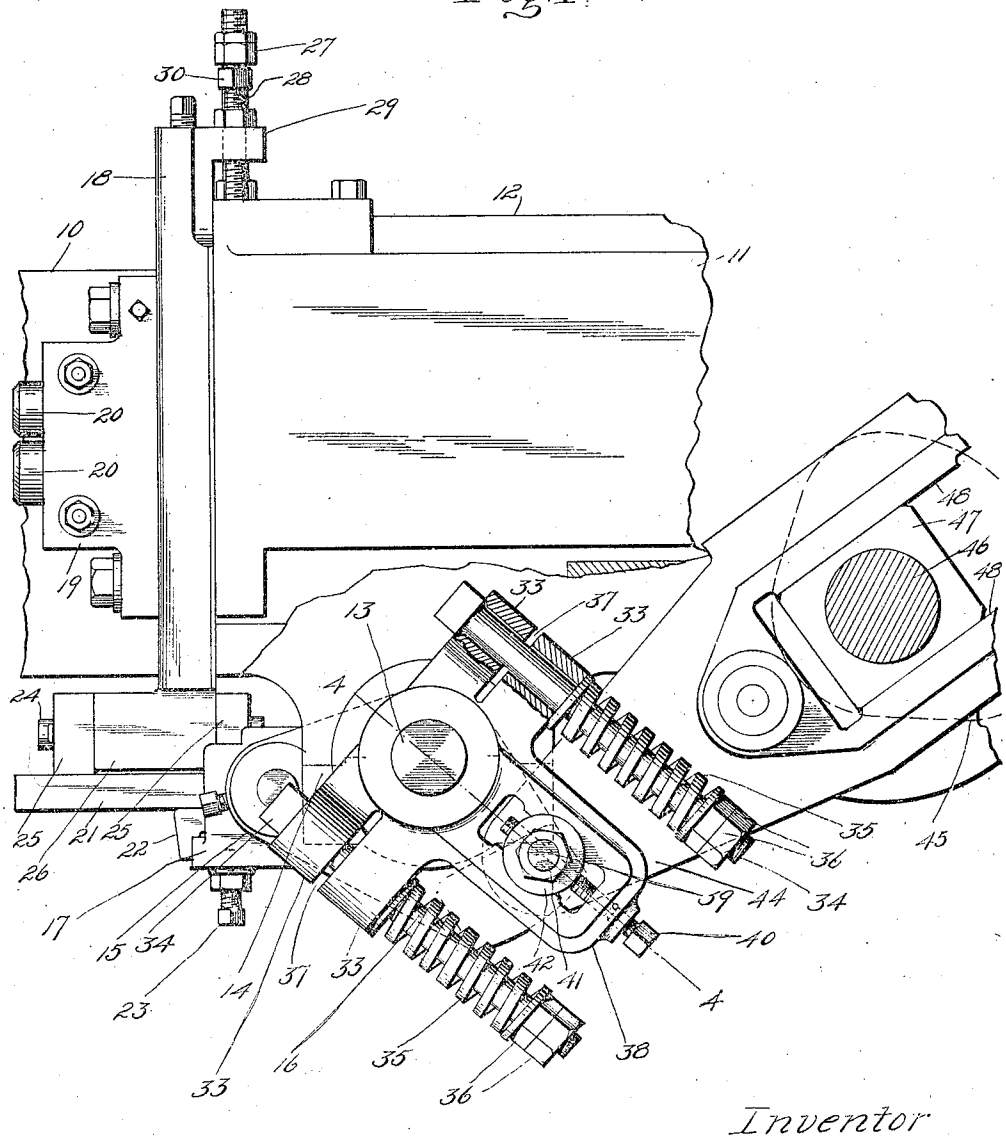
Jan. 9, 1923. 1,441,255.

R. L. WILCOX.

COMPENSATING MECHANISM.

FILED FEB. 6, 1922. 3 SHEETS—SHEET 1.

Fig. 1.



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COMPENSATING MECHANISM.

FILED FEB. 6, 1922. 3 SHEETS—SHEET 2.

Fig. 2.

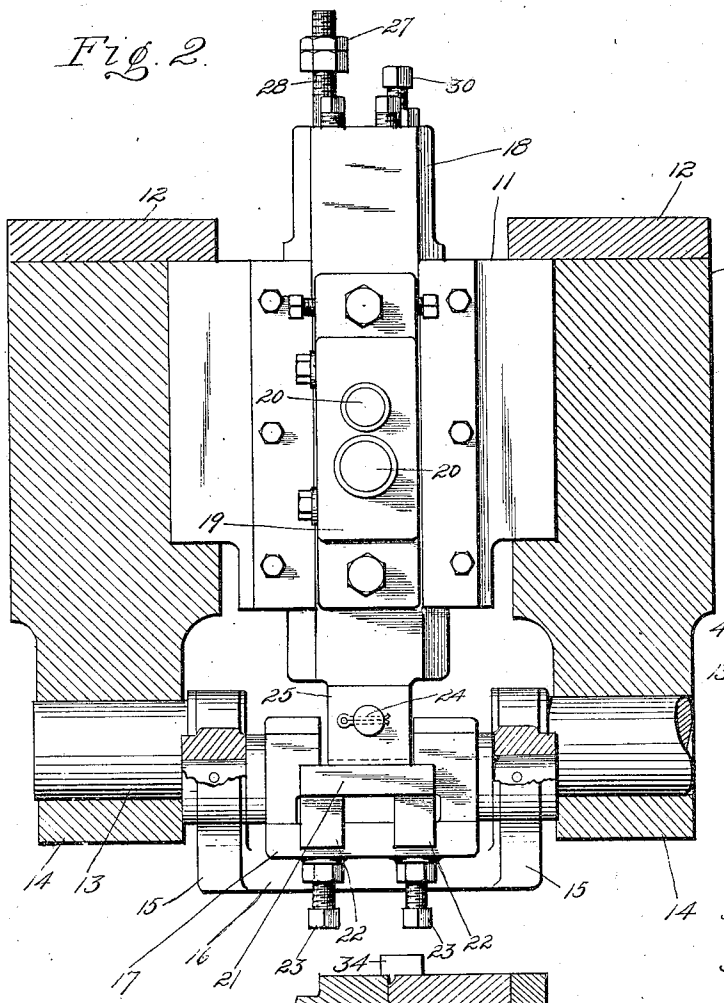


Fig. 3.

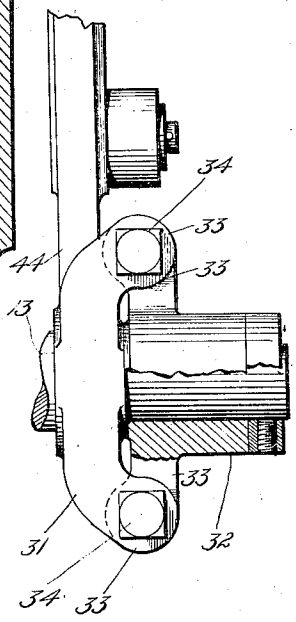
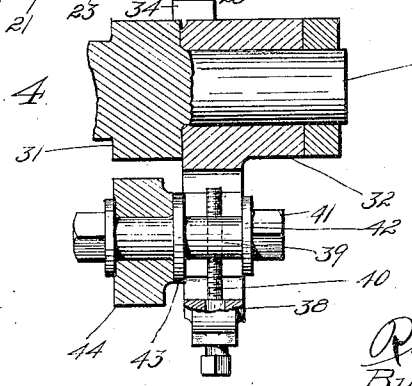


Fig. 4



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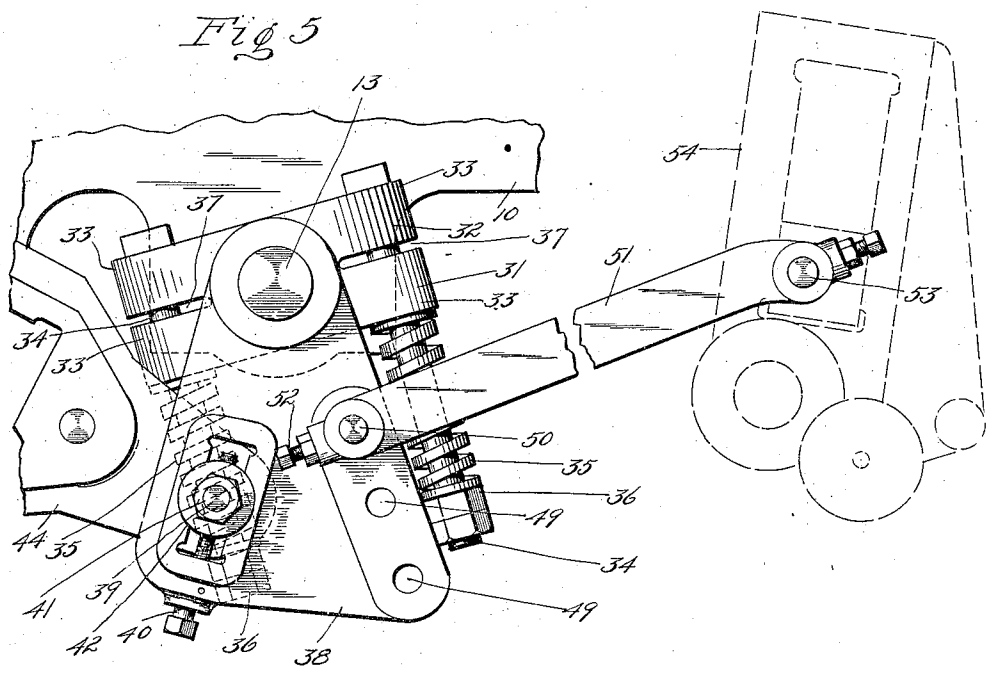
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R. L. WILCOX.

COMPENSATING MECHANISM.

FILED FEB. 6, 1922. 3 SHEETS—SHEET 3.

Fig 5



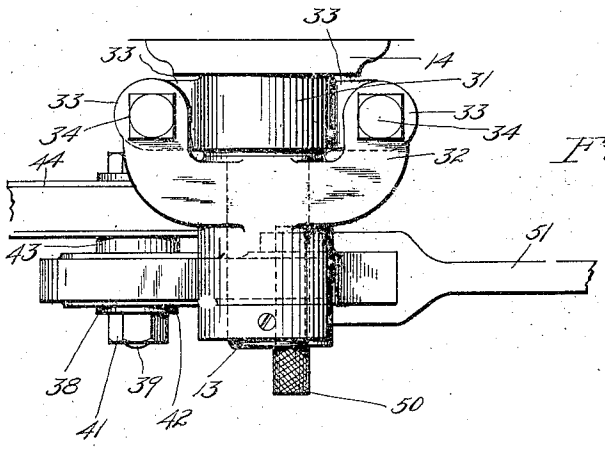


Fig. 6.

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Patented Jan. 9, 1923. 1,441,255

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.

COMPENSATING MECHANISM.

Application filed February 6, 1922. Serial No. 534,537.

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 Compensating Mechanisms, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to compensating mechanisms particularly as applied to a heading or upsetting machine, although not limited thereto.

It is the object of this invention, among other things, to provide a simple and efficient device, so associated with the means for operating a movable part, such as the punch slide, that variations in the position of movement thereof may be made without requiring adjustment of its operating means as has heretofore been necessary.

Among other aims and objects of the invention may be recited the provision of a device of the character mentioned with a view to compactness and in which the number of parts are few, construction simple, and efficiency and operation high.

The details and arrangement of parts will be apparent from an inspection of the accompanying drawings in connection with the description hereinafter contained and wherein a preferred embodiment of the invention is disclosed for the purpose of imparting an understanding of the same.

In the drawings;

Figure 1 is a side elevation of my improved mechanism as applied to a heading or upsetting machine, the portions thereof immediately adjacent thereto also being shown therein;

Figure 2 is a front view of the slide, the gate, a portion of the mechanism whereby the same is given a reciprocatory movement upon the gate and a sectional view of the body of the header;

Figure 3 is a fragmentary plan view of a portion of the compensating mechanism;

Figure 4 is a sectional view thereof, taken generally upon line 4—4 of Figure 1;

Figure 5 is an elevation of the compensating mechanism designed to be associated with a feed mechanism; and

Figure 6 is a plan view thereof.

In a heading or upsetting machine it has been the practice heretofore to operate the punch slide upon the reciprocatory gate from a rotating shaft. It is necessary from time to time to vary the relative position of the slide upon the gate, the means heretofore provided for this purpose requiring first, an adjustment of parts immediately associated with the slide, usually stop screws and the like, and second, an adjustment of parts between the shaft and the rock shaft through which the slide is actuated.

The first of these mechanisms is located so as to obviously require attention in adjustment of the parts, while the second is usually underneath the frame of the machine and not so readily manipulated, in fact, many operators do not know of its existence. The result is, that operators either through carelessnsess or ignorance merely adjust the first of said mechanisms and entirely ignore the necessary adjustment of the second. This results in an uncertain and inaccurate movement of the punch slide, excessive wear and strain upon the parts that is frequently the cause of the breaking thereof, and also inaccuracy in the feed when the same is derived from the mechanism through which the punch slide is actuated.

With my compensating mechanism it is only necessary to manipulate the first of said adjusting means, the variation in the position of the punch slide occasioned thereby being automatically accommodated in the mechanism for actuating the punch slide.

In the drawings wherein like characters of reference designate corresponding parts in the several figures, 10 is a portion of the frame of a heading or upsetting machine, 11 the gate that has a reciprocatory movement therein under the caps 12, 13 a rock shaft journaled in the bearings 14 connected with the frame 10. Forming part of the rock shaft 13 between the journal bearings 14 are the offset arms 15 joined by the tie bar 16 within which is journaled the cradle 17.

The punch slide 18, to which is adjustably secured the punch block 19 having the punches 20 fixed therein, is movably mounted in the front end of the gate 11.

Slidably mounted in the cradle 17 is a shifter plate 21 held therein, with proper frictional engagement, by gibs 22 against which abut the adjusting screws 23.

A hinged connection is made between the

punch slide 18 and the shifter plate 21 by a pin 24 that passes through the lugs 25 on the shifter plate and the lug 26 on the punch slide.

All of the parts above described are now known in the header art and require no further description herein.

The upper position of the slide in relation to the gate is limited by the nuts 27 threaded on the stud 28 fixed in the gate 11, and passing through the lug 29 on said slide. Its down position is limited by stop screws 30 which are threaded through the lug 29 and contact with the top of the gate. This method of adjustment of the stroke and position of the punch slide is also old and the one always utilized by the operator, to the neglect frequently of the adjustment of the slide operating mechanism, necessary to fully accommodate the punch slide in its adjusted limits.

My invention particularly relates to means for actuating the rock shaft whereby any adjustment of the position of the punch slide 18 through the means above described is automatically compensated and taken care of, thus eliminating one adjustment necessary in the present type of heading or upsetting machines, and the one that is usually forgotten or overlooked by the operator with consequent injury and damage to the parts and ineffective and uncertain operation.

In the practice of my invention I provide two compensating arms 31 and 32, the former being either made integral with or secured to the rock shaft 13, and the other rotatably mounted thereon, each being provided with oppositely disposed lugs 33, these being arranged in pairs one above the other and through both of which pairs project the bolts 34. Upon each of these bolts is a compression spring 35, held and adjusted thereon to vary the tension thereof by the nuts 36, or the like.

When assembled there is an open space 37 between the adjacent faces of each of the pairs of lugs 33 so as to permit relative movement. Connected with the compensating arm 32 is a crank arm 38 within which a stud 39 is radially adjustable by a screw 40 threaded therethrough, this stud being locked in its adjusted positions by the nut 41 and collar 42 upon one side of the crank arm and a collar 43 upon the opposite side thereof.

The numeral 44 designates the connection arm which is journaled on said stud 39 and is operated from a cam 45, or other means, mounted upon a shaft 46. This arm 44 is held in operative engagement with said shaft by the block 47 rotatable upon said shaft and slidable between the walls 48—48 of said arm.

The shaft 46 is rotatably mounted in parts fixed in relation to the body 10 and is of the usual structure, as well as the cam 45 or crank plate as is usual in headers.

The rotation of the cam 45 actuates the connection arm 44 in the direction of its length and thereby causes the compensating arm 32 to move about its axis and through the bolts 34 and springs 35 similar movement is imparted to the compensating arm 31 and the rock shaft 13.

As so arranged the adjustment of the parts and especially the springs 35 is such that they move as a unit until the punch slide 18 has reached the limit of its stroke, either up or down. At this time the compensating arm 31 comes to a full stop and any additional movement of the arm 44 causes the compensating arm 32 to rock in relation to the compensating arm 31. This is permissible because one of the springs will be compressed. The first portion of the reverse movement of the connection arm 44 actuates the compensating arm 32 until the pressure of each of the springs 35 is equal, when the two compensating arms again move as a unit.

At the limit of the up stroke the spring at the right of Figure 1 is compressed and the spring at the left at the limit of the down stroke. The extent of compression of the springs is determined by the amount of over-travel of the connection arm 44, which is designed to accommodate the extreme limits of position of the punch slide, or the position of the stud 39 in the crank arm 38.

In Figures 5 and 6 I have shown a construction wherein the feed mechanism may be actuated through the compensating mechanism. In this form the crank arm 38 is of slightly different shape and is provided with a plurality of holes 49 therethrough to receive the pin 50 that is projected through one end of a link 51 secured thereon by the screw 52, whereby a pivotal connection is made between said link and the compensating arm, the opposite end of said link, by means of a pin 53, being connected with the feed arm 54.

The feed mechanism adjacent to the link 51 is shown in Figure 5 by broken lines, the same being of the usual form and constituting no part of this invention.

This modified form of mechanism operates exactly as that shown in the preceding figures with the exception that during the movement of the crank arm 38, the feed mechanism is actuated through the link 51. The several holes 49 in said arm permit the link 51 to be connected thereto at points varying in distance from the axis of the rock shaft 13, which provides for a variation in the length of the feed.

Minor changes and alterations may be made within my invention, aside from those herein suggested, and I therefore desire it

to be 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 combination with a supporting member, of a slide mounted thereon, means for adjusting the position and stroke of said slide in relation to its supporting member, a rotary member, and means for actuating said slide from said rotary member without adjustment irrespective of the relative position of said slide.

2. In combination with a supporting member, of a slide mounted thereon, means for adjusting the position and stroke of said slide relative to its supporting member, a rotary member, and means for actuating said slide from the rotary member, comprising a connection and elements that will automatically absorb any excess motion of the connection.

3. In combination with a supporting member; of a slide mounted thereon, means for adjusting the position and stroke of said slide relative to its supporting member, a rotary member, and means for actuating said slide from said rotary member, comprising in part elements that may move relative to each other, but held against such relative movement until said slide has reached the limit of its stroke.

4. In combination with a supporting member, of a slide mounted thereon, means for adjusting the position and stroke of said slide relative to its supporting member, a rotary member, and means for actuating said slide from said rotary member, comprising in part elements that may move relative to each other, but against such relative movement by yielding means until said slide has reached the limit of its stroke.

5. In combination with a supporting member, of a slide mounted thereon, means for adjusting the position and stroke of said slide relative to its supporting member, a rotary member, and means for actuating said slide from said rotary member, comprising in part elements that have movement relative to each other and held by yielding means so that they actuate as a unit during the movement of said slide.

6. In mechanism of the character described, a shaft, a member connected therewith and fixed in relation thereto, a second member rotatably mounted relatively to said shaft, means for connecting said members together whereby they may move as a unit or relatively to each other according to the resistance to the movement of said shaft, and means connected with one of said members for imparting movement thereto and to said shaft.

7. In mechanism of the character described, a shaft, a member connected therewith and fixed in relation thereto, a second member rotatably mounted relatively to said shaft, means for connecting said members together whereby the same may move as a unit or relatively to each other according to the resistance to the movement of said shaft, said means comprising elements located upon opposite sides of said shaft, and means connected with one of said members for imparting movement thereto.

8. In mechanism of the character described, a shaft, a member connected therewith and fixed in relation thereto, a second member rotatably mounted relatively to said shaft, each of said members having parts upon opposite sides of said shaft, which substantially register with each other, and yielding means connected with each of said parts whereby said members may move relatively to each other or as a unit depending upon the resistance to the movement of said shaft.

9. In combination with a shaft, companion compensating arms, one fixed relatively to said shaft, and the other rotatably mounted relatively thereto, each of said arms having a yielding connection with each other upon each side of the center of said shaft, and means for imparting movement to one of said compensating arms and through it to said shaft.

10. In combination with a shaft, of companion compensating arms, one fixed in relation to said shaft and the other rotatably mounted relatively thereto, each of said compensating arms having a stud projecting therethrough upon each side of the center of said shaft, and a spring surrounding each of said studs.

11. In combination with a shaft, of companion compensating arms connected therewith, one fixed and the other movable relatively thereto, each of said compensating arms having a lug upon opposite sides of the center of said shaft and opposite to a lug upon the other arm with an open space therebetween, and a connection between each of the lugs upon the same side of said shaft having a spring forming part thereof.

12. In combination with a shaft, companion compensating arms, one fixed relatively to said shaft, and the other rotatably mounted relatively thereto, each of said arms having a yielding connection with each other upon each side of the center of said shaft, and a power arm connected with one of said compensating arms for imparting movement to one of said compensating arms and said shaft.

13. In combination with a shaft, companion compensating arms, one fixed relatively to said shaft, and the other rotatably mounted relatively thereto, each of said arms having a yielding connection with each other

upon each side of the center of said shaft, a power arm connected with one of said compensating arms for imparting movement to one of said compensating arms and said shaft, and means for adjustably securing said power arm to the compensating arm.

14. In combination with a shaft, companion compensating arms, one fixed relatively to said shaft, and the other rotatably mounted relatively thereto, each of said arms having a yielding connection with each other upon each side of the center of said shaft, a power arm connected with one of said compensating arms for imparting movement to one of said compensating arms and said shaft, a feed mechanism, and a connection between said feed mechanism and the compensating arm with which said power arm is connected.

15. In combination with a supporting member, of a slide mounted thereon, means for adjusting the position and stroke of said slide relative to its supporting member, a rotary member, and means for actuating said slide from the rotary member, comprising a connection having elements that will automatically absorb any excess motion of the connection at both ends of the movement of said slide.

In testimony whereof, I have hereunto affixed my signature.

RICHARD LESTER WILCOX.