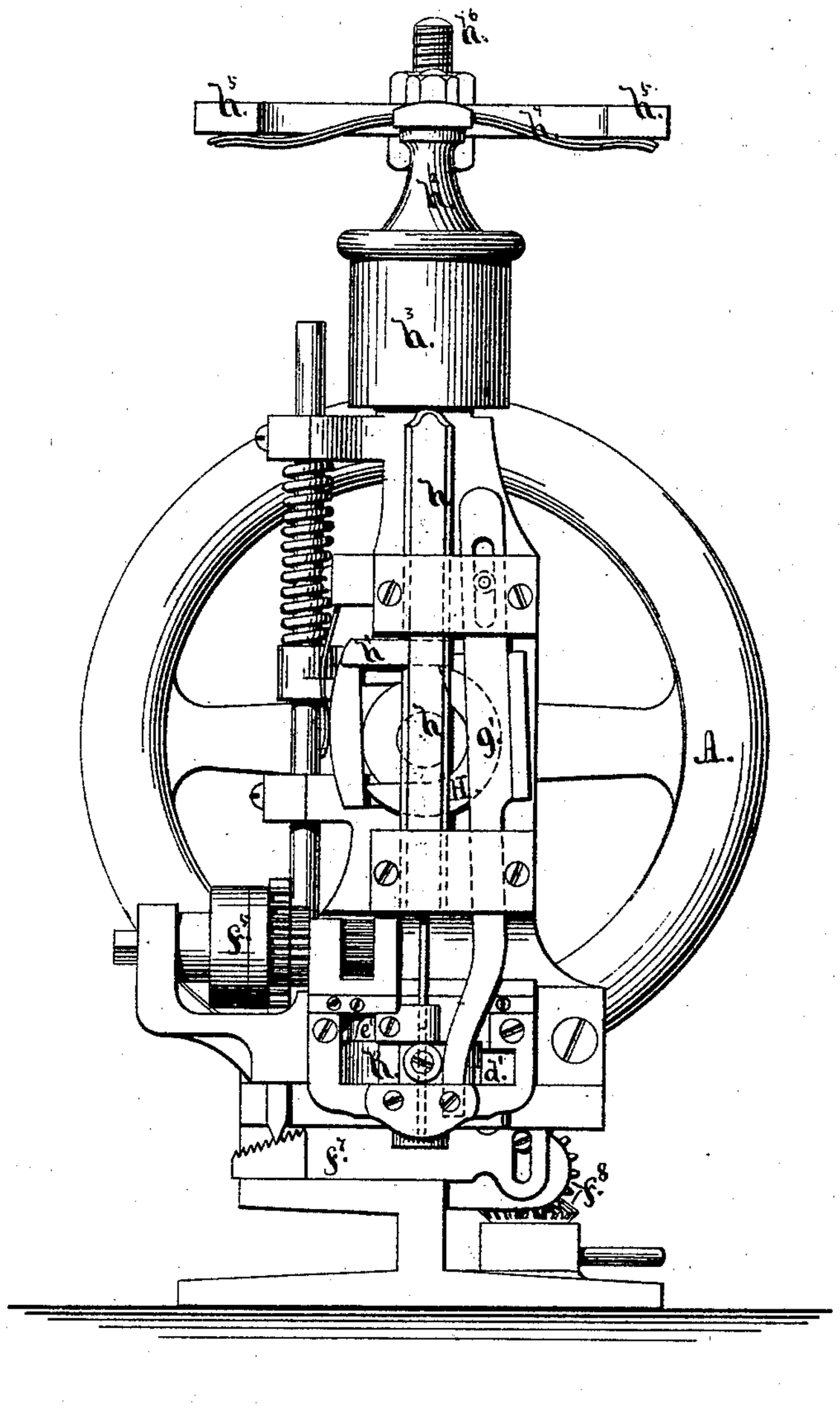
4 Sheets—Sheet 1.

W. G. BUDLONG.

Boot and Shoe Pegging-Machine.

No. 222,659. Patented Dec. 16, 1879.

Fig. 1.



WITNESSES:

Joseph A. Miller Jr

William L. Coop.

INVENTOR:

William G. Budlong

by Joseph A. Miller

Attorney

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W. G. BUDLONG.

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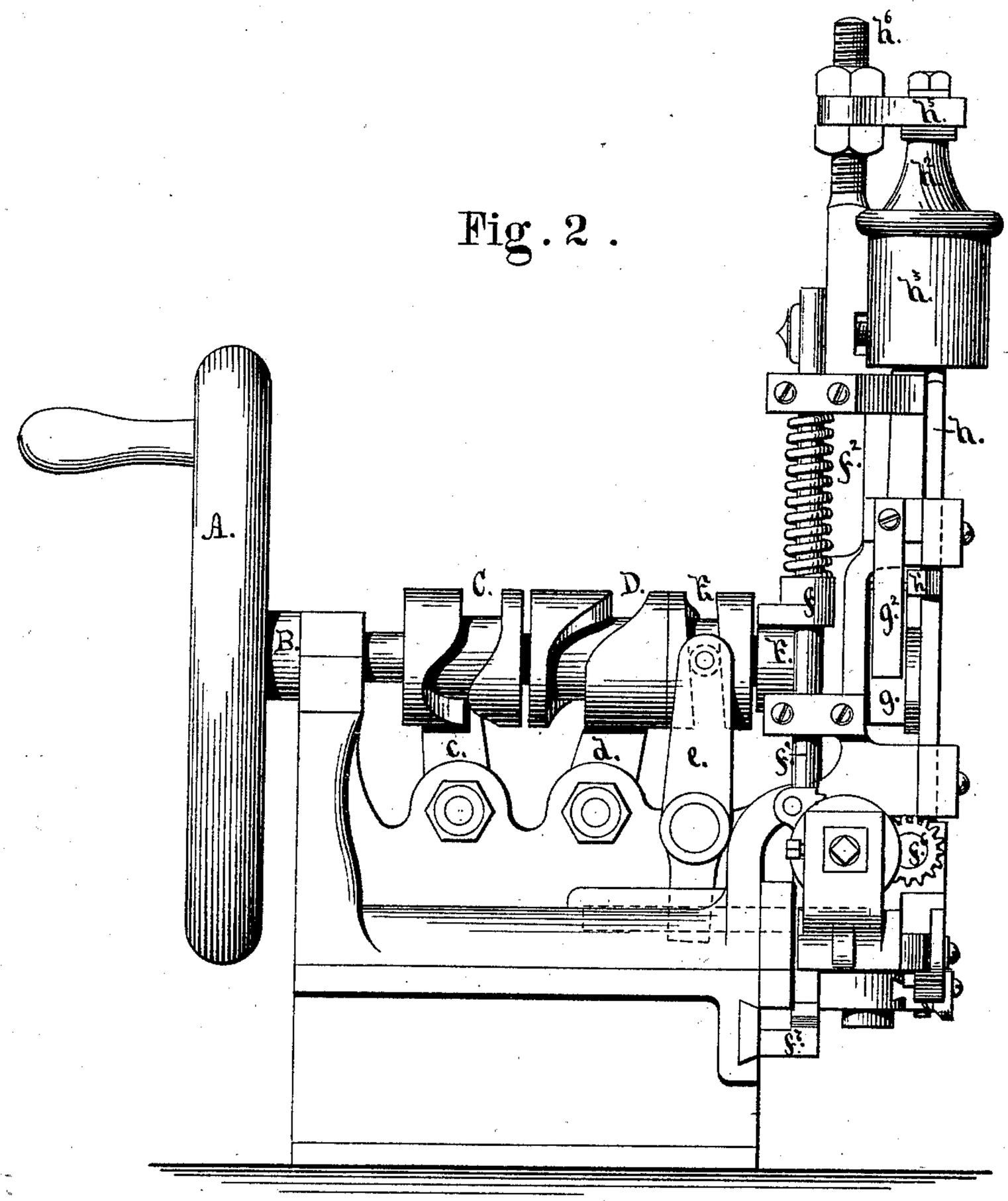
Fig. 2.



WITNESSES:

Joseph A. Miller Jr.

William L. Coope.

INVENTOR:

William G. Budlong

by Joseph A. Miller

Attorney

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W. G. BUDLONG.

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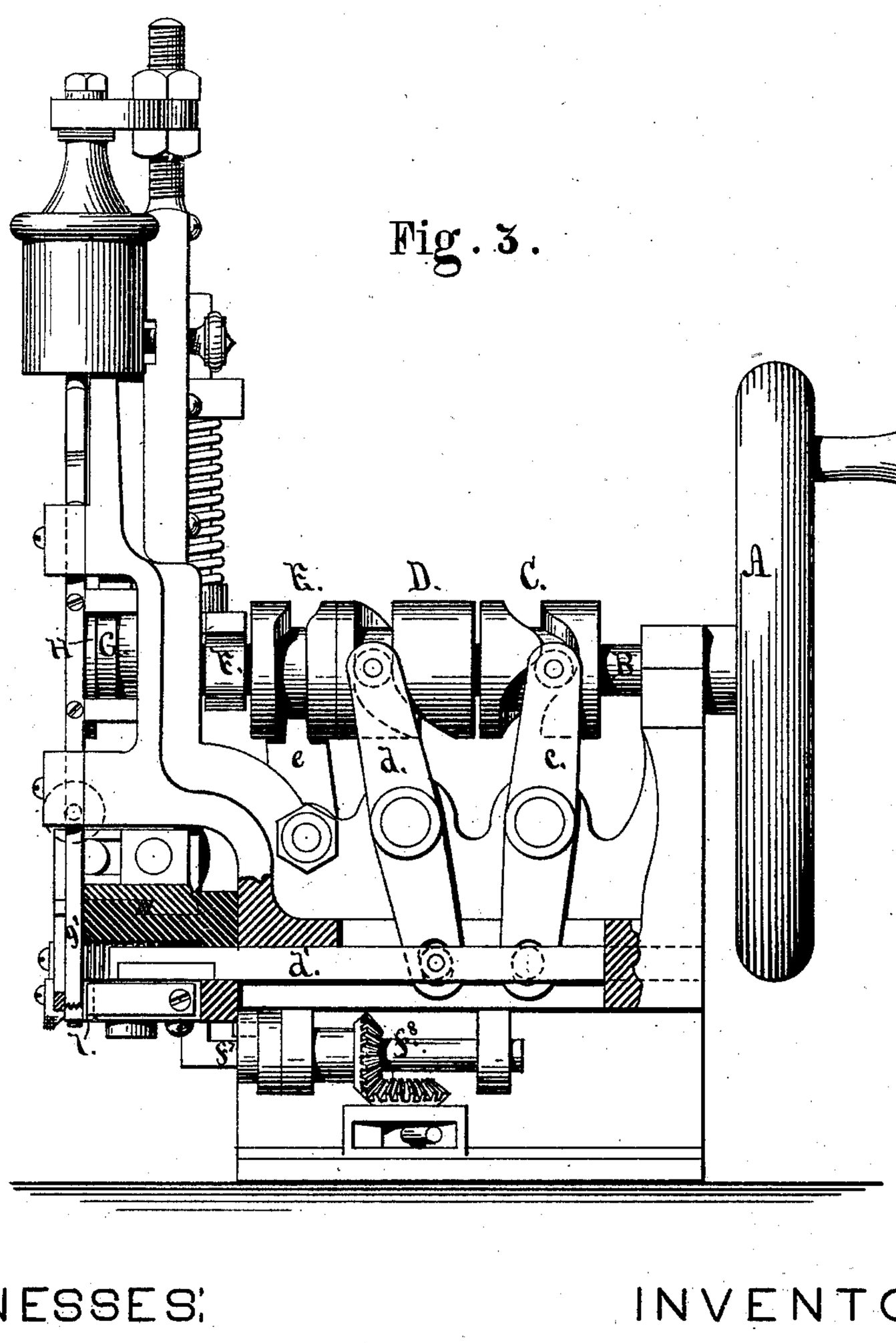
Fig. 3.



WITNESSES:

Joseph A. Miller Jr

William L. Coop.

INVENTOR:

William G. Budlong

by Joseph A. Miller

Attorney

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W. G. BUDLONG.

Boot and Shoe Pegging-Machine.

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Fig. 4.

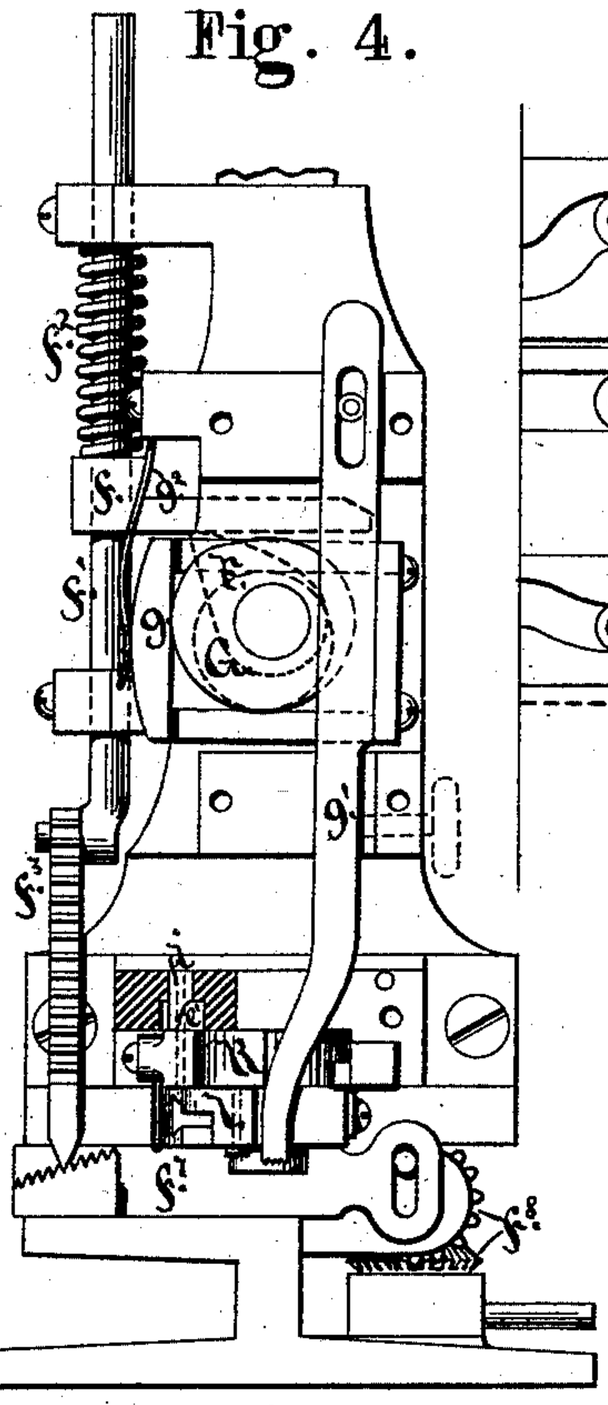
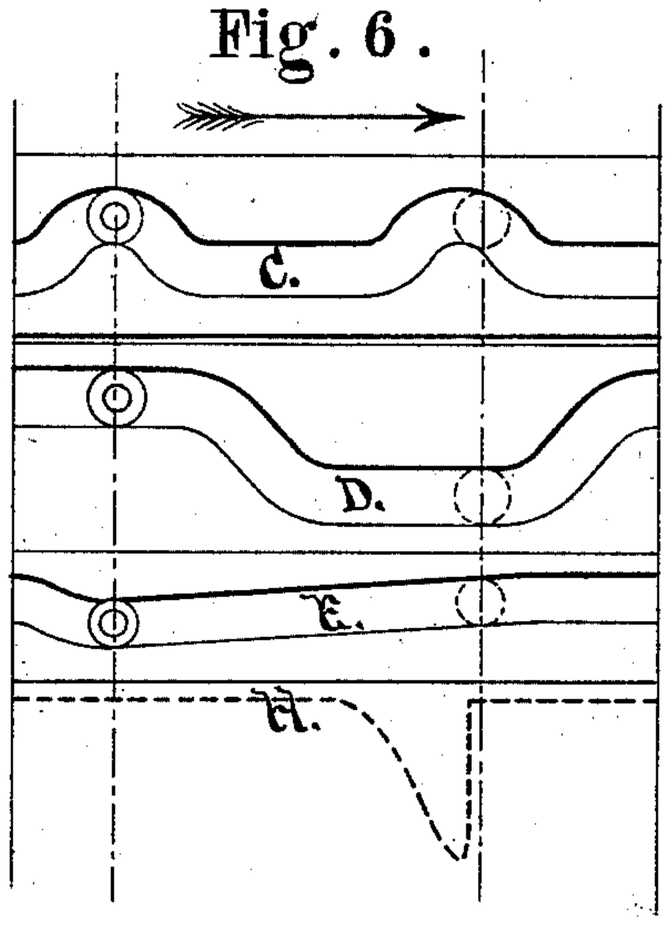


Fig. 6.



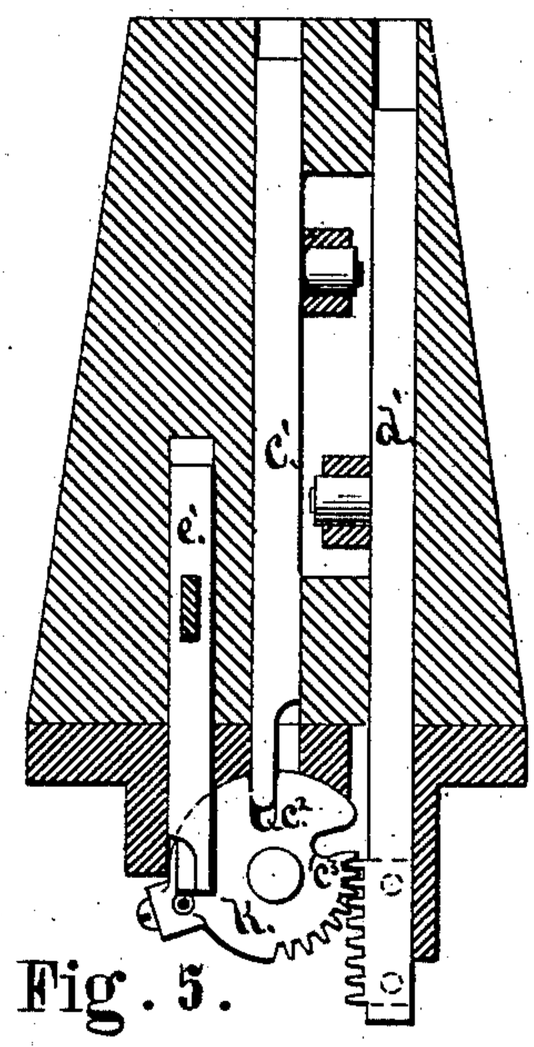


Fig. 5.

Fig. 7.

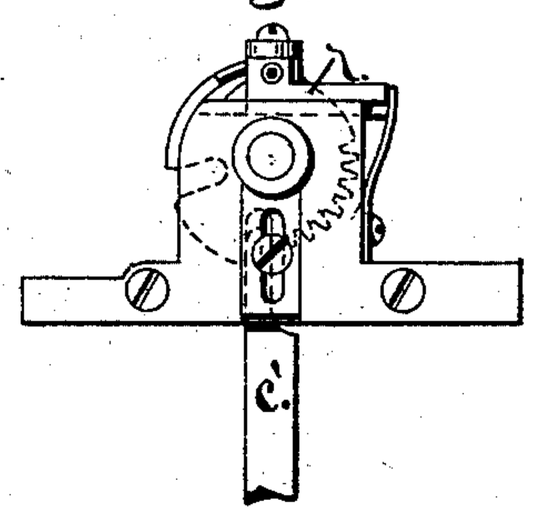


Fig. 8.

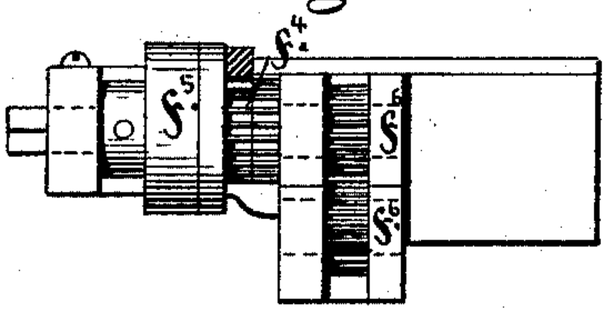
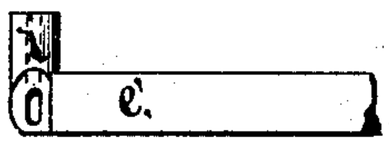


Fig. 11.

Fig. 9.

Fig. 10.



WITNESSES:

Joseph A. Miller Jr.

William L. Coop.

INVENTOR:

William G Budlong

by Joseph A Miller

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM G. BUDLONG, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE EUREKA NAILING MACHINE COMPANY, OF SAME PLACE.

IMPROVEMENT IN BOOT AND SHOE PEGGING MACHINES.

Specification forming part of Letters Patent No. **222,659**, dated December 16, 1879; application filed July 18, 1879.

To all whom it may concern:

Be it known that I, WILLIAM G. BUDLONG, of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Boot and Shoe Pegging Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a front elevation of my improved boot and shoe nailing machine, all the parts being shown in their relative positions at the moment when the driver is at the highest point and is about to be released from the cam to drive the nail home. Fig. 2 is a side view of the same machine shown in the same position with reference to the driver, showing the three cams secured to the driving-shaft by which the cutting device, the locking device, and the carrier are operated in connection with the cam at the end of the driving-shaft by which the nail-driver is operated. Fig. 3 is a side view, showing the side of the machine opposite to Fig. 2. This view is partly in section, so as to show more clearly the connections with the cams of the locking device and the carrier-operating ratchet-bar. It also shows the beveled gearing by means of which the device regulating the length of the nails is operated. Fig. 4 is a skeleton view, showing the arrangement for regulating the length of the nails, the device for feeding the work, and the operation of the cams. Fig. 5 is a plan view, showing the reciprocating cutter, the reciprocating locking-arm, and the reciprocating rack by means of which the carrier is operated. Fig. 6 is a plan view of the cams operating the cutter, the locking and the carrier devices, with the movement of the driver, the path of which is shown in broken lines. Fig. 7 is a bottom view of the nail-carrying device, showing the carrier as locked directly under the driver, so that the nail may be driven into the boot or shoe. Fig. 8 is a view of the device for corrugating and delivering the wire, which is operated by a rack and pinion controlled by a clutch. Fig. 9 is a view of the wire-holder, showing the end of the cutter-bar. Fig. 10 is a side view of the wire-holder and the cutter-bar; and Fig. 11 is a view and section of a nail or fastening device such as may be used in this machine.

By changing the cutter a fastening device with any desired point may be made, and by inserting proper rolls any desired sectional form or corrugation may be given to the device, so that this machine is not confined to any particular nail or fastening device.

This invention has reference to that class of boot and shoe pegging machines in which a metallic fastening device is used to secure the soles to boots or shoes, and in which the device is made from wire fed to the machine, cut, and driven automatically.

The object of this invention is to construct such a machine that the whole operation of securing the soles to boots or shoes is performed by automatically shaping and preparing the wire, cutting the point on one nail and squaring the driving end of the previous nail, carrying the nail to the driver, and driving the nail home by a blow.

Another object of this invention is to so construct the machine that the length of the fastening devices can be regulated and varied while the machine is in operation.

The invention consists in the peculiar and novel construction of this machine, by which all the functions of shaping, cutting, carrying, and driving the wire, and also of feeding the work, are performed through the means of peculiarly-shaped cams secured to one driving-shaft, and all the complicated machinery is avoided, while the various operations are performed in their regular successions more perfectly.

The invention further consists in connecting with the wire-feeding device a device for regulating the length of the wires, all of which will be more fully set forth hereinafter.

Machines for nailing or pegging boots or shoes have to be operated by persons who are not skilled mechanics, and have to exert considerable force in performing their functions. They are therefore liable to wear and derangement. In machines as heretofore constructed the slightest wear created lost motion, and the different parts of the machine failed to perform their functions consecutively at the pre-

cise moment required, and thus caused the stoppage of the machine.

By moving all the parts of the machine either directly by the cams on the driving-shaft or by means of simple levers transmitting the motions directly to the parts, the whole machine is reduced to the fewest possible parts, and these parts are made strong, with broad wearing-surfaces, while the construction of the cams is such that considerable wear can take place without interfering with the consecutive and accurate working of the machine.

In the drawings, A is the driving-wheel by which the machine is operated, usually by a belt driven by some prime motor. B is the driving-shaft, to which all the cams are secured. These cams are C, operating the locking device; D, the cam for operating the rack by which the carrier is rotated; E, the cam operating the cutter-bar. F operates the rack by which the wire-corrugating rolls are rotated. G is a double cam operating the work-feeding device, and H is the cam raising the driver.

The cam C is connected by the hinged lever c with the locking-bar c', which locking-bar enters the nail-carrier in the slit or recess c^2 for locking the same at the moment when the cutter cuts the nail off from the wire, and at the same time points the succeeding nail, and also when the carrier has brought the nail under the driver by entering the recess c^3. The carrier is by these means locked in each of these two positions, and the fastening device is accurately and firmly held in the proper position both for cutting and for driving.

The cam D is connected, by means of the lever d, with the slide d', the forward end of which is provided with a rack gearing into the pinion on the nail-carrier, so that the reciprocation of the slide d' rotates the carrier.

The cam E is connected by the lever e with the cutter-bar e', and each rotation of the cam E produces one reciprocation of the cutter-bar, and as the motion of the cutter-bar is but slight the cam acts with great force, and the cutter readily cuts the nail or fastening device off the wire.

The cam F raises the arm f, secured to the rod f', against the force of the coiled spring f^2, and allows the rod f' to descend by the force of the coiled spring f^2.

To the lower end of the rod f' the rack f^3 is secured, which, gearing into the pinion f^4, turns the gears f^6 as the rod descends, the clutch f^5 allowing the pinion to turn when the rod f' is raised without turning the gears f^6.

It is evident that when a wire is inserted between the rolls f^6 f^6 the length of the wire delivered by the rolls depends on the rotation of the rolls, and, as they are rotated by the descent of the rod f' and rack f^3, the length of the wire delivered can be regulated by regulating the length of the vertical reciprocation of the rack f^3. To so regulate the length, the slide f^7 is provided with a serrated stop arranged to arrest the descent of the rack at varying heights, as is fully shown in Fig. 4, for the farther the rack descends the longer will be the wire delivered by the rolls f^6 to the cutter, and consequently the longer the nail or fastening device, and the contrary will be the case when the rack is arrested in its descent at a higher point.

The slide f^7 is shown as operated by a pin secured to the bevel-gear f^8 and working in a slot in the slide, which beveled gear is operated by another beveled gear operated by a lever; but it is obvious that the slide may be operated in various ways to regulate the length of the nail or fastening device.

The cam G operates within the frame g, and imparts vertical as well as horizontal motion to the feeder-arm g', the lower end of which is pressed against the sole or other work to be nailed, and, being serrated, carries the work forward after each nail is driven. The arm g' is hinged near its upper end, and, as the frame g is made to follow the cam G by the action of the spring g^2, a set-screw or other stop may be arranged to arrest the return motion of the feeder-arm g', and thereby the feed of the work and the distance between the nailing devices can be regulated.

The cam H on the end of the shaft operates to raise the driver h by coming in contact with the arm h', secured to the driver h. The upper end of the driver is provided with the piston h^2, working in the dash-pot h^3, and above the piston the spring h^4 is secured to the bar of the driver, which, when the driver is raised, comes in contact with the arms h^5 h^5, secured to the post h^6, so that the driver descends when released from the cam by a strong quick blow exerted by the spring h^4.

The wire, after being corrugated by the rolls f^6 f^6, passes through the tube i, (shown in Figs. 9 and 10,) and the cutter e' cuts the point on the end of the wire and a square cut on the nail held in the carrier K. Under the carrier is the slide l, on the top surface of which the nail is carried by the carrier until it is over a hole in the slide l and under the driver. The slide is held to its place by a spring, so that when the feeder-arm g' comes in contact with the slide the same will yield to the feeder-arm, and when released will return to its proper position.

This machine will automatically perform all the functions of preparing the wire in the rolls, cutting the wire into nails, carrying the nail to its proper place under the driver, and driving and clinching the wire, while the length of the nails can be regulated during the operation of the machine to suit the varying thicknesses of the sole, and, as all the nails are cut and pointed in the machine and all in the same direction, all the points, when driven against the metal sole of the last, will clinch in the same direction, and thus produce more even and uniform work.

The locking-slides enter the carrier-disk a sufficient distance to hold the same firmly, and also to compensate for any possible wear or backlash in the working parts, as the locking-

slide will insure the accurate position of the carrier in the two positions where accuracy is required by so adjusting the carrier when entering the recess, which is slightly enlarged at the periphery of the disk, that the entering of the locking-slide will adjust the carrier should the wear of the rack and pinion or of any other part of the machine fail to place it in the proper position for the cutter or the driver.

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

1. In a shoe-nailing machine, the combination of the following instrumentalities, arranged substantially as shown and described: a device for feeding and corrugating the wire, a device for shaping and separating the nail, an oscillating carrier, a locking device for locking the carrier, and a driver, the several parts being adapted to operate substantially in the manner and for the purpose set forth.

2. In a shoe nailing or pegging machine, the combination of the following instrumentalities, arranged substantially as shown and described: a device for feeding and corrugating the wire, a device for regulating the length of the nails, a device for shaping and cutting the wire into the varying lengths, a driving device, and a work-feeding device, the several parts being adapted to operate substantially in the manner and for the purpose set forth.

3. The combination, with the corrugating and feeding rolls, of a fixed tube or holder, a reciprocating cutter, and an oscillating carrier provided with a hole arranged to hold the nail when it is separated from the wire and carry the same and hold it under the driver, as and for the purpose described.

4. The combination, with the corrugating and feeding rolls of a shoe-nailing machine, of a device, substantially as described, for regulating the rotation of the rolls and the length of the wire delivered so as to vary the length of the nail during the operation of the machine, as described.

5. The combination, with a nail-carrier arranged to carry the nail from the cutter to the driver, and a work-feeding device, of a yielding slide placed below the carrier to prevent the falling of the nail from the carrier, and provided with a hole to receive the nail, arranged to yield to the work-feeding device, as and for the purpose described.

6. The combination, with the driving-shaft B, of the cams C, D, E, F, G, and H, arranged to operate the various parts, substantially as and for the purpose set forth.

7. The combination, with the carrier K, provided with the segmental gear, of the slide d', provided with the rack at its end, the lever d, and cam D, the whole arranged to oscillate the carrier so as to bring the hole in the carrier alternately under the holding-tube i and under the driver, as described.

8. The combination, with the rack f^3, arranged to rotate the feeding and corrugating rolls f^6 f^6, of the slide f^7, provided with the serrated stops, arranged to arrest the descent of the rack and regulate the length of the nails, substantially as and for the purpose set forth.

9. The combination, with the cam F, the rod f', and arm f, of the spring f^2, rack f^3, and adjustable stop f^7, the whole arranged so that the rod and rack are raised by the cam and forced down by the spring until the rack is arrested by the adjustable stop f^7 and the reciprocation of the rack is regulated, as and for the purpose described.

10. The combination, with the carrier K and the work-feeding arm g', of the spring-pressed slide l, arranged to yield to the feeding-arm, substantially as and for the purpose described.

11. The combination, with the slide f^7, provided with the graduated stops, of the bevel-gears f^8, connected with the slide by a pin and slot arranged to regulate the length of the fastening device in a shoe-nailing machine, as described.

12. The combination, with the spring-pressed driver h, of the oscillating carrier K, the work-feeder arm g', and the slide l, the whole arranged to carry the nail under the driver and over the hole in the slide l, drive the nail, and feed the work, as described.

WILLIAM G. BUDLONG.

Witnesses:
JOSEPH A. MILLER,
JOSEPH A. MILLER, Jr.