

(No Model.)

2 Sheets—Sheet 1.

C. W. DURCHSCHLAG.
HEADING MACHINE.

No. 547,773.

Patented Oct. 15, 1895.

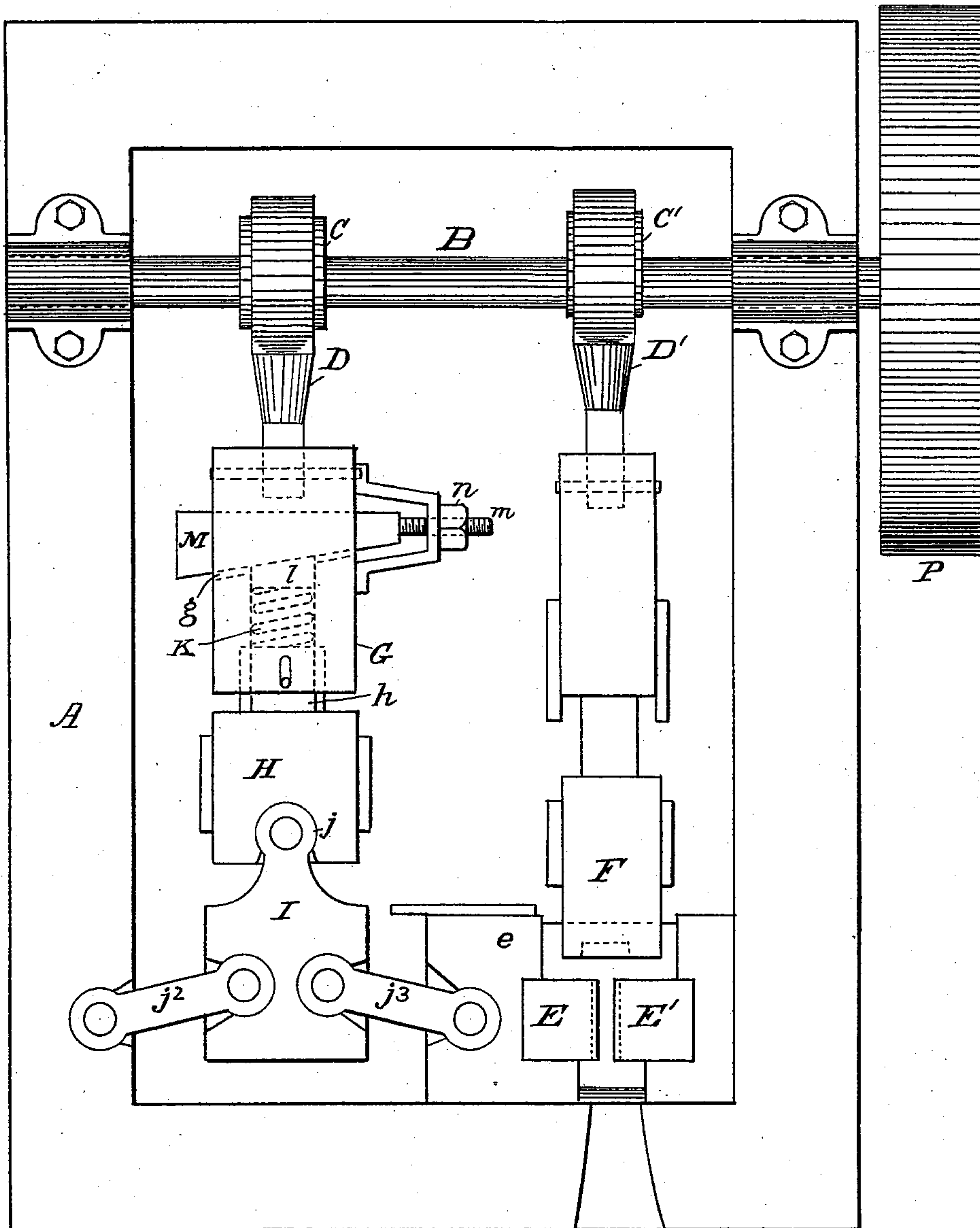


Fig. 1

WITNESSES

Roland Rider.
Soren Puntis

INVENTOR

Charles W. Durchschlag
by *C. M. Morse*
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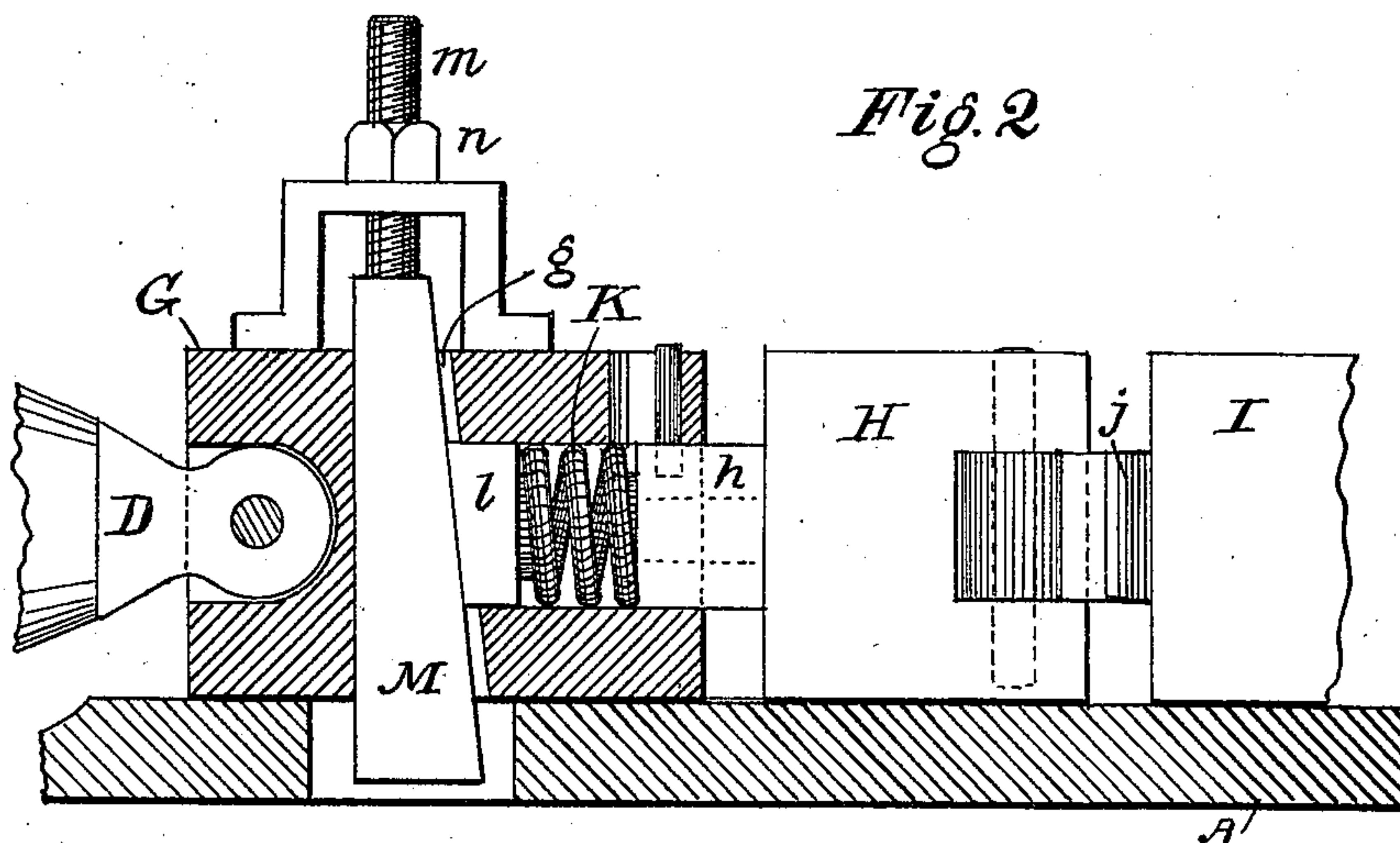
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WITNESSES

Roland Rider
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INVENTOR

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UNITED STATES PATENT OFFICE.

CHARLES W. DURCHSCHLAG, OF CLEVELAND, OHIO.

HEADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 547,773, dated October 15, 1895.

Application filed December 5, 1894. Serial No. 530,845. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. DURCHSCHLAG, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Heading-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, 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 heading-machines, and particularly to those employed in heavy work, such as heading bolts and the like.

The object of the invention is to prevent the breakage of the dies or any other parts of the machine by any unusual strain—such, for instance, as might be caused by misfeeding, or the feeding in of blanks of a larger size than the machine is set for, or the accidental falling in or getting of any obstruction between any of the fixed and moving parts.

In general terms the invention consists of interposing a yielding connection between the shaft which by means of a crank or eccentric drives the machine and the moving parts by which the gripping of the work is done, and specifically in the construction and combination of parts to effect the object set forth, as hereinafter fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 represents in plan view a bolt-heading machine embodying my invention applied to the parts which actuate the gripping-dies. Fig. 2 is a detail, partly in section, of the center slide, &c., of a bolt-header embodying my invention, and showing the preferred arrangement of the adjusting-wedge and relief-spring.

A represents the bed or frame of the machine, usually of heavy cast-iron.

B is the crank-shaft, driven by pulley P, on which are cranks or eccentrics C C', which actuate pitmen D D', by which the gripping and heading dies are actuated in any usual or preferred manner.

E E' are the gripping-dies, and F the heading-die. The moving die E is secured to a die-block e, sliding in guideways in the bed of the machine, while the fixed die E' is secured upon the bed of the machine as usual. The

die is actuated by the pitman D as follows:

A center block G, secured to the pitman by a pivotal attachment, slides in ways on the bed of the machine and carries a toggle-head H, to which is attached the oscillating toggle-block I. This oscillating block is connected to three toggles $j^1 j^2 j^3$, the first of which j^1 is rigid with the block I, while j^2 and j^3 are pivoted to the block I, and at their opposite ends are pivoted, respectively, j^2 to the bed or some rigid support and j^3 in the moving die-block e, by which means the reciprocating motion of the block G is caused to reciprocate the die-block E at right angles thereto.

Heretofore the cushioning against excessive strain has been sought to be effected by wedges or equivalents interposed in the line of motion of the die-block and actuated by springs or weighted levers. Such wedges have, however, been found liable to give way too easily, so as often to result in imperfect work by reason of the heading-die forcing back metal between the gripping-dies against the action of the weighted wedge and in other ways easily understood. To avoid such objections, I interpose the cushioning device between the pitman and the oscillating toggle-block, whereby I am enabled to utilize the action of a spring for the cushioning effect, which is nearly if not quite impossible to do satisfactorily when interposed directly in the line of strain. This result I effect by interposing the cushion as above described, owing to the fact that any excessive strain will only begin to act when the toggles $j^2 j^3$ are nearly or quite closed, and consequently have themselves their greatest power and greatest resistance. If the toggles were quite closed, so as to be in exact line with each other, obviously they would not give way; but by adjusting the parts so that the toggles will not be quite closed in direct line with each other until the dies are closed any excessive strain—such as misfeeding of the work, &c.—will resist the closing of the toggles enough to prevent breakage, while the resistance of the toggles in their closed position will prevent their being opened by any strain caused by the action of the heading-die less than sufficient to cause breakage if not cushioned.

The construction of the cushioning device is as follows: The shank h of the toggle-head

H has slight longitudinal play in the center block G, and against the inner end of the shank *h* I arrange a spring K with a follower *l*, which has a wedge face projecting into a transverse recess or opening *g* in the center block. Through this opening passes a wedge M, whose inclined face bears against the inclined face of the follower *l*. The wedge M is provided with any suitable screw-feed—as, for instance, with a screw *m* passing through a rigid part of the block G or through a bracket or lug affixed thereto, and having a nut *n*, whereby the wedge M may be drawn or forced through the recess *g* and caused to force the follower against the spring K to compress the same and increase its resistance. This construction enables me to adjust the cushioning device to any degree of sensitiveness, and since the resistance to the action of the toggles only arises when they are nearly at their maximum power of action the spring has sufficient power to close the toggles against the strain encountered in the usual and ordinary working of the machine and will yield enough to prevent breakage when the strain becomes unusually great.

Another important feature is the timing of the gripping-dies, since they are required to close before the heading-die strikes the work and to remain closed until after the heading-die has acted. Heretofore the timing of the dies has been effected by sliding parts or cams, which are liable to rapid wear, whereas by the construction above described the timing and cushioning effect is produced by the same parts, which are not subject to a sufficient strain to cause wear. When the dies have closed, the further forward action of the

block G will operate simply to compress slightly the spring K and give the necessary time to the die E.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a heading-machine the combination of a center-block actuated by the cam or pitman, a toggle head attached to and having spring-supported sliding movement therein, a toggle-block having oscillating connection with the toggle-head and carrying toggles on its opposite sides, one of which is connected to the die-block and the other to a rigid support in line with the back-thrust of the dies, and an adjustable wedge passing through the center-block and bearing on the spring to adjust the tension thereof, substantially as described.

2. In a heading machine the combination of a center-block actuated by the cam or pitman, a toggle-head attached to and having spring-supported sliding movement therein, a toggle-block having oscillating connection with the toggle-head and carrying toggles on its opposite sides, one of which is connected to the die-block and the other to a rigid support in line with the back-thrust of the dies, a wedge passing through the center-block and bearing on the spring, and a screw for adjusting the wedge to regulate the tension, substantially as described.

In testimony whereof I hereto affix my signature in presence of two witnesses.

CHARLES W. DURCHSCHLAG.

Witnesses:

WM. G. TAYLOR,
LONN PRENTISS.