

In the Illinois Penitentiary eight hundred convicts are employed in mechanical trades. Two hundred and fifty are in the cooper shops, ninety make shoes, forty-four make cigars, and there are thirty harness makers.

The Everett Mills, in Lawrence, Mass., run 30,000 spindles, employ 1,000 hands, use every week 12,000 pounds of wool and 20,000 pounds of cotton; and produce in the same time, 100,000 yards of goods, principally flannel shirtings, cotton and wool fabrics, dress goods, and shawls.

Work upon the Iron Mountain Railroad between St. Louis and the South is going on rapidly. Track laying will be finished to a point four miles below Farmington within sixty days, and the track has already been laid from Belmont to Charleston. Fifteen hundred men are employed upon the line in and at the tunnel, fifty miles from Bismarck; four sets of hands are constantly employed working night and day. This tunnel is twelve hundred feet in length.

Experiments have recently been made at the camp of Lyons on the bodies of dead horses, with the view of ascertaining the precise character of the wounds produced by conical bullets discharged by the Chassepots muskets. It is said that the aperture made by the projectile at the moment it penetrates the flesh is commonly no larger than an ordinary pea, but that the rotatory movement of the ball revolving on its axis gradually enlarges its circles until it makes a hole into which a person could thrust both fists.

CHROMATE OF IRON.—This mineral, which is found so abundantly in Maryland and Pennsylvania, has recently been used for alloying iron and steel to considerable extent, and with highly satisfactory results, the steel made from the mixture being the hardest known. Works for its manufacture have recently been erected, and a company formed whose capital is \$400,000, which are in active operation. The extension of the use of this mineral for hardening various manufactures of iron is now under experiment; and if the results prove satisfactory, the consumption of chrome ore, or chromate of iron, as it is technically termed, will be greatly increased.

Recent American and Foreign Patents.

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

LAMP FEEDER.—T. P. Gibbons, Baltimore, Md.—The object of this invention is to provide a cheap and convenient device by which lighted lamps can be filled at any time with perfect safety.

SNOW PLOW FOR RAILROADS.—Jenkins Jones and T. G. Eiswald, Providence, R. I.—The object of this invention is to construct a snow plow for railroads which shall operate more easily and effectually than those heretofore in use, and by which the snow may be thrown upon either side of the track, as may be desired.

STOVE.—Henry D. Snyder, Carbondale, Pa.—The object of this invention is to so improve the culm or anthracite burning stove, that better combustion of the fuel will be effected, and the heat be better radiated than heretofore, while the outer wall of the stove can be opened all around the fire box so as to diffuse the cheerful radiance of the fire on every side. The stove can, also, be readily changed and adapted to burning different kinds of coal and wood.

WATER ELEVATOR.—C. F. Woodruff, Newbern, Tenn.—The object of this invention is to furnish a simple and neat device by which, after raising a bucket of water from the well, the bucket can be readily and conveniently lowered into the water again without reversing the motion of the crank by which it was raised. This device is an improvement on one patented by the same party Feb. 4, 1868.

CLOTHES WRINGER.—Josiah Webb, Spartansburgh, Pa.—This invention consists in the peculiar method of constructing and arranging the compressing rolls, whereby the water is more completely expressed from the clothes, and whereby, also, the rubber coating of the rolls can be easily adjusted and tightened when it wears loose.

PROCESS FOR PREPARING SULPHATE OF BARYTES.—Page and Krause, St. Louis, Mo.—This process is a simple and effective series of operations for treating the mineral known as sulphate of baryta or heavy spar, so called, whereby the mineral is refined and reduced to a fine powder known in commerce as sulphate of barytes.

GUIDE FOR SCROLL SAWING.—G. W. Staats, Newcastle, Pa.—The object of this invention is to enable irregular figures and curves to be sawn from wood by a scroll saw without the necessity of working to a line, which latter operation is properly performed by a skilled workman, beside requiring the figure to be marked to the wood to guide the operator.

GROUND AUGER MACHINE.—Jacob M. Walter, and Samuel Shank, Springfield, Ohio.—The object of this invention is to provide a machine for boring post holes in the ground, which is effective, easily and conveniently operated and adjustable to operate upon side hills. It consists of a binged auger shaft whereby the earth lifted by the auger may be conveniently deposited away from the hole, together with windlass and cord mechanism for lifting the auger shaft vertically from the hole. It further consists in the form of the boring disk, and binged or pivoted uprights supporting the boring and lifting mechanism, the said uprights vibrating in contact with slotted semi-circular plates affixed to the bed frame of the machine which serve in conjunction with clamp borers and screw studs in the uprights to adjust the up rights and the auger shaft in a vertical position when the hole is to be bored on a side hill and the bed frame is necessarily inclined from the horizontal.

TENONING MACHINE.—William McKnight, Clearfield, Pa.—The object of this invention is to provide an apparatus by means of which tenons of any suitable angle and slope, both in the tenon and shoulder of the same, may be cut in an expeditious and accurate manner. It consists of a frame having devices for adjusting and holding the wood to be cut in such a manner that the tenon when cut will be straight or tapered, or the shoulders of the same will be straight or mitred as may be desired and having, also suitable guides for the plane. It further consists of a tenoning plane having a shear iron, in combination with the frame above mentioned.

SAWING MACHINE.—Samuel Varion, deceased, Corunna, Mich.—This invention refers to a portable machine designed more particularly for felling trees and for cutting the same up into dimensions suitable for portability or for consumption as fuel, and is peculiarly simple and effective in accomplishing the same.

LIFTING MACHINE.—Andrew Kriebel, Hereford, Pa.—This machine has for its object to furnish a simple, cheap, and convenient machine, designed especially to enable the end of an endless chain horse power to be easily and conveniently raised by one man, to receive the trestle, so as to give a proper inclination to the endless chain of the machine.

WAGON JACK.—E. R. Baldwin, Southfield, Mass.—The object of this invention is to provide a wagon jack that may be operated with great ease than those now in use, and which is more especially adapted for raising heavy trucks and carts which stand low, but which may also be used with equal facility for high and light wagons.

SEED COVERER.—E. D. Cramer, Hackettstown, N. J.—This invention relates to a new device for covering the seed behind a planting or seeding machine, and consists of a triangular frame which rests on three or more wheels and which is attached behind a planter or seeding machine, so as to follow its motion. On the two sides of the frame, which converge directly in front, are secured metal plates that are up and down adjustable these; plates acting as scrapers for covering the seed.

ADJUSTABLE CARRIAGE POLE.—M. A. Koon, Catskill, N. Y.—This invention relates to that class of carriage poles which can be adjusted to carriages, sleighs, or other vehicles, in which the clips may be set at any suitable distance apart and to any length of axle.

CORN HARVESTER.—Nelson Newman, Springfield, Ill.—This invention relates to a new and improved device for picking the ears of Indian corn from the standing stalks.

COMBINED CORN PLANTER AND CULTIVATOR.—John S. Mason, Coal Run, Ohio.—This invention relates to a combination of a corn planter and cul-

tivator, and it consists in a peculiar construction and arrangement of the same.

WRENCH.—Luke Chapman, Collinsville, Conn.—This invention has for its object to furnish an improved wrench, simple in construction, comparatively inexpensive in manufacture, strong, and convenient.

ANGULAR SHAFT COUPLING.—John M. Case, Worthington, Ohio.—This invention has for its object to improve the construction of my angular shaft coupling, patented March 10, 1868, and numbered 75,364, so as to make it simpler and cheaper in construction, and equally efficacious in use.

PLAYING CARDS.—J. J. Levy, New York city.—This invention relates to a new manner of forming the edges of playing cards, for the purpose of facilitating the shuffling of the same, and to prevent them from spitting. It also consists in providing the cards with beveled edges when double beveled or single, so that they are narrower at the edge than in the middle.

BEEHIVE.—Orin Field, Independence, Iowa.—This invention consists in a peculiar construction of the hive, the manner of arranging the comb frames, etc., whereby a very desirable hive is obtained, all the comb frames readily very accessible, and all of them rendered capable of being renewed when necessary.

PACKING, PRESSING, AND WEIGHING WOOL, ETC.—A. W. Fox, Columbiaville, Mich.—This invention relates to a machine for packing, pressing, and weighing wool and other similar substances, and it consists in a novel construction and arrangement of parts.

REFRIGERATOR.—Wilson Bray, Stockton, N. J.—This invention relates to an improvement in refrigerators, and the improvement is applicable to railway provision cars as well as to stationary refrigerators, both on a large and small scale.

HEATING RAILWAY CARS BY STEAM.—W. B. Farwell, New York city.—This invention relates to certain improvements in heating railway cars by steam taken from the boiler of the locomotive by which the cars are drawn.

WAGON AXLE.—C. D. Bacheider, Camden, Me.—This invention consists in providing an oil recess in the body of the journal of the axle, and a sleeve which is put on over the axle oil tight, to confine the oil in the recess, having a slot communicating with the recess in the axle through which the oil is fed by a wick to the wearing parts.

CONSTRUCTION OF CHAIR SEATS.—E. L. Buckingham, Jefferson, Wis.—This invention consists in a method of fastening the rod or splint to the frame of the seat by providing oblique slots through the rails from about the center of the inner edge, downward and outward, terminating in the bottom face of the rails near the outer edge, and in passing the strips of which the bottom is to be woven through the said slots, instead of through vertical holes, as heretofore; and it further consists in providing tenons on the back ends of the side rails, to be secured in corresponding holes in the hind posts.

KITCHEN IMPLEMENT.—Charles S. Westland and John B. Allen, Providence, R. I.—The object of this invention is to provide an implement available both as a stove-plate lifter and a holder for knives, forks, and spoons, which latter will, when so held by the implement, be conveniently accessible to the person employed in cooking.

BLOCKING CHAIN.—Peter Kendrick, Trenton, N. J.—This invention relates to a device for facilitating the driving of wooden blocks in chains, such as are used for mining purposes.

SULKY PLOW.—J. R. McConnell, Marengo, Iowa.—This invention relates to a sulky plow, and it consists in a peculiar construction of the same, whereby ease of draft, uniformity in the depth of furrow, and complete control over the machine by the driver, is obtained.

DEVICE FOR CONDUCTING GRAIN TO THRESHING MACHINES.—A. W. Lockhart, Sacramento, Cal.—This invention relates to a device for conducting grain from the stack or from wagons, to threshing machines, thereby effecting a great saving in labor in thrashing grain.

STEAM ENGINE.—Thomas A. Nizer, Hamilton, Ohio.—This invention relates to that class of steam engines which are known as rotary engines, and it consists in a novel construction and arrangement of parts.

GAS APPARATUS.—John W. Brown, Wooster, Ohio.—This invention relates to improvements in apparatus for generating and purifying coal gas, for illuminating and other purposes, whereby the apparatus is adapted to household or domestic use, and the flow of gas to the gas holder is regulated automatically, and the surplus gas used as fuel.

MACHINE FOR STUFFING COLLARS.—William Fauntleroy, New Harmony, Ind.—This invention consists of a collar board pivoted centrally on a suitable bench, whereon the leather portion of the collar is stretched and secured with both ends open, and a pulley made to operate by a foot lever, over which a belt works, to which a stuffing mandrel is connected, which is guided by one hand, while by the other the straw or the filling is fed into the mouths of the collar, and the strap actuates the mandrel to pack the filling. When the collar has been filled at one end to the center, the collar board is swung around to present the other end to the operator.

MORTISING AND SLOTTING AUGER.—Peter Cunningham, Eckley, Pa.—The object of this invention is to provide an auger with which the operations of mortising and slotting may be performed rapidly. Patented Sept. 1, 1868.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at \$5 00 a line, under the head of "Business and Personal."

All reference to back numbers should be by volume and page.

W. L. B., of N. Y.—There is nothing that will remove rust from polished steel and leave a smooth surface. Iron rust is dissolved by acids, but they will attack the polished metal. The only remedy we can recommend is repolishing.

A. J. G., of Kansas.—The amount of water that can be raised to a given height by the hydraulic ram, working under a given head, is limited only by the size of the ram and the supply. Hydraulic Rams are manufactured by W. and B. Douglass, Middletown, Conn.

J. J., of Ill.—If wheat is not allowed to sweat before grinding, the flour will sweat after grinding; but this may take place without injury or loss more than is usual in the complete drying of the grain. We believe the best flour is made from wheat which has passed through this stage before grinding. The bolting cloths made in Holland are of silk, instead of thistle fiber as you have been informed.

M. H. R., of Mass.—All other things being equal, increased length of a water pipe diminishes the flow. In your case, if we understand it, the flow through the aperture at the junction of the pipe with the cistern depends upon the pressure of the water in the reservoir. Beyond a length sufficient to compensate for the contracted vein a pipe will be of no advantage.

F. C. C., of Me.—There are different theories in regard to why the ocean is salt. Some think there may be large deposits of salt somewhere at the bottom of the ocean which by dissolving have rendered it salt. Some think that the sea obtained its salt at the time the globe was in the act of subsiding from a gaseous state. We are better satisfied to believe that it results from the evaporation of the water which is constantly flowing into the sea, which, although it may appear fresh to the taste, always or nearly always contains more or less salt absorbed from the earth during its flow. In this view the ocean bed is an immense caldron in which nature has been boiling away water for ages; the salt remaining in the kettle, precisely as it does in the saltworks, only very much slower.

G. W. B., of S. C.—A good waterproof cement may be made simply of powdered clay, dried by a gentle heat and mixed to the consist-

ency of a paste with boiled linseed oil. It may be thinned with turpentine, colored with ochres or other pigments, and used for covering metallic roofs.

M. A. K., of Conn.—We have frequently restored faded flowers by immersing a portion of their stems in very hot water and allowing them to remain until the water is cool; then, removing them, cutting off the scalded portion of the stems and placing them in a vase of cold water.

A. H., of R. I., says that sawdust is the best bedding for horses he has ever tried. It possesses all the qualities necessary; it is absorbent, a deodorizer, and a fertilizer, keeps the horse's skin in a healthy condition, and does not contaminate the clothes of the attendant with offensive smells.

P. T., of Mass., says: "Having seen in the SCIENTIFIC AMERICAN several notices of attempts to procure a substitute for ivory in the manufacture of billiard balls, my attention has been drawn to the subject, and I am surprised that no attempt has been made to utilize the seeds of the macrocarpa, or microcarpa, a sort of palm growing in the valleys of the Peruvian Andes. These seeds, large enough for billiard balls, have an apparent structure similar to none, but are hard and elastic like ivory. I think they might receive and retain color; they can be handsomely polished."

Business and Personal.

The charge for insertion under this head is one dollar a line.

For State and County rights to the best and cheapest sorghum stripper now in use, address C. P. Hale, Calhoun, Ky. Agents wanted.

Wanted—purchasers for a valuable patent right—large business can be done. Address G. Knell, 130 Market st., Philadelphia.

Manufacturers of steam engines, water wheels, flour and saw mill machinery, cotton gins, etc., etc., send circulars to A. W. Lunsen, machinist and millwright, New Braunfels, Texas.

To say that the siccohash, invented by Asahel Wheeler, Boston, is superior to any other oryzer for linseed oil, and cheaper, is but reiterating the words of Mr. John H. Peck, chief painter and chemist at the Washington Navy Yard, and many other good mechanics, among whom are Messrs. Barney & Styles, of New York.

Wickersham's American oil feeders oils loose pulleys, it being the most perfect, reliable, and economical plan for that purpose in the world.

For sale—State rights of a valuable patent for an article used in every household. Apply at room 12, No. 113 Water st., New York, between the hours of 10 and 12, M.

To inventors—a gentleman of energy and experience in the management of an agency business, desires the general agency, for Ontario, of some really valuable patent of general utility. Address Box 1092, Toronto, Canada.

Hardware dealers and manufacturers, address, for circular and sample of best sash lock in use, O. E. Woodbury, Madison, Wis.

For sale cheap—a small adjustable steam press for vulcanizing rubber or other light work. Address A. W. Gates, 418 Eighth avenue, New York.

For sale—a complete set of the "Scientific American," neatly bound, (31 volumes), old and new series; also, odd volumes. Address L. M. Montgomery, Box 2953, New York.

Parties about to buy steam boilers should examine Root's wrought iron sectional safety boiler at 95 and 97 Liberty st., New York. See advertisement.

To inventors.—I will furnish means to patent some useful invention, or will take an interest in a patent, if sufficient inducements are offered. Address, with stamp, J. K. Ross, Noblesville, Ind.

Wanted.—Makensie No. 2 2d-hand cupola. N. C. Stiles, Middletown, Conn.

Wanted—a machine suitable to crush quartz and bones. Send circulars and price list to E. D. S., Postoffice box 708, New Orleans.

Millstone-dressing diamond machine, simple, effective, and durable. Also, Glazier's diamonds, diamond drills, tools for mining, and other purposes. Send stamp for circular. J. Dickinson, 61 Nassau st., N. Y.

N. C. Stiles' pat. punching and drop presses, Middletown, Ct.

For sale—the patent right, in Great Britain, for perforated saws. The manufacture of these saws is now firmly established in the United States, and they are rapidly taking the place of all other solid saws. Apply to J. E. Emerson, Trenton, N. J.

Prang's American chromos for sale at all respectable art stores. Catalogues mailed free by L. Prang & Co., Boston.

For breech-loading shot guns, address C. Parker, Meriden, Ct.

Winans' anti-incrustation powder, 11 Wall st., N. Y. 20,000 references. No foaming. No injury. 12 years in use. Imitations plenty.

NEW PUBLICATIONS.

CONSTRUCTION OF IRON ROOFS. F. Campin, C. E., member Nat. Acad. Great Brit., etc. New York: D. Van Nostrand, 192 Broadway.

The increasing use of iron in the construction of buildings, and especially in the construction of self-supporting roofs, combining lightness and strength, seems to make this treatise of peculiar value at this time. The subject of iron roofs is treated practically and also theoretically, the formulae for strain being equally applicable to timber structures. The volume is illustrated with eight plates, showing the details of such work, taken from buildings actually erected.

AMERICAN HOUSES. A Variety of Original Designs for Rural Buildings Illustrated by Twenty-six Colored Engravings with Descriptive references. By Samuel Sloan, Architect. Philadelphia: Henry Carey Barré, 406 Walnut street. Sent free of postage on receipt of \$2.50.

The object of this book, as announced by the author, is to present a number of designs in an attractive dress, that may either serve as models to build from, or criteria by which the projector may judge of the relative quality and merits of his intended edifice. It will prove of value to such as need some guide in forming a judgment upon designs, and who, meditating the erection of rural buildings, wish for some hints upon the subject before consulting an architect. Architects also will find useful studies in this book, and we especially recommend it to beginners and students.

A TREATISE ON OPTICS, or Sight and Light Theoretically and Practically Treated, with the application to Fine Arts and Industrial Pursuits. By E. Nugent, C. E. With one hundred and three illustrations. New York: D. Van Nostrand, 192 Broadway.

This is a work written in popular and pleasing style, and adapted to the wants of those who have not time or the preliminary education requisite for the study of larger works. To all such we can recommend it.

Improvement in Hanging and Retaining Center-Boards.

For shallow water, and also for deep water when vessels of great relative breadth of beam and slight immersion are employed, the center-board is invaluable, holding, while in use, the vessel closely to the wind, without impeding its motion through the water. There are some objections to its use, the principal owing to the method of hanging the board, allowing leakage and its consequent dangers and annoyances. The usual method is simply to drive a pin through the walls of the well or trunk and the board, which in time becomes corroded and loosened, and when the board is to be removed must be driven out from either side.

The engraving presents a view of an improved plan of hanging the center boards of vessels for which a patent was issued January 8, 1867. The trunk, A, is of usual form, the board or blade, B, hung on a pivot at C. This pivot is a simple pin of steel, iron, or composition, having its bearings, not in the walls of the trunk, but in a screw socket or nut seen enlarged in Fig. 2. The hole in this socket for the reception of the pin is not bored through, but the nut end of the socket forms a cap. The shank of the socket nut has cut on it a sharp thread for seating into the wood of the trunk, and the inner side of the flange is formed into a sharp annulus or ring that seats itself into the outside of the trunk, forming a ring, as at C, and making a perfectly water-tight joint, entirely preventing all possibility of leakage. If thought advisable, a flange or gasket of rubber or leather may be introduced under the flange of the socket nut. The pin, bearing entirely on the metal of the sockets, may be lubricated, and to prevent wear the orifice through the blade or board may be lined with a metallic sheath. When it is necessary to remove the board, it may be done simply by unscrewing one of the nuts and taking out the pin, which is perfectly loose.

This device has been thoroughly tested for over two years—before the date of the patent—by sailing masters, and owners of yachts, fishing and pleasure boats, and has proved satisfactory to each and all. It has been found to be a device saving time and annoyance, and considered to be better in every respect than the ordinary method of hanging center boards.

Letters may be addressed to either of the patentees, George Storer, or George W. Storer, at Middletown, Conn.

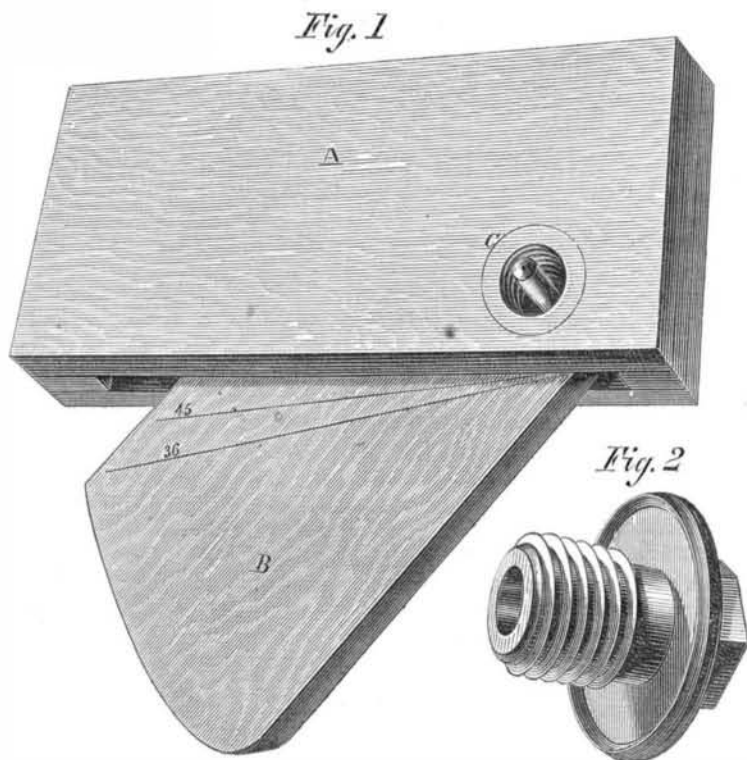
Improvement in Car Coupling.

The inventor of the coupling shown in the accompanying engravings has for his object to furnish a simple, convenient, strong, safe, and reliable car coupling, which shall also be so constructed as to uncouple itself should one or more cars of a train be over-turned or thrown from the track. Fig. 1, is a plan or top view of the contrivance; Fig. 2, a longitudinal vertical section with the coupling block engaged, and Fig. 3, the same with the coupling disengaged.

A is the coupling bar having near its end a long slot, in the forward part of which is pivoted the block or catch, B. C is a spring the rear end of which is secured in a slot in the coupling bar, and its forward end resting in a notch in the middle of the rear side of the block, B, its object being to hold the block at right angles to the line of the bar. D are parallel spring bars, the rear ends being attached to the draft bar of the car, and projecting at a distance apart equal to the thickness of the coupling bar. These springs are mortised to receive the length of the coupling bar between their jaws. One of the spring bars, D, is mortised or beveled in the line of the proposed movement of the coupling bar and its catch-block, so that when the cars are run together, the bar, A, and coupling block, B, may engage with the spring bars, D, the latter being forced into place by the spring, C. The cars will then be securely coupled, while sufficient transverse motion is allowed for the rounding of curves, etc. If one or more cars "jump" the track the spring of the bars, D, will allow the block to be disengaged and the car to hold to the track without being carried by those before it to destruction. When in a line with the train and it is desirable to uncouple, it may be done by pressing down one end of the bar or block, B, to a position parallel with the length of the coupling bar, when it will readily slide out and disconnect the cars. If thought desirable, the spring bars, D, may be incased or covered to protect them and to guide the coupling bar in entering the space between them. The spring bars should be made of steel or of flexible iron.

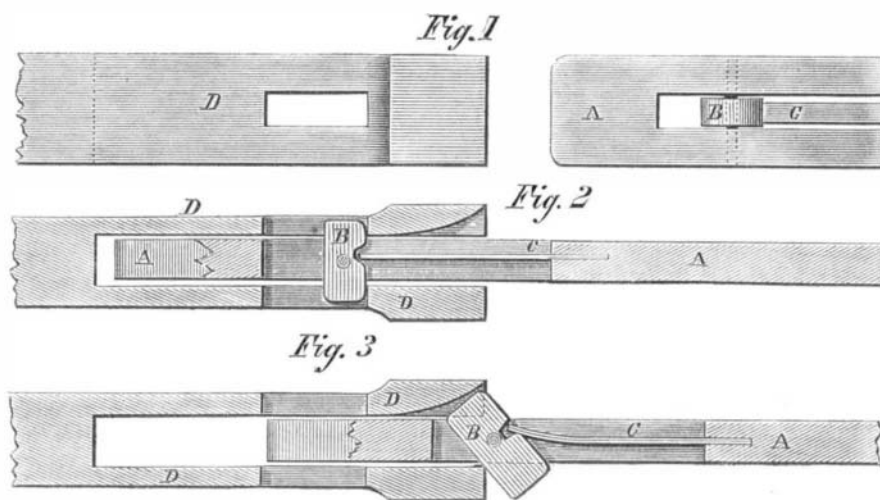
Patented through the Scientific American Patent Agency, August 4, 1868, by Clinton R. Hardy, who may be addressed at Lexington, Ind., for territorial or manufacturing rights.

STORER'S PATENT CENTER-BOARD ATTACHMENT.



glycerin, and twenty-five per cent silica. It might be supposed from its composition, that it would possess only three-fourths the explosive power of nitro-glycerin, the specific gravity of both being nearly the same. But practically there is no advantage in the greater concentration of the power of the latter substance. It cannot, or at least it ought not to be poured directly into the bore-hole, since it easily causes accidents by leaking into crevices, where it explodes under the miner's tools. It must therefore be used in cartridges which leave considerable windage; whereas dynamite, being somewhat pasty, yields to the slightest pressure, so as to completely fill up the sides of the bore-hole. For this reason, a given bore-hole will receive at a charge as much nitro-glycerin, in the form of dynamite, as in the liquid state.

M. Nobel then gave an extended account of the different experiments which had established the claims of dynamite to efficiency and safety. Most of these have already been placed before our readers, and we will therefore only allude to one of a somewhat extraordinary character, performed at Stockholm, in Sweden. A weight of 200 pounds was dropped from a height of 20 feet upon a box containing dynamite, which was violently crushed without an explosion. This adds to the already accumulated evidence that dynamite cannot be exploded by percussion.



HARDY'S AUTOMATIC CAR COUPLING.

The inventor proceeded to say that the danger attending the use of nitro-glycerin, indirectly resulted from its liquid form. Much as has been written on the danger of congealed nitro-glycerin, he believes that if the solid form was its natural state at ordinary temperatures, we should hardly have had to deplore a single one of those fatal accidents which it has caused. He asserts that crystallized nitro-glycerin is not more sensitive to concussion than the liquid, and states that the reverse is the case in a remarkable degree. Nearly all the calamities referred to have occurred from leakage, which, owing to various causes—the principal of which is the tendency of this substance to expand by increase of external temperature—it is well nigh impossible to prevent. He states that he can hardly remember a cargo that has reached its

destination without leakage. He thinks it wrong to blame nitro-glycerin for a practical difficulty of this kind, and supports his position by the fact that nearly all the accidents which have occurred (as at Aspinwall and San Francisco) have taken place when it was forwarded under wrong declaration, and consequently the necessity of cautious handling was not known.

It seems to us, however, that M. Nobel proves too much by these statements, and that they are much more likely to confirm the belief in the dangerous character of nitro-glycerin, than to convince the public of its safety.

The case is, however, different in regard to dynamite, which can be handled without danger, and is in no degree inferior in explosive power. There have been already fifty tons of the latter sold, and reports are unanimously concurrent in its favor. The prominent point which ought to be considered in estimating the value of dynamite as a blasting agent, is the fact that a smaller bore-hole than has hitherto been required will contain a sufficient charge to perform a given amount of work, thus largely reducing the expense of drilling. It is estimated that at least one-third of the labor required when gunpowder is used, is thus saved, and, so far as we can form an opinion from the various reports we have seen, we are inclined to think this is within reasonable limits.

UNIFORM STANDARD FOR BOLTS AND NUTS—ITS ADOPTION BY THE NAVY DEPARTMENT.

We have before us the report of a board of naval officers appointed by Hon. Gideon Welles, Secretary of the Navy, March 28th, to investigate the different systems for forming the threads of bolts and nuts and their relative sizes. The board consisted of Chief Engineers Isherwood, Henderson, and Zeller, and Assistant Engineer Greene, of the Navy. They visited the establishments of the principal tool and machinery builders in Boston and Springfield, Mass.; Providence, R. I.; New York city, Newark, N. J., and Philadelphia and Pittsburg, Pa., and also addressed letters of inquiry to other localities. The result of their labors is a very exhaustive report, illustrated with tables and diagrams, together with mathematical formulæ, which will be found to be very interesting to machinists and engineers. After a thorough examination of the systems of Whitworth, of England, Sellers, of Philadelphia—known as the "American Standard"—and recommended by the Franklin Institute—and that of Robert Briggs, the board recommended that of Sellers as the best. Accordingly the Secretary of the Navy, on the day after the receipt of the report—May 16th—ordered its adoption as the standard for the naval service.

The form of thread is that we have heretofore described and advocated, a V-thread with inclination of 60°, the top and bottom flattened equal to one eighth of the pitch. We append a table of the number of threads and the diameter of bolts:

Diameter of bolt.	No. of threads.	Diameter of bolt.	No. of threads.
1/8	20	2	4 1/2
5/16	18	2 1/2	4 1/4
3/8	16	3	4
7/16	14	3 1/2	3 3/4
1/2	13	4	3 1/2
5/8	12	4 1/2	3 1/4
3/4	11	5	3 1/4
7/8	10	5 1/2	3
1	9	6	2 3/4
1 1/8	8	6 1/2	2 3/4
1 1/4	7	7	2 3/4
1 1/2	7	7 1/2	2 3/4
1 3/4	6	8	2 3/4
2	6	8 1/2	2 3/4
2 1/4	5 1/2	9	2 3/4
2 1/2	5 1/2	9 1/2	2 3/4
2 3/4	5	10	2 3/4
3	5	10 1/2	2 3/4
3 1/4	5	11	2 3/4

The board, in concluding their report, say: "So far as we have been able to confer with engineers and manufacturers, either personally or by letter, we have heard but one opinion expressed in regard to the importance of uniformity of practice. Many have already adopted the Sellers pitch; others are gradually adopting it, while others still express their willingness to adopt it. A majority, we confidently believe, are now willing to adopt the Sellers form of thread also, provided it be made the standard.

"As a proper auxiliary we suggest the importance of having all necessary gages manufactured by a single establishment, as by that means only can entire uniformity be secured."

We regard this report and the consequent order as a step in the right direction. Whether there may be uniformity in the relative dimensions of the bolt shank and the head and nut or not, it is of manifest importance that there should be in the form and number of threads. The fractional pitch of the threads in the inch and five eighths and most of the sizes following may be considered objectionable by some, but it is no great difficulty to procure additional gears by which these grades can be cut by almost any leading screw; beside, these large sizes are not so frequently used as the smaller sizes. The recommendation that the gages should be made by one concern, for the sake of uniformity, we also approve.

This American Standard departs less from the proportions generally in use in this country than any other standard, and this is another argument in its favor. As to the form of the thread, we doubt if any other combines so perfectly the elements of strength, ease of production, and safety.

BUFFALOES FOR THE CENTRAL PARK.—From a private letter just received from Abilene, Kansas, we learn that three full grown bison captured on the plains are soon to be sent from that place to New York city as a contribution to the Central Park collection.