

BOUGHTON'S IMPROVED HUB BAND.

Before improvements began to be made in hub bands, however elegant the finish of a carriage in other respects, there was always one portion of it which was greasy, dirty and unsightly—the end of the axle at the middle of the hub. As it is necessary to keep the axle greased, and as carriages are exposed to dust, the accumulation of dirt at this place seemed to be a necessary consequence. But the difficulty, like so many others, has been surmounted by the intensely inventive activity of the present century. Of all the plans devised, the one which (in practice) has proved to be the best is the screwing of a tight cap into the end of the hub, so as to completely conceal the nut on the end of the axle, protecting it effectually from the entrance of dust from the outside, preventing the escape of grease, and making this ugly spot not only perfectly clean, but the most ornamental part of the whole carriage. A silverplated band is placed around the end of the hub, with a rim turned down over the end, and into this rim is firmly screwed the cap. This form of hub band has proved so superior to all others that it has gone into almost universal use, and there are several large establishments in the country engaged in its manufacture. There are, however, some important objections to securing the cap by screwing it into the end of the band.

1st. It is necessary to make a square or octagonal projection from the cap for the wrench to grasp, and this gives a heavy and clumsy appearance to the wheel, materially marring the beauty and elegance of the carriage.

2d. The action of the wrench upon the projection soon wears off the plating, exposing the brass beneath, and making the carriage look worn and old.

3d. The action of the wrench in taking the nut from the axle wears away the threads in the band which holds the cap in place.

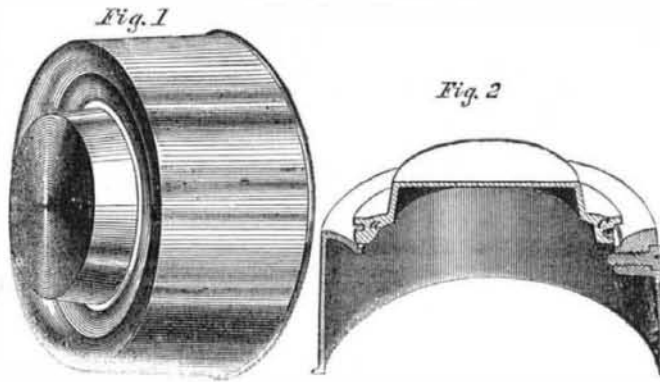
4th. The opening in the band is of too small size to allow convenient access to the nut in the frequent operation of greasing the axle, and as a wrench must be made for each size of nut (the sizes are not in practice varied with the size of the hub), caps of only four sizes being, in fact, made for hubs of all sizes, from 2½ to 5 inches.

All of these difficulties are overcome in the most effectual manner by the hub band here illustrated, which was invented by James A. Boughton, of Poughkeepsie, N. Y., and patented Nov. 29, 1859. The cap, instead of being screwed into the band, is made to fit into a rabbit-shaped depression in the edge of the hole through the end of the band, where it is held in place by means of a lip and small screw. The lip, *a*, on one side of the cap has a groove to receive the edge of the band, and the screw, *b*, passing through the band, enters a hole in the enlargement, *c*, on the side of the cap opposite to the lip, *a*. The hole in the enlargement, *c*, for the reception of the end of the screw, has no thread, but is made tapering to receive the conical end of the screw, which presses into it in a wedge-like way, forcing it against the edge of the band, and holding it in the firmest possible manner in its place. The cap is represented in the drawing a little out of place, to show the parts more clearly. By this plan no wrench, specially adapted for the purpose, is required, but the cap is removed by an ordinary screw-driver. Besides the essential qualities fully developed in the above description, the prevention of the wearing of the cap or of the hole through the band by the wrench, and the obtaining of a large opening through the band for taking off the nut from the axle, an incidental advantage of this band of no small importance is the securing of the neat, light, beautiful and elegant finish to the hub represented in Fig. 1 of the engravings.

The patent for this invention has been assigned to Hannah & Storm, of Poughkeepsie, N. Y., manufacturers of the bands, to whom inquiries for further information in relation to the matter may be addressed. The trade name which they have given to this band, and by which it may be designated in orders, is the "Champion Band."

COMBINATIONS OF MANURES.

Immense quantities of nitrate of soda are imported into England for agricultural fertilizing. George Ville has examined the question of the policy of employing this nitrate. He finds that soda is found naturally in greatest abundance in marine plants, and that it diminishes as we recede to the interior of countries, where it disappears as a principal element. He finds that, although potash may in many cases be substituted for soda, soda cannot so well be substituted for potash. In experimenting with wheat, he found that the addition of potash caused double the yield that soda gave; but if a silicate of potash be added to the nitrate of soda,



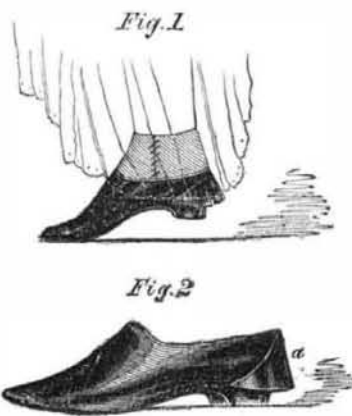
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the result is the same as that obtained from nitrate of potash. His conclusions are that the nitrate of soda, mixed with phosphate of lime, is not very efficacious as a fertilizer, but that the addition of potash immediately communicates great efficiency

HARRIS' IMPROVED HEEL GUARD FOR OVERSHOES AND BOOTS.

A great annoyance in muddy weather results from the soiling of one's clothes by the mud which is spattered on the heel of walking, and we are sure that large numbers of our readers of both sexes—especially ladies—will be grateful to the inventor who has, by a very cheap and simple contrivance, effectually protected us from this annoyance.

This is accomplished by making the overshoe with a hood-shaped shield upon the heel, as illustrated in the annexed cuts. The shield, *a*, made of the same material of the overshoe, or of other suitable material, is, in the process of manufacture, cemented to the heel near the top and at the sides, and extends down sufficiently to protect the pantaloons or dress, but not far enough to enter the mud. The water or mud which is



thrown up by the foot strikes against the underside of the shield; and thus the outer side, which comes in contact with the clothing, is kept perfectly dry.

This is one of those little improvements in an article of universal use which are the most certain to pay large profits to the inventor. And this seems to be the inventor's opinion, for he has secured patents for it (through the Scientific American Patent Agency) in Great Britain and France, as well as in this country—the American patent dated June 5, 1860—and has also made arrangements to have a number of pairs made for the royal family of Great Britain. Further information in relation to the matter may be obtained by addressing the inventor, William A. Harris, at Providence, R. I.

PRACTICAL DIRECTIONS FOR MARINE ENGINEERS.

We have already noticed favorably the work of W. H. King, of the United States navy, on Steam and the Steam Engine, published by Frederick A. Brady, of this city, and now, by the consent of the author, we extract some of his practical directions in case of casualties. We shall continue these extracts in subsequent numbers of our paper.

How to act if the Eccentric be Broken in an Irreparable Manner.

If there be two paddle engines connected at an angle of 90°, connect the starting bar of the deranged engine, by means of a line and guide pulleys, to the cross-tail, air-pump beam, air-pump cross-head, or other part having motion coincident with the piston of the other engine, to give the bar motion in one direction, and attach a heavy weight to it, with a line running over a pulley, to give it motion in the opposite direction.

If there be but one engine, connect by similar means to the connecting rod of the deranged engine, which will give the proper motion.

How to act when a Steamer springs a leak and commences to fill rapidly.

Put on immediately all bilge injections and bilge pumps, and shut off all other injections. If they do not keep the water down, break the joints on the bottom or side injections, and allow them to draw water from the bilge, taking care to station a man at each one to prevent anything from passing in that would choke the valves.

Vessels are sometimes saved from foundering by covering the leak with a sail-cloth passed over the bows and under the bottom.

If the leak be a large one, such as one occasioned by a collision, it may be possible to force a mattress, or something of that nature, into it from the outside.

The Medical and Surgical Reporter, of Philadelphia, states editorially that chloroform is very rapidly going out of use as an anaesthetic agent in consequence of the great danger attending its administration, its place being supplied by ether, which is admitted to be almost absolutely safe.



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