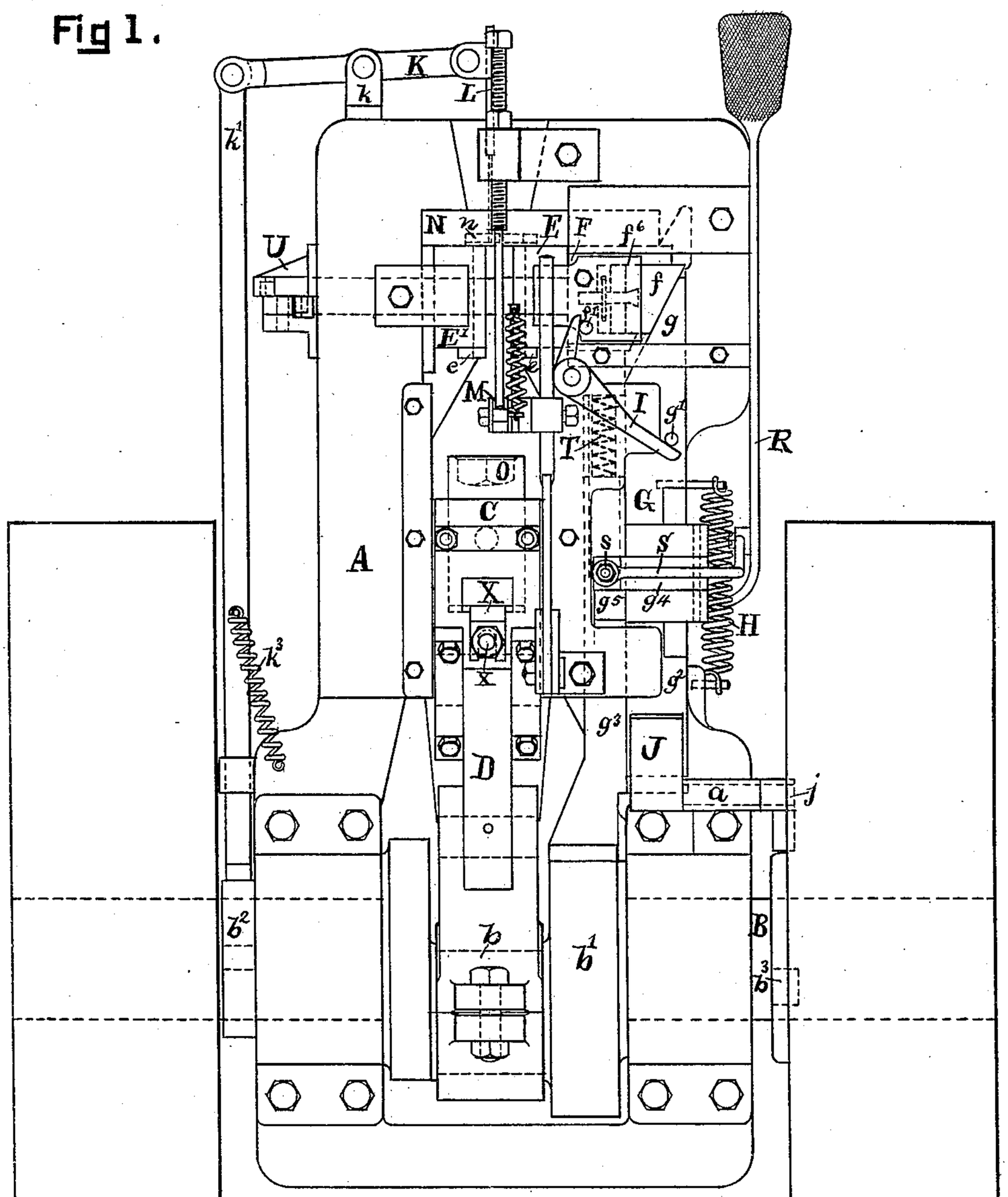
(No Model.) 5 Sheets—Sheet 1.

C. S. SEATON.

MACHINE FOR HEADING BOLTS, &c.

No. 444,460. Patented Jan. 13, 1891.

Fig 1.



WITNESSES.

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(No Model.)

5 Sheets—Sheet 2.

C. S. SEATON.

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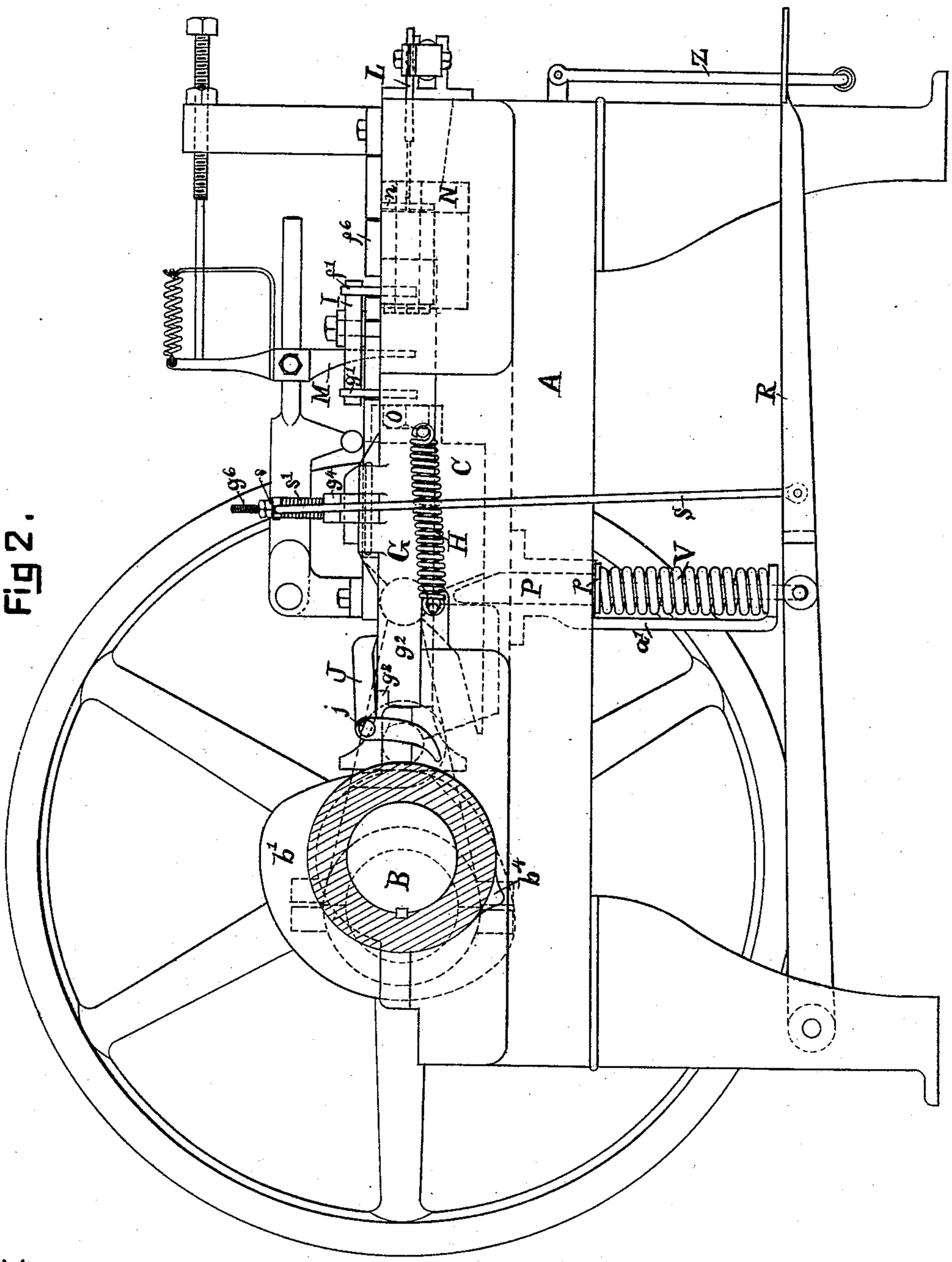
Fig 2.



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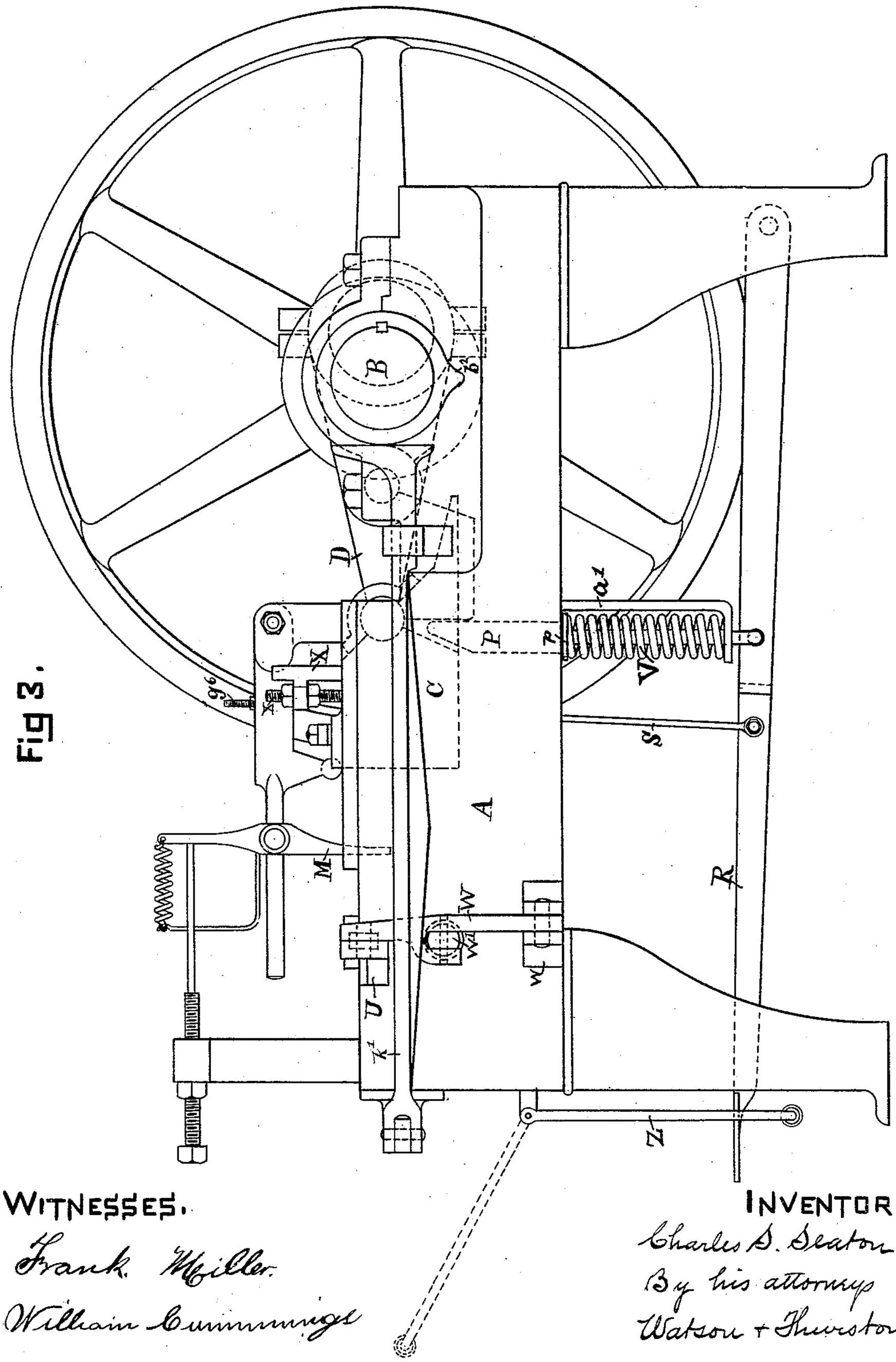
(No Model.) 5 Sheets—Sheet 3.

C. S. SEATON.

MACHINE FOR HEADING BOLTS, &c.

No. 444,460. Patented Jan. 13, 1891.

Fig 3.



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(No Model.) 5 Sheets—Sheet 4.

C. S. SEATON.

MACHINE FOR HEADING BOLTS, &c.

No. 444,460. Patented Jan. 13, 1891.

Fig 4.

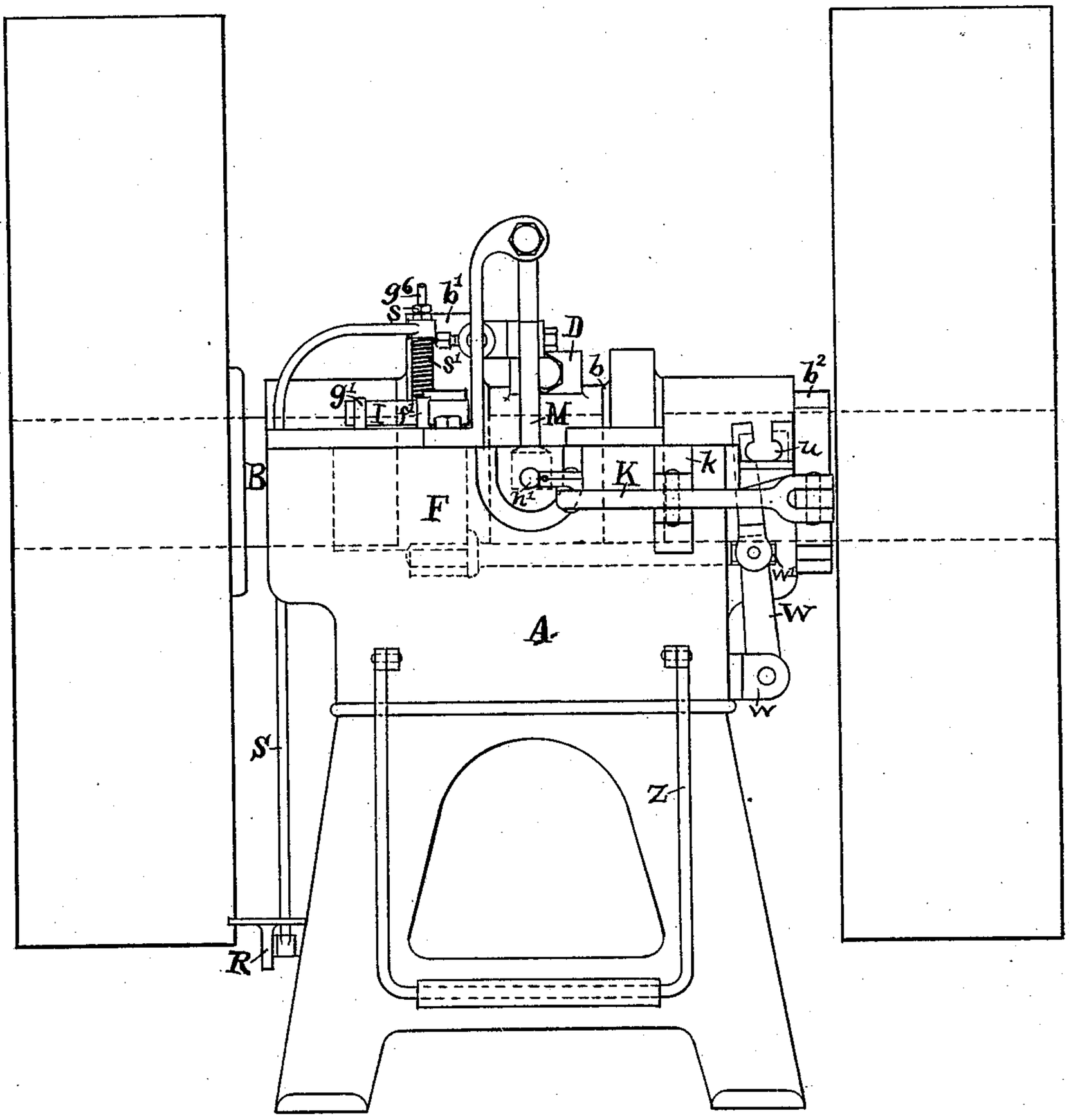

Fig 8.

WITNESSES.

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(No Model.) 5 Sheets—Sheet 5.

C. S. SEATON.

MACHINE FOR HEADING BOLTS, &c.

No. 444,460. Patented Jan. 13, 1891.

Fig 5.

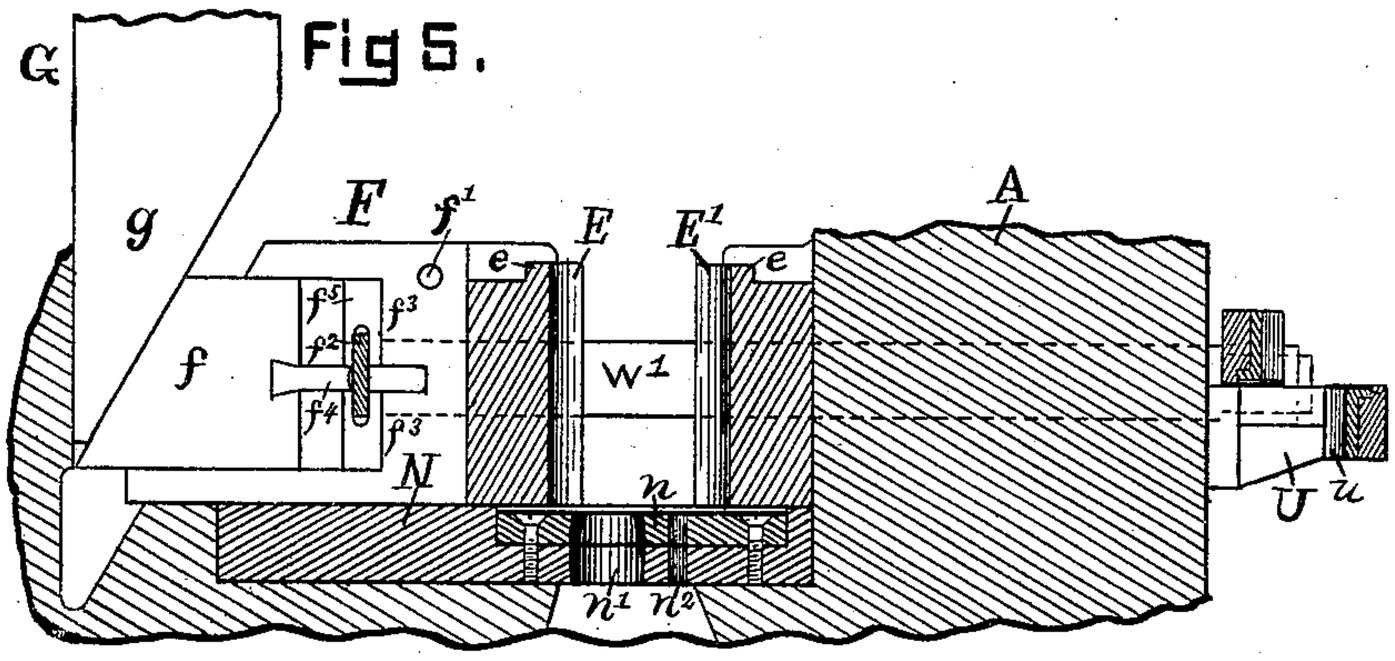


Fig 6.

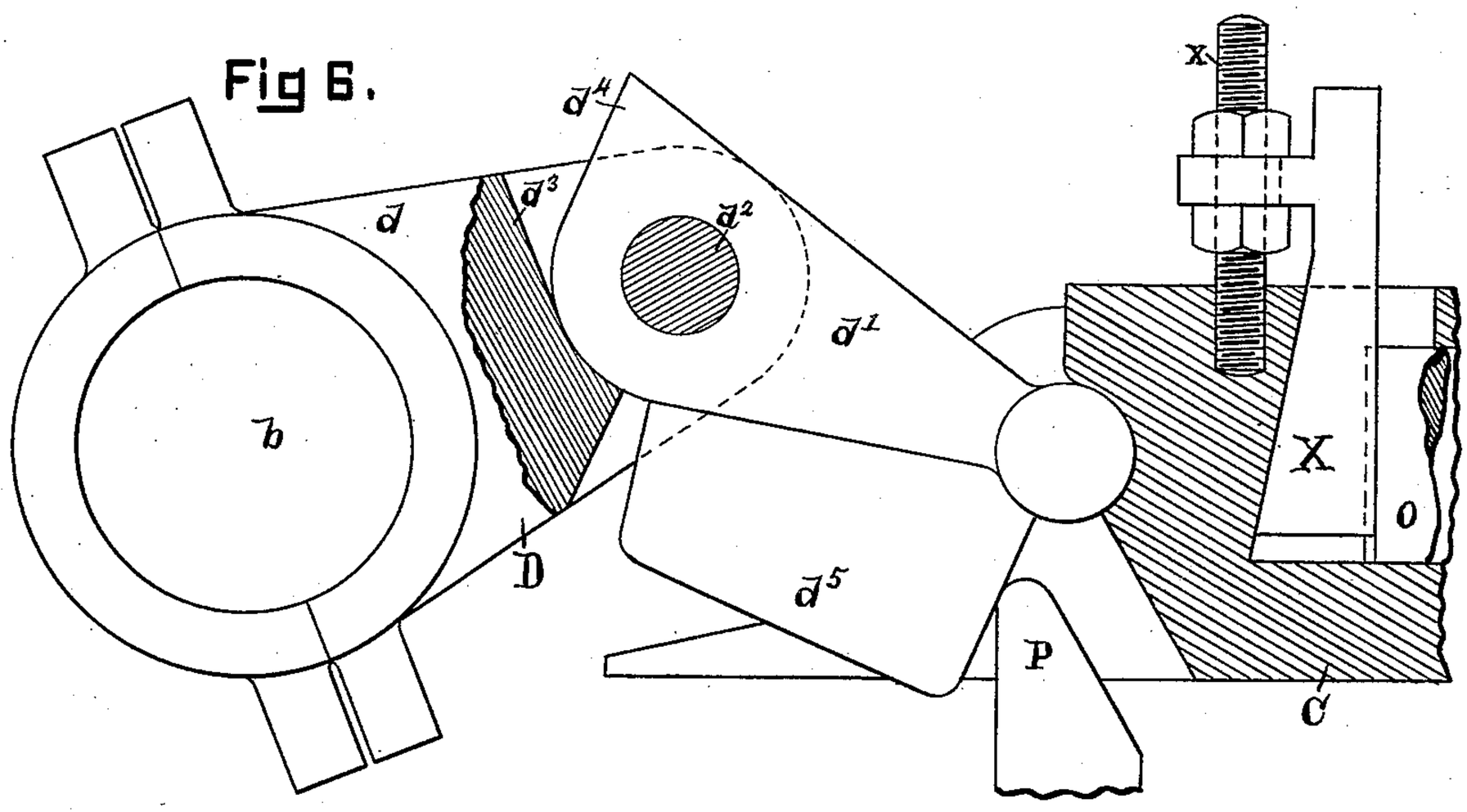
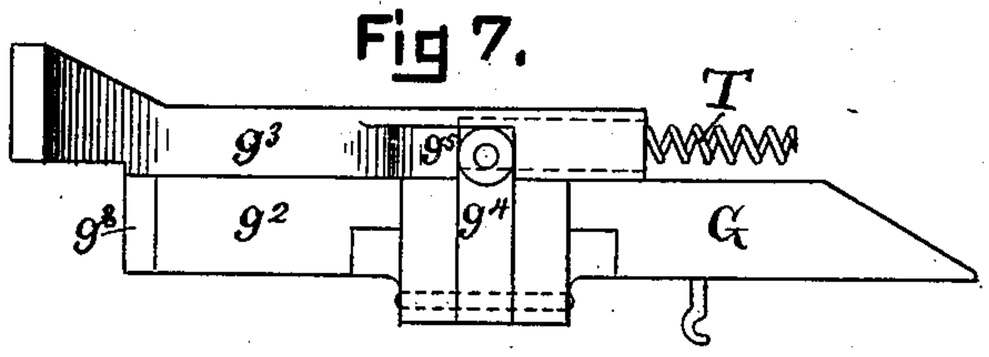


Fig 7.



WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES S. SEATON, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO JOHN A. SEATON, OF SAME PLACE.

MACHINE FOR HEADING BOLTS, &c.

SPECIFICATION forming part of Letters Patent No. 444,460, dated January 13, 1891.

Application filed March 25, 1890. Serial No. 345,196. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. SEATON, 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 and Rivet Heading Machines, of which the following is such a full, clear, and exact description as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings.

My invention relates to that class of machines which have generally been employed for heading rivets, track-bolts, and other bolts having circular heads.

The objects of my invention are, first, to improve the mechanism by which some of the parts of such machines are operated; second, to improve the form and construction of some of the parts; third, to add new parts having new functions in this class of machines; fourth, to provide safeguards against accidental breakage of the machine, and, fifth, to improve this class of machines generally, in the manner and for the purpose hereinafter specified.

My invention consists in the construction and combinations of the parts hereinafter described, which are particularly and definitely pointed out in the claims.

In the drawings, Figure 1 is a top plan view of my improved machine. Fig. 2 is an elevation of one side. Fig. 3 is an elevation of the other side. Fig. 4 is an end elevation. Fig. 5 is an enlarged plan of the front end of the machine, showing the holding-dies, movable die-carriage, cutter-block, &c., some of said parts being in section. Fig. 6 is an enlarged side view of the connecting-rod and a part of the cross-head, the latter being shown in section. Fig. 7 is the detail plan of the sliding wedge-bar, showing the two parts of which it is composed and the means for connecting and disconnecting said parts. Fig. 8 is an end view of an open block which may be substituted for the cutter-block N when it is desired to head long rods in the machine.

I will now proceed to describe in detail the machine shown in the drawings, referring to the parts by letters.

A represents the frame of the machine, which is provided at one end with suitable boxes, in which is journaled the constantly-driven shaft B, which is provided with a double crank *b*, located substantially midway between the boxes. Sliding in suitable guideways in the frame is a cross-head C, which is connected with the crank *b* by a connecting-rod D, whereby the cross-head may be moved backward and forward at each revolution of the shaft.

At the end of the frame opposite to that at which the shaft is journaled are placed the dies E E′. The dies are provided upon their proximate faces with horizontal grooves, which when said dies are closed form a socket in which the rod is held. I therefore term these dies the "holding-dies." The die E′ is fixed and the die E is movable toward and from said stationary die, for the purposes hereinafter specified.

The mechanism shown for moving said holding-die E is as follows: The die is secured by any appropriate means to a carriage F, adapted to slide in suitable horizontal guideways running transversely of the machine. At the back of this carriage is a beveled piece *f*, which engages with the beveled end *g* of the sliding bar G. This bar slides in straight guideways extending lengthwise of the machine. The rear end of the bar G engages with a cam *b*′, secured to the shaft B, whereby the bar is driven forward, and the pressure of the beveled part of the bar G against the beveled side of the carriage moves said carriage forward to close the dies. A spring H serves to draw the bar G backward for the purpose of bringing its end into engagement with the cam. A bent lever I, movable in a horizontal plane, is pivoted to the frame in substantially the position shown, whereby one arm engages with a vertical stud *g*′, secured to the bar G, and the other arm engages with a vertical stud *f*′, secured to the carriage F. The backward movement of the bar G moves the lever I, which by its said engagement with the stud *f*′ draws the carriage back.

Just behind the holding-dies E E′ is a fixed block N, having an orifice *n*′, preferably tapering, through which the bar from which the bolt is to be cut is fed. The rear end of

the fixed die E′ rests against and the rear end of the movable die E slides in contact with the face of this block. Set into that face of the block N next to the dies is a cutting-plate *n*, having an orifice which registers with the feed-orifice in the block. The edge of this orifice is beveled on the back side, thereby forming knife-edge, which, acting in conjunction with the edge of the movable die E, cuts to the proper length and with a shearing cut the rod which is fed through said orifice.

Heretofore I believe it has been considered necessary when cutting an iron rod (hot or cold) with a shearing cut to have the shearing-edges move in substantial contact with each other, or, in other words, as nearly as possible in the same plane. I find, however, that in working hot iron especially a smoother cleaner cut is made when the shearing-edges do not move in contact. Therefore the cutting-plate *n* is set slightly—say one thirty-second of an inch—below the surface of the block N, substantially as shown in Fig. 5, and I thereby obtain much more satisfactory results than would be possible if the plate were flush with the surface of the block. Directly behind the socket, which is formed when the two dies E E′ are in contact, is one small orifice n^2 through the block N and plate *n*, through which an ejecting-hammer L works, substantially as shown and described in my prior patent, No. 296,073, dated April 1, 1884.

The mechanism for operating the ejecting-hammer herein shown is somewhat different from that shown in said prior patent, and is as follows: A lever K is pivoted to a bracket *k*, secured to the frame. The hammer L is pivotally connected at one end to said lever K, and a long bar *k′*, sustained in guides in brackets on the frame, is pivotally connected with the other end of said lever. An abrupt cam b^2 on the shaft B is adapted to push this bar suddenly forward at the proper time in each revolution, whereby the hammer gives a quick tap on the end of the headed rod, which loosens it from the die. A spring k^3 withdraws the hammer.

In operation the parts of the machine above described act as follows: The holding-dies E E′ being open, a heated rod is fed through the orifice *n′* in block N until its end strikes a suitable stop-gage M.

The construction and mode of operation of the gage shown in the drawing are substantially such as are shown in the prior patent above mentioned, and are no part of the present invention. The forward movement of the wedge-bar G moves the die E toward the die E′. This movement causes the projecting end of the hot rod to be sheared off by the knife-edge of the plate *n*, and the part thus cut off is caught and retained in the socket between the two dies E E′. Concurrently the cross-head moves forward. The heading-tool O, which it carries, engages with the end of the rod and upsets and forms it. It is not intended that the rod shall be pinched between the dies E E′ hard enough to hold it, the design being that most of the pressure in the heading operation shall be borne by the block N through the endwise pressure against it of the rod. The rod may, however, be held by the side pressure of the dies, if desired, and will occasionally be so held owing to the slight variations in the diameter of the rods. In both modes of operation the strain is ultimately borne by the block N, since the rear ends of the dies E E′ abut against said block. When the head is formed, the heading-tool is withdrawn by the backward movement of the cross-head. Concurrently the movable holding-die is drawn away from its fellow, the ejecting-hammer loosens the headed bolt from the dies, and when the dies are separated sufficiently the bolt falls by gravity. Notwithstanding the fact that the dies are not intended to hold the rod by the sidewise pressure, the tendency of the hot rod to spread in the socket imposes upon said dies considerable sidewise strain. In order that this strain may not be transmitted through the several movable parts and be ultimately borne by the shaft B through the end pressure of the bar G on the cam *b′*, (which action, it is clear, would cause the meeting surfaces of the cam and bar to wear and impede to some extent the revolution of the shaft,) I provide locking mechanism, automatic in its action, whereby when the dies are closed they are locked temporarily, and all side strain on the movable die is borne during the heading operation by this locking mechanism. To secure this result, a shoulder g^8 is provided on the rear end of the sliding bar G, and a pawl J is pivoted to a bracket *a* on the frame in such position that it is adapted to fall by gravity behind said shoulder g^8 when the bar G is at the extreme forward end of its movement. The pawl J is rigid with a small rock-shaft *j*, which is journaled in said bracket, and a depending arm *j* on said rock-shaft is struck during each revolution of the shaft by a lug b^4 on the hub of the fly-wheel, whereby the pawl is lifted, when the spring H draws the bar G backward until its end engages with the cam *b′*. If the ejecting-hammer fails to loosen the bolt so that it will fall from the dies and if the operator fails to notice this and a fresh length of rod is fed into the machine, something will be liable to break when the holding-dies come together. In order that the something may not be an important part of the machine, I arrange the parts so that the pressure tending to move the carriage F forward to close the dies shall be applied against a breaker-plate which is sufficiently strong to resist the ordinary strain when the machine runs properly, and provide mechanism whereby a part of this plate shall be sheared away under extraordinary strain. The specific construction shown for producing this mode of operation is as follows: The carriage F is pro-

vided with two separated shoulders f^3 f^3, and a steel plate f^5, having a hole through it, is placed against said shoulders with the hole opposite the space between said shoulders. A wrought-iron plate f^2 is set into said plate f^5 so as to lie across said hole, substantially as shown most clearly in Fig. 5. A stud f^4 is secured to the block f in such position that its end presses normally against said plate f^2 through the hole in the plate f^5. These several parts are held in engagement with the carriage F in the described position by a cap-plate f^6. If something gets between the two dies E E′, so that they cannot be closed, the stud f^4 is punched through the plate f^2, and a piece of said plate is sheared out and no further damage is done. When a new plate is inserted, the machine is repaired. This arrangement, whereby a piece of the plate is punched or sheared out, is better than any arrangement for merely breaking the plate, because it is stronger, and therefore any breaking in the ordinary operation of the machine is avoided, and, further, because when broken there are no broken pieces of irregular shape and size, which might in turn cause other breakage, and thus defeat the purpose for which the plate is provided. The piece punched out is carried forward into a cavity adapted to receive it, and from which it may be easily removed.

The above-described mechanism is provided to automatically save the machine from breakage in case the operator does not see the danger.

In order to lessen the chances of accident and for other reasons which are clear, I provide means whereby the forward movement of the cross-head may be arrested without stopping the continuous revolution of the shaft B. The mechanism for arresting the forward movement of the cross-head consists of a connecting-rod made in two parts pivoted together, means to limit the extent of their movement in one direction, and mechanism for compelling them to move upon said pivot in the contrary direction, the following being a description of the details of this construction: The two parts of the connecting-rod are indicated in Fig. 6 by the letters d d'. They are pivoted together by a strong pivot d^2. The part d is forked, and is provided with shoulders d^3 d^3, against which the end d^4 of the part d' abuts immediately after swinging "past the center," whereby the rod is adapted to deliver an end-thrust and thus push the cross-head forward. Attached to the part d' is a depending fin d^5, and a vertically-movable tripping-piece P is struck by said fin, thereby causing the two parts of the connecting-rod to swing upon their common pivot, which moves upward during the operation. This action is arranged to take place when the crank b has just passed the center and is beginning its forward movement, when there is very little strain upon the connecting-rod. When the connecting-rod is broken, as above described, the cross-head moves forward only about half its normal stroke. When the tripping-piece is removed, the rod automatically straightens itself, and the machine operates as first described. This connecting-rod may be properly termed a "toggle," which automatically straightens itself during its backward movement, whereby it is adapted to move the cross-head forward its full stroke. The tripping-piece P slides in suitable guides in the frame, and it is connected with the treadle R. When the treadle is pressed down, the tripping-piece is drawn out of the way of the fin d^5, and the connecting-rod remains straight and pushes the cross-head forward, whereby the bolt is headed. At the same time that the forward motion of the cross-head is arrested it is desirable to arrest the movement which closes the holding-dies E E′. This result is secured by making the bar G into two parts g^2 g^3, independently slidable side by side, and providing means for connecting and disconnecting them at will. The details of the mechanism shown for securing this result are as follows: On the part g^2, which has the wedge-shaped end, is pivoted a latch g^4, and on the part g^3 is a shoulder g^5, in front of which said latch is moved, thereby so connecting them that the two parts must move forward together when acted upon by the cam b'. The latch g^4 is provided with a vertical stem g^6, which is screw-threaded on its upper end. A bent rod S (most clearly shown in Fig. 4) is connected with the stem g^6 by a nut s and by a pivot with the treadle. A spring s' surrounds the stem g^6, and thrusts endwise against the latch and the eye on the rod S. When the rod S is drawn down by the downward movement of the treadle, this movement is transmitted to the latch by means of the spring s', and the two parts of the bar G become locked together. A coiled spring T is arranged to thrust against the part g^3 and the frame, whereby the said part is moved backward to a point where it may be latched, as above described. A spring V surrounds the stem of the tripping-piece P and thrusts against a collar p at one end and against a bracket a' at the other, whereby the treadle is raised normally and the parts rendered inoperative, as above described, until the treadle is pressed down. It is clear that the power to drive the cross-head forward is applied at the greatest disadvantage when the crank-shaft is nearest the "dead-center," while the machine is required to do some of its hardest work at this point of its movement. It sometimes happens that the resistance arrests the forward movement of the heading-tool at just about the dead-center and the machine stops. In order that this difficulty may be easily remedied, a vertically-movable wedge X is introduced into the cross-head, as shown. Its front side is straight and its back side is beveled and bears against an oppositely-beveled surface on the cross-head. The heading-tool is clamped to the cross-head, and its rear end bears against said wedge. A screw-

threaded stud *x*, engaging with the wedge, is secured to the top of the cross-head, and the wedge is held in place by nuts on said stud. When, therefore, the machine is blocked at the dead-center, as above described, the nut is screwed up and the wedge is struck down by a hammer, whereupon the heading-tool moves backward slightly and permits the cross-head to easily move forward the necessary distance to overcome the difficulty. This mechanism also affords means for nicely adjusting the extent of the forward movement of the heading-tool.

It is clear that these several mechanisms to arrest the motion of the different parts to guard against accidents and to relieve the machine when it becomes blocked have no part in the heading of the bolt or rivet and they may be a part of the machine or not, as desired.

Machines of this sort for different kinds of work should be built with special reference to the work each is to perform to obtain the most satisfactory results. The exigencies of the trade, however, demand a machine with which a variety of work may be done. Machines substantially such as the drawings show have been built with which bolts and rivets up to eight inches in length can be made automatically. Occasionally it is desirable to be able to head rods longer than this. I therefore provide means whereby these rods may be cut to the desired lengths by this machine. The mechanism shown is as follows: Rigidly secured to the side of the machine is a bracket U, in which is a horizontal groove *u*, one edge of which acts in conjunction with the movable shearing lever to cut the rod. W represents the shearing-lever pivoted to a bracket *w* on the frame. This lever is connected by a link *w'* with the carriage F. The upper end of the lever is provided with a semicircular groove, the edge of which is sharpened. When the carriage F moves forward, the lever W is moved, and a rod held in the groove *u* is sheared off between the closing edges of the two grooves.

When this machine is to be used to head longer rods than the machine is adapted to cut and head automatically, the block N is removed, and a block substituted like that shown in Fig. 8, which is slotted from the top directly behind the socket formed by the holding-dies when closed, and the dies are arranged to grip the rod between them and hold it firmly while it is being headed.

Heretofore, as I believe, machines of this general character have been available only for making "rivets" and "track-bolts," so called, and other bolts having curved heads. For making such bolts a heading-tool having a socket the shape of the desired head has been moved up to a flat-faced die. A fin of metal would generally be formed between said flat-faced die and the heading-tool. This was not a very objectionable feature on such kinds of bolts; but such a fin would spoil a square or hexagon head or a head of any other angular shape. Therefore that class of bolts have always been made, as I believe, in machines employing side hammers.

The machine hereinbefore described is adapted to employ a novel form of dies which I have invented, and with them to make bolts of any desired shape of head at a single blow. These dies *per se* are the subject of Letters Patent No. 424,136, granted to me March 25, 1890; but I have shown them in the drawings combined with a suitable machine in which they may be operated, and desire to claim them in combination with such operating mechanism.

The heading-tool or female die is provided with a socket having outwardly-beveled edges, and the part of the socket above the beveled edges is slightly deeper than the thickness of the bolt-head to be formed. Otherwise it is of the same shape and size. The holding-dies E E' have each a projection *e e* adjacent to the groove therein. When the two blocks are together, these projecting parts surround the socket in which the rod is held and form a male die of the same size in cross-section as the head which is to be formed and of such size as to fit snugly in that part of the socket in the heading-tool which is inside the beveled edges thereof. The height of these projections *e e* above the blocks is immaterial, provided it is sufficient to permit them to pass into the female die past its beveled edges a very short distance—say about a thirty-second of an inch. The rod from which the bolts are to be made is fed through the orifice in the block M to the gage. The movement of the die E causes the rod to be cut off. The portion cut off is held in the socket between the two dies. The heading-tool moves forward, and the socket passes over the end of the rod and upsets the metal. This movement continues until the female die passes over the male die. In this movement the metal (if it has spread somewhat irregularly and at a point only slightly outside of said socket) is pushed back by the male die up the beveled edges until the socket is completely filled. As the edge of the male die passes above the beveled part of the socket any excess of metal is sheared off. A slight further movement compresses the inclosed metal and fills out all of the corners of said socket and makes a perfect bolt. Since in this machine the heading-tool always advances the same distance, the bolts are all of uniform thickness.

The metal rods from which bolts or rivets are made in this machine are, when purchased, usually, say, twelve to sixteen feet in length. When the machine is employed for hot work, some three to four feet is heated at one time, and when this heated part is used the rod is reheated and this operation repeated. At first, therefore, it is desirable to have the rod supported in position opposite to the feed-orifice, and it is equally desirable that this sup-

port shall be easily removable, so that when the rods are short the workmen may get close up to the machine. These requirements are met by a swinging bracket Z pivoted to the frame. When in use, it is supported by an upright bar or other suitable means. When not in use, the support may be removed, when the bracket swings out of the way.

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

1. In a bolt or rivet heading machine, in combination, a stationary holding-die, a sliding carriage, a movable holding-die secured to said carriage, a breaker-plate secured to said carriage, and mechanism pressing directly against said breaker-plate to move said carriage forward, the whole being arranged substantially as described, whereby when the forward movement of said carriage is arrested before it reaches the end of its stroke a portion of said breaker-plate will be sheared away, for the purpose specified.

2. In combination with a movable holding-die of a bolt or rivet heading machine, a sliding carriage to which said die is secured, having separated shoulders, a block secured to the carriage, against which the pressure is applied to move said carriage forward, a punch secured to said block, and a breaker-plate arranged between said shoulders and punch, substantially as and for the purpose specified.

3. In a bolt or rivet heading machine, in combination, a sliding carriage having the separated vertical shoulders f^3 f^3, a breaker-plate engaging behind said shoulders, a block f, having the stud f^2, a holding-die, a cap-plate f^4, and mechanism for pressing directly against the block f to move said carriage forward, substantially as and for the purpose specified.

4. In combination with the movable holding-die of a bolt or rivet heading machine, a sliding carriage having separated shoulders f^3 f^3, a plate f^5, having a hole therethrough, resting against said shoulders, a breaker-plate f^2, secured to said plate across said hole, a block having a punch f^4, arranged to press against said breaker-plate through said hole, a beveled surface on the back of said block, a movable bar having an oppositely-beveled surface, and means for moving said bar, substantially as and for the purpose specified.

5. In a bolt or rivet heading machine, in combination, a block having a cutter-plate set below its surface, a feed-orifice passing through said block and plate, a stationary holding-die, a movable holding-die having its rear end in contact with the face of said block, and mechanism for moving said die across said feed-orifice, substantially as and for the purpose specified.

6. In a bolt or rivet heading machine, a cutter-block having a cutting-plate set into said block below its surface, both said plate and block having coincident holes, substantially as and for the purpose specified.

7. In a bolt or rivet heading machine, in combination, a cutting-plate having a suitable feed-orifice and a relatively-movable holding-die, the proximate faces of said plate and die being slightly separated, whereby a metal rod projecting through said feed-orifice is sheared off between the opposed edges of said die and feed-orifice, substantially as and for the purpose specified.

8. In a bolt or rivet heading machine, the combination, with the movable holding-die having a beveled surface at its back, of a sliding bar having an oppositely-beveled surface, said bar being made in two parts independently slidable side by side, mechanism for connecting and disconnecting said two parts, and mechanism for sliding said bar forward and backward, substantially as and for the purpose set forth.

9. In a bolt or rivet heading machine, a movable holding-die, a sliding bar made of two parts independently slidable side by side, mechanism for connecting and disconnecting said two parts, and suitable connecting devices between said bar and die, whereby said die is moved in both directions by the movement of said bar when its parts are connected, substantially as and for the purpose specified.

10. In a bolt or rivet heading machine, in combination with the movable holding-die having a beveled surface at its back, a sliding bar having an oppositely-beveled surface, a bent lever, the arms of which engage, respectively, with projecting studs which are secured directly or indirectly with said bar and die, and mechanism for sliding said bar in both directions, substantially as and for the purpose specified.

11. In a bolt or rivet heading machine, a movable holding-die, a sliding bar made of two independently-slidable parts, a revolving cam engaging with one of said parts, and suitable connecting mechanism between said die and the other part with a shoulder on one of said parts, a latch pivoted to the other part, mechanism for moving said latch in front of said shoulder and for removing it, and an independent spring for moving each of said parts backward, substantially as and for the purpose specified.

12. In a bolt or rivet heading machine, the combination of the movable holding-die, a sliding bar made of two independently-slidable parts, and suitable connecting mechanism between said die and bar with a shoulder on one of the parts of said bar, a latch pivoted to the other part, a screw-threaded stem to said latch, a treadle, a bent bar connecting said treadle and stem, and a spring around said stem, substantially as and for the purpose specified.

13. In a bolt or rivet heading machine, the combination of the movable holding-die having a beveled surface at its back with a sliding bar having an oppositely-beveled surface,

a cam, and a pawl adapted to engage with said bar when it is at the extreme end of its forward movement, substantially as and for the purpose specified.

14. In a bolt or rivet heading machine, the combination of the movable holding-die, a sliding bar, a cam, and suitable connecting mechanism between said bar and die, with a shoulder on said bar, a rock-shaft, a pawl secured thereto, an arm on said rock-shaft, and a lug revolving with the main shaft of the machine and adapted to engage with said arm at each revolution of said shaft, substantially as and for the purpose specified.

15. In a bolt or rivet heading machine, in combination, a crank-shaft, a cross-head, a connecting-rod formed in two parts, which are pivoted together, shoulders on said two parts, whereby the connecting-rod is adapted to deliver an endwise thrust, and mechanism for causing said two parts to turn upon their common pivot, substantially as and for the purpose specified.

16. In a bolt or rivet heading machine, in combination, a crank-shaft, a cross-head, a connecting-rod made of two parts pivoted together, said parts having shoulders which are adapted to abut and thereby adapt said rod to deliver an endwise thrust, a fin depending from one of said parts, a tripping-piece, and mechanism for moving said tripping-piece into and out of the line of travel of said fin, substantially as and for the purpose specified.

17. In a bolt or rivet heading machine, the combination of a crank-shaft, a cross-head, and a connecting-rod made in two parts having shoulders which are adapted to abut and thereby adapt the rod to deliver an endwise thrust, and having a fin depending from one of said parts, with a vertically-movable tripping-piece, a treadle-connecting mechanism between said tripping-piece and treadle, and a spring arranged to hold said treadle in such position that the tripping-piece is held normally in the line of travel of said fin, substantially as and for the purpose specified.

18. In a bolt-heading machine, a stationary holding-die having a horizontal groove, a movable holding-die having a horizontal groove and mechanism for moving the latter die against the former, projections from the face of both dies surrounding the socket formed by the two grooves, which projections when the blocks are in contact have substantially the same cross-sectional area as the bolt-head to be formed, with a cross-head, a revolving crank-shaft, a connecting-rod, and a heading-tool secured to said cross-head having a socket, the outer edges of which are beveled outward, said socket inside said beveled edges being of substantially the same shape and size as the bolt-head to be formed, except that it is slightly deeper than the thickness of said head, substantially as and for the purpose specified.

19. In a machine adapted to automatically cut from a rod a definite part thereof and to head the same at a single operation, a bracket pivoted to the machine at the feeding end thereof and adapted to be held in suitable relation to the feeding-orifice to support the rods as they are being fed, substantially as and for the purpose specified.

20. In a bolt or rivet heading machine, the combination of a stationary bracket secured to the side of the machine, a shearing-lever adapted to co-operate therewith, and suitable mechanism connecting said shearing-lever with some other moving part of the heading mechanism, whereby said lever is operated simultaneously with the heading mechanism, substantially as and for the purpose specified.

21. In a bolt or rivet heading machine, the combination, with a carriage which carries the movable holding-die, of a stationary bracket, a shearing-lever, and mechanism connecting said shearing-lever and carriage, whereby any desired length of rod may be cut while another rod is being headed, substantially as and for the purpose specified.

22. In a bolt or rivet heading machine, the combination of a shearing-bracket attached to the side frame of the machine and a pivoted shearing-lever adapted to co-operate with said bracket with a transversely-movable carriage and a link connecting said carriage and lever, substantially as and for the purpose specified.

23. In a bolt and rivet heading machine, the combination of a stationary and a movable holding-die provided with horizontal grooves, which when the dies are together form a socket in which the rod is held during the heading operation, a block against which said dies abut, having an orifice coincident with said socket, an ejecting-hammer, a lever to one end of which said ejecting-hammer is pivoted, a rod pivotally connected with the other end of said lever, and a quick-acting cam on the main shaft adapted to push said rod forward, substantially as and for the purpose specified.

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