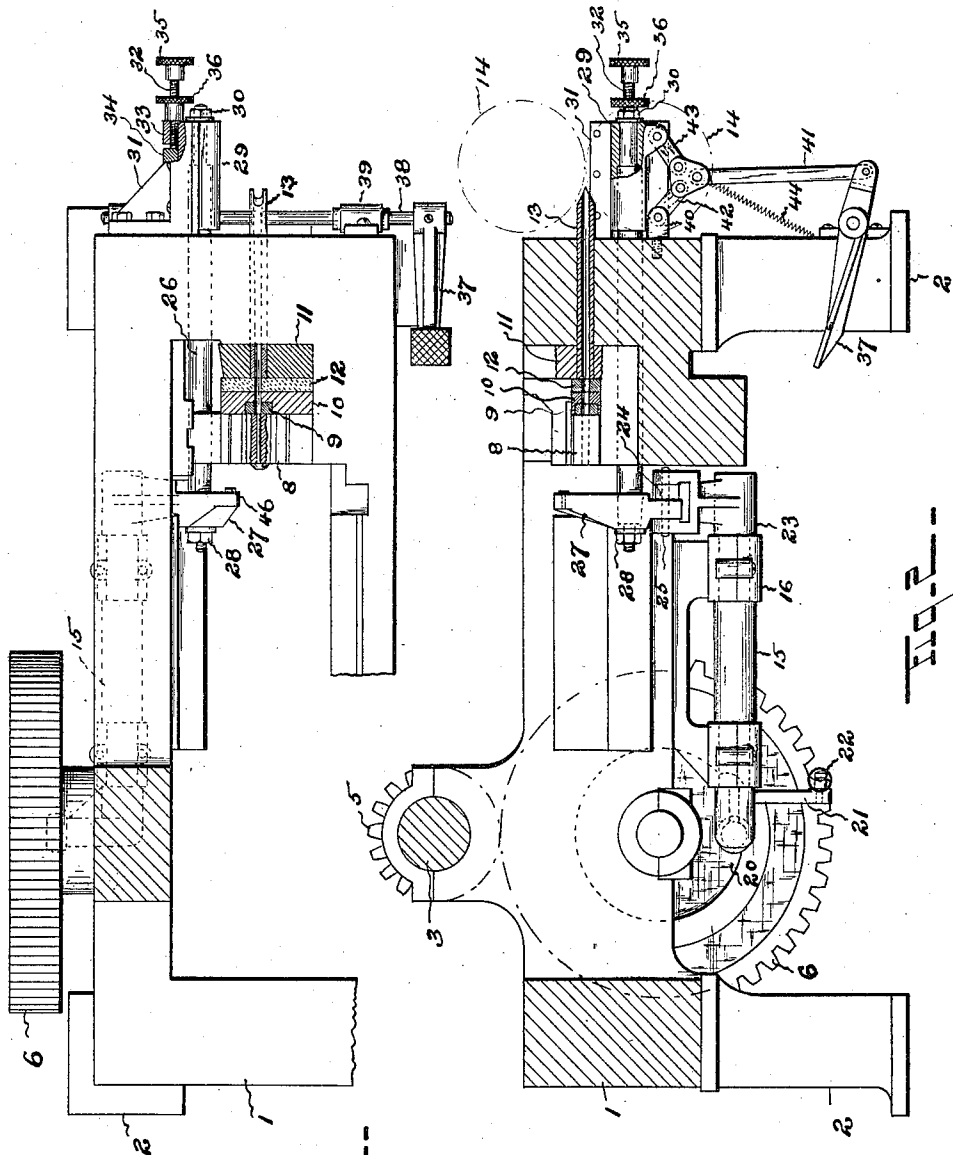


R. L. WILCOX.
STOP MECHANISM.
APPLICATION FILED JUNE 14, 1910.

1,023,539.

Patented Apr. 16, 1912.

2 SHEETS—SHEET 1.



WITNESSES:

Florence H. Wink.
Gertrude B. Bunker

INVENTOR

Richard Lester Wilcox

BY

George E. Hoef
ATTORNEY

R. L. WILCOX.

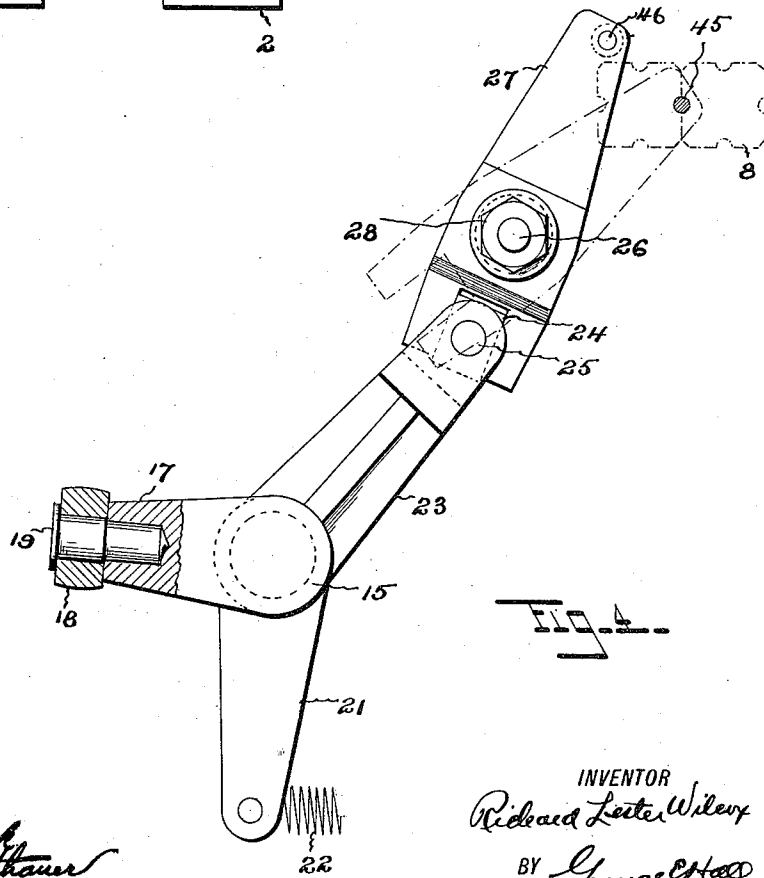
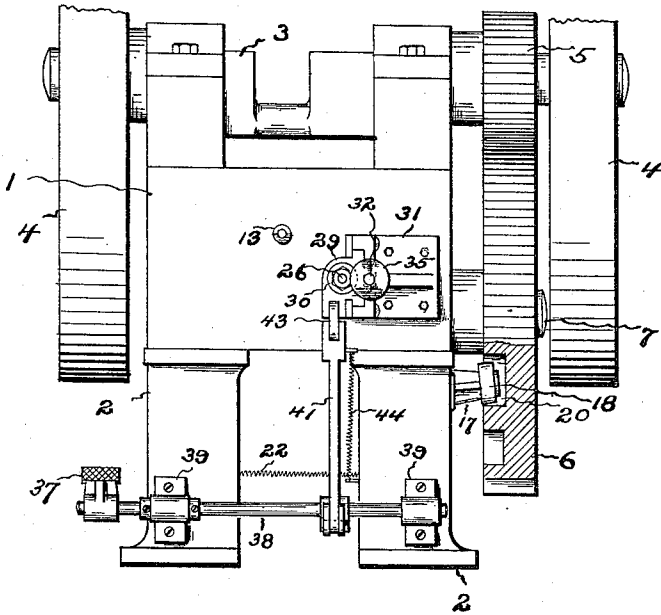
STOP MECHANISM.

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2 SHEETS-SHEET 2.



WITNESSES:

Florence H. Monk
Estimote B. Buthauer

INVENTOR

Richard Lester Wilcox

BY

George C. Hall

ATTORNEY

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.

STOP MECHANISM.

1,023,539.

Specification of Letters Patent.

Patented Apr. 16, 1912.

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To all whom it may concern:

Be it known that I, RICHARD LESTER WILCOX, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Stop Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a new and improved stop mechanism, more particularly as applied to a rivet making or similar machine, and has for its object, among other things, to provide means for limiting the position of the wire in relation to the die, comprising mechanism that may be economically constructed, readily assembled and both adjusted and controlled during the operation of the machine.

To these, and other ends, my invention consists in the stop 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 plan view of a portion of a rivet making machine, of a common type, having my improved mechanism connected therewith; Fig. 2 is a sectional elevation thereof; Fig. 3 is an end elevation; and Fig. 4 is an enlarged end elevation of the rock shaft and stop arm.

My invention is illustrated as applied to a type of rivet making machine now in common use, but it may be applied to any other type of such machine, as well as to machines constructed for other purposes.

The machine shown in the drawings consists of the body 1 supported upon suitable legs 2, having a crank shaft 3 rotatable therein through the driving wheels 4, and upon which is the pinion 5, which meshes into and drives a gear 6 rotatably mounted upon a shaft 7 journaled in the bed of the machine, a forming die 8, shear die 9 held within the shear plate 10, die holder 11 and filler block 12 between said die holder and shear plate, and the guide tube 13, through which the wire is fed from the rolls 14 to

the dies. All of the above mechanism is well known and common in the art.

My invention particularly relates to the mechanism for limiting the inward movement of the wire so that it may be projected beyond the face of the forming die a predetermined distance or stopped flush therewith, as desired. Said mechanism comprises in part a rock shaft 15, which is rotatably mounted within a bracket 16 fixed to the underside of the bed with a roll arm 17 at one end and a yoke arm 23 at the other end, a roll 18 rotatable upon a stud 19 fixed in said roll arm and projecting into a cam groove 20 in the face of the gear 6; a spring arm 21 having a spring 22 connected therewith and to a fixed part for normally moving said rock arm in one direction, and a rectangular block 24 pivotally connected with the yoke arm 23 by the pin 25.

Rotatably and slidably mounted within the bed 1 is a shaft 26 that is connected with the slide 29 by the nut 30, and has a stop arm 27 secured to the inner end thereof by means of the nut 28. Said slide is movably mounted in a fixed bracket 31, and its movement toward the body is limited by a stop screw 32 having a knurled head 35 thereon, that is threaded through a lug 33 on said slide and abuts against a lug 34 upon said bracket. A knurled jam nut 36 threaded on said rod prevents accidental movement of said stop screw 32 within said lug 33. Movement is imparted to said slide within said bracket through the foot treadle 37 secured to the shaft 38 rotatable within the fixed brackets 39, and the toggle connection, comprising the fixed stud 40; links 41, 42 and 43. A spring 44, connecting the link 41 with a fixed part, normally holds the slide and the links in the relative position occupied by them in Figs. 1 and 2 of the drawings.

While the wire, designated 45, is being fed through the forming die, the arm 27 is moved by the rock arm 15 through the action of the spring 22, so that the hardened plug 46 is in line therewith, the then position of said arm being shown by the broken lines in Fig. 4, after which the stop arm 27 is moved out of line with said wire to the position shown by full lines in said Fig. 4.

It will be observed that the arm 27 has a swinging motion and operates toward the wire line by a spring and drawn away therefrom positively by a cam. The timing of this arm is such that it falls toward the wire line as the finished blank is being ejected, therefore resting on the wire with a spring tension, and as soon as the feed has forced the finished blank out of the dies, this feed stop snaps in front of the incoming wire and also forces the finished blank to one side. During the operation of the machine the length of the wire projecting beyond the face of the die can be varied accurately by shifting the endwise position of the shaft 26, which is accomplished through the rotation of the stud 32, the arm 27 during this time sliding upon the block 24.

In open die headers the completed rivet is ejected by the feed of the wire for the next succeeding rivet. To discontinue the operation of the header, and bring the parts to a full stop, it is customary to first throw out the feed pawls manually so as to stop the wire feed, but in practice, the operator is rarely ever able to stop said feed quick enough to prevent a length of wire from projecting out of the dies from the preceding feed, sufficient to make a rivet, which, however, is not ejected from the dies. In such a case, as the momentum of the moving parts is being gradually lessened, the force of the blow by the punch upon the wire is sufficient to bring the parts to a full stop, with the punch in contact with the wire, that now has a partially completed head thereon, and all of the parts jammed upon a dead center, there not being power enough to carry them over. To again place the machine in operation requires much labor and effort, and the first rivet thereafter ejected from the dies is always damaged. By limiting the feed of the wire so that it will not project beyond the face of the dies the difficulties above described will not be met with. In my device I have provided means for accomplishing this purpose, so that only wire enough is fed to eject the rivet and not enough to form a head, which means consists in moving the stop arm 27 so that it is in line with the face of the die. This operation is accomplished by depressing the foot treadle 37, which moves the link 41 upwardly and through the links 42 and 43 connected therewith the slide 29 is moved away from the body member and the arm 27 drawn toward the face of the die. Thus when the feed pawls are thrown out there remains in the dies a piece of wire without a head, for the last feeding of the wire was stopped at the face of the dies, not allowing any metal to project for a head. The stop finger swings at all times while the machine is in motion, whether in its normal position or drawn toward the face of the die, and as

before stated, is timed so as to rest on the blank as it is being ejected from the dies, hence has only a very limited distance to move into the wire line to stop the wire from projecting through the die.

In stopping my improved header, the punch or punches do not contact with the wire, and hence the moving parts are not jammed on a dead center, and the machine can be started again at any time without labor or unusual effort. This mechanism is also of great convenience to the operator in inspecting his work and adjusting the length of feed, as well as setting the tools, because a single rivet can be made and then the stop moved, through the treadle, so as to discontinue the wire feed, without stopping the machine, as has been heretofore necessary.

Throwing out the feed pawls, in this device, requires no special skill as to the relative time of the operation, for if the operator is slow and fails to lift the pawls before depressing the treadle, or even forgets to do it, no harm is done, as the feed rolls would only slip upon the wire without moving it endwise, the wire being held against such movement by the stop arm. If the pawls are not thrown out, then successive blanks are cut off and ejected from the dies, so long as the machine is in operation, but the blanks are all short, being just the length of the dies, and without a head.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. In mechanism of the character described, the combination with a die; of a stop member; means for moving the same in a circular path substantially parallel with the face of said die; means, operative during the movement of said stop member, for limiting the relative position of said stop member toward and away from said die; and means, also operative during the movement of said stop member, for shifting the position of said stop member toward and away from said die without affecting said limiting means.

2. In mechanism of the character described, the combination with a die; of a stop member; means for moving the same, through a circular path, into and out of alinement with the opening in said die; means for limiting the position of said stop member in relation to said die; and means for shifting said stop member toward and away from the face of said die during its movement into and out of alinement with the opening in said die and without affecting said limiting means.

3. In mechanism of the character described, the combination with a die; of a slide movable in a path substantially parallel with the opening in said die; adjustable means for limiting the movement of said

slide in one direction; a stop member; an operative connection between said slide and stop member, whereby the adjustment of said slide is transmitted to said stop member; and means for moving the said stop member, through a circular path, into and out of alinement with said die.

4. In mechanism of the character described, the combination with a die; of a stop member; means for imparting a movement to said stop member in a circular path substantially parallel with the face of said die; means for imparting a movement to said stop member in a path at substantially a right angle to the aforesaid circular path; and adjustable means for limiting the position of said stop member in one direction during said right angle movement.

5. In mechanism of the character described, the combination with a die; of a shaft; a stop member fixed thereon; means for imparting a rocking movement to said shaft; means for moving the same in a direction parallel with its axis during its rocking movement; and means for varying the terminal position of said shaft at one end of the movement parallel with its axis.

6. In mechanism of the character described, the combination with a die; of a stop member for limiting the feed of wire through said die; a slide; adjustable means for limiting the movement of said slide in one direction; a connection, having a two direction movement, between said stop member and slide, one of said movements being derived from said slide; and means for moving said stop member into and out of alinement with said die and through a circular path.

7. In mechanism of the character described, the combination with a die; of a stop member; a slide; adjustable means for limiting the movement of said slide in one direction; an operative and rigid connection between said stop member and slide, whereby the movement of said slide will be imparted to said stop member; and means for moving said stop member, through a circular path, into and out of alinement with the opening in said die, irrespective of the position of said slide.

8. In mechanism of the character described, the combination with a die; of a stop member; a movable member; adjustable means for limiting the movement of said movable member in one direction; a rigid connection between said stop member and movable member; treadle actuated means for moving said movable member in one direction, whereby said stop member is moved in a path parallel with the opening in said die; and means for moving said stop member into and out of alinement with said die.

9. In mechanism of the character de-

scribed, the combination with a die; of a stop member; a movable member; adjustable means for limiting the movement of said movable member in one direction; a connection between said stop member and movable member; a toggle between said movable member and a fixed part; manual means for actuating said toggle; and means for moving said stop member into and out of alinement with said die.

10. In mechanism of the character described, the combination with a die; of a stop member; means for imparting a movement to said stop member toward and away from said die, said means comprising a manually actuated slide, and a rigid connection between said slide and stop member; adjustable means for limiting the movement of said slide in one direction; and means for moving said stop member through a circular path into and out of alinement with said die.

11. In mechanism of the character described, the combination with a die; of a stop member; means for moving said stop member, through a circular path, into and out of alinement with said die; and manually actuated means for moving said stop member toward and away from said die while the same is being moved into and out of alinement therewith.

12. In mechanism of the character described, the combination with a die; of means for limiting the feed of wire there-through, comprising a rock shaft; a stop member having connection with a part upon said rock shaft, whereby said stop member is caused to move in a circular path into and out of alinement with said die; and means for moving said stop member toward and away from said die without breaking the connection between said rock shaft and stop member.

13. In mechanism of the character described, the combination with a die; of means for limiting the feed of wire there-through, comprising a rock shaft; a second rock shaft; a stop member connected with said second rock shaft and actuated by said first rock shaft; and means for moving said stop member toward and away from said die while the same is being actuated by said rock shaft.

14. In mechanism of the character described, the combination with a die; of means for limiting the feed of wire there-through, comprising a rock shaft; a second rock shaft, deriving its movement from said first rock shaft; a stop member connected with said second rock shaft; and means for moving said second rock shaft in a direction parallel with its axis, while the rocking movement is being imparted thereto.

15. In mechanism of the character described, the combination with a die; of a rock

shaft; a second rock shaft; a stop member connected with said second rock shaft and having a slidable connection with said first rock shaft; and means for imparting a reciprocal movement to said second rock shaft in a direction parallel with its axis without affecting its rocking movement or the connection between said stop member and first rock shaft.

10 16. In mechanism of the character described, the combination with a die; of a rock shaft; a slide; a second rock shaft, having an adjustable connection with said slide; a stop member connected with said
15 second rock shaft and actuated by said first rock shaft; and manual means for actuating said slide, whereby a movement in the direction of the axis of one of said shafts is imparted thereto.

20 17. In mechanism of the character described, the combination with a die; of a rock shaft having a radially projecting part thereon; a slide; means for imparting movement thereto; a shaft connected with

said slide; a stop member upon said shaft 25 and engaging said projecting part, so as to be moved in a circular path by said rock shaft and have movement thereon parallel to its axis.

18. In mechanism of the character de- 30 scribed, the combination with a die; of a rock shaft; a slide movable in a fixed part; means for imparting movement to said slide comprising toggle links, one of which is connected with a fixed part and the other 35 with said slide and manually actuated means for working said toggle links; a shaft connected with said slide; and a stop member upon said shaft but having a connection with said first rock shaft that will 40 permit of a movement parallel with its axis.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD LESTER WILCOX.

Witnesses:

BENJ. F. HUBBELL,
CLIFFORD PETITJEAN.