

In regard to this diagram, the author remarks: "Notwithstanding this extraordinary speed the lines are all well defined showing distinctly the points of cut-off and release. A remarkable point in the diagram is, that though the pencil passed over it certainly twice or more, the lines are very near to each other, showing that even under this unprecedented speed of piston, the instrument was uniform and reliable in its action. This is not a selected diagram, all others taken on the same trip show the same characteristics.

Leaving the interpretation of these diagrams to engineers, we pass to the appendix, which contains much useful information.

We shall also make a single extract from this portion of the work, which will sufficiently show its practical character. The extract relates to the measuring of steam used for heating.

"The engineer is often called to determine the amount of steam that is used to heat apartments, liquids, etc. This the indicator does not reveal directly, no further than it shows how much steam it requires for a horse power; varied, of course, by the point of cut-off and its efficiency.

"Under these circumstances we have followed the rule of Watt, which is to allow one cubic foot of water per hour for each horse power; hence we measure the water condensed in the heating pipes in a given time, and estimate accordingly."

"If it is inconvenient to reduce the water to cubic feet, it may be weighed, allowing 62.5 lbs. to the cubic foot, or it may be measured by the gallon, or 7.48 gallons per cubic foot.

"When the steam pipe enters the vessel, and it discharges the steam directly into the liquid to be heated, the water then cannot be caught to be measured; in that case we measure the increment of its contents, and thereby find the quantity of steam condensed."

On the whole, the work is one well adapted to the use of scientific and practical engineers, and cannot fail to be an important help to any who seek a complete knowledge of steam and its applications.

TO KEEP CELLARS FROM FREEZING.

An agricultural friend, at our suggestion, has tried an experiment with a cellar of an out-house, in which on several occasions vegetables have frozen, although the cellar was fortified against frost by a process known to farmers as "banking." The walls and the ceiling were pasted over with four or five thicknesses of old newspapers, a curtain of the same material being also pasted over the small low windows at the top of the cellar. The papers were pasted to the bare joists overhead, leaving an air space between them and the floor. He reports that the papers carried his roots through last winter, though the cellar was left unbanked, and he is confident they have made the cellar frost-proof.

We do not counsel the special use of old newspapers for this purpose. It is just as well or better to use coarse brown paper. Whatever paper is employed, it will be necessary to sweep down the walls thoroughly, and to use a very strong size to hold the paper to the stones. It is not necessary to press the paper down into all the depressions of the wall; every air space beneath it is an additional defense against the cold.

ANNOUNCEMENT FOR 1870.—A SPLENDID WORK OF ART AND CASH PREMIUMS TO BE GIVEN.

The SCIENTIFIC AMERICAN enters its twenty-fifth year on the first of January next, and to mark this period of a quarter of a century in which it has maintained its position as the leading journal of popular science in the world, we have purchased from the executors of the estate of the late John Skirving, Esq., and propose to issue on New Year's day, the fine steel engraving executed by John Sartain, of Philadelphia, entitled

"MEN OF PROGRESS—AMERICAN INVENTORS."

The plate is 22x36 inches, and contains the following group of illustrious inventors, namely, Prof. Morse, Prof. Henry, Thomas Blanchard, Dr. Nott, Isaiah Jennings, Charles Goodyear, J. Saxton, Dr. W. T. Morton, Erastus Bigelow, Henry Burden, Capt. John Ericsson, Elias Howe, Jr., Col. Samuel Colt, Col. R. M. Hoe, Peter Cooper, Jordan L. Mott, C. H. McCormick, James Bogardus, Frederick E. Sickles.

The likenesses are all excellent, and Mr. Sartain, who stands at the head of our American engravers on steel, in a letter addressed to us says "that it would cost \$4,000 to engrave the plate now," which is a sufficient guarantee of the very high character of the engraving as a work of art.

The picture was engraved in 1868, but owing to the death of Mr. Skirving, a few copies only were printed for subscribers at \$10 each. A work embracing so much merit and permanent interest to American inventors, and lovers of art, deserves to be much more widely known. We propose, therefore, to issue, on heavy paper, a limited number of copies at the original price of \$10 each, to be delivered free of expense.

No single picture will be sold for less than that price, but to any one desiring to subscribe for the SCIENTIFIC AMERICAN, the paper will be sent for one year, together with a copy of the engraving, upon receipt of \$10. The picture will also be

offered as a premium for clubs of subscribers as follows to those who do not compete for cash prizes:

For 10 names one year	\$30	one picture.
" 20 " " "	50	" "
" 30 " " "	75	two pictures.
" 40 " " "	100	three "
" 50 " " "	125	four "

In addition to the above premiums we also offer the following cash prizes:

\$300	for the largest list of subscribers
250	" " second do do
200	" " third do do
150	" " fourth do do
100	" " fifth do do
90	" " sixth do do
80	" " seventh do do
70	" " eighth do do
60	" " ninth do do
50	" " tenth do do
40	" " eleventh do do
35	" " twelfth do do
30	" " thirteenth do do
25	" " fourteenth do do
20	" " fifteenth do do

Subscriptions sent in competition for the cash premiums must be received at our office on or before the 10th of February next. Names can be sent from any post office, and subscriptions will be entered from time to time until the above date. Persons competing for the prizes should be particular to mark their letters "Prize List" to enable us easily to distinguish them from others.

Printed prospectuses and blanks for names furnished on application.

NEW PUBLICATIONS.

A MANUAL OF THE HAND LATHE. Comprising Concise Directions for Working Metals of all kinds, Ivory, Bone, and Precious Woods; Dyeing, Coloring, and French Polishing, Inlaying by Veneers, and various Methods Practiced to Produce Elaborate Work with dispatch and at a small expense. By Egbert P. Watson, Late of the SCIENTIFIC AMERICAN, Author of "The Modern Practice of Machinists and Engineers." Illustrated by Seventy-eight Engravings. Philadelphia: Henry Carey Baird, Industrial Publisher, 406 Walnut street. London: Sampson, Low, Son & Marston, Crown Buildings, 138 Fleet street. Price \$1.50.

This work is eminently practical, and the information given is based upon the experience of the author. A brief extract from the work on the "Gluing in of Veneers," published in another column, will give a good idea of the plain and practical character of the book, and when we add that the subjects enumerated in the title above set forth are treated in the same clear and practical manner, we have said enough to convince the common-sense mechanic of the value of the work.

THE CHEMICAL FORCES—HEAT, LIGHT, ELECTRICITY. With their Applications to the Expansion, Liquefaction, and Vaporization of Solids; the Steam Engine, Photography, Spectrum Analysis, the Galvanic Battery, Electro-Plating, the Electrical Illumination of Light-Houses, the Fire Alarm of Cities, the Atlantic Telegraph, an Introduction to Chemical Physics. Designed for the Use of Academies, Colleges, and Medical Schools. Illustrated with numerous Engravings, and containing Copious Lists of Experiments, with Directions for Preparing them. By Thomas Ruggles Pynchon, M. A., Scovill Professor of Chemistry and the Natural Sciences, Trinity College, Hartford, Conn. Published by O. D. Case & Co.

A scientific book adapted to the student as well as the general reader is difficult to prepare. The author of this work has, however, shown himself skillful in meeting the difficulties of his task, though we think he displays something too much of caution in his discussion of modern views of the nature of molecular forces. In fact he can hardly be said to discuss them, contenting himself with their enunciation merely. In a work of this kind it would have been more satisfactory to have seen some more space given to this important subject. The correlation, convertibility, and equivalency of the physical forces are, however, well discussed. As the title promises, the industrial application of the chemical forces are noticed at considerable length, and it has been the aim of the author to produce a book not requiring of its reader an extensive knowledge of mathematics; it is well adapted to the use of the general reader. We notice that points liable to give difficulty to those not familiar with the subject are treated with special care, and are elucidated as only a teacher who has been accustomed to show pupils the way out of such difficulties could elucidate them. This is a valuable feature of the work, and one which will be appreciated by Mr. Pynchon's readers. We recommend the work as one of the best text-books we have met with upon the subject of which it treats.

STUDIEN I GRUFBRYNINGSVETENSKAP NO. 2. UEBER GESTEINSBOHRMASCHINEN. Von Dr. phil. F. M. Stapff, Assultant in der Bergabtheilung des Commercecollegiums. Mit Atlas enthaltend 11 theils Lithografie theils ueberdruckte Tafeln. Stockholm: A. Bonnier, 1869. [A TREATISE ON ROCK-DRILLING MACHINERY. By F. M. Stapff, Assultant in the Mining Department of the Royal Commercial College. With an Atlas containing 11 sheets of Lithograph Plates. Stockholm: A. Bonnier, Publisher, 1869.]

This is a very copious and comprehensive treatise in the German language on rock drilling and cutting, with especial reference to mining, tunneling, etc., etc. The methods employed in the most celebrated works of this character are described, and the machinery discussed and illustrated in detail. The atlas sheets are large folio, each containing a large number of finely-executed drawings. The work is one admirably adapted to the use of engineers, and well merits an English translation.

THE AMERICAN BUILDER. Published by Charles D. Lakey, Chicago, Ill. Terms, \$3.00 per annum.

The above is one of our most interesting exchanges, and we are pleased to learn that it is meeting with well deserved success.

Caueats are desirable if an inventor is not fully prepared to apply for his Patent. A Caveat affords protection for one year against the issue of a patent to another for the same invention. Patent fee on filing a Caveat, \$10. Agency charge for preparing and filing the documents from \$10 to \$12. Address MUNN & CO., 37 Park Row, New York.

Inventions Examined at the Patent Office.—Inventors can have a careful search made at the Patent Office into the novelty of their inventions, and receive a report in writing as to the probability of success of an application. Send sketch and description by mail, inclosing fee of \$5. Address MUNN & CO., 37 Park Row, New York.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

The losses by fire in the United States, from last January to October, inclusive, amount to the large sum of \$33,584,000.

M. Delaurier states that oxygen may be obtained very economically from manganese of lime, as this salt when heated gives off that gas very abundantly.

A surveying party of the San Diego, El Paso, and Memphis Railroad have passed the summit of the range of mountains between San Diego and Fort Yuma. They report the grade to be less than 100 feet per mile.

A writer in *Comptes Rendus* says that if articles made of copper be immersed in molten sulphur having lamp-black in suspension, they assume the appearance of bronze, and can be polished without losing that aspect.

It is stated that Mr. A. T. Stewart has purchased the block lying between North Twelfth and North Thirtieth streets, and First street and the East river, Brooklyn, for \$300,000, and that he intends to build thereon a depot for the proposed railway to Hempstead.

Water collected from roofs or kept in tanks covered with zinc has been found by M. Zurek to be so much contaminated by that metal as to prove detrimental to health, when used for domestic or industrial purposes. He recommends that such tanks or roofs be painted with asphaltic varnish.

Chicago is going into the iron manufacture on a large scale, and with Lake Superior ores. A number of capitalists there have formed a company and contemplate the erection of a large mill at Joliet. Wrought iron gas and water pipes will form one feature in the production of the establishment.

The miners of the Wilkesbarre (Pennsylvania) Coal and Iron Company have a fund of five thousand dollars for the use of those of their number who may be disabled in any way. It was raised by each miner and the company giving the earnings of one day; one thousand dollars is to go to Avondale, and the balance in the above manner.

The Darien canal project is reviving. The United States steamer *Nipstic*, attached to the South Atlantic squadron, is under orders to proceed to the Isthmus of Darien to make surveys and explorations, with a view to determine the best location for an inter-oceanic canal. A similar survey on the Pacific shore of the Isthmus will be made at a future day. It is asserted that President Grant will recommend the early construction of this Darien ship canal in his forthcoming message. What truth there may be in the statement it is difficult to say, as never before has a president been so successful in preventing a premature publication of the contents of the annual communication to Congress.

M. Méne says that when woods of a naturally white color are painted over with a concentrated aqueous solution of permanganate of potassa, they assume the appearance of walnut wood. Different woods behave in a different manner when acted upon by this solution. The woods of the pear tree and the cherry tree are readily stained, while the white woods (the acacia, for example) resist a longer time, and resinous woods, as the fir, are still more difficult to affect. The rationale is that the permanganate of potassa is decomposed by the woody fibers; brown peroxide is precipitated and fixed by the potassa, which is afterwards removed by washing with water. The wood when dry is varnished, and is not easily distinguished from woods of a naturally dark color.

Components of the *Chemical News* give two methods of constructing foot-paths: (1) One part of Portland cement mixed with seven or eight parts of gravel, or old, hard rubbish, such as brick-bats, broken stones, etc., will make a neat, cheap, permanent garden walk, impervious to wet, and not readily affected by changes in the weather. (2) A very good, and comparatively cheap foot-path may be made by laying down, first, a layer of coarsely broken-up old bricks, next, some middling coarse gravel, and over that a layer, from two to four inches in thickness, of small sea-shells. If care be taken to beat or roll the broken-up bricks and gravel into a somewhat solid mass, the shell-covered surface may be advantageously rolled in with a heavy iron roller, and will form even on soft sub-soil, a durable and inexpensive roadway.

GROOVED WHEEL RAILROAD BRAKE.—A novelty in railroad brakes, which seems to us to possess much merit, is the subject of a recent patent granted to R. d'Heureuse, whose address is Box 684, New York. Grooved wheels are employed between the running wheels of the truck, raised just enough to clear the rails, when it is desired that the speed be unimpeded; but when the motion is to be arrested or retarded, the grooved wheels are depressed upon the rails and the brake blocks forced down into the grooves, thus quickly effecting the purpose. This system of brake is operated by either hand or steam power, and with but a small expenditure of force. A model exhibited at the late American Institute Fair, worked well, and seemed to be a step in the direction of improvement. As the grooved wheels are arranged in the middle of the truck, the weight of the car would be sustained by them, in the event of an ordinary running wheel or its axle being broken, and many of the accidents so frequently occurring would thus be prevented.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

IMPERMEABLE PAPER COLLARS, CUFFS, ETC.—It is proposed to make these of paper which has been partially converted into vegetable parchment. It is well known that water has little or no effect on paper so prepared, and colors and patterns can be applied with the greatest facility.

PRESERVING ANIMAL AND VEGETABLE SUBSTANCES, ETC.—Mr. G. W. Perry, of Melbourne, Australia, treats the substances to be preserved as follows. They are first washed in a solution of bisulphite of lime and magnesia, and then dipped into a boiling solution of gelatin and bisulphite, and so, when dry, the substance is coated with an air-tight covering. In order to preserve animals, without removing the skin or feathers, a hot solution of bisulphite of lime and magnesia, with the addition of ten per cent of common salt must be injected into the blood vessels as soon as the blood is drained from the body, and before the carcass has become set. The viscera may then be removed, and the inside thoroughly cleaned and washed with the bisulphite solution. Fish, to be preserved, should be cleaned, the viscera removed, and then packed in barrels, filled with a pickle composed of salt and bisulphite solution. Liquids, too, such as ale and wine, or other fermented liquors, it is said, can be preserved in vessels, the inside of which have been washed with bisulphite of lime and magnesia.

MANUFACTURE OF SULPHURIC ACID.—This invention consists in the employment of ammonia, or carbonate of ammonia, to condense the nitric acid vapors escaping from the exit of the vitriol chambers. To accomplish this, ammonia, or carbonate of ammonia, is caused to come in contact with the escaping fumes, either in a cone tower or chamber. The fluid, thus resulting, is again afterwards decomposed with sulphuric acid, and the escaping nitrous fumes are returned into the vitriol chamber for the oxidation of the sulphurous acid. The patentee of this invention is Mr. Konrad Walter, Wicklow, Ireland.

MACHINERY FOR MANUFACTURING SEMOLINA AND FLOUR.—G. A. Buchholz, Shepherd's Bush, England.—The invention relates to a novel arrangement of apparatus for reducing hulled wheat to semolina, which apparatus by slight modifications, may be used to reduce the same to flour, the object being to effect such operations rapidly, and, when designing to manufacture semolina, to produce it with concurrent formation of a minimum proportion of flour or wheat dust. It is also designed to economize space in the mill by rendering the apparatus more compact than heretofore.

GRINDING MILL.—G. A. Buchholz, Shepherd's Bush, England.—This invention consists in the use of pairs of grooved rollers which are nicely adjusted to their work, and are speeded so that one roller will rotate from five to six times as fast as the other roller, and thereby reduce by a cutting in contradistinction to a crushing action, the ripped corn into particles of the required size.

TREATING CORN FOR PANIFICATION.—By this process corn is prepared for bread-making without grinding, and it is asserted, that by it, all the nutritious portions of the grain are retained, and only the outer pellicle is removed. The corn is first steeped in water to remove dust and foreign matter; in this way defective grains can be removed, as they will be found floating on the surface. After steeping for half an hour, the water is to be run off, and the grain is introduced into a metal cylinder with rasp-like projections on its inner side, which remove the outer pellicle. The grain is then placed in a receptacle filled with water, at 68° Fah., about 400 lbs. of water being employed to about 200 lbs. of grain, so that there may be a certain quantity of water above the grain, about 2 lbs. of semi-dried yeast, and from 15 lb. to 2 lb. of glucose having been previously mixed with the water, this fermentable matter acts by degrees upon the grain, which, after about twenty or twenty-four hours immersion, is ready for fermentation as bread, having absorbed from fifty to seventy per cent of water. The water is then drawn off, and the grain is placed in a hopper, which, by means of a distributor, causes it to pass between rollers, where it is reduced to a pasty condition. The pasty mass is then mixed with water, to which the requisite amount of salt has been added, and the dough is then made up into loaves and baked.

A NEW SWEETMEAT.—It is often amusing to notice the very simple and ordinary matters which are sometimes made the subject of a patent, the following is one of them. M. Francois Arond, of Lyons, France, has provisionally patented a method of manufacturing a *veritable* sweetmeat. He mixes seven ounces of sugar, one ounce of marmalade, eleven drams of rum or other spirit, eleven drams of extract of meat. After thorough incorporation, the sweetmeats are molded, dried, and finally candied.

BLIND MORTISING MACHINE.—Martin Buck, Lebanon, N. H.—This invention consists in arranging the levers which move the slides carrying the stiles to be bored and mortised, to or from the boring or mortising tools, for adjustment, so that the said slides may have a greater or less movement as required by the nature of the work. It also consists in an arrangement of interchangeable ratchet bars with ratchet teeth of different pitch, for varying the movement of the stiles past the cutter for different kinds of work. It also consists in an adjustable arrangement of the reciprocating boring and mortising tool carrying carriage for varying the angle of the slots.

MODE OF PACKING EGGS, FRUIT, ETC.—A. S. Smith, Lawrence, Mass.—The invention consists in the employment of pockets made in pairs of strips of stiff paper, leather, or bark, folded, and joined in a way to make two pockets of one strip and by one fastening, and of the proper size to receive one article each, the said pockets being open at each end, and arranged in tiers in a box, barrel, or case, with dividing boards between each tier, constituting the end walls of the said pockets when in position.

WASH BOILER.—G. E. Calkins, Rock Island, Ill.—This invention relates to improvements in wash boilers such as are arranged to cause a circulation of hot water and steam from the bottom upward through pipes or passages, and has for its object to provide an improved construction and arrangement of the false bottom or rack, whereon the clothes rest for keeping them above the bottom, to provide space for generating the steam.

BLACKING BOXES.—C. H. Gatchell, Oldtown, Maine.—This invention relates to improvements in blacking boxes, and consists in providing pointed tacks projecting downward from the bottom for holding the box from being moved around on the table or other board whereon it sets, when rubbing the brush on the blacking to charge it for applying to the shoe.

WELDING, TEMPERING, TOUGHENING, AND PURIFYING IRON AND STEEL.—J. F. Beazel, Uniontown, Pa.—This invention relates to improvements in welding, tempering, toughening, and purifying iron and steel, and consists in working the same in the presence of a flux of caustic soda, known in commerce as "saponifier," or "concentrated lye."

STUMP EXTRACTOR.—Alexander McLeod, Black River Falls, Wis.—The object of this invention is to furnish a simple, convenient, powerful, and effective machine for extracting stumps from the ground, and it consists in a combination and arrangement of mechanical appliances by means of which the object in view is attained.

MACHINE FOR MAKING WOOD PULP.—Frederick Burghardt, Curtisville, Mass.—This invention relates to a new and useful improvement in machines for reducing wood to pulp for use in manufacturing paper, and consists in a wheel with one or both of its sides provided with grating, rasping, filing, or roughened surfaces, in contact with which the wood to be reduced is brought.

KNIFE SHARPENER.—W. H. Howland, San Francisco, Cal.—This invention relates to a new and useful improvement in an article for sharpening knives, whereby that necessary operation is greatly facilitated, and it consists in the employment of two conical disks, composed of emery or of some equivalent grinding composition or material, secured together in a suitable stand or support by means of a screw or bolt.

BEEHIVE.—W. A. Elam, Milan, Tenn.—This invention relates to new and useful improvements in beehives, whereby they are rendered more useful than they have hitherto been, and consists in the construction and arrangement of parts.

WAGON SEAT SPRING.—Cyrus C. Carter, Exeter, Ill.—This invention relates to a new and useful improvement in seats for lumber and other wagons, and consists in the novel arrangement of adjustable springs.

HARROW.—John H. Miller and F. A. Pickering, Niantic, Ill.—This invention relates to new and useful improvements in harrows, whereby the parts which carry the harrow teeth are made adjustable, so that obstructions may be avoided and so that the harrow will adjust itself to the surface of the ground over which it passes.

COMBINED PLATE LIFTER AND BREAD TOASTER.—T. D. Keith, Mayville, Wis.—This invention relates to a new and useful improvement in an article for kitchen use, designed for lifting plates and toasting slices of bread, and it consists in the use of a slide on two or more long hooks secured to a handle.

BABY WALKER.—John C. Goulding, Trenton, N. J.—This invention has for its object to so construct baby walkers that it will fit the child like a garment, allow the same freedom of motion while supporting it, and be simple, light, and cheap at the same time.

STAIR ROD FASTENER.—Joseph Stuehler, Brooklyn, N. Y.—This invention relates to a new stair rod fastener, which is so constructed that the rod can be readily applied and removed, and securely retained in proper position.

GANG SAW MILL.—William Penny, Milton, Fla.—This invention relates to a new manner of constructing and arranging the frames of gang saw mills, with a view of producing a simple, effective, and compact machinery which may be readily transported, and which will combine all the requisites of a full working mill.

BASKET.—C. Renne and F. Lanzenberger, New York city.—The object of this invention is to construct a basket so that it will indicate the weight of the articles contained in it, to enable housekeepers and other parties buying goods to judge whether the correct weight has been measured out to them.

ANIMAL TRAP.—Robert Tompkins, Clarksville, Tenn.—This invention consists of a cylinder of wire netting, mounted upon trunnions so as to easily revolve, having a hole at one end for the entrance of the victim, and, near the other, the hook holding the bait. The weight of the animal, as soon as he enters the cylinder, causes the latter to rotate until such rotation is checked by a stop at a point where an egress is afforded from the cylinder into a retaining box, immediately upon which egress of the animal the cylinder, relieved of its weight, rotates back to its original position and is reset.

BILLIARD-TABLE CUSHIONS.—Mathew Delany, Virginia City, Nevada.—This invention relates to improvements in billiard-table cushions, and consists in the combination with the india-rubber cushions, of wires or cords embedded in the edges, running from end to end thereof, and strained by straining keys, or other devices, in a way as to impart a superior springing quality to the said cushions.

HULLING MACHINE.—G. A. Buchholz, Shepherd's Bush, England.—This invention consists of a cylindrical case fitted at its opposite sides with panels of wire gauze or perforated metal to facilitate ventilation within, and armed on its inner periphery at the parts not occupied by the panels with sets of steel blades fixed radially in segmental groups; within the cylindrical case is mounted a series of drums, say four, the number preferred for ordinary working, which are keyed upon a central rotating shaft; these drums are armed on their peripheries, with blades made like those on the case of flat steel plates. The drums are cast with radial wings, extending from the boss to the periphery, and holes are formed through the drums to allow of a down draft being created and distributed through the case by the wings as the drums are rotated. The drums instead of being inclosed, as heretofore, in separate cylindrical chambers have interposed between them horizontal rebated ring plates, which form part of the case. These ring plates and also the bottom plate of the case are cast with annular-flanged projections, which are intended to receive steel blades rebated at the back to fit the flanged projections.

PROSCOPIC.—George Brownlee, Princeton, Ind.—This invention relates to a new apparatus for displaying successively any suitable number of photographic or other pictures. The object of the invention is to construct a case, not much larger than necessary to hold the pictures, and without any machinery, and still to allow all pictures to be displayed in the required succession by the motion of the case.

APPARATUS FOR TEMPERING STEEL.—C. B. Cottrell, Westerly, R. I.—This invention relates to a new apparatus for conveniently and rapidly tempering small tools or other articles made of steel.

KEY AND KNOB SHANK GUARDS.—Max E. Berolzheimer, New York city.—This invention consists of a sliding guard having a notch or slot in the end for sliding over the plain sided shanks of the keys or knobs so as to hold them in the manner of a wrench, to prevent them from being turned; the said slides may be provided also with pins for passing through holes in the shanks, or they may hold the same wholly by the pins if preferred. They are also provided with caps fastened to the lock plate or door for the reception of the ends, to confine them against efforts which may be made from without to force them away from the door by strong rods inserted in the keyholes and forced against them. They may also be provided with any preferred means to hold them from sliding back, to disengage the shanks, and when applied to the keys they are made broad enough to cover the whole of the keyhole.

A NEW RAILWAY BRAKE has been invented in England which acts automatically when the connections between the parts of a train are any of them ruptured to bring both portions of the train to a standstill. The details of its construction are not given in the papers which announce the invention except that the brakes are thrown into operation by the rupture of a small chain which passes under the train from end to end.

LATHES ATTACHMENT FOR TURNING OVALS.—Ramsey Lawson, Shelburne Falls, Mass.—This invention has for its object to furnish an improved device for attachment to lathes, by means of which oval handles for tools, and other oval work may be turned with the same ease and rapidity as round work.

COMBINED PLANTER AND CULTIVATOR.—John A. Rockwood, Kinserhook, Ill.—This invention has for its object to furnish a simple, convenient, strong, durable, effective, and cheap machine, which shall be so constructed and arranged that it may be easily and quickly adjusted for use as a planter or cultivator, as may be required.

TURBINE WATER WHEEL.—A. M. Harding, Oregon City, Oregon.—This invention has for its object to furnish an improved water wheel, which shall be simple in construction and effective in use, being so constructed and arranged as to economize the water and enable its admission to be more conveniently regulated and controlled.

CULTIVATOR.—S. W. Brock, Niantic, Ill.—This invention has for its object to furnish an improved cultivator, which shall be simple in construction, effective in operation, and easily adjusted to work closer to or further from the plants and to turn the soil towards or from the plants, as may be desired.

HAND CORN SHELLER.—Charles M. O'Hara, Bonnar, Tenn.—This invention has for its object to furnish a simple, convenient, and effective device, by means of which the corn may be shelled quickly and easily, and which shall be particularly adapted for shelling corn for seed or meal, where only part of the kernels are to be removed from the cob.

COMBINED SCOOP AND SIFTER.—Cephus Boucus, Waupun, Wis.—This invention has for its object to furnish a simple and convenient instrument, by means of which flour, and other substances, may be lifted and at once sifted without its being necessary to handle them two or three times before getting them sifted and into the place or vessel where they are to be used.

CULTIVATOR.—I. N. Gates, Burnside, Ill.—This invention has for its object to furnish an improved device for connecting the plow beams to the truck frame of a cultivator, which shall be simple in construction, strong and durable, and effective in operation, permitting a free vertical and lateral movement of the plows, and at the same time holding the plow beams loosely and steadily, preventing all tendency of the plow to wallow or tip when plowing crooked rows.

COMBINED BED AND KEY BOARD MUSICAL INSTRUMENT.—John McDonald, New York city.—This invention has for its object to furnish a key-board musical instrument, which shall be so constructed that it may be opened up to serve as a bed, and which, when closed, shall have every appearance of, and may in fact be, a real instrument, suitable to be placed in a parlor or sitting room.

COMBINATION POCKET RULE.—This invention consists in a combination of twelve tools in one instrument, to be carried in the vest pocket and weighing less than one ounce. It is a pocket rule, ruler, square, bevel, screw driver, chisel, compasses, scissors, button-hole cutter, paper knife, eraser, and pencil sharpener. The instrument is finished in various styles—plain steel, silver, or gold plated. It is a most convenient and useful article. It will be found advertised on our last page by the Combination Tool Co., 95 Mercer street, N. Y.

BENDING MACHINE.—David Pierce, Almont, Mich.—This invention comprises an apparatus for first bending the edges of the strips of sheet metal for eave troughs to receive the wire; also, an arrangement of apparatus for bending the sheet into the finished form and for wiring the edges; and also an apparatus for bending the sheets for the conductors, and for forming a part of the locks for uniting the edges.

BRIDGE.—H. W. Cass, Lodi, Wis.—This invention consists in an arrangement of counter chords at the center thereof, and braces between the ends of the said counter chords and the upper chord, whereby the upper and lower chords are braced by a series of inverted arch-shaped braces. The invention also comprises, in connection with the above, an arrangement of lateral brace rods.

GARDEN IMPLEMENT.—Henry Miller, Roadside, Va.—This invention consists in the manner of connecting the handle with stock, whereby the former is rendered removable, and, also, capable of being kept always tight.

CURRYCOMB.—J. E. Yager, Barboursville, Va.—The object of this invention is to construct a currycomb in such a manner, that when it gets out of order from any cause, it can be readily taken apart and adjusted or repaired.

SHOVEL PLOW PLATE AND POINT.—Henry Miller, Roadside, Va.—This invention consists of a plow plate, or mold, to be secured to any plow stock, its face being concave, lengthwise, and flat crosswise, and the mold having seats at its ends into which are placed reversible points of shape suited to the seats.

FIREPLACE HEATER.—Benjamin F. Conley, Tunnelton, West Va.—This invention relates to improvements in hearths for fireplaces, and consists of a new and improved manufacture of hearths of cast metal, in place of ornamental designs, and of any size or shape for application to fireplaces of all dimensions or shapes.

HULLING MACHINE.—G. A. Buchholz, Shepherd's Bush, England.—This invention relates to the employment of improved machinery for manufacturing semolina. In carrying out this manufacture, the wheat intended to be converted into semolina is first hulled in a novel construction of apparatus, the acting surfaces of which are formed of metal blades which, when the apparatus is set in motion give to the grain the friction requisite for removing the outer skin or the greater portion thereof. When the grain has passed through this hulling machine, the bran or hull is separated therefrom in any approved manner, and afterwards the grain is submitted to the action of a novel construction of roller mill whereby a large portion will be reduced to semolina fit for the market. This is separated by sieves or other suitable means, and the remainder is reduced in any known or approved manner to flour which may be dressed and finished as usual for the market.

MACHINE FOR BORING AND TENONING.—Thos. Place, Alfred Center, N. Y.—This invention relates to improvements in machines for boring felles and tenoning spokes, such as patented to the same inventor March 12, 1867, No. 62,883, and consists in an improved arrangement of the turntable for holding and centering the hub on the carriage, for holding up to the auger and spoke holder.

BUCKLE.—Henry R. Swan, Norwalk, Conn.—The object of this invention is to confine the cloth, which supports the buckle, exactly in the center of the hook, so as to prevent its crowding to one side or the other when subjected to a lateral or oblique pull.

HOISTING MACHINE FOR RUNNING UP SLOPES.—Geo. Martz, Pottsville, Pa.—This invention relates to the propulsion of cars laden with coal from the gangway of a mine, up an inclined way, to the surface, by means of a motive truck, separate from the cars, and running upon a track above them.

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Inventions Patented in England by Americans.

[Compiled from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

- 2,625.—PUMP.—J. W. Douglas, Middletown, Conn. Sept. 14, 1869.
 3,092.—SEWING MACHINE NEEDLES.—Mrs. H. G. Suplee, San Francisco, Cal. October 25, 1869.
 3,118.—MANUFACTURE OF SHEET IRON.—S. Parker and H. S. Pratt, Hartford, Conn. October 27, 1869.
 3,125.—ELECTRO-DEPOSITION OF NICKEL.—Isaac Adams, Jr., Boston, Mass. October 28, 1869.
 3,133.—SHAFT COUPLING.—M. Clemens, Boston, Mass. October 28, 1869.
 3,137.—SPRING.—J. Trent, Millerton, N. Y. October 29, 1869.
 2,919.—AXLE BOXES.—D. H. Dotterer, Philadelphia, Pa. Oct. 8, 1869.
 2,942.—MEANS OF LOCOMOTION.—Thomas Luders, Olney, U. S. October 8, 1869.
 3,067.—ROTARY BLOWING ENGINE.—P. H. Roots and F. M. Roots, Connersville, Ind. Oct. 21, 1869.
 3,093.—DRY WHITE LEAD AND WHITE LEAD PIGMENT FROM METALLIC LEAD.—G. T. Lewis, Philadelphia, Pa. Oct. 25, 1869.
 3,095.—ADHESIVE COMPOUND.—S. P. Conner, Philadelphia, Pa. October 25, 1869.
 3,115.—WIRE DRAWING, ETC.—D. F. Maltby, Waterbury, Conn. Oct. 27, 1869.
 3,130.—AXLES FOR VEHICLES.—J. M. Regua, New York city. October 28, 1869.
 3,131.—DRAWING FRAMES.—Chas. Wall, New York city. October 28, 1869.