

W. C. STEWART & W. H. HOOPER.

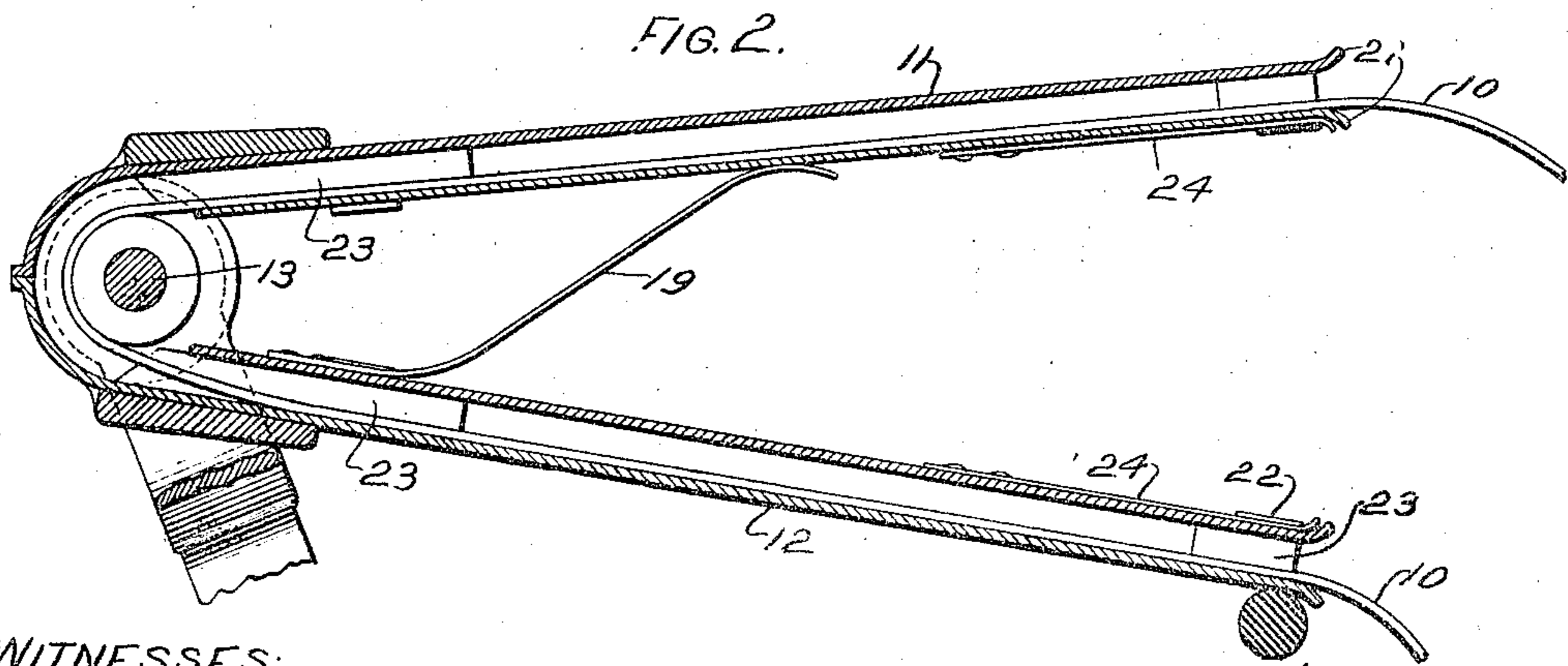
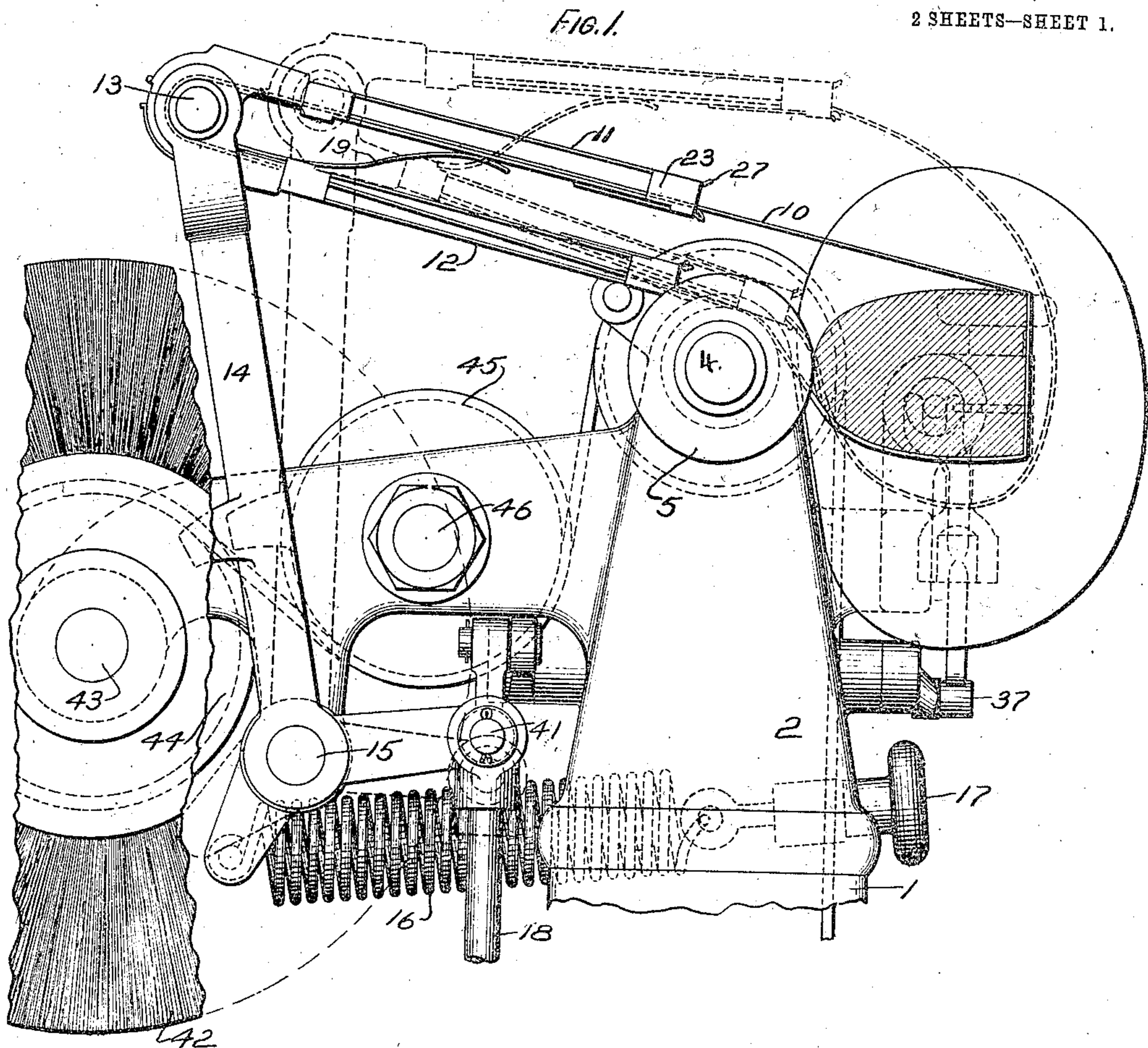
HEEL BEADING MACHINE.

APPLICATION FILED NOV. 20, 1907. RENEWED FEB. 27, 1909.

944,294.

Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

Roswell F. Hatch,  
Redfield H. Allen

INVENTORS,  
WILLIAM C. STEWART, and  
WILLIAM HENRY HOOPER,  
BY Robt. P. Hains ATTY.

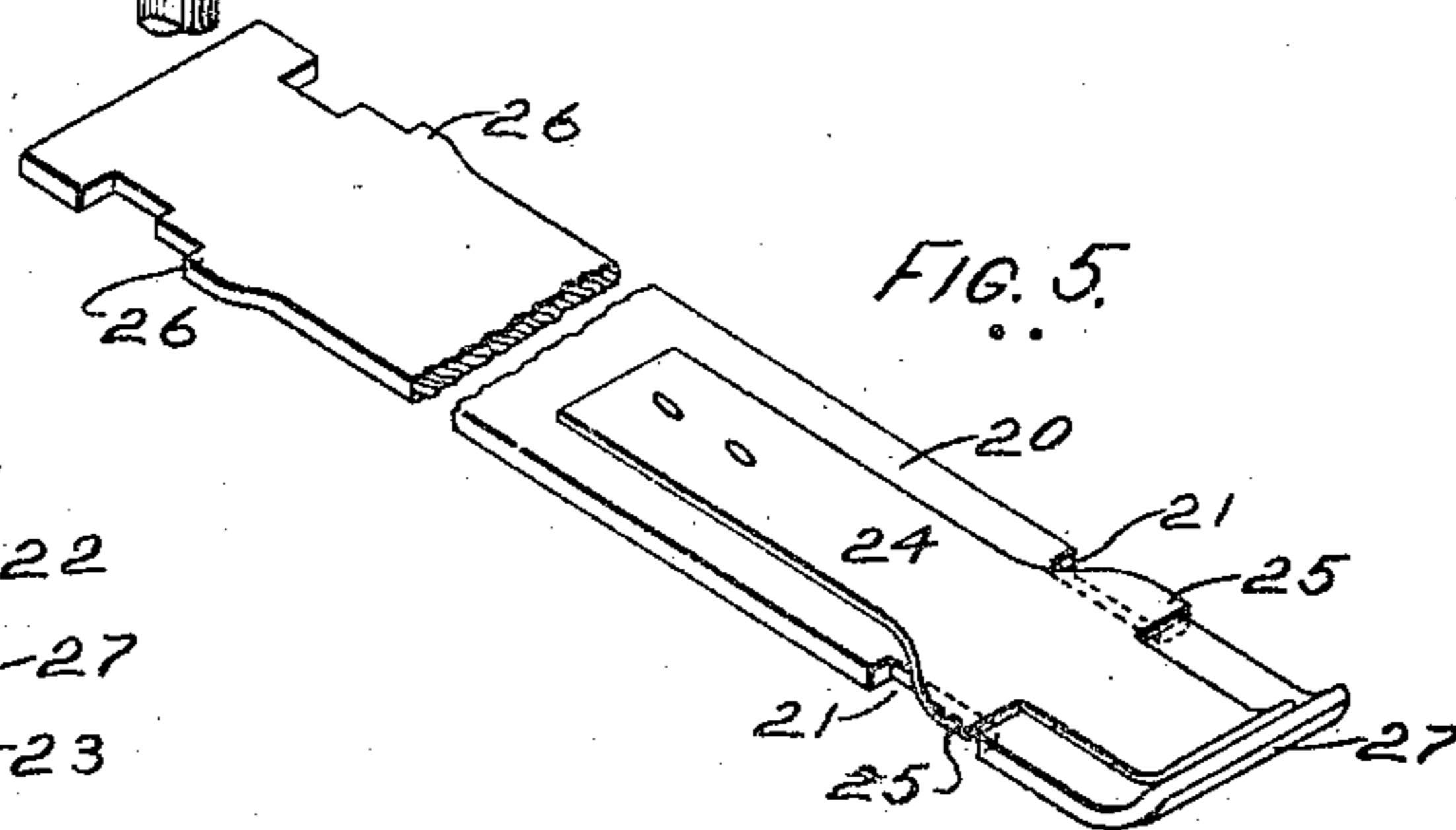
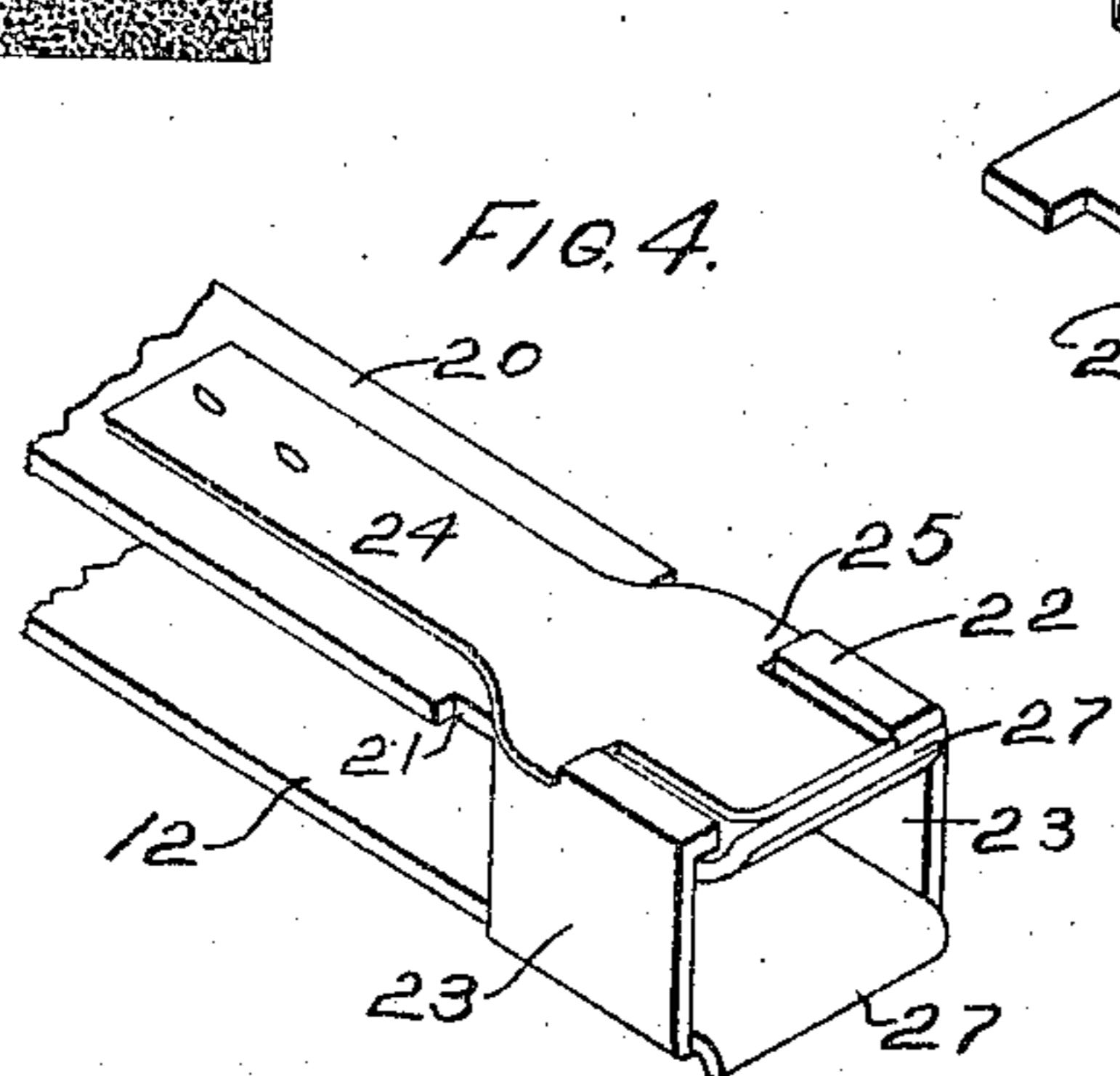
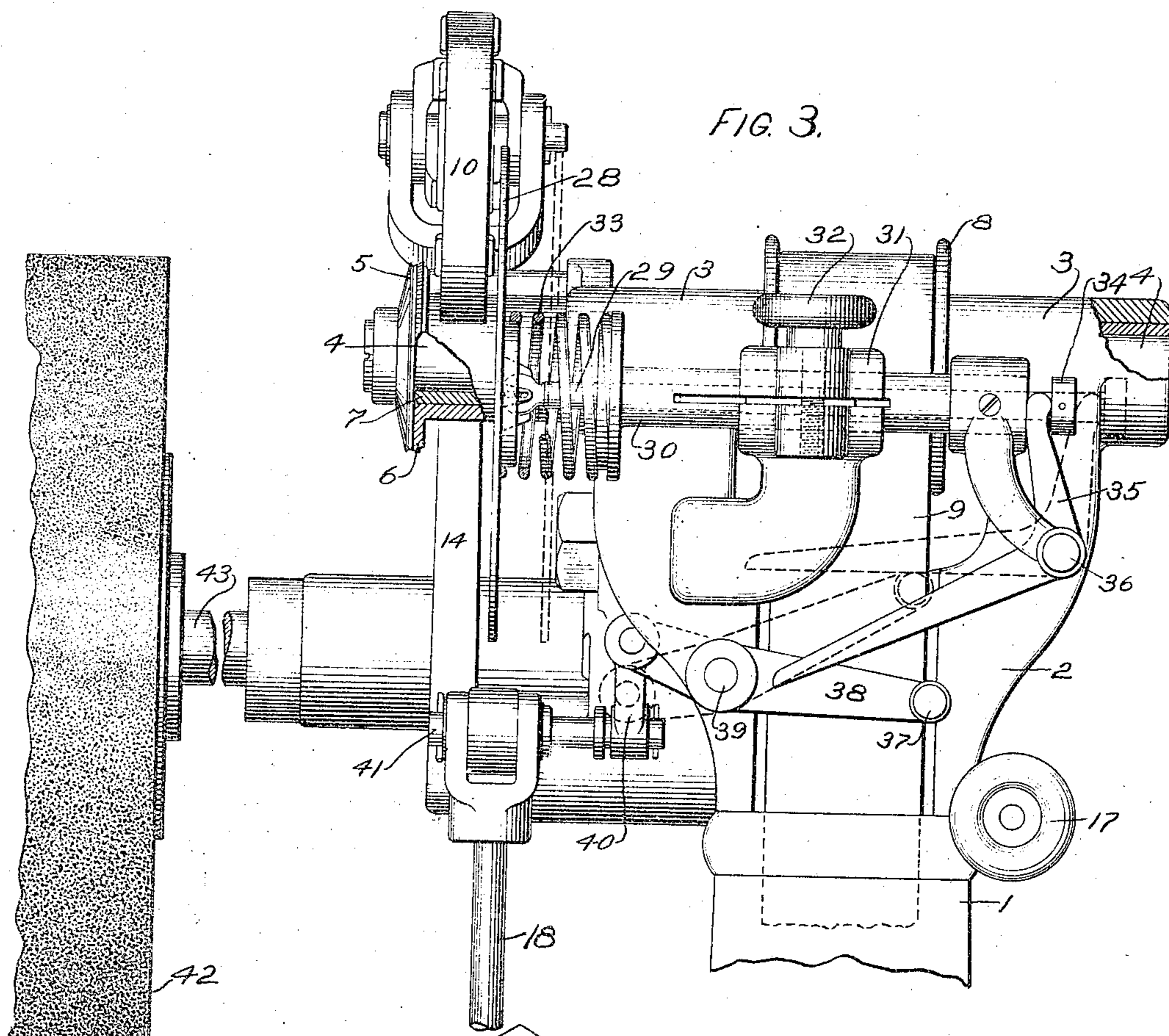
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WILLIAM HENRY HOOPER,  
BY Robt. F. Harris,  
ATTY.

# UNITED STATES PATENT OFFICE.

WILLIAM C. STEWART AND WILLIAM H. HOOPER, OF LYNN, MASSACHUSETTS, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THOMAS G. PLANT, OF BOSTON, MASSACHUSETTS.

## HEEL-BEADING MACHINE.

944,294.

Specification of Letters Patent. Patented Dec. 28, 1909.

Application filed November 20, 1907, Serial No. 403,026. Renewed February 27, 1909. Serial No. 480,376.

*To all whom it may concern:*

Be it known that we, WILLIAM C. STEWART, a subject of the King of Great Britain, and WILLIAM H. HOOPER, a citizen of the United States, both residing at Lynn, in the county of Essex and State of Massachusetts, have invented an Improvement in Heel-Beading Machines, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

The object of this invention is to produce a novel machine for beading or otherwise operating upon the heels of boots and shoes.

The invention embraces various features of construction and operation to be hereinafter disclosed and particularly referred to in the claims appended hereto.

In the accompanying drawings, Figure 1 is a side elevation of the head portion of a machine, illustrating one embodiment of our invention, several of the parts being shown in section, for convenience of illustration; Fig. 2 is a detail on an enlarged scale showing the presser holder; Fig. 3 is a front elevation of the parts shown in Fig. 1, and Figs. 4 and 5, perspective details to be referred to.

In the particular embodiment of our invention selected for illustration herein and shown in the drawings, referring first to Figs. 1 and 3, the machine head 2, is mounted upon a column 1, provided at its base with a countershaft if necessary or desired, and with suitable operating or controlling treadle means, for convenient control of the machine. The machine head, as shown in Fig. 3, is forked to provide bearings 3, 3 for a wheel shaft 4, having fast upon its left hand end a suitable beading device shown as a wheel 5. Adjacent the inner face of this beading wheel is a usual nurling wheel 6, mounted to turn loosely upon a bearing sleeve 7, rigidly clamped in the left hand bearing 3 and furnishing interiorly the left hand bearing for said wheel shaft. Between the head bearings 3, 3 (Fig. 3) and fast upon the shaft 4 is a driving pulley 8, driven by a belt 9 from the countershaft below and driving the beading wheel positively as is customary in machines of this character, while the nurling wheel is free to turn by contact with the heel as the latter is presented throughout its contour to the beading wheel. To hold the heel firmly and steadily

in contact with the beading and nurling wheels, my invention contemplates the use of a presser, shown as an endless belt, band, or strap 10 (Fig. 1) supported in a two-part holder or carrier 11—12, the parts of which are jointed at 13 in the upper end of a three-arm lever 14. This lever is fulcrumed at 15 upon an arm of the machine head and has its depending arm connected by a spring 16 with a tension adjusting device 17 in the head. Connected to the horizontal arm of said three-armed lever is a treadle rod 18 which leads to a treadle not shown, depression of which throws said lever forward to carry the presser band 10 also forward to receive within it the heel to be beaded. When the treadle is released the spring returns the lever and thereby draws the presser band (Fig. 1) to draw or press the heel into working contact with the beading and nurling wheels.

The two members 11 and 12 of the presser holder or carrier are sufficiently tubular to furnish a guide for the presser or band yet admit of ready access to it. The parts of the presser or band are normally separated by a spring 19, carried by the lower member of the holder or carrier and pressing against the upper member to separate the free ends thereof and thereby spread the front end of the presser belt to receive the heel, said spring yielding as may be necessary to permit the two members to draw together as the position of the heel within the presser is changed from time to time in presenting the same to the working devices.

To facilitate removal or insertion of the belt we have provided the two holder members 11 and 12 each with a removable wall or plate 20, shown as the adjacent top and bottom plates thereof. These plates (Figs. 4 and 5) are provided near their opposite ends with notches 21, to permit them to be dropped between the intumed lips 22 on the ears 23 of and struck up from the outer or fixed walls of the tubes. Said plates are then pushed inward so as to carry their edges under said lips, which latter thereafter hold the said plates in position. To prevent accidental withdrawal of the removable plates we have provided each with a holding spring 24, riveted at its inner end to its plate and provided at its outer end with laterally extended ears 25. When the plate is placed in position these spring ears 25 overlies the lips

22. When the plate is pushed back into position the spring ears 25 drop behind the holding lips 22 and prevent withdrawal of the plate except the said spring be first lifted to clear the lips 22, after which the plate may be drawn forward or removed. Said plate is prevented from being pushed too far inward by stop ears 26 thereon which engage similar holding ears 23 next the jointed ends of the holder members. The front ends of the holder tubes 11, 12 are provided with flaring lips 27, 27, one of which in each case is formed on the removable plate.

15 To position a heel the operator depresses the treadle to throw the three-arm lever 14 forward, the holder members 11, 12 serving to prevent the presser belt 10 from bulging except at its front or looped end. The heel is then inserted from the lefthand side of the machine (Fig. 3) and the treadle released, whereupon the spring 16 returns the three-arm lever until the presser belt draws the heel firmly inward with its seat in contact with the beading wheel. The tension of the spring 16 is considerable, so as to insure firm contact of the heel with its beading wheel, and causes the flexible presser belt to conform closely to the heel, as indicated in Fig. 1, the two holder members being drawn together against the tension of the spring 19 as necessary, to permit the upper run of the belt to lead directly from the upper side of the heel rearward to the holder joint 13. At the joint 13 is a loose pulley, about which the presser belt may run to permit said presser to travel freely through the tube as the heel is turned in one or the other direction to present its surface to and be acted upon by the beading and nurling wheels.

It will be evident that whatever may be the contour of the heel and however freely its position may be changed in presenting it to the beading wheel, the presser belt conforms perfectly thereto, as may be necessary to cause the heel to be drawn into firm and operative contact with the beading and nurling wheels; and this without interfering in the least with the free manipulation of the heel. The tension of the spring 16, which represents the pressure of the heel upon the said wheels, remains always substantially constant.

55 The tension of the spring 16 may be merely sufficient to steady and position the heel, leaving the principal pressure of the heel against the working wheels to be furnished by the operator, who in any event holds the heel down in position to prevent it being drawn upward and above the beading wheel which it might do if not restrained.

By properly positioning the presser belt the latter may be caused to exert a draft in any desired direction upon the heel, so as to

draw it diagonally upward and in a measure over the beading wheel, as indicated in Fig. 1, or directly against the beading wheel, without any tendency to ride over or under the beading wheel. This may be adjusted by the mechanic according to the particular action it is desired to obtain. To further assist in the positioning of the heel, we have provided a toplift plate 28 (Fig. 3). This plate stands in position to contact firmly with the toplift of the heel positioned to be operated upon. To this end the said plate is universally mounted upon the end of a horizontal slide bar 29, mounted to slide in a sleeve bearing 30 held in the split arm 31 of the machine head. A clamping screw 32 furnishes means for clamping said sleeve in desired position to accommodate heels of different heights. Between the enlarged end of said sleeve 30 and the said toplift plate is interposed a spring 33 which tends to square the said plate relative to the end of its holding bar 29 and also to maintain the said plate pressed normally and yieldingly to the left. Said slide bar 29 at its opposite or righthand end (Fig. 3) is provided with a fast collar 34, in front of which stands the short arm of a bell crank lever 35, fulcrumed at 36 on an arm depending from said sleeve. The long arm of said lever overlies a stud 37 on a lever 38, fulcrumed at 39 on the machine head. This lever is connected by a link 40 with the extended end of a pin 41, which constitutes the connection between the treadle rod 18 and the horizontal arm of the three-arm lever 14. Whenever said treadle rod is depressed to throw the three-arm lever forward to present the presser belt for reception of a heel, the lever 38, just described, is turned to cause its stud 37 to lift the long arm of the bell crank 35 and thereby withdraw the toplift presser plate 28 to the right (Fig. 3). After the heel has been inserted in the loop of the presser or band, release of the treadle to permit the presser or band to draw the heel against the beading wheel also releases the bell crank lever 35 and permits the spring 33 to press the toplift plate 28 to the left, to square the heel and, at the same time, to cause the heel rand to be pressed firmly and laterally against the beading wheel 5, and not run off and produce a bad bead and possibly injure the counter. In any position of adjustment of the toplift plate the bell crank lever 35, which is adjusted with it, is always lifted into position with its long arm in a substantially horizontal position, which gives a substantially constant distance of withdrawal of the toplift plate 28 for presentation of all heels to be beaded. It will also be noted that when the long arm of the bell crank lever 35 is in such horizontal position, adjustment of the sleeve 30, which carries

the bearing 36 of said lever, can be made conveniently by loosening the set screw 32 and sliding the sleeve in its clamp bearing 31, thus adjusting the top lift plate 28 for heels of different heights.

It will be observed that the heel, in all positions of presentation, is completely controlled and pressed uniformly against the beading wheel and by a presser or band, contradistinguished from a heel clamp or jack, thus speeding the machine and avoiding possible injury to the heel such as is likely to result from the use of a clamp.

The machine, as here shown, is provided with a brushing-up wheel 42, positioned at the back and somewhat to the left of the beading wheel. This wheel is mounted on a shaft 43, journaled in rearwardly extended arms on the machine head, and is provided with a belt pulley 44 shown in Fig. 1, adapted to be driven by the same belt that drives the beading wheel. This is arranged herein by the use of an intermediate idler 45 running upon a stud 46 in the said arms. Thus, after a heel has been beaded the operator may conveniently brush up the bead and so much of the heel as may be necessary, without transfer of the work either in his hands or to a separate machine, thus further speeding the operation of heel finishing.

While we have shown details of mechanical devices which have been found well adapted to carry the invention into effect, it is to be understood that said invention is not restricted or circumscribed thereby, the essentials of the invention being defined in the claims by intentionally broad language comprehensive of various forms or embodiments of the invention.

Having described an illustrative embodiment of our invention, what we claim is:

1. A machine for operating upon the heels of boots and shoes, comprising a working tool, a flexible strap constructed and arranged to provide a loop for engaging the boot or shoe, and means for bodily moving the strap and the loop engaged boot or shoe toward said working tool.

2. A machine for operating upon the heels of boots and shoes, comprising a tool, a heel engaging member presenting a loop conformable to the shape of and to receive the heel, said heel engaging member being constructed and arranged to travel relative to the heel as the latter is moved by the operative to present different portions of the heel to the tool.

3. In a machine for acting upon the heels of boots and shoes, the combination of a working tool, a work supporting band or strap constructed and arranged to provide a loop for engaging and sustaining the work, means for moving the band or strap in one direction to permit the work to be placed within the loop, and means for moving it in

the opposite direction to carry the work into operative relation with the tool.

4. In a machine for acting upon the heels of boots and shoes, the combination of a working tool, a flexible band or strap constructed and arranged to provide a work receiving loop, and means for separating the parts of the loop to permit the work to be placed therein.

5. In a machine for acting upon the heels of boots and shoes, the combination of a working tool, a flexible band or strap, a carrier for said band or strap, means for separating the parts of the band or strap to permit the work to be engaged thereby, and means for moving the carrier and band or strap to place the heel in operative relation with respect to the working tool.

6. In a machine of the character described, the combination of a working tool, a flexible band or strap, a carrier for said band or strap, said carrier and band or strap being constructed and arranged to provide a loop in said band or strap wherein to receive the work, and means for moving said carrier and band or strap to place the work held by said loop in operative relation to said tool.

7. In a machine of the character described, the combination of a working tool, a presser comprising a band or strap, a carrier or presser holder for said band or strap, means for separating the parts of said carrier or holder to separate the parts of the band or strap and permit the work to be placed in a loop formed therein, and means for moving the band or strap and the loop engaged work into operative relation to the working tool.

8. In a machine for operating on the heels of boots and shoes, the combination of a working tool, a band or strap for engaging the heel of a boot or shoe, treadle operated means for moving the band or strap with relation to the working tool to permit the heel of a boot or shoe to be placed within a loop formed in said band or strap, and means for returning the band or strap to initial position and the heel into operative relation with the working tool.

9. A machine of the character described, comprising in combination a tool, a flexible work presser for presenting the work to the tool, and an independently mounted self centering top-lift plate adjacent the flexible work presser.

10. A machine of the character described, comprising in combination, a tool, a presser for presenting the work to the tool, an independently mounted top-life plate, means for projecting the presser to permit the introduction and removal of work, and devices movable upon operation of said means to retract the top-lift plate.

11. In a machine of the character described, the combination of a tool, a presser

comprising a flexible band or strap for presenting the work to the action of said tool, a universally mounted top-lift plate, and means for normally centering said plate.

5 12. In a machine of the character described, the combination of a tool, a presser comprising a flexible band or strap having a work supporting loop for presenting the work to the action of said tool, a universal  
10 mounted top-lift plate adjacent thereto, and yielding means for normally centering said plate.

13. In a machine of the character described, the combination of a tool, a presser  
15 comprising a flexible band or strap having a work supporting loop for presenting the work to the action of said tool, and a top-lift plate mounted adjacent thereto and over which the top-lift moves as the work is being  
20 treated by said tool.

14. A heel beading machine, comprising a beading tool, a flexible work conforming presser for presenting the heel to the action of said tool, means to project said flexible  
25 presser to receive a heel, holding means for said presser, and means for separating the parts of said holding means.

15. In a machine of the character described, the combination of a working tool,  
30 a flexible band or strap, a carrier or holder for said band or strap, said carrier or holder and band or strap being constructed and arranged to provide by said band or strap a loop for sustaining the work therein, and  
35 said carrier or holder having relatively movable parts constructed and related to permit ready removal and insertion of said band or strap.

16. In a machine of the character described, the combination of a working tool,  
40 a flexible band or strap, a carrier or holder for said band or strap having relatively movable members each sustaining a part of said band or strap, means for moving the  
45 carrier or holder in one direction to position a loop formed by said band or strap for the insertion of the work, means for separating the parts of the band or strap as the carrier or holder is so moved, and means for returning the carrier or holder to initial position and closing the loop about the work.  
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17. In a machine for treating the heels of boots and shoes, the combination of a working tool, a flexible band or strap constructed  
55 and arranged to provide a work sustaining loop to receive the heel of a boot or shoe, and a top lift plate disposed and arranged with relation to said working tool and flexible band or strap to engage and guide the  
60 heel.

18. In a machine for treating the heels of boots and shoes, the combination of a working tool, a flexible band or strap constructed and arranged to provide a work sustaining  
65 loop to receive the heel of a boot or shoe, a

top lift plate disposed and arranged with relation to said working tool and flexible band or strap to engage and guide the heel, and means for adjusting the top lift plate for the treatment of heels of different  
70 heights.

19. In a machine for operating on boots and shoes, the combination of a working tool, a flexible band or strap, a carrier or holder for said band or strap, means for  
75 separating the members of said carrier or holder and the parts of the band or strap to enable the work to be placed in a loop formed by the said band or strap, and means for bodily moving the band or strap to place  
80 the work held by said loop into operative relation with the working tool.

20. In a machine for acting on the heels of boots and shoes, the combination of a tool, a top-lift plate disposed adjacent thereto  
85 and on which the top lift of the heel may rest, a supporting rod for said top-lift plate, a flexible joint connecting said top-lift plate and supporting rod, and means acting normally to automatically center the top-lift  
90 plate when in top-lift engaging position.

21. In a machine for acting upon the heels of boots and shoes, the combination of a tool, a top-lift plate, a support for said top-lift plate, a flexible joint connection between the  
95 top-lift plate and its support to permit the top-lift plate to center itself when it meets the heel, and treadle controlled means for quickly moving the top-lift plate and support toward and from top-lift engaging  
100 position.

22. In a machine for acting upon the heels of boots and shoes, the combination of a tool, a presser for presenting the work to the action of said tool, a universally mounted  
105 top-lift plate adjacent thereto, and yielding means for normally centering said plate when in top-lift engaging position.

23. In a machine for acting on the heels of boots and shoes, the combination of a  
110 tool, a top-lift plate disposed adjacent thereto and on which the top lift of the heel may rest, a rod, a universal jointed connection between the top-lift plate and said rod for supporting said top-lift plate, treadle operated means acting upon said rod to withdraw the top-lift plate from top-lift engaging position, and means for centering the top-lift plate as it is returned to initial position.  
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24. In a machine for acting on the heels of boots and shoes, the combination of a tool, a top-lift plate against which the top lift of a heel may rest when in working position, means for supporting the top-lift plate with  
120 the heel in working position, means for withdrawing the top-lift plate from operative position, means for returning the top-lift plate to operative position, and additional means for adjusting the top-lift plate  
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with respect to the tool to accommodate heels of different heights.

25. In a machine for acting upon the heels of boots and shoes, the combination of a tool, a top-lift plate, a rod on which said top-lift plate is mounted, a sleeve carrying said top-lift supporting rod and adjustably mounted on the machine frame, and a spring disposed between said sleeve and said top lift plate.

26. In a heel beading machine, a beading tool, a presser for pressing the work into operative relation with the beading tool, a toplift plate, supporting means therefor, and a treadle and connections between the said treadle, the presser and toplift plate to cause a single movement of the treadle to relieve the presser of its pressing action and

withdraw the toplift plate from operative position.

27. In a heel beading machine, a beading tool, a toplift plate, a rod supporting the toplift plate, a sleeve surrounding said rod, a bearing in which said sleeve is adjustably mounted, a bracket secured to said sleeve, a lever pivoted on said bracket for withdrawing the toplift plate from operative position, and an actuator for said lever.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

WILLIAM C. STEWART.

WILLIAM H. HOOPER.

Witnesses:

GEORGE F. STEWART,

ARNALDO M. ENGLISH.