

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.

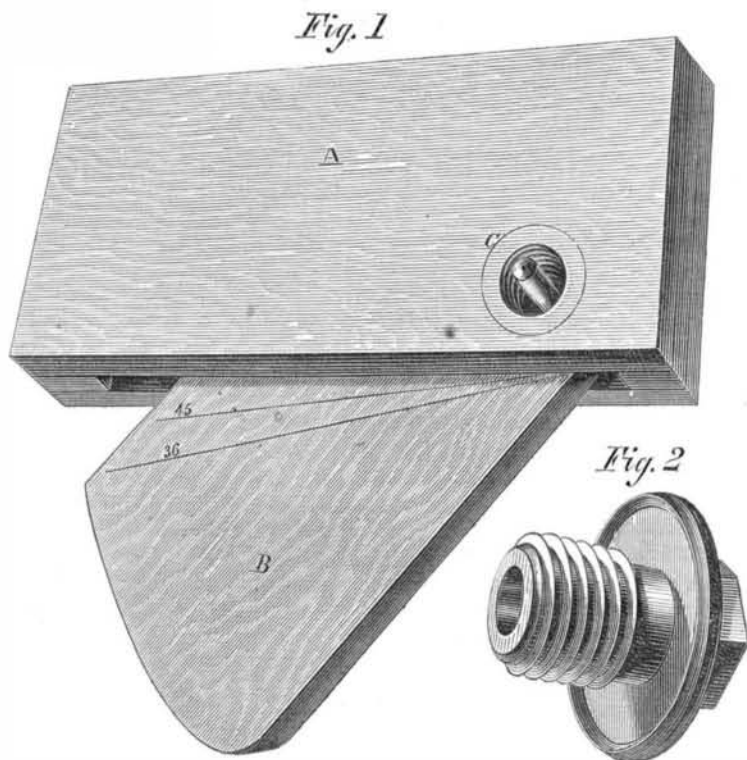
Improvement in Car Coupling.

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.

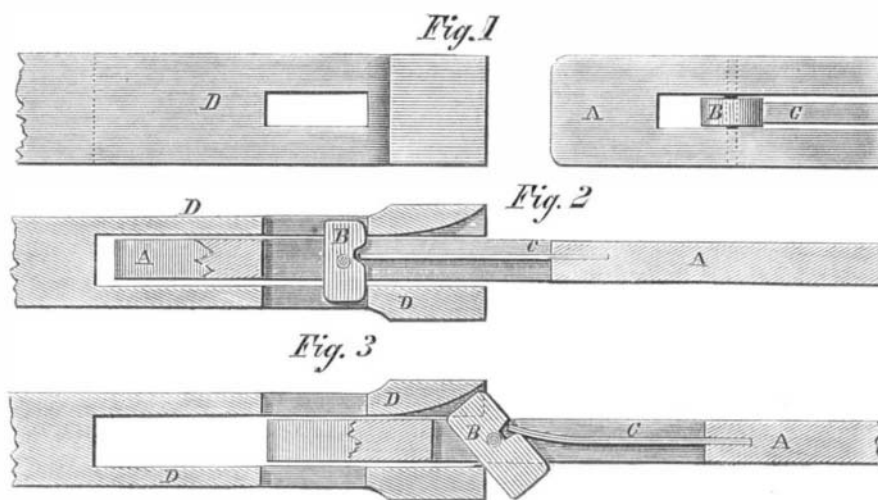
Patented through the Scientific American Patent Agency, August 4, 1868, by Clinton R. Hardy, who may be addressed at Lexington, Ind., for territorial or manufacturing rights.

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.