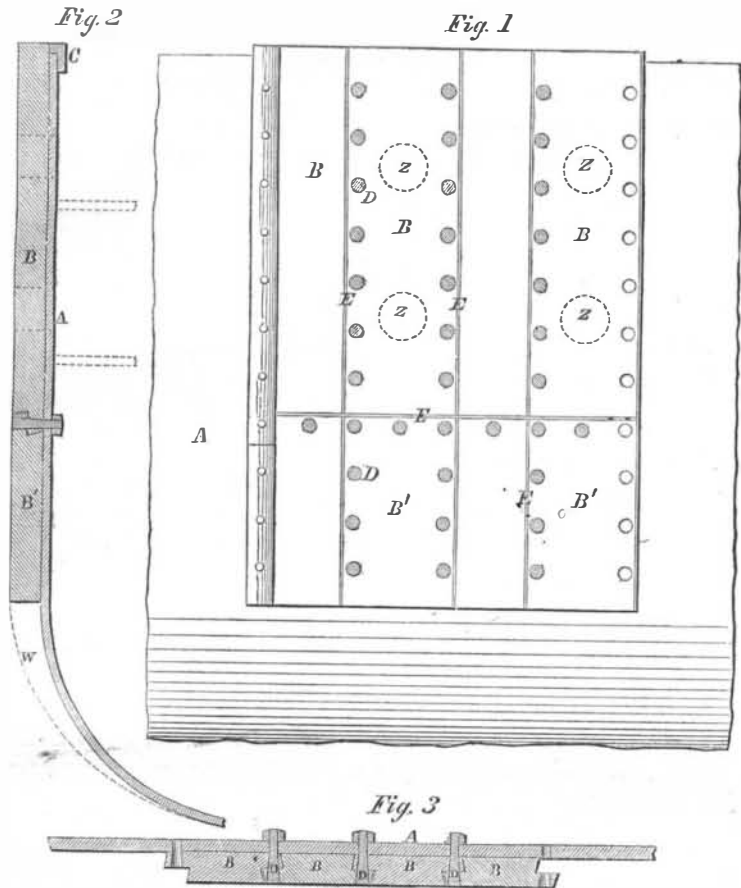


Improved Mode of Fastening Armor Plates on War Vessels.

It is difficult to realize the enormous weight of iron, $4\frac{1}{2}$ to $5\frac{1}{2}$ inches in thickness, of sufficient extent to cover the sides of a great ship; and it is still more difficult to fasten such plates to a vessel so as to hold them securely while the vessel is rolling and

proper positions. It is believed that this is a more simple and effective mode of securing iron armor plates than any heretofore devised, and that it presents the great advantage of making the joints perfectly water tight.

The patent for this invention was granted Oct. 22, 1861, and further information in relation to it may



LOVE'S MODE OF FASTENING ARMOR PLATES TO WAR VESSELS.

pitching in a heavy sea. And if to this difficulty is added the necessity of so securing the plates that they will bear the concussion of the heaviest cannon balls fired against them, the problem is certainly one of the most formidable that has ever been presented to engineers. Our inventors have entered boldly upon this task and it is our intention to present an illustrated history of their efforts in its accomplishment.

The plan here illustrated consists essentially in rabbeting the plates together at their edges, and then passing bolts through both plates where they lap, and through the sides of the ship; securing the bolts upon the inner side by nuts.

Fig. 1 is a view of a portion of the side of a vessel partly covered with plates, as proposed. Fig. 2 is a vertical section of the side, and Fig. 3 is a horizontal section.

The plates are represented in a vertical position in two series, the upper series, B B B, being, say 16 feet long, 4 feet wide, and of the desired thickness; the lower series of the same width and thickness, but only 8 feet long, or of sufficient length to clothe the side of the vessel to the desired depth. The edges of the plates are rabbeted as shown in Figs. 2 and 3, and tapering bolt holes are drilled through them at the laps, and through the side, A, of the iron ship. As the bolts, D D, are made tapering they can be driven flush with the outside of the plates; leaving no projecting head to be knocked off by the enemy's shot. The inner ends are secured by nuts.

The plates are placed together and the holes drilled straight through them, but before the bolts are driven, a thin piece of packing, E E, consisting of sheet iron or other suitable material is placed in the joint so that as the bolts are driven home, they may draw the plates together with great force, thus forming a water-tight joint and so binding the plates that they will materially strengthen the sides of the ship.

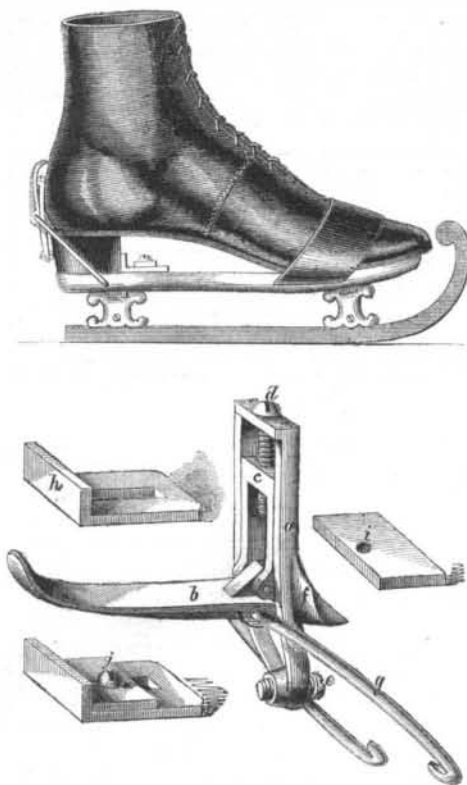
At the upper edge of the ship's side, a hook, C, is riveted to the inner side of the plate, in such manner that it may catch over the edge, as shown; thus securely fastening the upper edges of the ship's side, and the armor plate securely together.

Port-holes, Z Z, are cut through the plates in the

be obtained by addressing the inventor, John B. Love at the southeast corner of Front and Market streets, Philadelphia, Pa.

PLIMPTON'S SKATE FASTENER.

The fashion of skating continues to prevail, and we suppose as long as the art is popular improvements in



skates and skate fastenings will continue to come from the fertile brains of our inventors. The invention here illustrated is of unusual novelty, and displays more than ordinary ingenuity. It is a device for fastening the skate to the foot in a remarkably secure manner, and is instantaneous in its action.

A block, a, of brass, is fashioned to fit against the boot or heel, with a claw or projection, f, to enter the groove above the heel. The block, a, is secured to the skate by a bent rod, g, in such manner that the rod may be instantly tightened to bind the skate to the heel of the boot, and instantly loosened to take off the skate. To effect this the rod is connected at its ends by pivots to each side of the skate, while at its middle it passes loosely through a lever, b. This lever is pivoted at the end to a brass block, c, which is connected by the screw, d, to the block, a. It will be seen that when the lever, b, is turned up in the vertical position shown in Fig. 1, the rod, g, is tightened, and the skate is bound firmly to the boot heel, while by simply turning the lever down, the rod, g, is loosened and the skate drops off.

The fastener is adjusted to heels of various heights by varying the height of the block, c, by means of the screw, d.

The heel is prevented from sliding forward on the skate by the block, h, which is secured to the skate by a set screw, j, passing through a long slot, in order that the position of the block upon the skate may be varied to suit boot heels of different sizes. A plate, i, is placed across the block, h, above the slot, and through this the set screw passes. By the screw, e, the fastener is adjusted to the slope of the heel.

The toe strap is made adjustable in any approved mode, and all of the adjustments are arranged by the skater before leaving the house, so that upon arriving at the ice the skate can be attached in one second.

Beside its unparalleled rapidity of operation this fastener has the advantage of dispensing with a strap over the instep, which is uncomfortable and injurious, from its compressing the foot and obstructing the circulation of the blood. As this fastener takes hold of the upper surface of the heel it prevents the tendency to tear the heel apart, and it holds the skate with remarkable security. This fastening may be applied to most of the skates in use.

The patent for this invention has been ordered to issue, and the claim will undoubtedly appear in our next number. Further information in relation to the invention may be obtained by addressing the inventors, H. R. and J. S. Plimpton, at No. 145 Tenth street, corner Fourth avenue, New York City.



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