

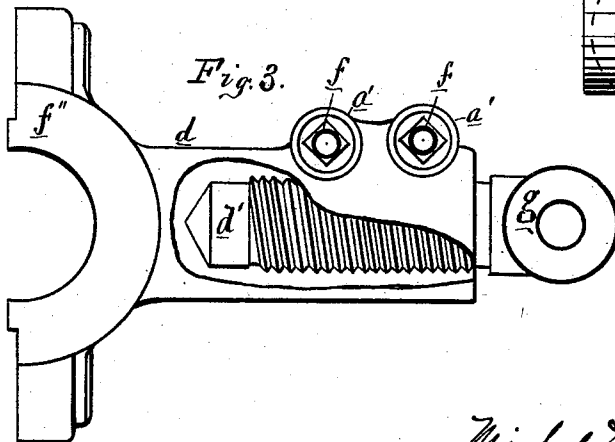
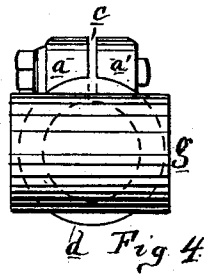
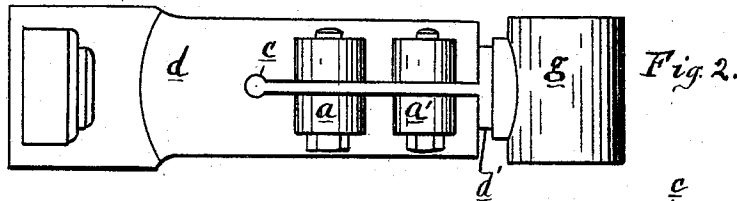
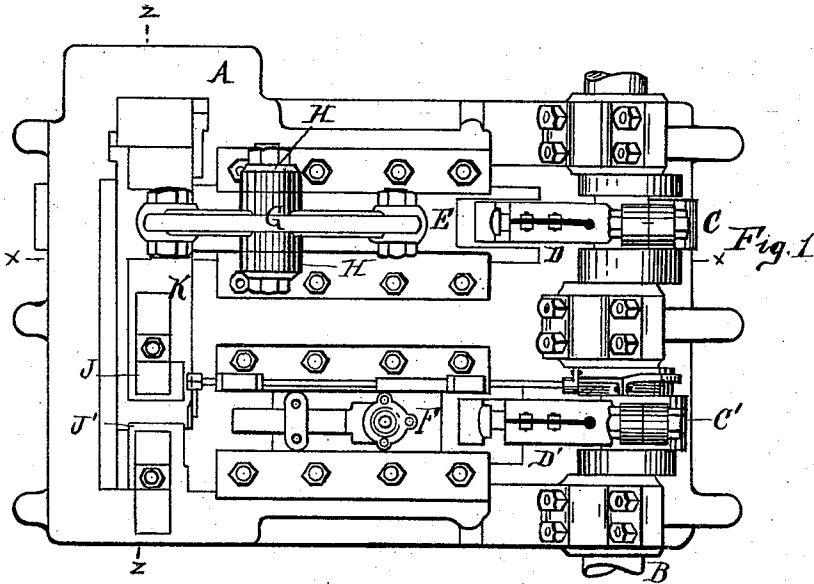
(No Model.)

2 Sheets—Sheet 1.

M. D. LUEHRS.
BOLT HEADING AND FORGING MACHINE.

No. 466,249.

Patented Dec. 29, 1891.



Witnesses
T. S. Sprague
Edwin A. Crabb

Inventor
Michel D. Luehrs
 By His Attorneys
Attorneys

(No Model.)

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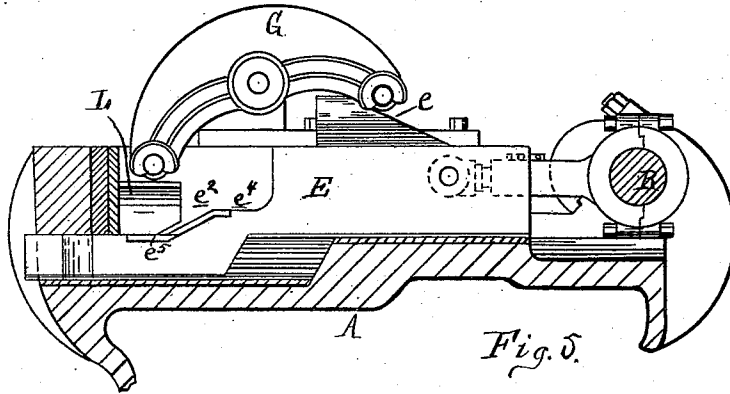


Fig. 5.

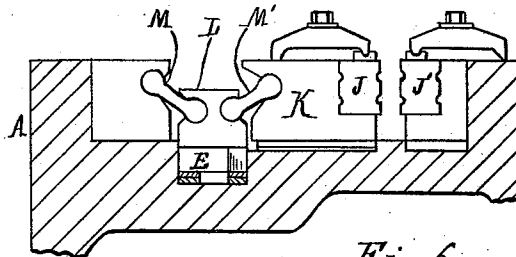


Fig. 6.

Witnesses
F. S. Sprague
Edward A. Crable

Inventor
Michel D. Luehrs
By Osborn's Attorneys
Osborne & Co

UNITED STATES PATENT OFFICE.

MICHEL D. LUEHRS, OF CLEVELAND, OHIO.

BOLT HEADING AND FORGING MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,249, dated December 29, 1891.

Application filed September 5, 1890. Serial No. 384,094. (No model.)

To all whom it may concern:

Be it known that I, MICHEL D. LUEHRS, 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 Bolt Heading and Forging Machines, of which the following, with the accompanying drawings, is a specification.

My improvements relate to machines for heading bolts and forging metal for various purposes.

The object of my invention is an improved pitman for connection between the crank-shaft and the toggle mechanism, and also between the crank-shaft and the heading-slide forging-machines, whereby the throw of the toggle mechanism may be regulated to close the gripping-dies and hold them closed, as desired, and also be adapted for use with the header-slide to regulate the throw of the header-tool. When applied to the toggle mechanism, my pitman is especially adapted to the improvements patented to myself and Daniel S. Coe by Letters Patent No. 409,110, dated August 13, 1889.

The invention consists in the novel construction and arrangement of parts described herein and defined in the claims.

Figure 1 is a plan view of a forging-machine embodying my invention. Fig. 2 is an enlarged plan of my improved pitman. Fig. 3 is a side elevation of the same, part of the shell of the pitman being broken away to illustrate its internal construction. Fig. 4 is an end view of Fig. 2. Fig. 5 is a longitudinal vertical section through the line xx of Fig. 1. Fig. 6 is a vertical cross-section of Fig. 1 on the line zz .

In the accompanying drawings, which form a part of this specification, A represents the main stand or bed of the machine.

B is the crank-shaft.

C is the crank which operates the header-slide, and C^x is the crank which operates the toggle mechanism.

D is the pitman connecting the crank-shaft and the toggle mechanism, and D' is the pitman which connects the crank-shaft and the header-slide. Both these pitmen are alike in construction.

E and F are sliding bars, which are driven

reciprocally in slides in the bed of the machine by means of the cranks C and C' in connection with the pitmen D and D'.

G is a rock-arm pivoted in the supports H above the sliding bar E.

J is the movable die, and J' is the stationary die.

K is the sliding die-block.

L is a toggle-block, and M and M' are the toggles.

For the sake of greater clearness, and that my present invention may be better understood and distinguished from what is described in said Patent No. 409,110, of August 13, 1889, I will first describe generally the operation of said machine and then describe the present invention.

The sliding bars E and F are driven reciprocally in ways on the bed-plate by means of the cranks C and C' in connection with the pitmen D and D'. The sliding bar F supports the heading-tool and carries it to and from the dies J and J'. The sliding bar E operates the mechanism which causes the movable die-block K, with the attached die J, to approach to and recede from the stationary die J'. The rock-arm G is shown in depressed position in Figs. 1 and 5. The sliding bar E has inclines e and e'' and plane surfaces e''' and e'''' on its upper face. Immediately above the forward end of the bar E is loosely placed the toggle-block L, provided with the toggles M and M'. One of these toggles M' engages with the sliding die-block K. The other toggle M engages with the adjacent side wall of the machine. The rock-arm G is pivoted above the bar E by means of supports on the bed of the machine. The front end of the rock-arm engages the upper surface of the toggle-block L and the opposite end engages the incline e on the bar E, said incline being in reverse direction to the incline e'' , situated near the opposite end of said bar E. The function of said rock-arm is to depress the toggle-block L when the sliding bar is on its back stroke. Plane surfaces e''' and e'''' at the top and bottom of the incline e'' sustain the toggle-block L stationary at each end of the stroke of the bar E. It will be observed that the incline e'' on the upper face of the bar E as said bar makes its

forward stroke will raise the toggle-block L, and by means of the toggles M and M' and the loose block K will throw the die J to the die J'. The crank C, which operates the toggle mechanism, is set a little in advance of the crank C', which operates the header-slide. The object of this is to close the dies a little in advance of the stroke of the heading-tool. The plane surface e'''' while under the block L sustains said block stationary and keeps the die J close to the die J' till the header-tool completes its stroke, when the bar E is withdrawn and the rock-arm depresses the block L and opens the dies. It will be seen that the quicker the incline e'' is pushed under the block L and the further the plane surface e'''' is pushed under said block the quicker and longer said block will be raised and sustained and so increase the length of time the dies J and J' are in gripped position. The converse is equally true—*i. e.*, the later the incline e'' is pushed under the block L and the shorter the distance the plane surface e'''' is pushed under said block the shorter will be the time the dies are closed.

My present invention is directed to this point—namely, to provide means for varying the time said dies will be closed. This is accomplished by means of a pitman, which may be increased or decreased in length, thus regulating the time when the incline e'' will be forced under said block L and the distance the plane surface e'''' will be pushed under said block.

I will now describe in detail said adjustable pitman, which is my present invention. The matter is illustrated in detail in Figs. 2, 3, and 4 of the drawings.

The pitman consists of a shell d , having a female thread, and a stud d' , having a male thread. The shell d is provided on its upper face with one or more ears a' , bored to admit the passage of bolts f and f' through them, and said ears and shell are slotted through, as shown at c . The bolts $f f'$ are loosened and the stud d' is screwed into the shell till the pitman is made the required length, when said bolts f and f' are tightened. This construction makes it easy to adjust the pit-

man to the desired length. Being made as strong and heavy as they are required to be, some means is desirable for allowing the parts to screw together easily, and these means shown also affords a way to tighten or take up the wear of the thread. This construction may take on various changes of detail.

f'' in the figures represents part of the cap for securing the pitman to the crank of the driving-shaft, and g is an eye for securing the pitman to the slide E and F.

It will be seen that by lengthening the pitman, through which is operated the toggle mechanism, the incline e'' will be pushed under the toggle-block L and will push the plane surface e'''' a greater distance under said block, thus making the dies close quicker and remain longer, and that by shortening the pitman the dies will not be closed so quickly nor remain closed so great a length of time. This is important where different classes of work is made on one machine. By thus lengthening and shortening the pitman, through which is operated the heading-tool, the distance of the extreme throw of said tool may be regulated for various kinds of work and allow more uniformity in the size of the heading-tools.

What I claim as my invention is—

1. In a bolt-header, a pitman so adapted to be adjustable in length as that the die-closing mechanism of the machine and the length of the forward thrust of the heading-slide may be varied as desired, substantially as shown and described.

2. In a bolt-header, a pitman consisting of a shell threaded interiorly and slotted a portion of its length and a stud threaded to screw into said shell, and means for taking up the wear of the thread, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 1st day of September, 1890.

MICHEL D. LUEHRS.

Witnesses:

J. A. OSBORNE,
H. S. SPRAGUE.