No. 658,637. Patented Sept. 25, 1900.

J. GRIBBEN.

SPIKE MAKING MACHINE.

(Application filed Aug. 23, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

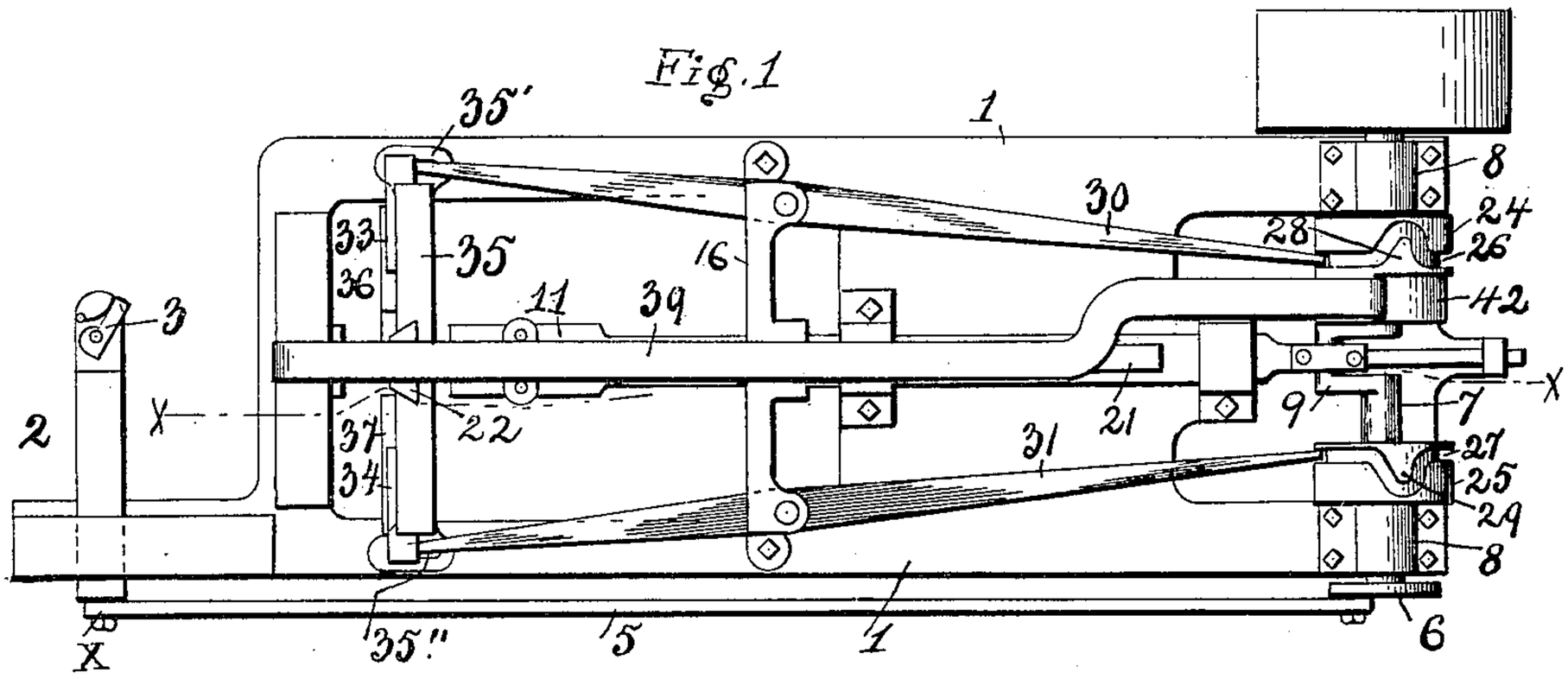


Fig. 2

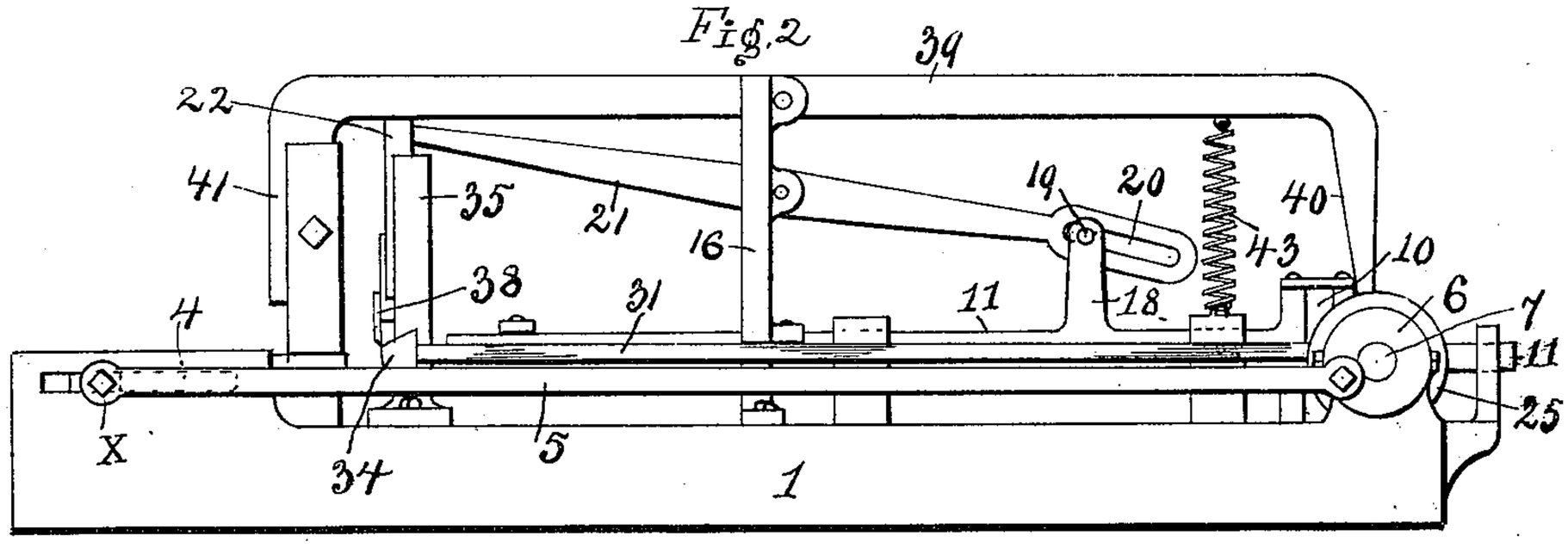
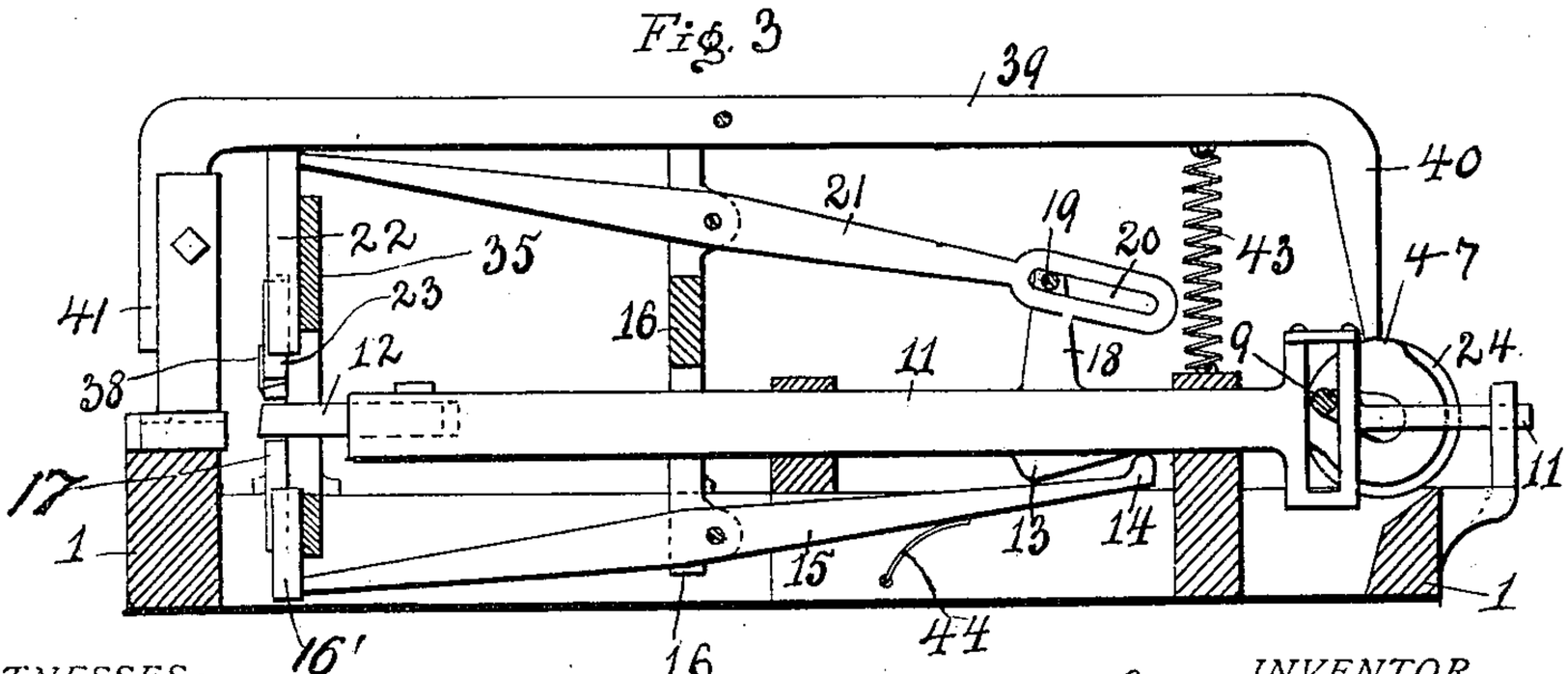


Fig. 3



WITNESSES:
Richard S. Harrison.
C. H. Williams

INVENTOR.
John Gribben
BY
John St. Roney
his
ATTORNEY.

No. 658,637. Patented Sept. 25, 1900.

J. GRIBBEN.

SPIKE MAKING MACHINE.

(Application filed Aug. 23, 1899.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 4

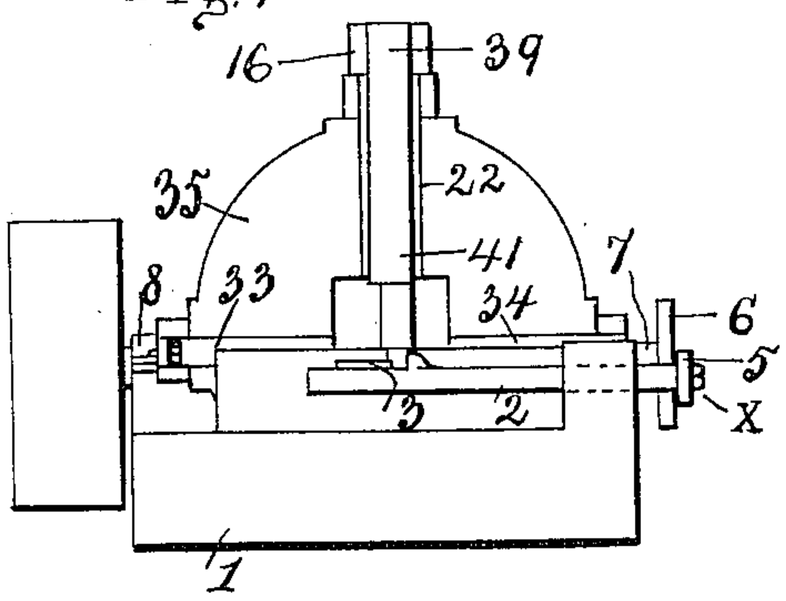


Fig. 5

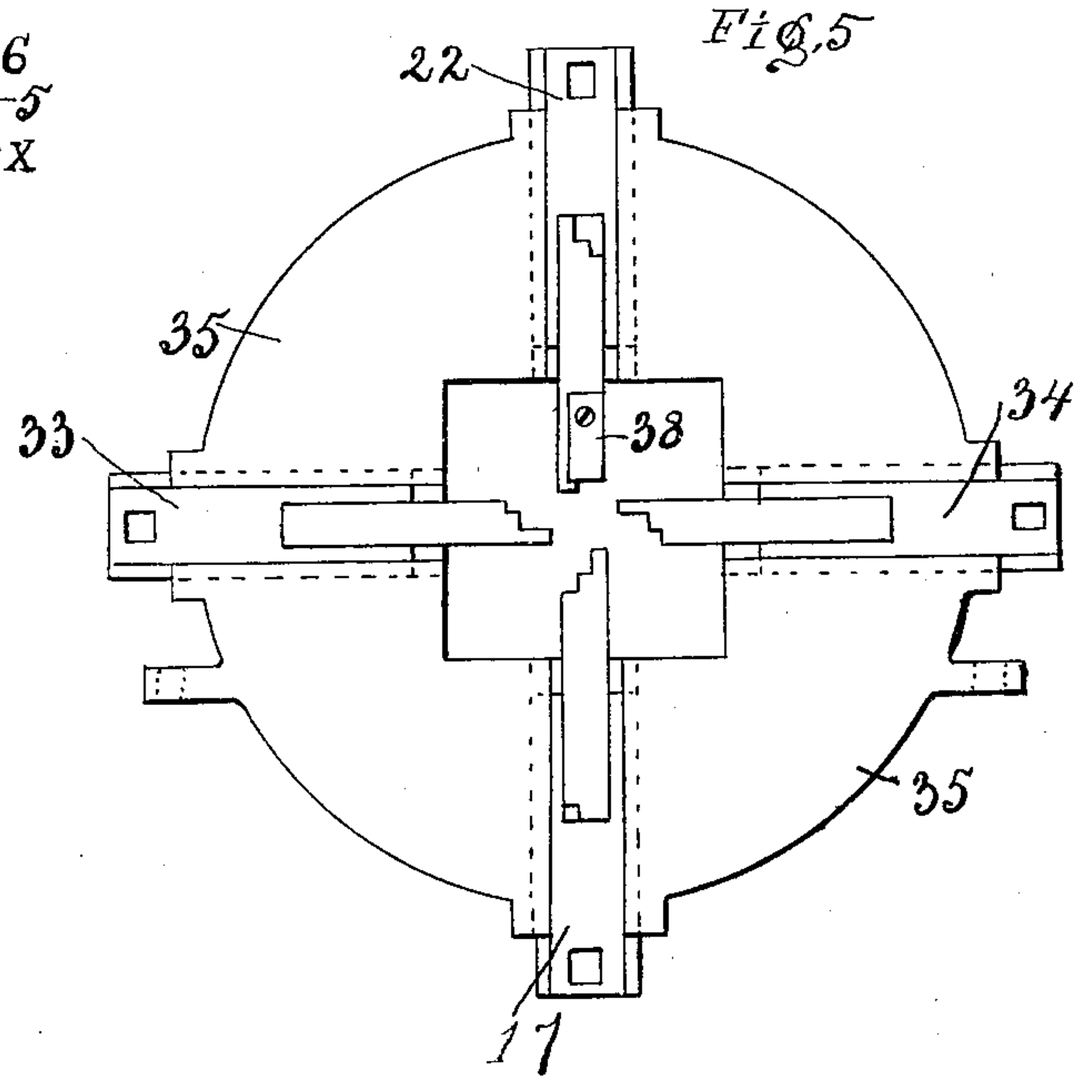


Fig. 6

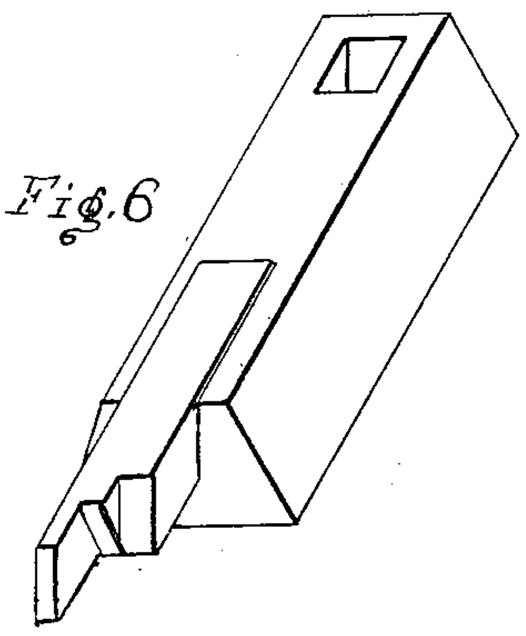


Fig. 7

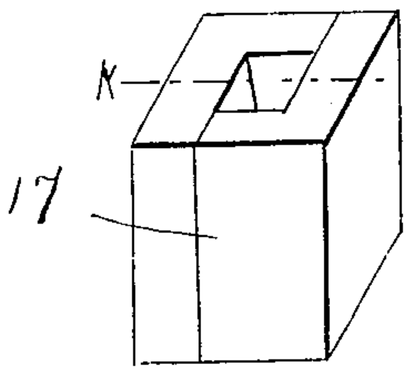


Fig. 8

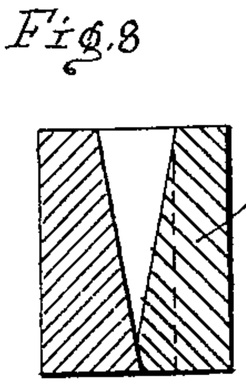
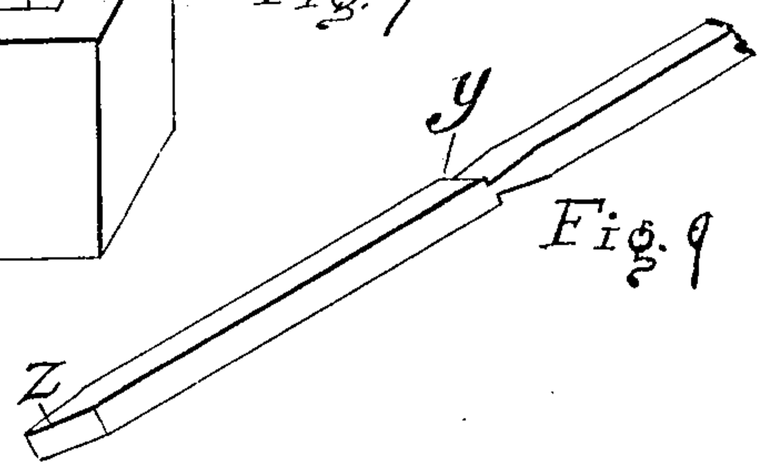


Fig. 9



WITNESSES:
Richard S. Harrison,
C. F. Williams

INVENTOR.
John Gribben
BY John St. Roney
his
ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN GRIBBEN, OF PITTSBURG, PENNSYLVANIA.

SPIKE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 658,637, dated September 25, 1900.

Application filed August 23, 1899. Serial No. 728,152. (No model.)

To all whom it may concern:

Be it known that I, JOHN GRIBBEN, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Spike-Making Machines, of which the following is a specification.

My invention relates to improvements in machines for making spikes.

The objects of my invention are to produce a device of this character adapted to manufacture spikes of different lengths, to make a long and comparatively-sharp point thereon, to turn a portion of the blank out of horizontal alinement simultaneously with cutting off a finished spike for the purpose of edging down a portion of the material to form the head of the next succeeding spike, and at the same time produce a machine adapted to largely increase the output or product of machines of this general character now in use to accomplish these purposes.

To these purposes my invention consists in the novel construction, combination, and arrangement of parts hereinafter set forth, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 indicates a plan view of my improved machine for making spikes. Fig. 2 is an elevation of one side of the same. Fig. 3 is a longitudinal view, partly in section, taken on line *x x* of Fig. 1. Fig. 4 is an end view of the same. Fig. 5 is a front elevation of the die-housing and dies. Fig. 6 is an enlarged view of one of said dies. Fig. 7 is a perspective view of one of the dies. Fig. 8 is a sectional view taken on line *k k* of Fig. 7. Fig. 9 is a perspective side view of blank after compression of sidewardly-moving dies.

Like reference characters indicate like parts wherever they occur throughout the several views.

Referring to said drawings, 1 is a base-plate or foundation, whereon the machine is adapted to be mounted or secured in any suitable manner. Said machine is preferably located close to and in advance of a mill (not shown) in order that the rolling of the spike material and the finishing of the same by the machine into spikes may be a continuous operation and requiring but one heating. The material as it passes from the mill is received upon a reciprocating support 2, passing through the feed mechanism 3 on one end of said reciprocating support and in alinement with the spike-forming dies of said machine. The end of said reciprocating support opposite that carrying the feed mechanism projects in a long slot 4, formed in the forward portion of the base-plate and constituting bearings in which the said support is adapted to be reciprocated by the movement of the rod 5, one end of which is connected to said support at *x* and the opposite end connected to the cam 6, mounted on the outer end of the power-shaft 7, which is mounted in housings 8 8, formed in or secured upon the rear end of the base-plate or foundation. The said power-shaft at the center of the same, or, rather, intermediate the length of the same, is provided with or formed in a crank 9, which turns in bearings 10, formed in the rear end of the reciprocating header 11, in the extreme forward end of which is secured the die 12 for forming the head of the spike. Near the rear end of said reciprocating header, on the under side of the same, is secured or formed an incline 13, which contacts with the upwardly-projecting rounded rear end 14 of the long lever 15, which is pivotally secured intermediate its length on the extreme lower end of the bracket 16. The forward end of said lever is connected to a die-holder 16′, which carries a die 17, adapted to form the point of the spike, the said die being reciprocated or moved vertically by the backward movement of the header 11. Immediately opposite the incline plane 13 and projecting upwardly is an arm 18, which is secured upon said reciprocating header in any suitable manner, the upper end of the same being provided with a horizontal pin 19, which projects in the angularly-disposed slot 20, terminating in the rear end of the long lever 21, which is pivotally secured intermediate its length in the upper side of the bracket 16 in vertical alinement with the point at which the lever 15 is pivotally connected to the same bracket. The forward end of the lever 21 is connected to and adapted to reciprocate a die-holder 22, on the lower end of which is secured in any suitable manner a corresponding die 23 to that carried by the die-holder 16′, the

said die 23 being adapted to move toward a horizontal plane downwardly, while the lower die moves upwardly, by the action of their respective levers, to press the material downwardly and upwardly into a form of a spike-point. The power-shaft 7 near the ends, respectively, is provided with rollers or wheels 24 and 25, in the periphery of which are formed grooves 26 and 27, in which a cam 28 and 29 is formed. The rear ends of levers 30 and 31 respectively engage in said grooves 26 and 27. The said levers 30 and 31, being pivotally connected on opposite sides of the machine to the bracket 16, and the forward end of said levers are movably secured in laterally-movable die-holders 33 and 34, which are secured in the upper portion of the die head or housing 35 and adapted to be reciprocated laterally by the movement of said levers 30 and 31, so as to bring the dies 36 and 37 for forming or pressing the material to form the spike-point laterally just previous to the downward-and-upward movement of the other portion of the die which presses the blank vertically to form the point of the spike. The said die-holder 22 is provided with a knife 38, adapted to sever the material from the spike simultaneously the point of the spike is formed by the dies carried by the holders 22 and 17.

39 is a long lever extending the length of the machine and is pivotally mounted in the upper portion of the bracket 16, both ends of said lever 39 terminating in downwardly-projecting portions 40 41. The said part 40 rests upon the plain portion 42 of the roller 24, one portion 47 of the periphery of which is somewhat enlarged, whereby when the roller is rotated the end 40 of the lever is moved upward or elevated when in contact with said enlarged portion of the roller. The opposite end of the lever is at this moment depressed or forced downward upon the piece being headed. Immediately the rotation of the roller brings the smaller portion of its periphery in contact with the end 40 of the lever the contraction of the spring 43 and gravity elevates the opposite end 41, releasing the piece and permitting it to be fed a sufficient distance to bring the end of the piece in vertical alinement with the point-forming dies.

The die head or housing 35 is adjustably secured on the base or foundation for the purpose of moving the same from or toward the header 12, so that shorter or longer heads may be formed upon the spike, if desirable, the said housing at the point of its connection with the base-plate or foundation being provided with slots 35′ and 35″ to admit of this.

The dies for forming the point of the spike are formed of two corresponding parts 17 and 23, respectively, which when closed, as shown in Figs. 7 and 8, by the movement of die-holders in which they are secured form a box, the sides of which are vertical, and the top and bottom thereof converge to a point, forming a V-shaped recess, as shown in Figs. 7 and 8.

The dies which compress the point end of the blank laterally preceding the formation of the point thereon are, like the point-forming dies, formed of corresponding parts 36 and 37, similar to the parts 17 and 23. They, however, compress the point laterally and do not close as tightly upon the point as do the parts 17 and 23, which completes the formation of the point.

In Fig. 9 a blank is shown which illustrates at Y the appearance thereof after the parts 36 and 37 have compressed the same laterally and at Z the same after the parts 17 and 23 have completed the spike-point.

Springs 43 and 44 are for the purpose of holding the levers 15 and 39 in contact with the roller 42 and the incline plane 13, respectively.

The operation of my improved machine is as follows, to wit: Suitable bars being fed through a mill are passed through the feeding mechanism 3, which is secured to one end of reciprocating support 2. Power being applied, the support is carried toward the die-header, and simultaneously the die for forming the head of the spike is caused to advance toward and against the blank, forming the head of the spike. Immediately the die for forming the head of the spike moves away from the blank after the head has been formed thereon the said blank travels in the same direction by means of the feed mechanism and the pressure of the mill a sufficient distance to bring the point portion of the spike into alinement with the dies in the header simultaneously with the said dies for pressing or reducing the blank in laterally or reducing the same in width, as shown in Fig. 9. Immediately this operation is performed the dies which operate vertically for pressing the blank into a long sharp point are caused to act, completing the operation of forming the point, and simultaneously with the said operation the blank is severed from the completed spike by the knife which is carried by the upper die for forming the point. This operation is repeated in forming succeeding spikes.

The machine is capable of running at a very high rate of speed.

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

1. The combination of a header-die, a plurality of laterally-movable dies adapted to compress the sides of the end of the blank preceding the formation of the point thereon, a plurality of vertically-movable dies adapted to compress the blank and form the point of the spike, a head or housing carrying said dies adapted to be adjusted whereby the length of the head on the spike is varied, substantially as set forth.

2. The combination of a header-die, a plurality of laterally-movable dies adapted to

compress the end of the blank laterally preceding the formation of the point thereon, a plurality of vertically-movable dies adapted to compress the blank and form the point of the spike, a head or housing carrying said dies adapted to be adjusted whereby the length of the head of the spike is varied, and means to sever the completed spike from the bar, substantially as set forth.

3. The combination of a header-die, a plurality of laterally-movable dies adapted to compress the end of the blank laterally preceding the formation of the point thereon, a plurality of vertically-movable dies adapted to compress the blank and form the point on the spike, a head or housing adapted to be adjusted whereby the length of the head of the spike is varied, and means to feed the blank toward the dies, substantially as set forth.

4. In a machine for making spikes, the combination of a plurality of vertically-movable dies, the levers 15 and 21 connected with and adapted to reciprocate the said vertically-movable dies, a plurality of laterally-movable dies, the levers 30 and 31 connected with said laterally-movable dies and adapted to reciprocate the same, a die for forming the head of the spike, means to reciprocate the same, the inner lower end of said die being provided with an incline plane adapted to contact with the inner end of the lever 15 for the purpose of elevating the die connected therewith, and the upper end carrying an arm which projects in a slot reversely inclined to said incline plane for the purpose of causing the die connected with lever 21 to travel downwardly, and the lever 39 adapted to intermittently release and grasp the blank being fed to the die-holder, substantially as set forth.

5. In a machine for making spikes, the combination of a plurality of vertically-movable dies, the levers 15 and 21 adjustably connected with and adapted to reciprocate the said vertically-movable dies, a plurality of laterally-movable dies, the levers 30 and 31 adjustably connected with said laterally-movable dies and adapted to reciprocate the same, a die for forming the head of the spike, a head or housing carrying said vertically and laterally movable dies and adapted to be adjusted for the purpose of changing the length of the head of the spike, means to reciprocate the head-forming die the inner lower end of the carrier of said head-forming die being provided with an incline plane adapted to contact with the inner end of the lever 15 for the purpose of elevating the die connected therewith and the upper end carrying an arm which projects in a slot reversely inclined to said incline plane for the purpose of causing the die connected with a lever 21 to move downward, and the lever 39 adapted to intermittently release and grasp the blank being fed toward the die-holder, substantially as set forth.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

JOHN GRIBBEN.

Witnesses:
CLARENCE A. WILLIAMS,
JOHN H. RONEY.