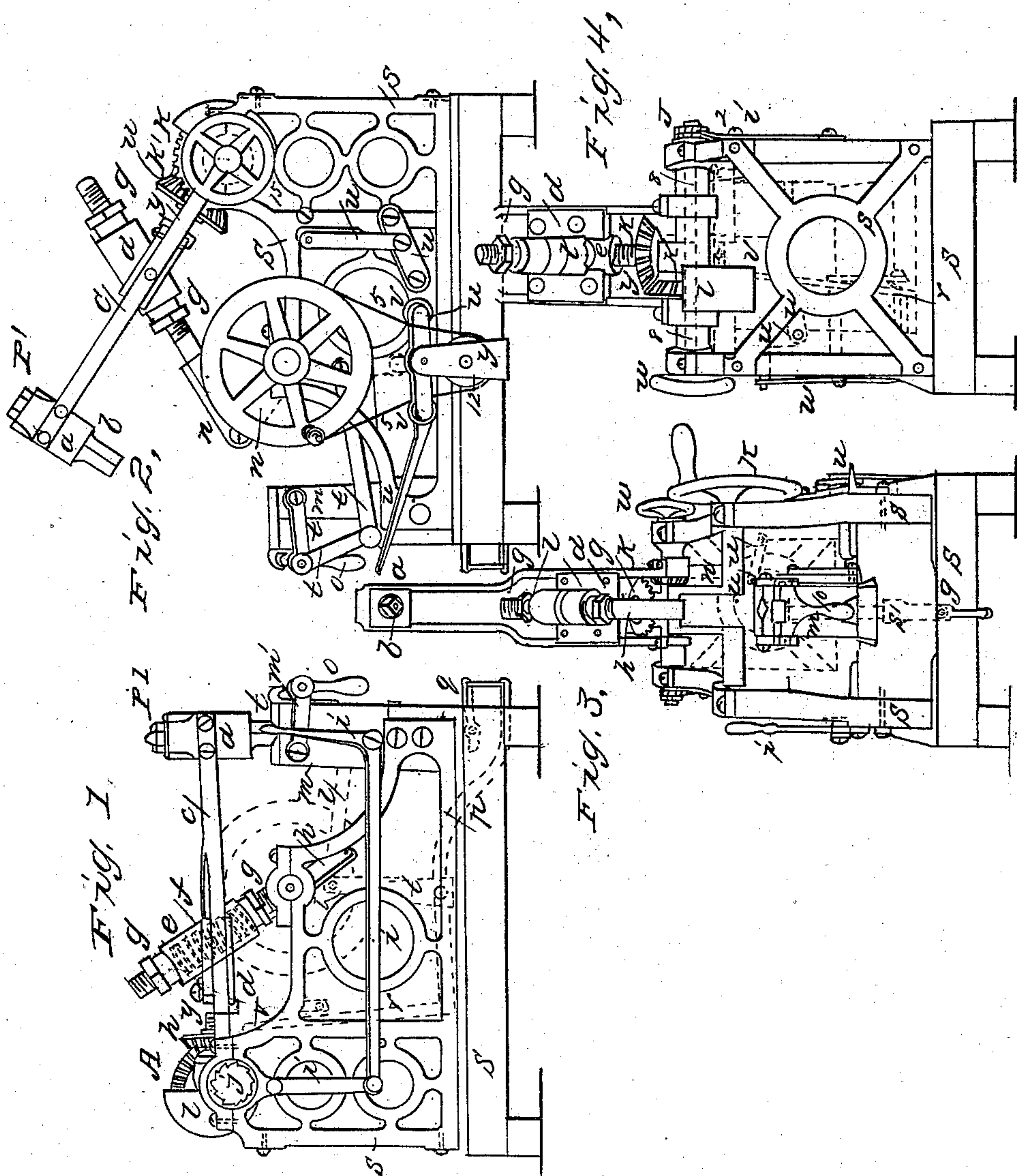


E. SIMKINS.

Bolt Machine.

No. 21,279.

Patented Aug. 24, 1858.



UNITED STATES PATENT OFFICE.

ELISHA SIMKINS, OF ALLEGHENY, PENNSYLVANIA.

BOLT-MACHINE.

Specification of Letters Patent No. 21,279, dated August 24, 1858.

To all whom it may concern:

Be it known that I, ELISHA SIMKINS, of the city and county of Allegheny, in the State of Pennsylvania, have invented a new and Improved Machine for Making Bolts, Spikes, &c.; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, similar letters referring to similar parts.

The nature of my invention consists in a mechanical arrangement for adjusting the dies, removing the bolts, stopping, starting and regulating the stroke and force of the hammer, and also in an arrangement for relieving the machinery from the concussion produced by the action of the hammer.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings Figure 1, is a perspective view of the machine (when looking at the side) and represents the hammer at rest, Fig. 2, is a perspective view of the machine (when looking at the right hand side) and represents the hammer raised, Fig. 3, is a perspective view of the machine (when looking at the front end) and represents the hammer raised. Fig. 4, is a perspective and sectional view of the machine (when looking at the back end) and represents the hammer raised.

In the accompanying drawings (*s*) is the frame of the machine, (*a*) is the receiver of hammer (*b*) which is held in its place by the nut (*p*¹); the receiver (*a*) is secured to two rods (*c*) which forms the helve of the hammer; the rods (*c*) are attached to the shaft (8) which is hollow; the hand wheel (*w*), the bevel wheel (*k*), and the two ratchet wheels (*j*) are held to their place by a shaft or spindle which passes through the hollow shaft (8). Secured to the hollow shaft (8) is a screw (*y*) which is armed with a bevel wheel (*k*¹); the screw (*y*) moves the cross or sliding head (*d*); the two rods (*c*) form the slides or bearing for the cross or sliding head (*d*); the connecting rod (*h*) passes through the cylinder (*e*) and is held to its place by the two spiral springs (*f*) and the two nuts (*g*); the cylinder (*e*) oscillates between the jaws of the sliding head (*d*); the bearings for the trunnions of the oscillating cylinder (*e*) are in the jaws of the sliding head (*d*). The crank (*h*¹) is operated by

the wheel (*x*). Over the wheel (*x*) and under the pulley (12) passes a belt which is made operative or inoperative by simply raising or lowering the lever (*u*). The fulcrum of lever (*u*) and the bearing for pulley (12) are in the piece (*y*) which is bolted to the frame (*s*); the lever (*u*) has in it two pulleys (*v*) which act as friction pulleys for tightening and slacking the belt (5); the lever (*u*) which is a compound lever (that is a lever of several parts) is connected to the stop (*r*); by raising the lever (*u*) it will slacken the belt (5), move to one side the stop (*r*), stop the machine, open the die (*m*), and throw out the bolt; by lowering the lever (*u*) it will tighten belt (5), draw to one side the stop (*r*), close the die (*m*), and start the machine.

It will be observed that the lever (*u*) moves the lever (*t*) which is connected to the link (*m*¹) on the die (*m*) and acts with lever (*u*) in closing the die. The lever (*i*) with its double ratchet and the ratchet wheels (*j*) are used for the purpose of regulating the force and stroke of the hammer. When the handle (*i*¹) of lever (*i*) is drawn forward the outside ratchet and ratchet wheel will cause the spindle in the hollow shaft (8) to revolve backward by the motion of the hammer, and the sliding head (*d*) is drawn back toward the back end of the machine, thereby increasing the force and stroke of the hammer. When the handle (*i*¹) is thrown back the inside ratchet and ratchet wheel will cause the spindle in the hollow shaft to revolve forward by the motion of the hammer, and the sliding head (*d*) is thrown forward toward the front end of the machine, thereby diminishing the force and stroke of the hammer.

The hand wheel (*w*) is used for regulating the hammer without the use of the ratchet and ratchet wheels (*j*). When the hammer is in use and no change of the stroke or force is required, the handle (*i*¹) of lever (*i*) stands perpendicular with the die (*m*) as shown in Fig. 1 of the drawings. The handle or lever (*o*) is used for the purpose of opening and closing the die (*m*) without the use of levers (*u*) and (*t*).

It will be observed that the different size of bolts or spikes, &c., will require a different size of dies and hammers; hence these parts are so arranged that they can be changed with ease and speed; and it will also be observed that by my arrangement

of the connecting rod (*h*) with cylinder (*e*), springs (*f*) and nuts (*g*), the crank (*h*¹) can pass its centers at any change of position of the connecting rod (*h*).

5 The operation of my improved bolt machine is as follows: Having prepared the iron by cutting it in proper lengths for the bolt desired and having the iron properly heated in a furnace prepared for that purpose, a piece of the iron thus cut and heated is placed in the die (*m*), the lever (*u*) is pressed down by the operator, which will close the die and start the machine. When the hammer has been in operation sufficient time to form the head on the bolt, the lever (*u*) is raised up, which will open the die and move the stop (*r*) in so as to come in a line with the stud (15) which is on the projection or offset (*l*) of the hollow shaft (8). The stud (15) in the upward motion of the hammer, will strike the stop (*r*), which is thrown forward, giving to the levers (*p*¹) and (*q*) and bolster (*s*¹) a quick and sudden motion, thereby throwing the bolt out of the die and stopping the machine, which is then ready for making another bolt.

What I claim as of my invention and desire to secure by Letters Patent of the United States is—

1. The flexible connecting rod (*h*); and the arrangement of the cylinder (*e*), the spiral springs (*f*), and nuts (*g*), as described and for the purpose set forth. 30

2. The arrangement of the lever (*i*), the ratchet wheels (*j*), the bevel wheels (*k*) and (*k*¹), the screw (*y*), and the cross head (*d*), when used in connection with the flexible connecting rod (*h*), as herein described and for the purpose set forth. 35

3. The arrangement of the compound lever (*u*), and the pulleys (*v*), in connection with the lever (*t*) and stop (*r*), as herein described and for the purpose set forth. 40

4. The arrangement of the stud (15), the stop (*r*), the levers (*p*) and (*q*), and the bolster (*s*¹), as herein described and for the purpose set forth. 45

ELISHA SIMKINS.

Witnesses:

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ALEXANDER HAYS.