

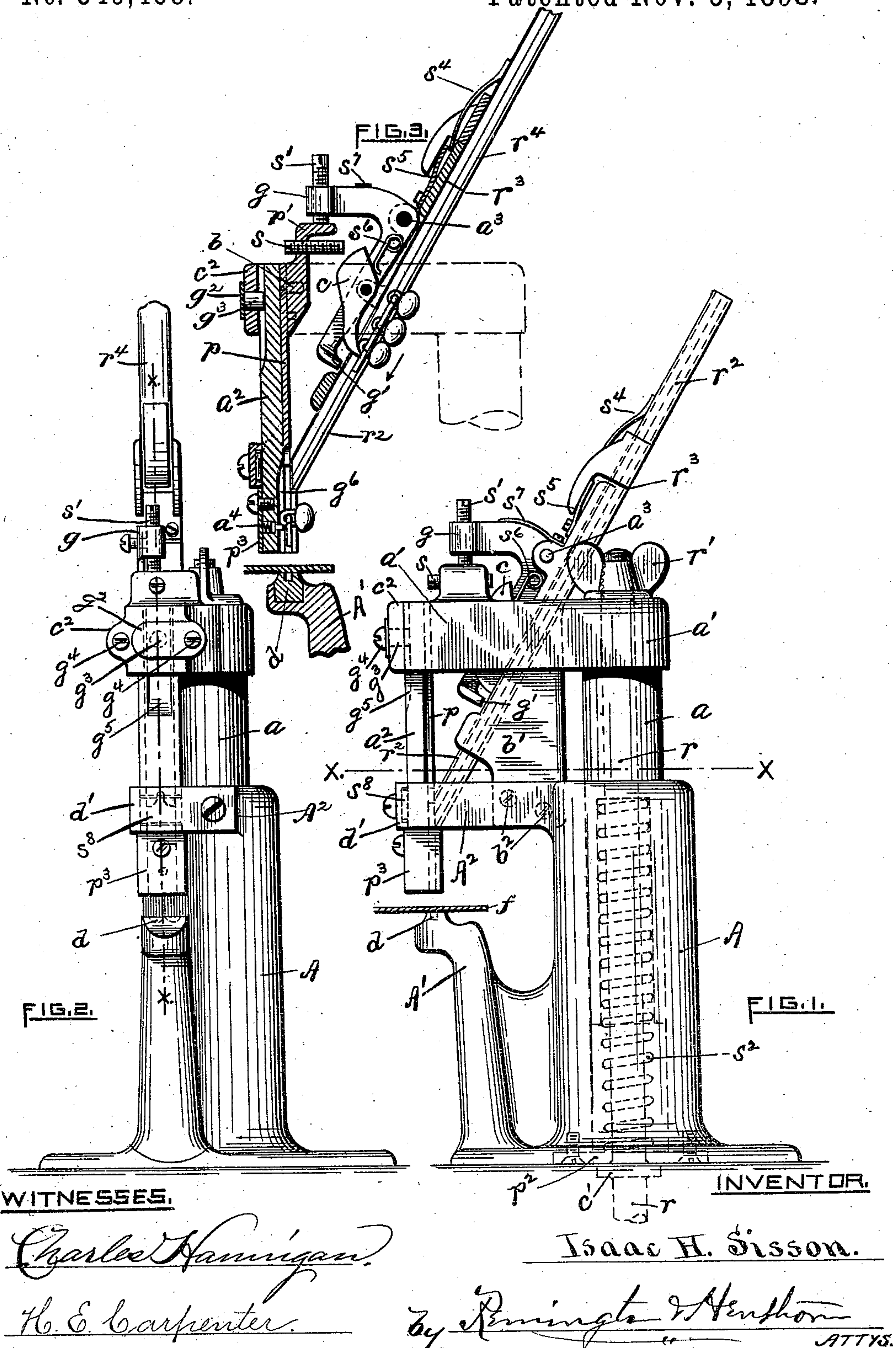
(No Model.)

2 Sheets—Sheet 1.

I. H. SISSON.
BUTTON SETTING MACHINE.

No. 549,468.

Patented Nov. 5, 1895.



2 Sheets—Sheet 2.

Patented Nov. 5, 1895.

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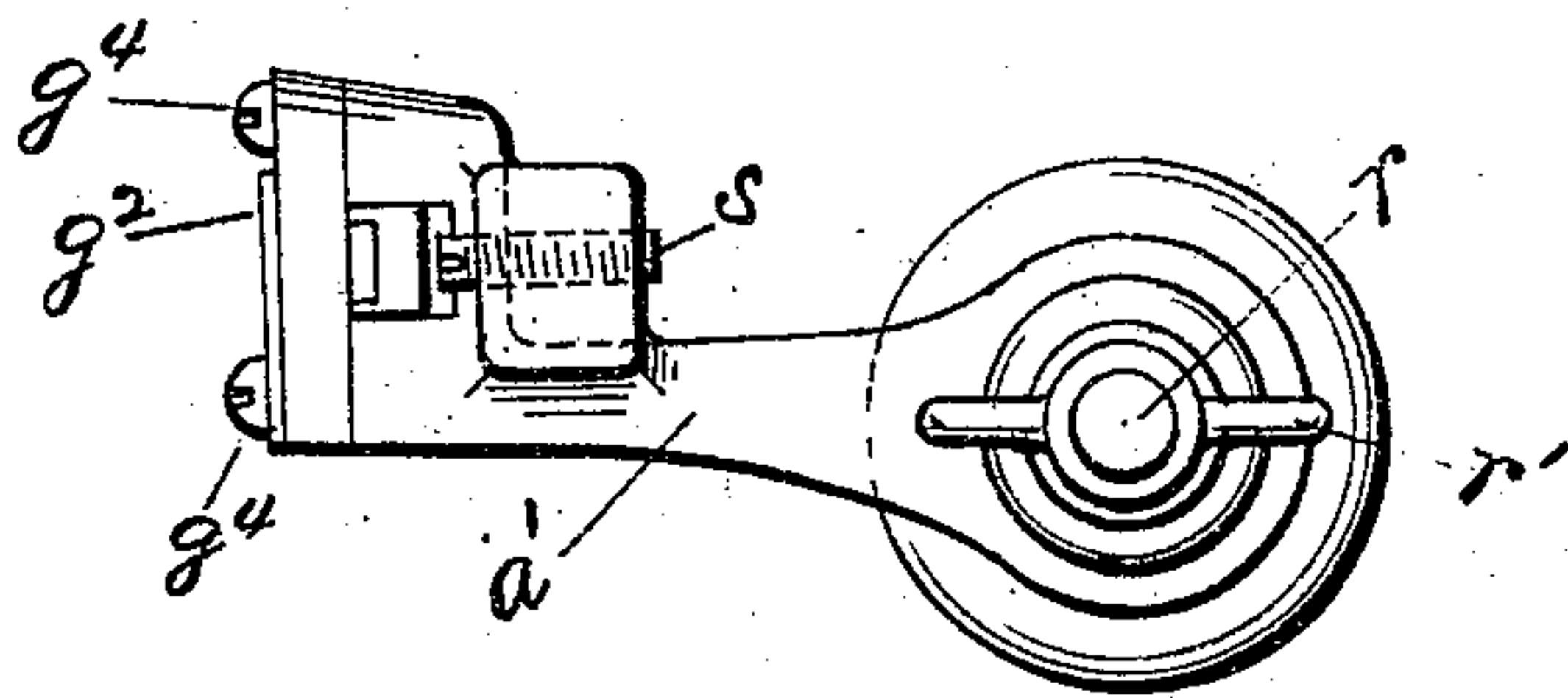


FIG. 6.



FIG. 8.

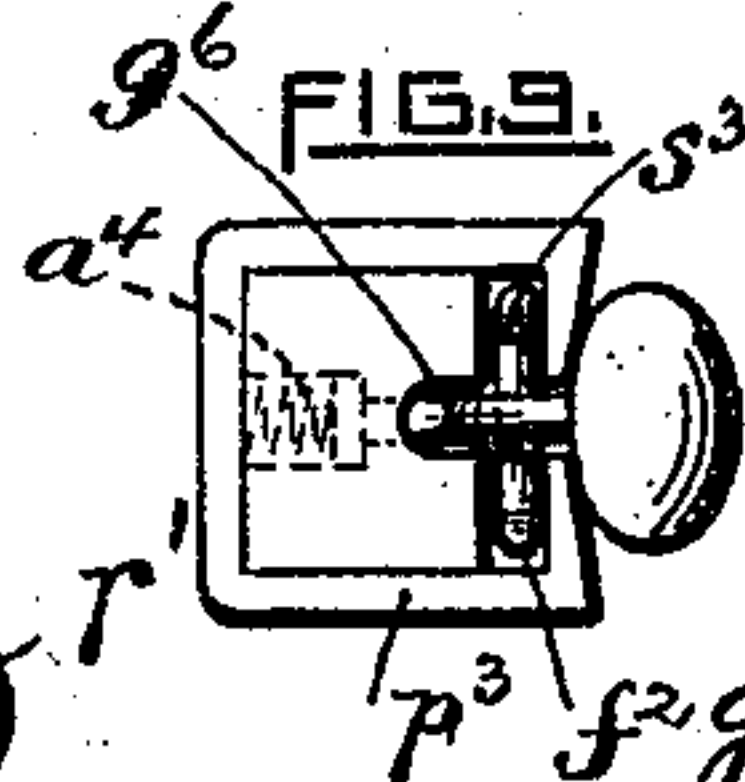


FIG. 4.

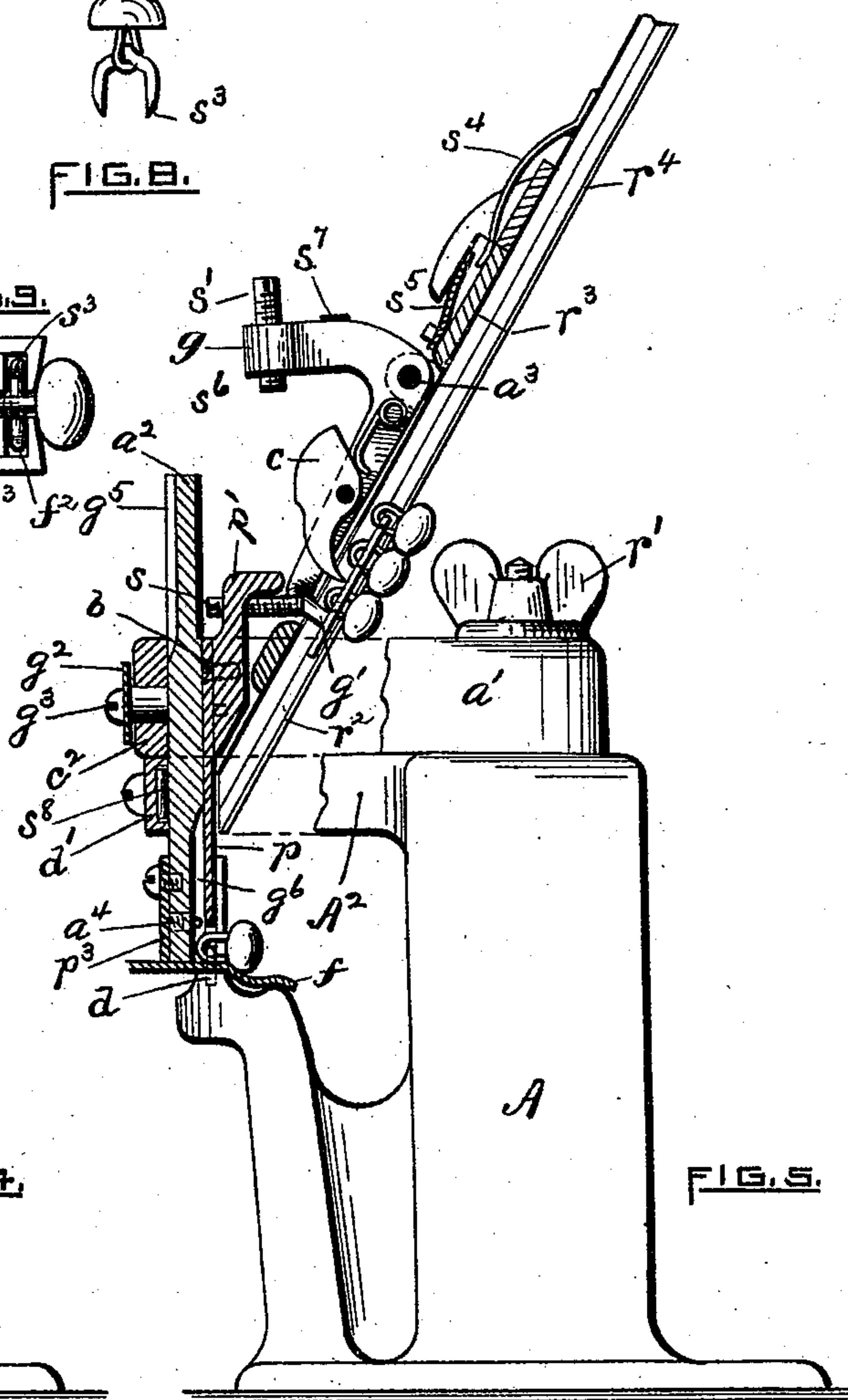


FIG. 5.

WITNESSES.

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ISAAC H. SISSON, OF PROVIDENCE, RHODE ISLAND.

BUTTON-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 549,468, dated November 5, 1895.

Application filed July 9, 1891. Serial No. 398,926. (No model.)

To all whom it may concern:

Be it known that I, ISAAC H. SISSON, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Button-Setting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My present invention relates to new and useful improvements in machines for attaching buttons to leather or other material of a boot, shoe, or other articles by means of metallic staple-fasteners, and embodies in a machine the button and fastener, an inclined runway for downwardly conveying the button and its connected fastener, an automatic finger for intermittingly releasing and retarding the flow of buttons and fasteners in the inclined runway, working in unison with an automatic and intermittingly-operated guard, whereby the said buttons and connected fasteners are delivered singly to a corresponding recess in the path of the driver or hammer having a vertical motion which works in unison by frictional contact with a retaining-guide, whereby also the material to be operated upon is retained in position while the staple or fastener of the button is being clinched underneath in the material between the face of the driver or hammer and the stationary anvil.

To properly illustrate my invention I have prepared the annexed two sheets of drawings.

Figure 1 represents a side elevation (in its upward position) of my machine complete and in its normal position, ready to receive the buttons and their fasteners in the runway. Fig. 2 is a side elevation viewed from the left of Fig. 1. Fig. 3 is a partial sectional elevation showing the driver or hammer in its upward position, and also showing the runway and button-feeding mechanism and its contiguous parts, a fastener being in position in the holder or lower portion of the runway in readiness to be operated upon by the driver or hammer in its downward movement. Fig. 4, Sheet 2, is a side elevation in partial section, the latter being taken substantially on line α of Fig. 1 and showing the driver and the

adjacent parts in the mid-position of the downstroke, the driver being in engagement with the fastener and all moving in unison downwardly. Fig. 5 is a similar view to that last described, showing the relation of the several parts upon the completion of the button-attaching operation. Fig. 6 is a plan view corresponding to Fig. 5, the magazine and runway being omitted. Fig. 7 is a partial side view, viewed from the opposite side of Fig. 1, showing the upward position of the driver, the latter being in engagement with the guard for delivering into the holder the button and fastener previously deposited in the lower part of the runway. Fig. 8 shows a combined button and fastener, and Fig. 9 is an inverted end view of the holder enlarged.

Again referring to the drawings, the standard A of my improved machine is designed to be rigidly secured to a bench or other suitable table. Within this standard is suitably guided the vertical plunger a , with its connected arm a' , this latter forming the means for operating the connected steel driver or hammer p , which is rigidly secured thereto by screws b . The outer or front face of the driver is in frictional contact with a vertical guide a^2 , the lower rear portion of which constitutes a holder adapted for the reception of a combined button and fastener. Upon the upper portion of the arm a' is cast an inwardly-turned projection p' , provided with an adjustable stop or screw s for intermittingly operating the feeding mechanism. The upper face of the projection p' is adapted to engage and raise an adjusting-screw s' , mounted in the pivoted button-guard g . (See Fig. 3, &c.) The set-screw s acts in moving up and down to vibrate the button-feeding pivoted cam c . A vertical reciprocating motion is imparted to said mechanism by the pull-rod r , suitably mounted in the lower part of the stand A, its lower end being connected with any suitable power, whereby the rod may be moved up and down at pleasure. Mounted upon this rod, and within a chamber formed in the stand A, is a spiral spring s^2 , bearing against a removable plate p^2 in the bottom of the stand. The spring serves to bring the plunger a and its connected parts up to its maximum elevation or normal position. Upon the rod r is a fixed collar c' , which serves to limit the extent of its vertical movement. (See Fig. 1). At the upper por-

tion of the rod r is a threaded nut r' for securing the plunger a thereon, and thus the spring s^2 is compressed more or less at pleasure, or sufficient to readily bring the plunger, &c., up to the maximum elevation.

Upon the base A there is cast an anvil block or horn A' , which is slotted or otherwise adapted at its upper extremity for the reception of a die d , having suitable cavities in its upper face (see Fig. 2) of such shape as to direct the points s^3 of the staple-prongs (Fig. 8) toward each other, and causing them to be inwardly turned and clinched within the material operated upon. The base A is further provided with an arm A^2 extending laterally therefrom, its outer portion being above and in line with the setting-die. To this arm is secured the inclined runway r^2 , the latter having for this purpose a side or bracket b' , through which screws b^2 pass into the arm. (See Figs. 1 and 7.)

The upper portion of the runway r^2 is adapted to receive a removable tube or magazine r^4 , containing a number of threaded or combined buttons and fasteners, the parts being held in position between suitable guides by a spring s^5 . A spring s^4 acts to automatically close the longitudinal slot or opening upon the removal of the tube, thereby preventing the buttons and fasteners from dropping out. This feature, however, as well as the runway and tube, form no part of my present invention. Pivotaly mounted upon the fixed runway r^2 is the spring-actuated curved cam c , which is vibrated both on the upward and downward movement of the plunger a and its connected parts by means of its engagement with the horizontal adjusting-screw s , before described.

The double vibration or movement of the cam c is effected when the screw s is on its first part of the downward stroke, and again when on the latter part of its upward stroke. A light spring s^6 serves to maintain the sharp or pawl-like lower end of the cam in contact with the inner face of the runway and below the column of buttons when the cam is not in engagement with the screw s . This arrangement insures a more certain delivery of a button and fastener against the lower finger g' of the retaining guard or stop g , about to be described. I would state here that in operation the slotted face of the inclined tube and runway is at the lower side—that is, the buttons lie with their heads downwardly. (See Figs. 3, 4, and 5.)

At one side of the axis of the runway r^2 there is mounted the pivoted two-arm guard-lever g , having its fulcrum at a^3 , its inclined lower prolongation or guard portion terminating in a finger g' , which is bent so that its free end is, when in its normal position, brought central with the axis of the opening in the runway and in close proximity with the lower side of the shank of the last button resting in the runway. This lever remains stationary until the plunger a and its con-

nected driver is nearing its extreme elevation, motion being imparted to it when the upper portion of the arm a' engages the screw s' , mounted in the other arm or horizontal portion of the lever, and results in an elevation or rearward movement of the guard from the runway, and thus permits the staple and its connected button previously retained between the end of the cam and said finger to follow the path of the raceway by gravity until its downward movement is interrupted by a yielding or spring stop a^4 , located in the lower portion p^3 of the frictionally-operated holder a^2 .

Bearing upon the back of the lever g is a flat spring s^7 , arranged to constantly keep it under pressure and maintain the finger g' in close proximity to the under slot of the runway for the purpose of intercepting the buttons and staples as they are deposited singly thereon by the mechanism above described.

Directly in the face of the outer or free end of the plunger-arm a' , as before stated, there is rigidly secured thereto the driver p of a thickness slightly in excess of the diameter of the wire forming the staples. The lower end of the driver conforms in outline to that of the arch of the staple. Adjoining, and in fact sliding frictionally upon, the face of the driver is the vertical holder a^2 , adapted in use not only to hold a threaded button and fastener, but also to guide and hold the material or stock f while the staple is being driven. This bar is guided and retained in position at its upper end by the cap c^2 , through which passes the securing-screws g^4 and the loosely-fitted friction-pin g^3 , adapted to a slight movement endwise and bearing against the bottom of the groove g^5 , formed in the upper portion of the holder a^2 . As this pin is at all times under the influence of the tension of the flat spring g^2 , it serves to frictionally retard the free movement of the holder. The lower portion of the holder is guided by the cap d' , inside of which there is also placed a small flat retaining-spring s^8 , in frictional contact with the cap and holder. This cap is rigidly secured to an arm A^2 , forming a part of the stand A and extending above the die. (See Figs. 1, 2, &c.)

Into the rear face of the holder, at its lower end, there is cut a groove g^6 , having a width slightly exceeding the thickness of the button-shank, thereby allowing the projecting part of the eye of the button to enter therein, the staple at the same time being retained in the rear side grooves f^2 , formed in the holder. (See Fig. 9, &c.) As the threaded button is released from the stop g' it instantly slides from the runway into the holder and is arrested by the spring-stop a^4 , the latter retaining it at that point until the driver in its downward movement passes and closes the mouth of the runway, after which the driver comes in contact with the arch of the staple, (see Fig. 4,) when now the whole—that is, the holder, driver, and the staple and its button—

move simultaneously downward to the material *f*, covering the anvil or die *d*, while a further and final movement of the driver forces the fastener-prongs through the material, and bends them inwardly thereunder by contact with the concavities in the die or anvil *d*. (See Fig. 5.)

The outer lower portion of the holder-bar *a*² is enlarged to form a stop *p*³, thereby limiting the vertical movement of the bar and also serving to guide the staples as they descend from the runway. (See Fig. 9.)

The operation of attaching buttons is as follows: The removable tube or magazine *r*⁴ is first filled with combined buttons and staples and inserted into the upper end of the runway *r*², thereby withdrawing the spring-stop *s*⁴ and permitting the column of buttons and fasteners to slide down the runway, the first or lowest button being arrested and retained in position by contact with the sharp pawl-like point of the cam *c*. The several parts of the machine meanwhile are assumed to be in their normal position, as shown in Figs. 1, 2, 3, and 7, being the extreme rearward elevation, and further assuming that a button and staple are in position in the holder to be operated upon under the driver, the said button and staple having been released from the finger *g*' by the preceding upward movement of the setting mechanism. Now, by pressing the pull-rod *r* downwardly by any convenient method, either by foot or power, a corresponding movement is at once imparted to the driver-arm *a*' and the driver *p*. At the same time the spring *s*⁷ causes the lever *g* to vibrate downwardly, thereby lowering the finger *g*' and thus preventing the escape of a staple and its button until the next downward movement of the setting mechanism. A further downward movement of the driver-head, &c., soon brings the screw *s* in contact with the upper portion or convex surface of the pivotally-mounted cam *c*, thereby vibrating it rearwardly and permitting the column of buttons to descend until stopped by the finger *g*'. A further downward movement carries the set-screw *s* beyond the abrupt surface of the cam when the spring *s*⁶ acts to return the sharp point of the cam to its normal position, thereby inclosing a button and fastener between it and the finger. (See Fig. 4.) During this movement the driver has closed the opening in the mouth of the runway and engages the arch of the staple and button, supported by the spring-stop *a*⁴ at the lower end of the holder. (See Fig. 4.) When, now, the said guide bar or holder is frictionally moved downwardly in unison with the driver until the material *f* or article to be acted upon is reached, by a further movement of the driver the staple-prongs are forced through the material and are inwardly turned and clinched, thus completing the downward stroke of the machine.

By withdrawing the power or pressure from the rod *r* the movable parts of the setting

mechanism are returned upwardly to the normal position by the tension of the confined spring *s*³. During such upward movement the frictional contact of the driver, with that of the holder or guide-bar *a*², also elevates the latter to its normal position. In its upward movement the driver uncovers the mouth of the runway, the screw *s* at the same time engaging the convex surface of the cam *c*, thereby again causing it to vibrate, and allows a button to descend against the finger *g*', if it had previously failed to do so. A still further and final upward movement brings the projection *p*' into contact with the screw *s*', thereby raising the pivoted finger *g*' and allowing the contiguous button and staple to slide downwardly into the runway and holder, and directly beneath or in line with the driver, to be operated upon by the latter on its return stroke, as before described.

I claim as my invention—

1. In a button setting machine, a stationary anvil, a stationary runway, a device consisting of two automatically dropping check-levers having their lower ends arranged for intermittently feeding a connected button and fastener mounted in the runway, and a vertically movable head or plunger adapted to actuate said feeding device, as in releasing the said button and fastener, in combination with a driver, as *p*, secured to and moving in unison with said plunger, a guide or holder, as *a*², in frictional contact with and in front of said driver having its rear lower portion communicating with and arranged to receive said released button and fastener or staple from said runway, a yielding stop for arresting and supporting the button and fastener in position in the lower portion of the guide, and a fixed stop for arresting said guide in its upward movement before the driver completes its corresponding stroke, substantially as described.

2. In a button setting machine, provided with an anvil or clinching member, a runway for feeding connected buttons and fasteners and a movable head or plunger, the driver, as *p*, secured to said head arranged to force the prongs of the fastener against said clinching member, combined with a frictionally supported movable holder or guide *a*² arranged to receive a button and its fastener from the runway preparatory to being acted upon by the driver a yielding stop mounted in the guide for arresting the said button and fastener and supporting them in position, and a yielding pressure device adapted to maintain the holder in frictional contact with the driver, substantially as described and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

ISAAC H. SISSON.

Witnesses:

CHARLES HANNIGAN,
GEO. H. REMINGTON.