D. WHITON, W. THOMAS & C. F. HOUGH.

ROPE-MACHINE.

No. 192,317. Patented June 19, 1877.

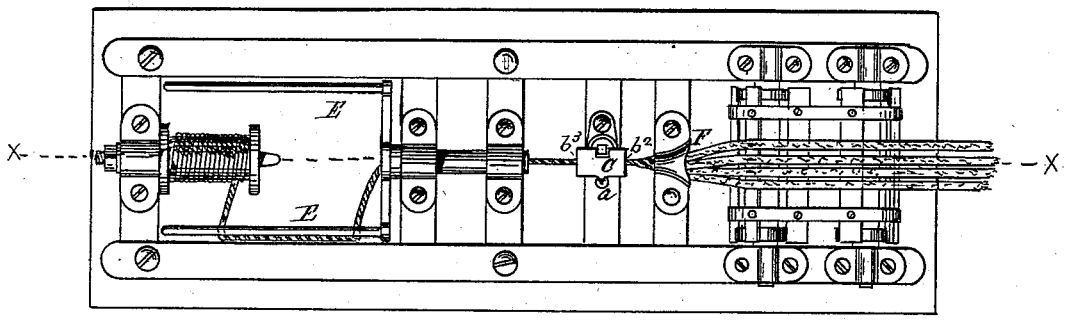

Fig. 1.

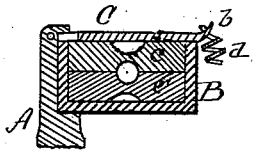

Fig 3

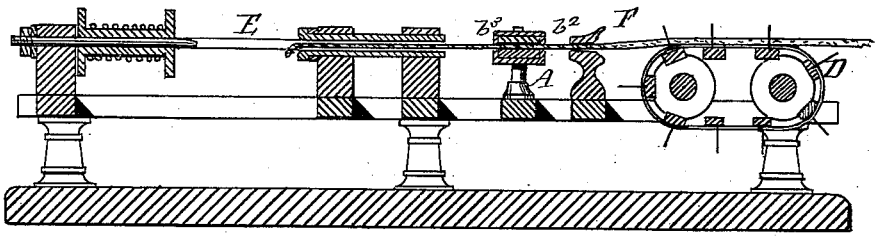

Fig. 2.

WITNESSES.

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UNITED STATES PATENT OFFICE.

DAVID WHITON, WILLIAM THOMAS, AND CHARLES F. HOUGH, OF HINGHAM, MASSACHUSETTS, ASSIGNORS TO MORRIS F. WHITON, OF SAME PLACE.

IMPROVEMENT IN ROPE-MACHINES.

Specification forming part of Letters Patent No. **192,317**, dated June 19, 1877; application filed March 6, 1877.

To all whom it may concern:

Be it known that we, DAVID WHITON, WILLIAM THOMAS, and CHAS. F. HOUGH, all of Hingham, in the county of Plymouth and State of Massachusetts, have invented an Improvement in Rope-Machine, of which the following is a specification:

In the manufacture of rope it is of the utmost consequence to make the finished article smooth, even, well-rounded, and free from hairs or fibers projecting loosely from the surface. The first step to this end is to produce smooth rounded yarns, and it is for that purpose the present improvement is devised.

It consists in a tubing attachment to be placed in the spinning-jenny, between the chain and the fliers, through which the yarn passes, and within which it is twisted and compressed. The compression exerted upon the fibers while being twisted secures absolute roundness to the yarns. The construction of this attachment and its combination with the chain and fliers form the subject of this application. It is applicable principally, if not wholly, to those jennies having capstans on the fliers, whereby the yarn is completely twisted at short ratch, between the fliers and the chain, instead of at long ratch, where the strain and twist are given by the bobbin, and the yarn is not completed till wound on the bobbin, while with the short-ratch spinning with capstans on the fliers, the yarn is spun wholly between the fliers and chain, and the yarn is complete when it goes onto the capstans.

In the jenny which is manufactured by Silsbee & Cheeney, of Boston, Massachusetts, and which embraces some of the elements described in the Day patents, No. 596, granted February 7, 1830, and No. 6,388, granted April 24, 1849, and in the Treadwell patent, granted February 5, 1834, the yarn is thus spun, and the present invention is an attachment to that, to be placed between the chain and the flier.

In the drawing, Figure 1 is a plan of the spinning-jenny, showing the position of our attachment relative to the chain and fliers. Fig. 2 is a vertical section of the same, and Fig. 3 is a cross-section of our attachment on the line *x x*, Fig. 1.

A is a stand fastened to the bed of the machine, between the chain and the fliers. It carries a cross-piece or block, B, at the top, at each end of which is a mouth-piece, b^2 b^3. A cap, C, is hinged to the cross-piece, and held down to place by a spring, *d*, which is fast to the lug *a* on the stand A or bed of the machine, and to the ear *b* on the cap C. A die, *c*, having a semi-cylindrical groove in it, is fitted in the cap C, and another die, *c'*, fits in the concavity of the cross-pieces or block B, between the mouth-pieces b^2 b^3. These die-pieces *c c'* may be grooved on more than one side, as shown in Fig. 3, so as to be adjustable to various sizes of yarn, by simply reversing their position in the cross-piece or block B. It will be observed that the semi-cylindrical dies *c c'* form part of a perfect cylinder, within which the yarn is twisted and compressed. This compressing and equalizing attachment, as above stated, we place between the chain D and the fliers E, and between the chain and the dies may be arranged the mouth-piece F, or it may form a part of the cross-piece B. In the drawing no capstans are shown on the fliers, for want of space, and in lieu thereof the rope is carried to a bobbin through holes in one of the fliers. The roving, as it comes from the chain D, is converged by the mouth-piece F, which is trumpet-shaped, and its first twist is got as it enters the mouth-piece. The two dies *c c'* form a tube, within which the yarn is drawn, twisting as it runs, and which confines all the ends of the fiber to the sides of the yarn and insures their being well twisted into the yarn.

In case of any inequality of the roving the pressure alters a little by aid of the spring, and, if a bunch appears, acts as a brake and smooths it down, while, if the roving is scant in any place, it is nevertheless as well and strongly twisted there as in any other part.

The result of the use of this attachment is that rounder, smoother, fairer, and evener yarn can be produced than ever before, which facilitates the process of making the rope, and brings out a rounder, smoother, fairer, and evener rope.

We are aware that, heretofore, trumpet-shaped pieces have been used in gathering

the sliver from the chain, and also that sliding conical gages have been employed in freeing the sliver from knots and other imperfections, and, further, that a coiled rope or strap has been wound around the strands of a rope, while they are being twisted, to form a flexible tube through which said rope is drawn, but the same is not our invention, which is a device for exerting a uniform compression upon the entire section of the sliver which is being spun, whereby all the twisting or spinning of the sliver is done under a uniform degree of pressure derived from yielding metallic dies of a uniform diameter throughout and of a length sufficient to embrace the section of the sliver in which the twist is given, and which operates between the chain and flier of a spinning-jenny, such as described, at the place where the twisting takes place, so that the sliver is spun under pressure, and the loose fiber and hairs incorporated, compressed, and twisted into the roving.

Having thus fully described our invention, we claim and desire to secure by Letters Patent—

1. In a spinning-jenny for spinning yarn at short ratch, the combination of the chain D and capstan E with the automatically-operating dies *c c'*, arranged upon the standard A, between said chain and capstan to compress that section of the sliver upon which the twist is exerted, so that the entire spinning of the sliver is accomplished under pressure and the loose hair and fibers incorporated, compressed, and twisted into the roving, substantially as described.

2. The combination of the stand A, provided with cross-piece or block B, hinged cap C, and spring *d*, with the removable dies *c c'*, substantially as shown and described.

3. The combination of the stand A, provided with cross-piece or block B, hinged cap C, and spring *d*, with the reversible die-pieces *c c'*, substantially as and for the purpose described.

4. In a rope-machine for spinning yarn at short ratch, the combination of the chain D and capstans E with the mouth-piece F and automatically-operating dies *c c'*, supported on standard A, in relation to the chain and capstan as set forth, all operating substantially as described.

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