March 11, 1924. 1,486,711

R. L. WILCOX

CONNECTION MECHANISM

Filed June 4, 1921

Fig. 1.

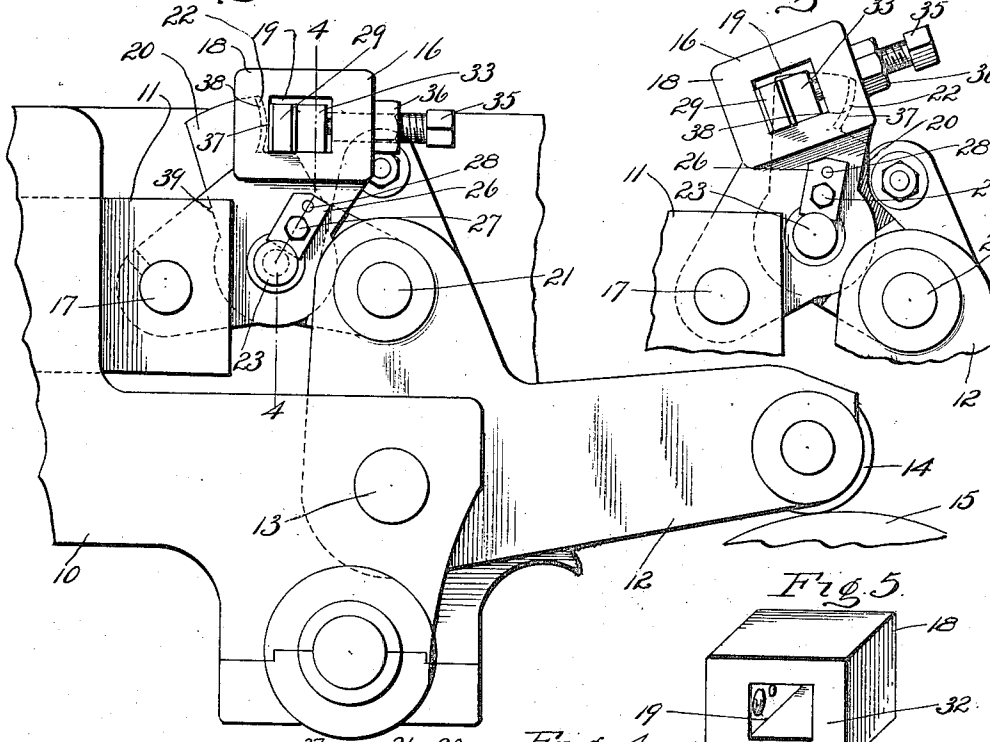



Fig. 2.




Fig. 3.

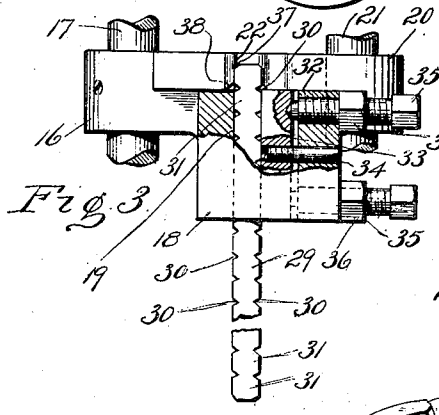



Fig. 4.

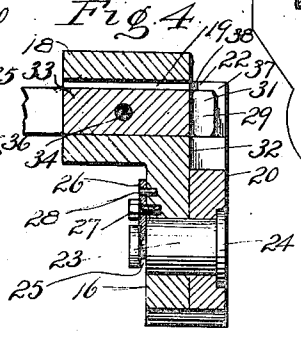



Fig. 5.

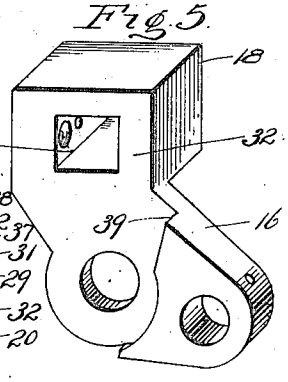
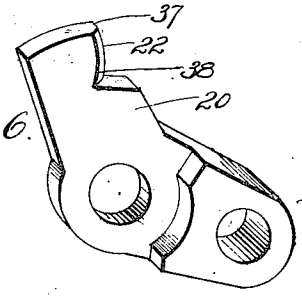



Fig. 6.




Inventor
Richard Lester Wilcox
By George E. Gray
Atty

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# 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.

## CONNECTION MECHANISM.

Application filed June 4, 1921. Serial No. 475,091.

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

This invention relates to connection mechanisms and refers more particularly to means for connecting a power member with an operated member that will yield when subjected to undue or unusual strain, so that one of such members may continue to operate and the other remain stationary.

It is the object of this invention, among other things to provide a device of this character that will form a rigid connection while conditions are normal, but will be inoperative as soon as conditions become abnormal and I accomplish such desirable results with mechanism having a fragile element, producible at a small cost, that will break at predetermined places, as well as to produce a simple and inexpensive device that will be exceedingly effective for its designed purpose.

These and other objects I obtain by means of such structure and relative arrangement of parts as will fully appear from the following specification and claims.

In the drawings like characters of reference indicate corresponding parts in the several figures wherein,—

Figure 1 is a side elevation of my improved connection mechanism as applied to a heading or upsetting machine with the parts in the relative positions occupied by them while operating under the usual strains;

Figure 2 is a similar view showing the relative position of the parts after the fragile element has been broken as a result of abnormal operating strains;

Figure 3 is a plan view of my improved connection mechanism partly in section;

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

Figure 5 is a perspective view of the arm member; and

Figure 6 is a similar view of the shearing member.

For the purpose of illustration only I have shown my improved device as associated with the mechanism for operating the plunger of a heading machine of the type substantially as shown in the patent to R. L. Wilcox #1,104,090, dated July 21, 1914. As the device is equally applicable to other forms of mechanism, I desire it to be understood that by such illustration it is not intended that this mechanism should be limited to such use.

In the drawing 10 designates the body of a heading machine, 11 the plunger that has a reciprocatory movement therein, 12 the rock lever journaled upon a stud 13 in said body member, and carrying a cam roll 14 which is held in contact with a cam 15, from which motion is imparted to said rock lever.

The parts above described are common and well knonw in the art and require no further description here.

My improved device consists in the means for connecting the rock lever 12 with the plunger 11 whereby a reciprocatory movement is transmitted to the plunger from the rock lever.

One preferred form of said connection mechanism consists of an arm member 16 connected with the plunger 11 by the stud 17 and having a head 18 that in part projects laterally upon one side thereof through which is the opening 19; and a shearing member 20 having a shearing blade 22 connected therewith which is pivotally connected with the rock lever 12 upon the stud 21.

The arm member 16 and shearing member 20 are pivotally secured together by the stud 23 having a head 24 at one end and an annular groove 25 in the other end into which projects the latch or key 26 to prevent lateral movement of the stud 23. This latch or key 26 is secured in place by the bolt 27 and if desired a dowel pin 28 or another bolt may be utilized for the same purpose.

The means herein shown for pivotally connecting the arm member 16 and shearing member 20 are only one of the many forms of pivotal connections that may be utilized and my invention is not, therefore, limited thereto. This form of connection, however, is especially desirable when the inner face of the shearing member 20 operates close to an adjacent part as herein shown and it therefore permits of convenient and ready assembly of the several parts.

The shearing bar 29 is preferably rectangular in cross-section with a plurality of notches 30 in two opposite faces thereof and substantially opposite each other. By reason of these notched faces the shearing bar is formed into a plurality of sections 31.

This bar is inserted within the opening 19 with the innermost section 31 projecting beyond the inner face 32 of the arm member 16 as shown in Figure 3 with two of the notches 30 in substantial alignment with said face. The bar is held rigidly in this position by a clamp 33 which is adjustably secured in its clamping position by a screw 34 and the screws 35, these latter being threaded through the head portion 18 of the arm member 16 and having nuts 36 thereon to hold the same against accidental movement.

In Figures 1 and 3 my connection mechanism is shown with the parts assembled and providing a positive connection means between the rock lever 12 and the plunger 11 at which time the face 37 of the shearing blade 22 is in contact with one face of the projecting section 31 as shown in Figure 3, and its rear face is in contact with the shoulder 39 on the arm member, thus making a rigid connection, locked against relative movement.

An angular face 38 is formed in the inner edge of this shearing blade so that there is no contact of said blade with said outermost section, adjacent to the inner face 32 of the arm member 16. I prefer that this angular face should be provided on the shearing blade, but the device will operate without it and in some cases I prefer not to use it.

With all of the mechanisms operating under normal strains, the strength of the shearing bar 29 is sufficient to transmit motion of the rock lever 12 to the plunger 11. If movement of the plunger is interfered with, however, by any abnormal strain the continued movement of the rock lever 12 moves the arm member 16 and shearing member 20 relatively to each other in very much the same manner as a toggle, about the axis of the stud 23 until they occupy the positions substantially as shown in Figure 2. During this action the blade 22 of the shearing member 20 breaks off the projecting section 31 of the shearing bar 29 against the clamp 33. The rock lever 12 will thereafter continue its movement without transmitting motion to the plunger 11, the members of the connection mechanism moving upon their pivotal connection 23.

The connection for transmitting motion is restored by advancing the shearing bar 29 so that the next succeeding section 31 will project beyond the face 32 of the arm member 16 and then locking it in its new position by the clamp 33. The sections 31 are each successively broken off from the shearing bar 29 at the weakest point, that is, between the notches 30, so that only a small portion of the bar is lost at each shearing action. The operation of thus restoring the connection for power transmission involves but a very limited amount of labor and requiring practically no skill.

By reason of the face 37 of the shearing blade 22 contacting with the projecting section beyond the face 32 the pressure upon said section is such that it tends to turn the same upon the edge of the clamp 33 and thus breaks it off. As the bottom portions of the notches are inside of the face 32, the breaking face is thus inside thereof and thus there are no projecting or ragged edges to project beyond said face to mar or interfere with the operations of said blade.

Aside from the suggestions above made as to the alterations and modifications of my invention, there are others that may be made that will be apparent to any person versed in the art, and 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 a connection mechanism, an arm member, a shearing member formed into a plurality of sections separated by a weakened portion thereof, means for securing said shearing element in said arm member so that one of said sections will project beyond the face thereof with a weakened portion registering therewith; a second member having a shearing blade as a part thereof, means for operatively connecting said members together whereby said shearing blade is held in contact with the projecting section of said shearing element, said shearing blade having an angular face upon its edge adjacent to the arm member.

2. In a connection mechanism, companion members operatively connected with each other and a shearing element composed of a plurality of sections with a weakened portion therebetween, means for securing said shearing element in one of said members whereby a portion thereof projects into the path of relative movement of the other member, all of the parts being so designed and arranged that said shearing element is rigidly secured and a weakened portion thereof is in register with a face of the member with which it is connected and the other member has contact therewith at a point distant therefrom.

3. In a connection mechanism, companion members, one an arm member having a shoulder thereon, and the other a shearing member, operatively connected with each other, a shearing element having a section

at one end separated from the remainder of said shearing element by a weakened portion; movable means for securing said shearing element in said arm member whereby said section projects into the path of relative movement of the shearing member with said weakened portion adjacent to one end of the securing means, said shearing member having contact with said section at a point beyond the said face of said arm member and when so engaged, the said members being held against relative movement by said shearing member having contact with said section and with the shoulder of said arm member.

4. In a connection mechanism, companion members comprising an arm member and a shearing member, operatively connected with each other, a shearing element having a section at one end separated from the remainder of said shearing element by a weakened portion; and movable means for securing said shearing element in said arm member, all of said parts being so associated that said shearing member is held against relative movement by said shearing element and a projecting portion of said arm member whereby said members and element operate as a unit under normal strains, but move relatively to each other under abnormal strains, at which time the projecting section of said shearing element will be broken off at said weakened portion and released from engagement with both of said members, the pressure of the shearing member thereon being applied at a point beyond its securing means.

5. In mechanism connecting a driving and a driven element, companion members, one of said members having a pivotal engagement with the driving element and the other of said members with the driven element, and both pivotally connected with each other at a point between the aforesaid pivotal engagements, and a shearing element fixed at one end only in one of said members that project therefrom in front of the other of said members with the outer end thereof substantially flush with the outer face of the last mentioned member, so that when the said members are moved in relation to each other that portion of the shearing member projecting beyond the supporting member and in front of the other members is broken off and free from engagement with either of said members.

6. A driving element, a driven element, a connection therebetween comprising a member pivotally connected with the driving element, a second member pivotally connected with said member and also with said driven element, and a sectional fragile element secured in one of said members and overhanging therefrom into the path of movement of the other member and restraining relative movement thereof in one direction only, said pivotal connection between said members being at a point between the pivotal connections with said driving and driven elements.

In testimony whereof, I have hereunto affixed my signature.

RICHARD LESTER WILCOX.