No. 648,528. Patented May 1, 1900.

J. H. RICHARDSON.

SHOE SEWING MACHINE.

(Application filed June 14, 1899.)

(No Model.)

FIG. 1.

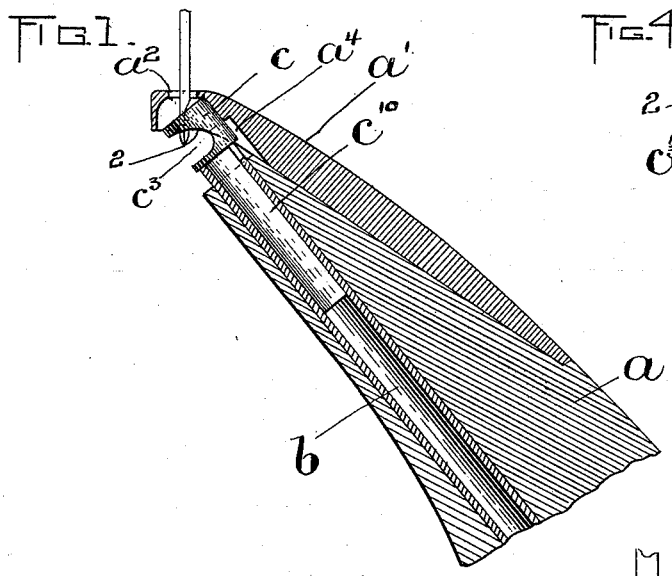


FIG. 4.

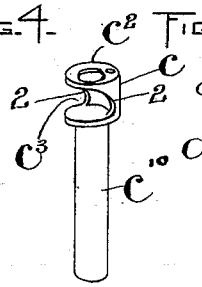


FIG. 5.

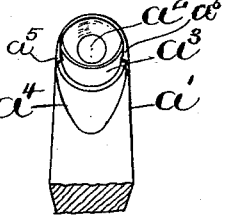


FIG. 3.

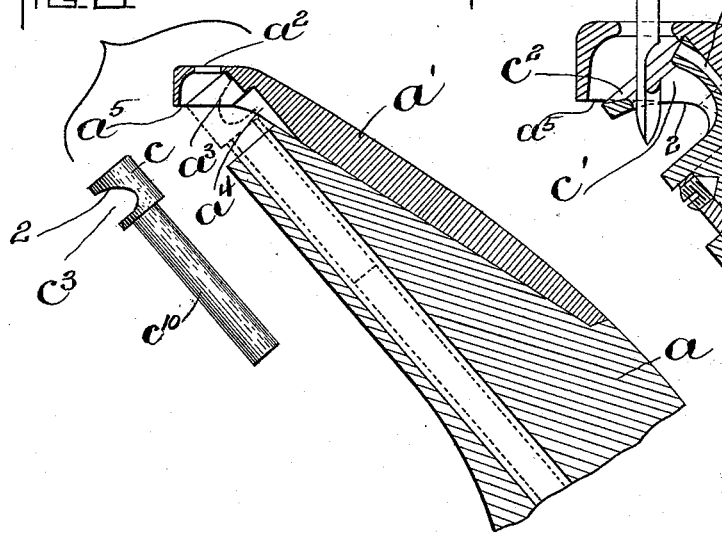
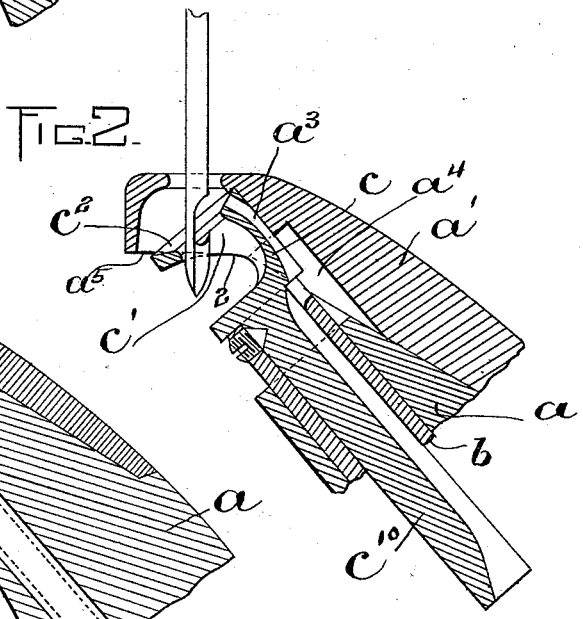


FIG. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN H. RICHARDSON, OF LAWRENCE, MASSACHUSETTS.

SHOE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 648,528, dated May 1, 1900.

Application filed June 14, 1899. Serial No. 720,500. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. RICHARDSON, of Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to sewing-machines of the rotary-horn type, the horn having a rotary looper which rotates on an inclined axis and has a needle-receiving cavity, the mouth of which is surrounded by an annular end face, substantially as shown in Letters Patent No. 599,253, dated February 15, 1898.

The present invention has for its object to facilitate the discharge or removal from the needle-receiving cavity of such lasting-tacks as may drop or be forced by the needle into the said cavity when the machine is in operation; and the invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a sectional elevation of the upper portion of a sewing-machine horn provided with my improvements, the looper being shown in elevation. Fig. 2 represents a view similar to a portion of Fig. 1, but on a larger scale, the looper being shown in section. Fig. 3 represents a sectional elevation of the portion of the horn shown in Fig. 1, the looper and its shaft being indicated by dotted lines and the looper shown in a separate view adjacent to the end of the horn. Fig. 4 represents a perspective view of the looper. Fig. 5 represents a view of the under side of the horn cap or tip.

The same letters and numerals of reference indicate the same parts in all the figures.

In the drawings, a represents a portion of the horn of a sewing-machine, and b represents a tubular shaft journaled in an inclined position in the horn.

c represents the looper, which is rotatively engaged with the shaft b, the looper being shown in the present instance as provided with a shank c^{10}, inserted in the shaft.

a' represents the cap or tip of the horn, the same having the needle-orifice a^2 and a recess a^3 immediately below the needle-orifice. Said recess a^3 is formed to closely fit one side of the periphery of the looper, its general form being semicircular. The bottom surface of the tip intersects the wall of the recess a^3, this intersection forming shoulders a^5 a^5, which constitute the ends of the wall and are oblique to the axis of the looper. Below the recess a^3 is a deeper recess a^4, formed in a thicker portion of the tip. The length of the looper is such that its lower portion extends below the recess a^3, so that a space or opening is formed by the recess a^4 between the lower portion of the looper and the tip a', said space being wide enough to receive and permit the movement of a tack which may find its way to this point.

The looper c has a needle-receiving cavity c' and an annular end face c^2, surrounding the mouth of said cavity. Below the end face c^2 is a side opening c^3 in the looper, said opening extending from the upper to the lower portion of the looper and gradually increasing in width from its upper toward its lower portion, so that the portions 2 2 of the margin of said opening are oblique to the axis of the looper. The lower portion of the opening c^3 communicates with the space formed by the recess a^4 in the horn-tip.

In the operation of the machine lasting-tacks quite frequently fall or are forced by the needle into the cavity c' of the looper, and as the walls of said cavity are usually coated with wax the tacks are liable to stick to the walls of the cavity. In the above-mentioned patent small orifices are shown in the sides of the looper to permit the escape of tacks from the needle-receiving cavity; but it has been found that owing to the wax the tacks do not always escape as freely as could be desired through said openings, and it sometimes happens that a tack protruding partially from said opening and carried arround by the rotation of the looper strikes the adjacent surface of the horn-tip and causes damage. It is to permit the projecting tacks to rotate with the looper until they drop off or are removed by contact with the shoe without damage to the looper that I have provided the opening c^3 of the form above described, the shoulders a^5, and the deeper recess a^4 in the horn-cap. One of the oblique portions 2 of the margin of the opening c^3 during the rotation of the whirl coöperates with one of the

shoulders a^5 in giving a downward movement to any portion of a tack that may protrude through said opening, so that such tack is gradually forced outwardly and downwardly to the lower portion of the opening c^3 and is then allowed by the recess a^4 in the horn-tip to be carried around by the rotation of the looper until it drops therefrom or is detached by contact with the inner surface of the shoe on the horn, said recess a^4 preventing the binding of a tack which may be carried around by the edge of the opening in the looper and permitting said tack to pass around freely. The said oblique portions 2 intersect or cross the shoulders a^5 when the looper is turned from the position shown by dotted lines in Fig. 3 to the position shown in Figs. 1 and 2. While the looper is moving to the last-mentioned position, the points of intersection of the oblique portions 2 and shoulder a^5 progress downwardly or toward the recess a^4, thus forcing a tack protruding through the opening c^5 toward said recess a^4, around which it may freely pass until it drops from the horn.

There is not enough material in the upper portion of the tip to permit the formation of a recess deep enough to provide a tack-receiving space between the upper portion of the looper and the tip. Hence said deep recess can only be formed at the lower portion of the looper, and means must be provided for forcing tacks downwardly from the upper portion of the looper to the deep recess a^4, said means being in this case the shoulders a^5 on the tip and the oblique portions 2 2 of the margin of the opening c^3 in the looper.

I claim—

1. A sewing-machine-horn cap or tip containing a needle-orifice, a looper-receiving recess below said orifice, and a deeper recess below the looper-receiving recess, said cap having shoulders a^5 at the ends of the looper-receiving recess, in combination with a looper movable about its longitudinal axis and having means coöperating with said shoulder for discharging tacks into said deeper recess during the operation of said looper.

2. A looper movable about its longitudinal axis and having a needle-receiving cavity, an annular end face surrounding the mouth of said cavity, and a side opening below said end face, said opening increasing in width from its upper toward its lower end, so that portions of its margin are oblique to the axis of the looper, in combination with a horn cap or tip having a recess and provided with shoulders adapted to coöperate with the edges of the opening in the looper in forcing tacks into said recess.

3. The combination of a sewing-machine-horn cap or tip, and a rotary looper having a side opening, the cap having also a recess forming a tack-receiving space between the cap and the lower portion of the looper, while said cap and looper are provided with coacting means for forcing a tack downwardly to said tack-receiving space.

4. A sewing-machine horn having in its cap or tip a needle-orifice, a looper-receiving recess below said orifice, an oblique shoulder a^5 at the end of said recess, and a deeper recess below the looper-receiving recess, combined with a looper rotatively mounted in the horn and formed to fit the upper recess, said looper having a needle-receiving cavity, and a side opening which extends from the upper portion of the looper to a point below the said upper recess, said opening increasing in width from its upper to its lower end, so that portions of its margin are oblique to the axis of the looper, said oblique portions intersecting the shoulder a^5.

5. In a sewing-machine horn, a cap having a looper-receiving cavity, and a larger cavity below the looper-receiving cavity, combined with a rotary looper which has a needle-receiving cavity and a side opening in said cavity opposite the said larger cavity in the cap, the upper edge of said opening being oblique to the axis of the shaft.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN H. RICHARDSON.

Witnesses:
C. F. BROWN,
A. D. HARRISON.