

No. 607,157.

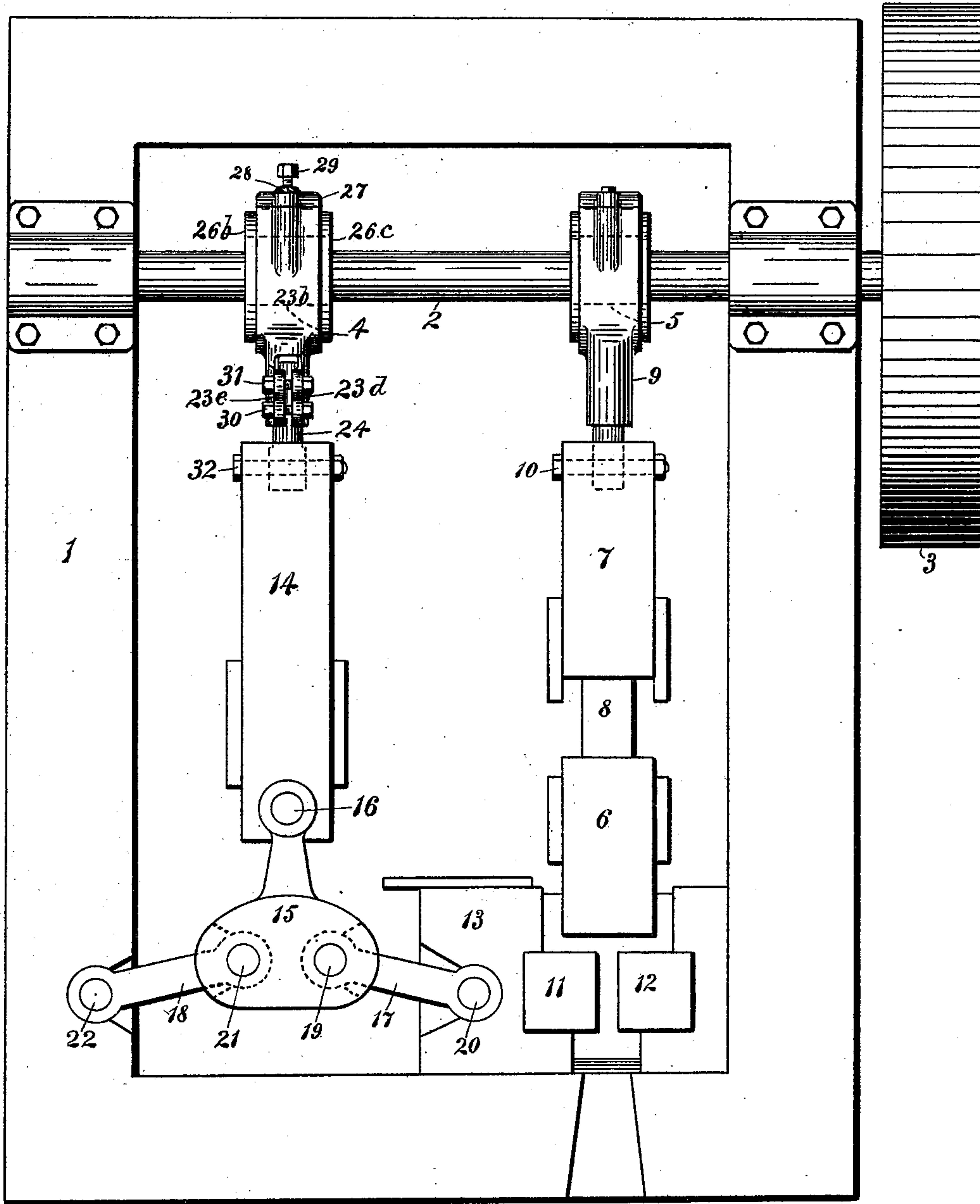
Patented July 12, 1898.

F. W. BRUCH.  
BOLT HEADING MACHINE.

(Application filed Mar. 15, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.  
H. Griewold  
E. E. Osborne.

Fig. 1

Inventor.  
Frederick W. Bruch,  
By J. A. Osborne & Co.  
attorneys.

No. 607,157.

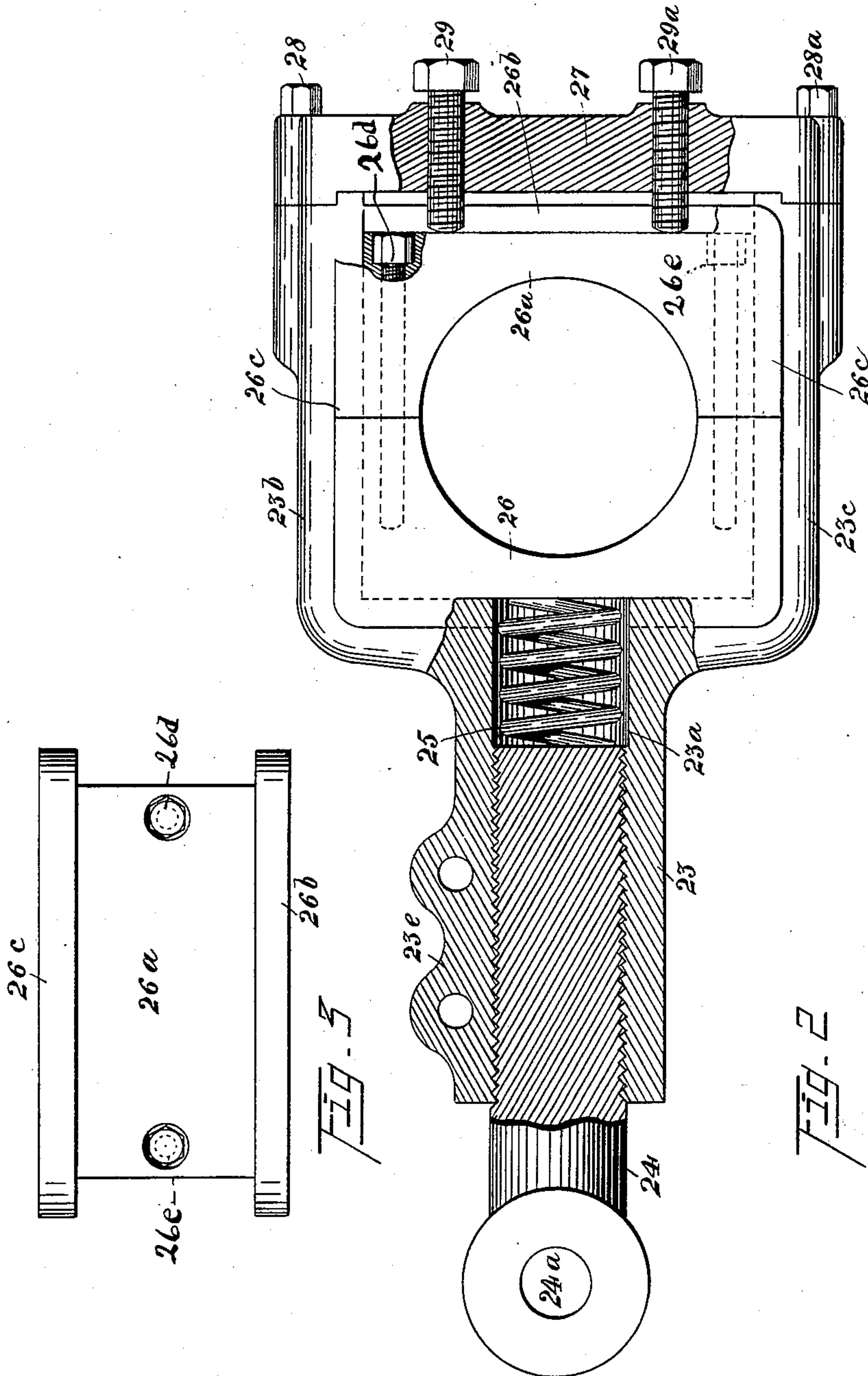
Patented July 12, 1898.

F. W. BRUCH.  
BOLT HEADING MACHINE.

(Application filed Mar. 15, 1897.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses.  
*L. J. Griswold*  
*C. M. Bell*

Inventor.  
*Frederick W. Bruch*  
By *J. A. Osborn & Co.,*  
Attorneys.



# UNITED STATES PATENT OFFICE.

FREDERICK W. BRUCH, OF CLEVELAND, OHIO, ASSIGNOR TO THE ACME MACHINERY COMPANY, OF SAME PLACE.

## BOLT-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 607,157, dated July 12, 1898.

Application filed March 15, 1897. Serial No. 627,526. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK W. BRUCH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga, State of Ohio, have invented a certain new and useful Improvement in Bolt-Heading Machines, of which the following, with the accompanying drawings, is a full, clear, and exact specification.

My invention relates to machines used for heading spikes, bolts, and rivets and for upsetting and forging metal rods and bars for various purposes. In such machines a toggle mechanism operated from a cam or a crank offset from the main shaft closes and opens the gripping-dies to grip the stock while being upset and to release it after having been upset. The plunger that strikes the blow to upset the metal comes into contact with it at the instant the metal is gripped between the dies. If no provision were made to prolong the grip of the dies, they would close and open again almost instantly as the cam or crank rounds the forward throw of its travel. This instantaneous closing and opening of the dies is sufficient in making rivets, track-bolts, and the like, where but a small quantity of metal is upset, but in making the larger bolts and spikes, where considerable metal is upset, the dies should remain closed a longer time, proportioned to the amount of metal to be upset and the character of the work to be done.

The object of my invention is an improved, simple, inexpensive, and effective means for prolonging the grip of the gripping-dies, said means being easily and quickly adjustable to time the grip of the dies to the amount of metal to be upset and the character of the work to be done.

My invention consists in crank or cam brasses for the actuating cam or crank that is adjustable longitudinally of the pitman through which the toggle mechanism is operated and a yielding rest for said adjustable brasses. It also consists in the details of said means herein described.

In the drawings, Figure 1 is a plan of a bolt-heading machine embodying my invention; and Fig. 2 is an enlarged side elevation of my improvement, the pitman and its strap end being partly in section to illustrate the

application of my improvement thereto. Fig. 3 is an edge view of one of the brasses.

1 represents the machine-frame, and 2 is the crank-shaft, driven by the pulley 3, on which are cranks or eccentrics 4 and 5, offset from the shaft to actuate the pitmen through which the toggle mechanism and the plunger are operated in the usual or any preferred manner.

6 is the plunger, that is operated through the slide 7 and their connection 8 and the pitman 9, driven from the cam 5. The pitman 9 and the slide 7 are pivotally connected by a pin 10.

11 and 12 are the gripping-dies. The gripping-die 12 is fixed to a rigid support and is immovable, while the die 11 is fixed to the die-block 13 and has a reciprocating movement therewith to close and open the dies. The die-block 13 slides in guideways in the bed of the machine.

To the slide 14 is pivotally attached the toggle-block 15 by the pin 16, and a link 17 connects the toggle-block 15 on one side with the movable die-block 13, and a like link 18 connects the toggle-block 15 at its opposite side with the machine-frame 1 or other rigid part of the machine. All these toggle-connections are pivoted upon the pins 19, 20, 21, and 22.

The mechanism hereinbefore described may be of the usual or any preferred construction. I will now describe the preferred embodiment of my invention and its application to the bolt-header herein described.

The pitman through which the toggle mechanism is actuated from the cam 4 preferably consists of a clamp-socket 23, threaded interiorly from its outer end, into which is screwed a stud 24. The stud does not extend through the clamp-socket. The bolts 30 31, that pass through the lugs 23<sup>d</sup> 23<sup>e</sup>, serve to clamp the socket 23 tightly upon the stud 24 and prevent wear thereof. The stud is pivotally connected with the slide 14 by a pin 32, that passes through the slide transversely and through the eye 24<sup>a</sup> in the stud. In the end of the clamp-socket next to the brasses is a recess 23<sup>a</sup>, within which is a spring 25. Between the side straps 23<sup>b</sup> 23<sup>c</sup> are the two



brasses 26 26<sup>a</sup>. The brasses are held in place transversely by flanges 26<sup>b</sup> 26<sup>c</sup>, that overlap the sides of the straps. A retaining-plate 27 is secured to the straps 23<sup>b</sup> 23<sup>c</sup> by bolts 28 28<sup>a</sup>.

5 The brasses are shorter than the space between the plate 27 and the back end of the straps. One of the brasses 26 rests against the spring 25. Passing through the plate 27 are adjusting-bolts 29 29<sup>a</sup>, whose inner ends  
10 engage the outer brass 26<sup>a</sup> between its flanges. The brasses 26 and 26<sup>a</sup> are held together by bolts 26<sup>d</sup> 26<sup>e</sup>, that screw through one of the brasses into the other.

When the brasses are held solid against the  
15 bottom of the straps, as shown, Fig. 2, the dies will open almost instantly upon closing. The dies are in closed position when the toggles are in a straight line. The length of the pitman and connections between the shaft of  
20 the machine and the toggles in the adjustment illustrated is such that the toggles are in a straight line and the dies are closed when the cam or crank is at its extreme forward point of movement. The adjustment shown  
25 in Fig. 2 and hereinbefore described is adapted to making rivets, track-bolts, &c., wherein little metal is upset to form the heads. By turning the adjusting-bolts 29 29<sup>a</sup> out the spring 25 will hold the brasses away from the  
30 bottom between the straps, thus lengthening the connection between the cam 4 and the toggle mechanism. This will cause the dies to close earlier than with a shorter connection. The toggle-block moves forward until  
35 the toggles are in a straight line and the gripping-dies are then closed. As the dies are closed and the toggles are brought in line before the cam 4 reaches its forward throw when the connection is lengthened, as de-  
40 scribed, the spring 25 will yield to allow the cam to round its throw, thus holding the toggles in line and the dies closed while the cam is rounding the forward part of its travel. The resistance of the dies and toggles when  
45 the dies are closed being greater than the resistance of the spring 25, the spring will yield and allow the cam that operates the movable die to move through the forward arc of its travel.

50 Lengthening the connection nine-sixteenths of an inch by my invention will cause the dies to remain closed while the plunger travels four and one-half inches, thus upsetting that length of the rod or bar metal into the head  
55 of a bolt or spike. When adjusted, the brasses will move forward and back the dis-

tance of their adjustment between the straps with each revolution of the machine.

My invention may have any desired adjustment and not that given only. The above 60 adjustment is given to illustrate the approximate proportion of time gained by lengthening said pitman connection.

As the adjusting-bolts 29 29<sup>a</sup> are at one end of the machine they are easy of access for 65 adjustment, and since the brasses are made of gun-metal or other metal of great wearing qualities the wear of the adjusting device comes upon parts of the machine best adapted to receive the wear. Further, as the brasses 70 are necessarily used in the machine the added expense of making them sliding and adjustable and of furnishing a spring-rest therefor is very small.

What I claim as my invention, and desire 75 to secure by Letters Patent, is—

1. In a bolt-heading machine, the combination of a shaft, a pitman provided with straps and having a recess therein, a spring within said recess, brasses connected together be- 80 tween the straps, a plate connecting the straps at their outer ends, and adjusting-screws passing through the plate to adjust the movement of the brasses between the straps, substantially as described. 85

2. In a bolt-heading machine, a shaft, a pitman adapted to carry a spring and having straps, brasses connected together between the straps, and an adjustment for the brasses adapted to close the brasses down tightly 90 upon the spring to permit no movement of the brasses between the straps, and to be adjusted to allow a limited movement to the brasses, substantially as described.

3. In combination, in a bolt-heading ma- 95 chine, a shaft provided with a crank or a cam from which one of the dies of the machine is operated, a pitman connected with said crank or cam, brasses connected together and fitted upon the crank or cam and having adjust- 100 ment longitudinally of the pitman, and a spring against which one of the connected brasses rests to allow a yielding of the pitman, substantially as described.

In testimony whereof I affix my signature, 105 in the presence of two witnesses, this 10th day of March, 1897.

FREDERICK W. BRUCH.

Witnesses:

J. A. OSBORNE,

ALFONSO H. CARPENTER.