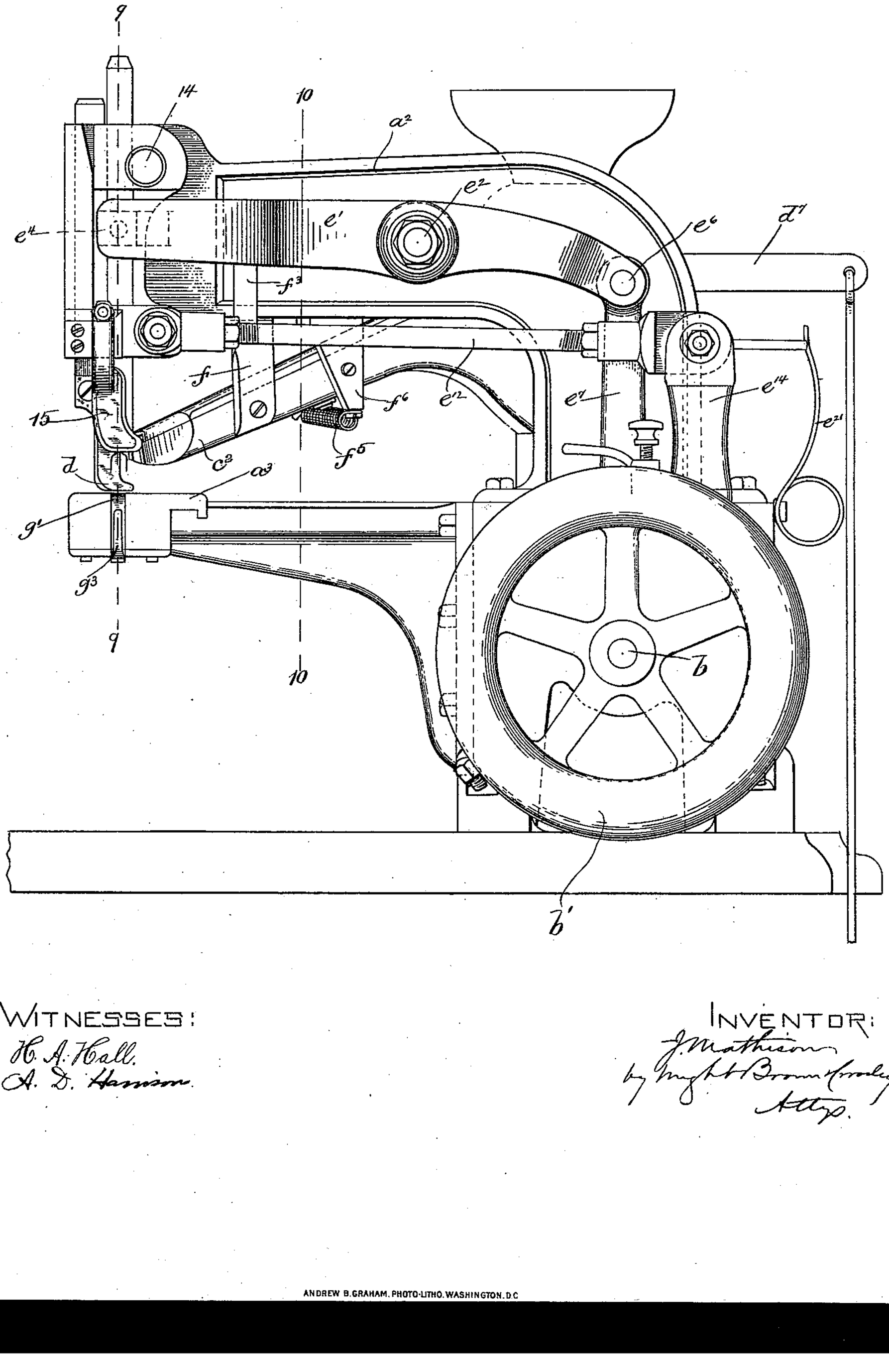
(No Model.) 7 Sheets—Sheet 1

J. MATHISON.

MACHINE FOR ATTACHING BUTTONS.

No. 561,015. Patented May 26, 1896.

FIG. 1.



WITNESSES:
H. A. Hall.
A. D. Harrison.

INVENTOR:
J. Mathison
by Wright Brown Quinby & Otty.
Attys.

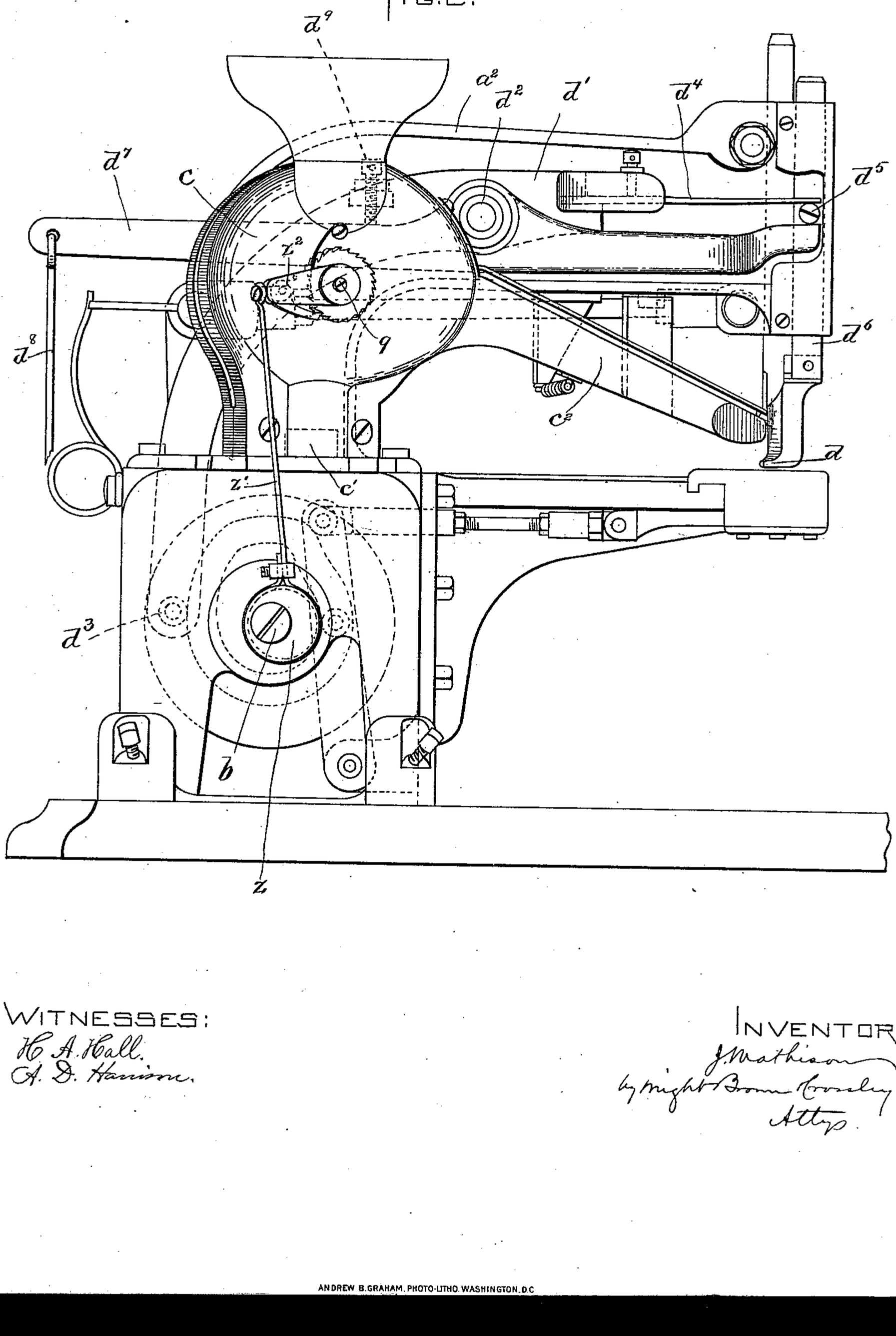
(No Model.) 7 Sheets—Sheet 2.

J. MATHISON.

MACHINE FOR ATTACHING BUTTONS.

No. 561,015. Patented May 26, 1896.

FIG. 2.



WITNESSES:
H. A. Hall.
A. D. Harrison.

INVENTOR:
J. Mathison
by Wright Brown Quinby & Otty
Attys.

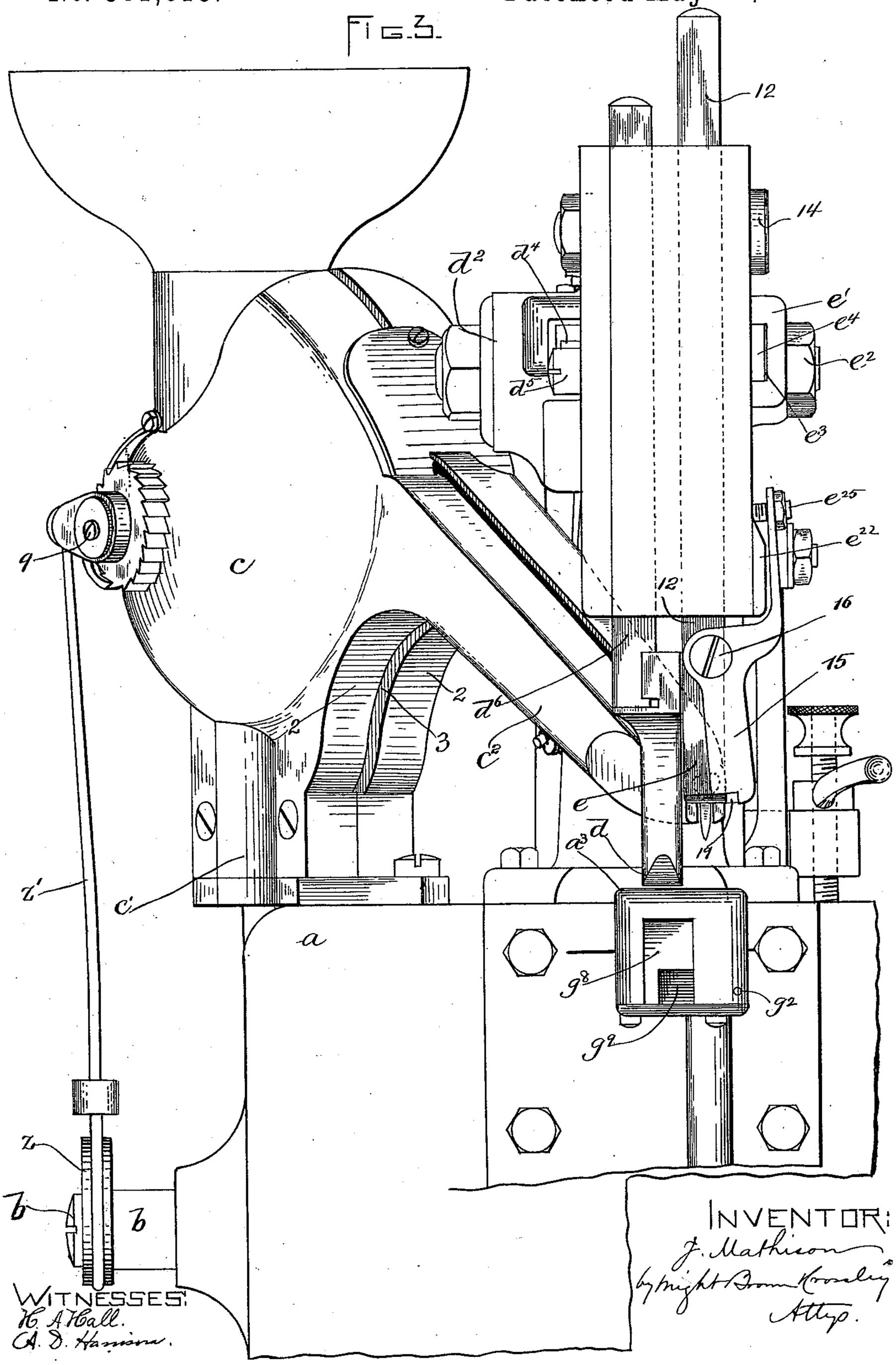
(No Model.) 7 Sheets—Sheet 3.

J. MATHISON.

MACHINE FOR ATTACHING BUTTONS.

No. 561,015. Patented May 26, 1896.

FIG. 3.



WITNESSES:
H. A. Hall.
A. D. Harrison.

INVENTOR:
J. Mathison
by Wright Brown Quinby & Otley
Attys.

(No Model.) 7 Sheets—Sheet 4.

J. MATHISON.

MACHINE FOR ATTACHING BUTTONS.

No. 561,015. Patented May 26, 1896.

FIG. 4.

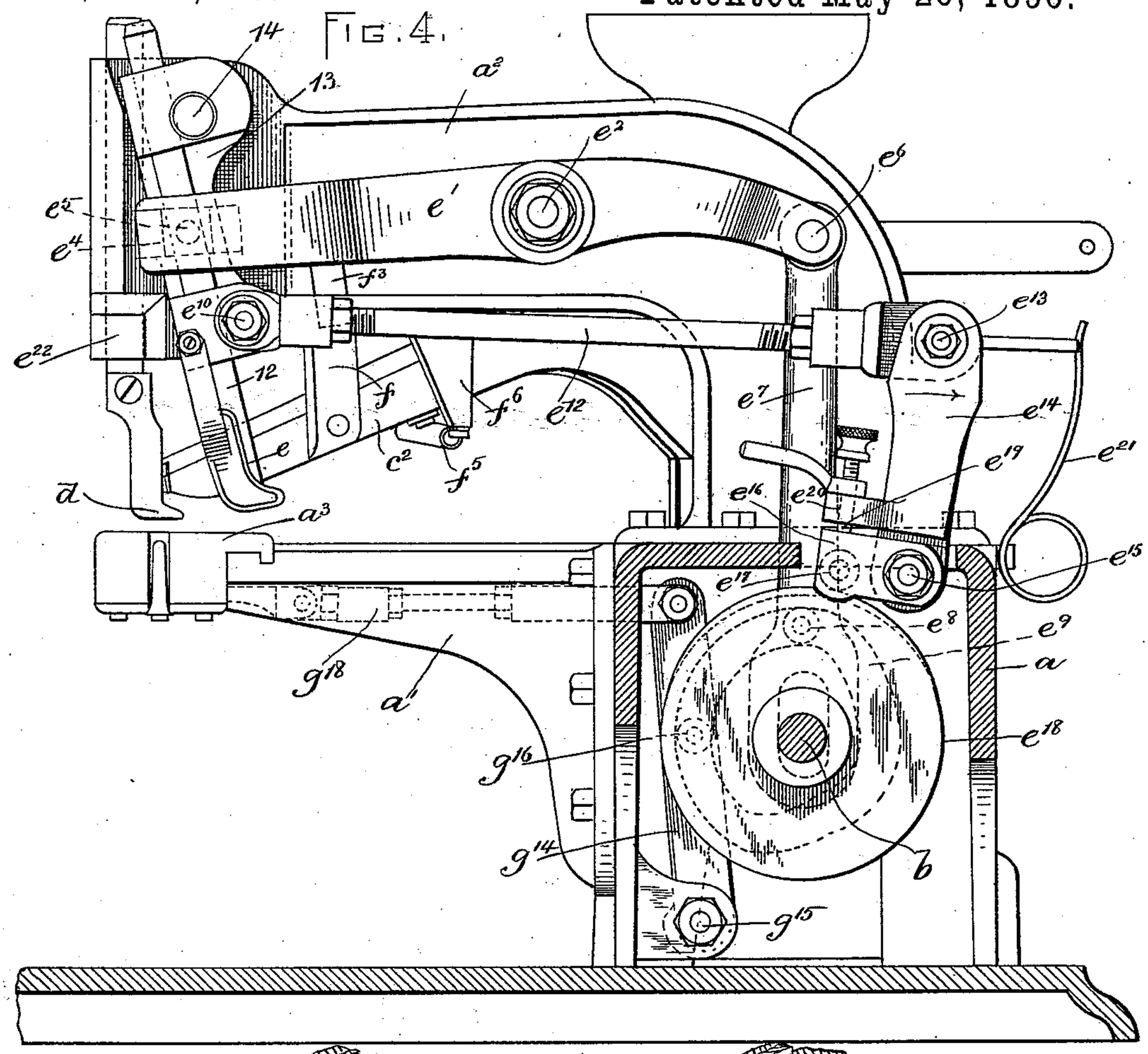


FIG. 5.

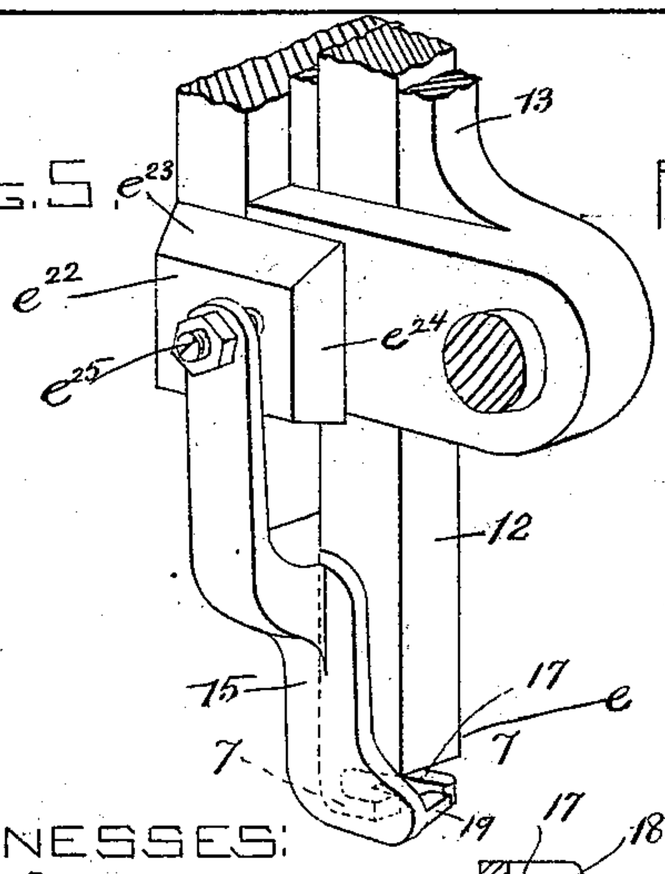


FIG. 6.

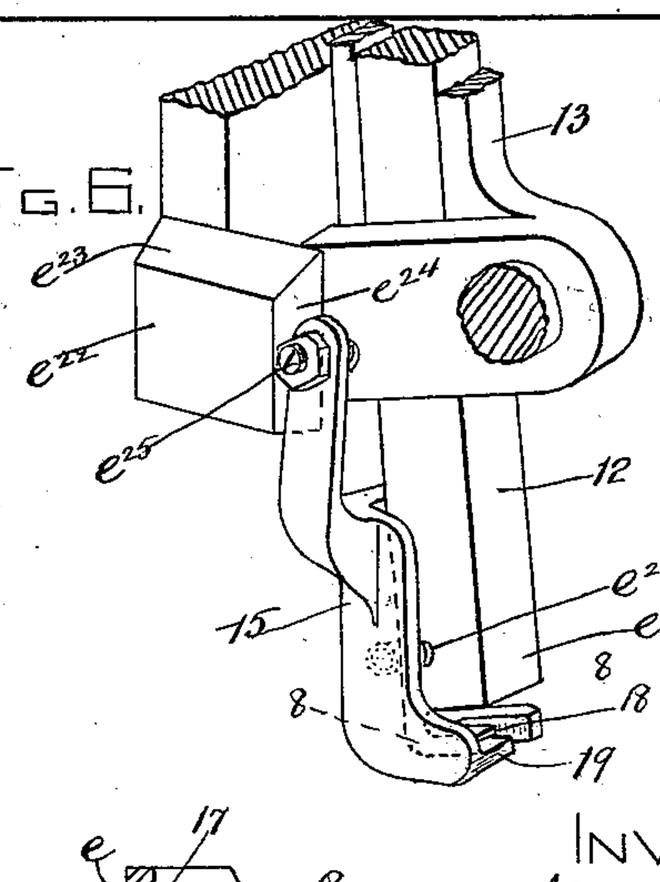


FIG. 7.

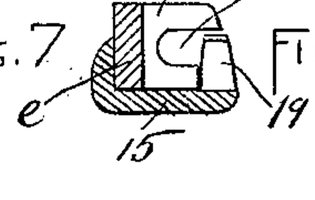
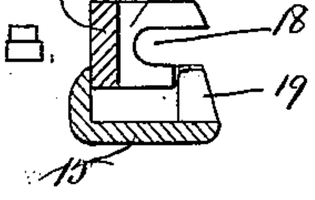


FIG. 8.



WITNESSES:
H. A. Hall.
A. D. Hannan

INVENTOR:
J. Mathison
by Wright Brown Quinby & Atty's.

(No Model.) 7 Sheets—Sheet 5.

J. MATHISON.

MACHINE FOR ATTACHING BUTTONS.

No. 561,015. Patented May 26, 1896.

FIG. 9.

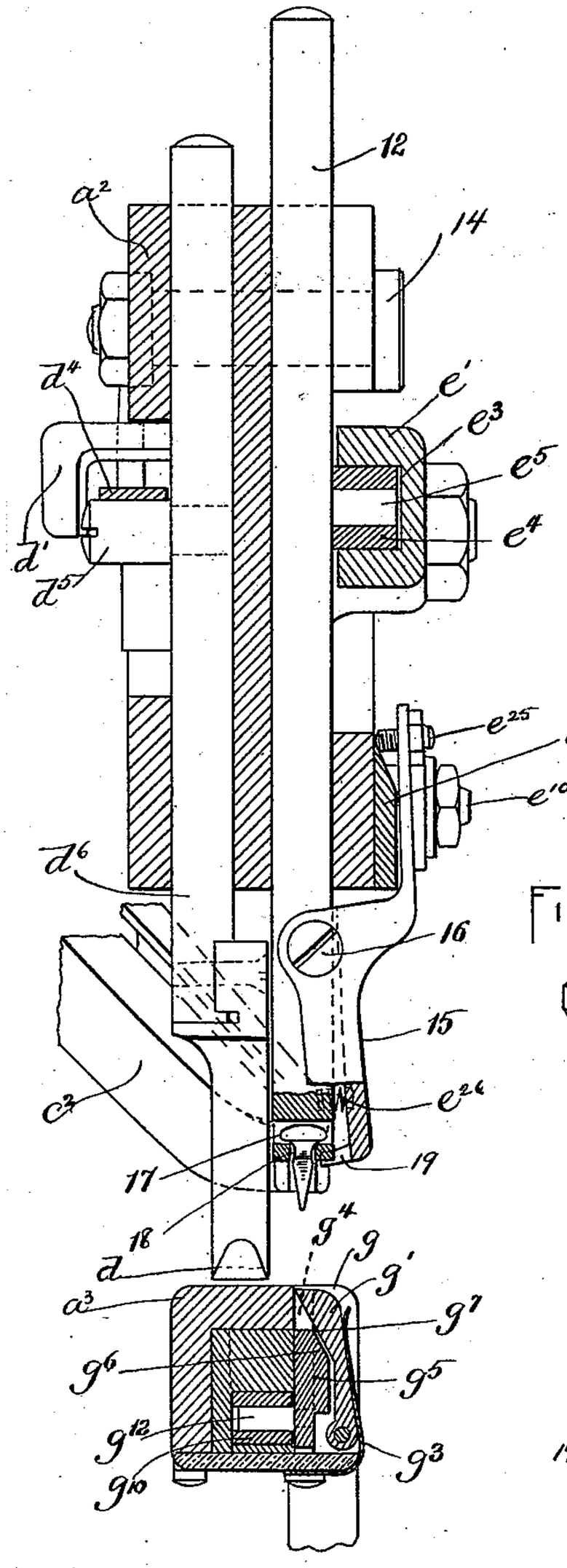


FIG. 10.

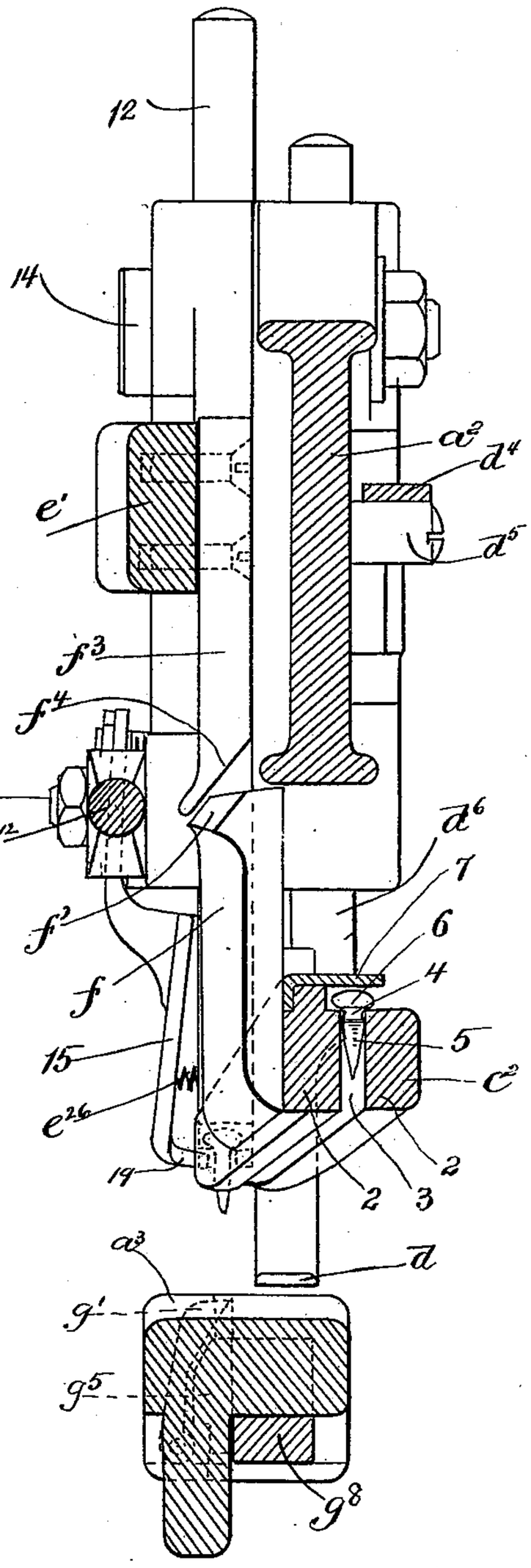
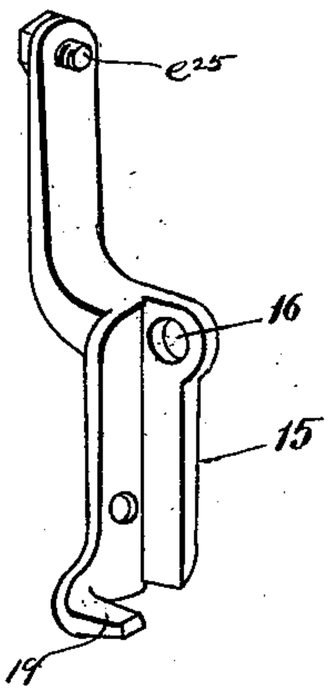


FIG. 11.



WITNESSES:
H. A. Hall.
A. D. Harrison.

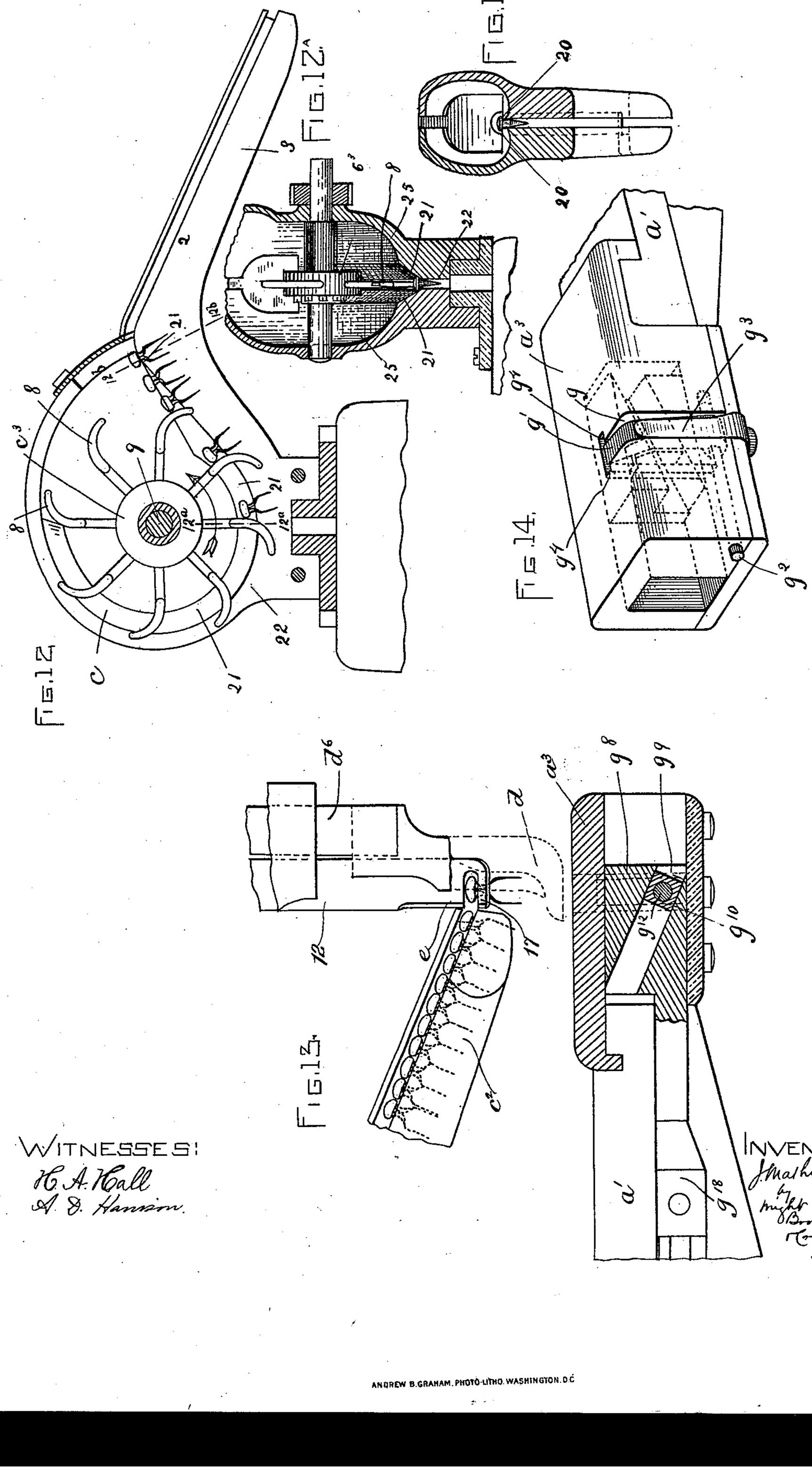
INVENTOR
J. Mathison
by Wright Brown Quinby & Atty's

(No Model.) 7 Sheets—Sheet 6.

J. MATHISON.

MACHINE FOR ATTACHING BUTTONS.

No. 561,015. Patented May 26, 1896.

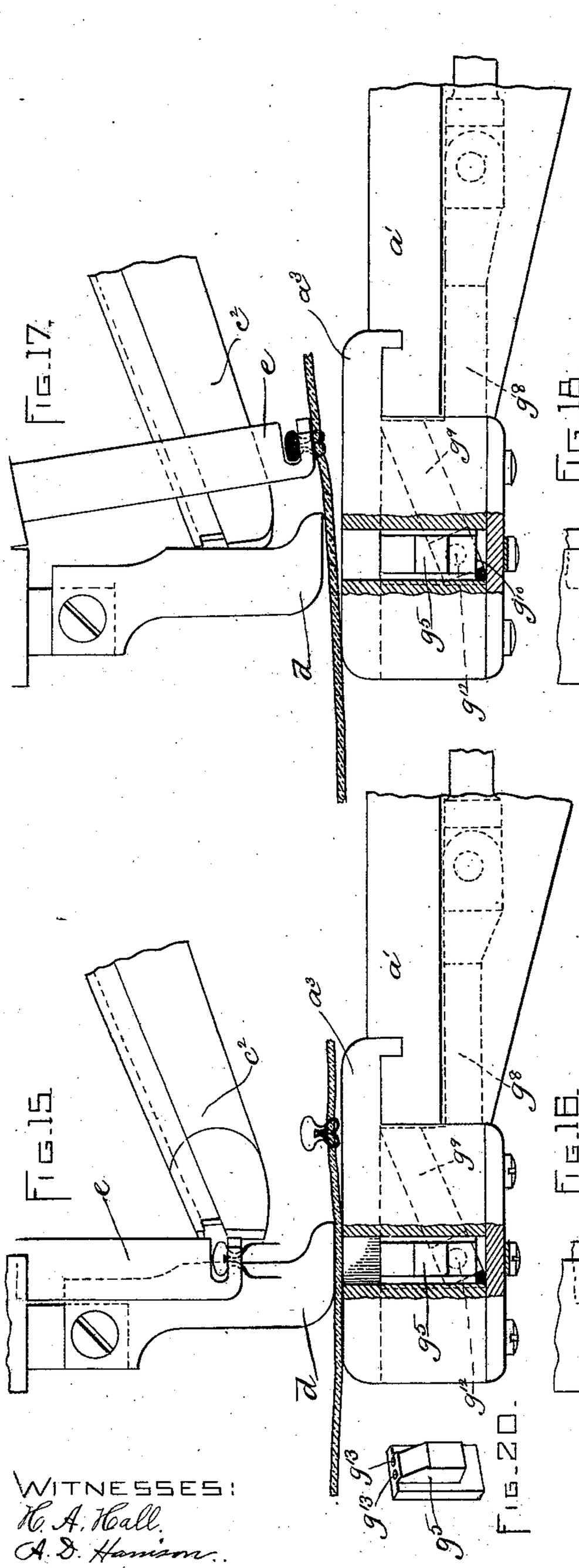


(No Model.) 7 Sheets—Sheet 7.

J. MATHISON.

MACHINE FOR ATTACHING BUTTONS.

No. 561,015. Patented May 26, 1896.



WITNESSES:
H. A. Hall.
A. D. Harrison.

INVENTOR:
J. Mathison
by Wright Brown Quinby & Otis
Attys.

UNITED STATES PATENT OFFICE.

JOSEPH MATHISON, OF SOMERVILLE, MASSACHUSETTS.

MACHINE FOR ATTACHING BUTTONS.

SPECIFICATION forming part of Letters Patent No. 561,015, dated May 26, 1896.

Application filed October 26, 1891. Serial No. 409,849. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MATHISON, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Attaching Buttons, of which the following is a specification.

This invention has for its object to provide a machine adapted to apply pronged metal buttons to pieces of material with which they are to be used, particularly the buttons shown in Letters Patent of the United States No. 457,970, granted to me August 18, 1891, said button being formed from a single piece of sheet metal, and comprising a head, a contracted shank below the head, feet extending outwardly from the shank to bear upon the upper surface of the piece to which the button is attached, and prongs formed on said feet and adapted to penetrate the piece and be clenched on the under side of the same.

The invention consists, in the improvements hereinafter described and claimed, in mechanism for automatically supplying buttons from the reservoir, forcing their prongs through the piece, clenching the prongs upon the under side of the piece, and removing the attached button with the piece to which it is attached from the position occupied during the button-attaching operation, thus preparing the piece to receive the next button.

Of the accompanying drawings, forming part of this specification, Figure 1 represents a side elevation of a button-attaching machine embodying my invention. Fig. 2 represents an elevation of the opposite side of the machine from that shown in Fig. 1. Fig. 3 represents an end elevation of the machine on a larger scale than that shown in Figs. 1 and 2. Fig. 4 represents a side elevation, a portion of the machine being shown in section. Figs. 5 and 6 represent perspective views of parts of the mechanism. Fig. 7 represents a section on the line 7 7, Fig. 5. Fig. 8 represents a section on the line 8 8, Fig. 6. Fig. 9 represents a section on the plane of line 9 9, Fig. 1, looking toward the right. Fig. 10 represents a section on line 10 10, Fig. 1, looking toward the left. Fig. 11 represents a perspective view of a part shown in the preceding figures. Fig. 12 represents a sectional view of the button-reservoir and a side elevation of the agitating device therein. Figs. 12^a and 12^b represent, respectively, sections on lines 12^a 12^a and 12^b 12^b, Fig. 12. Fig. 13 represents a side elevation of a portion of the button-chute and of the button-carrier that receives the buttons therefrom, together with a longitudinal section of a portion of the work-supporting arm or horn. Fig. 14 represents a perspective view of the portion of the horn shown in Fig. 13. Figs. 15, 16, 17, and 18 represent side elevations showing the chute, button-carrier, presser-foot, and work-supporting horn as they appear at different stages of the operation, the horn being shown partly in section. Fig. 19 represents a top view of a portion of the work-supporting arm or horn. Fig. 20 represents a perspective view of the anvil that clenches the button-prongs.

The same letters and numerals of reference indicate the same parts in all the figures.

In the drawings, *a* represents the main portion or base of the supporting-frame, to which is attached the horizontally-projecting arm or work-supporting horn *a'* and the arm or neck a^2 overhanging said horn.

b represents the driving-shaft, which is journaled in bearings in the supporting-frame *a* and is driven by power applied in any suitable way, such as by a belt running on a pulley *b'*, affixed to the shaft *b*. To the shaft *b* are affixed a series of cams, which give motion, as hereinafter described, to the moving parts of the machine.

c represents the button-reservoir, which is mounted to oscillate on a vertical stud or pivot *c'*, Fig. 2, affixed to the supporting-frame, and is provided with an inclined button-chute c^2, which is adapted to receive at its upper end the buttons which are delivered to it by the rotary agitator c^3, Fig. 12, and to deliver said buttons to the button-carrier *e*, which is located at the lower end of the button-chute. The chute is composed of two parallel bars or pieces 2 2, Fig. 10, which are separated by a slot or way 3, formed to receive the shanks 4 and prongs 5 of the buttons, the heads 6 of the buttons resting on the upper edges of the pieces 2 2. A guide flange or plate 7, projecting horizontally over the slot or way 3, prevents the buttons from

being displaced upwardly. The agitator c^3 is composed of a series of curved arms 8, affixed to a central hub which is mounted on a shaft 9, journaled in bearings in the side pieces of the reservoir. The arms 8 are formed to raise the buttons from the lower portion of the reservoir and cause a sufficient number of them to fall upon the upper edges of the inclined pieces 2 2 to keep the chute properly supplied with buttons, those buttons which fall in a given position on the pieces 2 2 being allowed to slide down the chute in the position indicated in Figs. 10 and 13.

d represents the presser-foot, which holds the material to which the buttons are to be attached upon the work-plate a^3, which is affixed to the horn or arm a'. The presser-foot is automatically raised and depressed at the proper times to release and hold the work by means of a lever d', pivoted at d^2 to the arm a^2 and having at one end a trundle-roll d^3, Fig. 2, which engages a cam-groove (not shown) in a disk on the shaft b, said cam-groove being formed to oscillate the lever d' in the proper time to raise and depress the presser-foot, as hereinafter described. One end of the lever d' has a spring d^4, which bears upon a stud d^5 on the presser-bar d^6 and exerts a downward yielding pressure on said bar. The presser-foot may be raised at the will of the operator by means of a lever d^7, which is pivoted upon the same stud or center d^2 that supports the lever d' and bears at one end on the under side of the stud d^5, its other end being connected by a rod d^8 with a treadle, (not shown,) whereby the lever d^7 may be moved to raise the presser-foot. The lever d' is provided with an adjustable stop or screw d^9, which bears on the lever d^7 when the lower end of the lever d' is being depressed by the cam. Hence during said movement the lever d^7 is practically a rigid part of the lever d' and acts to positively raise the presser-foot.

The button-carrier e is composed of a bar 12, fitted to slide in an oscillatory guide 13, which is pivoted at 14 to the arm a^2, and a lever 15, which is pivoted at 16, Fig. 3, to the bar 12. The lower end of the bar 12 is provided with a horizontal slot or pocket 17, which is formed to receive a button-head from the chute c^2. The lip or flange which forms the lower side of said pocket is provided with a recess or slot 18, formed to receive the shank of the button whose head is inserted in the pocket 17. (See Fig. 9.) The lower end of the lever 15 is provided with a jaw or finger 19, which is arranged to project across the slot or recess 18, as shown in Fig. 7, to retain a button-shank in said slot after the shank has passed from the button-chute into the recess 18, the jaw 19 being withdrawn from the slot 18, as hereinafter described, and as shown in Fig. 8, when the slot 18 is in position to receive a button-shank, and moved inwardly to the position shown in Fig. 7 to close the slot 18 after the button-shank is in position therein.

The bar 12 of the button-carrier is given two movements—namely, an endwise-reciprocating movement, which causes the button-carrier to rise and fall, and an oscillating movement, which causes the button-carrier to move laterally to feed the work by carrying the button last attached away from the position it occupied while being attached. The reciprocating movements of the bar 12 are caused by a lever e', pivoted at e^2 to the arm a^2, and having at one end a slot or guide e^3, Fig. 9, receiving a block e^4, which is mounted to oscillate upon a stud e^5, affixed to the bar 12. One end of the lever e' is pivoted at e^6 to a rod e^7, which is provided near its lower end with a trundle-roll e^8, entering a cam-groove e^9 in a disk affixed to the driving-shaft b. The rotation of the shaft b causes the cam e^9 to reciprocate the rod e^7, and thus oscillate the lever e', the block e^4, which is adapted to slide lengthwise in the lever e', imparting a reciprocating motion to the bar 12 and permitting said bar to oscillate, as next described. To the lower or swinging end of the oscillatory guide 13 is pivoted at e^{10} one end of a rod e^{12}, the other end of which is pivoted at e^{13} to an arm e^{14}, which is pivoted at e^{15} to a fixed support. e^{16} represents a short arm pivoted at e^{15} to the lower end of the arm e^{14} and provided with a trundle-roll e^{17}, which is arranged to bear upon the periphery of a cam e^{18}, affixed to the driving-shaft b. The rotation of the cam e^{18} causes the arm e^{16} to oscillate vertically, said arm being loosely connected to the arm e^{14}, so that it does not move the latter excepting when it strikes an adjustable stud or screw e^{19}, which is supported by an ear e^{20} on the arm e^{14}. The arm e^{16} is caused to strike the stud e^{19} during its upward movement, and thus move the arm e^{14} in the direction indicated by the arrow thereon in Fig. 4, this movement causing the arm e^{14}, through the rod e^{12}, to swing the lower end of the guide 13 in the same direction, and thus carry the button-carrier from the position shown in Figs. 5, 16, and 18 to that shown in Figs. 4, 6, and 17.

When the cam e^{18} moves to a position permitting the depression of the arm e^{16}, a spring e^{21}, attached at one end to the supporting-frame and bearing at the other end on an extension of the rod e^{12}, forces said rod, the arm e^{14}, and the button-carrier in the opposite direction, thus causing the bar 12 of the button-carrier to assume a vertical position beside the presser-foot. The arm e^{16} and the adjustable stud or stop e^{19}, coöperating therewith, enable the swinging movements of the button-carrier to be varied in length, so that the spacing of the buttons which is caused by said movements can be varied to any desired extent, the button-carrier, when moved from the position shown in Fig. 16 to that shown in Fig. 17, carrying the button last at-

tached, together with the attached piece, away from the point occupied by the button during the attaching operation and bringing another portion of said piece into position to receive the next button.

The lever 15 and jaw 19 thereon are moved to alternately grasp and release the button by means of a fixed wedge or cam-block e^{22}, affixed to the arm a^2 and having two beveled faces e^{23} e^{24}. The upper end of the lever 15 has a stud e^{25}, which is pressed by a spring e^{26} against the cam-block e^{22}. When the button-carrier is raised and occupies the position shown in Fig. 1, the stud e^{25} is permitted by the face e^{23} of the cam-block to swing inwardly, thus permitting the spring to force outwardly the lower end of the lever 15 and separate the jaw 19 thereon from the slot 18, as shown in Fig. 8. Hence when the button-carrier is elevated the slot 18 is open for the reception of a button from the chute. When the button-carrier descends to bring its lower end to bear on the work, the stud e^{25} is forced outwardly by its passage across the beveled face e^{23} until it bears on the outer surface of the cam-block, as shown in Fig. 5, the lever 15 being thus moved to force the jaw 19 to its button-grasping position shown in Fig. 7, the button being thus firmly held during its descent from the point to which it was delivered by the chute to the point at which its prongs enter the material on the work-plate a^3. When the button-carrier is moved to the position shown in Figs. 4 and 6, the stud e^{25} passes onto the beveled face e^{24} of the cam-block, so that the spring e^{26} is permitted to again force the jaw 19 outwardly to release the button.

The button-reservoir and the chute thereon are oscillated in a horizontal direction to cause the lower end of the chute to coincide with the button-carrier when the latter is raised, as shown in Fig. 1, and to remove the chute from the path in which the button-carrier moves to the position shown in Fig. 4.

The means for oscillating the chute and button-reservoir are as follows: f represents an arm affixed to and projecting upwardly from the button-chute, said arm having at its upper end a beveled face f', Fig. 10. f^3 represents an arm affixed to the lever e' and projecting downwardly therefrom, the arm f^3 having at its lower end a beveled face f^4, which is arranged so that when the lever e' is depressed to depress the button-carrier the beveled face f^4, striking the beveled face f' of the arm f, will move the button-chute laterally out of the path through which the button-carrier moves in feeding the work, the chute remaining thus displaced until the button-carrier is again raised, whereupon a spring f^5, attached at one end to the chute and at the other end to a fixed arm f^6, draws the chute into position for its lower end to coincide with the button-carrier and deliver a button thereto.

It should be here remarked that when the chute is displaced, as above described, from the path of the button-carrier its lower end is brought adjacent to the presser-foot d, as shown in Fig. 4, said presser-foot standing in such a position that it obstructs the chute and prevents the escape of buttons therefrom while the chute is thus displaced.

The work support or plate a^3 is provided with a slot g, in which is located a swinging arm g', the upper end of which is substantially flush with the work-supporting surface of the plate a^3, said arm being mounted to oscillate upon a rod or pivot g^2 and normally pressed inward against the inner wall of the slot g by a spring g^3. The upper end of the arm g' constitutes a part of the work-supporting surface when the arm is in the position shown in Fig. 14. The slot g is provided with two recesses or branch slots g^4 g^4, which are located at opposite sides of the arm g' when the arm is in its normal position. The slots g^4 g^4 are arranged to receive the prongs of a button depressed by the button-carrier, said slots receiving the two prongs after they have passed through the piece of material and guiding them downwardly into the work-support until they meet the prong-clenching anvil g^5, next described, the slots g^4 preventing displacement of the prongs in any direction and causing their proper presentation to the anvil, so that they can roll or clench against the under surface of the material only in one direction—namely, inwardly or toward each other, as shown in Fig. 18.

The anvil g^5 is vertically movable in the slot g, and has a beveled face g^6, which, when the anvil rises, bears against a correspondingly-beveled face g^7 on the inner side of the arm g' and forces said arm outwardly, the upper end of the anvil rising to take the place of the upper end of said arm. The anvil is reciprocated vertically by means of a slide g^8, which is reciprocated horizontally in a guide or way in the work-supporting arm by means presently described. Said slide is provided with a diagonal guide g^9, which receives a block g^{10}, mounted on a stud g^{12}, affixed to the anvil g^5. The reciprocating movements of the slide g^8 cause the block g^{10} and the stud and anvil engaged therewith to reciprocate vertically. The anvil is provided in its upper surface with cavities or depressions g^{13}, Fig. 20, which are formed to act on the lower ends of the prongs of the buttons and roll or turn said prongs inwardly when the anvil in rising meets said prongs, the latter having been previously inserted in the slots g^4 by the depression of the button-carrier. The slide g^8 is reciprocated to move the anvil vertically by means of a lever g^{14}, pivoted at g^{15} to the supporting-frame and having a trundle-roll g^{16}, engaging a cam-groove in a disk on the driving-shaft, and a connecting-rod g^{18}, connecting the swinging end of the lever g^{14} with the slide g^8.

The operation of the machine is as follows: The button-carrier being elevated and held

in the position shown in Fig. 1, the button-chute c^2 is held by the spring f^5 in position to present its lowest button to the button-carrier, the head of the button sliding into the pocket 17 when the chute and button-carrier coincide. Immediately after the entrance of the button into the carrier the latter commences to descend, the jaw 19 being at the same time forced inwardly to grasp the button and hold it in a fixed position, so that its prongs, after passing through the material, will enter the slots g^4 g^4 without liability of striking the parts surrounding said slots. The button-carrier continues to descend in a vertical line until the prongs of the buttons have passed through the material and the base or lower end of the button-shank is pressed firmly down upon the material. The button-carrier is arrested in this position, and the anvil then rises, displacing the arm g' and striking the ends of the prongs, causing the prongs to roll inwardly and clench against the under side of the piece. At this point the presser-foot is raised from the material, and at the same time the button-carrier is first raised slightly to clear the attached button from the work-support and is then moved to the position shown in Figs. 4 and 17, the last-attached button being still engaged with the button-carrier, so that the said button and the material to which it is attached are fed forward, as clearly indicated in Fig. 17. Before the button-carrier reaches the end of its forward or work-feeding movement the stud e^{25} on the lever 15 passes on to the beveled face e^{24} of the cam-block, so that the spring e^{26} displaces the jaw 19 before the button-carrier returns to its starting position, so that when the carrier returns it leaves the button at the point to which it was moved by the work-feeding movement of the button-carrier. The presser-foot is depressed and caused to hold the work just before the button-carrier returns to its starting position, so that the work cannot move backwardly with the button-carrier. After the button-carrier has been moved back, so that its bar 12 occupies a vertical position, the carrier is raised by the action of the lever e', the block f^3 being thus raised, so that the spring f^5 is permitted to swing the button-chute over into the path of the button-carrier and present another button to the latter. This completes one cycle of movements of the machine, the operation being thus continued indefinitely.

Among the important features of this machine are the means provided for grasping and holding the button in a fixed and unalterable position while it is being carried down into the work, said means including the bar 12, with its pocket 17 and slot 18, and the lever 15, having the jaw 19, which coöperates with the bar 12 in grasping the buttons; also the work-support, having the anvil, the slots g^4 g^4, guiding the prongs to the anvil, and the arm g', standing between the slots g^4 while the prongs are descending.

Another important feature of my machine is the adaptation of the button-carrier to feed the work, as described, and the provision of means for varying the length of the feed movement, and therefore of the spaces between the buttons.

The button-reservoir is composed of two dished or concavo-convex side pieces 25 25, which are formed integrally with the side pieces 2 2 of the chute. Said side pieces 25 are separated by a slot 22, which is a continuation of the slot 3 which separates the side pieces of the chute. The side pieces are provided with segmental beveled faces 21 21, which join the sides of the slot 22, as shown in Fig. 12ª, said beveled faces and the slot 22 forming a trough in which the buttons are positioned by the rotation of the agitator, so that their shanks and prongs are below the heads, the heads resting on the beveled faces 21 while the prongs enter the slot 22. The side pieces 25 are also provided with shoulders 20 20, which extend from one end of the segmental beveled faces 21 outwardly and upwardly to the margin of the reservoir, said shoulders 20 joining the shoulders 2 2 of the chute, as shown in Fig. 12. The agitator rotates in the direction indicated by the arrow in Fig. 12, and causes such buttons as assume the position above described, between the beveled faces 21, to move upon the shoulders 20, said shoulders being formed to support the under sides of the heads of the buttons, their prongs and shanks extending down into the slot between the shoulders 20. The buttons are thus gradually forced outwardly to the upper end of the chute, from which they pass by gravitation to the lower or delivering end of the chute. The agitator is slowly rotated, its rotation being accomplished in the present instance by means of an eccentric z on the driving-shaft and a rod z', connecting the strap of said eccentric with an arm z^2, attached to the shaft 9, to which the hub of the agitator is affixed.

In case it is not desired to automatically feed the work, the described work-feeding movement of the button-carrier may be dispensed with, in which case the button-carrier would require to move only toward and from the work-support, and the button-chute would not necessarily have a lateral movement.

I do not limit myself to the details of mechanism herein shown and described, whereby motion is communicated from the driving-shaft to the various operative parts of the machine, and said details and the general construction of the connecting mechanism between the said shaft and operative parts may be variously modified without departing from the spirit of my invention.

My invention is not limited to the particular form and construction of the various operating parts of the machine, and said parts may be of any other suitable construction which will permit the performance of the functions hereinbefore described.

The anvil g^5 may be adjusted vertically, so that the position or height of its operating-face when the anvil is raised may be varied to compensate for wear of said operating-face or for any other purpose. The adjustment of the anvil may be effected by means of the connecting-rod g^{18}, which connects the slide g^8 with the oscillating lever g^{14}, said rod being made in sections connected by screw-threads, so that the rod may be lengthened or shortened at will. By lengthening the rod g^{18} the slide g^8 would be moved forward, so as to raise the anvil, as will be readily seen.

I claim—

1. In a machine for attaching pronged buttons, a button-carrier having a compound movement one part of which movement is for carrying the buttons from the supply-chute to the work, and another part of which movement is for feeding the work, said carrier having separable means for embracing the button; and suitable mechanism for imparting the compound movement to the carrier.

2. In a machine for attaching pronged buttons, the combination of a work-holding presser-foot, a work-support, prong-clenching mechanism below the work-support, a button-carrier movable vertically toward and from the work-support and laterally in a path above the same and having provisions for embracing the button, mechanism for reciprocating said carrier vertically, and means for moving it laterally when at the lower end of its vertical movement.

3. In a machine for attaching pronged buttons, the combination of a work-holding presser-foot, a work-support, prong-clenching mechanism below the work-support, a button-carrier movable vertically toward and from the work-support and laterally in a path above the same and having provisions for embracing the button, mechanism for reciprocating said carrier vertically, a movable button-chute normally coinciding with the button-carrier and adapted to present a button thereto when the carrier is elevated, and means for moving the said chute out of the path of the carrier preliminary to the lateral or feed movement of said carrier.

4. In a machine for attaching pronged buttons, the combination of a work-holding presser-foot, a work-support, prong-clenching mechanism below the work-support, a button-carrier comprising first a slide or bar movable longitudinally toward and from the work-support, and laterally in a path above the work-support, and provided with a slotted jaw formed to receive a button-shank, and secondly a lever pivotally connected with said slide and provided with a jaw formed to cooperate with the said slotted jaw in grasping and releasing the button, said lever-jaw being normally retracted by a spring, mechanism for vertically reciprocating the button-carrier, means for vibrating the carrier when at the lower end of its vertical movement, and a fixed cam-block for actuating the lever of the button-carrier, substantially in the manner described.

5. In a machine for setting pronged buttons, the combination of a work-support, a work-holding presser-foot, a laterally-movable guide supported by the fixed frame of the machine, a button-carrier movable vertically in said guide and independently thereof, toward and from the work-support, and also movable laterally with said guide to feed the work, said carrier having provisions for embracing the button mechanism for vertically reciprocating the button-carrier and mechanism for laterally reciprocating the guide and with it the carrier, as set forth.

6. In a machine for setting pronged buttons, the combination of a work-support, a work-holding presser-foot, a laterally-movable guide supported by the fixed frame of the machine, a button-carrier movable vertically in said guide and independently thereof toward and from the work-support, and also movable laterally with said guide to feed the work, mechanism for vertically reciprocating the button-carrier, and adjustable mechanism for laterally reciprocating both the guide and carrier, said adjustable mechanism being substantially such as a short pivoted lever, bearing on a cam on the driving-shaft of the machine, and adapted to be vertically reciprocated by the rotation of said cam, a longer pivoted lever having a stud or bearing adjustable toward and from said short lever and adapted to be moved by the latter to impart a longitudinal movement to said longer lever, and a rod connecting said longer lever with the button-carrier guide, the length of movement of the longer lever being determined by the adjustment of said stud or bearing, and determining the length of the feed movement of the button-carrier, as set forth.

7. In a machine for setting pronged buttons, the combination of a work-support, a work-holding presser-foot, a laterally-movable guide supported by the fixed frame of the machine, a button-carrier movable vertically in said guide toward and from the work-support and also movable laterally with said guide, a laterally-movable button-feeding chute normally held by a spring in position to register with the button-carrier when the latter is raised, and an oscillating lever e' engaged with the button-carrier and adapted to vertically reciprocate the latter, said lever being arranged to displace the button-chute during the descent of the button-carrier, and to permit said chute to assume its normal position on the ascent of the button-carrier, as set forth.

8. The combination of a work-support, a button-carrier movable vertically toward and from the work-support and also movable laterally in a path above the work-support, a laterally-movable button-chute which is normally held in position to register with the button-carrier when the latter is raised and is displaced from said position when the button-

carrier descends, and a presser-foot located beside the button-carrier and formed and arranged to prevent the escape of buttons from the chute when the latter is displaced from its normal position, as set forth.

9. The combination of the button-reservoir composed of two dished side pieces separated by a prong-receiving slot 22 and having segmental beveled faces 21 21 at opposite sides of said slot, and the button-head-supporting shoulders 20 20 extending outwardly from one end of said faces, the faces and slot forming a trough adapted to position the pronged buttons so that their heads will rest on the shoulders 20 and their prongs will extend downwardly from said shoulders; the chute composed of the side pieces 2 2, the upper edges of which are continuations of the shoulders 20 20, said side pieces being separated by a slot 3 which is a continuation of the slot 22; and a rotary agitator within the reservoir, having arms formed to enter the slot 22; as set forth.

10. The combination of a work-support, having a slot or opening such as g, and prong-receiving slots g^4 g^4 communicating therewith, an arm g' yieldingly held between said prong-receiving slots, an anvil vertically movable in the work-support and having its operating-face arranged under said slots, said anvil being adapted to displace the arm g' when moved upwardly, and a horizontally-reciprocating slide in the work-support provided with an inclined guide engaged with a projection on the anvil, whereby the anvil is raised and lowered, as set forth.

11. The combination of a work-support having a slot or opening such as g, and prong-receiving slots g^4 g^4 communicating therewith, an arm g' yieldingly held between said prong-receiving slots, an anvil vertically movable in the work-support and having its operating-face arranged under said slots, said anvil being adapted to displace the arm g' when moved upwardly, and a horizontally-reciprocating slide in the work-support provided with an inclined guide engaged with a projection on the anvil, a lever oscillated by a cam on the driving-shaft, and an adjustable rod connecting said lever with the slide, the adjustablity of said rod enabling the anvil to be vertically adjusted, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 22d day of October, A. D. 1891.

JOSEPH MATHISON.

Witnesses:
C. F. BROWN,
A. D. HARRISON.