Jan. 28, 1941. W. M. CUNNINGHAM 2,229,917

TYPESLUG DESHANKING MACHINE

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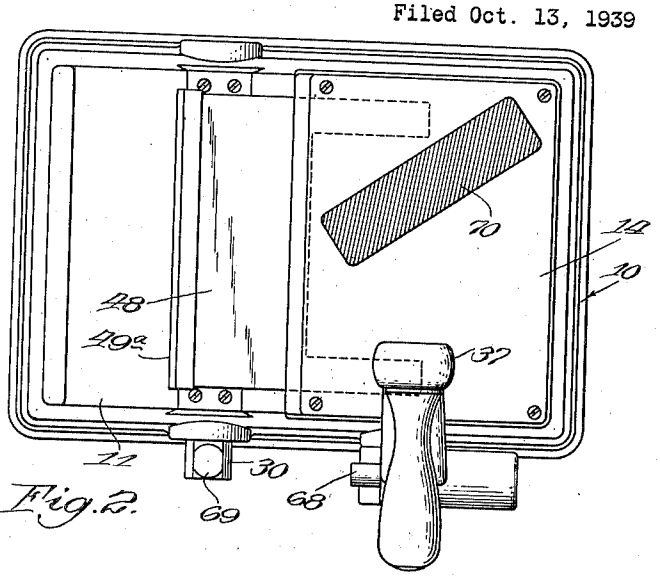


Fig. 2.

Fig. 3.

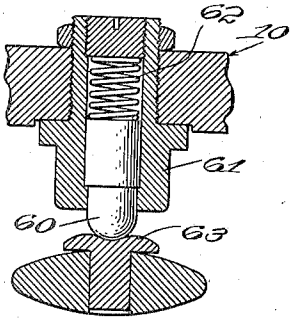


Fig. 4.

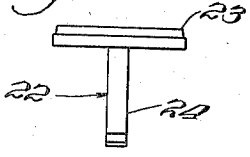


Fig. 5.

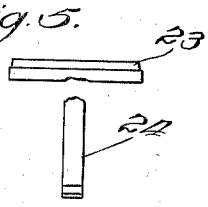
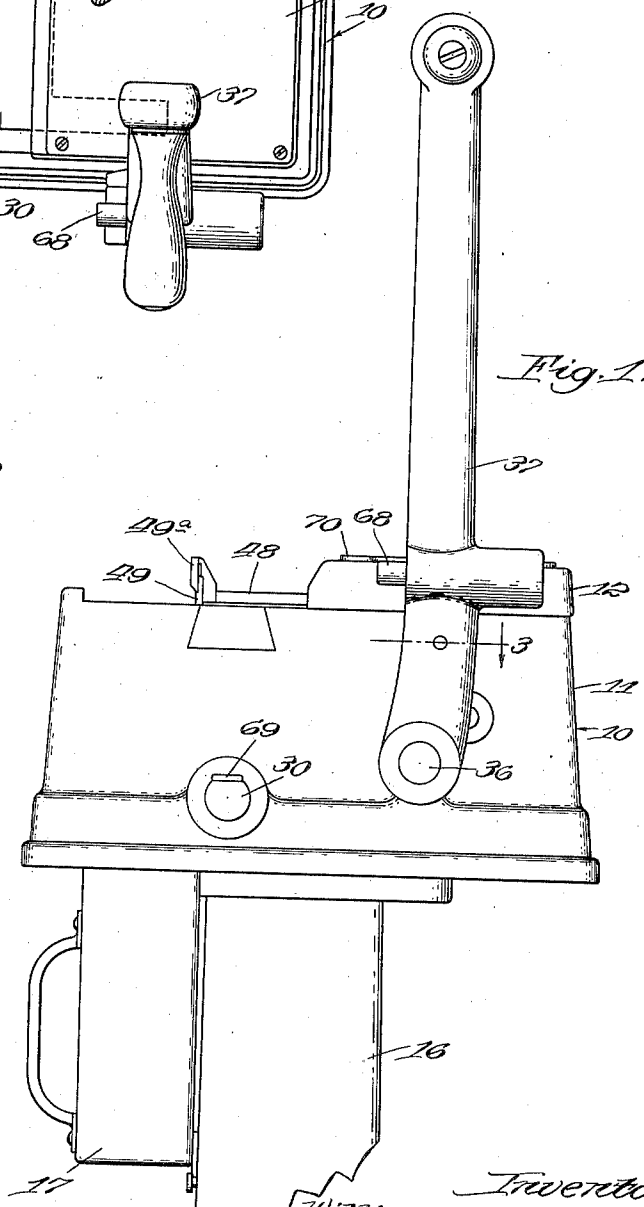


Fig. 1.



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TYPESLUG DESHANKING MACHINE

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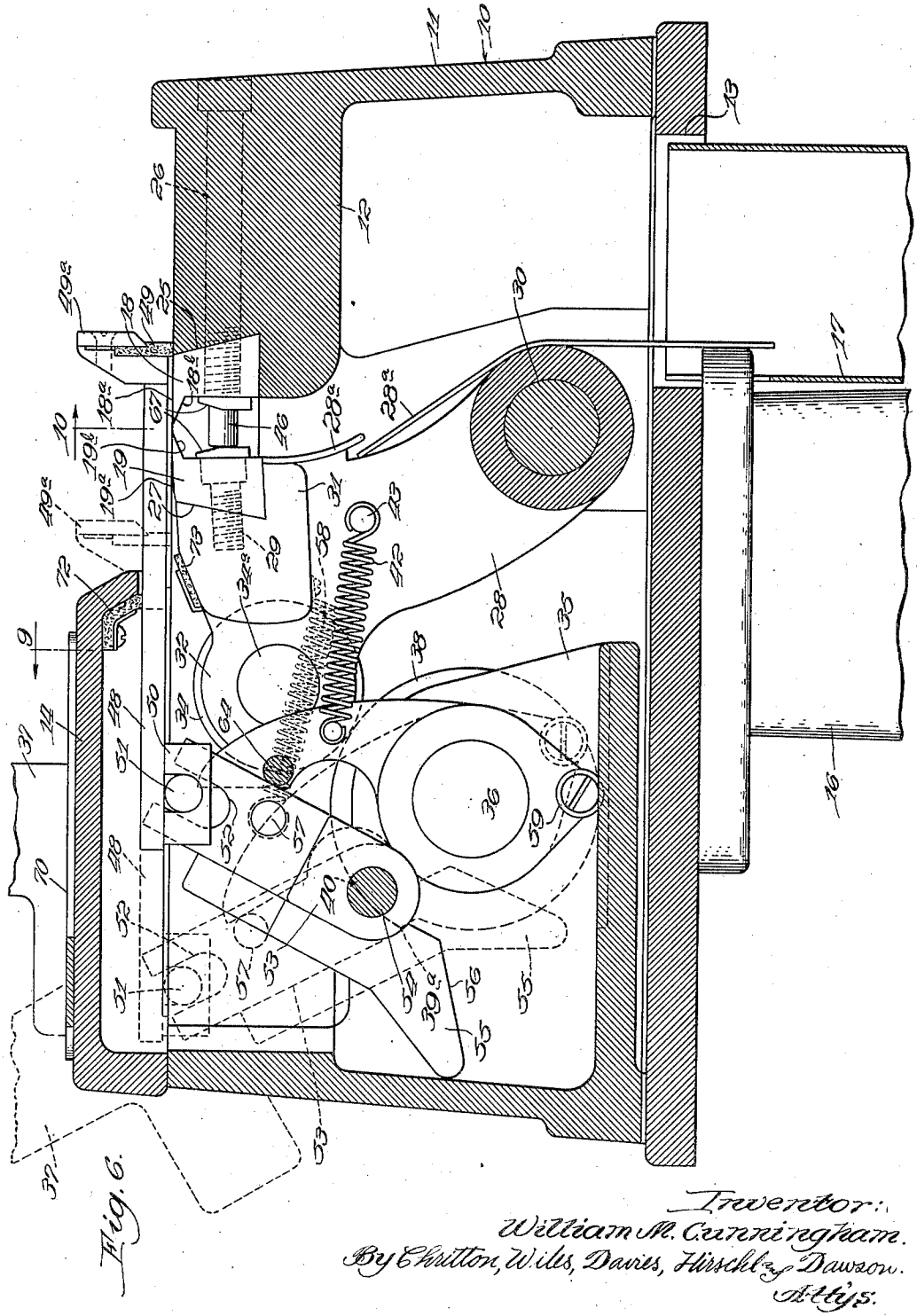


Fig. 6.

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TYPESLUG DESHANKING MACHINE

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Fig. 8.

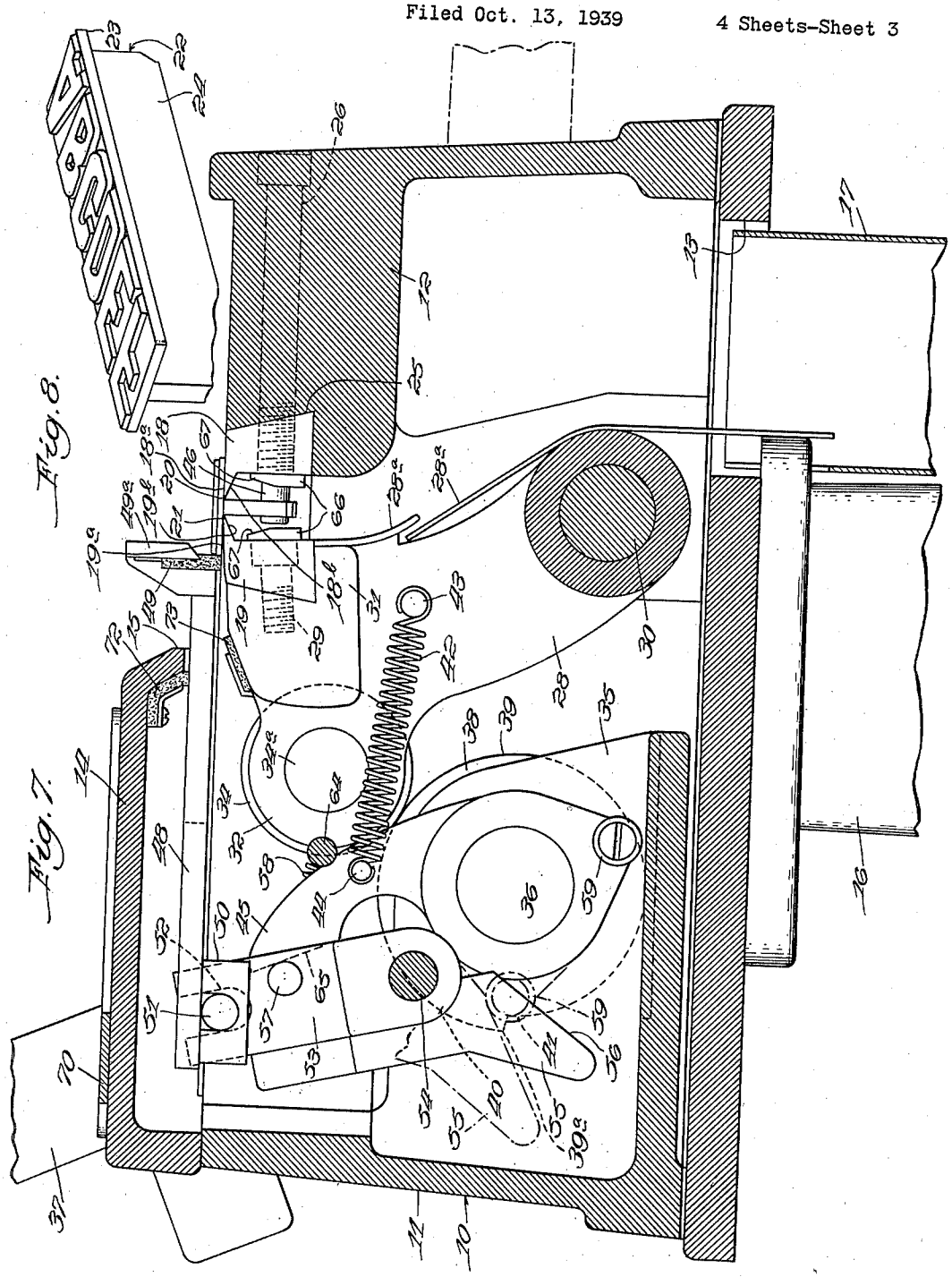


Fig. 7.

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TYPESLUG DESHANKING MACHINE

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Fig. 9.

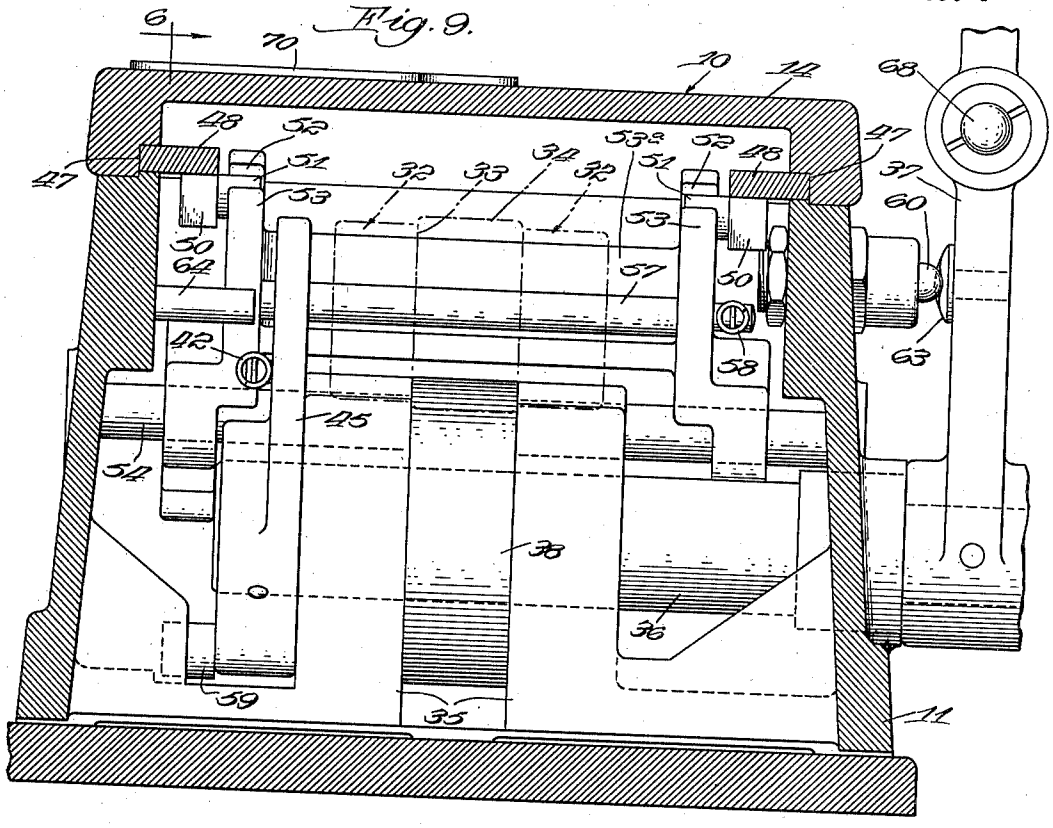
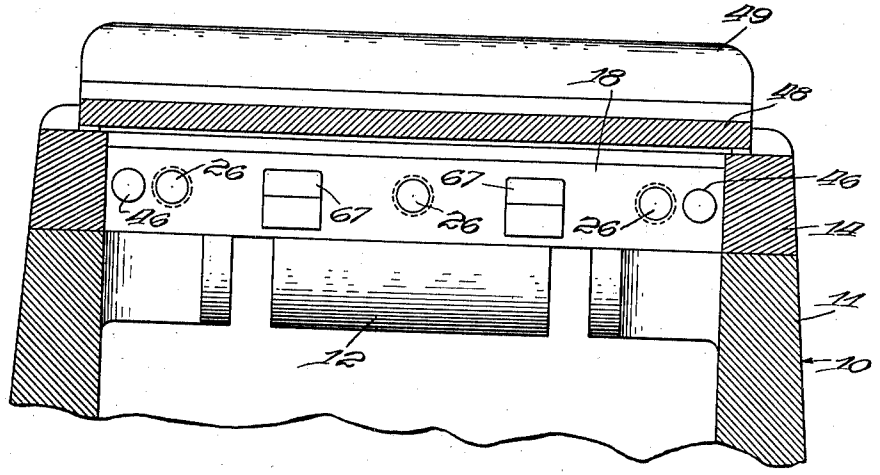


Fig. 10.



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UNITED STATES PATENT OFFICE

2,229,917

TYPE SLUG DESHANKING MACHINE

William M. Cunningham, Chicago, Ill., assignor to Ludlow Typograph Company, Chicago, Ill., a corporation of Illinois

Application October 13, 1939, Serial No. 299,361

14 Claims. (Cl. 164—57)

My invention relates to a machine for separating the shanks from the heads of T-section type slugs.

As a preface to the following description it may be stated that it sometimes becomes desirable in a printing establishment employing such slugs, to utilize the printing character-bearing head-portions, separated from their shanks, in certain printing makeup, and thus it is desirable that a machine for thus operating on slugs be provided.

My objects generally stated are to provide a highly satisfactory operating machine for this purpose; to provide a machine which may be operated by hand and will be comparatively economical of manufacture; and certain other more specific objects as will be manifest from the following description.

Referring to the accompanying drawings:

Figure 1 is a view in side elevation of a machine embodying my invention, the machine being shown in normal position.

Figure 2 is a plan view of the machine.

Figure 3 is an enlarged fragmentary sectional view, the view being taken at the line 3 on Fig. 1 and viewed in the direction of the arrow.

Figure 4 is an end view of a slug the shank of which is to be separated from the head thereof by the machine of the preceding figures of the drawings.

Figure 5 is an end view of the slug showing the shank separated from the head.

Figure 6 is a view in longitudinal sectional elevation through the machine, the section being taken at the line 6 on Fig. 9 and viewed in the direction of the arrow.

Figure 7 is a view like Fig. 6 of the machine, but showing the positions assumed by the parts upon the first-stage operation of the machine, viz., with the lever, to which force for operating the machine is applied, positioned slightly in advance of its rearwardmost position for operating on a slug having a particular thickness of shank.

Figure 8 is a perspective view of the slug of Figs. 4 and 5.

Figure 9 is a section taken at the line 9 on Fig. 6 and viewed in the direction of the arrow, with certain parts on the line of section shown by dot and dash lines for clearness of illustration; and

Figure 10, a section taken at the line 10 on Fig. 6 and viewed in the direction of the arrow.

The machine shown comprises a housing 10 formed of a lower section 11 open at its top except at its forward end which is closed by a transverse enlargement 12 of the housing, and open at the front end of its bottom as shown at 13; and a hollow cover section 14 located at the rear of the housing with its front edge 15 spaced from the enlargement 12.

The housing 10 is shown as supported on a column 16 on which an open-top slug-shank-receiving box 17, projecting through the bottom opening 13 in the housing, is releasably secured.

Located at the top opening in the housing and extending transversely of the machine is a pair of knife bars 18 and 19, the knife edges of which, represented at 20 and 21, respectively, face toward each other; these knives being provided for separating the shanks from the heads of the type slugs, a typical one being shown at 22, the head and shank thereof being represented at 23 and 24, respectively.

The knife bar 18 is stationarily supported in a recess 25 in the rear side of the housing-enlargement 12 and is held therein by screws 26.

The other knife bar 19 is mounted in a recess 27 in the front side of a rock lever 28 and is secured in place by screws 29.

The rock lever 28 is pivoted at its lower end on a shaft 30 supported in the housing 10, the upper end of this lever having enlargements at its opposite sides (one of which is shown at 31) to afford a broad bearing area for the knife bar 19.

The rear upper end of the rock lever 28 has a slotted enlargement 32 in the slot 33 in which a roller 34, journaled at a shaft 34a in the enlargement 32 at opposite sides of the slot 33, is located.

Referring now to the means for actuating the knife bar 19 there is journaled at one end, in a side of the housing 10 and also in upwardly extending spaced apart brackets 35 carried by the housing, a shaft 36 provided exteriorly of the housing with an operating handle 37 rigidly connected therewith and by means of which all of the movable parts of the machine are operated or controlled.

The shaft 36 has fixed thereto, to extend between the brackets 35, a cam disk 38 for cooperating with the rock lever 28, this disk having a spiral cam surface 39 on its periphery, as shown, its high point being indicated at 40 and its low point at 41, the cam disk 38 being located in line with the roller 34 on the rock lever 28.

A coil tension spring 42 connected at one end with a pin 43 on the rock lever 28 and with a pin 44 on an upwardly extending arm 45 rigidly con-

nected with the shaft 36 serves at all times to urge the rock lever 28 and the arm 45 toward each other and maintains the roller 34 in contact with the cam surface 39.

As will be understood from the foregoing, rotation of the shaft 36 clockwise in Figs. 6 and 7 causes the higher portion of the cam surface 39 to move against the roller 34 with the result of moving the rock lever 28 in a direction to move the knife bar 19 toward the stationary knife bar 18, and reverse rotation of the shaft 36 causes the receding portion of the cam surface 39 to move against the roller 34, permitting the spring 42 to move the rock lever 28 in a direction to move the knife bar 19 in a direction away from the stationary knife bar 18.

Stops 46 carried by the knife bar 18 and extending into the path of movement of the knife bar 19 prevent this knife bar from contacting the knife bar 18, while permitting the knife edges to almost contact with each other, in which position the knife edges are in the same horizontal plane.

It may here be stated that in the particular construction shown the knife edge portions of the knives 18 and 19 have flat upper surfaces 18*a* and 19*a*, respectively, whereas, their undersides are similarly beveled as represented at 18*b* and 19*b*, respectively, whereby these undersurfaces converge upwardly as illustrated. Thus as the knife 19 moves toward the knife 18 and against the slug shank, the knives cut into the shank and concurrently by reason of the provision of the inclined surfaces 18*b* and 19*b*, exert a downward thrust on the shank, resulting in the fracturing of the metal of the slug adjacent the severed portions at the juncture of the shank with the head, due to the brittleness of the metal of which the slug is made in accordance with common practice, permitting the shank 24 to drop into the box 17.

As the knife 19 continues its inward movement the knives 18 and 19 cut through the downwardly projecting portions of the roughened surface on the head 23 produced by the fracture referred to. However, as the knife edges do not come into contact with each other and thus do not cut entirely through such projecting portions, the head of the slug becomes interlocked with, or wedged between, the knives, requiring the forcing of the head 23 to dislodged position, and to accomplish this means are provided for exerting a thrust against the head of the slug, immediately following the final inward movement of the knife 19; a description of the means shown for this purpose being as follows:

Mounted at its longitudinal edges in horizontal ways 47 in the under portion of the cover 14 is a slide plate 48 provided at its forward end with a slug-head-engaging portion shown as in the form of a felt bumper pad 49 secured to the plate 48 by a clamp 49*a*, the plate 48 having depending blocks 50 secured to the underside of its rear end, these blocks having upwardly opening recesses for laterally extending pins 51 clamped against the plate 48 by these blocks.

The pins 51 extend into upwardly opening slots 52 in the upper ends of arms 53 rigidly connected together at their upper ends by a cross bar 53*a* and connected at their lower ends with shafts 54 journaled in the housing 10 to the rear of the shaft 36, whereby the plate 48 is reciprocated by rocking this unitary arm and shaft structure, one of the arms 53 having a depending portion 55 presenting an inclined forwardly facing surface 56.

A cross pin 57 extends from one to the other of the arms 53 into the path of movement of the arm 45 in moving rearwardly from the position shown in Fig. 6.

A coil tension spring 58 connects at one end with the pin 57 and at its opposite end with the rock lever 28 and serves at all times to exert force on the arms 53 tending to swing them to the right in Figs. 6 and 7.

The surface 56 of the depending portion 55 on one of the arms 53 extends in line with a roller 59 journaled on the lower end of the arm 45 and is adapted to be engaged by this roller for rocking the arms 53 to the right in Figs. 6 and 7 following the final movement of the knife bar 19 toward the stationary knife bar 18.

To this end the cam 38 from its high point 40 to the end 39*a* of the surface 39, is concentric with the axis about which the cam rotates; the roller 59 being so disposed that it moves into engagement with the surface 56 after the roller 34 engages the high point 40 of the cam surface 39 and thus after the knife 19 has ceased to move toward the knife 18.

In the normal position of the parts of the machine as shown in Figs. 1, 2, 3, 6, 9 and 10, the lever 37 occupies the substantially vertical full line position shown in certain of these figures in which position it is releasably held by a keeper device shown as comprising a plunger 60 slidable in a socket member 61 secured to a wall of the housing 10 and engaging under the action of a coil spring 62, a socketed keeper member 63 secured to the lever 37.

In this position of the parts the springs 42 and 58 are under tension holding the roller 34 against the cam surface 39 and holding one of the arms 53 against a stop pin 64 extending inwardly from a wall of the housing 10, the slide plate 48, in this position of the arms 53, extending into forwardly projected position as shown in Figs. 2, 6 and 10 in which position it extends over and covers the opening in the top of the housing 10.

To operate the machine for separating the shank 24 from the head portion 23 of the slug, the operator swings the lever 37 rearwardly to the left in Figs. 6 and 7 to the dotted line position shown in Fig. 6 which moves the slide plate 48 rearwardly to the dotted line position shown in Fig. 6 thereby uncovering the opening in the top of the housing 10; the slide plate 48 being moved to this position against the tension of the spring 58 by the engagement of the arm 45 at its surface 65, with the pin 57 connecting the arms 53; such movement of the lever 37 also resulting in the slight rocking to the rear of the rock member 28 in following down on the cam surface 39 under the action of the spring 42.

The operator while holding the lever 37 in the rearwardly pressed position stated, inserts the shank 24 of the slug to be operated on into the space between the knife bars 18 and 19 to the position shown in Fig. 7, the head 23 of the slug resting upon the knife bars and the shank 24 being guided to place by guide blocks 66 beveled at their upper portions as indicated at 67 and secured to the opposing faces of the knife bars.

The operator then swings the lever 37 forwardly, namely, to the right in Figs. 6 and 7, with the result of camming the rock lever 28 to the right in these figures, against the tension of the spring 42 and also by the retracting of the arm 45 permitting the arms 53 to swing to the right in these

figures, the arms 53 coming to rest upon contact of the felt bumper 49 on slide 48 with the adjacent edge of the head 23 of the slug as shown in Fig. 7, the spring 58 holding the slide at its bumper 49 against the head of the slug.

It may here be stated that the machine shown is adapted to operate on slugs having different thicknesses of shanks, as well as on slugs having different widths of heads, the size of the shank of the slug shown in Fig. 7 in position to be operated on, being relatively large, as for example a 12 point shank slug; it being understood that in the rearward movement of the lever 37 to the dotted position shown in Fig. 6 the knives are separated the maximum distance (a distance slightly in excess of the thickness of the shank of the largest slug to be operated on), and the bumper pad 49 retracted to the extreme rearward position (a position in which the head of the largest slug will clear the pad when the slug is inserted into the machine).

In the continuing forward movement of the lever 37, the arm 45 disengages from the pin 57, and the continuing rotation of the cam disk 38 forces the movable knife bar 19 against the adjacent side of the shank 24 of the slug and, in cooperation with the stationary knife bar 18, which engages the other side of the shank, cuts into the shank at its connection at the head of the slug, from both sides thereof, fracturing it from the head, the shank thus separated from the head dropping through the housing 10 into the box 17 as above stated, a sectional shield 28a in the housing 10 guiding the shank into the box.

After the final movement of the movable knife bar 19 in this cutting operation the roller 59 on the arm 45 engages the surface 56 of the portion 55 of the arm 53 and forcibly swings the arms 53 to the right in Fig. 7 to a position in which the depending portion 55 extends substantially in the dot and dash line position shown in this figure, thereby forcing the slide plate 48, already in contact at its bumper pad 49 with the side of the head 23 of the slug, to the right in this figure to dislodge the head 23 from its wedging engagement with the knives 18 and 19.

A stop device on the lever 37 in the form of a spring-backed plunger 68, engages a stop 69 so positioned on the shaft 30 (Figs. 1 and 2) as to cushion the lever 37 in the movement of the knife bar 19 into engagement with the stops 46.

To restore the operated parts to normal position the operator swings the lever 37 backwardly to engage the plunger 60 with the keeper 63 in which position the slide plate 48 covers the opening in the top of the housing 10, forming a guard for the knives.

As will be noted, the knife-bar 19 swings upwardly on an arc in engaging the shank 24 which ensures the cutting of the shank 24 sufficiently close to the underside of the head 23 as to minimize the leaving of any undue projections of metal on this side of the head. Such burrs or fins of metal as may remain may be removed in any desirable way, the machine being shown as provided with a file 70 for this purpose.

The machine shown also includes means for cleaning the knives on the return stroke of the operating lever 37, these means comprising the felt pad 49 which thus performs not only the function of a bumper pad, as stated, but also the knife cleaning function; and also means for preventing access to the operating mechanisms of chips, or the like, produced in the shank-removing operation comprising felt wiper strips 72 and 73 on the underside of the cover 14 and on the rock lever 28, respectively.

While I have illustrated and described a particular construction embodying my invention I do not wish to be understood as intending to limit the invention thereto as the same may be variously modified and altered and the invention embodied in other forms of construction without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent, is:

1. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, stripper means for the head of the slug comprising a member to bear laterally against the head of the slug, means for actuating said knife means, and means operative to cause said stripper means to perform the stripping operation.

2. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, stripper means for the head of the slug comprising a member to bear laterally against said head, means for actuating said knife means, and means operative upon the final cutting movement of said knife means to cause said stripper means to perform the stripping operation.

3. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, stripper means for the head of the slug comprising a member to bear laterally against said head, means yieldingly forcing said member against said head, means for actuating said knife means, and means to cause said stripper means to perform the stripping operation.

4. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, stripper means for the head of the slug comprising a member to bear laterally against said head, means yieldingly forcing said member against said head, means for actuating said knife means, and means operative upon the final cutting movement of said knife means to cause said stripper means to perform the stripping operation.

5. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, stripper means for the head of the slug comprising a slide having a member to bear laterally against said head, means yieldingly forcing said member against said head, means for actuating said knife means, a pivoted member engaging said slide for actuating it, and means operative to engage said pivoted member for causing said stripper means to perform the stripping operation.

6. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, stripper means for the head of the slug comprising a member to bear laterally against said head, means for actuating said knife means, means operative to cause said stripper means to perform the stripping operation, and an actuating member for actuating the knife means and the

means for actuating the stripper means common to both of these means.

7. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, stripper means for the head of the slug comprising a member to bear laterally against said head, means for actuating said knife means, means operative upon the final cutting movement of said knife means to cause said stripper means to perform the stripping operation, and an actuating member for actuating the knife means and the means for actuating the stripper means common to both of these means.

8. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, a guard device for said knife means, and means for actuating said knife means and said guard device and operative to cause said guard device to be out of guarding position when said knife means are in position to receive the shank of a slug to be operated on.

9. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, a guard device for said knife means, means yieldingly urging said guard device toward guard position, and means for actuating said knife means and said guard device and operative to cause said guard device to be out of guarding position when said knife means are in position to receive the shank of a slug to be operated on.

10. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, a guard device for said knife means, stripper means for the head of the slug movable with said guard means and adapted to bear laterally against said head, means for actuating said knife means, and means operative to cause said stripper means to perform the stripping operation and to cause said guard device and said stripper means to be removed from a position obstructing insertion of a slug into position to be operated on.

11. In a machine of the character set forth, the combination of knife means operable to cut into the slug to be operated on adjacent the connection between its head and shank, stripper means for the head of the slug comprising a member to bear laterally against said head, a movable element for actuating said knife means, means engaging said stripper means and said movable member for yieldingly forcing said slug-head-engaging member against said head, and an actuating member for actuating said element and said stripper means operative to cause said stripper means to perform the stripping operation.

12. In a type slug deshanking machine of the character set forth, the combination of a pair of knives; means mounting said knives for arcuate cutting movement relative to each other to meet at a point of common tangency to the arc of movement, and means to cause such movement, the machine being free of obstruction to the seating of the head of the slug under pressure against the knives during their operation in deshanking the slug.

13. The structure of claim 12 wherein one of said knives is fixed with its cutting edge closely adjacent a plane passing through the axis of movement of the remaining knife.

14. In a machine of the character set forth, the combination of a fixed knife having an elongated cutting edge; said knife shaped to permit said edge to contact the shank of a slug closely adjacent the head thereof, a movable blade of like shape to coact with said fixed knife, an arm carrying said movable knife and pivoted on an axis lying closely adjacent the plane of the surface of a shank contacted by said fixed cutting edge, a shaft with its axis parallel with the axis of movement of said arm, cam means carried by said shaft engaging a surface on said arm spaced from said axis not a substantially less distance than the cutting edge of said movable knife, and a lever fixed on said shaft for actuation of said cam means.

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