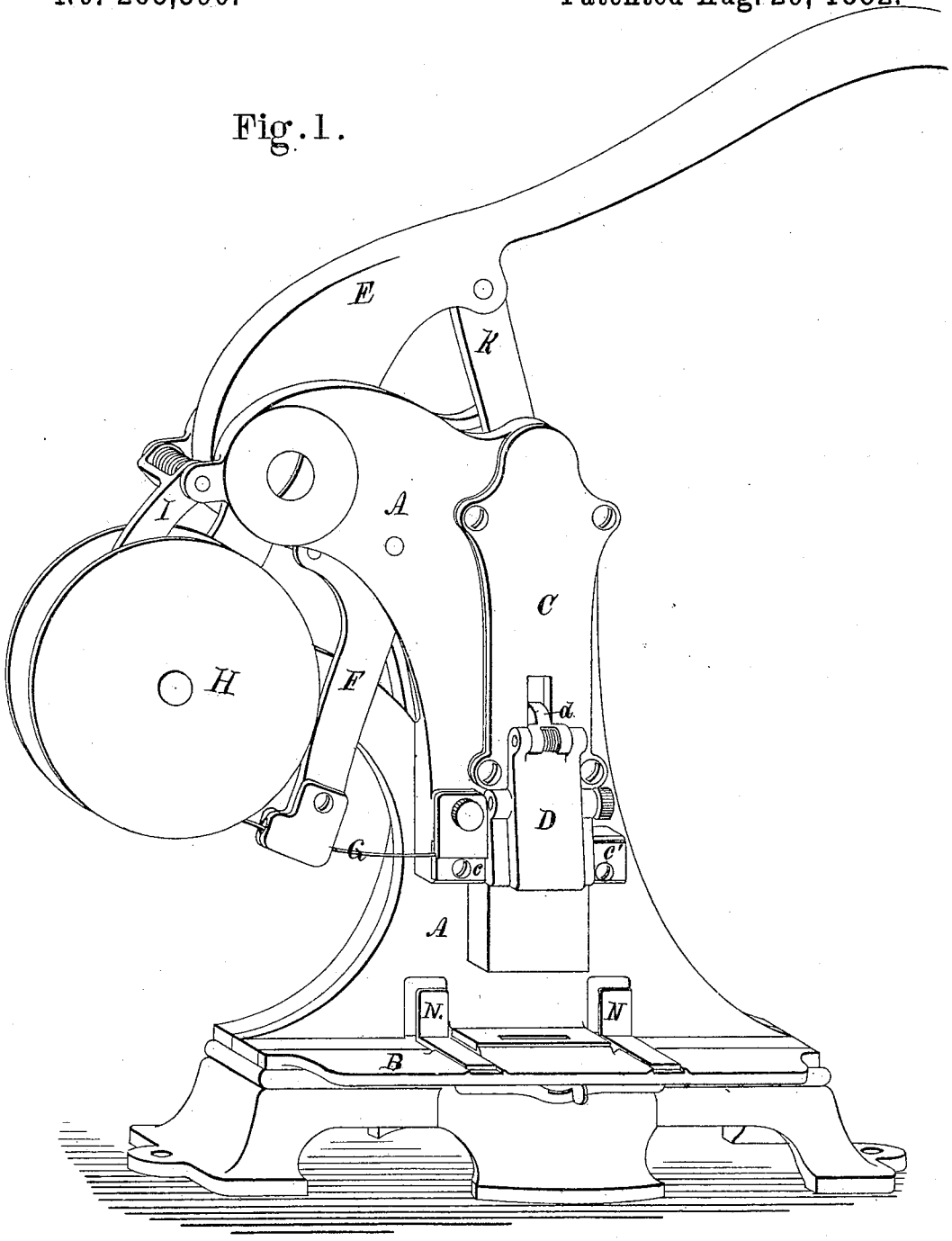
(No Model.) 5 Sheets—Sheet 1.

W. L. COOP.

BOOK STAPLING MACHINE.

No. 263,390. Patented Aug. 29, 1882.

Fig. 1.



WITNESSES:

Henry J. Miller

J. A. Miller Jr

INVENTOR:

William L. Coop.

(No Model.)

5 Sheets—Sheet 2.

W. L. COOP.

BOOK STAPLING MACHINE.

No. 263,390. Patented Aug. 29, 1882.

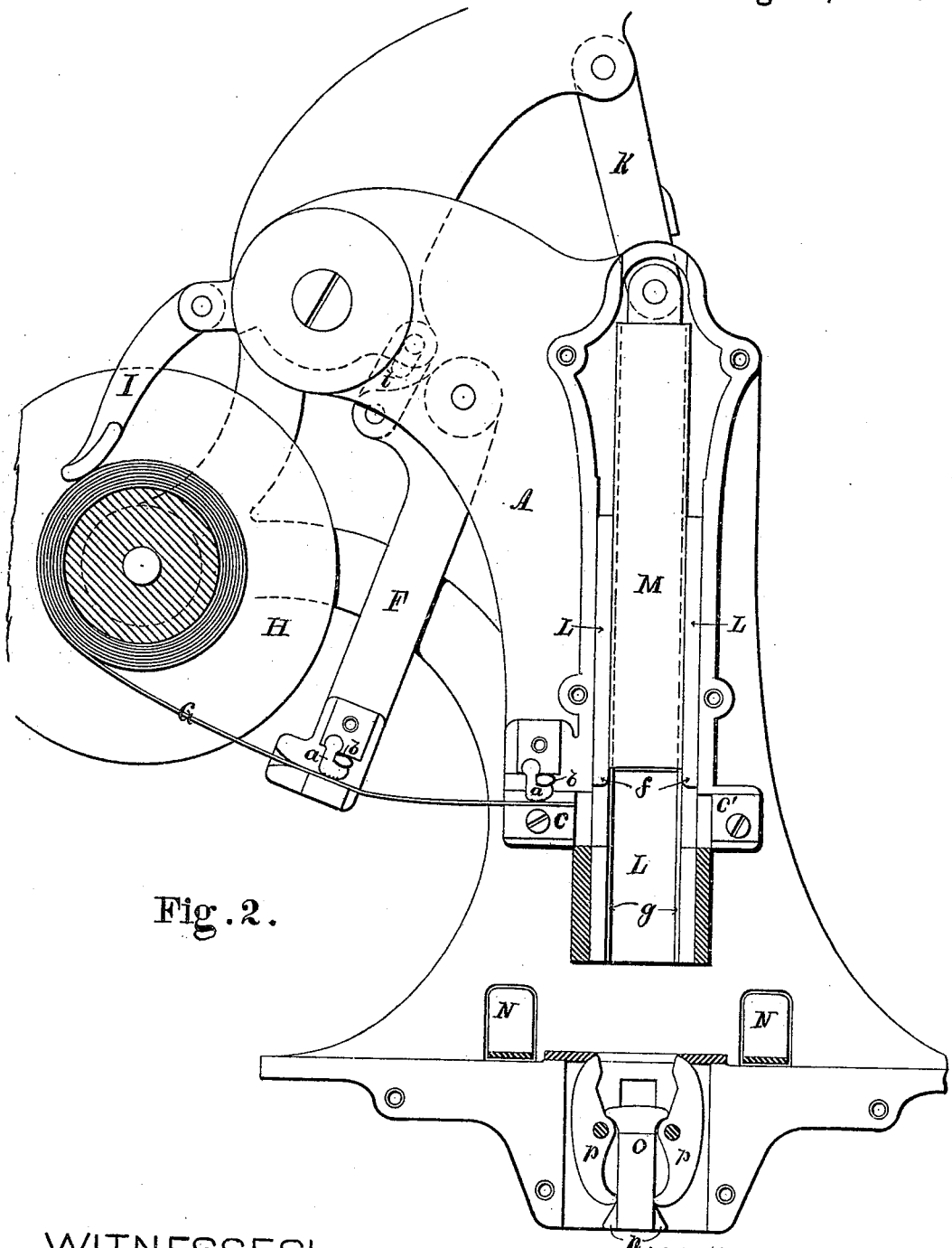


Fig. 2.

WITNESSES:

Henry J. Miller

J. A. Miller Jr

INVENTOR:

William L. Coop

(No Model.) 5 Sheets—Sheet 3.

W. L. COOP.

BOOK STAPLING MACHINE.

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Fig. 4.

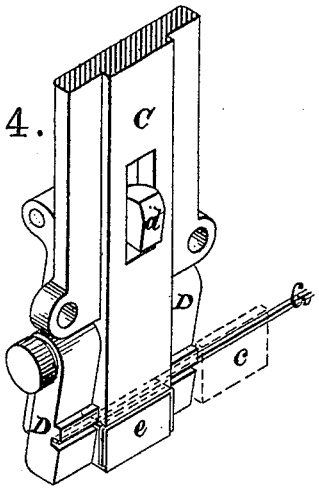


Fig. 5.

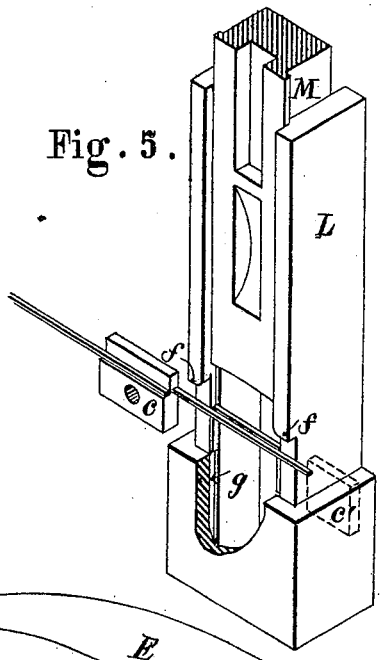
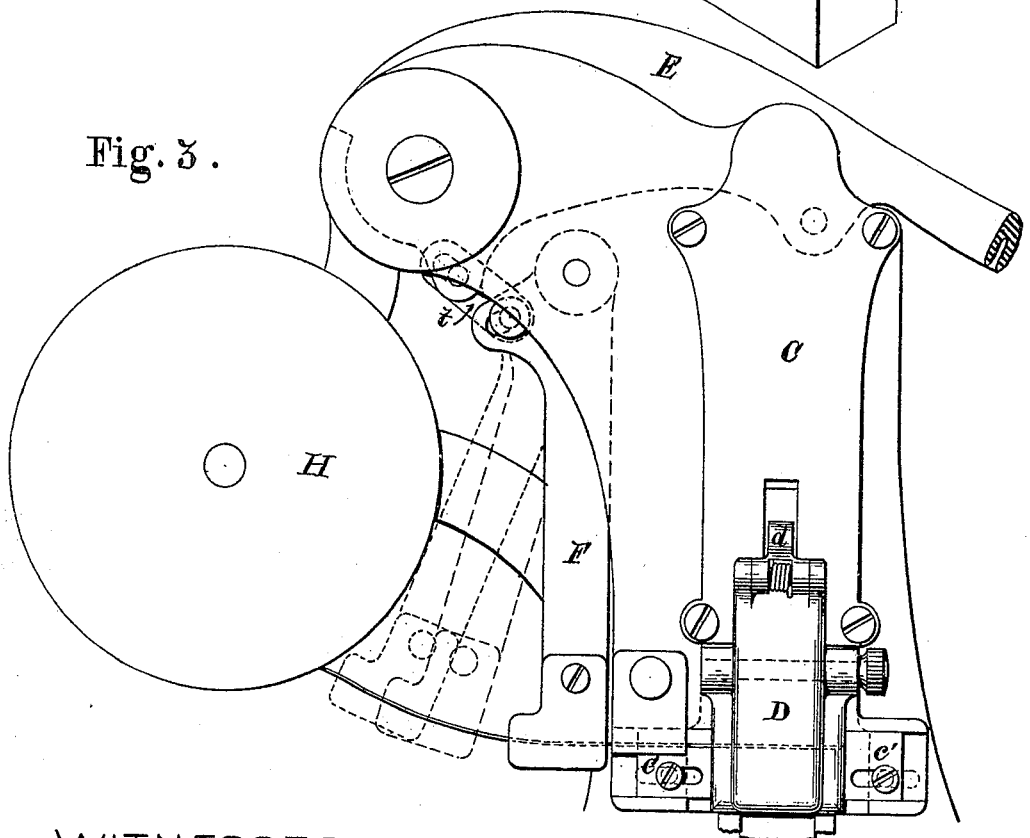


Fig. 3.



WITNESSES:

Henry J. Miller

J. A. Miller Jr

INVENTOR:

William L. Coop.

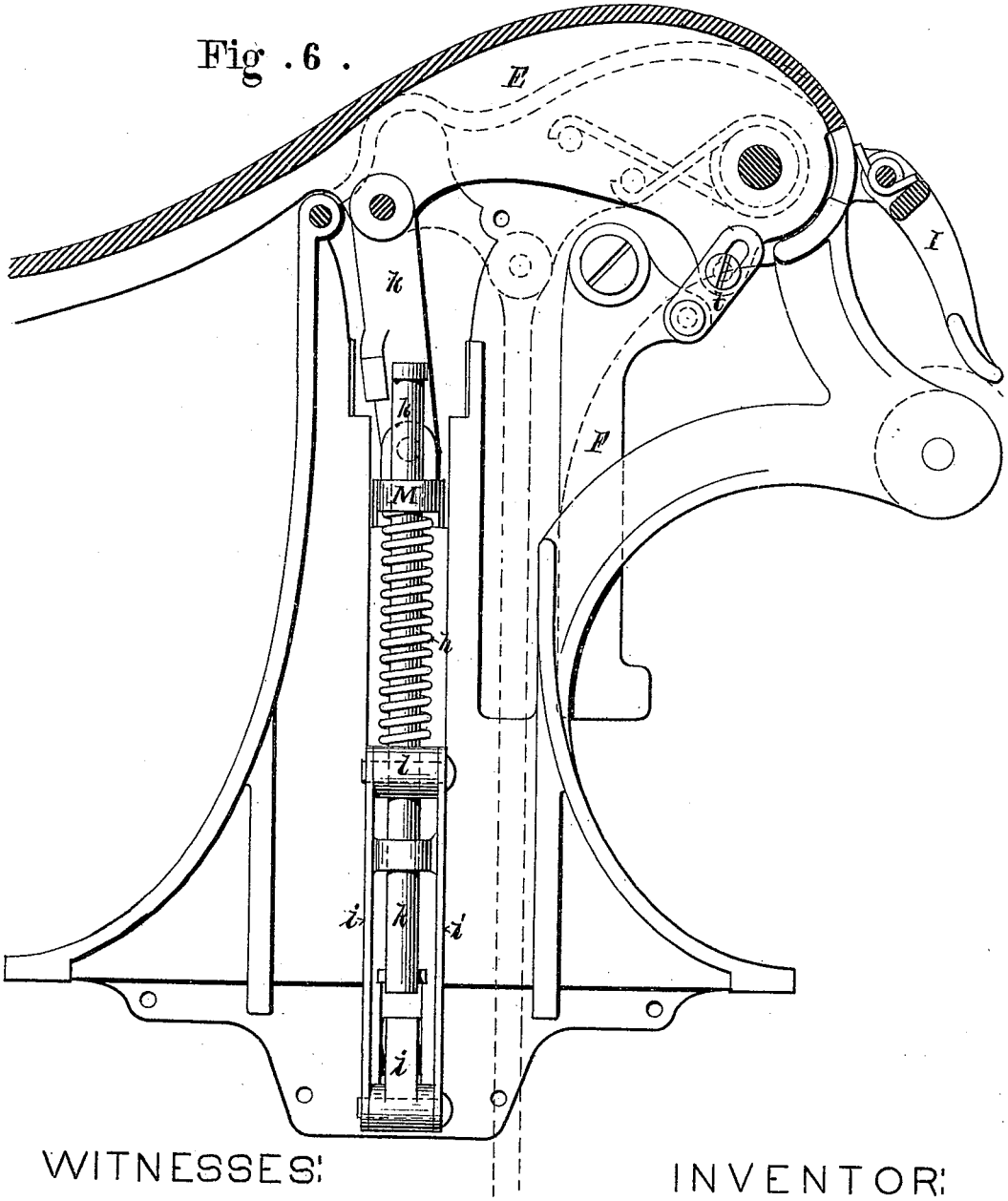
(No Model.) 5 Sheets—Sheet 4.

W. L. COOP.

BOOK STAPLING MACHINE.

No. 263,390. Patented Aug. 29, 1882.

Fig. 6.



WITNESSES:

Henry J. Miller

J. A. Miller Jr

INVENTOR:

William L. Coop,

(No Model.)

5 Sheets—Sheet 5.

W. L. COOP.

BOOK STAPLING MACHINE.

No. 263,390. Patented Aug. 29, 1882.

Fig. 11.

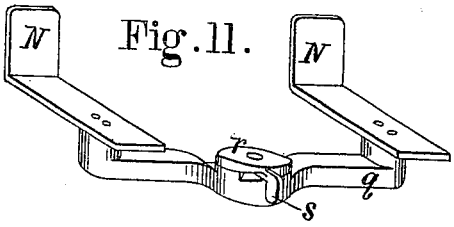


Fig. 10.

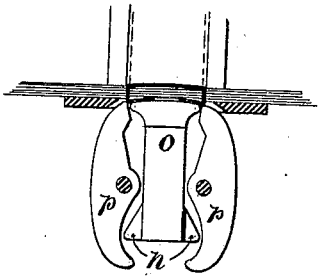


Fig. 8.

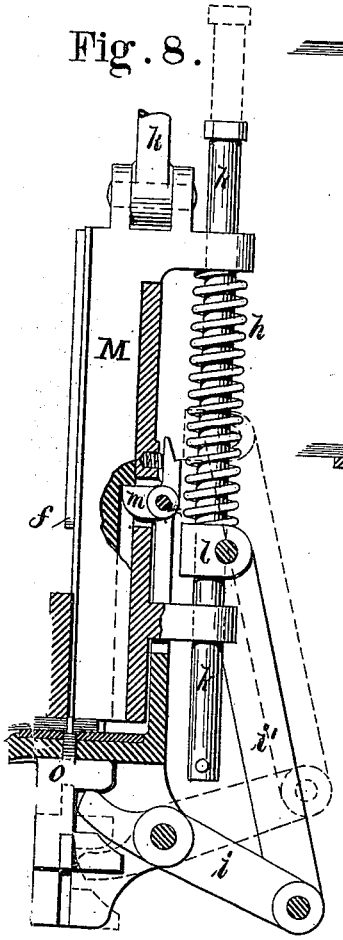


Fig. 9.

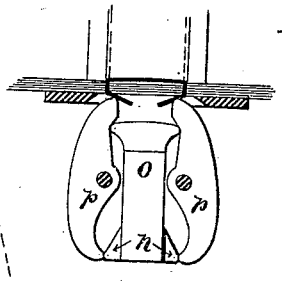
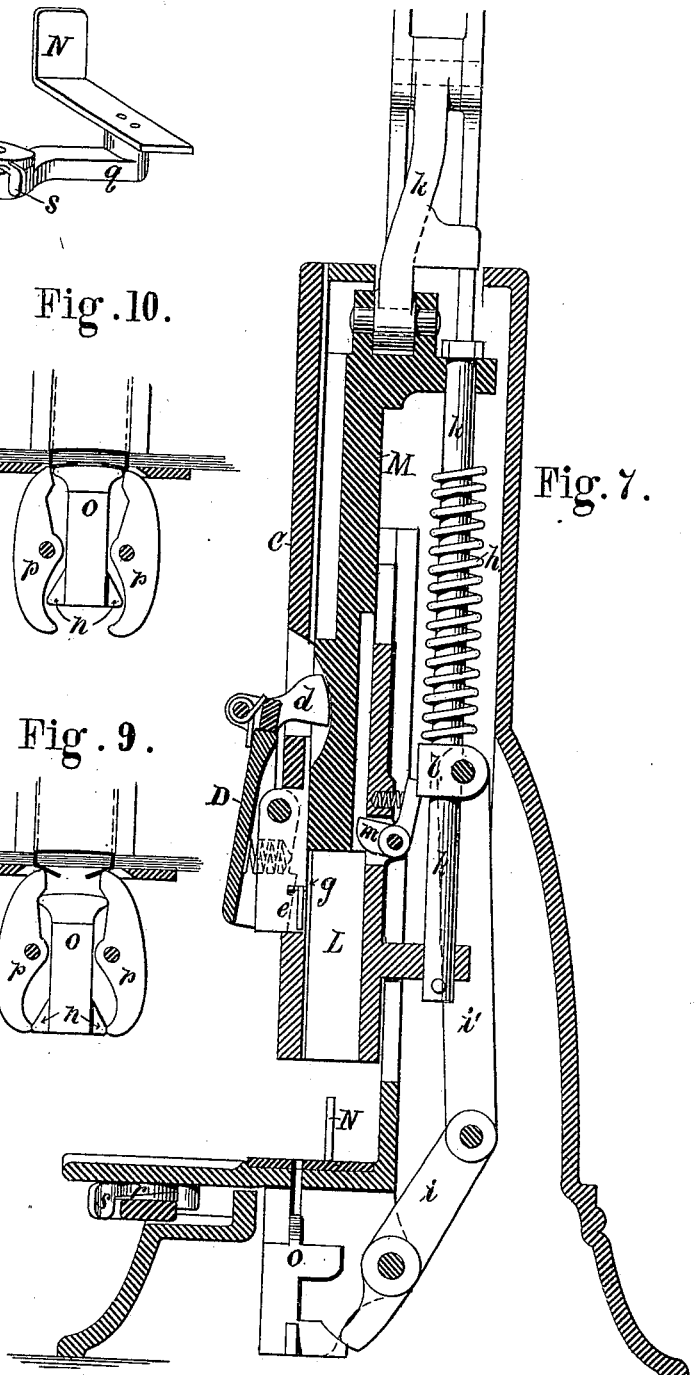


Fig. 7.



WITNESSES:

Henry J. Miller

J. A. Miller Jr.

INVENTOR:

William L. Coop.

UNITED STATES PATENT OFFICE.

WILLIAM L. COOP, OF PROVIDENCE, RHODE ISLAND.

BOOK-STAPLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 263,390, dated August 29, 1882.

Application filed May 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. COOP, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Machines for Binding Books with Wire Staples; and I 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.

This invention has reference to improvements in the class of staple-driving machines in which the staple is made, formed, driven, and clinched in one machine; and it consists in the peculiar and novel construction and arrangement of the parts, so that the whole operation is performed by the downward and upward motion of one actuating-lever.

It further consists in peculiar means by which the length of the wire fed and the length of the staple can be adjusted, as also in some of the details of construction, which will all be more fully set forth hereinafter, and pointed out in the claims.

Figure 1 is a perspective view of my improved machine for binding books with wire staples. Fig. 2 is a side view of the machine, all the front caps or plates being removed so as to show the actuating devices more clearly. Fig. 3 is also a side view of the machine, showing the feed-arm and its connection with the actuating-lever, constructed so that the length of wire fed to the former and driver can be regulated. Fig. 4 is a perspective view of the front cover, which is placed over the driver, showing the cutter-lever hinged on the cover and the actuating-arm projection from the upper end of the cutter-lever, as also the wings of the cutter-lever. Fig. 5 is a perspective view of the driver and presser, being a view of these parts opposite to the parts shown in Fig. 4 and co-operating with the same. Fig. 6 is a sectional view of the machine, showing the parts in the position occupied when the lever has reached its lowest depression and the staple has been clinched. Fig. 7 is a transverse sectional view, showing the various parts in the positions occupied by them when the lever has reached its highest point and is ready to descend. Fig. 8 is a transverse sectional view of the driving and clinching mechanism, showing the pawl and latch by means of which the clinching device is released when the staple is driven home and operated to clinch the projecting ends of the staple. Fig. 9 represents the clinching-levers in the act of bending the ends of the staple and the hammer for clinching the same. Fig. 10 represents the hammer in contact with the staple to complete the clinching. Fig. 11 is a perspective view of the gage by means of which the position of the staples with reference to the edge of the book or pad is regulated.

Similar letters of reference indicate corresponding parts in all the figures.

In the drawings, A is a hollow standard, provided with the projecting table or rest B, on which the sheets of paper that are to be secured together rest while the staple is driven.

C is a front plate placed over the staple forming and driving device, so that it can be readily detached.

D is the wire-cutter, hinged to the plate C by pins, which can be easily withdrawn and another cutter substituted, and is operated by the driver, as will be shown more particularly hereinafter.

E is the actuating-lever, by means of which all the parts are operated.

F is the feed-lever, adjustably connected with the actuating-lever E.

G is the wire from which the staples are made, and H is a spool containing the wire.

I is a brake or presser held by means of a coiled spring against the wire on the spool H, so as to prevent the uncoiling of the wire, and also to retard the rotation of the spool.

K is the link connecting the actuating-lever E with the pressing, driving, forming, and clinching devices.

L is the compressing device. It also bends the wire into the form of the staple.

M is the staple-driver.

Having thus designated the principal parts of the machine, I will now describe in detail the connection of these parts and the operations performed by the same.

Referring to Fig. 2, it will be seen that the wire G from the spool H is passed through the lower end of the feed-lever F. In this lever is placed the serrated cam *a*, pressed against the wire by the spring *b*, constructed so that the arm will slide over the wire when moving toward the spool, and will tightly

clamp the wire when moving in the opposite direction, thus drawing the wire from the spool and feeding the same to a like device, also provided with a cam, *a*, and spring *b* on the standard A over the cutter-die *c*, through which the wire passes.

c' is another cutter-die, placed on the other side of the cutter D, so that any excess of wire that may be fed by the feed-lever F will be cut off.

The operation of the wire-cutter D is shown in Fig. 7. The arm *d*, secured to the upper end of the cutter, bears against the concaved cam on the driver M, and, in descending, the driver forces the upper end of the cutter D outward and the lower end inward between the dies *c* and *c'*, thus cutting off the desired length of wire, and also carrying the length of wire inward, resting on the anvil *e*. When the presser descends the projections *f f* come in contact with the projecting ends of the wire and bend the same into the form of a staple.

The cutter-dies *c* and *c'* are secured in slides, and are provided with holes, through which the screws pass by which they are secured, so that they can be adjusted to the cutter D. By changing the cutter and adjusting the dies *c* and *c'* the legs of the staple can be adjusted. The formed staple is pushed by the wings of the cutter-lever into the groove *g* and under the driver, which, on descending, pushes the staple downward, guided by the groove *g*, into the paper or the material into which it is to be driven.

The driver M is connected directly with the actuating-lever E by the link K; but the presser L, which surrounds the driver on three sides, is operated by the coiled spring *h* as soon as the upper part of the driver comes in contact with the spring, so that a yielding pressure is exerted by the spring in the same manner as is shown and described in Letters Patent granted to me for improvements in "Machines for Binding Books with Wire Staples," June 15, 1880, to which Letters Patent reference is made, the present invention differing from the former in that all the operations are performed by the actuating-lever E.

Figs. 7 and 8 show the clinching device consisting in the pivoted lever *i*, connected by a link, *i'*, with the spring-pressed rod *k*, the end of said link being pivoted to a clamp, *l*, on said rod. This clamp *l* is connected with the presser by the hinged pawl *m*. As the presser descends the levers *i i* assume the position shown in Fig. 8 in broken lines. At this moment the presser has compressed the paper, the driver has driven the staple through the same, a shoulder on the driver now releases the pawl *m* from the clamp *l*, and the coiled spring completes the operation of clinching by driving the hammer *o* against the staple, as is shown in Fig. 10.

The hammer *o* is operated by the short arm of the lower lever, *i*, as is shown in both Figs. 7 and 8. The hammer *o* is provided with two beveled cams, *n n*, which come in contact with the hinged clinching-pawls *p p*, as is shown in Fig. 9. N N are adjustable guides, against which the paper to be secured is held while the staple is being driven. They are shown in perspective in Fig. 11. The guides N N are secured to the cross-arm *g*, which is provided with a projection on each end. These projections pass through slots in the table B, so that they can be drawn in and out to regulate the guides. These guides are secured by means of a cam-button, *r*, the lower face of which is provided with a spiral inclined plane corresponding with a like inclined plane on the arm *g*. The cam-button *r* is provided with a projecting arm, *s*, so that it can be partially turned to secure or release the arm *g*, and with it the slides N N.

To allow the feed-arm F to be adjusted so as to regulate the length of wire fed, it is connected with the actuating-lever by means of the link *t*, which in its turn is secured at one or both ends by clamp-screws passing through slots, so that the same may be secured close to or farther from the center of the pivotal connection of the actuating-arm E or the feed-arm F—either or both.

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

1. In a staple-forming and staple-driving machine, the combination, with a lever which has pivotal movement in a vertical plane, of a staple-driver to which it is connected, a staple-former provided with a presser-foot, a spring which connects said staple former and driver, and a clinching device, substantially as described, operated by the same spring.

2. The combination, with the actuating-lever E, directly connected with the driver, of the feed-arm F, connected with the actuating-lever by an adjustable connection, constructed substantially as described, to regulate the length of wire fed to the machine.

3. The combination, with the interchangeable cutter D, of the adjustable dies *c* and *c'*, constructed to regulate the length of the wire cut, as described.

4. In a staple-forming and staple-driving machine, the combination of the following instrumentalities: a spool containing the wire for the staples, a feeding device constructed to feed the wire, a cutter to cut the wire, a compressor to compress the material through which the staple is driven and also form the staple, a driver for forcing the staple through the material, and a clinching device for clinching the staple-legs upon the material, all constructed and arranged substantially as described, and a single actuating-lever arranged to transmit motion to said parts for causing them to perform their various functions during one downward and one upward motion of said lever, as set forth.

WILLIAM L. COOP.

Witnesses:
J. A. MILLER, Jr.,
HENRY J. MILLER.