utmost regularity and precision not only grain of all kinds, but any material however fine, and as it carries down the matter and distributes it evenly around in the bed stone at the verge of the eye, there is no possibility of clogging, and the stone may be run at any speed whatever. The faster they run, the greater the certainty of discharging regularly, as both gravity and centrifugal force carry down the material. The shoe and damsel are entirely dispensed with, and the cost of the apparatus is less than that of the article named. It is exceedingly simple and durable. The inventors believe that no other contrivance has been found so well to surmount all the difficulties at a high speed without interfering with a proper ventilation in the eye of the stone, which latter point is a great desideratum in the manufacture of good flour. The apparatus can be applied to old burrs with ordinary fixtures, in the space of an hour's time, merely by substitution.

For further information, the patentees may be addressed-M. \& C. Painter, Owing's Mills, Maryland.

Gibks' Universal Adjustable Clamp. The accompanying figure represents one of those useful devices-an adjustable clampso convenient for workers in wood, such as carpenters, and cabinet-makers, for holding planks,
upon.
A is
is the shank, B is the lower sliding jaw and $F$ the upper stationary jaw, firmly secured

o or forming part of the shank; E is a sliding plate, through which the shank passes. D is a lever, with its end formed with a cam head lever, with its end formed with a cam head,
placed in a slot in jaw B, and working on
pivot C. The shank A may be made of any length desirable, so that the space between the upper jaw and the plate $E$ may be enlarged or diminished, according to the thickness of stuff to be clamped, and held fast between them.
When stuff is to be taken out or put in the clamp, the lever D is turned in the position represented by the dotted lines; which allows plate $E$ to lie close and flat on the lower jaw or slide rest B. When stuff is to be secure $i$ in the clamp, the lever D is turned down as shown, and the cam head then forces the plate E against the stuff and holds it firmly betw een the plate and jaw F . The sliding plate E presses evenly against the board, and holds it accurately in place, without making an indent, or exerting unequal pressure on it. It is an excellent clamp for cabinet-makers and joiners, also for numerous other purposes, as it can be operated so easily and fastened and unfastened readily, and can be used in the reverse, or the position represented.
A patent was granted for it on the 17th of February last to J. E. A. Gibbs.
For more information, sce advertisement on nother page, or address Mr. Gibbs, at 702 Chestnut st., Philadelphia, or J. H. Ruckman, of Mill Point, Va.

Experiments with Breech Loading Riles.
Telegraphic reports to this city gire an account of a trial with breech-loading rifles, which took place at the United States Arsenal, Washington, D. C., on the 24th inst., before the Secretaries of War and the Navy, and a large company of spectators. The following war implements were entered for competition: Colt's rifle carbine and pistol, distance one, two, and four hundred yards; Sharp's rifle and carbine, same distance; Burnsides' "Rhode Island" rifle, same distance ; Merills' "Baltimore" rifle and carbine, same distance. The result of the test applied is not yet ascertained in detail. At one hundred yards, Sharp's rifle proved the most accurate, though there was a spirited contest with Colt's and Burnsides'. At three hundred yards the contest was nearly equal, Sharp's missing once. At four hundred and five hundred yards, Colt's rifle won the day. Burnsides' carbine beat Sharp's at five hundred yards, the latter hitting the target only once in five shots.

The Secretary of the Navy made some excellent shots with Colt's pistols at one hundred yards. Why one rifle was most accurate in aim at one hundred yards and least accurate at five hundred yards has not been made public. There must be a reason for this contradictory action in its performance.

## American Salt.

The annual salt product of the United States amounts to $12,370,000$ bushels. New York is the greatest producer, her amount being 6,000,000 bushels; Virginia next, her product being $3 ; 500,000$ bushels. In eleven States the manufacture of salt is carried on, the great sources of supply being salt brine obtained from deep wells far removed from the ocean.


## Inventors, and Manufacturers

## TWELFTH YEAR

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