J. GOULDBOURN.

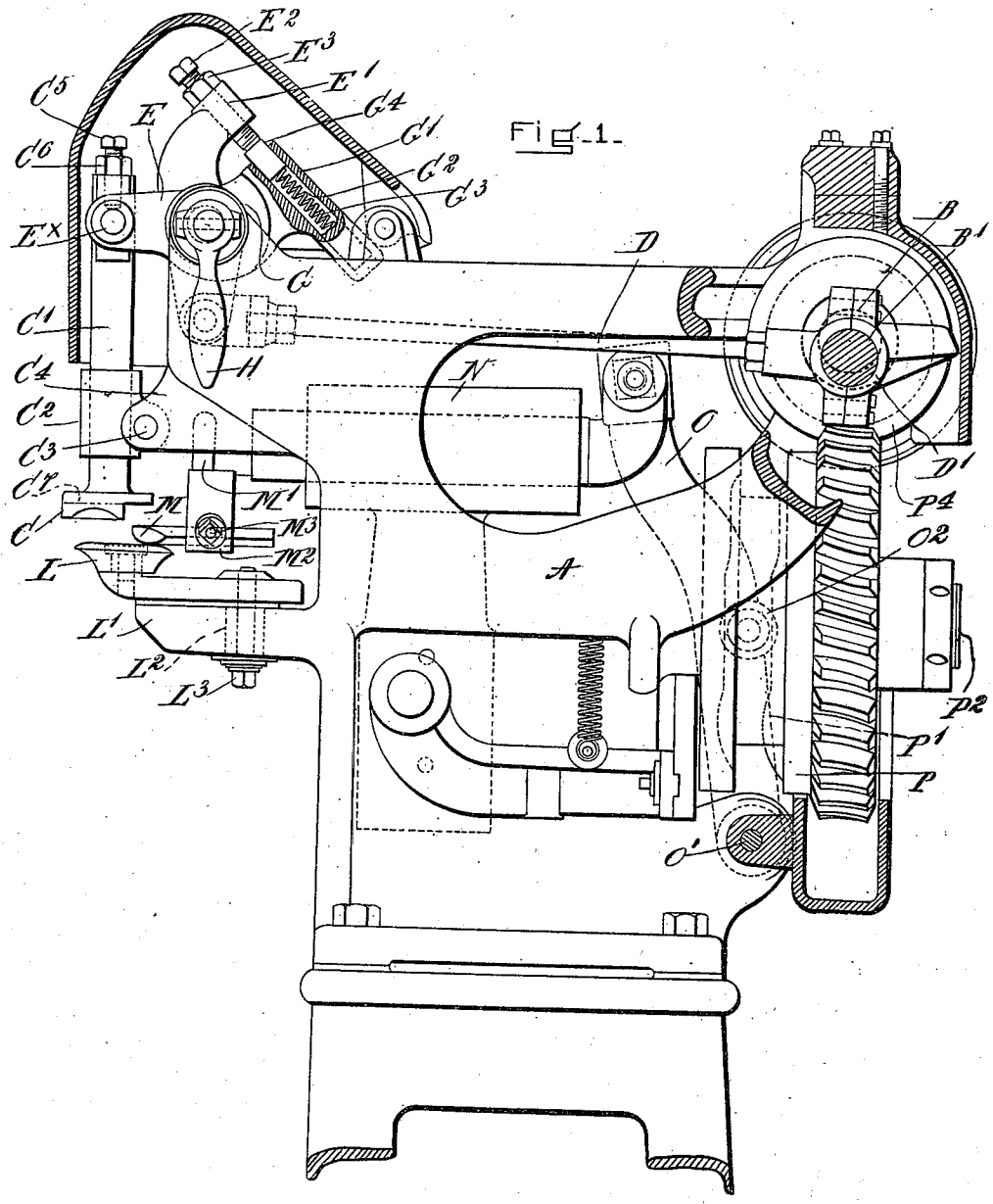
MACHINE FOR OPERATING ON WELTS.

APPLICATION FILED AUG. 7, 1909.

996,483. **Patented June 27, 1911.**

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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2 SHEETS—SHEET 2.

Fig. 2.

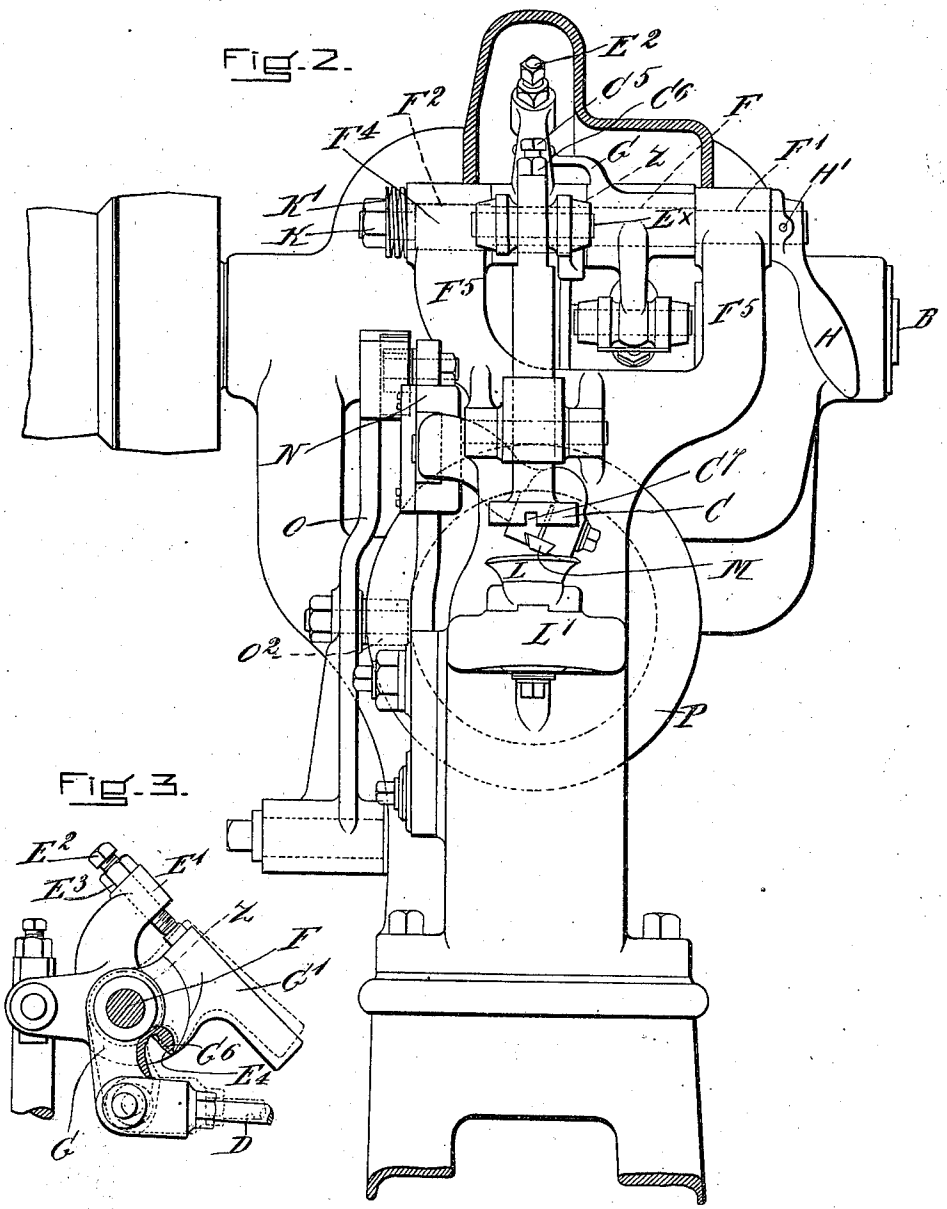

Fig. 3.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR OPERATING ON WELTS.

996,483. Specification of Letters Patent. Patented June 27, 1911.

Application filed August 7, 1909. Serial No. 511,703.

To all whom it may concern:

Be it known that I, JOSEPH GOULDBOURN, a subject of the King of Great Britain, residing at Leicester, in the county of Leicester, England, have invented certain new and useful Improvements in Machines for Operating on Welts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to welt beating machines, and more particularly to the mechanism through which the hammer or beating tool is rapidly actuated to deliver cushioned or yielding blows upon the welt.

The objects of the invention are to facilitate the adjustment of the resistance offered by the spring through which the cushioning of the hammer blows is effected, to facilitate the adjustment of the hammer to operate upon welts of different thickness, and to reduce the vibration incident to the rapid operation of the hammer.

To these ends one feature of the invention contemplates the provision in a welt beating machine provided with connecting mechanism between the actuator and the hammer, including a spring for causing the hammer to deliver yielding blows upon the welt, of means for adjusting the hammer in its line of movement without altering the tension of the spring. Another feature contemplates the provision of means for adjusting the tension of the spring without altering the position of the hammer. By these independent adjustments the hammer may be adjusted in accordance with the thickness of the welt being operated upon, and after the proper adjustment has been made the force of the blows delivered by the hammer may be varied in accordance with the quality of the welts without disturbing the adjustment of the hammer. Likewise, any adjustment of the hammer required by variations in the thickness of different welts may be made without change in the force of the blows delivered by the hammer. Thus proper adjustments of the hammer and spring may be quickly and conveniently made to secure the proper and most efficient action of the hammer upon welts of differing thickness and quality.

In the preferred construction, the independent adjustment of the hammer is provided for by mounting the connecting mechanism between the actuator and hammer upon a support which is itself adjustable for the purpose of adjusting the hammer. The preferred construction for independently adjusting the spring comprises a mechanism connecting the actuator and hammer including two members provided with stops pressed together by a spring interposed between abutments on the members which are relatively adjustable to vary the tension of the spring while the stops remain in contact.

In accordance with another feature of the invention, the spring and adjusting devices, together with their carrying members and the hammer, are so arranged that they are balanced about their center of movement so that they may oscillate or reciprocate at a high rate of speed with comparatively little vibration.

The various features of the invention will be understood from an inspection of the accompanying drawings, which show a welt beating machine embodying the various features of the invention in their preferred form.

In the drawings Figure 1 is a side elevation with certain parts in section of a welt beating and slitting machine embodying the features of the invention in their preferred form; Fig. 2 is a front elevation, and Fig. 3 is a side view of the connecting mechanism between the actuator and hammer.

In the drawings A indicates the frame of the machine which has journaled in its upper portion a driving shaft B carrying an eccentric B′, which eccentric actuates a hammer C through a connecting rod D and other connecting mechanism hereinafter to be described.

An anvil or work support L is secured by tongue and groove connections to a knee L′ forwardly projected from the frame A of the machine. The knee L′ is slotted at L^2 and receives a bolt L^3 by means of which the anvil L may be adjusted forward and backward to bring it to proper coöperative relationship with the hammer C.

A welt-slitting knife M is supported by a knife carrier M′, the said knife being held within a holder M^2 mounted upon the forward end of the said knife carrier. The knife is dove-tailed in cross section and the

knife holder M^2 is slotted so that the knife may be clamped by a bolt M^3 and held in adjusted position. The knife carrier M′ is mounted to reciprocate in a guideway on a plate N secured to the frame of the machine. The rear end of the knife carrier is pivotally connected with an actuating lever O which is pivoted at O′ upon a stationary part of the machine frame and carries a cam roll O^2 which engages a cam path P′ in a cam disk P mounted upon a stud P^2 projecting from the frame of the machine. The cam disk P is rotated from a worm-wheel P^4 which is driven from a worm mounted upon the driving shaft B of the machine.

The hammer C, hereinbefore referred to, is carried upon a plunger C′ that reciprocates vertically in a guide C^2 pivoted at C^3 upon a bracket C^4 carried by the frame of the machine. The hammer C has a cavity C^7 cut in its face as is usual in this type of machine to permit the access of the knife M to cut slits in the welt of a boot or shoe while under compression by the hammer. The upper end of the hammer plunger C′ is pivotally connected at $E^\times$ to one arm of a lever E that is pivoted on a sleeve Z mounted upon a shaft F, a set screw C^5 and lock nut C^6 being provided to secure the pivot $E^\times$ to the hammer plunger. A second lever G is also pivoted upon the shaft F, the lower arm of which lever is pivotally connected to the connecting rod D hereinbefore referred to and thus by an eccentric strap D′ with the eccentric B′ on the driving shaft B.

The lever G has an arm G′ which is hollowed out at G^2 to receive a spiral spring G^3, which spring supports a plunger G^4. The lever B supporting the hammer has an arm E′ which carries a set screw E^2 the end of which abuts against the plunger G^4. Stop faces E^4 and G^6 (see Fig. 3) are provided on the two levers E and G respectively so that the motion between them may be limited in the direction in which the spring G^3 tends to separate them, the degree of tension of the spring G^3 being regulated by the set screw E^2 which is then locked in its adjusted position by a lock nut E^3. By this means the lever G which is driven by the eccentric B′ through the connecting rod D imparts through the spring G^3 and stop G^6 a rocking motion to the lever E which in turn reciprocates the hammer plunger C′ and hammer C, the spring G^3 enabling the lever E to yield to the resistance offered by the work so that the hammer strikes a yielding blow, the force of the blow being regulated by adjusting the tension of the spring without altering the position of the hammer.

In order that the distance of the face of the hammer from the anvil L may be adjusted, the shaft F upon which the levers E and G are pivoted is eccentrically mounted upon journals F′ and F^2 forming part of the said shaft, and are carried in bearings F^3 and F^4 in upstanding extensions F^5 from the frame of the machine. A handle H is mounted on the said shaft F and secured from turning upon it by a pin H′. By moving the handle H the shaft F is rotated upon its eccentrically mounted parts and by this means the levers E and G and with them the hammer C may be adjusted to or from the anvil L in a vertical direction without disturbing the adjustment of the spring or its relationship to the rest of the hammer operating mechanism carried by the shaft F. The shaft F can be retained in its adjusted position by a friction spring K′ between a nut K on the shaft and the face of the bearing F^4 which thus secures the journal F^2 against accidental rotation.

A convenient form of construction according to the present invention is to make the arms E′ and G′ of the levers E and G together with the spring-pressed plunger G^4 and its adjusting devices to balance the hammer C, hammer plunger C′ and the connecting rod D about their axis of oscillation. By this means the vibration, wear and tear and noise incident to the rapid operation of the hammer is greatly reduced.

While it is preferred to employ the specific construction and arrangement of parts shown and described, since this construction and arrangement is the most simple and efficient embodiment of the invention which has yet been devised, it will be understood that this construction and arrangement is not essential except so far as it is specified in the claims, and that it may be varied and modified without departing from the broader features of the invention.

Having explained the nature and object of the invention, and specifically described one construction in which it may be embodied, what I claim is:—

1. A machine for operating on welts, having, in combination, a welt beating hammer, an actuator therefor, connecting mechanism between the actuator and hammer including a spring for causing the hammer to deliver cushioned blows upon the welt, and means for adjusting said hammer in its line of movement without altering the tension of the spring, substantially as described.

2. A machine for operating on welts, having, in combination, a welt beating hammer, an actuator therefor, connecting mechanism between the actuator and hammer including a spring for causing the hammer to deliver cushioned blows upon the welt, and a support for said connecting mechanism adjustable to vary the position of the hammer in its line of movement, substantially as described.

3. A machine for operating on welts, having, in combination, a welt beating hammer,

an actuator therefor, connecting mechanism between the actuator and hammer including a spring for causing the hammer to deliver cushioned blows upon the welt, and an adjustable eccentrically mounted support upon which said mechanism is mounted, substantially as described.

4. A machine for operating on welts, having, in combination, a welt beating hammer, an actuator therefor, connecting mechanism between the actuator and hammer including a spring for causing the hammer to deliver cushioned blows upon the welt, and means for adjusting the tension of the spring without disturbing the adjustment of the hammer, substantially as described.

5. A machine for operating on welts, having, in combination, a welt beating hammer, actuating mechanism therefor including a spring for causing the hammer to deliver cushioned blows upon the welt, and means for adjusting the tension of the spring without disturbing the adjustment of the hammer, substantially as described.

6. A machine for operating on welts, having, in combination, a welt beating hammer, actuating mechanism therefor including a spring for causing the hammer to deliver cushioned blows upon the welt, means for adjusting the hammer in its line of movement without altering the tension of the spring, and means for adjusting the tension of the spring without altering the adjustment of the hammer, substantially as described.

7. A machine for operating on welts, having, in combination, a welt beating hammer, an actuator therefor, connecting mechanism between the actuator and hammer including a spring for causing the hammer to deliver cushioned blows upon the welt, means for adjusting the hammer in its line of movement without altering the tension of the spring, and means for adjusting the tension of the spring without altering the adjustment of the hammer, substantially as described.

8. A machine for operating on welts, having, in combination, a welt beating hammer, an actuator therefor, connecting mechanism between the actuator and hammer including two relatively movable members, a spring interposed between the members, stops for limiting the movement of the members by the spring, and relatively adjustable abutments for varying the tension of the spring, substantially as described.

9. A machine for operating on welts, having, in combination, a welt beating hammer, an actuator therefor, two concentrically mounted levers connected respectively with the actuator and hammer, a spring interposed between the levers for cushioning the blows of the hammer, stops on the levers for limiting the relative movement of the levers by the spring, and means for adjusting the tension of the spring, substantially as described.

10. A machine for operating on welts, having, in combination, a welt beating hammer, an actuator therefor, two concentrically mounted levers connected respectively with the actuator and hammer, a spring interposed between the levers for cushioning the blows of the hammer, stops on the levers for limiting the relative movement of the levers by the spring, means for adjusting the tension of the spring, and an adjustable shaft having eccentric bearings on which said levers are mounted, substantially as described.

11. A machine for operating on welts, having, in combination, a welt beating hammer, an actuator therefor, two relatively movable members connected respectively to the hammer and actuator, a spring interposed between the members for causing the hammer to deliver cushioned blows upon the welt, devices for adjusting the tension of the spring, and a pivotal support for said members so arranged that the members and hammer are balanced about the axis of said support, substantially as described.

12. A machine for operating on welts, having, in combination, a welt beating hammer, an actuator therefor, two concentrically mounted levers connected respectively to the hammer and actuator, a spring interposed between the levers for causing the hammer to deliver cushioned blows upon the welt, and devices for adjusting the tension of the spring, the supports for the spring and adjusting devices being arranged to balance the hammer and connections, substantially as described.

13. A machine for operating on welts, having in combination, a welt beating hammer, actuating mechanism including a spring for causing the hammer to deliver cushioned blows upon the welt, and rotary means adapted to move one end of the spring relatively to the opposite end in order to adjust the tension of the spring without disturbing the adjustment of the hammer, substantially as described.

JOSEPH GOULDBOURN.

Witnesses:
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