

Metallic Guard for Pantaloon.

Our engraving represents a new appliance intended for the bottoms of pantaloon. It is simply a light, but stiff brass band, as shown at A. This is inserted between two thicknesses of cloth, formed by turning up a seam on the bottom, and there fastened with stitches through the small holes, *a*. The object of this invention is to produce a neater appearance of the garment, and make it set better around the feet. The tendency of it is to preserve the shape imparted to the trowsers by the tailor, and cause them to fit around the boot even when wet. It entirely dispenses



SINCLAIR'S METALLIC GUARD FOR PANTALOONS.

with the use of buckram or stiffening, and does not draw in folds and seams as the latter does when damp or unskillfully applied. It is also attached in its place much quicker than canvas, and will last much longer.

A patent is now pending on this invention through the Scientific American Patent Agency; for further information address the inventor, W. D. Sinclair, at Trenton, N. J.

Improved Screw Spike.

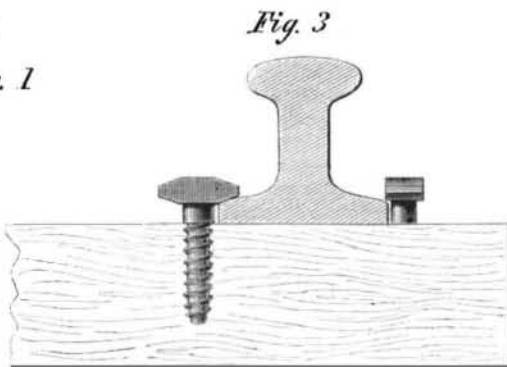
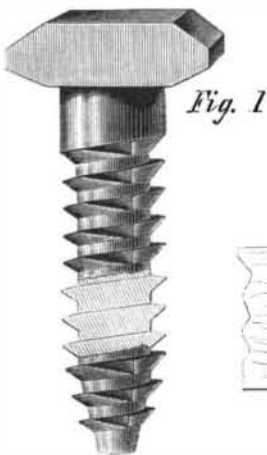
This spike is intended to make the construction of railroads much more durable and permanent than they are in general. It is well known that ordinary spikes split the ties the rails are placed upon, and

the time that the old spike requires. Barbed spikes have been used for confining rails in their places, but are practically discarded because, if they are not immovable, they lacerate the ties badly when withdrawn, and require the same to be renewed at an early day. If one side of the head on this spike is broken, another is left and can be made available by simply turning it around so as to bite on the rail. In sections of the Western country, where it is difficult to procure any other than soft wood for ties, these screw spikes possess advantages over the old ones which are palpable to practical persons, as they hold much

more firmly than the others can be made to. The expense of manufacture is but little more than that of an ordinary spike, but the actual cost of laying the rails on a line of road with it is really less, by reason of the greater durability and adhesion of this screw spike to the timber, besides requiring a much smaller number of them.

The patent for this invention was issued to John O. Montignani, on Feb. 16th, 1864. The entire right is offered for sale on reasonable terms; for further information address John O. Montignani, Albany, N. Y.

THE MONITOR "COMANCHE."—In noting the progress made in raising the sunken monitor *Comanche*,



MONTIGNANI'S SCREW SPIKE.

that they are also rapidly loosened by the repeated jars and concussions to which they are subjected from the passage of trains. This fastening obviates these difficulties, it may be made with a quick pitch so that it can be driven by a sledge, or it can be constructed as shown in the several engravings. Fig. 1 is an elevation and section, and Figs. 2 and 3 end views. The head is formed so as to be embraced by a wrench, and turned by it as other screws are. In Fig. 2, a portion of the thread is shown cut away, which represents one of the forms used by the inventor in his investigations. One side of the head is beveled so as to fit the base of the rail, and when it is necessary to replace a rail, from any cause, the screw spike can be turned to one side so as to clear the bottom; in this way the operation can be done in half

the San Francisco *Bulletin* says:—"From Mr. Ryan, one of the contractors, and under whose personal supervision the cleaning up of the material is being done, we learn that the greatest danger to be apprehended is that the ribs of the *Comanche* may be injured by breaking or bending in getting up from the *Aquila*. The shapes of these ribs are peculiar, scarcely more than two of each being alike, and in case many of them should be broken or bent in recovering them, it would be very difficult to detect the change so as to admit of remedy. To add to the trouble the molds from which the *Comanche* was built have been destroyed by a fire in Jersey City, so that it would be almost impossible to rebuild her, as the rivet holes would scarcely admit of coming in their right places."

AFFINITY OF IRON FOR SULPHUR.—The strong affinity of iron for sulphur is strikingly illustrated at Prof. Everett's lead-smelting works in Horatio street, New York. While the sulphide of lead is being reduced in a reverberatory furnace, the charge is stirred every fifteen minutes with a large iron hoe. The sulphur set free from the galena combines with the iron of the hoe, forming a thin stratum of sulphide of iron, which crumbles off, leaving a fresh surface of iron exposed to the action of the sulphur. This action goes on so rapidly that a hoe an inch in thickness is destroyed in the course of each day.

NAVAL HYGIENE.—Dr. Dutroleau has examined the effects of modern naval improvements in a hygienic point of view. Paddle-steamers are superior to screws as regards oscillation, but the atmosphere in screw steamers is rather better, the engine-room being apart from the rest of the vessel, and in general, owing to the short time in which passages are effected in consequence of steam, most nautical diseases have lost their virulence. As regards those endemic maladies which are peculiar to hot countries, the frequent removal of air caused by steam is found to be to a certain extent a preservative against them.

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