(No Model.)

C. S. SMITH.

FEATHER BEATER.

No. 568,215. Patented Sept. 22, 1896.

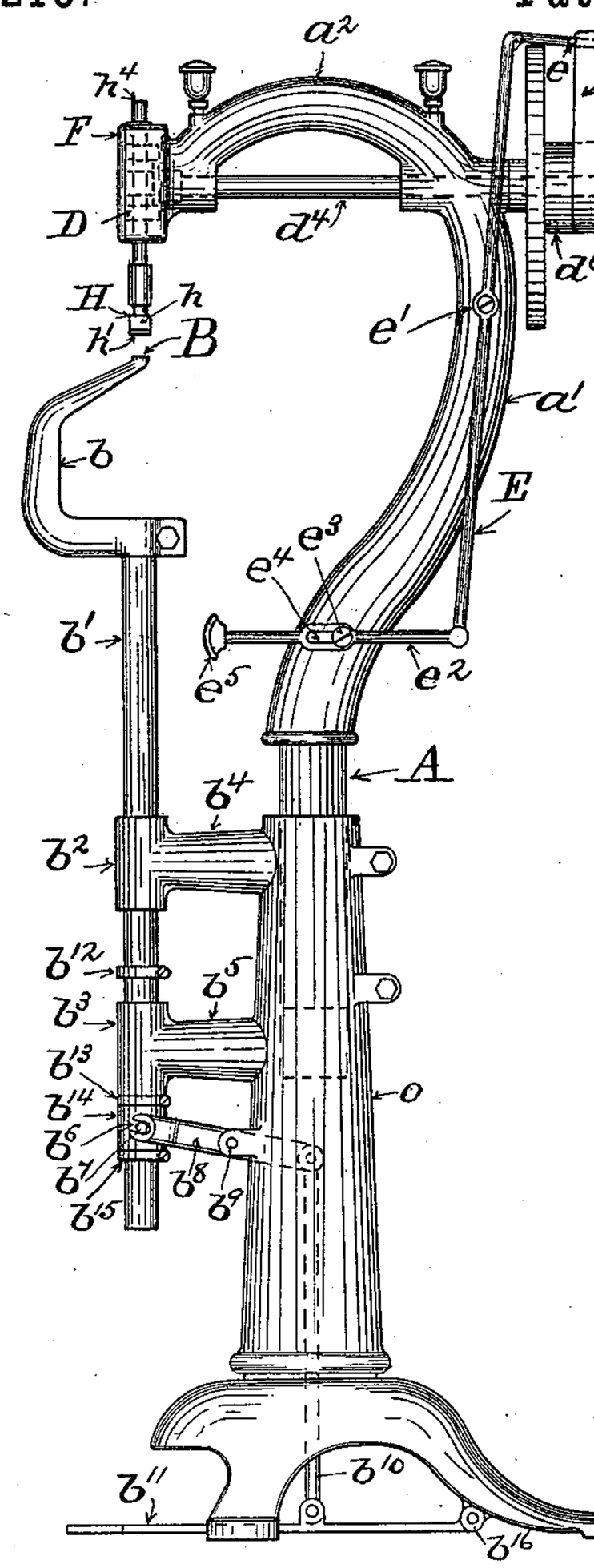

FIG. 1.

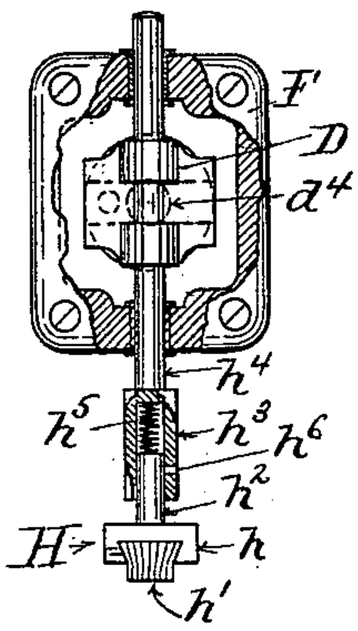

FIG. 2.

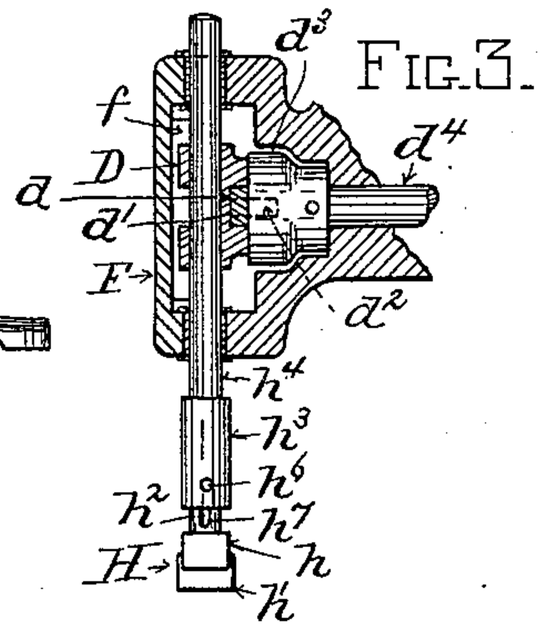

FIG. 3.

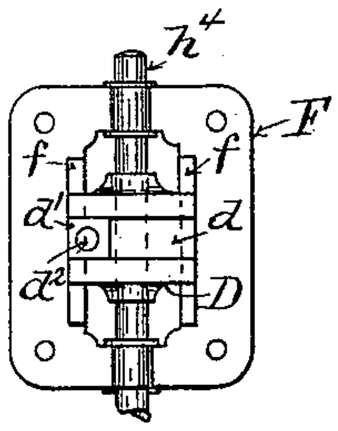

FIG. 4.

WITNESSES.

Fred V. Hart.

George E. Barstow

INVENTOR.

Charles S. Smith

By his Attorney

Benjamin Phillips

UNITED STATES PATENT OFFICE.

CHARLES S. SMITH, OF BROCKTON, MASSACHUSETTS.

FEATHER-BEATER.

SPECIFICATION forming part of Letters Patent No. 568,215, dated September 22, 1896.

Application filed August 30, 1895. Serial No. 561,054. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. SMITH, a citizen of the United States, and a resident of Brockton, in the county of Plymouth, Massachusetts, have invented a new and useful Improvement in Feather-Beaters, of which the following, taken in connection with the accompanying drawings, is a specification.

In the manufacture of welt-shoes it is customary, before the upper is lasted to the insole, to split the edge of the insole along the fore part and shank, and either to turn over the lower portion to form a "lip," so called, or to remove the same, leaving what is commonly termed the "shoulder." The upper portion of the split edge is left projecting beyond the shoulder or lip and is commonly termed the "feather." During the subsequent steps in the manufacture of the shoe the feather is apt to be more or less turned up or bent, allowing the upper to draw away from the welt and giving the shoe an irregular and unfinished appearance.

The object of the present invention is to provide a device whereby the feather which has become bent or turned up, as above suggested, may be straightened after the shoe has been completed, giving the shoe an even and finished appearance.

To the above end the present invention consists of a vibrating hammer, an anvil to support the feather, and a suitable support for the anvil, all formed and arranged and combined with associated parts, as hereinafter more specifically set forth in the following specification and designated in the claims.

The present invention is illustrated by the accompanying drawings, in which—

Figure 1 is a side view of a machine embodying the same. Fig. 2 is a front view of the head of said machine with portion of front plate broken away to show underlying parts. Fig. 3 is a section through the head; and Fig. 4 is a detached view of front plate reversed, showing immediately-associated parts.

Similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings, A is a frame suitable to support the working parts of the machine, which, as shown, consist of a post or standard a, which supports an upper frame a', having a laterally-projected arm a^2.

B represents the anvil, which is shaped to project under the feather and support the same as the shoe is moved by the operator to present it to the hammer during the operation of the machine.

As shown, the anvil B is mounted upon the horn b, which may conveniently be similar in shape to the horn commonly found in shoe-sewing machines of the horn type. The horn b is supported by and rotates with the horn rod or shaft b'. The horn-shaft b' is mounted in the bearings b^2 and b^3, which may be conveniently supported by the brackets b^4 and b^5, which are projected from the post a. The shaft b' is free to rotate and also to reciprocate in the bearings b^2 and b^3, being guided and held in position thereby. Collars b^{12} and b^{13}, which may be conveniently placed upon opposite sides of the bearing b^3, limit the reciprocation of shaft b'.

The shaft b' may be conveniently actuated by the following mechanism: Mounted upon the shaft b', below the collar b^{13}, is a sleeve b^{14}, loose on the shaft b' and conveniently held in position by means of a collar b^{15}. From opposite sides of the sleeve b^{14} project the pins b^7 b^7, (only one shown,) which are engaged by the slots b^6 b^6 (one shown) in the bifurcated lever b^8, which is intermediately fulcrumed at b^9 upon the post a or a suitable bracket thereon, and which, on the other side of its fulcrum, is connected by the link b^{10} with a treadle b^{11}, pivoted at b^{16} to post a or other suitable support. The above-described arrangement is such that the horn b, supporting the anvil B, may be rotated as required, and at the same time raised or lowered and held at any required elevation by means of the treadle b^{11}. I wish in this connection to say that the specific form and arrangement of mechanism whereby the above-suggested result is secured, as hereinbefore described, form no essential feature of the present invention and I consider the present invention as by no means limited thereto.

H represents the hammer, which, as shown, consists of a holder h, in which is secured a block h' of yielding and conveniently elastic material, the lower face of which forms the striking-face of the hammer. I would say in this connection that I do not consider elasticity an essential property of the block h',

as the block h' may be made of any material sufficiently yielding to secure a blow of sufficient force for the purposes hereinafter set forth without marring the finished bottom of the sole.

From the holder h projects the hammer-stem h^2, which is fitted to the socket h^3 on the hammer-shaft h^4. In the socket h^3 is a coil-spring h^5, which bears against the top of the socket h^3 and the stem h^2, forming an elastic bearing for the stem h^2. The stem h^2 is held in the socket h^3 by means of a pin h^6, secured to the socket h^3 and projecting into a slot h^7 in the stem h^2, or by some other suitable device which will allow a limited reciprocation of the stem in the socket h^3.

The hammer-shaft h^4 may be conveniently reciprocated by the following mechanism: To the hammer-shaft h^4 is secured a cross-head D, in which is formed a groove d, extending transversely to the hammer-shaft. To the groove d is fitted a block d', free to slide along the same. In the block d' works a crank-pin d^2, projected from the disk d^3, which is secured to and rotates with the shaft d^4, mounted in suitable bearing in frame A. The crank-pin d^2 is free to rotate in its bearings in the block d'. The shaft d^4 is driven by a belt d^5 on the fast pulley d^6. d^7 is a loose pulley on the shaft d^4, and means are provided whereby the belt d^5 is shifted from the pulley d^7 to pulley d^6, and vice versa, to stop and start the vibration of the hammer H. As shown in the drawings, such devices consist of the bent lever E, which is provided with a belt-shifting bracket e, which embraces the belt d^5. The lever E is fulcrumed at e' on the frame A or other suitable support and at or near its lower end is pivotally connected with an operating-rod e^2. The rod e^2 is supported by frame A and arranged to have a limited to-and-fro motion, which may be conveniently provided for by means of a bolt e^3, which is projected through a slot e^4 in the rod e^2 and secured in the frame A. In practice I provide the rod e^2 with an operating-handle e^5.

The head of the machine is conveniently provided with a removable front plate F, bolted or otherwise suitably secured thereto, which supports a part of the bearings of the hammer-shaft h^4, which, together with the cross-head D, may be removed from the machine with the same. Suitable ways f and f' are provided preferably on the plate F, against which the cross-head D bears and along which it slides, being guided and held in position thereby.

I wish to say in regard to the hammer-vibrating mechanism and stopping and starting mechanism, as above described, that the details of their form and arrangement are not essential elements of the present invention, but can be variously modified without involving any departure therefrom.

The operation of my improved feather-beater is described as follows: The operator places a shoe upon the horn b, adjusting the anvil B under the feather. He then pushes back the rod e^2 and by means of lever E shifts the belt d^5 onto the fast pulley d^6, starting the rotation of shaft d^4 and the vibration of the hammer H. He then raises the horn b by the treadle b^{11} until the hammer H strikes the sole of the shoe above the anvil B. He then moves the shoe as required to present the edge of the sole along the fore part and shank to the hammer, rotating the horn as required and keeping the anvil B projected under the feather. The force of the blow of the hammer is regulated during the above-described operation by raising or lowering the horn b by means of the treadle b^{11}.

Since the feather-beater is applied to the shoe after the buffing operation, it is essential that it should in no way dent or mar the bottom of the sole, and the failure to secure the above-suggested result has been the objection heretofore existing to machines of this class.

It will be noted that in my improved feather-beater the impact as the hammer strikes the sole is taken up by the yielding face of the hammer, and if the downward stroke of the hammer is continued after impact with the sole further downward pressure is taken up by the spring h^5, which prevents the hammer from being pressed against the sole with sufficient force to dent or otherwise mar the same, even if the operator has raised the shoe too high. It will be readily seen that the yielding face of the hammer and the spring h^5 have distinct functions. The yielding face of the hammer, forming the contact between the hammer and the sole, acts much quicker than the spring d^5 to take up the force of the impact, and when the face of the hammer has yielded to its limit the spring d^5 is ready to take up any further downward pressure of the hammer.

Having thus described my invention and its operation, I claim as novel and desire to secure by Letters Patent—

1. In a feather-beater the combination of a vibrating hammer, an elastic bearing for the hammer, an anvil shaped to project between the upper and feather inside the shoe and support the feather, a vertically-movable horn supporting the anvil and mechanism for raising and lowering the horn, substantially as described.

2. In a feather-beater the combination of a vibrating hammer, a yielding striking-face upon the hammer, an anvil shaped to project between the upper and feather inside the shoe and support the feather, and a movable horn supporting the anvil, substantially as described.

3. In a feather-beater the combination with a vibrating hammer, of a yielding striking-face for the hammer, an anvil shaped to project under and support the feather, a rotary and vertically-movable horn supporting the anvil, and mechanism for raising and lowering the horn, substantially as described.

4. In a feather-beater the combination with a vibrating hammer of a yielding striking-face for the hammer, a yielding bearing for the hammer, an anvil shaped to project under and support the feather, a rotary and vertically-movable horn supporting the anvil, and mechanism for raising and lowering the horn, substantially as described.

Witness my hand, in the presence of two attesting witnesses, at said Lynn, August 12, 1895.

CHARLES S. SMITH.

Witnesses:
C. S. GILKEY,
F. R. BARNARD.