March 1, 1927. 1,619,494

R. L. WILCOX

UPSETTING MECHANISM

Filed Feb. 6, 1922 2 Sheets-Sheet 1

Fig. 1

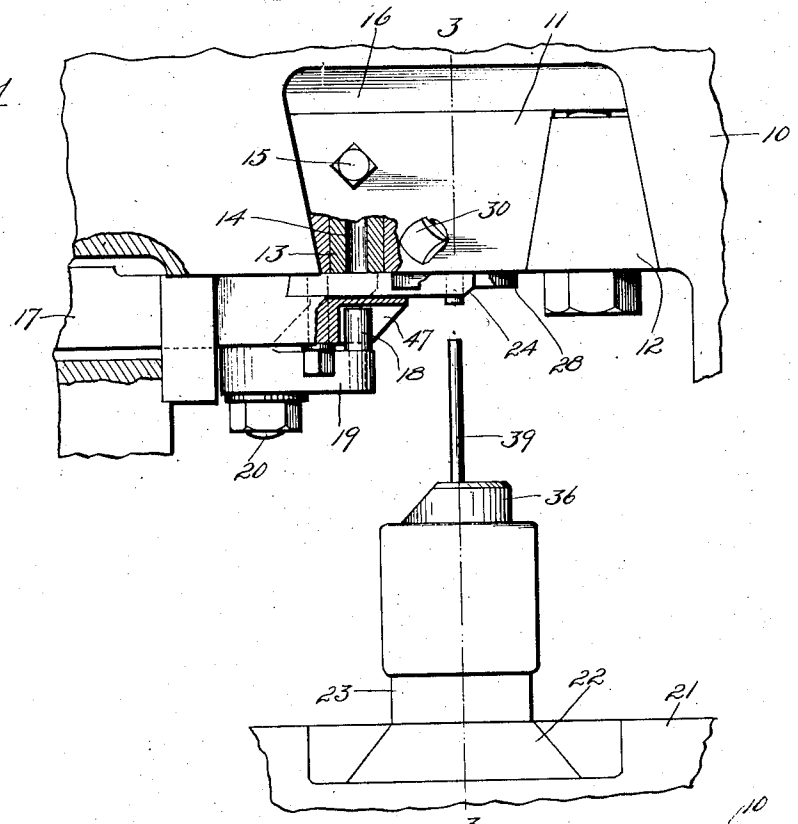
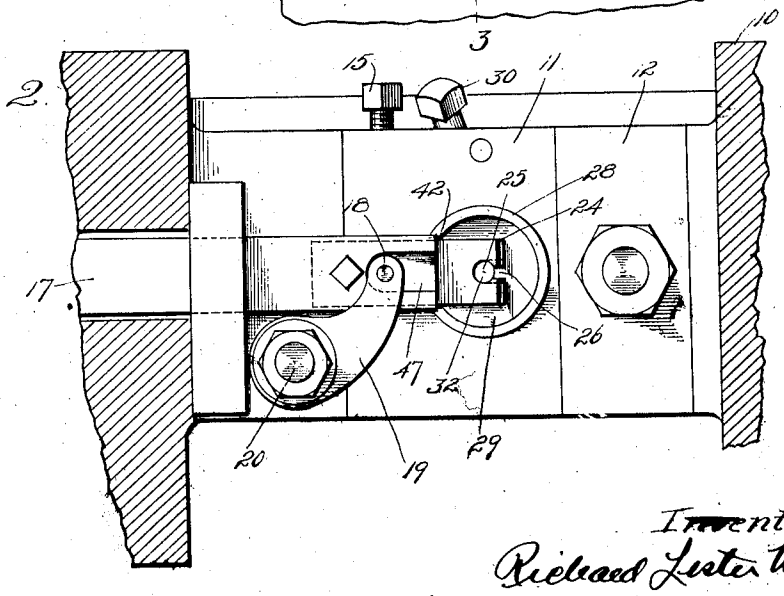


Fig. 2



Inventor
Richard Lester Wilcox
By George H. Graves
Atty

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Fig. 3.

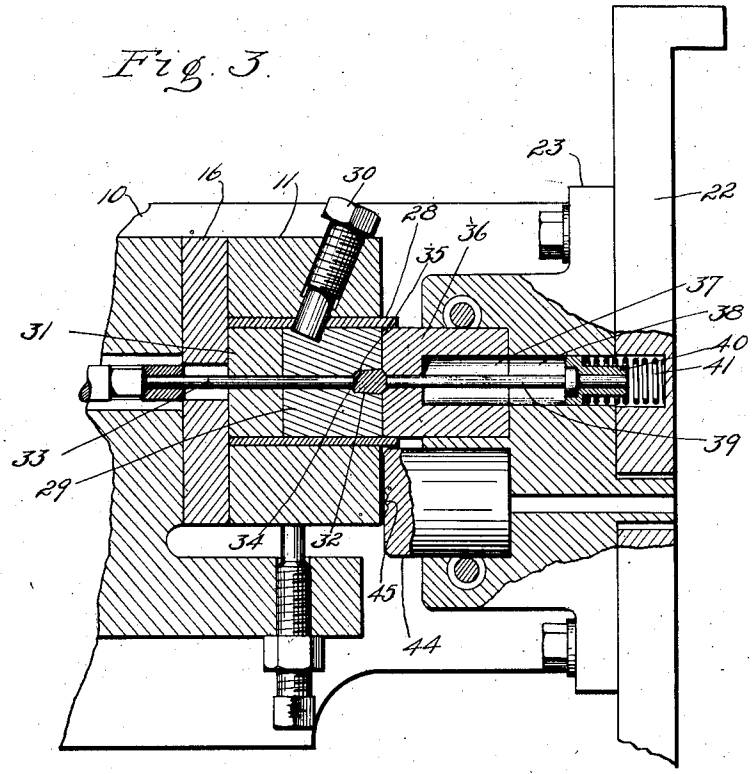


Fig. 7.

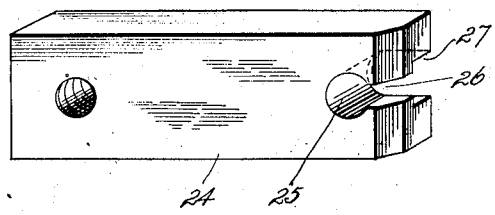


Fig. 4.

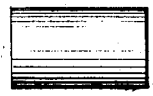


Fig. 5.

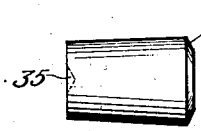
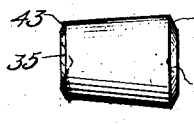


Fig. 6.



Inventor
Richard Lester Wilcox
By Young & Hall
Atty

Patented Mar. 1, 1927. 1,619,494

UNITED STATES PATENT OFFICE.

RICHARD LESTER WILCOX, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE WATERBURY FARREL FOUNDRY AND MACHINE COMPANY, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

UPSETTING MECHANISM.

Application filed February 6, 1922. Serial No. 534,538.

My invention relates to new and useful improvements in header mechanism, referring more particularly to mechanism for cutting off and transferring a blank from the cut off or feed line to the upsetting line of a heading machine and insuring operation thereon at the latter point, wherein in the formation of the blank certain features thereof may be in exact predetermined position.

It is the object of this invention, among other things, to provide a device of this character wherein the mechanism is comparatively simple, the alignment of the tools absolutely predetermined relatively to each other, the cut off mechanism positive in its operation and designed also to transfer the blank to the upsetting line, simple and effective means for moving the blank out of the transfer mechanism into one of the tools and permit a withdrawal of the transfer mechanism; and in these and other ways produce such improvements in header mechanisms as will result in the production of articles that are uniform in size and shape with portions thereof absolutely central with the blank or parts whose position is equally determined with exactness.

To these and other ends my invention consists in the header mechanism having certain details of construction and combinations of parts, as will be hereinafter described and more particularly pointed out in the claims.

Referring to the drawings, in which like numerals of reference designate like parts in the several figures;

Figure 1 is a fragmentary plan view of my improved mechanism shown in connection with a portion of a header or upsetting machine;

Figure 2 is a front view of a portion thereof;

Figure 3 is a transverse sectional view, taken generally upon line 3—3 of Figure 1;

Figures 4, 5 and 6 are views respectively of the blank during successive operations in my improved machine; and

Figure 7 is a perspective view of the cutter blade.

In the drawings, 10 designates the frame of a header or upsetting machine and in one end of which is secured a die block 11 against a backing plate 16 by means of the wedge plate 12 in a well known manner. In the die block is mounted a bushing 13 having an opening 14 therethrough and held in its operative position by a screw 15 or other suitable means.

Movable transversely to the die block 11 is a cut-off bar 17 having a recess 47 in its inner end and adjacent thereto is a stop pin 18 fixed in an arm 19 connected with a rod 20. Movable in the bed 10 is a gate 21, within which the slide 22 is vertically movable, having a punch block 23 connected therewith.

All of the above mentioned parts are of a well known type and therefore require no further detail description herein.

Fixed on the inner end of the cut-off bar 17 is a knife 24 having an opening 25 therethrough adjacent to its forward end of substantially the same size as the wire from which the blank is cut, such blank being shown in Figure 4.

Connecting the opening 25 with the end of the knife is a slot 26, which is of less width than the diameter thereof but near the inner edge of the knife, as at 27, is substantially the same width as the diameter of said opening.

Mounted in the die block 11 is a bushing 28, within which is the die 29, held against movement by a screw 30 or other suitable means, between which and the plate 16 is the anvil 31. The front face of the die 29 is substantially flush with the front face of the die block 11, while the outer end of the bushing 28 projects beyond said face, as shown in Figure 3.

The recess 32 in the front face of the die is substantially the same shape as the body and one end of the finished blank, which for the purpose of illustration is shown herein as being the frustum of a cone. If this form of article is to be produced it is desirable that the diameter of the wire and of the blank (Figure 4) be substantially the same as the diameter of the finished blank substantially midway between the ends thereof.

A knockout pin 33, operated in the usual manner, projects through an opening in the backing plate 16, anvil 31 and die 29, in this case being pointed at its inner end 34 so as to form a depression 35 in one end of the blank.

The punches are mounted in the punch block 23 on the slide 22 in a well known manner, the first or upper punch 36 having a recess 37 in the rear face thereof which is opposite a recess 38 in the punch block and slide 22, and through which projects a stripper pin 39 that is supported at its outer end in the punch 36 and at its rear end by a bushing 40 and moved forwardly by a spring 41.

One side of that portion of the bushing 28 that projects beyond the face of the die block 11 is cut away to form a slot 42 substantially the same width as the knife 24.

In operation, a length of wire rod is fed through the opening 14 in the bushing 13, through the opening 25 in the knife 24, until the end thereof abuts against the stop pin 18. At this time the feed mechanism stops its feed movement and the cut-off bar 17 moves toward the center of the die 29, carrying with it the knife 24. During this time that portion of the wire rod projecting beyond the face of the bushing 13 is cut off and is retained in the opening 25 until brought into register with the opening in the die 29, the knife during the latter portion of this movement passing through the slot 42. The blank, now in the form shown in Figure 4, is thus presented in register with the opening or recess 32 of the die 29. Thereupon the gate 21 moves toward the die and the stripper pin 39 engages the outer end of the blank, advancing the same into said die recess or opening 32. The stripper pin 39 is within the punch 36, and the cut-off bar 17 is withdrawn as soon as the blank has been moved into the die far enough to be supported, such portion as projects beyond the face thereof passing through the recess 27 in the end of the knife during the withdrawal thereof and the stripper pin 39 passing through the slot 26. The knife is withdrawn so that the opening 25 therein again registers with the opening 14 ready to receive the end of the wire during the next feed movement. The punch 36 continues its movement and the forward end thereof enters the bushing 28, forcing the blank into the die, which is then shaped as in Figure 5. The punch 36 is now withdrawn, moved vertically in a well known manner and the lower or second punch 44 moved forwardly and entering the bushing 28 engages the outer end of the blank and completes the same. By reason of the centering point 45 in the recess in the face of the punch 44 a depression 46 is formed in the outer end of the blank. The blank being now completed, after the second punch has been withdrawn, is ejected by the knockout pin, and the operations are repeated as before.

By the mechanism above described a blank is formed with depressions 35 and 46 in the opposite ends thereof, which are concentric with the axis of the blank owing to the fact that the die and punches while operating upon the blank are absolutely concentric with each other, the bushing 28 assuring these relative positions.

The bevels 43 upon the opposite ends of the blank will also be concentric with the axis of the blank.

With the cutter as herein shown and described, wherein the opening 25 substantially surrounds the blank, the blank is cut off the rod with the ends cut square, due to being held rigidly in the opening 25 while it is being severed from the rod, and a convenient means is provided for supporting the blank while being transferred, thus eliminating the use of more or less complicated mechanisms heretofore found necessary in order to maintain the blank in proper relation with the knife. Obviously a bushing 28 might surround the punches 36 and 44 instead of the die 29, or other means might readily suggest themselves whereby the relation of the die and punches, during the forming operation, must be absolutely concentric with each other.

As there are other minor changes and alterations that may be made within my invention I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but claim all that falls fairly within the spirit and scope of the appended claims.

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

1. In mechanism of the character described; a die; a punch; transfer means for presenting a blank in front of the die; an element movable in the punch; and spring means for actuating the element in one direction, the element during the travel of the punch toward the die, engaging the blank and moving the same from the transfer means into the die where it is supported before the punch engages the blank.

2. In mechanism of the character described; a cut off knife having an opening therein adjacent to one end, of substantially the same diameter as the wire from which the blank is cut, and a slot, of less width than said opening, connecting the same with said end, the walls of said opening and slot being rigid and unyielding and maintaining their shape during the separation of the blank from the knife.

3. In mechanism of the character described; a die; a punch; means for cutting off a blank from a rod and transferring the same into line with said die, comprising a knife having an opening therethrough of substantially the same diameter as the wire from which the blank is cut, wherein the blank is supported while being transferred; and means for stripping the blank from the knife and projecting the same into the open-

ing in the die prior to the engagement of the punch therewith; said means passing through the opening in said knife and through a slot leading therefrom while the knife is being withdrawn.

4. In mechanism of the character described; a cut-off knife having an opening therein of substantially the same diameter as that of the wire from which the blank is cut, and a slot connecting said opening with the end of said knife, said slot for a portion of its length being of substantially the same width as the diameter of said opening and of less width for another portion thereof.

5. In mechanism of the character described; a cut-off knife having an opening therein of substantially the same diameter as that of the wire from which the blank is cut, and a slot connecting said opening with the end of said knife, said slot for a portion of its length being of substantially the same width as the diameter of said opening and of less width for another portion thereof, the wider portion of the slot being adjacent to the inner face of the knife.

6. In mechanism of the character described; a die; a punch; bushing means for positively causing the same to move in alignment with each other, said bushing having a slot in one side thereof; and means for transferring a blank to said die that passes through the slot in said bushing.

7. In mechanism of the character described; a die; a punch; bushing means for positively causing the same to move in alignment with each other, said bushing having a slot in one side thereof; means for transferring a blank to said die that passes through the slot in said bushing; and means, while said blank is in register with said die, for stripping the same from said transfer mechanism and projecting the same into the opening in said die, comprising a member that passes through an opening in said transfer mechanism and held in engagement with the blank while said transfer mechanism is being withdrawn and the punch brought into contact therewith.

8. In mechanism of the character described; a die; and a plurality of punches, one of the punches having a device connected therewith which acts independently of the punch by engaging the blank and projecting it into the die and holding it therein until the punch engages the blank and another of the punches acting upon the end of the blank to shape such end.

9. In mechanism of the character described; a die; a punch; means for cutting off a blank from a rod and transferring the same into line with the die, comprising a knife having an opening therein of substantially the same diameter as the wire from which the blank is cut, the knife embracing the blank to such a degree as to hold the same against lateral movement during the travel of the knife toward the die; and means for stripping the blank from the knife and projecting the same into the opening in the die prior to the engagement of the punch therewith.

10. In mechanism of the character described; a die; a punch; a cutoff knife that severs a rod into lengths and transfers the same into line with the punch; means for ejecting the blank from the cutoff knife and projecting the same into the die, the cutoff knife being so shaped that during the first portion of the movement of the blank into the die, the cutoff knife cannot be moved laterally to the blank, but may be so moved during the latter portion of such movement.

In testimony whereof, I have hereunto affixed my signature.

RICHARD LESTER WILCOX.