from which passes by the pulley to the near end of the slide P, and pulls it across the batten. The slide P, conveys the hook Q, at sufficient height to enter the shed, so as to pass through it, when the hair, being laid on to the hook, the treadle I, is released. The hook then flies back, its slide P, being drawn laterally by the spring R, and string S, which, after passing partly round the pulley T, is fixed to the under part of the slide. The slide moves freely in a trough V V, under the staple U, the object of which staple is to keep it in its place on the batten W W.

The hook Q Q, as shown in the cut, moves as much more than the treadle I, as the pulley N, is larger than the pulley M.

Trans. Soc. Arts, &c.

Description of an Improved method of Casting Screws. By Mr. WILLIAM BOWSER.

The difficulty of casting square threaded screws by the ordinary method, is owing to the nature of the spiral curve of the thread, which, presenting its angle of inclination parallel with the axis in opposite directions on each side thereof, prevents the possibility of removing the pattern without displacing some of the sand. To remedy this defect, Mr. W. Bowser has contrived a plan by which the patterns of square threaded screws may be withdrawn from the sand, and still leave perfect impressions for casting.

Instead of using only two flasks in casting any particular pattern, Mr. Bowser forms the mould for the screw in three flasks, two of which contain the upper and lower halves of the mould for the body of the screw, and the third one that for the mould of the head.

A metal plate of size sufficient to cover the end of the two long flasks when placed together, is attached to them, and has in its centre a screw nut which holds the pattern screw in its right position in the sand, at the division of the two halves, to form the required mould.

When the pattern of the body of the screw is to be removed from the sand, a key is introduced into the end of the pattern which passes through the nut, by turning which key the pattern is screwed out of the mould; the nut, which is firmly secured to the plate, affording the necessary resistance.

The plate and nut are then removed, and the third flask, containing that portion of the mould in which the head of the screw is to be cast, is joined to the two long flasks, when the whole is ready for casting.

Figs. 1 and 2, exhibit sections of the flasks and screw in the different stages of the process.

A A, fig. 1, is a board prepared to receive half of the pattern screw, by having a hollow formed in it, so that the remaining half projects above the top of the board; B, C C, and D, are the three portions of the pattern.

The portion B, is furnished with a pin E E, which passes into a

cylindrical hole in the screw portion C, and serves to guide the pattern when being screwed out of the sand. The part D, has a hole properly cut to allow of a passage for the pattern to be removed. F G, is part of one of the long flasks shown in section, and placed on the board A A. In the end G, is a semi-circular aperture sufficiently large to allow of the sand being pressed in round the collar D. A metal plate H H, is then screwed to the pattern collar D, and to the flask F G, by two screws I I. Sand is next filled into the flask and rammed solid to the top, as shown by the dotted sloping lines.

Fig. 2.

A second board J J, fig. 2, is now fixed to the top of the flask F G, and the whole being turned over, the board J J, becomes the lowest. The first board A A, is then removed, which leaves half the pattern above the sand. The first half of the mould is then made good if any defects are found in it; and the flask K L, is then placed over and secured to the flask F, and also to the plate H H. Sand is then filled into the top of this flask, and rammed solid as before, which

completes the impression of the body of the screw. The plate H, is next removed in order to attach to the two long flasks, by means of the screws I I, the end flask M M, which is filled with sand to take the impression of the head. This done, the end flask M M, is removed, and the plate H H, is again secured to the flasks F G, and K L, and also to the collar D.

The screw portion of the pattern is now withdrawn by applying a key to the aperture N, and turning the pattern round till it is removed entirely from the sand.

In order to remove the plain portion of the pattern B, the upper and lower flasks are separated from each other, and then all the flasks being once more united, a proper opening is made in the sand, and the metal poured in to obtain the required cast.

Ibid.

Description of a Hook for connecting Catgut Lines used in Machinery. By Mr. SAMUEL NICHOLLS.

The ordinary method of connecting the ends of catgut, when used as an endless line for machinery, is, by means of a steel hook and eye, the hollow stem of each being screw-tapped, for the purpose of holding the catgut.

Mr. Nicholls substitutes, for the above arrangement, a double hook C C, and two eyes A B. The catgut is secured to each of the eyes in the ordinary way, and the hook is an independent piece, and somewhat similar in shape to the letter S, except that each hook is at right angles to the other.

The advantages of this arrangement are, that the hook is less liable to jump on the pulley, it affords more play for the twist of the band, and the openings of the hooks being made very small, the eyes are not liable to be unhooked.

Ibid.

On the change of color in the Biniodide of Mercury. By ROBERT WARINGTON, Esq.

It is well known that when a solution of the iodide of potassium is added to a solution of the bichloride, or pernitrate, of mercury, a yellow precipitate, passing rapidly to a scarlet, is formed; this is the biniodide of mercury. It is soluble in an excess of either of the agents employed for its production, and if this act of solution be assisted by heat, the biniodide may be obtained, as the solution cools, in fine scarlet crystals, having the form of the octohedron with the square base, or its modifications.