2 Sheets--Sheet 1.

M. DIMOCK.

Machine for Casting Bobbins.

No. 160,008. Patented Feb. 23, 1875.

Fig. 1.

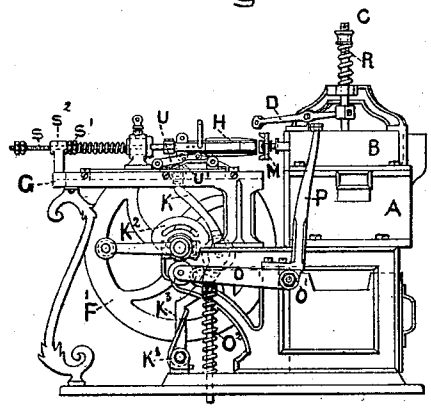


Fig. 2.

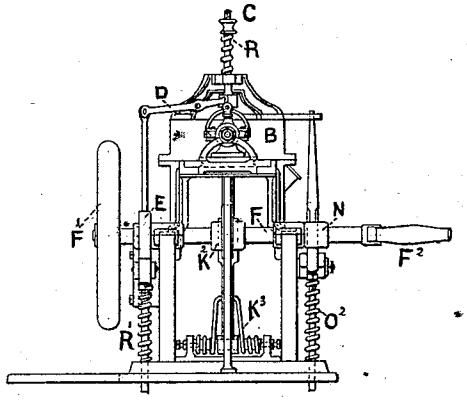


Fig. 3.

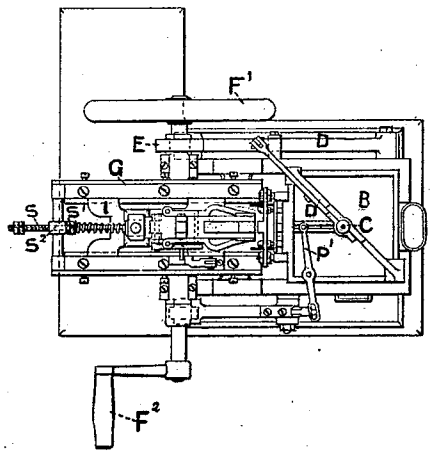
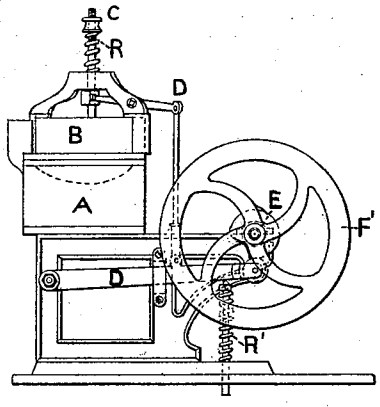


Fig. 4



WITNESSES.

Eugene N. Eliot

Boyd Eliot

Martial Dimock

INVENTOR.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2.

M. DIMOCK.

Machine for Casting Bobbins.

No. 160,008. Patented Feb. 23, 1875.

Fig. 5.

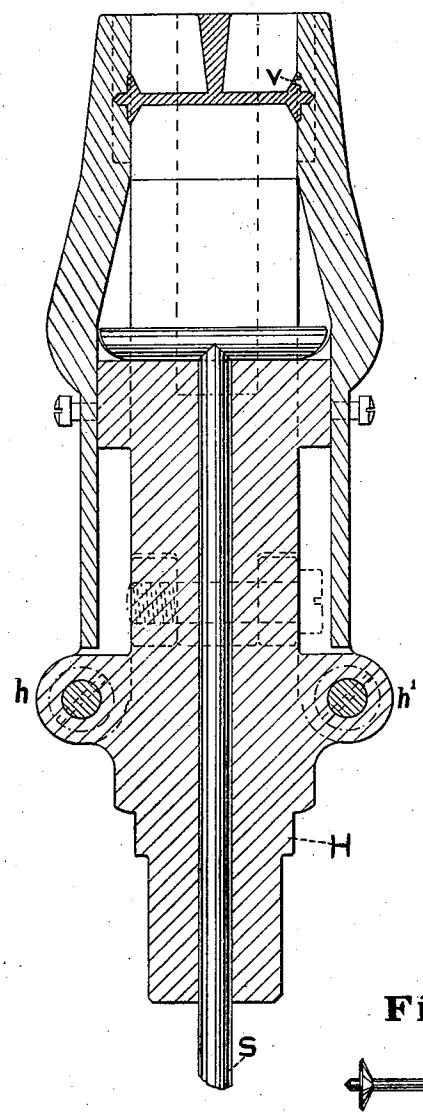


Fig. 6.

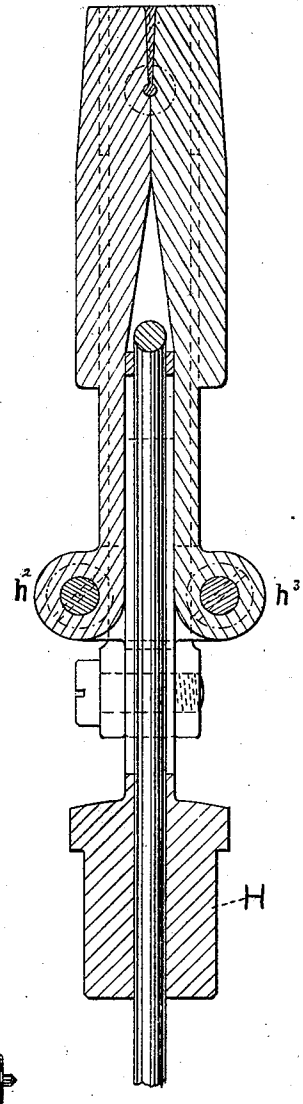


Fig. 7.

WITNESSES.

Eugene N. Eliot

Roy D. Eliot

Martial Dimock

INVENTOR.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

MARTIAL DIMOCK, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE CLARK THREAD COMPANY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR CASTING BOBBINS.

Specification forming part of Letters Patent No. **160,008**, dated February 23, 1875; application filed November 28, 1873.

To all whom it may concern:

Be it known that I, MARTIAL DIMOCK, of the city of Newark, county of Essex and State of New Jersey, have invented certain Improvements in Machinery for Casting Bobbins, of which the following is a specification:

This invention pertains to certain improvements in machinery for casting bobbins for sewing-machines, by which they may be formed with great rapidity complete at one operation, and without the expense of being finished afterward, as is now the case in the construction of such articles.

The improvements are hereinafter fully described and specifically claimed.

In the drawings, Figure 1 represents a side elevation of the machine complete for forming said bobbins. Fig. 2 is a front elevation of the same. Fig. 3 is a top view or plan. Fig. 4 is a partial elevation of the opposite side from Fig. 1. Fig. 5 is a full-size view of the mold in section, through the axis of the bobbin, which is shown also in section, and with the sprue attached. Fig. 6 is a sectional view of the mold at a right angle to Fig. 5. Fig. 7 represents the bobbin complete, having centers for holding it in working position in the shuttle.

The bobbin, as shown at Fig. 7, is formed of any compound of the metals, as the well-known composition called type-metal, or any similar combination that will melt at a low temperature, by which it may be readily cast in metal molds, and when so cast will have a smooth surface and be sufficiently hard to endure the operation of having the thread wound upon it, and also sustain the work in the shuttle of the sewing-machine.

To facilitate the labor of casting such articles a combination of the mold for casting the bobbin is made with the well-known apparatus for casting type, and therefore will be readily understood by a reference to the drawings, in which is shown a furnace, as at A, holding a tank, B, for melting the composition, and at C is shown the stem of the injector or pump for forcing the metal into the mold. Said injector is raised against its reactive springs by a lever at D, which is actuated by a cam at E upon the driving-axis F of the machine, upon one end of which axis or shaft is a fly-wheel, F^1, and on the opposite end a crank, as at F^2, for giving motion to all the working parts of the machine. Upon a suitable frame, as at G, is mounted the mold H, said mold being formed in four parts, as best shown at Figs. 5 and 6, where the sides and edges are shown as pivoted to a shank, H′, as at h h^1 h^2 h^3. Said shank forms the support of the mold by being fitted into a socket in the cross-head I, which is held between the guides on the frame G in such a manner as to be worked back and forth to and from the side of the tank or reservoir at B, and said cross-head is worked back and forth by a reciprocating lever, as at K, one end of which is pivoted to the frame at K^1, and the other works in a slot in the cross-head, and may terminate in a friction-roller to prevent wear in the said slot, and said lever is operated by a cam, as at K^2 on the main shaft, to drive the lever forward, so as to carry the mold toward the tank B, and said lever is or may be forced back against its driving-cam by a spring, as at K^3; but it will be found preferable to force it back by a positive motion from the same or another cam, as the spring is not always reliable to return the cross-head, and thereby carry back the mold from the point of being filled. The mold, as already mentioned, being made in four parts, is held together at the point of filling by being thrust, in its forward movement, into a socket, as at M, which is attached, by adjustable bolts, to the side of the tank B, and so arranged that just as the end of the mold is carried forward to meet the nozzle from the injector the tapered end of the mold is forced into said socket M to such a degree as to hold the four parts thereof firmly together until the injector can act to fill the mold, and also until the metal can set or chill in the mold to such a degree as not to change its shape if the mold be opened.

The length of time that this part of the operation is continued, relatively with a revolution of the main shaft, is determined by the length of the arc of the concentric portion of the cam at K^2.

As soon as said cam K^2 has forced the mold forward to the nozzle on the side of the tank

B, a cam at N, on the main axis, depresses the lever at O, one end of which is pivoted to the frame at O^1, and the other rests upon the spring O^2; and, by said depression, vibrates the arm P, which is fastened to the pivoted end of said lever O, and thereby vibrates the lever P′, to one end of which is attached the valve-stem that opens the valve in the tank B to let the metal flow into the injector, and during which time the plunger of the injector is raised by the cam at E on the main axis, so that the instant the cut-off valve closes the injector is forced down by the springs R R′—one on the injector-stem and the other under the lever to which the said stem is attached, R′ being best seen in Figs. 2 and 4. When the mold is filled, and is held in the socket at M, as already described, a sufficient time to let the metal set, the cross-head then draws the mold back, and, during the time of its receding, a rod, as at S, one end of which extends through the shank that carries the mold, is stopped by a nut near the outer end, as at S^1, coming in contact with a stud on the frame, as at S^2, and thereby causes the cross-bar on the inner end of said rod to be driven up between the four members of the mold, and, as a wedge, to drive them apart, and thereby free the bobbin that has just been cast therein; and here it will be observed that the inclined sides of the mold, against which the opening bar or wedge acts, are so formed that the ends of said bar act first upon the edge parts of the mold to drive them off the ends of the bobbin before the sides are set free, after which a still further backward action of the mold completely releases the bobbin, and, upon breaking off the sprue, the bobbin is completed and ready for use. The mold being carried with one of its sides down, it is evident that, when it is out of the socket M, said lower side would hang down to a vertical position were it not for a stop or check lever, as shown at U, Fig. 1, which is mounted upon the cross-head, and attached to a bar under the lower member of the mold, and which, as the mold advances toward the tank to be filled, raises the said lower side by a pin in the said lever rising on an incline, as at U′, and thereby lifts said under side of the mold until it enters the socket at M. The pin in the lever U then drops through a notch in the incline, and travels back underneath it to its first position, ready to lift the lower member whenever the bobbin is dropped therefrom. Upon the outer end of the rod S a check-nut is set on the outside of the stud, so as to draw the rod back in the mold and allow the members to close toward each other; but, referring to Figs. 5 and 6, it will be seen that the tips or centers of the bobbin are cast in holes or recesses in the two edge pieces of the mold, and, consequently, fins or rough edges will be thereby avoided on the said tips, and they will not require to be finished any further to be ready for the shuttle. It will also be observed that, at one end of the bobbin, as shown in section at Fig. 5, there is a small projection, as at V, extending from the edge of the mold into the end of the bobbin, and thereby forms a hole in the end, into which a pin is inserted from the winding-mandrel when the bobbins are filled with thread.

I claim—

1. The frame G, provided with the horizontal mold H, constructed of four pivoted parts, as described, the shank of which is fitted into a socket in the cross-head I, in combination with the reciprocating lever K and the cam K^2 on the main shaft for moving the mold from and toward the tank, substantially as and for the purpose described.

2. In combination with the mold H, tank B, and injector C, the socket M, attached to the tank for receiving and holding the four parts of the mold together while the mold is being filled, substantially as and for the purpose described.

3. The combination, with the mold H, arranged in the frame G, of the stop or check lever U and incline U′, constructed to lift the lower member of the mold, as and for the purposes described.

MARTIAL DIMOCK.

Witnesses:
EUGENE N. ELIOT,
BOYD ELIOT.