

L. W. G. FLYNT.
SHOE UPPER BEADING MACHINE.
APPLICATION FILED DEC. 14, 1908.

1,027,411.

Patented May 28, 1912.

3 SHEETS-SHEET 1.

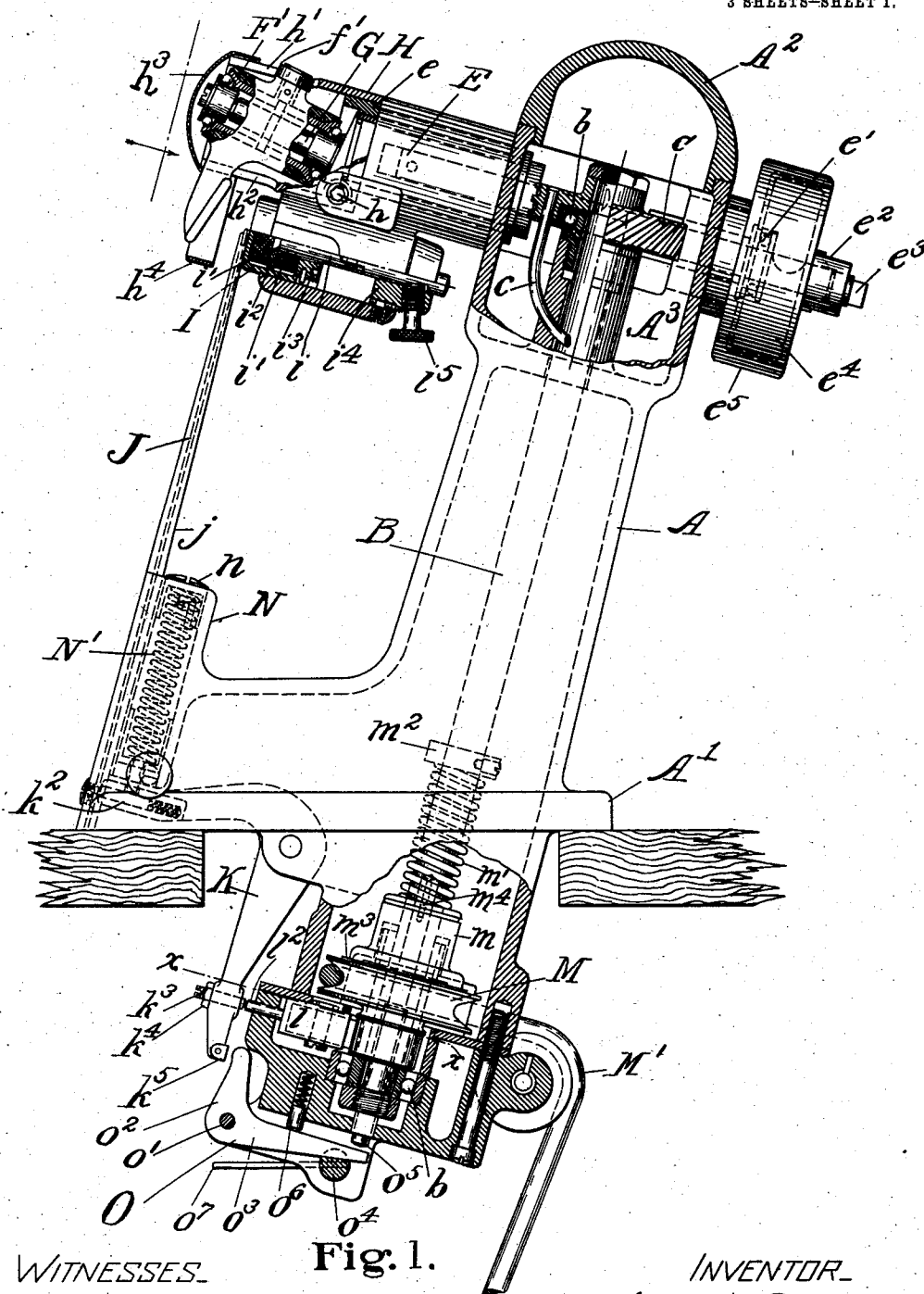


Fig. 1.

WITNESSES.

Elizabeth C. Coupe.
Edith C. Hollbrook

INVENTOR.

Louis W. G. Flynt
By his Attorney,
Nelson M. Howard

L. W. G. FLYNT.
SHOE UPPER BEADING MACHINE.
APPLICATION FILED DEC. 14, 1908.

1,027,411.

Patented May 28, 1912.

3 SHEETS—SHEET 2.

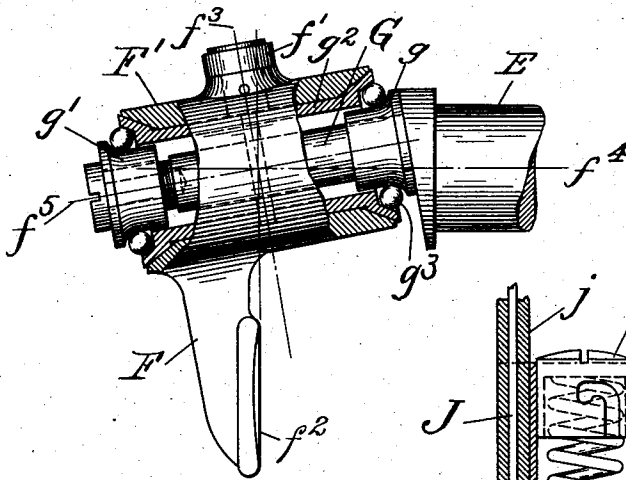


Fig. 2.

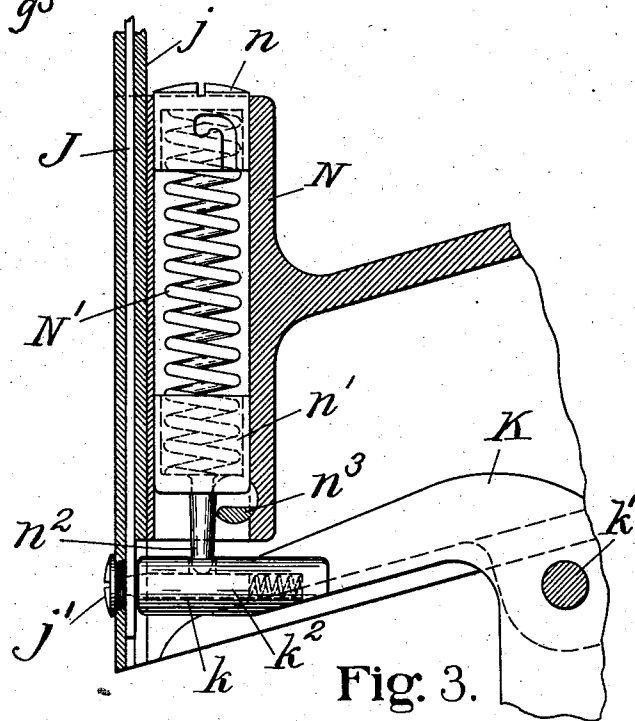


Fig. 3.

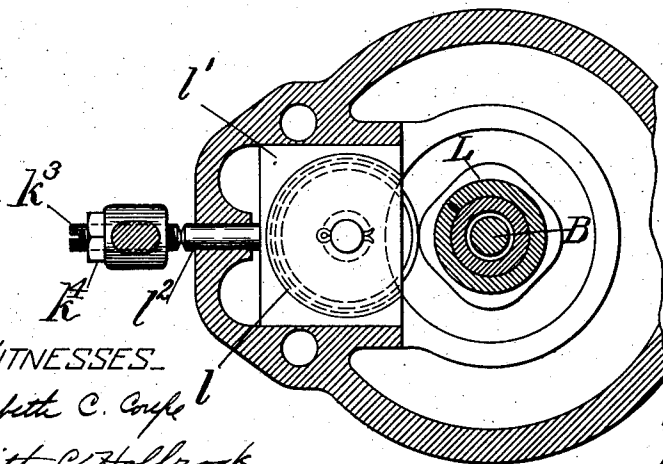


Fig. 4.

WITNESSES.
Elizabeth C. Cope
Edith C. Holbrook

INVENTOR.

Louis W. G. Flynt
By his Attorney,
Nelson McDonald

L. W. G. FLYNT.
SHOE UPPER BEADING MACHINE.
APPLICATION FILED DEC. 14, 1908.

1,027,411.

Patented May 28, 1912.

3 SHEETS—SHEET 3.

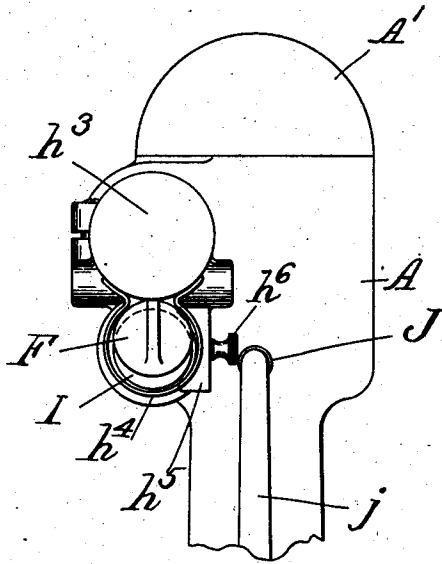


Fig. 5.

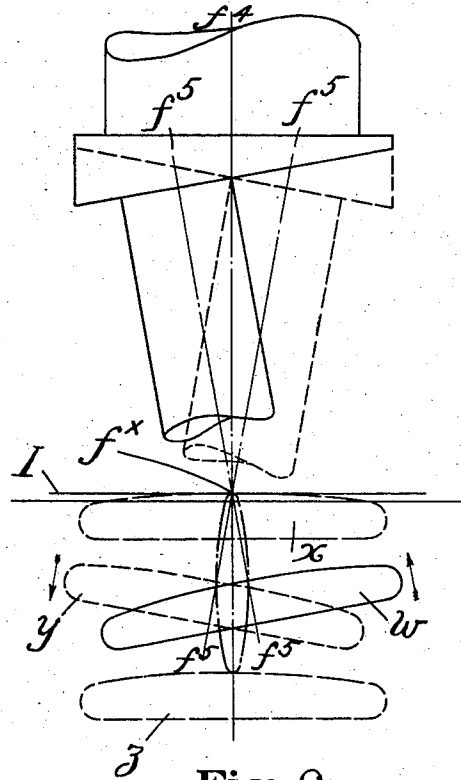


Fig. 6.

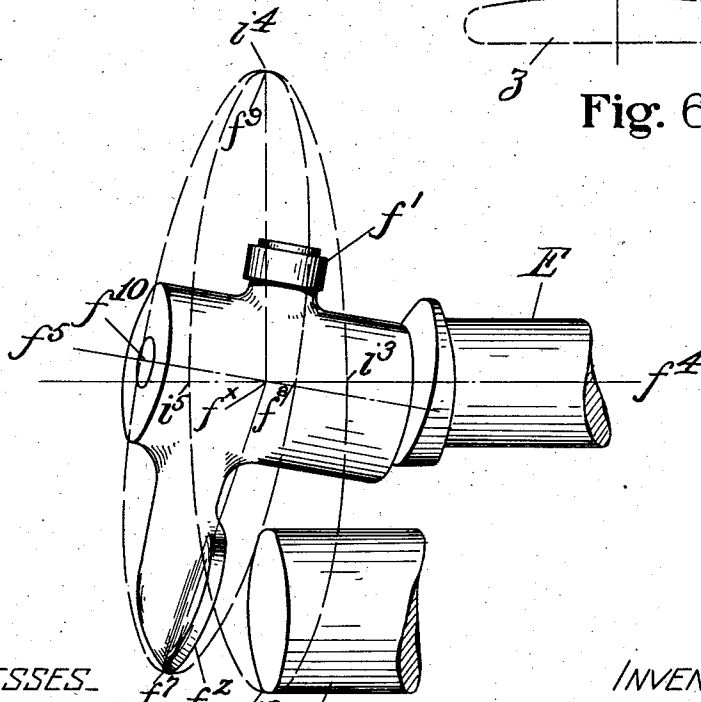


Fig. 7.

WITNESSES.

Elizabeth C. Cope
Edith C. Hollbrook

INVENTOR.

Louis W. G. Flynt
By his Attorney,
Helen M. Corrand

UNITED STATES PATENT OFFICE.

LOUIS W. G. FLYNT, OF ROCHESTER, NEW YORK, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SHOE-UPPER-BEADING MACHINE.

1,027,411.

Specification of Letters Patent.

Patented May 28, 1912.

Application filed December 14, 1908. Serial No. 467,437.

To all whom it may concern:

Be it known that I, LOUIS W. G. FLYNT, a subject of the King of England, residing at Rochester, in the county of Monroe and State of New York, have invented certain Improvements in Shoe-Upper-Beading Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for operating upon leather or similar materials in general, but more particularly it relates to machines for turning and hammering the edges of shoe uppers to form thereon a bead or cord.

In the operation of upper beading as ordinarily practised the upper and lining are first sewed together wrong side out, and are then turned right side out and their edges, when thus turned, are subjected to the action of a hammer to finish such edges. This hammer, whether it be operated by hand or by power, must necessarily have applied simultaneously to every portion of its working surface a pressure which will be sufficient to effectively form the bead, and when a seam is presented to the hammer the entire pressure thereon is applied to a greatly reduced area with the result that the stitches are liable to be ruptured and the upper injured. For this reason upper beading machines employing hammering devices, as formerly constructed, have been objectionable. Upper beading has also been performed by subjecting the edges of the upper to the action of rollers, and, in some cases, a rubbing tool has been caused to work upon the edges of the upper to form the bead, but so far as I am aware none of the machines of these several types could be run at a high rate of speed and at the same time produce entirely satisfactory results. I have discovered that a tool in the nature of a hammer which is so actuated as to cause the pressure to be applied to the work along a line which progresses from one side to the other of the anvil, or work support, due to a rolling motion of the hammer, will not injure the seams of uppers and may be run at a high rate of speed without imposing an undue amount of initial strain upon the machine, and will produce a superior quality of work. A tool which is arranged to be operated in

this manner delivers a series of applications of pressure to the work and thereby obtains all the desirable results following from the action of a hammer, but as such pressure is applied to relatively small areas of the work in succession, the force is insufficient to break the stitches in the seams, but is nevertheless sufficient, when applied in a series of impulses of high frequency, to bead the edge of an upper very effectively. Such a tool, together with its operating mechanism, constitutes an important feature of this invention, and I intend to claim the same broadly.

In order to give the tool or hammer the movements above defined, preferably such hammer is so constructed and arranged for operation that its working face represents a portion of the surface of a cone rolling on a plane surface, in this case the anvil, the hammer first approaching the anvil with its face inclined to the plane thereof, then rolling across the anvil, and finally receding therefrom with its face inclined thereto in a direction opposite to that of its inclination when it approached the anvil. These movements are preferably imparted to the hammer by means of a crank whose pin is angularly disposed with relation to its shaft, the hammer being carried by a sleeve surrounding the crank pin which is journaled therein. The sleeve may be provided with a projection carrying an anti-friction roller which will be guided in a slot formed in the casing inclosing the sleeve, to restrain the tendency of the hammer against rotation with the crank pin and to confine its field of operation to the face of the anvil. Such restraining means also serves to effect a suitable amount of sliding movement between the hammer and anvil, and thereby assists in feeding the work. The cone, of which the hammer represents a portion in its movements to and from and across the anvil, has its apex at the point of intersection of the axis of the crank pin and the axis of the shaft carrying such pin, and all of such movements are produced from this point as a center; and owing to the hammer being confined to movements in the plane of the anvil by the means described, it will be seen that the movement of any point in the face thereof will describe a curve in the surface of a sphere whose radius is equal to the distance of said point from the apex of the cone. This construction and arrangement

for imparting to the hammer its desired operation is another very important feature of my invention.

When the hammering device having the improved characteristics as above defined, is used for upper beading, I preferably associate therewith a turning iron, also of improved construction, and, as shown, this turning iron is slidably mounted in a horn and so positioned with relation to the hammer and anvil that the operations of turning and hammering the upper may be carried on simultaneously, the feeding effect of the hammer serving to draw the work from the turning iron toward the anvil. This arrangement I also regard as a feature of importance in this invention.

In the embodiment of the invention selected for illustration the turning iron is preferably caused to operate through the instrumentality of a bell-crank lever, one arm of which is actuated by a cam, or the like, secured to the hub of a pulley having bearing on the main driving shaft which causes the hammer to operate, and a clutch is so arranged for operation with these parts as to connect said pulley to the main shaft, or to disconnect it therefrom, at will. In order to interrupt the operation of the hammer, and to also simultaneously therewith interrupt the operation of the turning iron, suitable means, as a bell-crank lever, is so arranged relatively to the clutch actuator and the bell-crank lever which causes the turning iron to reciprocate, that upon a proper movement thereof one of its arms will actuate the clutch and its other arm will move the bell-crank lever of the turning iron to a position beyond the influence of its operating cam. This arrangement constitutes still another important feature of my invention.

The turning iron is, as herein shown, connected with its bell-crank lever by means of a spring-pressed pin which is mounted in the end of the said lever and has a tapered end to enter an aperture in the turning iron. A spring contained within a casing in the frame of the machine is suitably arranged to bear upon a pin and cause the same to enter an aperture in the arm of the bell-crank lever and engage and lock the spring-pressed pin. This also constitutes a simple and effective construction for maintaining the bell-crank lever for the turning iron in yielding engagement with its operating cam, and, furthermore, a construction which permits easy removal of the turning iron to replace it with another of a different size or shape. The cam for actuating the bell-crank lever for the turning iron is shown as acting upon a movable cam ring mounted upon a block carrying a pin, which pin bears upon an adjusting screw carried by an arm of said lever, whereby

the projection of the turning iron above the upper end of the horn may be adjusted, to compensate for wear, etc.

The main driving shaft, in the machine selected for illustration of this invention, carries a worm or other gear which meshes with a similar gear on the hammer crank shaft, and the upper portion of the casing is formed into or provided with an oil reservoir from which the oil may be distributed by a curved tube which leads through the gear on the main shaft, into said reservoir. As the tube revolves with the gear the oil is drawn up by centrifugal force and distributed to the several gears, and to the shaft bearings.

Another important feature of my invention consists in an improved construction of anvil, for use in this and similar machines, the same being herein shown as cup-shaped and mounted to slide, adjustably, in a portion of the frame of the machine, and being also provided with cushioning means, and with a suitable device to effect its adjustment, whereby the position of the anvil relatively to the hammer may be changed to accommodate stock of varying thickness, as well as to compensate for wear.

Other important features, combinations of parts, and details of construction will be hereinafter more particularly described and claimed.

Referring now to the accompanying drawings, Figure 1 is a view in side elevation of a machine embodying this invention, with parts thereof in section. Fig. 2 is a detail view in elevation of the hammer and its operating crank, parts of the hammer-carrying sleeve being broken away to show the crank pin and its bearings. Fig. 3 is a detail view, partly sectional, showing a portion of the turning iron and its driving means. Fig. 4 is a view in cross section on the dotted line *x, x*, Fig. 1. Fig. 5 is a detail view, showing in elevation the upper part of the machine from the direction indicated by the arrow in Fig. 1. Fig. 6 is a diagrammatic view showing the several positions assumed by the hammer and its crank during a single cycle of operations. Fig. 7 is a perspective view of the hammer and anvil, illustrating, diagrammatically, the cone of which the hammer face forms a portion, and the plane upon which it rolls.

The frame of the machine A is provided with a flange A', designed to rest upon a bench or other suitable support, and this flange as shown is arranged to support the machine so that the main driving shaft is approximately inclined at an angle of 100° to the bench. The driving shaft B is preferably supported for rotation in the frame A upon ball bearings *b, b*, and said shaft, as shown, carries at its upper end the worm gear C which meshes with a worm gear of

smaller size on the shaft E, shown as mounted at right angles to the shaft B.

The shaft E is provided at the rear end with a ball thrust bearing e' to resist the end-pull on the shaft caused by the blows of the hammer, and which may be adjusted by means of a nut e^2 and lock-screw e^3 . Preferably, also, this end of the shaft carries a fly wheel e^4 , shown as surrounded, partly, by a casing e^5 , which acts as a guard to prevent injury to the operator.

The opposite end of the shaft E carries an angularly-disposed crank-pin G, and said crank-pin is surrounded by the sleeve F' constituting a portion of the hammer F. The crank pin carries at or near its ends the cones g, g' , and the sleeve of the hammer is lined with a bushing g^2 between which and the cones are formed raceways for the balls g^3 to form a ball bearing. The hammer head projects from its sleeve at an angle, as shown, the face f^2 of the hammer presenting the same angle to a line f^3 drawn perpendicular to the axis of the crank pin as the angle formed by the intersection of the lines f^4, f^5 , which coincide, respectively, with the axes of the crank shaft and crank pin, as shown in Fig. 2.

The hammer sleeve carries at a point on the opposite side to that occupied by its head, a spindle upon which is rotatably mounted an antifriction roller f' , to play in a slot h' formed in a hood H. This hood is supported upon a bushing e which surrounds and forms a bearing for shaft E and projects from the forward end of the frame of the machine, the hood being shown as clamped to the bushing by screws h . The hood H is furthermore provided with an opening h^2 at its under side to accommodate the projecting arm of the hammer, and is closed at its forward end by a detachable cap h^3 . It will thus be seen that the hood not only serves as a means to guide the antifriction roller f' , but also as a cover to protect the bearings of the hammer. The cap h^3 is preferably provided with a depending guard h^4 , shown as surrounding the hammer head and whose function is to protect the hands of the workman from injury by coming in contact with the hammer.

The anvil I is located, as shown, in position to support the stock to be operated upon by the hammer. Said anvil is, preferably, cup shaped and is slidably mounted in a cylindrical portion of the frame A, located below the hood H. The rod i is provided at its forward end with a disk i^2 which is located within the hollow portion of the anvil, and cushions i', i'' , are located upon opposite sides of said disk and serve to yieldingly oppose the blows of the hammer, the cushions and disk being retained in place by an externally threaded plug i^3 which engages an internal thread in the

open end of the anvil. The rod i is preferably made in two parts as shown, whereby it may be removed from the rear, and said rod is supported for movement within the bore of a plug i^4 , which is threaded into the frame A. A set screw i^5 enters a threaded opening in the plug i^4 , and its end engages an inclined face formed in the rod i to hold said rod and hence the anvil I in different positions of adjustment relatively to the face of the hammer. At one side of the anvil I is a guide h^5 which is adjustably secured to the frame A by a set screw h^6 , said guide serving to assist the workman in locating the work between hammer and anvil.

Referring to Figs. 1, 3 and 4 of the drawings, it will be seen that the turning iron J is mounted for reciprocation within a horn j , the latter being suitably secured to the main casing, or, if desired, it may be cast therewith. The turning iron is provided with an aperture at or near its lower end to be entered by the tapered end of a spring-pressed pin k^2 mounted for movement within a casing k , which is cast with, or secured to, an arm of a bell-crank lever K. A screw-cap j' is threaded into an aperture in the horn, directly opposite the aperture in the turning iron entered by the spring-pressed pin. The bell-crank lever K is pivoted to the frame A at k' , and has a depending arm provided with a threaded opening which is engaged by a set-screw k^3 , under the control of a check-nut k^4 . The main driving shaft B has thereon a pulley M to the hub of which is secured a cam L, herein shown as provided with four rises, and mounted to slide in suitable guideways in the frame is a block l' carrying a cam roller l , which is arranged to be engaged and actuated by the cam L, and a pin l^2 fast to said block passes through an opening in the frame A, and engages a projecting end of the set screw k^3 .

A casing N, formed in the frame A, contains a spiral spring N' which is confined between a cap n and a plunger n' . The plunger n' carries a pin n^2 , which is adapted to be forced by the spring N' through an aperture in the side of the casing k , and into engagement with the spring-pressed pin k^2 in said casing, thereby to frictionally lock said pin against movement. A slidable cam n^3 , mounted below the plunger n' , serves to permit the plunger and its pin to be raised. The cap n may be connected with the casing N by a bayonet slot or equivalent connection, whereby the spring may be removed for repairs or the like.

The amount of projection of the turning iron J above the upper end of the horn j may be adjusted by means of the set-screw k^3 , and check-nut k^4 , in the depending arm of the bell-crank lever, to compensate for wear. The turning iron may also be re-

moved and replaced with another one of different size or shape, or a worn out one may be replaced by a new one, by first sliding the cam n^3 and raising the spring-pressed plunger n' carrying the pin n^2 thereby releasing the pin k^2 , and then removing the screw cap j' and forcing the pin k^2 out of engagement with the aperture in the lower part of the turning iron. The turning iron is then lifted out of the horn and a new one inserted, the pin k^2 being first forced back until the aperture is in position to be engaged thereby, then released, and finally the cam n^3 is disengaged to permit the pin n^2 to again come into engagement with and thereby lock the pin k^2 .

The driving pulley M is loosely mounted on the shaft B, and power is applied thereto from any suitable source by a belt M' which, as shown, passes over idler pulleys rotatably mounted in a bracket projecting from the frame A. The pulley M is connected to the shaft B to rotate the same by a clutch m , herein represented as a friction clutch surrounding said shaft and free to slide thereon, but held to rotation with the shaft by a key m^4 , which is fixed in a slot in the upper end of the clutch but is freely movable in a slot through the driving shaft B. The bottom face of the clutch is provided with a disk of leather, or like material m^3 , to contact with the face of the pulley, and a spiral spring m' surrounds the shaft B and is confined under tension between a collar m^2 thereon and the clutch m , whereby the clutch may serve to transmit power from the driving pulley M to the shaft B.

A bell-crank lever O is pivoted at o' in a slot formed within a projection from the frame A, and has an arm o^2 located in position to engage a hard metal shoe k^5 on the depending end of the bell-crank lever K, and an arm o^3 in position to engage the end of a rod o^5 , slidably mounted in a recess in the shaft B, and having its opposite end connected with the key m^4 .

A spring-pressed plunger o^6 , movable in the casing A, forces the two arms of the bell-crank lever O away from the lever K and rod o^5 , respectively, and holds the arm o^3 normally in contact with a cam o^4 , the same being rotatably mounted in the frame A and provided with an operating handle o^7 . By turning the cam o^4 through its handle o^7 , the arm o^3 of the bell-crank lever presses against the rod o^5 , thereby forcing said rod against the key m^4 , thus compressing the spring m' and raising the clutch from contact with the pulley M; at the same time the arm o^2 of the bell-crank O is forced against the lower arm of the bell-crank lever K, compressing the spring N', and removing said arm beyond the range of action of the pin k^2 .

The upper portion of the frame A is

formed into an oil reservoir A⁸ which is closed by a removable cap A⁹, and the gear C carries a curved tube c , which, as shown in Fig. 1, leads from a point near the bottom of the oil reservoir to the upper side of said gear. When the gear C is rotated rapidly the oil is carried up the tube by centrifugal force, and flows through spiral grooves in the shaft E to the front shaft bearings, whereby said bearings are kept thoroughly lubricated.

When the machine is at rest the cam o^4 occupies a position to raise the arm o^3 of the bell-crank lever O, thereby holding the clutch out of contact with the face of the pulley, the arm o^2 then contacting with the bell-crank lever K and holding the same beyond the path of movement of the pin k^2 .

To start the machine the handle o^7 is raised, thereby permitting the depending arm of the bell-crank lever K to come in contact with the pin k^2 , and the clutch member m to engage the pulley, power from the belt M' then causing the shaft B to rotate the shaft E, and the hammer, through the connections described, to deliver to the work a series of applications of pressure in rapid succession, the action of the working face of the hammer being similar to that of a cone rolling on a plane, whereby the pressure delivered to the work on the anvil is caused to progress from one side of the anvil to the other, the effect of the restraint exerted upon the hammer by guiding the roller j' in the slot h resulting in confining its lateral movements to a path corresponding to the face of the anvil, and in causing a slight slipping movement between the hammer and anvil to thereby feed the work. The same movement of the bell-crank lever O carries its arm o^2 out of contact with the bell-crank lever K, to permit the actuation of the latter by the cam L through the cam ring l and pin k^2 , to thereby reciprocate the turning iron, the operations of turning and hammering being effected simultaneously, and the feeding action of the hammer serving to draw the work from the turning iron toward the anvil.

Referring to Fig. 7, the line f^4 represents the axis of shaft E, and the line f^5 the axis of the crank pin G. The plane of the face of the anvil I is represented in perspective by the ellipse i^2 , i^3 , i^4 , i^5 , and the base of the cone of which the face of the hammer forms a part in its movements toward and from the anvil is represented by the ellipse f^7 , f^8 , f^9 , f^{10} , the apex of the cone f^6 being at the point of intersection of the lines f^4 and f^5 .

The different positions assumed by the hammer and its crank pin in operating through a single cycle are illustrated diagrammatically in plan in Fig. 6, the face of the hammer in this view being represent-

ed as slightly curved, being a portion of the surface of a cone. Assuming the hammer and crank pin to be in the positions represented by solid lines, if the crank shaft is revolving from left to right the hammer moves from the position *w* in the direction of the arrow on the right to the position *x*, gradually turns as it approaches the anvil *1*, and rolls across the same as the crank continues to rotate, and recedes from the anvil in the direction of the arrow on the left, with its face presented at an angle to the plane thereof which is opposite to that presented to such plane when the hammer approached the anvil, as represented at *y*, and, continuing to turn in the same direction, the hammer reaches the position indicated at *z*, and thence moves to the position indicated at *w* again to repeat the cycle. In following the course of the hammer, as shown in this view, it will be seen that any point on the face of the hammer, in its movements toward and from the anvil, traces an ellipse in the surface of a sphere.

While a hammer having the characteristics herein described is peculiarly fitted to effectively perform the operation known as upper beading, it is to be understood that I do not in any sense intend to be limited to such use of the invention, as there are many other operations for which it is obviously well adapted, and to which it may be applied, as will be readily suggested to those skilled in the art.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a machine of the class described, an anvil, in combination with a hammer having a curved face, and actuating means to cause the hammer to deliver a series of applications of pressure to the anvil on a line which progresses across the anvil.

2. In a machine of the class described, an anvil, in combination with a hammer and actuating means to cause the hammer to deliver a series of applications of pressure and to roll across the anvil.

3. In a machine of the class described, a hammer and actuating means therefor arranged to impart to the work a series of applications of pressure and to roll across the work whereby to apply its pressure progressively thereto.

4. In a machine of the class described, an anvil, a hammer and means for causing successive areas of the face of the hammer to impart a series of applications of pressure to the work along a line which progresses across the face of the anvil.

5. In a machine of the class described, an anvil, in combination with a hammer and actuating means for the hammer to cause it to approach the anvil, roll across the same and to recede therefrom.

6. In a machine of the class described, an anvil, in combination with a hammer and actuating means for the hammer to cause it to approach the anvil at an angle, to roll across the anvil, and to recede therefrom at an angle opposite to that presented to the anvil when it approached the same.

7. In a machine of the class described, an anvil, in combination with a hammer having a smooth work-engaging face and actuating means therefor constructed and arranged to impart to the hammer a movement corresponding to a cone rolling upon a plane.

8. In a machine of the class described, the combination with an anvil of a hammer so arranged that its working face represents a portion of the surface of a cone and actuating means to cause the hammer to roll upon said anvil the rolling movements being described from the apex of the cone.

9. In a machine of the class described, the combination with a hammer so arranged that its working face represents the portion of the surface of a cone of actuating means for said hammer including an angularly disposed crank pin.

10. In a machine of the class described, the combination with a hammer of actuating means including an angularly disposed crank pin for imparting to said hammer movements corresponding to a cone rolling upon a plane, the face of said hammer corresponding to a portion of the surface of such cone.

11. In a machine of the class described, the combination with an anvil, of a hammer and actuating means to cause the hammer to roll across the anvil, the parts being constructed and arranged to effect a relative sliding movement between the hammer and anvil to feed the work.

12. In a machine of the class described, the combination with an anvil, of a hammer and actuating means therefor to impart to the hammer movements corresponding to a cone rolling on a plane, and means to effect a relative sliding movement between the hammer and anvil to feed the work.

13. In a machine of the class described, an anvil, in combination with a hammer and actuating means to cause the hammer to roll across the anvil and restraining means for the hammer to cause the hammer to feed the work.

14. In a machine of the class described, the combination with an anvil, of a hammer and actuating means therefor to cause said hammer to approach the anvil, to roll across the anvil, and to recede therefrom, and restraining means to cause a relative sliding movement between the hammer and anvil, whereby to feed the work.

15. In a machine of the class described,

the combination with an anvil, of a hammer and actuating means therefor to impart to the hammer movements corresponding to a cone rolling on a plane, and restraining means to confine said movements to the face of the anvil.

16. In a machine of the class described, the combination with an anvil, of a hammer and actuating means therefor including an angularly disposed crank pin to impart to the hammer movements corresponding to a cone rolling on a plane, and restraining means to confine said movements to the face of the anvil.

17. In a machine of the class described, the combination with a hammer, of actuating means therefor including a crank-shaft and a crank pin angularly disposed thereto, said parts being arranged whereby the working face of the hammer is caused to move in a path corresponding to a portion of the surface of a cone rolling upon a plane, the apex of said cone being at the point of intersection of the axes of the crank shaft and crank pin.

18. In a machine of the class described, the combination with a shaft having an angularly disposed crank pin, of a hammer movably supported upon said crank pin, the angle presented by said shaft and pin agreeing with the angle presented by the face of the hammer and a line drawn normal to the crank pin and crossing the point of intersection of the axes of said shaft and pin.

19. In a machine of the class described, the combination with a sleeve having a hammer head projecting therefrom, of a crank shaft having an angularly disposed crank pin journaled in said sleeve, the angle presented by said shaft and pin agreeing with the angle presented by the face of the hammer and a line drawn normal to the crank pin and crossing the point of intersection of the axes of said shaft and pin.

20. In a machine of the class described, the combination with a sleeve having a beating tool projecting therefrom, of a crank-shaft provided with an angularly disposed crank pin, said pin being journaled in said sleeve, a casing for the sleeve, and cooperating means on said sleeve and casing to restrain the tendency of the beating tool to rotate on the axis of the crank pin.

21. In a machine of the class described, the combination with a sleeve having a beating tool thereon, of a crank shaft provided with an angularly disposed crank pin, said pin being journaled in said sleeve, a casing for said sleeve having a slot therein, and a pin carried by the sleeve and guided in said slot.

22. In a machine of the class described, the combination with a sleeve carrying an angularly disposed beating tool upon one

side thereof and a projection upon its opposite side, of a crank shaft having an angularly disposed crank pin, said pin being journaled in said sleeve, and a casing for the sleeve having a longitudinally arranged slot to receive and guide said projection.

23. In an upper beading machine, a hammer comprising a sleeve and a projecting head, a casing inclosing said sleeve and through which the head projects, said casing having an open end, and a cap inclosing said end and provided with a guard partly surrounding the hammer head.

24. In an upper beading machine, the combination of a hammer, an anvil, and a guide located at one side of the edge of the anvil in position to assist in placing the work between the hammer and anvil.

25. In an upper beading machine, the combination of a hammer, an anvil, and an adjustable guide located at one side of the anvil and having its work-receiving face located substantially in the plane of the face of the anvil to assist in placing the work between the hammer and anvil.

26. In an upper beading machine, the combination of upper turning means, an anvil fixed against lateral movement, and means to hammer the upper and draw it from the turning means toward said anvil.

27. In an upper beading machine, the combination with a reciprocating turning iron, of combined feeding and beating means for the upper.

28. In an upper beading machine, the combination of a turning iron, an anvil, and a hammer arranged to roll across the anvil and to draw the work from the turning iron toward said anvil.

29. In an upper beading machine, the combination with a turning iron having an aperture, of actuating mechanism therefor including a lever, and a movable pin carried by said lever to enter the aperture in the turning iron, whereby said turning iron is detachably connected with its operating mechanism.

30. In an upper beading machine, the combination with a horn and a turning iron slidable therein and provided with an aperture, of actuating mechanism for the turning iron including a lever, a yieldingly actuated pin thereon to enter the aperture in the turning iron, and means to lock said pin against movement.

31. In an upper beading machine, the combination with a horn and a turning iron slidable therein and provided with an aperture, of actuating mechanism for the turning iron including a lever, a yieldingly actuated pin thereon to enter the aperture in the turning iron, locking means to engage said pin, and means to relieve said pin from the effect of said locking means.

32. In an upper beading machine, the

combination with a horn and a turning iron slidable therein and provided with an aperture, of actuating mechanism for the turning iron including a lever, a movable pin on one end of said lever to enter the aperture in the turning iron, and yielding means acting in opposition to the actuating mechanism for the turning iron and serving to lock said pin against movement.

33. In an upper beading machine, the combination with a horn and a turning iron slidable therein and provided with an aperture, of a lever and actuating mechanism therefor, a yieldingly actuated pin on one end of said lever to enter the aperture in the turning iron, a locking pin to engage the first mentioned pin, and yielding means acting upon said locking pin and arranged to apply its force in opposition to the lever actuating mechanism.

34. In an upper beading machine, the combination with a turning iron having an aperture, of a lever carrying a spring-pressed pin to enter the aperture, a casing arranged in suitable proximity to said turning iron, a plunger slidable therein and carrying a locking pin to engage said spring-pressed pin, and yielding means in the casing to actuate said plunger.

35. In an upper beading machine, the combination with a turning iron having an aperture, of a lever carrying a spring-pressed pin to enter the aperture, a casing arranged in suitable proximity to said turning iron, a plunger slidable therein and carrying a locking pin to engage said spring-pressed pin, yielding means in the casing to actuate said plunger, and means to lift said plunger to move the locking pin out of engagement with the spring-pressed pin.

36. In an upper beading machine, the combination with a horn and a turning iron slidable therein and provided with an aperture, of means including a lever for actuating the horn, a yieldingly actuated pin carried by said lever to enter the aperture in the turning iron, said horn having an aperture adapted to register with the aperture in the turning iron, whereby to permit disengagement of the yieldingly actuated pin therefrom.

37. In an upper beading machine, the combination of a turning iron, a bell-crank lever having one arm connected to said turning iron, actuating means arranged for operation upon the other arm of the bell-crank lever, yielding means to maintain said arm in operative relation with said actuating means, and means to move said arm out of operative relation with said actuating means.

38. In an upper beading machine, the combination with a horn, of a turning iron movable therein, a lever having an arm connected to said turning iron, actuating

mechanism to act upon the other arm of the lever and reciprocate said turning iron, and adjusting means between said arm and the actuating mechanism to vary the amount of projection of the turning iron above the upper end of the horn.

39. In an upper beading machine, the combination with a horn, of a turning iron movable therein, a lever having one arm connected to said turning iron and its other arm provided with a set screw, a movable cam ring carrying a pin arranged to act upon said set screw, and means on the driving shaft to actuate said cam ring.

40. In an upper beading machine, the combination of a beading tool, a driving shaft operatively connected therewith, and provided with a loose pulley and a clutch, a turning iron and connections between the turning iron and loose pulley to reciprocate said turning iron, and means to move said clutch and to suspend the operation of the turning iron.

41. In an upper beading machine, the combination of a beading tool, a driving shaft operatively connected therewith and provided with a loose pulley and a clutch, a turning iron, a bell-crank lever pivotally mounted in the frame and having an arm connected with said turning iron and an arm normally held in operative engagement with actuating means operated from the loose pulley, yielding means to maintain such engagement, and means to simultaneously disengage the clutch from the loose pulley and move the bell-crank lever from engagement with its actuating means.

42. In an upper beading machine, the combination of a beading tool, a driving shaft to operate the beading tool having thereon a loose pulley, a clutch free to slide on said shaft but having a key to compel it to rotate therewith, yielding means on said shaft to hold the clutch in engagement with the loose pulley, a rod within said shaft and connected with the clutch, a pin supported for reciprocation in the frame of the machine and operated from said pulley, a turning iron, a bell-crank lever having one arm connected with said turning iron and its other arm maintained in engagement with said pin, and a second bell-crank lever so arranged that upon actuation thereof, one of its arms will move said rod to shift the clutch, and the other arm will move the arm of the first named bell-crank lever beyond said pin.

43. In a machine of the class described, the combination with a casing, of a cup-shaped anvil having a rod and adjustable in said casing, and means to secure said rod in its different positions of adjustment.

44. In a machine of the class described, the combination with a casing, of an anvil, a rod extending within said anvil, cushion-

ing means between said rod and anvil, and means to secure the rod to the casing.

45. In a machine of the class described, the combination with the main frame, of a casing thereon, an anvil slidable in said casing, a two-part rod connected with said anvil and constructed for separation whereby it may be removed from the rear of the casing.

46. In a machine of the class described, the combination with a casing, of a cup-shaped anvil slidable therein, a rod provided with a disk located in said anvil, cushions upon opposite sides of said disk, retaining means for said cushions, and retaining means for said rod.

47. In a machine of the class described, the combination with a casing, of a cup-shaped anvil slidable therein, a rod provided with a disk located in said anvil, cushions upon opposite sides of said disk, retaining means for said cushions, a plug closing the rear end of said casing, and a set screw fitting an opening through said plug and arranged to bear upon an inclined recess in said rod.

48. In a machine of the class described, the combination with an anvil of a hammer and actuating means to cause the hammer to roll across the anvil and also to have a sliding movement thereon so as to impart feeding movements to the work.

49. In a machine of the class described, the combination of a turning iron, an anvil, a hammer, and actuating means constructed and arranged to cause the hammer to subject the work to successive increments of pressure along a line extending across the anvil and to also draw the work from the turning iron toward the anvil.

50. In an upper beading machine, the combination of a reciprocating turning iron,

an anvil located at one side of said turning iron, and a hammer and actuating means therefor constructed and arranged to impart to the work a series of applications of pressure along a line which progresses across the anvil and also to draw the work from the turning iron toward the anvil.

51. In an upper beading machine, the combination of a reciprocating turning iron, an anvil located at one side of said turning iron, a hammer, and actuating means to cause the hammer to roll across the anvil and also to have a sliding movement relative thereto, said movements being along a line substantially perpendicular to the line of movement of the turning iron.

52. In a machine of the class described, the combination with a stationary part of the machine of a rod carried thereby, means for holding said rod in different adjusted positions with respect to said part, an enlargement at the end of said rod, a cup-shaped anvil slidable thereon, and cushioning means between said enlargement and anvil.

53. In a machine of the class described, the combination with a stationary part of the machine of a rod carried thereby, means for holding said rod in different adjusted positions with respect thereto, a cushion supporting member at the end of said rod, cushioning means on opposite sides of said member, a cup-shaped anvil extending over said member, and means connected with said anvil for retaining said cushioning means.

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

LOUIS W. G. FLYNT.

Witnesses:

QUENTIN W. BOOTH,
IRVING E. BOOTH.