J. R. BLAKESLEE.

SAFETY DEVICE FOR FORGING MACHINES AND THE LIKE.

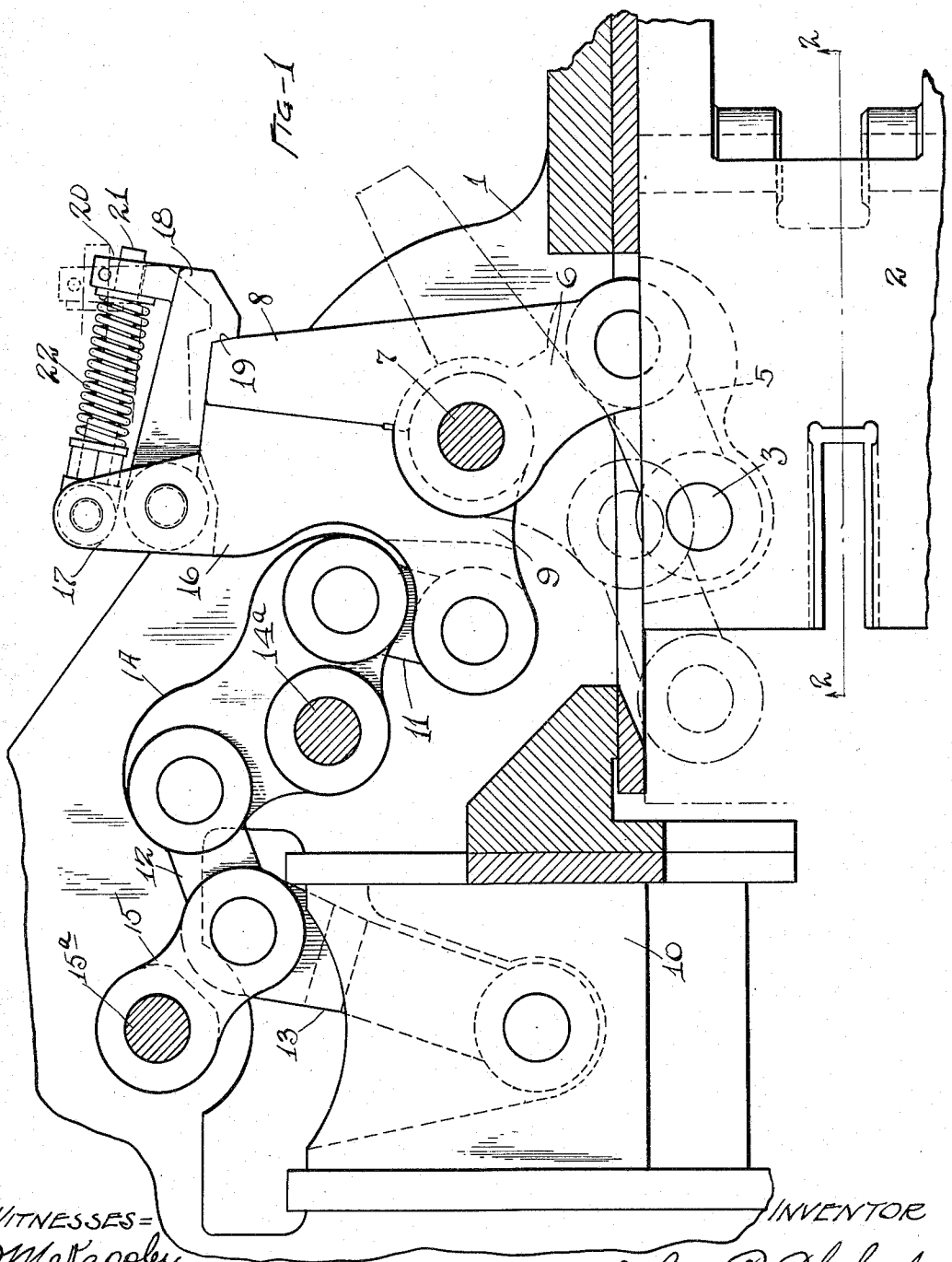
APPLICATION FILED APR. 16, 1914.

1,300,240.

Patented Apr. 15, 1919.

2 SHEETS—SHEET 1.

FIG-1



WITNESSES=

O. M. Kappler.

Thos. H. Fay.

INVENTOR

John R. Blakeslee

BY Fay and Sharlin

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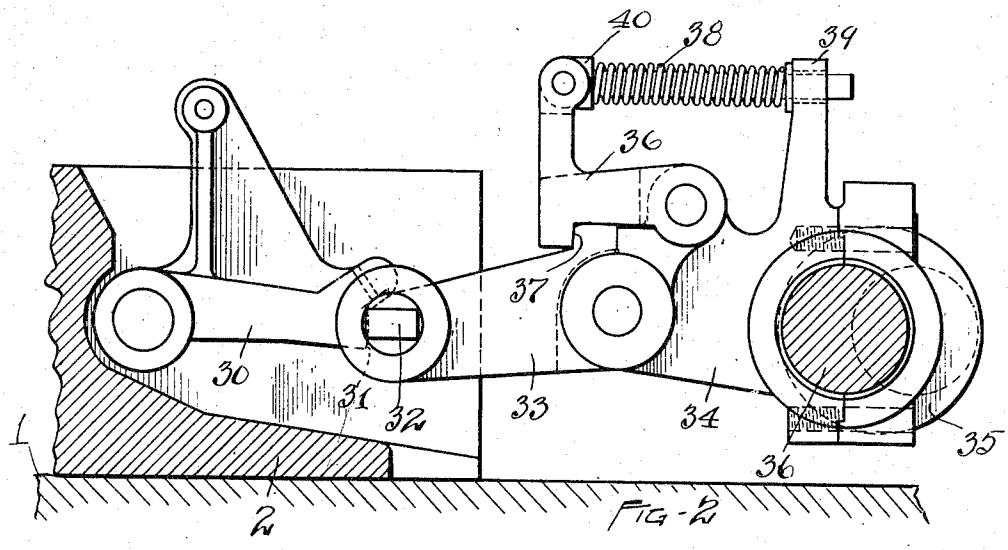


FIG-2

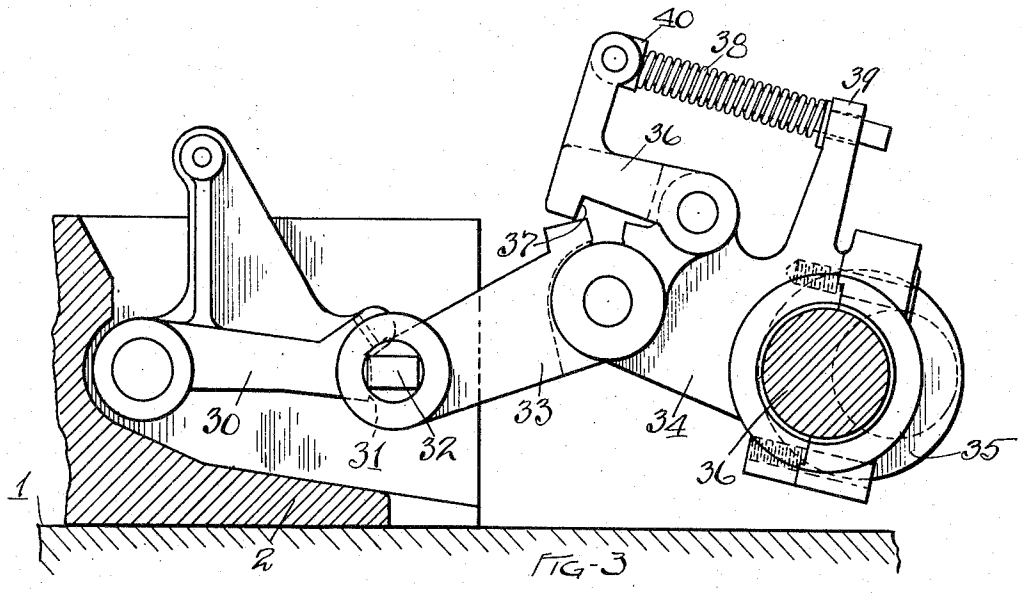


FIG-3

WITNESSES=
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UNITED STATES PATENT OFFICE.

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SAFETY DEVICE FOR FORGING-MACHINES AND THE LIKE.

1,300,240. Specification of Letters Patent. Patented Apr. 15, 1919.

Application filed April 16, 1914. Serial No. 832,241.

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 a new and useful Improvement in Safety Devices for Forging-Machines and the like, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present improvements relate to a safety device which has been designed for use in forging machines and the like, such, for example, as are shown in U. S. Patent No. 737,065. The general features of such a machine are well known and as they are not essential to the present invention it will be unnecessary to describe the same in detail. The particular feature which comprises the present invention consists of a means which permits the normal operation of the machine through the various links and connecting rods but which are designed to release when an undue overload is thrown upon the mechanism, thus preventing injury to the machine in general. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—

Figure 1 is a plan view of a portion of a forging machine showing more especially the mechanism for actuating the transverse slide, parts of the mechanism being shown in section; Fig. 2 is a transverse longitudinal section through the longitudinal or header slide and crank-shaft of such a machine when in position for normal operation, the plane of the section being indicated by the line 2—2, Fig. 1; and Fig. 3 is a view similar to Fig. 2, but showing the mechanism in the positions assumed after the operation of the safety device.

As shown in Fig. 1, the frame 1 of the machine is provided with a horizontally moving header slide 2 operating in suitable guides and bearing at one end a vertically disposed pin 3 serving as a point of attachment for one end of a link 5. Such link 5 is pivotally connected at its other end to a rocker, or "knuckle" 6, the latter being oscillatory about a fixed pin 7 as an axis and being provided with an extending jaw or arm 8. Oscillatorily mounted upon the same pin 7 is a second knuckle 9 which, upon being rocked, is adapted to drive the transverse slide 10 through suitable links 11, 12 and 13 and rockers or knuckles 14 and 15, the latter being oscillatorily mounted upon pins 14^a and 15^a respectively.

The knuckle 9 is provided with an extending jaw or arm 16 adapted to normally lie in contact with and parallel to, the extending portion 8 of the knuckle 6. Pivotally mounted upon an extending lug 17 on the arm 16 is a latch 18 which is adapted to engage against a contact face 19 formed on the outer edge of the arm 8. Upon the outer end of the latch 18 there is mounted a projecting lug 20 provided with an aperture through which passes a bolt 21 which is pivotally attached to the lug 17. Between the lugs 17 and 20 and encircling the bolt 21 there is disposed a compression spring 22 which is adapted to normally maintain the latch in the position shown in Fig. 1 when it is engaging the arm 8 and maintaining the same in contact with the arm 16. In this position of the members the arms 8 and 16 are connected together and constitute in effect a rigid bell-crank lever having portions extending upon either side of the axis 7. In the normal operation of the machine the arms 8 and 16 will operate in this manner, but when any undue strain, such as might damage the mechanism or bed is thrown upon this member the arm 8 will disengage from the latch 18, throwing the same into the position indicated in dotted lines in Fig. 1, thus preventing further transmission of power through the links 11, 12 and 13 to the slide 10.

In Fig. 2 there is shown the header slide 2 partially in section and partially in elevation, to which is attached a pivoted bell-crank lever 30. Such lever is provided upon its lower arm with a bearing surface 31 adapted to engage against a transverse bar 32 attached to a link 33. The link 33 is pivotally attached to a second link 34, the latter being in turn operated by means of an eccentric 35 from the driving shaft 36. It is

unnecessary to describe in greater detail the function of the bell crank 30 as the same is well known in the art and is fully described in the patent referred to in the preceding paragraphs.

The two links 33 and 34 constitute an articulated pitman or connecting rod for operating the slide 2 when these links are held in any given relation in order to make them constitute a single lever. For this purpose I provide a latch arrangement similar to that described and shown in Fig. 1, the latch consisting of a member 36 pivotally attached to the link 34 and adapted to engage against an engaging face 37 formed on the link 33. A compression spring 38 is mounted between lugs 39 and 40 which are attached respectively to the link 34 and the latch 36, such spring serving to maintain the latch in the position shown in Fig. 2. When the press- shown in Fig. 3, thus rendering the links 33 and 34 inoperative to reciprocate the tendency of these two links to move into the position shown in Fig. 3, since they are not in alinement, is sufficient to cause the latch 36 to disengage and to move into the position shown in Fig. 3, thus rendering the links 33 and 34 inoperative to reciprocate the header 2.

The action of the latch in each of the two connections shown should be clear from the foregoing description. It may be stated however, that the engaging faces 19 and 37 on the links 6 and 33 are formed to permit of the ready disengagement of the latches 18 and 36 when the tendency to disengage exceeds the pressure of the springs. By the use of the present device, the safety of the machine can be guarded without the necessity of supplying, at one point, a member adapted to break under an overload. When such a member is used the machine must be stopped while a new member is substituted, while my device need only be reëngaged after a stop. Moreover, such reëngagement is entirely automatic, for in either form of apparatus illustrated, upon the crank-shaft or actuating slide being moved so as to bring the separated parts back into normal position, the latches 18 and 36 are brought into operative engagement with the faces on the members 8 and 33 respectively.

I therefore particularly point out and distinctly claim as my invention:—

1. In a safety device, the combination with two pivotally connected arms forming, when in one relative position, a single rigid member, of a resiliently mounted, movable safety latch engaging over one of said arms and permitting the same to swing relatively to each other under abnormal strain.

2. In a safety device, the combination with two pivotally connected arms forming, when in one relative position, a single rigid member, of resilient safety means adapted to maintain said arms in the aforesaid position under normal strain, but permitting said arms to swing relatively to each other under abnormal strain, said means including a latch pivotally mounted on one of said arms and normally maintained in engagement with the other of said arms.

3. In a safety device, the combination with two pivotally connected arms forming, when in one relative position, a single rigid member, of resilient safety means adapted to maintain said arms in the aforesaid position under normal strain, but permitting said arms to swing relatively to each other under abnormal strain, said means including a latch pivotally mounted on one of said arms and normally maintained in engagement with the other of said arms, and a spring adapted to so normally maintain said latch.

4. In a safety device, the combination with two pivotally connected arms, forming, when in one position, a single rigid lever, one of said arms having an engaging face, and a latch pivotally mounted on the other of said arms and adapted to engage against such engaging face on said first-named arm, and a spring adapted to maintain said latch in such engaging position against a predetermined pressure tending to dislodge the same.

5. In a safety device, the combination with two pivotally connected arms, forming, when in one position, a single rigid lever, one of said arms having an engaging face, and a latch pivotally mounted on the other of said arms and adapted to engage against such engaging face on said first-named arm, a projection on said latch, a second projection on said second named arm, and a compression spring interposed between said projections and adapted to maintain said latch in such engaging position against a predetermined pressure tending to dislodge the same.

Signed by me, this 13th day of April, 1914.

JOHN R. BLAKESLEE.

Attested by—
THOS. H. FAY,
JNO. F. OBERLIN.