

(No Model.)

3 Sheets—Sheet 1

J. R. BLAKESLEE.
FORGING MACHINE.

No. 579,814.

Patented Mar. 30, 1897.

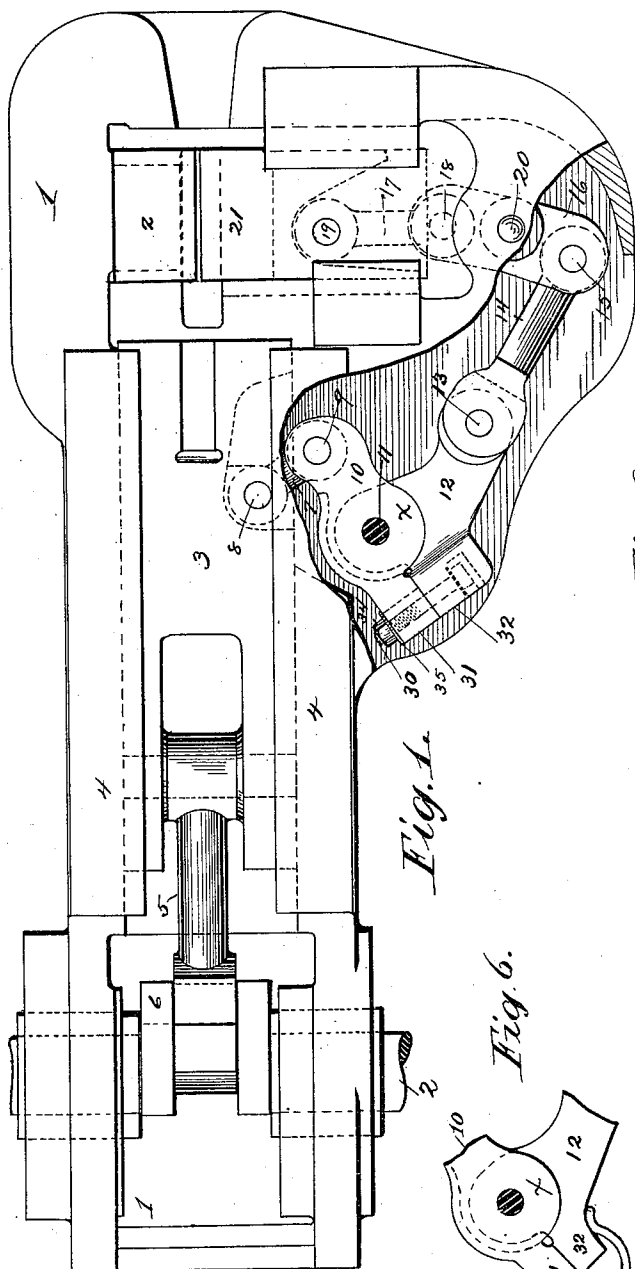


Fig. 1.

Fig. 2.

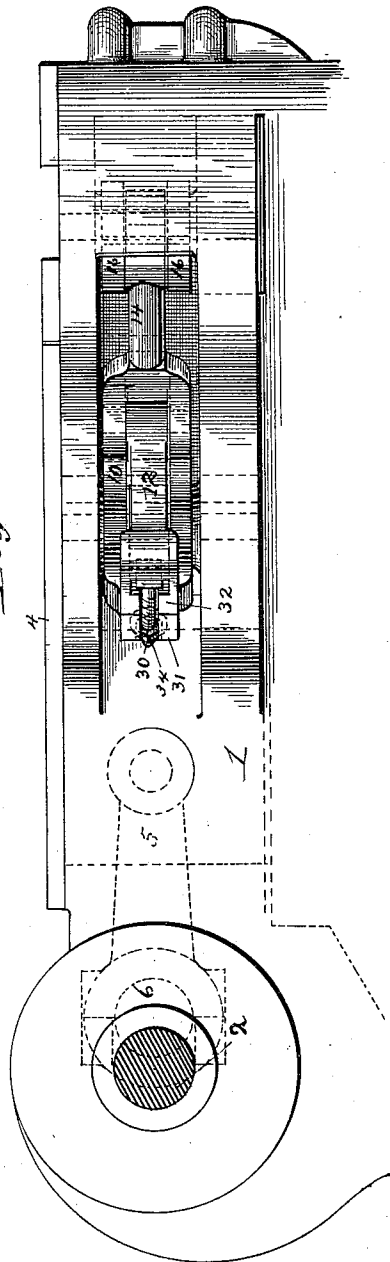
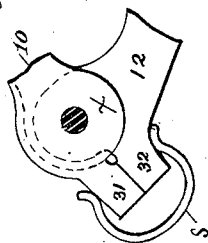


Fig. 3.



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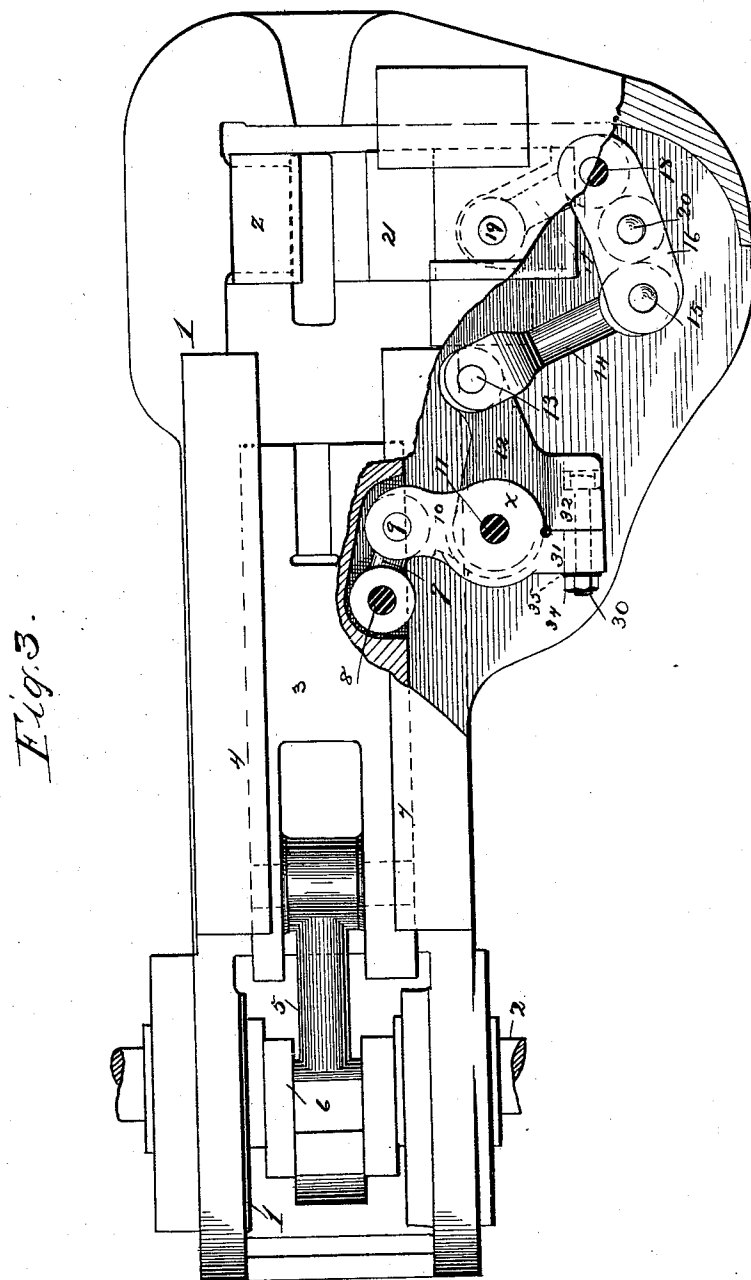
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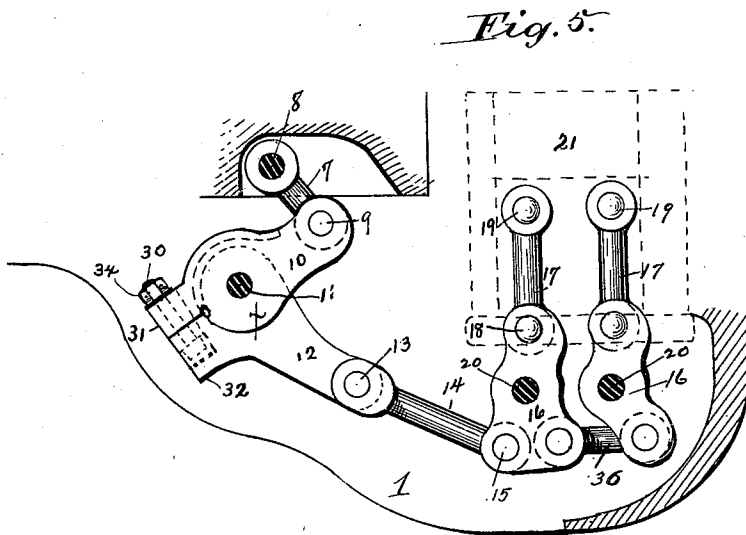
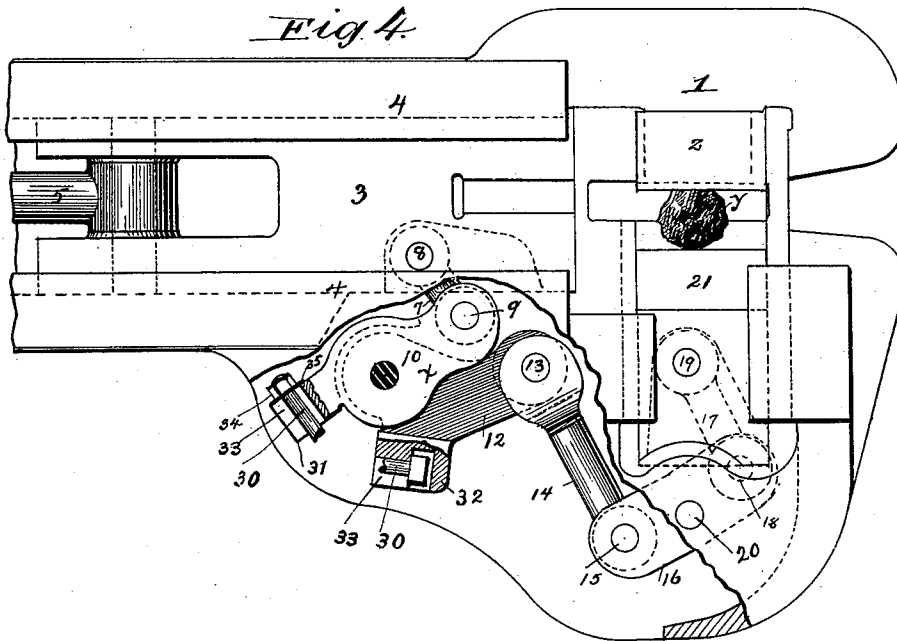
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UNITED STATES PATENT OFFICE.

JOHN R. BLAKESLEE, OF CLEVELAND, OHIO.

FORGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 579,814, dated March 30, 1897.

Application filed January 2, 1896. Serial No. 574,181. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. BLAKESLEE, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Forging-Machines, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in forging machinery of the class in which a longitudinally-reciprocating heading-plunger and transversely-moving gripping-dies are employed; and the objects of the invention are to provide mechanism connecting the header and gripping-dies whereby the latter will be operated by the movements of the former; and a further object is to provide a safety-joint in the connecting mechanism to prevent breakage of the working parts of the machine in case some obstruction should prevent the closing of the gripping-dies. To accomplish these objects, I employ the intermediate toggle mechanism and separable joint, with the means for detachably securing said joint and the details of construction and arrangement of parts, as hereinafter described, shown in the accompanying drawings, and more specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my improved machine, a portion of the top casing being broken away to show the toggle mechanism, the dies in this view being closed. Fig. 2 is an edge view thereof. Fig. 3 is a plan view of the same mechanism, showing the dies thrown back. Fig. 4 is a view in plan of the device, showing the separation of the joint caused by an obstruction. Fig. 5 shows an unusually long gripping-die and duplicate toggles connecting therewith to give the correct movement. Fig. 6 is a view of a modified form of clamp, employing a spring in place of a bolt.

In the views, 1 is the bed of the machine; 2, the driving-shaft; 3, the header, moving in guides 4, and 5 the connecting-rod, connecting the header with the crank 6. The front of the header is recessed at the side to admit of pivoting thereto the short link 7 at 8, the other extremity of this link being pivoted at 9 to

the shorter arm 10 of a bell-crank lever α , pivoted at 11 to the machine-frame. To the longer arm 12 of this bell-crank is pivoted at 13 one end of the link 14, the other end of which is pivoted at 15 to one extremity of the rock-bar 16, which transmits a transverse movement to the gripping-die 21 by means of the connecting-link 17, pivoted at 18 and 19, respectively, to the bar and die.

20 is the pivoted point of the rock-bar.

It will be seen from Figs. 1 and 3 that when the crank 6 moves the header forward the bell-crank α will be thrown backward, and by means of the rock-bar 16 and intermediate links 14 and 17 a transverse movement is given to the gripping-die 21, which will close in line with the heading-die, and upon the return of the header the gripping-die will be withdrawn, and the movements being exactly timed both header and gripping-die will move simultaneously, the opposite gripping-die Z remaining stationary.

The strength of the toggle mechanism is only desired to be sufficient to shape the hot metal in the die, and if the forging or any other solid body should be interposed in such a manner as to prevent the dies from completely closing, some portion of the mechanism would be broken. In order to prevent such an accident, the arms of the bell-crank are made separable at the pivoted point, and are secured together by means of a clamp 30, which is strong enough to sustain all the pressure required to grip the forging, but will give way before any other portion of the mechanism. Any convenient form of clamp or clamping-spring, as S, Fig. 6, may be employed. The construction of this device, as shown in Fig. 4, is as follows: The two arms of the bell-crank are provided with extensions 31 and 32 through the open slot 33, in the outer extremities of which is inserted the bolt 30, provided with nut and washer 34 and 35, by means of which the arms are securely clamped together, as in Figs. 1, 2, and 3. In Fig. 4 is clearly seen the breakage of the bolt and separation of the arms of the bell-crank when an obstacle, as Y, has become inserted between the dies.

In Fig. 5 is seen a modification of the toggle mechanism, where, to secure perfectly parallel movement in a long die, duplicate

rock-bars are employed and duplicate links connecting the rock-bars with the respective ends of the die. An additional link 36 connects the outer ends of the rock-bars. It will be obvious that by the use of duplicate mechanism of this character a perfectly rectilinear movement will be obtained for the die, no matter how long or irregularly shaped.

I believe myself to be the first to devise a transverse movement for the gripping-die by means of toggle mechanism actuated by the header and also to promote a safety-joint therein.

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

1. In a forging-machine, the combination with a reciprocating heading-die, of a transversely-moving gripping-die, an opposite stationary gripping-die, and mechanism connecting the heading-die and movable gripping-die, consisting of a bell-crank and rock-bar pivoted upon the machine-bed, and intermediate links connecting the said parts together, substantially as described.

2. In a forging-machine, the combination with a header and gripping die actuated thereby of intermediate toggle mechanism connecting the header and gripping die, the said intermediate mechanism being provided with a separable joint consisting of a bell-crank, provided with two arms, mounted separately upon a pivot, and a bolt of less tensile strength than said toggle mechanism, adapted to clamp the said arms together, substantially as described.

3. In toggle mechanism connecting a reciprocating header with a transversely-moving gripping-die, the combination with a bell-crank and intermediate links connecting with the header, of duplicate rock-bars and duplicate links connecting said bars with the respective ends of the gripping-die, whereby regularity of movement in the die is obtained, substantially as described.

JOHN R. BLAKESLEE.

Witnesses:

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