(No Model.) 3 Sheets—Sheet 1.

E. WOODWARD.

TACKING MACHINE.

No. 246,437. Patented Aug. 30, 1881.

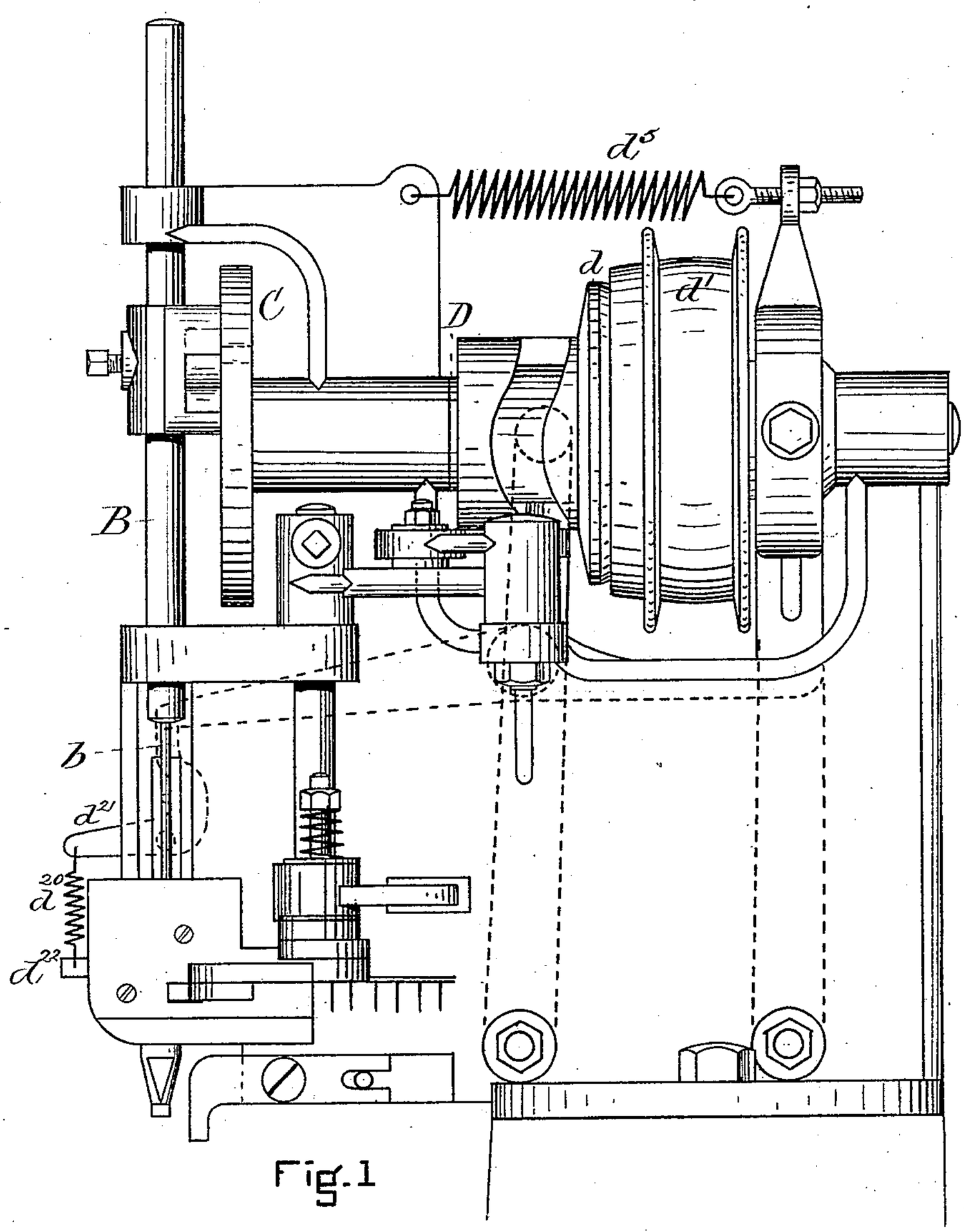

Fig. 1

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INVENTOR
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(No Model.)

3 Sheets—Sheet 2.

E. WOODWARD.

TACKING MACHINE.

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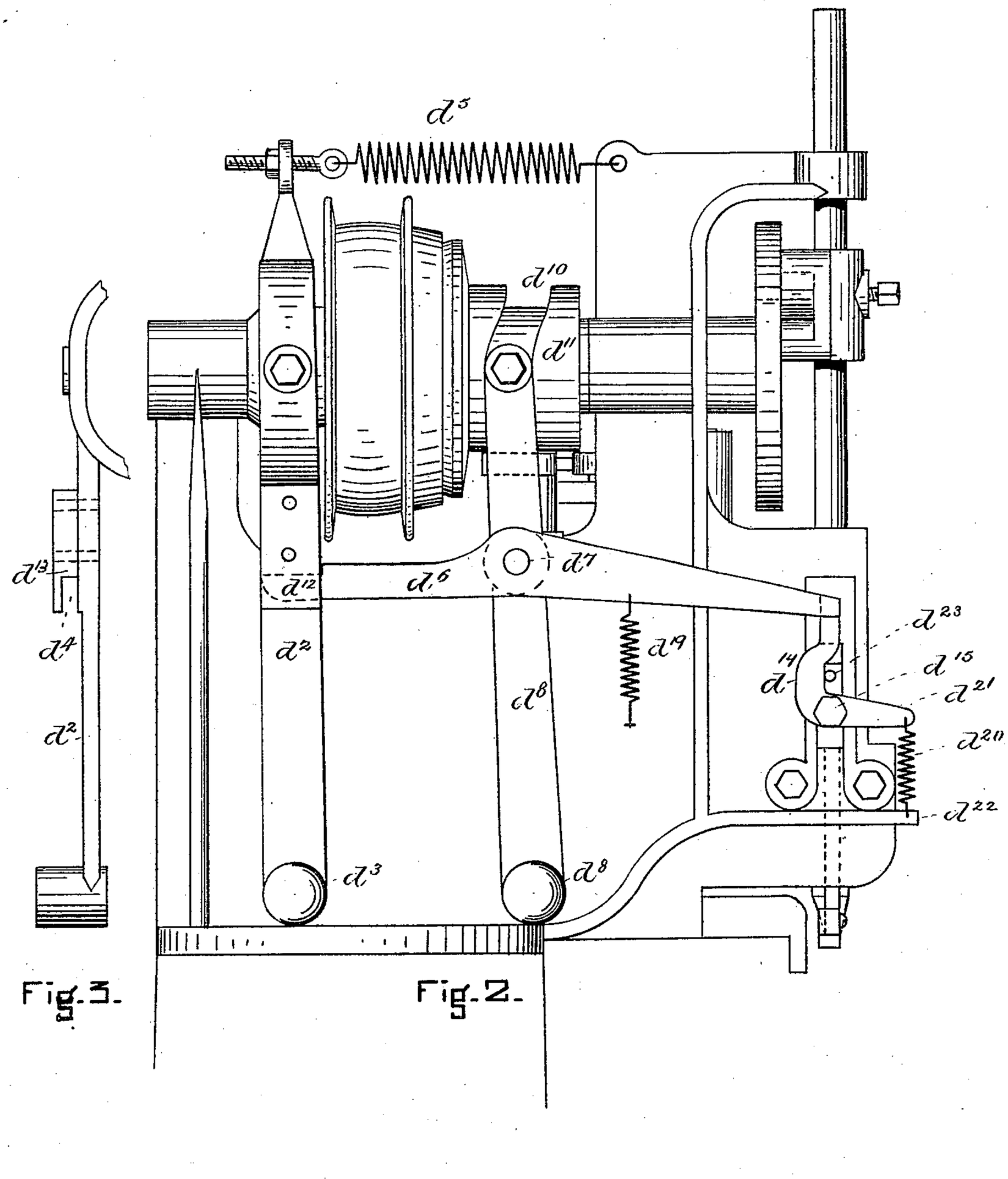

Fig. 3.

Fig. 2.

WITNESSES

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INVENTOR

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Clarke & Raymond.

(No Model.)

3 Sheets—Sheet 3.

E. WOODWARD.

TACKING MACHINE.

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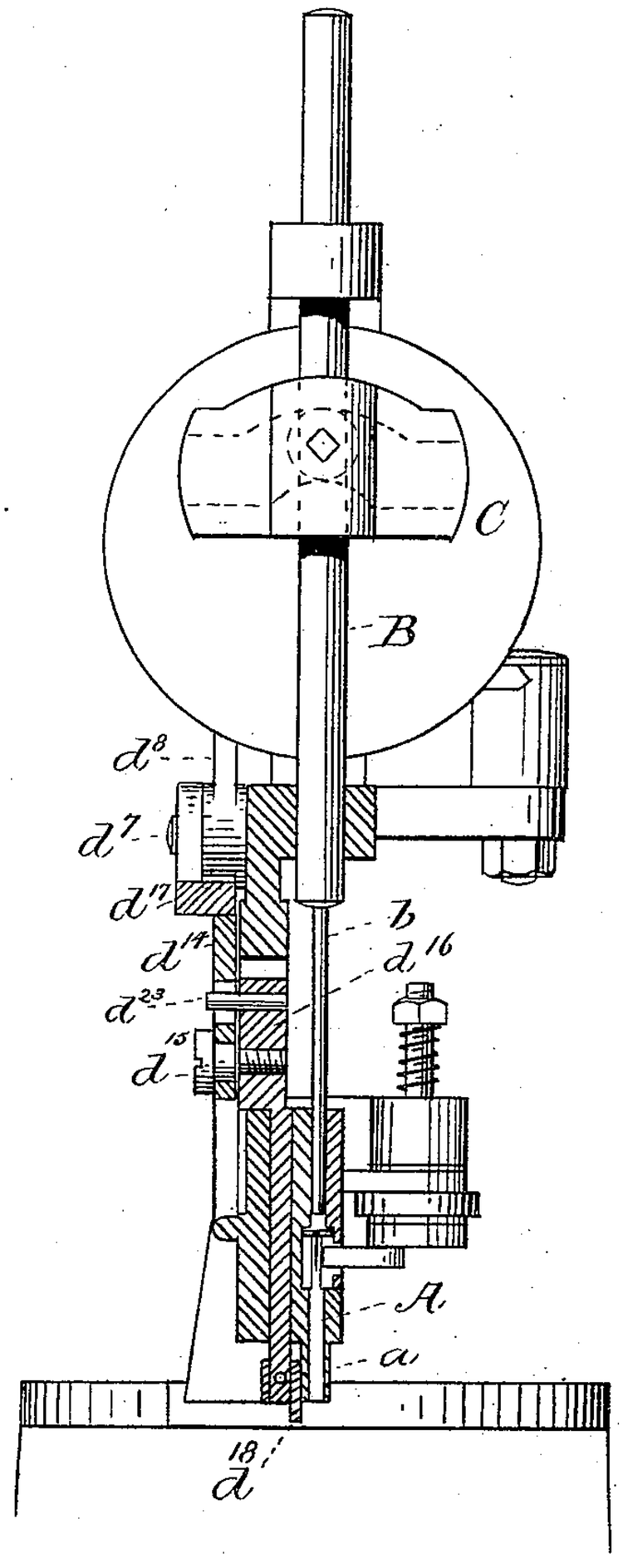

Fig. 4.

WITNESSES
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UNITED STATES PATENT OFFICE.

ERASTUS WOODWARD, OF BOSTON, ASSIGNOR TO GEORGE W. COPELAND, OF MALDEN, MASSACHUSETTS.

TACKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 246,437, dated August 30, 1881.

Application filed July 23, 1881. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS WOODWARD, of Boston, in the county of Suffolk and State of Massachusetts, a citizen of the United States, have invented a certain new and useful Improvement in Tacking-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification in explaining its nature, in which—

Figure 1 is a side elevation of my improved machine at the right hand of the nozzle. Fig. 2 is a side elevation of the machine at the left-hand side of the front. Fig. 3 is a detail view, hereinafter referred to. Fig. 4 is a vertical section of the throat and adjacent parts, hereinafter more especially described.

This invention relates to a power tacking-machine and means for starting it and then stopping it automatically, whereby it is made impossible to drive more than one tack at a time.

This invention is especially desirable for use in the process of lasting the uppers of boots and shoes, where it is very necessary to drive a tack very quickly and yet not drive more than one at a time.

I herein describe my invention as being operated by means of the work held by the operator, or by a jack which is moved by the operator, although, of course, I do not confine myself to this especial manner of operation, as the machine may be started by hand or by foot, or in any other desirable way.

In the drawings, A represents the throat of the machine, and *a* the end of the nozzle. B is the driver-rod, and *b* the driver. They are reciprocated, by means of a crank, eccentric, lever movement, or in any other desirable way, from a main shaft, and in the drawings I have represented the cam C.

It will be unnecessary for the purposes of this invention to further describe the operation of the driving mechanism or to describe that of the feeding mechanism, it being sufficient to state that the machine is organized to use the "Copeland" tack-strip, so called, or that tack-strip in which the heads are supported by strip of flexible material, and from which the tacks are driven; and for further information concerning the construction of the feeding mechanism, feedway, driving mechanism, and throat of the machine, I refer to the various patents granted Matthias Brock, George W. Copeland, and myself, and to the pending application of the said Matthias Brock.

The main shaft D is, of course, provided with the necessary cams or other instrumentalities for imparting suitable movements to the driver and feeding mechanism, and it is further supplied with the spider *d* and the driven pulley *d'*. This driven pulley is loose upon the shaft, and is adapted to be moved to and from the spider by mechanism consisting of the lever d^2, pivoted at d^3, secured to the pulley by means of a yoke, or in any other desired way, and having the recess d^4 formed therein in any suitable manner, the spring d^5, the lever d^6, pivoted at d^7 to another lever, d^8, which is pivoted at d^9, and is reciprocated by means of the cam-groove d^{10} in the edge of the cam-wheel or disk d^{11} upon the main shaft, the upper end of said lever d^8 having a cam-pin which projects into the cam-groove. The end d^{12} of the lever d^6 is shaped substantially as shown in Fig. 2, and it acts, in conjunction with the recess d^4 and the side d^{13} of the lever d^2, as a latch in holding the lever d^2, and consequently the driven pulley, against the stress of the spring d^5, and from contact with the spider. Upon the downward movement of the end d^{12} of this lever, however, the latch is tripped and the spring d^5 draws the pulley in contact with the spider, and of course the machine is set in motion. To operate this lever d^6 so that the latch may be tripped, and also returned to its original position to be again tripped, depends upon two features, first, the horizontal movement of the lever, and, second, the vertical movement of the end or latch d^{12}. This last-named movement is provided, in this instance, by means of the bell-crank lever d^{14}, which is pivoted at d^{15} to the sliding plate d^{16}, the end d^{17} of the lever resting upon the top of this bell-crank lever d^{14}. Of course, upon the lifting of the bell-crank lever the end d^{17} of the lever d^6 is raised and its other end depressed.

I have herein described the bell-crank lever as being attached to a sliding plate, d^{16}, which is adapted to be lifted by means of the foot d^{18}, which is adjustably attached to the lower end of the sliding plate, and which is located

in relation to the nozzle *d* of the machine substantially as shown in Fig. 4. Upon presenting the work to be tacked to the action of the machine it, of course, first comes in contact with the end of the foot, and before the machine can be operated the foot is lifted, so that the work shall come in contact with the end of the nozzle. This lifting of the foot causes the bell-crank lever to be lifted, thereby tripping the latch d^{12} and permitting the driven pulley to come in ccntact with the spider. It is necessary, however, when this method of operating the latch is used, to provide means whereby the lever d^6 may be moved to a position to again engage with the catch before the driving of another tack, and for this purpose I employ the cam d^{10}, the spring d^{19}, and construct the end d^{17} of the lever and the bell-crank lever d^{14}, so that the lever may be moved horizontally, and when moved sufficiently engage with the catch. The movements given by the cam and the spring are easily understood; but the connection between the end of the bell-crank lever and the end d^{17} of the connecting-lever is not so plain. I will therefore describe it more minutely. The end of the lever d^6 is bent inwardly in a horizontal direction at a right angle therewith, and consequently the end slides off the top of the bell-crank lever at certain times and falls beyond it, or, to state more definitely, when the cam d^{10} throws it back horizontally, to enable the latch to engage with the catch. The cam then moves the lever forward again, consequently moving the lever d^2, and causing it to disengage the driveu pulley from the spider, and in so doing the end d^{17} will come in contact with the side of the upper end of the bell-crank lever, unless the work has been withdrawn from the nozzle, and permits the sliding plate to fall. Therefore the bell-crank lever must be arranged to yield horizontally in the direction of said lever d^6, and this is accomplished by pivoting it at d^{15}, as described. Upon removing the work from the nozzle the sliding plate and its foot then fall, and the end of the bell-crank lever is then brought to its original position under the end of the lever d^6 by means of the spring d^{20}, which is attached to the end d^{21} of the bell-crank lever and stationary projection d^{22} of the frame. This spring not only causes the bell-crank lever to be brought into an upright position, but it also acts to force downwardly or return to their original position the sliding plate and the foot d^{18}. A stop, d^{23}, prevents the bell-crank lever from being moved from a vertical position, except in the direction described.

Of course, it will be readily seen that by attaching a suitable arm or lever to the bell-crank lever the machine could be started by hand or foot power, as well as by presenting the work to the nozzle; and it is as obvious that the machine would be started and stopped in the manner desired, if it were provided with a movement in relation to the work, instead of the work a movement in relation to it.

It is also obvious that the cam d^{10} can be so shaped that two or more tacks can be driven without automatically stopping the machine; but, of course, the number of tacks that can be driven is necessarily limited, and after the driving of the last one of the limited series the machine would automatically stop.

The advantages of this invention are manifest.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a machine for driving fastenings, the combination of the spider, the loose driven pulley, and the foot or projection d^{18}, adapted to be moved in presenting the work to the nozzle, as described, and intermediate connecting mechanism, whereby upon the movement of said foot the machine is set in operation, all substantially as and for the purposes described.

2. The combination, in a machine for driving fastenings, of a spider and a driven pulley with the foot or projection d^{18} and mechanism connecting the foot with the spider or pulley, whereby upon the movement of the foot the machine is set in operation, and then is stopped automatically after driving one or a given number of fastenings, all substantially as and for the purposes described.

3. In a machine for driving fastenings, the combination of the lever d^2, connected with a loose driven pulley and adapted to move it upon the main shaft, as specified, in relation to a spider, the cam d^{10}, the lever d^8, and the connecting-lever d^6 and its spring, all substantially as and for the purposes described.

4. In a machine for driving fastenings, the combination of the lever d^2, adapted to move a loose driven pulley in relation to a spider, as specified, the lever d^6, having a horizontal movement, and the bell-crank lever d^{14}, having a vertical movement, and pivoted as described, all substantially as and for the purposes set forth.

5. In a machine for driving fastenings, the combination of the spider, the loose driven pulley, the levers d^2 d^6 d^8, cam d^{10}, the bell-crank lever d^{14}, the sliding plate d^{16}, foot d^{18}, and the springs d^5, d^{19}, and d^{20}, to operate substantially as described.

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Witnesses:
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