

(No Model.)

4 Sheets—Sheet 1.

S. M. CUTTER.
SHOE SLUGGING MACHINE.

No. 487,404.

Patented Dec. 6, 1892.

Fig. 1

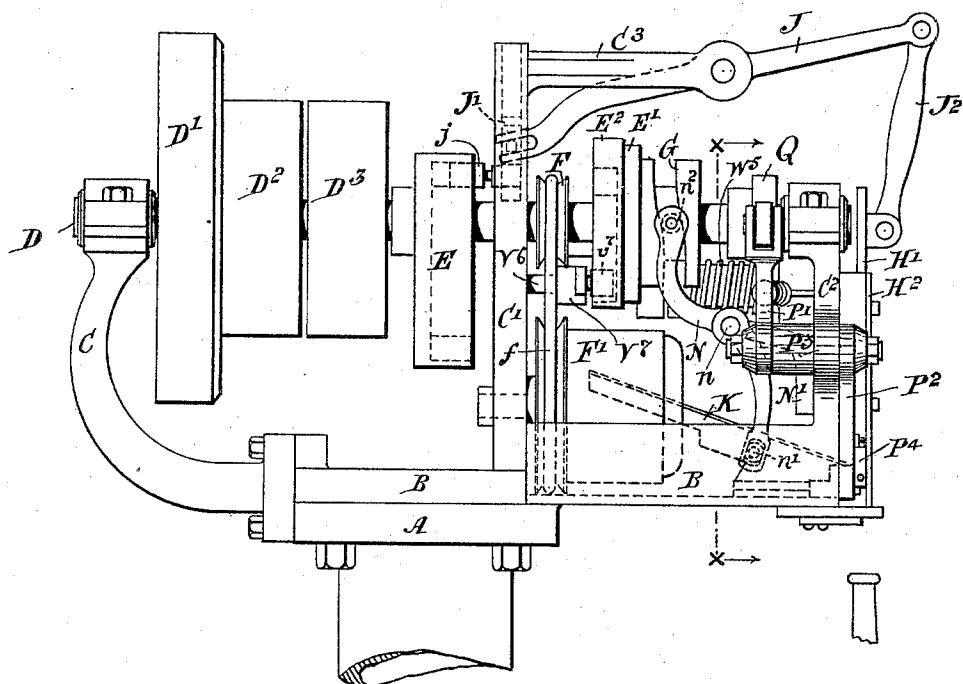


Fig. 2

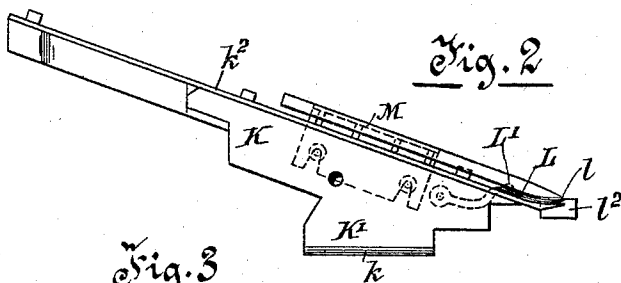
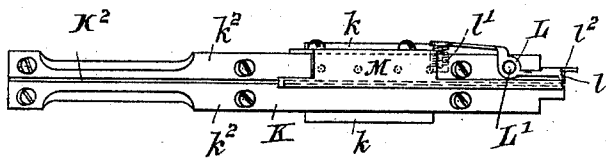


Fig. 3



Witnesses
John W. Smith
Judge J. J. J.

Inventor
S. M. Cutter
By *his Attorney*
Wm. H. J. J.

(No Model.)

4 Sheets—Sheet 2.

S. M. CUTTER.
SHOE SLUGGING MACHINE.

No. 487,404.

Patented Dec. 6, 1892.

Fig. 4

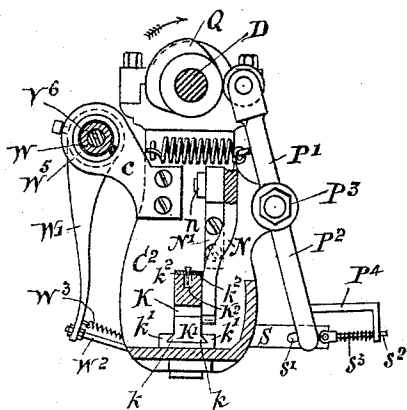


Fig. 5

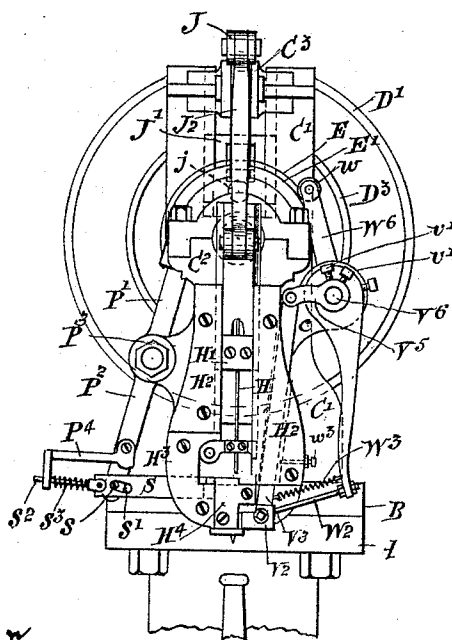


Fig. 6

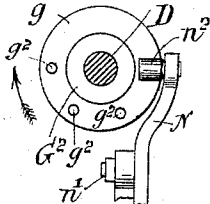


Fig. 7

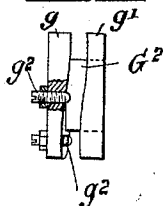
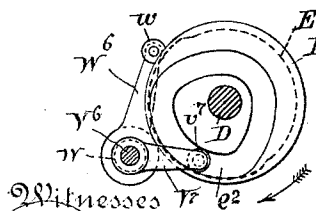


Fig. 8



Witnesses
John M. Carter
Edw. J. Sears

Inventor
S. M. Cutter
By *his Attorney*
Rusby Lequole

S. M. CUTTER.
SHOE SLUGGING MACHINE.

No. 487,404.

Patented Dec. 6, 1892.

Fig. 9

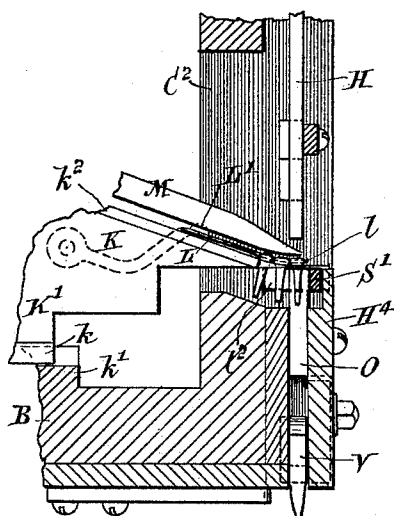


Fig. 11

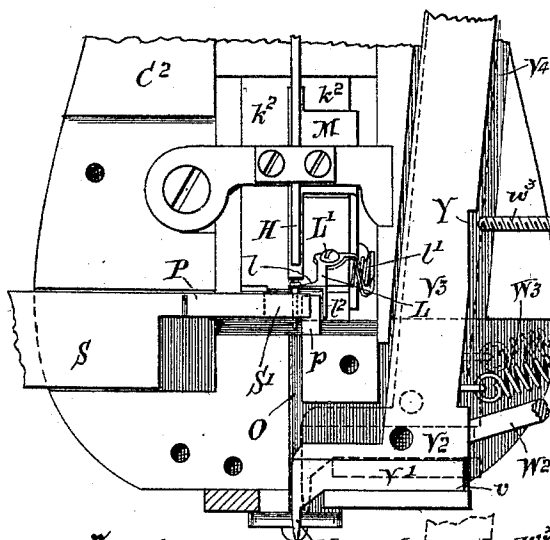


Fig. 10

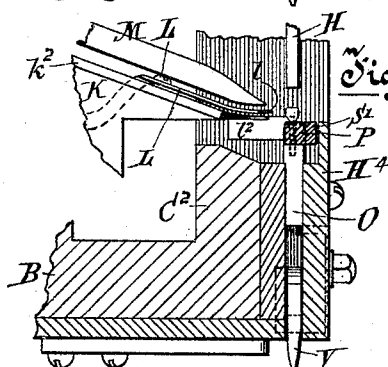


Fig. 12

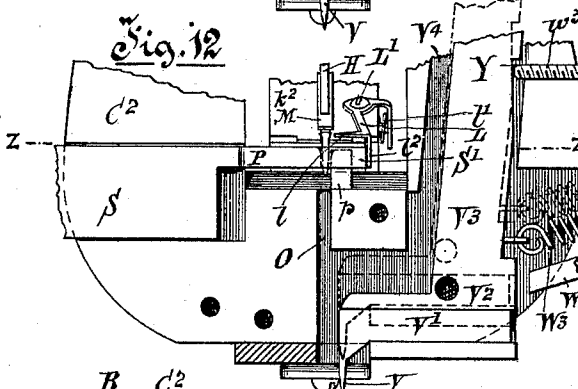
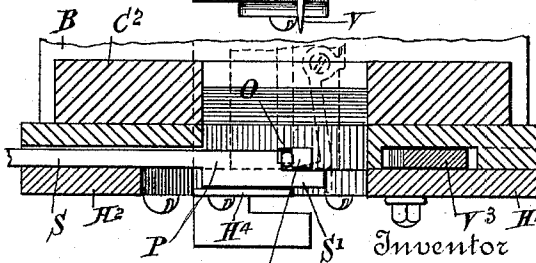


Fig. 13



Witnesses

Wm. M. Felt
Edw. J. Jones

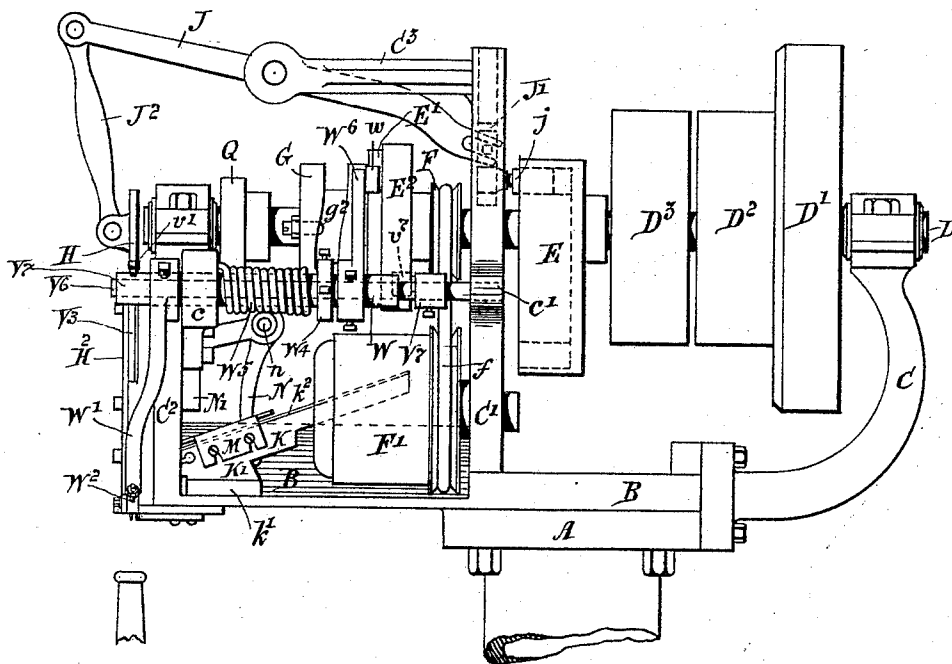
S. M. Cutter
By *his Attorney*
Wm. H. Reynolds

S. M. CUTTER.
SHOE SLUGGING MACHINE.

No. 487,404.

Patented Dec. 6, 1892.

Fig. 14



Witnesses
John W. Sears

John W. Sears

By

S. M. Cutter

Inventor

Attorney

Nash & Kierulff

UNITED STATES PATENT OFFICE.

SOLOMON M. CUTTER, OF QUEBEC, CANADA, ASSIGNOR TO WILLIAM ALFRED MARSH, OF SAME PLACE.

SHOE-SLUGGING MACHINE.

SPECIFICATION forming part of Letters Patent No. 487,404, dated December 6, 1892.

Application filed July 11, 1892. Serial No. 439,719. (No model.)

To all whom it may concern:

Be it known that I, SOLOMON MARCELLA CUTTER, of the city of Quebec, county and Province of Quebec, Canada, have invented certain new and useful Improvements in Shoe-Slugging Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to machines for automatically supplying loose nails from a reservoir or hopper to a nail-guiding throat from which the nails are driven by a reciprocating driver, and has for its object to provide a more efficient, durable, and less-complicated machine than has hitherto been produced, and, further, to provide a novel and improved stock-feeding device which coacts with the slug-driving parts to secure the better insertion of the slug.

The invention consists in the several improvements which I will now proceed to describe and claim.

In the accompanying drawings, forming part of this specification, and in which like symbols indicate corresponding parts, Figure 1 is a left-hand side elevation of the head portion of a machine embodying my invention; Figs. 2 and 3, respectively side elevation and plan views of the raceway; Fig. 4, a vertical transverse section of machine on line *xx*, Fig. 1; Fig. 5, a front or face view of the head portion of the machine; Fig. 6, a detail face view of one section of the cam-roller for operating the raceway, a portion of the lever being also shown in elevation; Fig. 7, a side elevation, partly broken away, of the same section of cam-roller; Fig. 8, a detail sectional view showing cams and lever connections for operating the feed; Figs. 9 and 10, detail sectional views of the slug-receiving or throat portion of the head of the machine and showing the feeding end of the raceway respectively in its forward and backward positions and the slug-holder and slide in cross-sections. Figs. 11 and 12 are face views, partly in elevation and section, of the same parts as shown in Figs. 9 and 10. Fig. 13 is a horizontal section of the front portions of the head on line *zz*, Fig. 12; and Fig. 14 is a right-hand or reverse side elevation of the head portion of the machine shown in Fig. 1.

A is the upper end of the standard or pedestal of the machine, its lower portion not being shown, as my invention is confined solely to the parts carried by the head portion or frame B, which is bolted to it.

C C' C² are three standards formed in one with or secured to the frame B and projecting up from it, those C C² at opposite ends to carry the driving-shaft D and the other C' centrally to carry the lever for operating the slug-driver.

The shaft D has mounted upon it the fly-wheel D' and fast and loose pulleys D² D³, a cam E for operating the slug-driver, a double cam E' E² for operating the work-feeding mechanism, a pulley F, from which a rotating nail-reservoir F', of any usual construction, is worked by band *f*, a grooved roller G for operating the raceway, and a cam Q for operating the combined slug holder and releaser.

The slug-driver H is of the usual form and secured to a cross-head or dovetailed plate H', working in a vertical guideway formed by face-plates H² H², screwed to the standard C², a positive up-and-down motion being imparted to it through a lever J, pivoted in an arm C³, extending from the standard C' and having its inner end forked to connect with a block J', which is arranged to slide in vertical guideways in the standard C², and to carry a roller *j*, which works in the groove of the cam E, the lever J being connected at the other end by a link J² with the cross-head H'. H³ H⁴ are additional face-plates covering the operating parts in the lower portion of the standard C², that H⁴ forming one side of the vertical throat for the slugs.

The raceway along which the slugs travel from the reservoir F' is constructed and operated to conduct the slug to a position immediately above the vertical throat or nail-tube O and in the axis of the slug-driver and its construction may be thus described: It is formed of a solid inclined bar K, having a base block or foot K', provided with dovetail flanges *k* to fit corresponding guideways *k'* *k'*, formed on the base-plate of the frame B and to slide to and fro therein, the bar being grooved centrally in its upper surface to afford a passage-way K² for the slug-bodies.

Two adjustable cover-strips k^2 k^2 are set on the bar K the required distance apart to support the slugs by their heads while allowing them free passage, and these strips project forward beyond the lower feeding end of the raceway-body, so that when the raceway is moved forward the slug at the extreme end will be located directly over the throat and beneath the driver.

A yielding slug-releaser in the form of a lever L, bent so that one portion will lie flat on the upper surface of one of the cover-strips k^2 and present a pointed finger l across the extreme end of the raceway-passage and another portion turn down over the side of the raceway and receive the pressure of a coiled spring l' against its end, is pivoted at L' to the top of the cover-strip k^2 and has a downwardly and forwardly projecting ear or lug l^2 , by means of which an extension from the slug-holder coming in contact therewith, as will be hereafter explained, can free the lower most slug. An adjustable protector-strip M, extending about half-way up the raceway, is also attached thereto, as shown in Figs. 2 and 3, to prevent the slugs jumping out.

The forward movement of the raceway is effected by means of a lever N, pivoted at n to a bracket N' , projecting out from the rear of the standard C^2 and having one end pivotally connected at n' with the raceway and the other end carrying a roller n^2 , working in the groove of the roller G, the construction of which roller I will now describe. It is preferably composed of two halves g g' , one of which has the sleeve portion G^2 , required for securing it to the shaft, formed in one with it and the other half being secured to such sleeve portion. The inner faces of these half-sections are correspondingly shaped to present an inclined groove or guideway, the rotation of which will impart reciprocal movement to the lever N, and in addition to this a number of adjustable studs g^2 g^2 are screwed through the section g , as shown in Figs. 6 and 7, so that their ends will project laterally into the groove and produce a shaking or tremulous motion in a longitudinal direction in the raceway at the proper time for the delivery or release of the lowermost slug.

Referring now to Figs. 9, 10, 11, 12, and 13, the slug-holder proper consists of the bar or finger P, which is an extension from the plate S, working horizontally in from the side of the head B, the lever-arms P' P^2 , pivoted in the bearing P^3 , and the cam Q being its operating mechanism, and such bar holds the slug firmly between its end and the block p , forming the upper portion of the right-hand side of the throat. The holder P is yieldingly connected with the lever-arm P^2 in order to accommodate different sizes of slugs by means of an arm P^4 , projecting from the lever-arm P^2 , a stud s and slot s' in the plate S, a rod s^2 with one end pivoted to the end of the plate and the other passing through a hole in the bent end of the arm P^4 , and a coiled expansion-spring

s^3 , acting between the end of the arm P^4 and the pivoting-shoulders of the rod s^2 .

S' is the extension from the finger P, but out of line of the slug-driver and slug and moving in front of same for the purpose of operating the yielding slug-releaser or lever L, as before described.

The feeding mechanism consists of the vertical awl V, formed on the inner end of a horizontal shank or slide V' , carried in a groove v in the foot portion V^2 of a bar V^3 , located in an inclined guideway or passage-way V^4 in the framework-head B, which guideway is wider than the bar in order to allow of a slight lateral movement of the bar therein, as will be more fully explained in the operation of the machine. The upper end of the bar V^3 is attached to the free end of an arm V^5 , fixed by set-screws v' v' on the forward end of a shaft V^6 , running parallel with the main driving-shaft D and being carried at front and rear ends, respectively, by an arm c , projecting from standard C^2 , and an arm or extension c' from the standard C' . The shaft V^6 is encircled for the greater part of its forward length by a sleeve W, as shown in Fig. 14, and on this sleeve are fixedly set, first, an arm W' , carrying at its lower end a pusher bar or rod W^2 for acting on the foot of the bar V^3 , as will be fully explained hereinafter, and such arm W' being connected with said bar V^3 at its lower end by retractile spring W^3 ; secondly, a collar W^4 , to which is attached one end of a spring W^5 , coiled around the sleeve between the collar and the arm c and to which latter its other end is attached, and, thirdly, an arm W^6 , fixedly set in place and carrying a roller w on its free end to bear on the periphery of the part E' of the double cam $E' E^2$, a second arm V^7 being fixedly set upon the shaft V^6 beyond the end of the sleeve W and carrying a roller v^7 on its free end to work in a cam-shaped groove e^2 in the part E^2 of the double cam $E' E^2$.

When the raceway is in its forward position, as shown in Fig. 8, with the slug directly over the throat O, the holder P through lever-arms P' P^2 and cam Q is thrown forward to grip and hold it fast between its end and that of the block p , and the slug is freed from the releaser or finger l by the extension S' having moved such a stop out of the way of the slug, so that it only remains to withdraw the raceway, which is done by means of the groove of the roller G, which acts through the lever N to draw the raceway back a sufficient distance to free the slug from its end, leaving it held between the holder P and the block p when the driver T descends to drive the slug down the throat into the work, the indentation in which latter caused by the feeding-awl facilitating the entry of the slug.

While the slug is being driven the awl V forms the lower right-hand side portion of the throat O, as shown by the dotted lines in Fig. 11, and simultaneously with the upward movement of the driver T the awl moves in a

right-hand direction to the required point over the work where the next slug is to be inserted, and it is then driven down into the work and by a left-hand movement carries it 5 to its position under the driver T, after which it is withdrawn from the work, leaving a hole for the reception of the slug, and takes the position shown by the dotted lines to form the lower portion of the right-hand side of the throat O, as before mentioned. This motion 10 of the awl V is secured by the contours of the cam E', (acting upon lever W⁶, sleeve W, arm W', and pusher-rod W²,) the groove e² in cam E², (acting through lever V⁷, shaft V⁶, arm V⁵, and bar V³,) and the springs W³ W⁵, the spring W³ serving to draw the bar V³ in the required right-hand direction (the rises 2 and 3 of the cam E' being arranged to regulate the several movements) and the spring W⁵ 20 serving to hold the roller on arm W⁶ against the periphery of cam E'. An adjusting-screw w³ in the framework-head B is used to regulate the spacing of the slugs in the work by stopping the right-hand movement of the bar 25 V³ at different points. The spring W³, in combination with the vertical surface or notch Y on the side of the bar V³ and the adjusting-screw w³, also provides that while the bar is in an inclined position the downward movement of the awl V shall be perfectly vertical.

What I claim is as follows:

1. In a shoe-slugging machine, the combination, with the slug-driver, slug-supply, and 35 the movable raceway provided with slug-releaser at its lower end, of the slug-receiving throat or guide-tube proper diminished in height to allow the nose of the raceway carrying the slug to project in and locate the slug 40 directly over the throat and in the axis of the driver and having a bearing-plate at one side thereof and a combined reciprocating detent and holder, the former operating the slug-releaser and the latter acting in conjunction with 45 said bearing-plate to hold the slug during the withdrawal of the raceway, as set forth.

2. In a shoe-slugging machine, the combination, with the slug-driver, the slug-receiving throat or guide-tube with the lower portion of one side cut away to furnish an opening, 50 and means for supplying slugs thereto, of a movable awl and a carrier for same having a horizontal inwardly-projecting foot portion carrying the awl, so that it is located in said opening and adapted to enter the stock at a point out of line with said throat, to move to within the axis of said throat, to be withdrawn from said stock, and be substituted for said cut-away portion in effecting the complete formation of said throat, and means for 60 actuating said carrier, as set forth.

3. In a shoe-slugging machine, the combination, with the slug-driver, slug-supply, the movable raceway provided with the slug-releaser at its lower end, and the diminished slug-receiving throat or guide-tube having an upwardly-projecting bearing-plate at one side

thereof, of the combined reciprocating detent and holder working above said throat, as and for the purposes set forth. 70

4. In a shoe-slugging machine, the combination, with the slug-driver, slug-supply, the movable raceway provided with the slug-releaser at its lower end, and the diminished slug-receiving throat or guide-tube having an upwardly-projecting bearing-plate at one side thereof, of the combined reciprocating detent and holder working above said throat, cam and lever mechanism for operating same, and a flexible or yielding connection intermediate 80 of such operating mechanism and the parts operated, as shown and described.

5. In a shoe-slugging machine, the combination, with the slug-driver, the slug-receiving throat or guide-tube with the lower portion of one side cut away to furnish an opening, and means for supplying slugs thereto, of a work-feeding awl and an adjustable carrier for same having a horizontal inwardly-projecting foot portion carrying the 90 awl, so that it is located in said opening and adapted to both feed the stock and be substituted for said cut-away portion in effecting the complete formation of said throat during the passage of the slug therethrough, and mechanism for imparting an intermittent 95 four-way movement to said carrier, as set forth.

6. In a shoe-slugging machine, the combination, with the main driving-shaft, the slug-driver, the partly-formed slug-receiving throat or guide-tube, and means for supplying slugs thereto, of a work-feeding awl adapted to both feed the stock and to form a part of said throat during the passage of the slug 105 therethrough, a carrier for said awl, an auxiliary shaft running parallel with said main shaft, a rocking arm set on the forward end of said auxiliary shaft and having a pivotal connection with said awl-carrier, a sleeve encircling said auxiliary shaft for a portion of its length and a rocking arm set on the forward end of said sleeve and provided with a finger extension to intermittently bear upon said carrier, a flexible or yielding connection 110 between this latter arm and the carrier, and mechanism for imparting independent rocking motion to said shaft and sleeve, as set forth.

7. In a shoe-slugging machine having a slug-driver, a slug-receiving throat or guide-tube with cut-away portion to form an opening, a work-feeding awl having an arm or neck horizontal or at right angles to its axis proper, a carrier for same adapted to receive the horizontal arm, and mechanism, substantially as described, for operating said carrier to locate the awl in said opening to feed the stock and effect a complete formation of the throat during the passage of the slug therethrough. 120

SOLOMON M. CUTTER.

Witnesses:

FRED. J. SEARS,
WILL P. MCFEAT.