

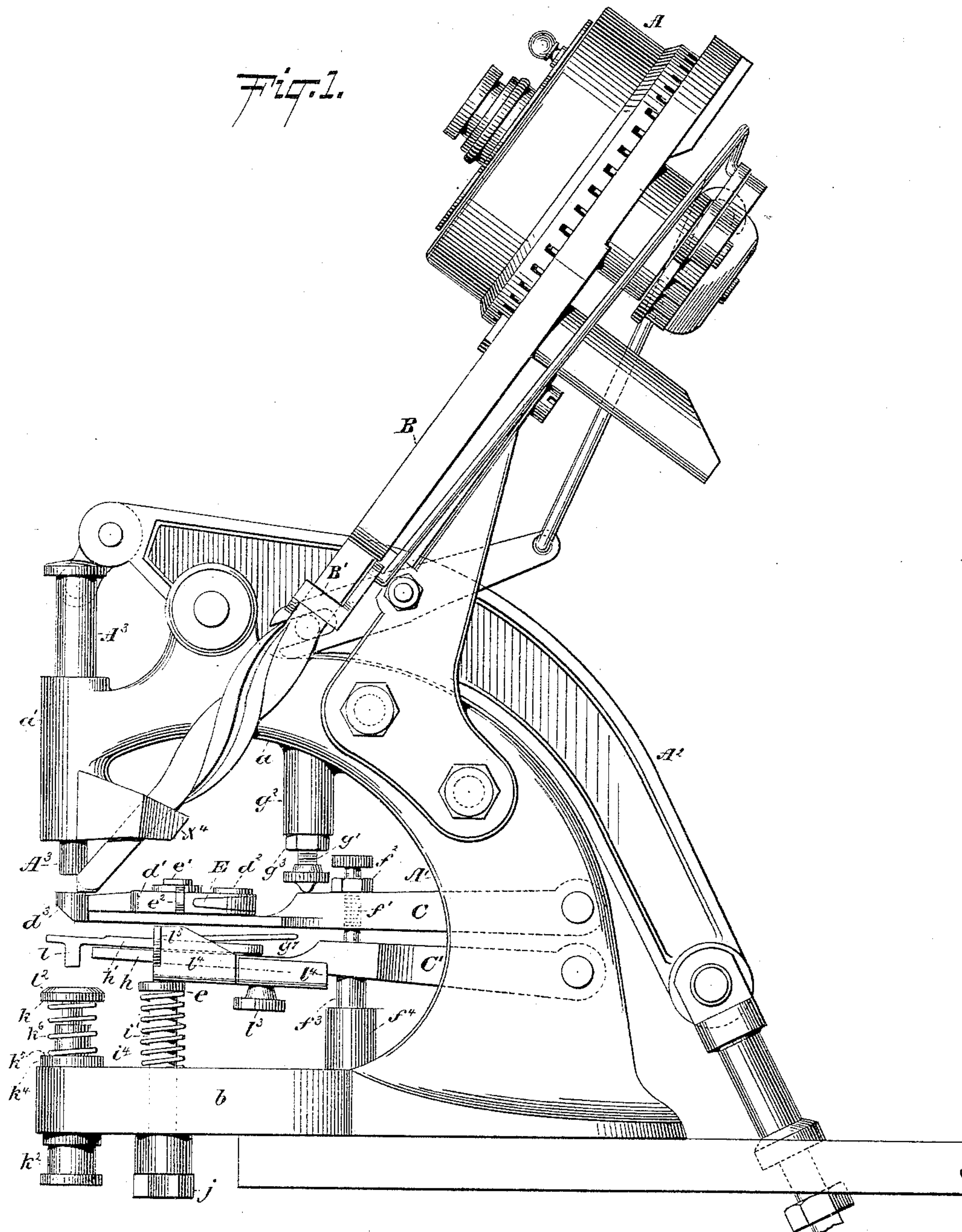
(No Model.)

4 Sheets—Sheet 1.

I. G. PLATT & F. R. WHITE.
RIVET AND BUTTON ATTACHING MACHINE.

No. 450,828.

Patented Apr. 21, 1891.



WITNESSES:
Gustave Wittenich.
William Goebel.

INVENTORS.
Irving G. Platt
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BY *George Cook*
ATTORNEY.

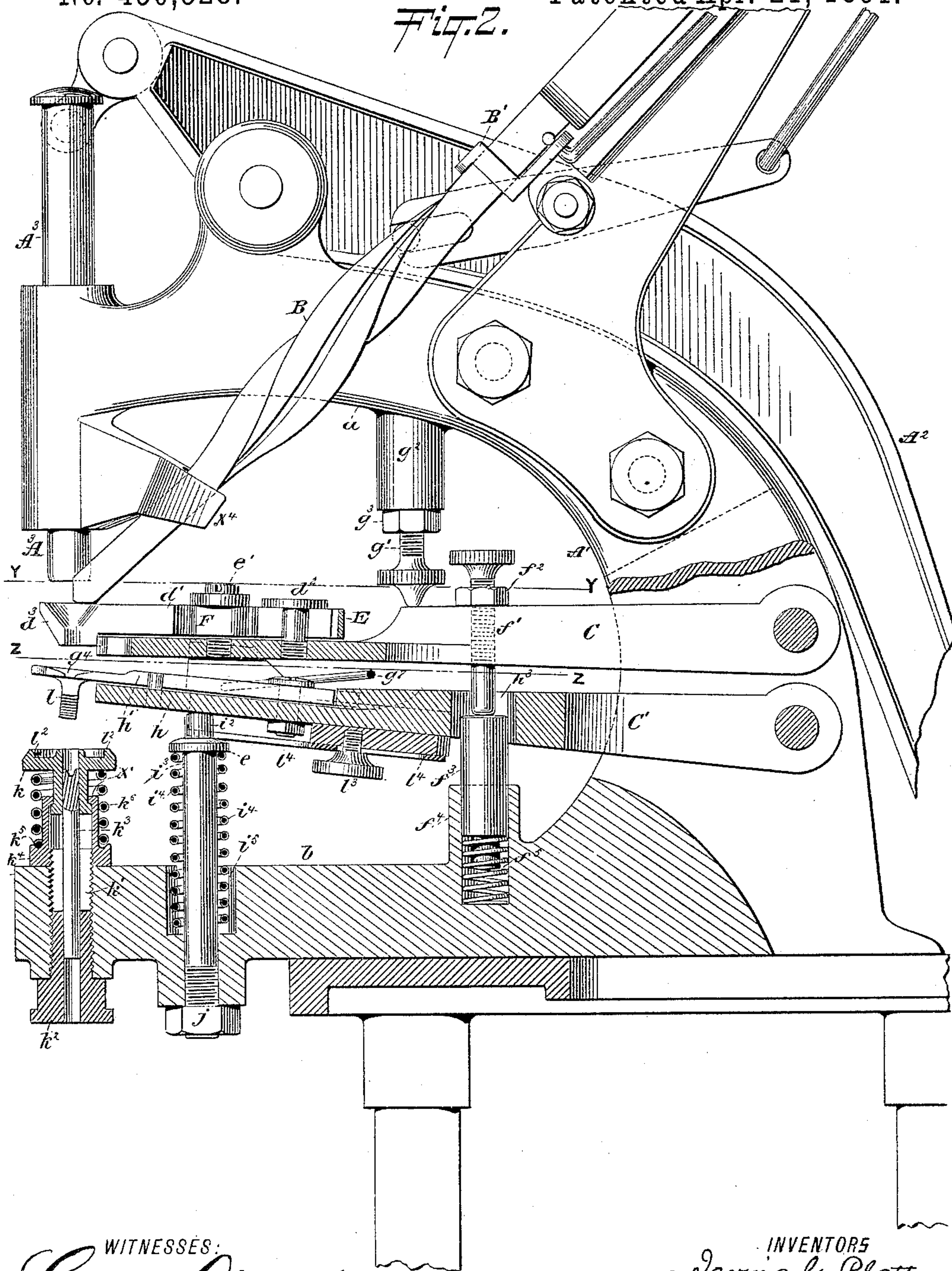
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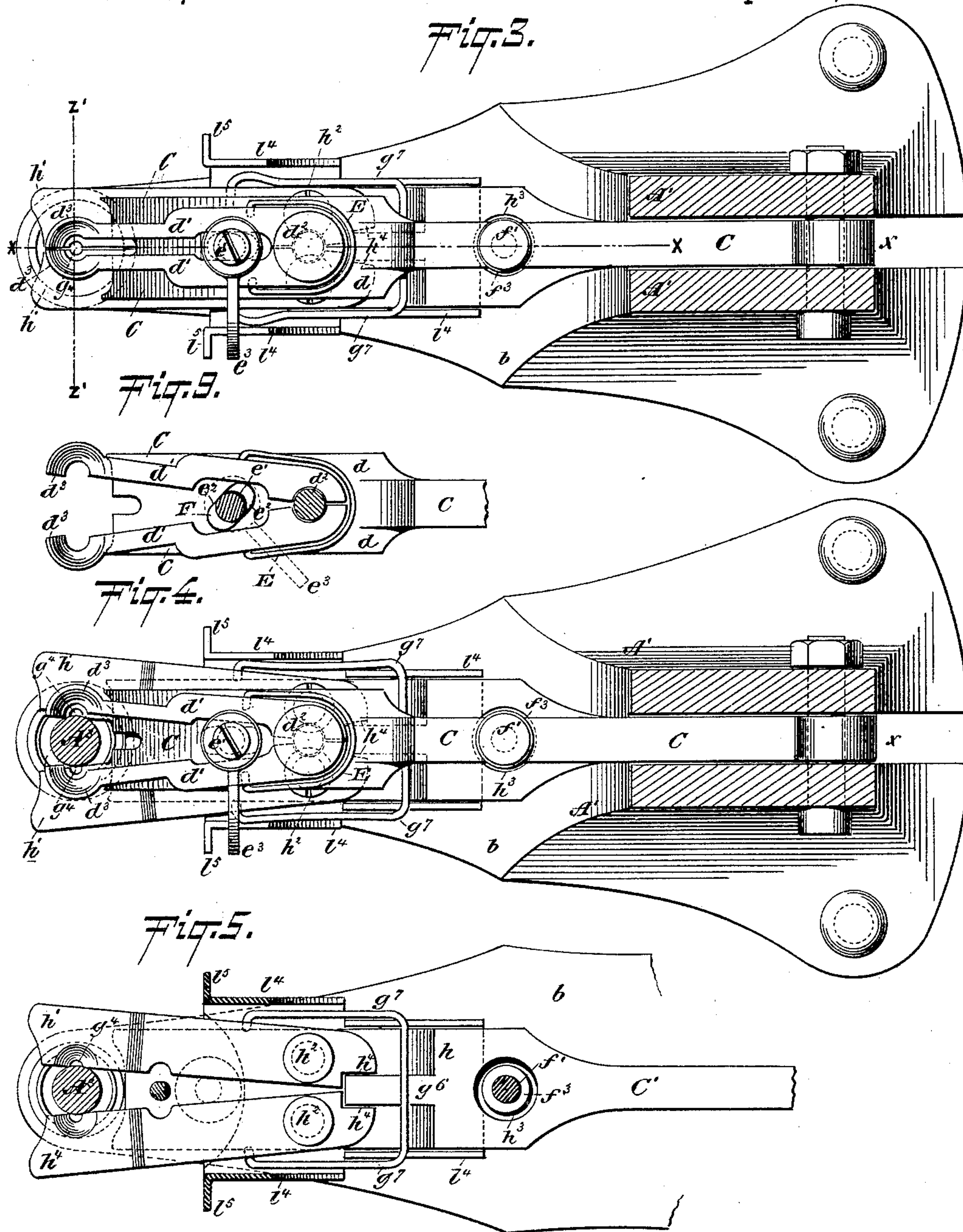
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4 Sheets—Sheet 3.

I. G. PLATT & F. R. WHITE.
RIVET AND BUTTON ATTACHING MACHINE.

No. 450,828.

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Fig. 6.

Fig. 8.

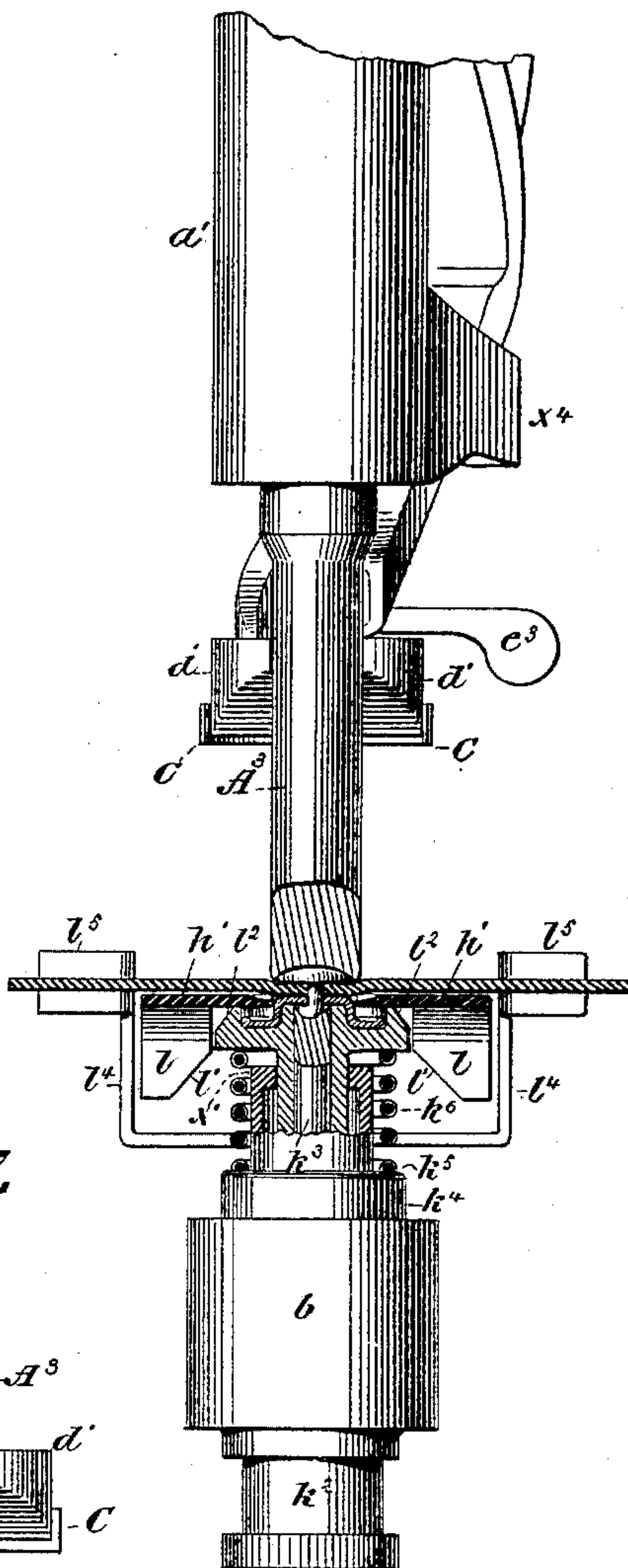
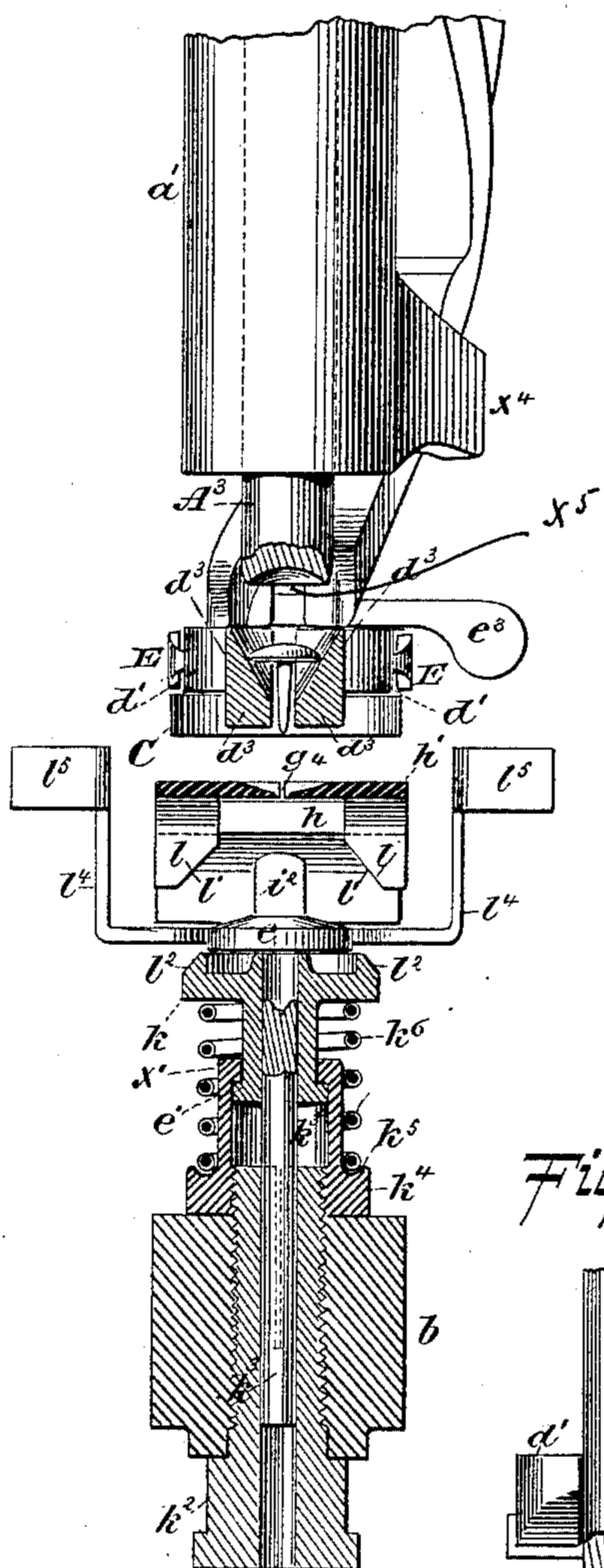
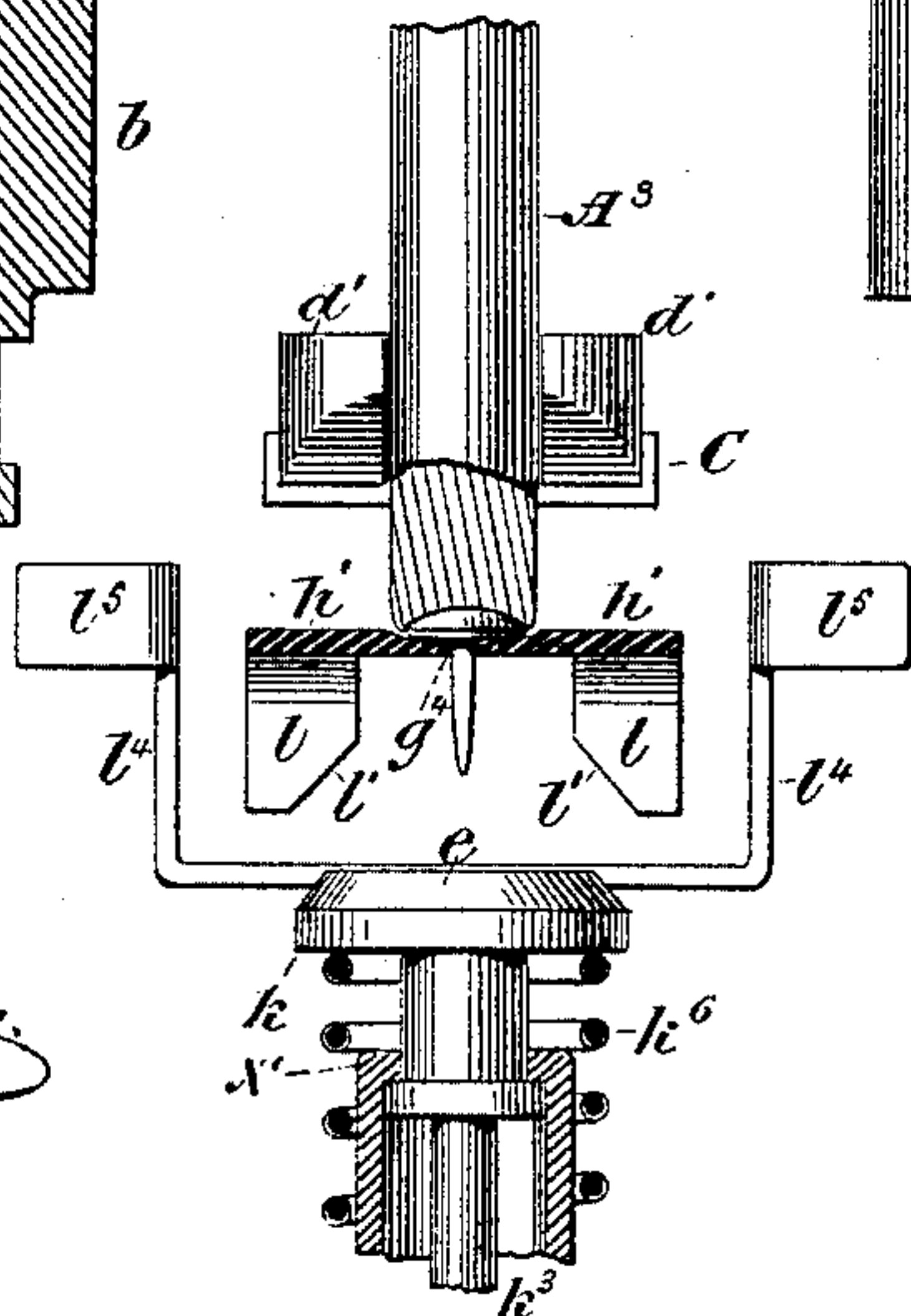


Fig. 7.



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UNITED STATES PATENT OFFICE.

IRVING G. PLATT AND FRANK R. WHITE, OF WATERBURY, CONNECTICUT.

RIVET AND BUTTON ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 450,828, dated April 21, 1891.

Application filed May 24, 1890. Serial No. 353,032. (No model.)

To all whom it may concern:

Be it known that we, IRVING G. PLATT and FRANK R. WHITE, citizens of the United States, and residents of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Rivet and Button Attaching Machines, of which the following is a specification.

Our invention relates to an improvement in rivet and button attaching machines, the object of the same being to improve upon the construction and arrangement of the fastening devices as now constructed and employed in machines of this character, and to provide devices for this purpose which will be more certain in their operation of attaching the buttons than has heretofore been the case.

A further object of our invention is to provide a machine of this character which shall be simple in its construction and arrangement of parts, which shall be easily and readily operated and understood by unskilled persons, and which will at every operation of the machine attach the button and rivet with certainty, which will not be liable to easily get out of order, and so constructed and arranged that the several parts of the attaching mechanism may be readily and nicely adjusted. With such ends in view our invention consists in certain novel features of construction and combination of parts, as will be hereinafter fully described, and set out in the appended claims.

In the accompanying drawings, Figure I is a view in side elevation of a portion of a button-machine having attached thereto our improved fastening mechanism. Fig. II is a longitudinal sectional view thereof on the line xx of Fig. III. Fig. III is a horizontal sectional view taken on the line yy of Fig. II. Fig. IV is a similar view showing the parts in their adjustment after the plunger has been depressed. Fig. V is a horizontal sectional view on the line zz of Fig. II. Fig. VI is a front sectional view taken on the line $z'z'$ of Fig. III. Fig. VII is a similar view after the plunger has been partly depressed or lowered. Fig. VIII is a similar view showing the parts in their several adjustments after the plunger has been lowered. Fig. IX is a detail view of the cam employed to open or separate the receiving-jaws.

Our invention, as will be hereinafter learned, belongs to that class of devices for attaching buttons and rivets contemplating the use of a rotating hopper A, into which the rivets or tacks are fed in bulk, and from which they are led to the attaching device by means of a twisted chute B, into which they are fed point up and head down, and from which they escape into the receiving-jaws head up and point down, and which class of machines also contemplates the use or employment of mechanism for revolving said hopper and the ordinary form or construction of cut-off B'. The machine is also provided with a main frame A', consisting of a curved supporting-arm a and the base or bed plate b , to which supporting-arm a is attached the operating-lever A², and which in turn has connected therewith the vertically-reciprocating plunger A³, working or sliding in the barrel or cylinder a' , formed on the supporting-arm a of the main frame.

As those parts of the machine above referred to are of the ordinary construction and arranged to operate in a manner which is well understood by those skilled in this art, it is not deemed necessary to describe in detail their construction or arrangement.

The curved arm a of the frame is provided with the bifurcated arm x^1 , between the prongs of which fits the twisted chute B, which is held thereby against all lateral movement, but which arm allows of a downward and backward movement of the chute in case a rivet or tack should accidentally become wedged between the plunger and the chute.

As shown by Figs. 3 and 4 of the drawings, the lower rear portion of the curved arm a of the frame is provided with an elongated slot or opening x , in which is mounted or pivoted one end of the arm C, the forward end of which is flattened or widened into the form of a plate, as shown at d , the object or purpose being to form or provide a support for the attachment of the rivet-receiver, which consists of the two arms d' , having their rear ends attached to said plate or support d by the common pivot d^2 and connected and retained in their proper position by means of the spring E. The ends of the said two arms d' are extended to a point directly below the plunger A³ and cup-shaped in form, as shown at d^3 , for the purpose of receiving a rivet or

tack from the lower end of the twisted chute or raceway leading directly thereinto and holding said tack in position to be operated upon by the plunger when the latter is lowered.

To the plate d and between the arms d' of the receiver is secured by means of a screw e' the sleeve or cam F , fitting around said screw e' and having its sides flattened, as shown at e^2 , against which flattened sides bear the inner sides of said arms d' when the latter are in their closed position for receiving a rivet from the raceway. This cam is formed on its upper end and at one side with a handle e^3 , by which it may be turned upon the pin or axis e' , the object and effect of which is to open or separate the arms d' and cup d^3 and release or allow the escape of the rivet or tack therefrom when desired to remove it, the spring E returning the arms d' to their normal position upon releasing the handle e^3 of the cam.

The arm C , with its attached spring-actuated receiver, is supported in its normal or substantially horizontal position (in which position the cup or receiver d^3 is held up against the lower end of the raceway or chute B) by means of the rod or bar f' , which passes through said arm C and threaded therein, and is secured in its several vertical adjustments by means of the lock-nut f^2 , the lower end of said pin, which projects below the arm C , resting upon the head or upper end of the plug f^3 , which is nicely fitted within the cylinder or barrel f^4 , formed on and projecting above the bed-plate b , said plug resting or being seated upon a coil-spring f^5 , fitted in the cylinder f^4 , the object of this construction and arrangement of parts being to allow a downward or vertical movement of the arm C and its attached receiver, and upon the release of the said arm to return the latter to its original horizontal position, the arm, after having been raised to its proper height by means of said spring, striking or abutting against the set-screw g' , threaded in a receptacle or sleeve g^2 , formed on and projecting downwardly from the supporting-arm a , said set-screw, after being raised or lowered to its proper adjustment to determine the proper height to which the said arm C is to be raised, being locked in such adjustment by means of the lock-nut g^3 . It will of course be understood that by raising or lowering the pin or bar f' and the set-screw g' the arm C will be correspondingly raised or lowered and the extent of its vertical movement or travel correspondingly limited or enlarged. It is obvious that, if desired, the arm C , with its receiving-jaws, may be held stationary, the arm having been first so adjusted that the point of the tack or rivet will enter the goods before being entirely forced out of the receiving-jaws $d' d'$ by the plunger.

In the slot x , formed in the lower rear end of the supporting-arm a of the frame and below the pivotal connection of the arm C is

pivotaly secured a lower or second horizontal arm C' , which is widened and flattened at its forward end to form a support or base h for the plates $h' h'$, each of which latter is pivoted at its rear end, as shown at h^2 , to the arm C' , and are held in their proper relative position by means of a spring g^7 , the forward ends of said plates being arranged to separate and extend out beyond the forward end of the arm C' and below the cup d^3 , formed on the forward ends of the arms d' , secured to the arm C .

The spring-actuated plates $h' h'$ are provided with the opening g^4 in their forward ends to permit of the entrance of the tack, as hereinafter described, the sides of said opening being preferably beveled for the purpose of properly guiding the point of the tack through the said opening, and is formed in the same vertical line with the opening in the cup d^3 . The arm C' is also widened near its rear end in order to provide sufficient material to allow the opening h^3 to be formed therein, the latter intended and serving as an opening or passage for the post f' and plug f^3 to permit of their vertical movements without interfering with the movement of the arm C' . The rear ends of the said yielding plates are cut away at a slant, as shown at h^4 , for the purpose of allowing their free forward ends to be separated or spread apart, said rear ends of the plates striking or impinging against the fin or flange g^6 , formed on the upper side of the arm C' after the forward ends of said pivoted plates $h' h'$ have been separated to their fullest extent.

The arm C' is held in its normal or substantially horizontal position by means of the sliding rod or bolt i' , on the upper end i^2 of which said arm rests, and which end is also provided with a head or flange i^3 , against which fits the upper end of the coiled spring i^4 , the lower end of said spring impinging against a shoulder formed around the opening i^5 , made in the base-plate b , and in which opening reciprocates the rod i' , the lower end of said latter rod extending out through said opening and provided with a thread on which is fitted the nut j . It will be understood from this construction and arrangement of parts that after the arm C' with its attached spring-actuated plates has been lowered by means of the plunger and released, as hereinafter described, the coiled spring i^4 will return the rod i' and arm C' to their original position, the height to which said arm is raised being regulated by means of the nut j , by raising which the rod will be virtually shortened, and by lowering which the rod will be lengthened, and the height to which said arm C' is raised being correspondingly regulated.

To the forward end of the base-plate b is attached the yielding button-support k , constructed and arranged as follows: The forward end of said base-plate b is provided with a threaded opening k' , in which is fitted the

thumb-screw k^2 , having tightly secured thereto the anvil k^3 . The upper end of the thumb-screw k^2 projects through and above the base-plate b , and has fitted thereon the circular nut k^4 , provided with a shoulder k^5 , against which fits one end of the coiled spring k^6 , the upper end of the same fitting against the under side of the button-support k , the hollow shank of which fits down within the hollow nut and around the die or anvil k^3 , the shoulders $x' x'$ being formed on the nut and shank of the support, for the purpose of preventing the parts from becoming separated or disengaged. It will now be understood that when the support k is pressed downwardly by means of the plates $h' h'$, the upper end of the anvil or die k^3 is exposed, and when released will be raised or returned to its original position by means of the coiled spring k^6 , the height of said anvil or die k^3 being regulated by raising or lowering the thumb-screw k^2 .

On the lower side and near the forward ends of the plates $h' h'$ are formed the downwardly-projecting lugs or shoulders $l l$, the inner sides or edges of which are beveled, as shown at l' , and which, when the arm C' with its plates are lowered, strike against the upper beveled edge l^2 of the button-support k , the effect of which is, when the plunger is forced downwardly, to open and separate said plates and force the latter down upon the upper side of said support k , and, the plunger being continued downwardly, to carry said plates downwardly, and, by reason of their bearing upon the button-support, to carry the latter downwardly until the upper end of the anvil or die k^3 is exposed, as before described, the plates $h' h'$ being returned to their original position by means of the spring g^7 after the plunger is raised, the arm C' at the same time being returned or raised, with the attached plates, by means of the coiled spring k^6 .

To the under side of the arm C' is secured by means of the thumb-screw l^3 the adjustable gage l^4 , having its forward end widened in order to allow of the separation of the plates $h' h'$, and provided with flaring lugs l^5 , said gage being provided on its under side with an elongated slot for the purpose of allowing said gage to be moved forwardly or backwardly in order to regulate the extent to which the fabric is inserted in the machine, and thereby enabling the buttons to be placed in their proper positions.

Having now fully described the construction and arrangement of the several parts of my improved machine, I will proceed to describe the *modus operandi*. As is well understood, the chute and the cut-off arrangement allow a tack or rivet to drop or fall into the receivers d' . The gage having been properly set and a button having been placed in position upon the support k , the fabric is placed upon the plates $h' h'$. The plunger is then forced downwardly upon the head of the rivet, which, with the arm C with its attached re-

ceiver, is carried downwardly by the plunger until the lower end of the plug f^3 strikes the bottom of the cylinder f^4 , at which time said arm C and its receiver have reached the lower arm C' and the point of the tack or rivet entered, or about to enter, the fabric placed thereon. The plunger being continued downwardly, the jaws d' are forced open and the rivet forced out of the cup or receiver d^3 into and through the fabric, said jaws partially encircling the plunger and being returned with the arm C to their horizontal adjustment by means of the spring. The plunger, being still continued or forced downwardly and bearing upon the head of the rivet, carries the latter, with the plates $h' h'$ and the arm C' and the fabric placed on said plates $h' h'$ downwardly until the beveled lugs $l l$ strike against the upper beveled edge l^2 of the button-support k , at which time the said plates will open or separate, as before described, and the several parts then be carried downwardly by the plunger until the point of the rivet has passed through the fabric into the opening in the center of the button and has been upset by striking on the die, the lower end of the plunger being recessed, as shown at x^5 , for containing the head of the rivet, which materially assists in holding the rivet in its vertical position and causing it to properly enter the opening in the button and button-support. The plunger is then allowed to rise, and the fabric with the button secured removed from the yielding plates $h' h'$ and the parts allowed to return to their normal position by means of the several springs, as hereinbefore described. The operation may then be repeated.

What we claim is—

1. In a button-fastening machine, the combination of two independently-operating arms pivoted to the frame one above the other, said upper arm having attached thereto jaws for receiving the rivet and the lower having separating-plates for holding the rivet while being carried to the button, substantially as described.

2. In a button-fastening machine, the combination of two arms secured to the frame one above the other and operating independently, one to receive the other to hold the rivet after being passed through the fabric and while being carried to the button, substantially as described.

3. In a button-attaching machine, the combination, with the arm C , pivoted to the main frame, of the spring-actuated jaws pivoted to said arm, and a rotating cam secured to said arm between said jaws to open the latter when said cam is rotated, substantially as described.

4. In a button-attaching machine, the combination, with a frame, of the vertically-moving arm C , pivoted thereto and having secured thereon the jaws $d' d'$, the lower vertically-moving arm C' , also pivoted to the frame and

having secured thereon the plates $h' h'$, constructed and arranged to operate in the manner and for the purpose described.

5 In a button-attaching machine, the combination, with a frame, of the vertically-moving arm C' , pivoted thereto, separating-plates $h' h'$, pivoted on said arm, and the adjustable spring-actuated bar or rod i' , sliding in the base for raising said arm to any predetermined height, substantially as described.

6 In a button-attaching machine, the combination, with the pivoted arm C' , of the plates $h' h'$, pivoted thereon and provided with beveled lugs l , and the button-support k , substantially as described.

7 In a button-attaching machine, the combination of plunger, the jaws $d' d'$, secured to the arm C , the yielding plates $h' h'$, secured to the arm C' , the button-support k , and die k^3 , all constructed and arranged to operate in the manner and for the purpose substantially as described.

8 In a button-attaching machine, the combination, with the arms $C C'$, each provided with suitable jaws, of the screw g' , and the spring-actuated bars $f' i'$, substantially as described.

9 In a button-attaching machine, the combination of the vertically-moving arm C , having the jaws $d' d'$ attached thereto, the arm C' , having plates $h' h'$ attached thereto, and the button-support k , said jaws, plates, and support each having an opening in the same vertical line, substantially as described.

10 In a button-attaching machine, the combination, with a frame, of the arm C , pivoted thereto, the spring-actuated jaws $d' d'$, the pin or bar f' , adjustably secured in said arm, and the spring-actuated plug f^3 for raising said arm and limiting the distance to which the same may be lowered, substantially as described.

11 In a button-attaching machine, the combination, with a frame, of the arm C , pivoted

thereto and provided with suitable jaws, the screw g' , and the spring-actuated pin or bar i' , said screw and bar being adjustable to determine the vertical movement of said arm, substantially as described.

12 In a button-attaching machine, the combination, with a plunger having a recess formed in the lower end for fitting around the head of the tack or rivet, of a pivoted arm having separating-plates attached thereto for supporting the material and provided with an opening in which the tack fits after being forced through said material, and is held by said plunger while said material and tack are carried to and the latter upset by a die, substantially as described.

13 In a button-attaching machine, the combination, with the plunger having a recess formed in its lower end, of a pivoted arm having separating-plates secured thereto for supporting the material, and a die below said plates, said plates being provided with an opening for assisting the recessed plunger in holding the tack or rivet after being forced through the material and while the material and tack are carried to and the latter upset by the die, substantially as described.

14 In a button-attaching machine, the combination, with a vertically-moving arm C' , having a fin or flange g^6 , formed on the upper side thereof, of separating-plates pivoted to said arm, the rear ends of which strike or impinge against said fin or flange when the forward ends of said plates are opened or separated to their fullest extent, substantially as described.

Signed at Waterbury, in the county of New Haven and State of Connecticut, this 20th day of May, A. D. 1890.

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Witnesses:

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