W. L. CLOUSE.

AUTOMATIC RELEASE MECHANISM FOR HEADING AND FORGING MACHINES.

APPLICATION FILED JULY 12, 1920.

1,382,625.

Patented June 28, 1921.

2 SHEETS—SHEET 1.

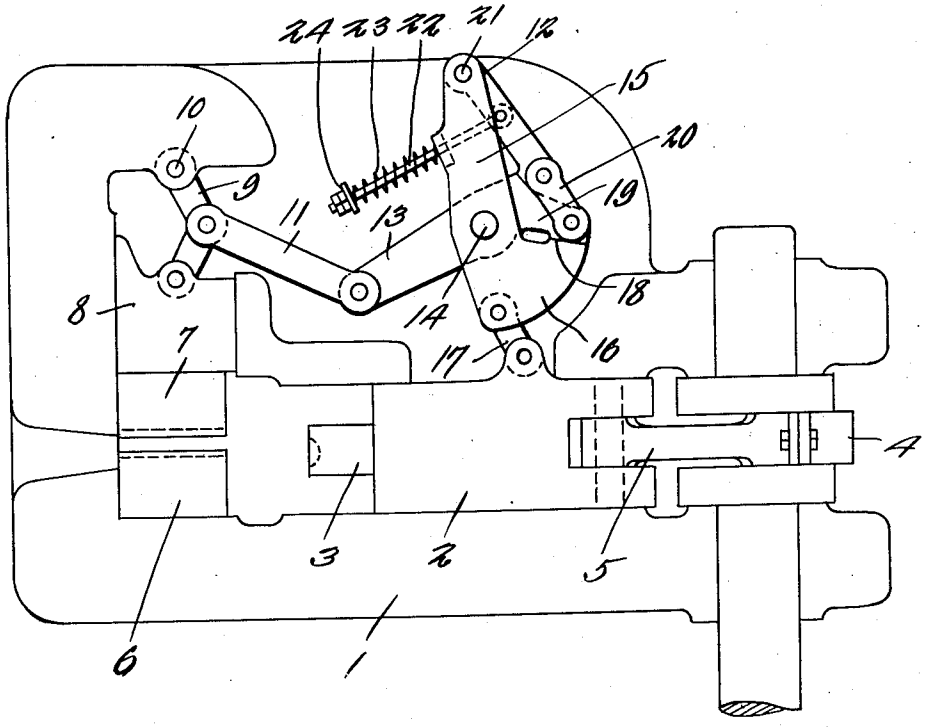


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

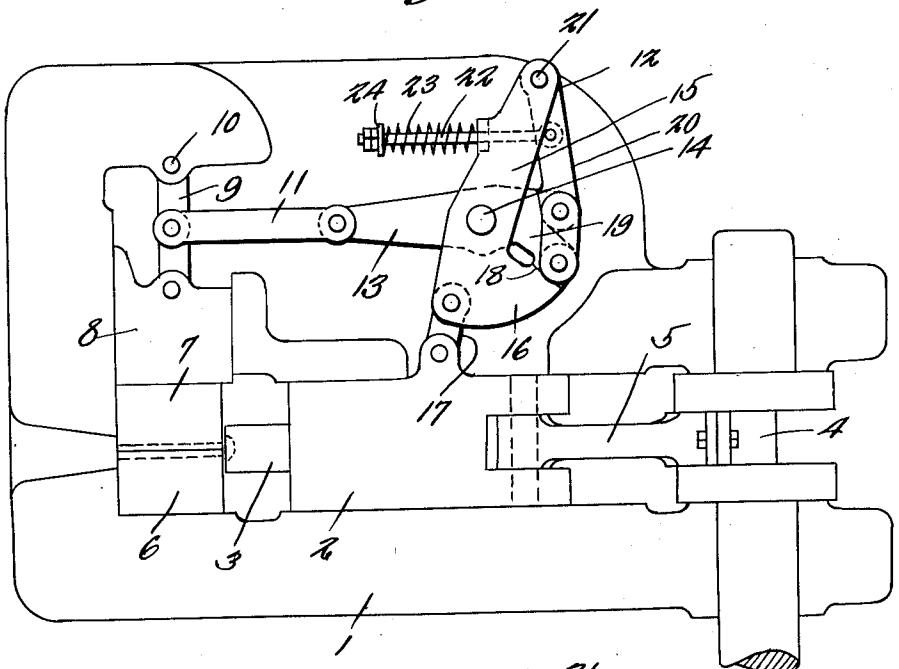
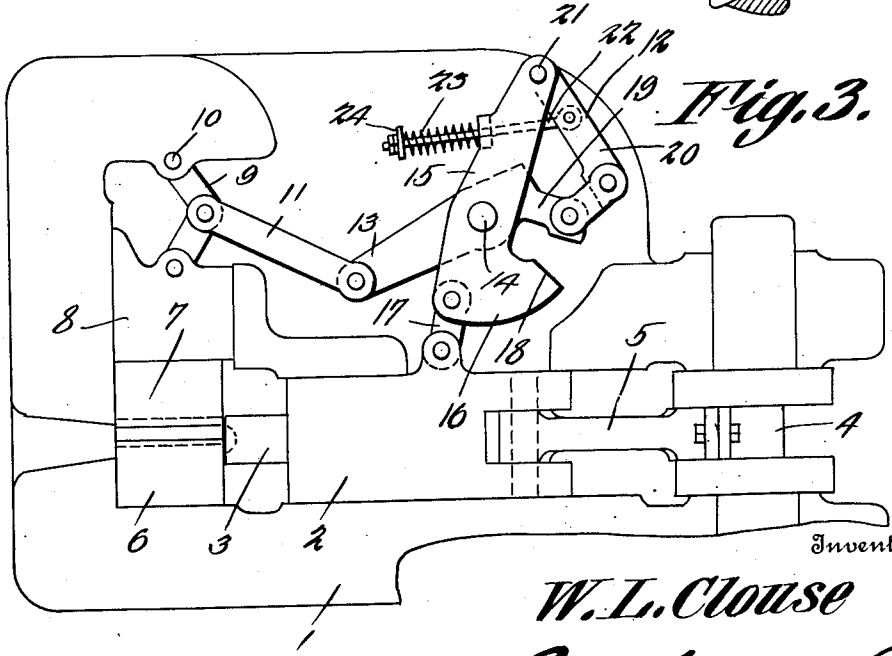


Fig. 3.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC RELEASE MECHANISM FOR HEADING AND FORGING MACHINES.

1,382,625. Specification of Letters Patent. Patented June 28, 1921.

Application filed July 12, 1920. Serial No. 395,574.

To all whom it may concern:

Be it known that I, WILLIAM L. CLOUSE, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented a new and useful Automatic Release Mechanism for Heading and Forging Machines, of which the following is a specification.

This invention relates to bolt heading and forging machines and more particularly to automatic release mechanism for the movable gripping die, one of the objects of the invention being to provide means which will yield automatically when the movable gripping die becomes hung from any cause and cannot make its full stroke.

The invention consists more especially in the use of a jointed toggle member having a spring controlled restraining toggle combined therewith which will hold the parts of the jointed toggle member against relative movement unless subjected to extreme resistance in which event said portions of the toggle member will shift relative to each other and allow the heading die to make its complete stroke without at the same time completing the stroke of the movable gripping die and its slide.

The invention also consists in certain other novel details of construction and combinations of parts hereinafter described and claimed, it being understood that, within the scope of what is claimed, changes in the precise embodiment of the invention shown can be made without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—

Figure 1 is a plan view of the structure showing the relative positions of the parts at the beginning of the stroke of the heading die.

Fig. 2 is a similar view showing the positions of the parts upon the completion of said stroke.

Fig. 3 is a like view showing the relative positions of the parts on the completion of the stroke of the heading die but when the movable gripping die is stopped in its movement so as not to complete its stroke.

Referring to the figures by characters of reference 1 designates the bed frame of a heading and forging machine, the same being provided with the usual heading slide 2 and heading die 3 operated by any suitable mechanism, as a crank 4 and a pitman 5. A stationary gripping die 6 is arranged in the path of the heading die 3 and a movable gripping die 7 is also arranged in the path of the heading die and is connected to and movable with a gripping slide 8 having one end of a toggle 9 attached thereto while the other end of the toggle is connected to the bed frame as shown at 10.

The release mechanism constituting the present invention comprises an operating toggle including a link member 11 and a jointed member designated generally at 12. This jointed member includes a link 13 mounted for movement about a stationary pin 14 and likewise mounted on this pin is another link 15 having an arcuate end portion 16 connected to the heading slide 2 by means of a link 17. This arcuate member forms an abutment or shoulder 18 and the link 13 has an extension 19 which also constitutes an abutment or shoulder adapted normally to bear against the shoulder 18. Pivotally connected to the extension 19 is one end of a supplemental toggle 20 the other end of which is pivotally connected to the outer end of the link 15 as shown at 21 and a rod 22 is pivotally attached to one of the links of the toggle 20 and is slidable in the link 15, there being a spring 23 on the rod 22 and which is engaged by a head 24 on the rod so that the toggle 20 is held normally extended with the extension 19 engaging the abutment 18 and the pivot of the toggle 20 almost in line. By referring to Figs. 1 and 2 it will be noted that the intermediate joint of the toggle 20 is slightly out of line so that, when subjected to excessive pressure the toggle will break at this joint and against the action of the spring 23.

During the operation of the machine the heading slide 2 will reciprocate in the usual manner and as it moves from the position shown in Fig. 1 to the position shown in Fig. 2 the link 11 will swing the member 12 as one body about the pivot 14 so that the two toggle members 11 and 12 will actuate the toggle 9 and reciprocate the slide 8 transversely of the path of movement of the heading slide 2. If, however, during the forward movement of the heading slide 2 and the movement of the gripping die 7 toward the gripping die 6, said gripping die 7 should be stopped in its movement from

any cause, the heading slide 2 would continue forward but as the toggles 9 could not be straightened out by the swinging of the member 12, the outer end of the member 15 of the toggle link would press against the supplemental toggle 20 and cause said toggle to buckle or break at its intermediate joint so as to fold as shown in Fig. 3 and against the action of the spring 23. Consequently the heading slide 2 can continue its movement without breakage of any of the parts and when it returns and the obstruction in the path of the gripping die 7 has been removed, the parts will automatically assume the positions shown in Fig. 1 and the operation of the machine will continue properly.

What is claimed is:

1. In a heading machine the combination with a heading slide and a gripping slide, and a toggle for actuating the gripping slide, of crossed members mounted upon a fixed pivot, coöperating abutments upon said members, a link connection between one of the members and the heading slide, a link connection between the other member and the toggle, a supplemental toggle connected to the crossed members, and yielding means connected to said supplemental toggle for holding it normally extended with the abutments of the members in contact, said toggle being adapted to break against the action of the spring when the crossed members are subjected to excessive resistance to their rotation in one direction about the fixed pivot.

2. In a heading and forging machine, the combination with a heading slide, a gripping slide and a toggle connected to the gripping slide, of crossed members mounted for movement about a fixed pivot, said members having abutting portions for limiting their relative movement toward each other in one direction, a link connection between one of said members and the heading slide, a link connection between the other member and the toggle a supplemental toggle connecting the two members, a spring restrained rod movably connected to one of the members and to the supplemental toggle for holding said toggle normally extended, said supplemental toggle when in its normal or extended position, being disposed with its intermediate joints slightly out of line with its end connection.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM L. CLOUSE.

Witnesses:

EARL C. KNAPP,

F. W. KLENK.