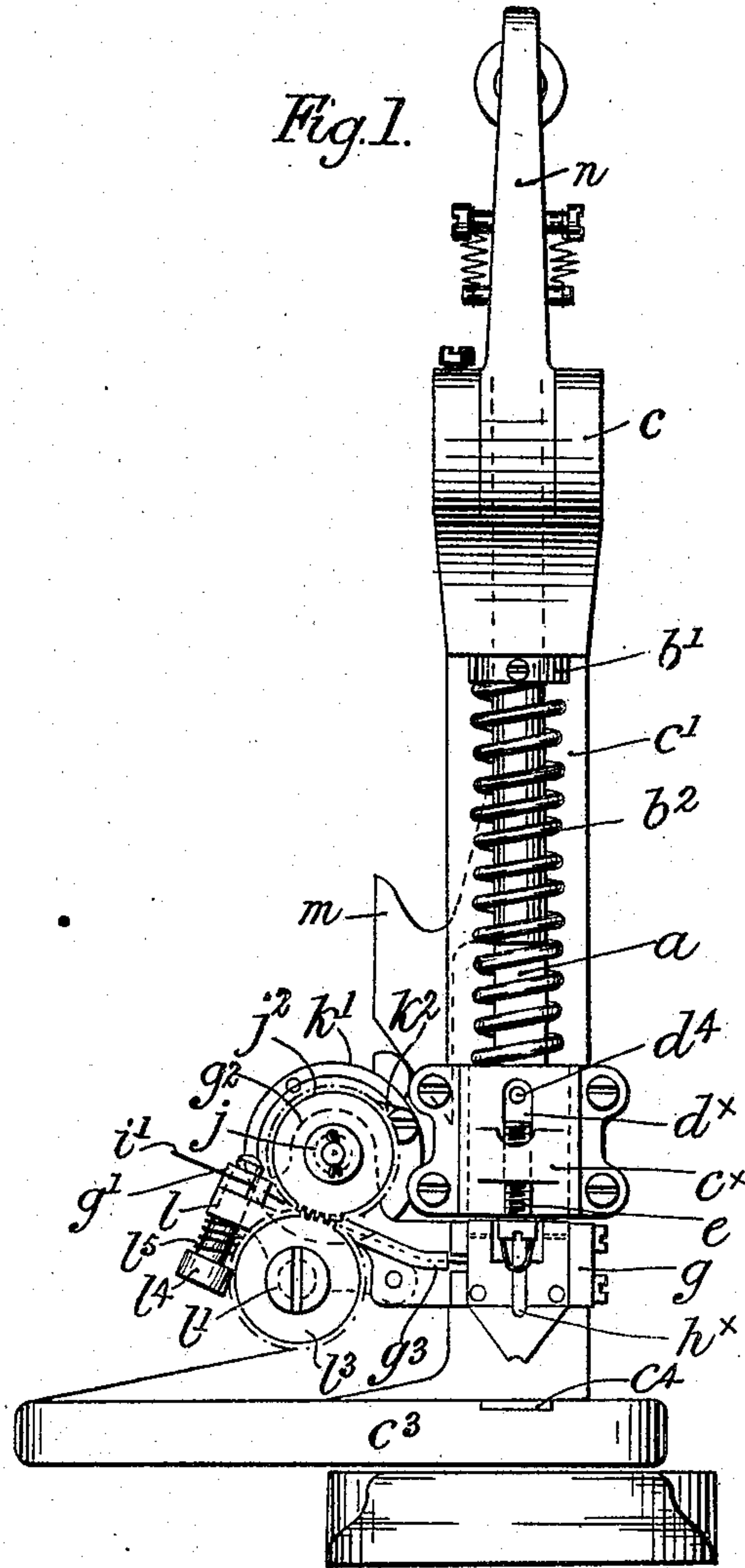


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MACHINE FOR ATTACHING BUTTONS, BUCKLES, OR LIKE ORNAMENTS TO BOOTS, SHOES,
GAITERS, AND KINDRED ARTICLES.
APPLICATION FILED OCT. 26, 1907.

919,791.

Patented Apr. 27, 1909.
3 SHEETS—SHEET 1.



—*Witnesses.*—

Chas. H. Smith
Arthur C. Serrell

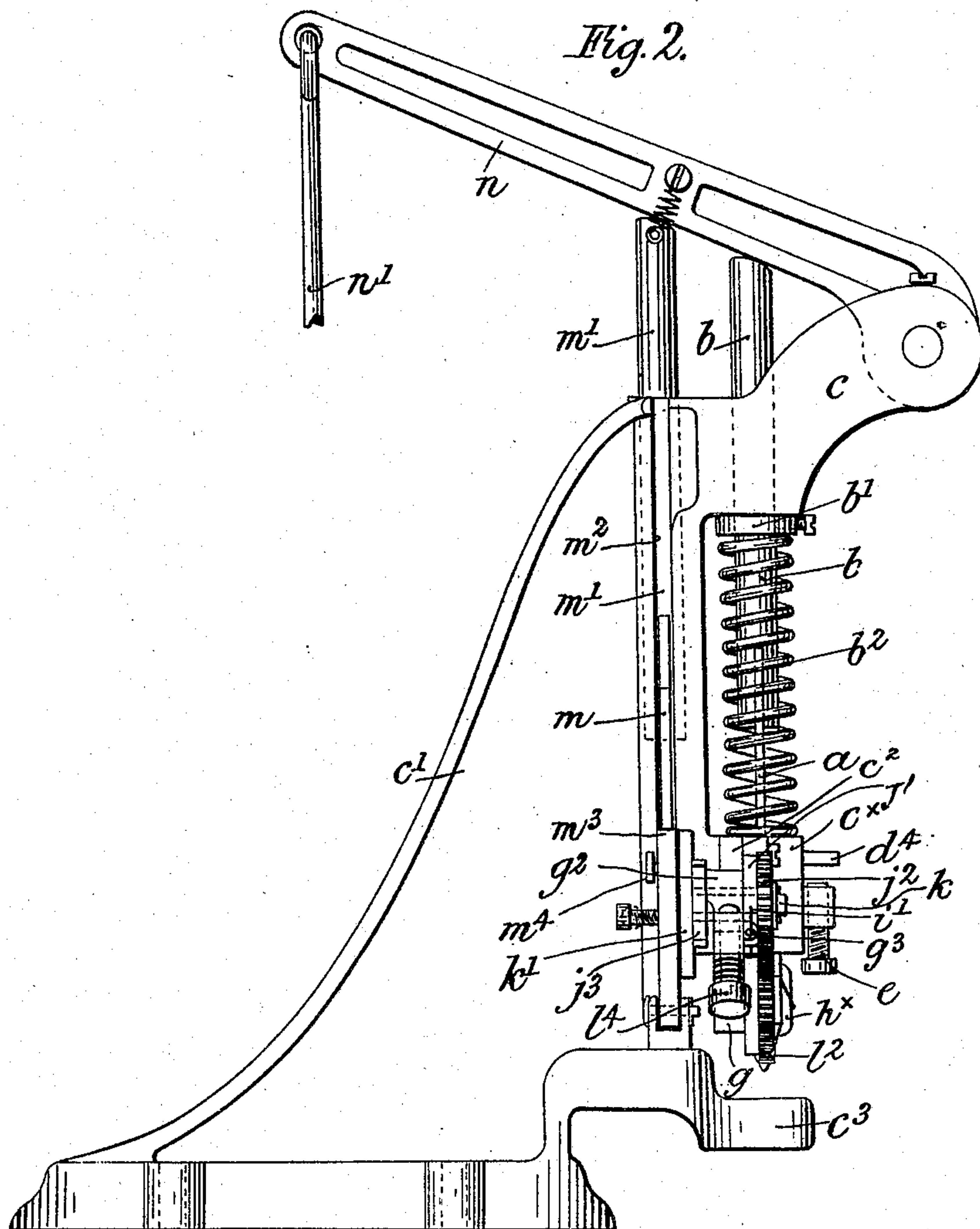
—*Inventors:*

Thomas H. Stringer
William H. Stringer
for *Harold Serrell*
their attys

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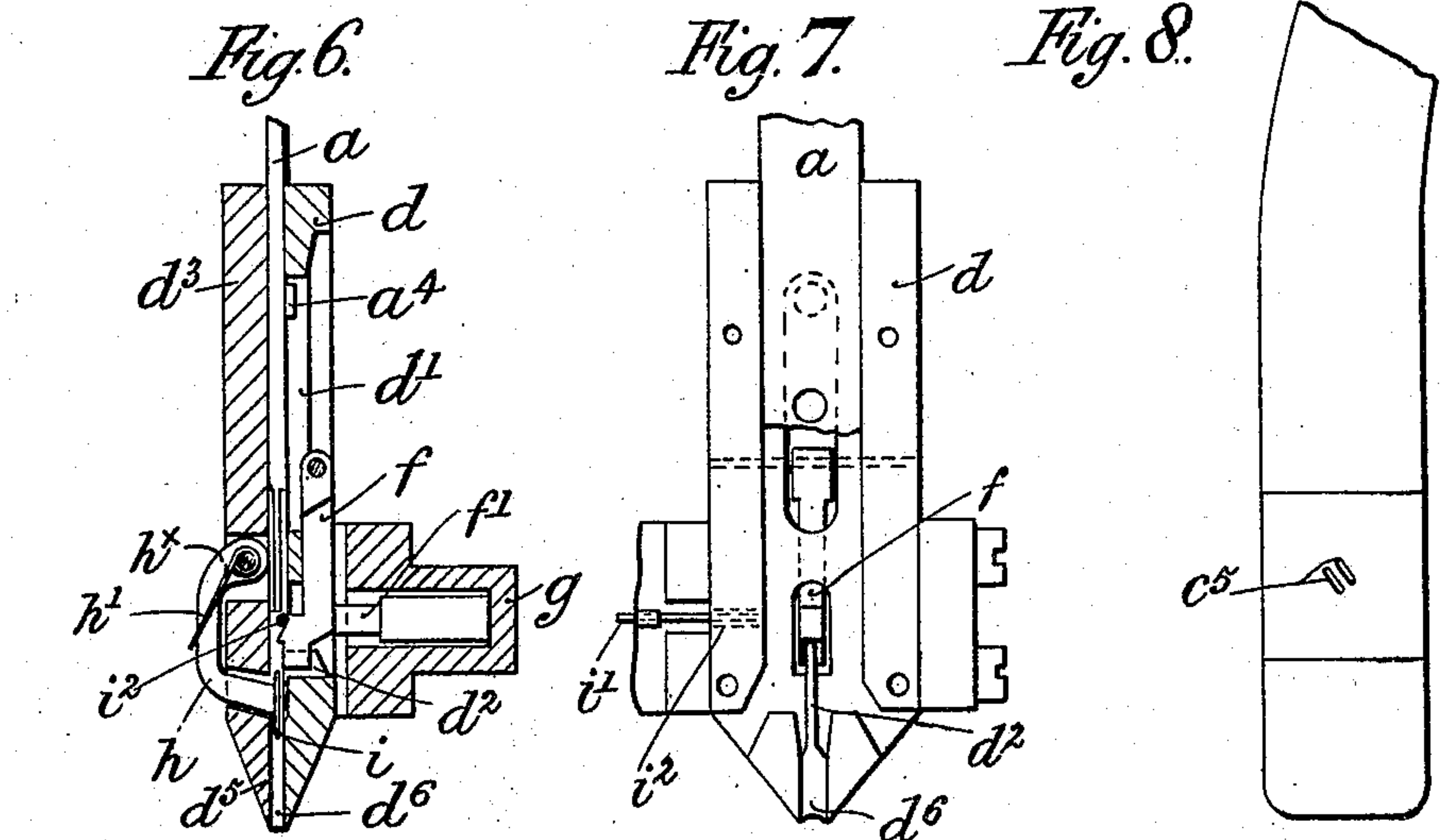
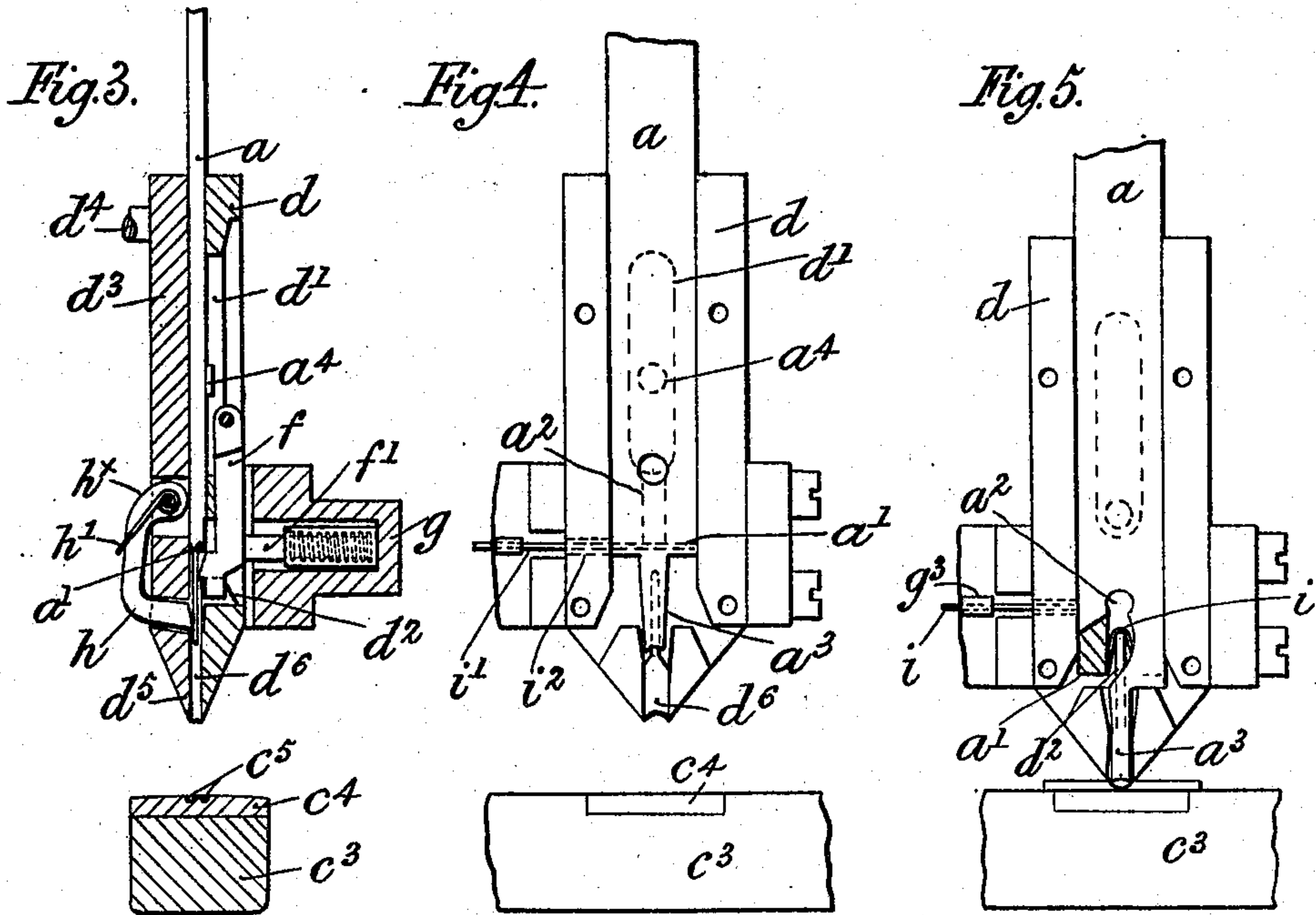
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3 SHEETS—SHEET 3.



Witnesses.—

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UNITED STATES PATENT OFFICE.

THOMAS HIGGINSON STRINGER AND WILLIAM HENRY STRINGER, OF LEICESTER, ENGLAND.

MACHINE FOR ATTACHING BUTTONS, BUCKLES, OR LIKE ORNAMENTS TO BOOTS, SHOES, GAITERS, AND KINDRED ARTICLES.

No. 919,791.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed October 26, 1907. Serial No. 399,307.

To all whom it may concern:

Be it known that we, THOMAS HIGGINSON STRINGER and WILLIAM HENRY STRINGER, sewing-machinists, subjects of the King of Great Britain and Ireland, residing at Leicester, in the county of Leicester, England, have invented a new and useful Machine for Attaching Buttons, Buckles, or Like Ornaments to Boots, Shoes, Gaiters, and Kindred Articles, of which the following is a specification.

This invention relates to that type of machine wherein a wire staple is formed, driven home, and clenched, and consists in a novel arrangement and combination of parts whereby, while one staple is being driven into the work, the next one is in process of formation, so enabling the above enumerated operations to be performed in a continuous and more expeditious manner than heretofore.

According to this invention, wire-feed mechanism is operated simultaneously with a reciprocating plunger formed with a cutter, a staple former, and a tongue, in such a manner that, during the down stroke of the said plunger, a length of wire is fed beneath the cutter, is severed, and is then formed into a staple upon a swage, while the staple formed by the previous down stroke is forced into the work; the staple formed during the down stroke of the plunger is, during the return stroke, pushed off the swage and into the path of said tongue where it is supported upon a spring-controlled lever until the succeeding down stroke of the plunger, whereupon it is forced into the work. And in order that the invention may be readily understood, we will now describe it fully with reference to the accompanying drawings, wherein:

Figure 1 is a front elevation of a machine embodying our improvements, and designed to be operated by any suitable treadle arrangement, and Fig. 2 is a side elevation thereof. Fig. 3 is a detached view in vertical section, and to a larger scale than the previous figures, of the die-box, showing the plunger about to cut off a length of wire. Fig. 4 is an elevation at right angles to Fig. 3, showing the interior of the die box. Fig. 5 is a view similar to Fig. 4, but showing the plunger and die-box in the position for clenched the staple. Fig. 6 is likewise a view similar to Fig. 3, but showing the plunger in its uppermost position and the

staple formed by the previous stroke supported in its groove. Fig. 7 illustrates the means for removing the staple from the swage upon which it has been formed. Fig. 8 is a plan of the arm on which the work is supported, and carrying the die on which the staple is clenched.

The plunger *a* is detachably connected to a rod *b*, which is supported by means of a collar *b*¹, upon a spring *b*² disposed between the head *c* of the standard *c*¹, and a guide *c*². The rod *b* passes up through the head *c*, while the lower extremity of the plunger *a* passes into the die box *d* working in the guide *c*² formed upon the front of the standard *c*¹. This die-box, as will be hereinafter explained, has a permissive vertical movement to give clearance for placing the work between it and the clenched die *c*⁴.

The plunger *a* is formed with a cutter *a*¹, a groove *a*² for forming the staple, and a tongue *a*³, for driving the formed staple into the work. The back of the die-box *d* is formed with a groove *d*¹, for the reception of a stop *a*⁴, provided at the back of the plunger *a*, and this box is furnished with a swage *d*² on which the staple *i* is formed, and with an arm *f*, the lower end of which is bifurcated to pass on each side of said swage, while the opposite end of this arm is pivotally mounted within the groove *d*¹. At the rear of the arm *f* is a spring-controlled plunger *f*¹, housed within a block *g* attached to the die-box *d*, and this spring normally maintains the bifurcated end of the arm *f* in its forward position. Upon the front of the die-box is a cover plate *d*³ formed with a lateral arm *d*⁴, and a plate *d*⁵, whereon is mounted a bent lever. The arm *h* of this lever extends into a channel *d*⁶ in the die-box where it supports the staple *i*, while the other arm *h*^x of said lever is pivotally mounted in the cover plate *d*⁵. A spring *h*¹ is provided for normally maintaining the arm *h* in the channel. The lateral arm *d*⁴ projects through a slot *d*^x in the cover-plate *c*^x of the guide *c*²; this arm on the downward stroke of the plunger, contacting with an adjustable stop *e* which regulates the permissive movement of the die-box.

The wire *i*¹ for forming the staple is led from a conveniently disposed spool (not shown), and passes through a hole *i*² in the die-box; it is fed into this box by means of mechanism constructed as follows:—Upon an arm *g*¹ formed on the block *g*, is mounted,

in a bearing g^2 , a hollow shaft j , to one end of which is attached a roller j^1 formed, or provided, with a toothed wheel j^2 , while on the other end of said shaft is mounted a ratchet j^3 . Passing through the hollow shaft j , is an axis k , on which is mounted a disk k^1 furnished with a spring pawl k^2 adapted to engage with the ratchet j^3 . Pivotaly mounted upon the block g , is another arm l carrying an axis l^1 on which is rotatably mounted another roller l^2 formed, or provided, with a toothed wheel l^3 . The arm l is connected to the arm g^1 , by means of a stud l^4 which is furnished with a coiled spring l^5 , so arranged as to maintain a yielding contact between the two rollers j^1 and l^2 , while their respective toothed wheels j^2 and l^3 are held in gear. The wire l^1 , on its way from the spool, passes between the rollers j^1 , l^2 , and thence, by way of a tubular guide g^3 , to the hole i^2 in the die-box, and across said die-box until it abuts against the opposite side of the same. To operate the rollers j^1 , l^2 , a cam m is provided, and is formed on a plunger m^1 working in a guide m^2 in the standard c^1 . Engaging with the cam m , is a spring-controlled forked arm m^3 , pivotaly mounted upon the foot of the machine, the fork receiving a stud m^4 extending from the rear of the disk k^1 , and said stud serves to rotate the disk. The plunger m^1 is arranged at the rear of the rod b in such a manner that a lever n pivotaly mounted in the head of the standard engages both the rod and the plunger, so that upon vibrating this lever, which may be effected by connecting it, by means of a rod n^1 , to a treadle (not shown), the spindle and the rod are reciprocated simultaneously.

The standard is formed with a curved arm c^3 , on which the work is supported, and this arm is furnished with a die-plate c^4 upon the face of which are formed two notches c^5 which turn the points of the staple i up into the work.

The working of the machine is as follows: On the lever n being depressed, the rod b and plunger m^1 are forced down and in their descent the plunger m^1 operates the wire feed-mechanism so causing it to feed a length of wire into the die-box d . Simultaneously with this feeding, the cutter a^1 , of the plunger a , has descended to the hole i^2 in the die-box (as shown in Figs. 3 and 4) and has severed the wire, the detached piece of which is thereupon brought by the cutter to the swage d^2 . The plunger continuing to descend, bends the wire over the swage by the groove a^2 in said plunger, and the staple i is thereupon formed, (as shown in Fig. 5). During this operation, that is to say the forming of the staple, the tongue a^3 of the plunger will have passed into the channel d^6 in the die-box and engaged with the staple formed by the previous down stroke, this staple having, meanwhile, been supported (as shown in Fig. 6),

upon the arm h of the bent lever. The last mentioned staple is now forced by the plunger through the channel d^6 , and when said plunger has descended to its lowermost position in the die-box, it, together with said die-box, will be forced down upon the work until the arm d^4 on the die-box, contacts with the stop e on the cover plate of the guide c^2 . While forcing the staple through the work, the points of the former will be turned inward by the grooves c^5 in the die-plate c^4 , with the effect that the staple will be clenched in the work. The lever n now rises, releasing the spring b^2 , which latter then forces up the plunger a . The pivotaly mounted arm f which, during the descent of the plunger and the formation of the staple, had been forced back, will now be pushed forward by its spring-plunger f^1 , whereupon the staple which had been formed upon the swage d^2 , will be pushed into the channel d^6 and will fall upon the arm h of the bent lever, ready for the next down stroke of the plunger, and so on continuously.

Having now described our invention, what we claim and desire to secure by Letters Patent, is:

1. In a machine for securing buttons, buckles, or like ornaments to boots, shoes, gaiters, and kindred articles, the combination of a spring supported plunger furnished with a cutter, a staple former, and with a tongue or driver, a reciprocable die-box wherein said plunger works, wire feed mechanism attached to said die-box, a second plunger formed with a cam for operating said wire feed mechanism, and means for reciprocating said plungers simultaneously, whereby during the forward movement of the plungers, a length of wire is fed into the die-box, and there formed into a staple.

2. In a machine for securing buttons, buckles, or like ornaments to boots, shoes, gaiters, and kindred articles, the combination of a spring controlled reciprocating plunger furnished with a cutter, a staple former, and with a tongue or driver, a die-box slidably mounted upon said plunger, a stop on said plunger for reciprocating said die-box, wire feed mechanism mounted on said die box, a second plunger furnished with a cam for operating said wire feed mechanism to feed a length of wire into the die box, a swage in the said die box on which a staple is formed, and a channel in said box which guides the formed staple when pushed down by said tongue or driver.

3. In a machine for securing buttons, buckles, or like ornaments to boots, shoes, gaiters and kindred articles, the combination of a spring-supported reciprocating plunger furnished with a cutter, a staple former, and with a tongue or driver, a die-box slidably mounted upon said plunger, wire feed mechanism attached to said die-box, a swage in

said box, whereon a staple is formed during the downstroke of said plunger, a spring controlled arm riding over said swage for pushing said staple during the upstroke of said plunger off said swage, and into the path of said tongue, a spring controlled lever for supporting said staple in the path of said plunger, and a guide in said box for said staple.

10 4. A machine for securing buttons, buckles, or like ornaments to boots, shoes, gaiters and kindred articles, comprising a standard, a plunger furnished with a wire cutter, a staple former, and a tongue or driver, a
15 spring supporting said plunger, a die box slidably mounted on said plunger, wirefeed-

mechanism attached to said die box, a second plunger furnished with a cam for operating said wire feed-mechanism, a lever engaging said plungers to reciprocate them simultaneously, a guide in said standard wherein said die box works, a swage in said die box, an arm on said die box and an adjustable stop on said guide.

In witness whereof, we have hereunto signed our names in the presence of two subscribing witnesses.

THOMAS HIGGINSON STRINGER.

WILLIAM HENRY STRINGER.

Witnesses:

WALTER W. BALL,
F. HOOD.