(No Model.)

H. H. BUFFUM.

SEWING MACHINE.

No. 554,238. Patented Feb. 11, 1896.

Fig. 1.

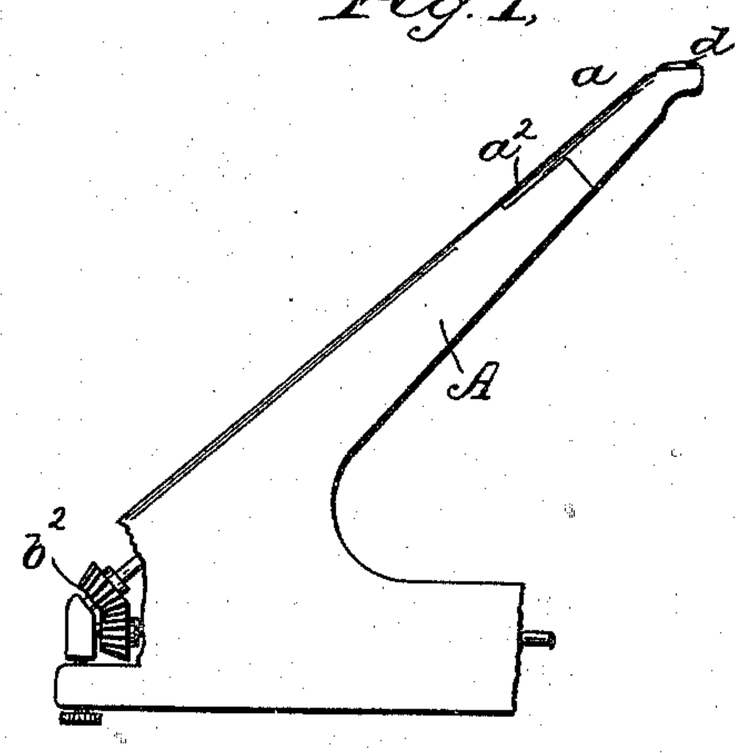


Fig. 2.

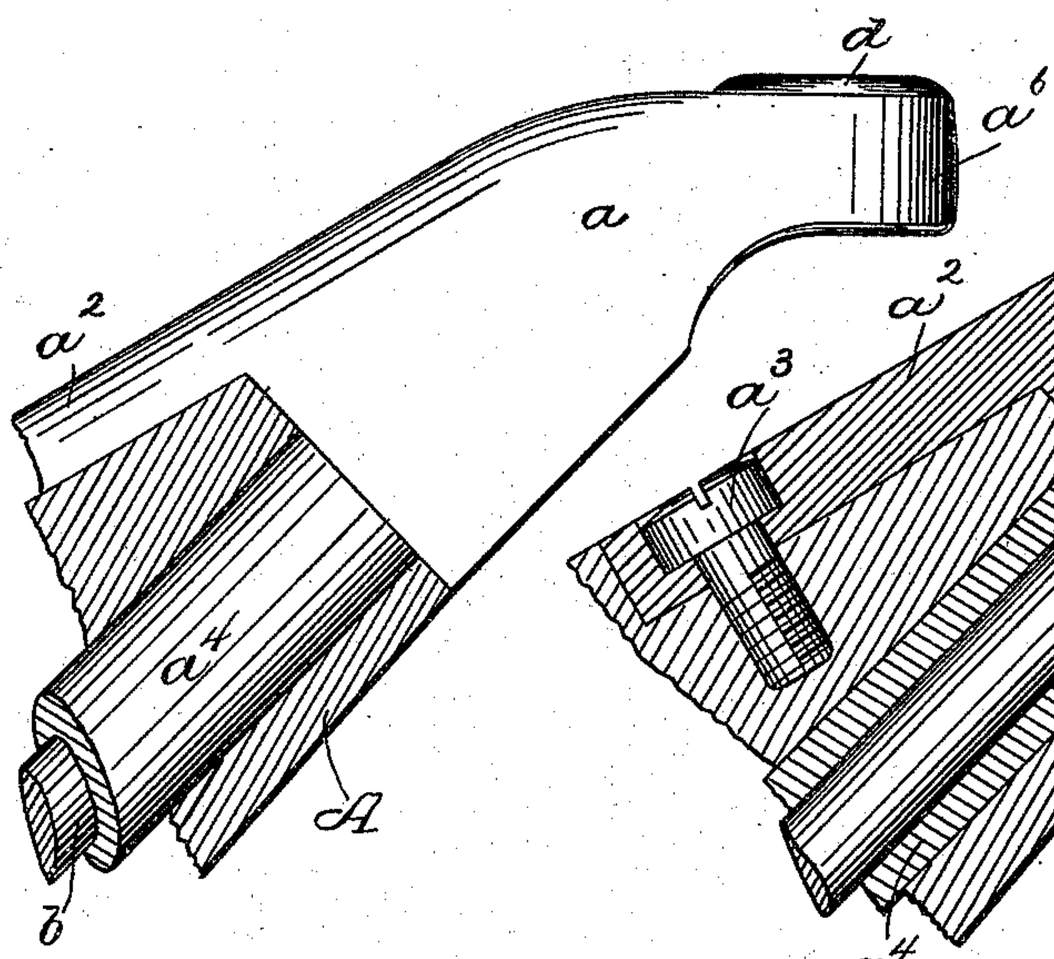


Fig. 3.

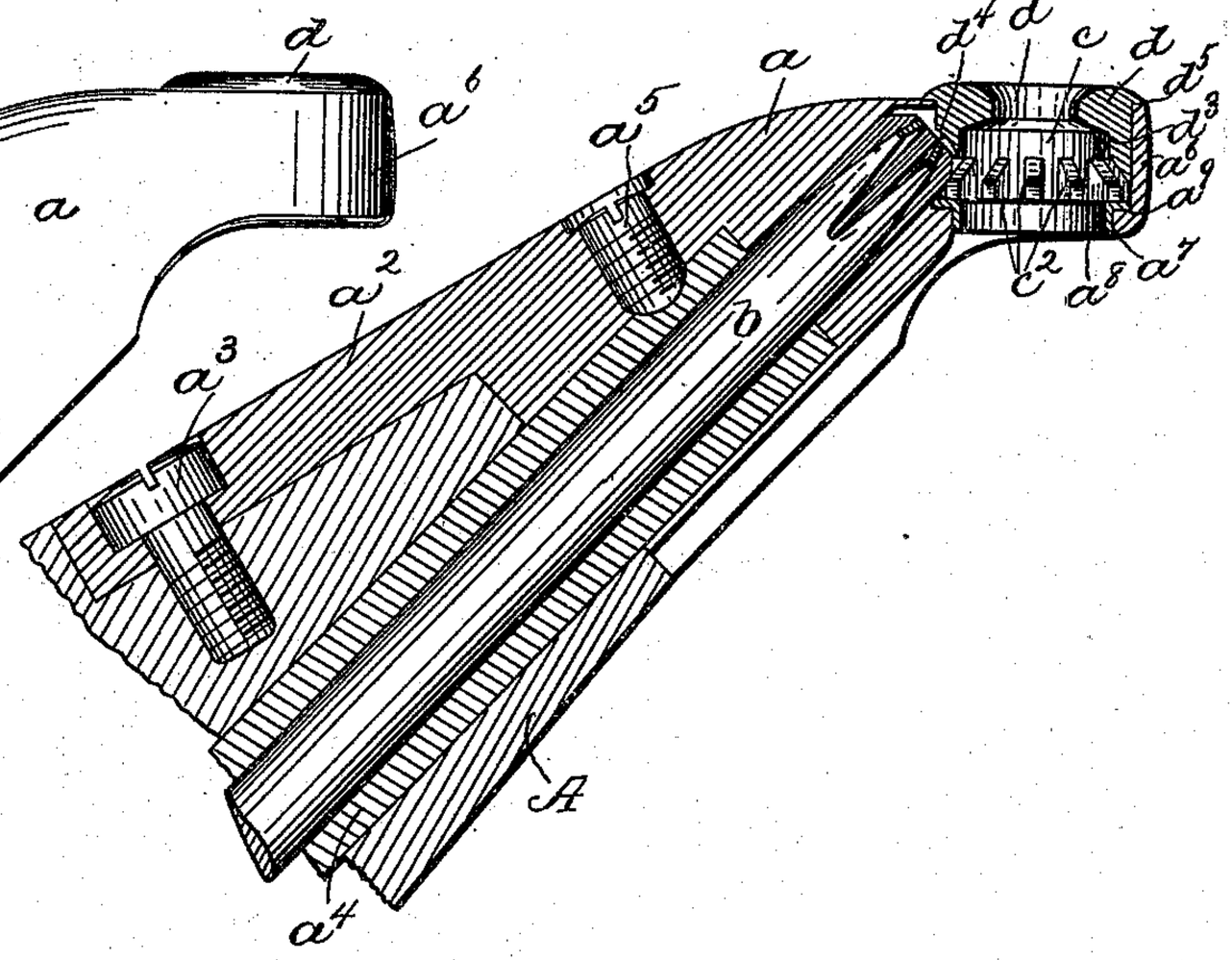


Fig. 4.

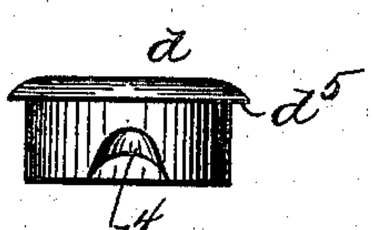
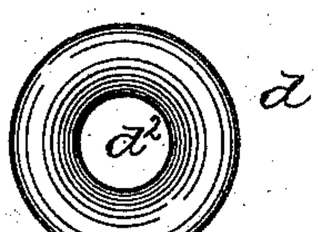


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

HERBERT H. BUFFUM, OF ABINGTON, MASSACHUSETTS, ASSIGNOR TO THE STEAM HEATED HORN COMPANY, OF PORTLAND, MAINE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 554,238, dated February 11, 1896.

Application filed March 25, 1895. Serial No. 543,084. (No model.)

To all whom it may concern:

Be it known that I, HERBERT H. BUFFUM, of Abington, county of Plymouth, State of Massachusetts, have invented an Improvement in Horn-Tips and Whirls for Wax-Thread Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is embodied in a wax-thread sewing-machine of the kind known as the "McKay" sewing-machine, having a horn that enters the boot or shoe being sewed, said horn being provided with a whirl and means for actuating the same, by which the thread is engaged with the needle which penetrates the stock from above, said thread being by the rotation of the whirl laid around the shank of the needle above the hook thereof, so that it is caught in the hook and drawn up thereby when the needle rises. As heretofore commonly constructed the whirl is a small bevel-toothed annulus having a passage through which the needle passes, and another eccentric passage through which the thread passes on its way from the thread-supply to the stock or material being sewed, and by which the said thread is laid around the shank of the needle at the proper time in the operation of the machine.

The present invention is embodied in an improved tip for the horn, the object being to provide a better bearing for the whirl and to afford protection for the gear-teeth by which the whirl is operated, and at the same time to render the whirl readily removable from the tip without removing the tip itself. Furthermore, in accordance with the present invention, the bearing portions may be readily renewed when worn without renewing the tip itself.

In accordance with the present invention the tip is formed of one piece having an annular cup to contain the whirl, the lower bearing of which is contained in the lower portion of the cup and preferably has a hardened-steel bushing which may be removed when worn, said whirl being confined in said cup by an annular plug adapted to be inserted into the top of said cup and serving at the same time as an upper bearing for the whirl and also as a cover for the protection of the gear-teeth.

Figure 1 is a side elevation of a portion of the horn of a McKay sewing-machine of the kind to which the present invention is applicable. Fig. 2 is an enlarged section of the upper portion of said horn, showing in elevation the tip applied thereto. Fig. 3 is a similar enlarged section of the upper portion of the horn and tip, showing in elevation the operating-spindle and the whirl; and Figs. 4 and 5 are respectively an elevation and a top plan view of the removable plug for confining the whirl.

The machine is applicable to the well-known McKay sewing-machine, of which a portion only of the horn A is shown, as the machine is widely known, and the present invention will be readily understood by those familiar with these machines without further illustration.

The main portion A of the horn is usually of cast-iron and is provided at its upper end with a tip which contains the whirl and is usually made in two parts, the main part having a tubular projection or tenon that enters a socket in the main portion of the horn and the other part being in the form of a cap which overlaps the main part of the tip and a portion of the main part of the horn and is fastened to each of said parts by screws, thereby fastening the entire tip to the main portion of the horn.

In accordance with the present invention the tip a is a single integral piece having an integral extension a^2, which overlaps the main portion of the horn and is secured thereto by the screw a^3, as clearly shown in Fig. 3. The said tip is also provided with a tube or bushing a^4, preferably hardened and secured in a recess in the tip by the set-screw a^5. As thus made, the tip, with its integral extension a^2 and attached sleeve a^4, is of the same shape externally as the two-part tips heretofore commonly used and may be applied to a horn adapted to receive the old form of tip without any change in said horn.

The sleeve a^4 forms the bearing for the whirl-operating spindle b, which is operated in the usual way through beveled gears b^2 at the foot of the horn, suitably connected to

the mechanism of the machine, and is provided at its upper end with a toothed portion forming a pinion meshing with the teeth c^2 upon the whirl c, which is contained in an annular cup or bearing portion a^6 at the end of the tip. The whirl c is cylindrical in shape, and the main portion thereof extends above and below the teeth c^2, thus forming bearing-surfaces, the lower of which enters the annular opening a^7 at the bottom of the cup a^6, the said opening thus forming a bearing therefor and being preferably provided with a hardened-steel bushing a^8, which is readily renewable in case of wear. The said opening is somewhat smaller than the main portion of the cup, so that a shoulder a^9 is formed at the junction of the two openings, upon which shoulder the teeth c^2 bear, thus supporting the whirl. In order to confine the whirl within the cup and at the same time to form an upper bearing therefor, the annular plug or cover d is provided, having an opening d^2 for the needle, the said opening being enlarged at its lower portion, d^3, so as to fit the upper portion of the whirl, and the edges of said enlarged opening are preferably beveled, as shown in Fig. 3, so as to fit closely over the tops of the beveled teeth c^2. A portion of the side of said plug is cut away, as shown at d^4, Fig. 4, to make room for the end of the pinion b^2, which meshes with the teeth c^2. The top of the plug d is preferably rounded, as shown, and provided with an overhanging upper portion or flange, d^5, to engage with the upper edge of the cup a^6.

By this construction herein shown the gear-teeth by which the whirl is driven are entirely protected from damage, since no object, such as a tack driven into the opening b^2, could possibly come in contact with the teeth c^2, while the removal of the whirl is readily accomplished without removing the tip, and the construction of the tip is in nowise complicated to attain this end.

The plug d has a tight fit in the cup or socket in the horn-tip, and is retained seated therein by merely driving it into the socket until the flange d^5 rests on the horn-tip around the edge of the socket therein. The pressure of the material being sewed always tends to keep the plug firmly seated, so that there is no danger of accidental displacement of the plug and whirl.

If the whirl is to be removed for any reason it is necessary only to withdraw the pinion b slightly and then to drive the whirl upward from below, thus forcing the plug and whirl out of the socket in the horn-tip, after which the whirl can be replaced as desired, while a new plug d and bushing a^8 can be substituted for the old, if necessary, at very slight trouble or expense. The whirl is provided with the usual openings for the needle and thread, which have not been herein shown, since they form no part of the invention, and since their arrangement is well known to those skilled in the art.

By having the bushing a^4 separate and detachable from the horn-tip it may be made of hardened material, so as to form a more durable bearing for the whirl-operating spindle b than in the common construction, where said spindle has its bearing in an integral portion of the horn-tip itself; and by the herein-described construction all the bearing portions in the horn-tip may be readily removed and replaced when worn, the horn-tip itself being subject to no wear in the operation of the machine, and is thus substantially indestructible.

I claim—

1. The combination of a horn-tip of a sewing-machine, provided with a cup or recess, with a whirl supported in said recess, and an annular plug seated in said recess and confining said whirl therein, substantially as described.

2. The combination of a horn-tip of a sewing-machine provided with a cup or recess, with an annular bevel-toothed whirl and a removable bushing within said recess constituting the lower bearing of the said whirl, and an annular plug or cover inserted in said recess, and adapted to confine said whirl therein and furnish an upper bearing therefor, substantially as described.

3. The combination of a horn-tip of a sewing-machine provided with a cup or recess, with a whirl supported in said recess and having peripheral teeth and bearing portions above and below said teeth, and an annular plug or cover inserted in said recess in the horn-tip and having a bearing-surface co-operating with the bearing-surface of the whirl above the teeth thereof, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT H. BUFFUM.

Witnesses:
JOS. P. LIVERMORE,
M. E. HILL.