

(No Model.)

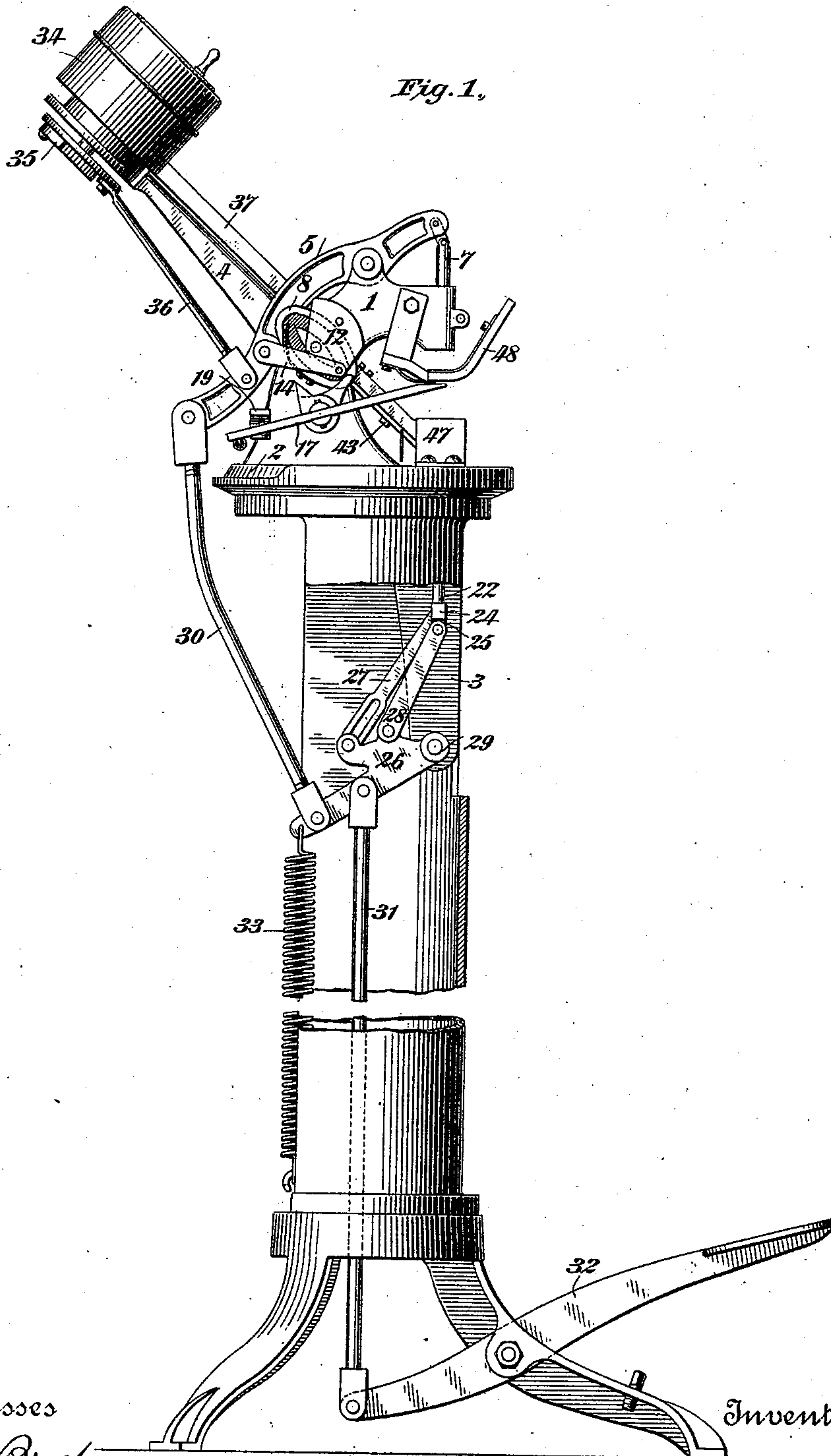
3 Sheets—Sheet 1.

D. A. CARPENTER.

MACHINE FOR ATTACHING BUTTONS TO GARMENTS.

No. 525,133.

Patented Aug. 28, 1894.



Witnesses
Geo. W. Breck
Edward Thorpe

Inventor
Daniel A. Carpenter

(No Model.)

3 Sheets—Sheet 2.

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Fig. 2,

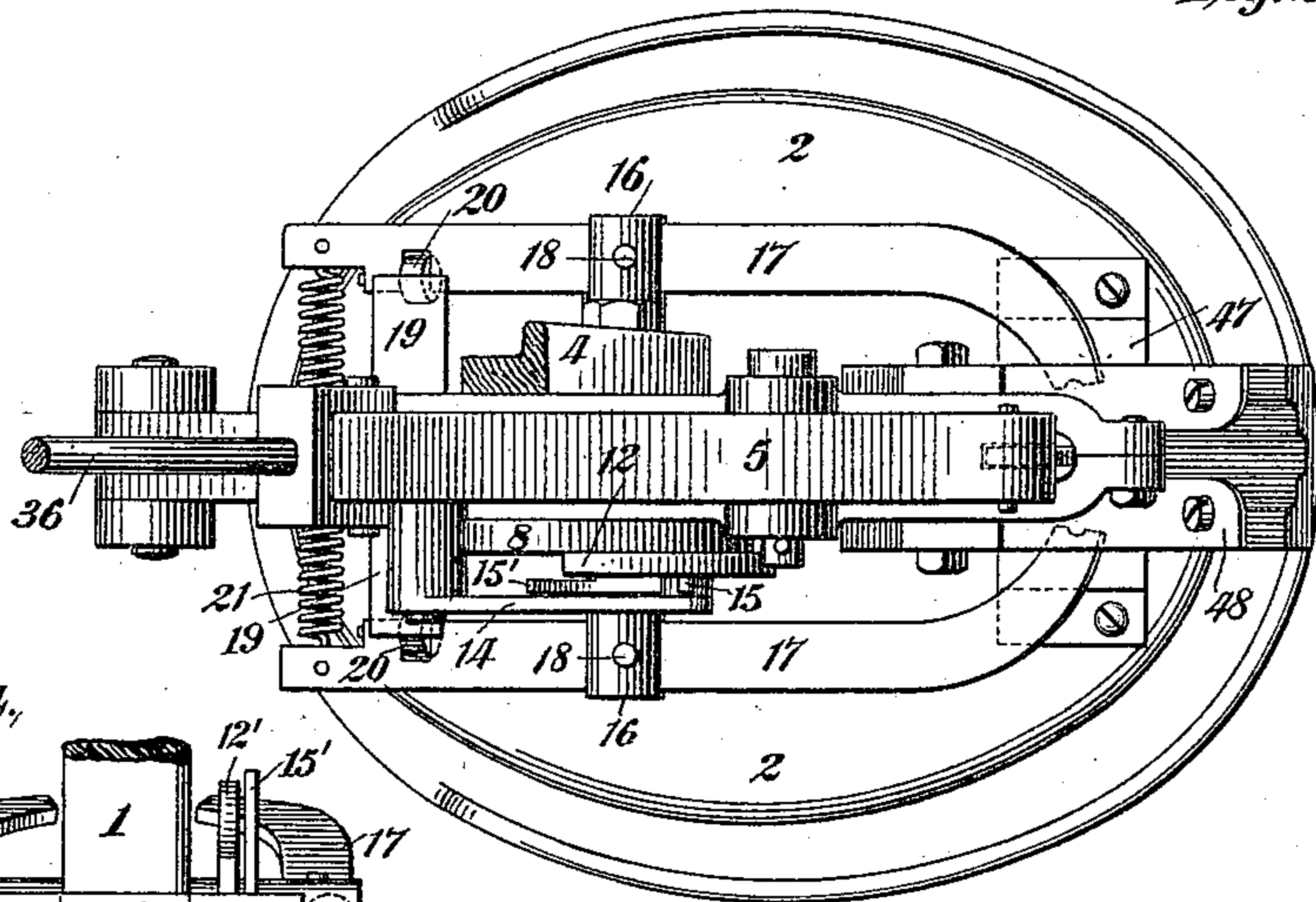


Fig. 4,

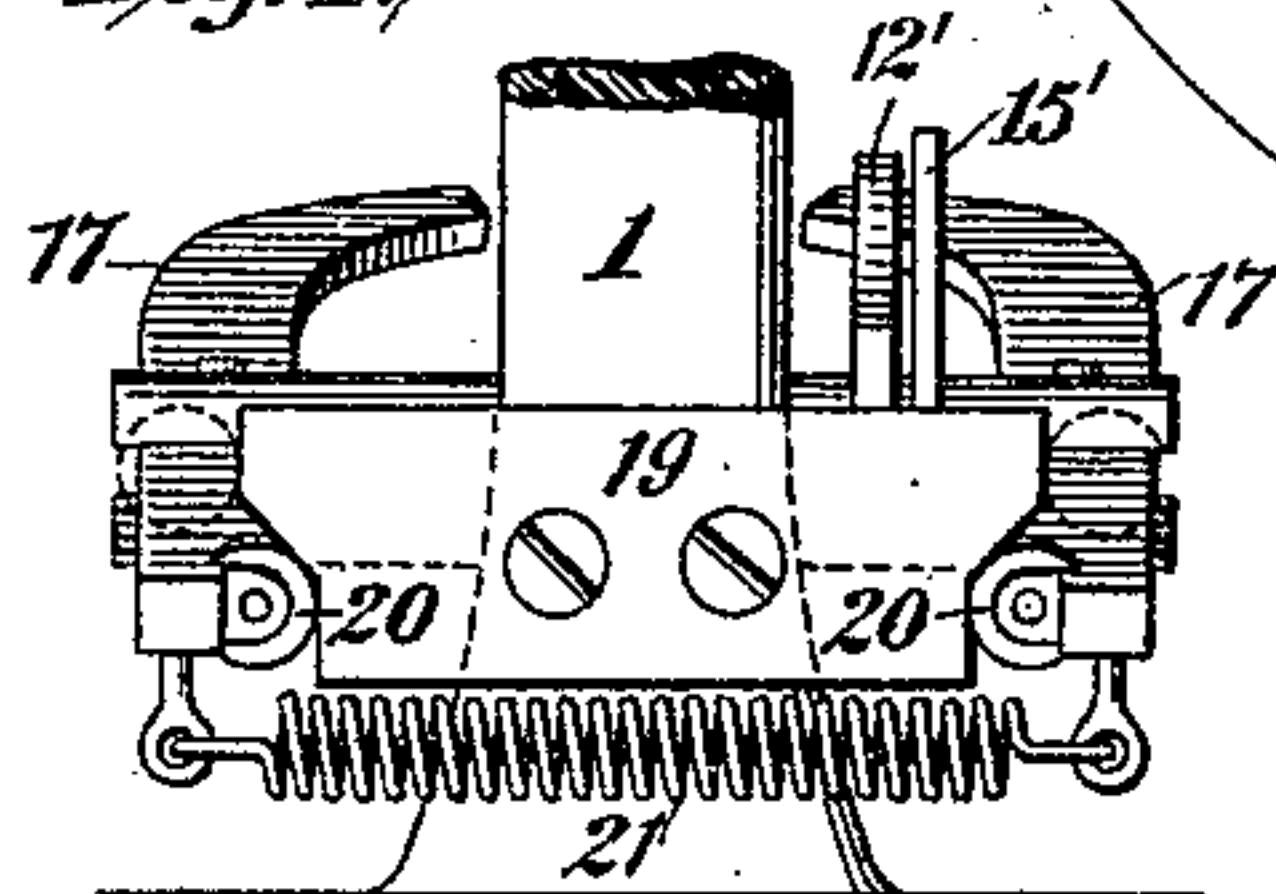


Fig. 3,

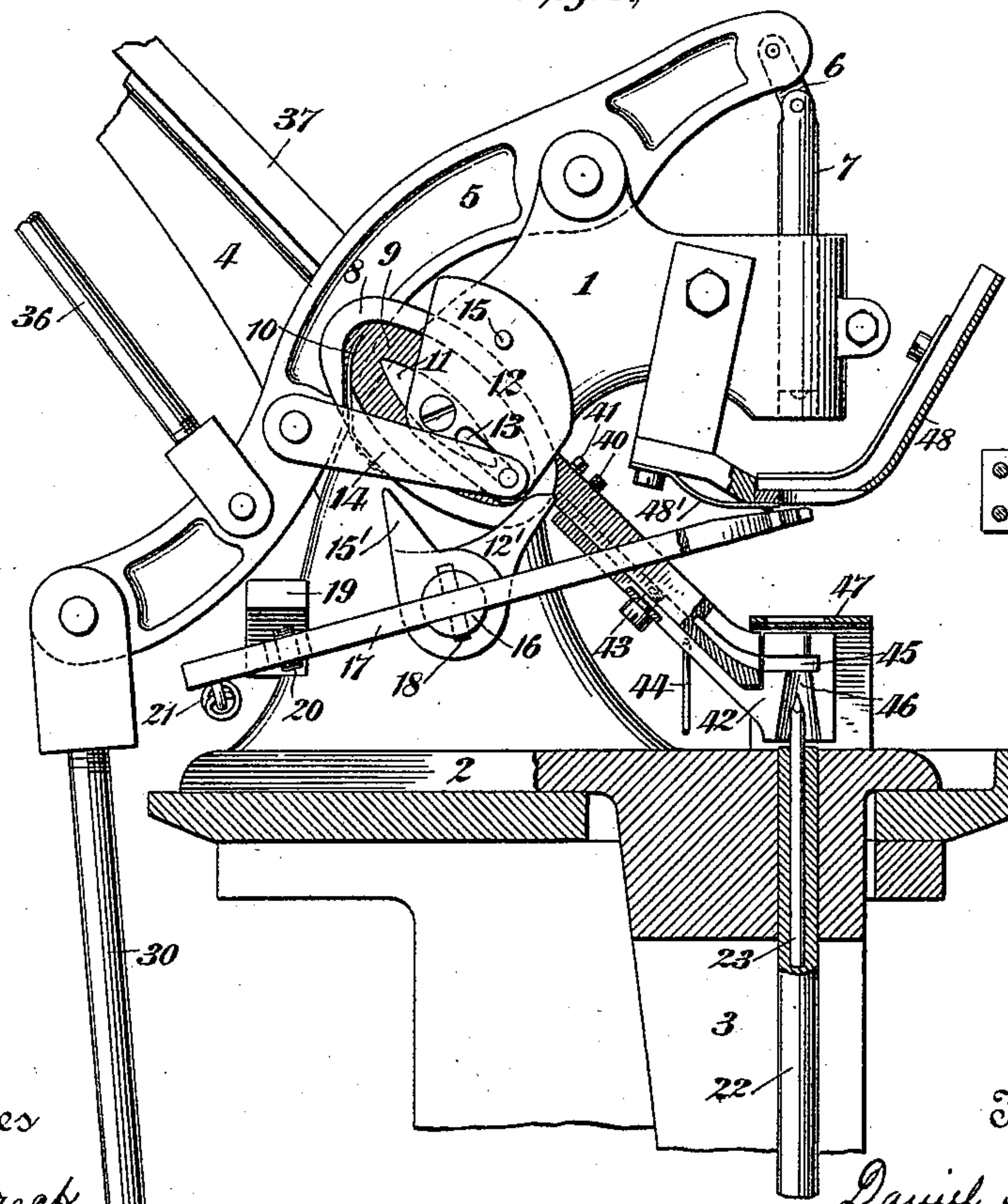


Fig. 5,



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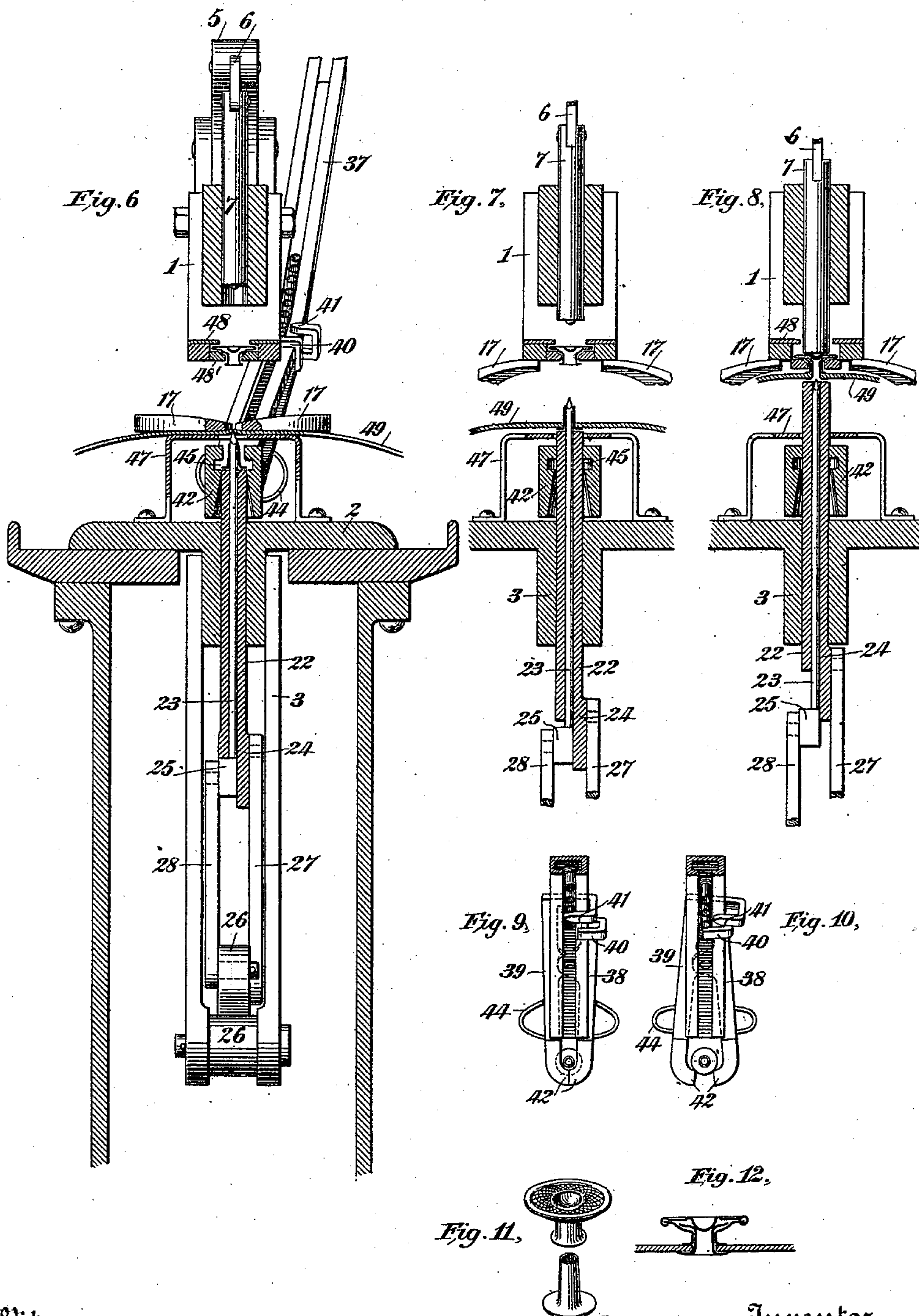
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UNITED STATES PATENT OFFICE.

DANIEL A. CARPENTER, OF NEW YORK, N. Y.

MACHINE FOR ATTACHING BUTTONS TO GARMENTS.

SPECIFICATION forming part of Letters Patent No. 525,133, dated August 28, 1894.

Application filed April 14, 1892. Serial No. 429,091. (No model.)

To all whom it may concern:

Be it known that I, DANIEL A. CARPENTER, of New York city, in the county and State of New York, have invented a certain new and
5 useful Improvement in Machines for Attaching Buttons to Garments, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This invention relates to improvements in machines which are adapted to attach buttons to garments by means of a rivet or similar metal fastening, and the invention consists of a machine with its various parts constructed, arranged and combined substantially as is herein described and claimed.

In the accompanying sheets of drawings, Figure 1 is a side elevation of the machine mounted on a column from one side of which
20 a piece has been broken out; Fig. 2, a top view, the reservoir not being shown; Fig. 3, an enlarged side elevation and section of part of the machine; Fig. 4, a view from the rear near the base; Fig. 5, a detail of a part of the
25 button holder; Figs. 6, 7 and 8 are vertical and transverse sections illustrating the operation at different stages; Figs. 9 and 10, details of the receiver and separator; Figs. 11 and 12, views of the button and fastener.

30 Similar reference numbers designate like parts in the several views.

The main object of this invention is to enable button-fastenings with an ordinary tubular stem to be fed from a reservoir and inserted in garments, and buttons like those
35 known as cone buttons to be attached to the garments with such fastenings, entirely by the action of machinery and in an expeditious manner. These buttons and fastenings are
40 illustrated in Figs. 11 and 12 of the drawings. The button has no opening in its face, but a central depression resembling an inverted cone, and against this cone the stem of the fastening is split and turned outward, after
45 it has been inserted in the garment, as indicated in Fig. 12. Since the end of the fastening is blunt the cloth needs to be perforated by some special means to enable the fastening to be forced through the cloth. The means
50 commonly employed to effect this result is a

needle which is placed by hand on the stem of the fastening resting upon an anvil, and when the cloth held firmly in both hands has been forced against the needle, which is thus made to penetrate the cloth, and pressed down
55 around the stem of the fastening, the needle is removed by the hand and the fastening remains inserted in the cloth ready to receive the button. Then the button is held so that the stem of the fastening will enter the hub
60 of the button when they are brought together, and they are united by suitable pressure. This invention obviates the necessity of manipulating the needle, and otherwise facilitates the attachment of the buttons to the
65 garments.

The machine is mounted on a standard, for example an iron column, as shown in Fig. 1, and adapted to be operated by a treadle.

The frame of the machine is a casting having the upright part 1, the base 2, and the
70 part 3 extending downward from the base. On one side of the part 1 is bolted an arm 4, and in a recess in the top of the casting is pivoted a lever 5, which is connected by a
75 link 6 with an anvil 7 fitted to slide in a vertical channel in the casting.

Against the opposite side of the part 1 from the arm 4 is fastened a block 8 in which is an elliptical channel 9, and through an opening
80 in the side of the channel a spring 10 projects into the channel, as shown in Fig. 3. To the central portion 11 of the block 8 is pivoted a cam 12, in which is a slot 13, and a pin attached to a link 14, pivoted at its rear end
85 to the lever 5, passes through the slot in the cam and is provided with a roller which is adapted to travel in the channel 9 of the block. In the cam is a pin 15 which projects
90 a little from the face of the cam. It will now be understood that when the rear end of the lever 5 is raised, the link 14 is drawn backward, and the cam 12 is caused to turn on its pivot by the action of the pin in the slot 13. During the upward movement of the lever
95 the cam is turned through one half of a revolution. When the lever descends, the roller being prevented by the spring 10 from returning through the lower section of the channel 9, it passes through the upper section, and
100

the cam is thus restored to the position from which it started without any backward motion of the cam but after having made a full revolution.

5 A shaft 16 is journaled in the casting, and projects from it on each side, as shown in Figs. 2 and 3, and bars 17 are inserted in slots in the ends of this shaft, and are held in place therein by pins 18, so that the bars may
10 turn with the shaft and on the pins at the same time. Between these bars is a block 19 which is secured to the back of the main casting, and is provided with beveled surfaces at its ends, and rollers 20 in the bars are arranged to bear against this block, and are
15 kept in contact therewith by a spring 21 extending from one bar to the other. These bars are curved near their front ends, which are adapted to meet when they are depressed, and in each bar is a semi-circular notch, as indicated in Fig. 2, whereby a round opening is formed just large enough to allow the stem of the fastener to pass through it when this is carried up on the anvil located in the base of
25 the machine. On the shaft 16 is keyed a lug 12' against which the cam 12 acts during the first part of its movement, as above described, and behind this lug is another lug or projection 15' so arranged that the body of the cam will pass between it and the frame of the machine, but the pin 15 cannot pass the rear lug without striking it, when it is thrown forward.

In the lower part 3 of the frame is a sliding anvil 22, and through this extends a needle 23, which is adapted to slide within the
35 anvil. The base 24 of the anvil and the base 25 of the needle are connected with a lever 26 pivoted between the sides of the part 3, by links 27 and 28 respectively. When the
40 anvil is in its lowest position it rests upon the base of the needle as shown in Figs. 1 and 6, though in the latter figure the anvil is shown after it has been raised a short distance.

The link 27 is slotted near its lower end and
45 is attached to the lever 26 farther from the pivot 29 of the lever than is the link 28, the length of the unslotted portion of the link 27, plus the distance of its lower pivot from the pivot 29 of the lever, being greater than the
50 length of the link 28 plus the distance of its lower pivot from the pivot 29, and the difference in height between its upper pivot and that of the link 27. This arrangement enables the anvil and needle to be raised to a
55 certain height together by the link 28, and the anvil then to be raised still higher, without the needle, by the link 27, and by means of this mechanism in connection with the bars 17, and the anvil 7, the fastening is first
60 driven through the cloth and afterward clinched in the button. The operation is fully described below.

The levers 5 and 26 are connected by a rod or link 30, and a treadle rod 31 connects the
65 lever 26 with a treadle 32 at the bottom of the column. The coil spring 33 is intended to re-

store the parts to their proper positions after they have been actuated by the treadle.

On the arm 4 is mounted a reservoir 34 having openings through which the fastenings
70 can be discharged from the reservoir, and within the reservoir is a brush, or other suitable mechanism for stirring the fasteners, which is operated from the lever 5 by means of a ratchet and pawl 35 and rod 36. A chute
75 37 extends downward from the reservoir nearly to the base of the frame behind the lower anvil and on the end of the chute is a combined receiver and separator by means of which the fasteners are fed one at a time to
80 the anvil. The details of this device are clearly illustrated in Figs. 9 and 10, in connection with the other views. It is composed of two parts 38 and 39 which are formed into fingers 40 and 41 at one end of the device,
85 and into the receiver 42 at the opposite end. Half of the receiver is made in the part 38, and the other half in the part 39, and these are attached together to the back of the chute by a pivot 43. They are so arranged that
90 when the receiver is closed the upper finger 41 projects partly across the channel of the chute, and when the receiver is open this finger no longer obstructs the channel but the lower finger 40 then projects into or over the
95 channel.

The receiver is located directly in the path of the lower anvil, and is kept closed by a bow spring 44, excepting when it is held open by the anvil in the operation of the machine.
100 In the receiver is an opening 45 corresponding to the channel of the chute, that is to say with the shape of an inverted letter T in cross-section, and below this is a hole 46 large enough to allow the needle 23 to pass freely
105 into the stem of the fastener, but not large enough where it intercepts the opening 45 to let the head of the fastener fall into it. The sides of the receiver around the hole 46 are beveled, as shown in Figs. 3 and 6, the cavity
110 thus formed being at the bottom of slightly greater diameter than the end of the anvil.

Above the receiver is a table 47 which has an opening in it to allow the anvil to pass up through the table.
115

A button holder supported from the frame, is located under the guide of the anvil 7, and forms a stop against which the forward ends of the bars 17 rest when they are elevated. This consists of a short raceway or chute 48
120 down which the buttons slide, with a spring fork 48', shown in detail in Fig. 5, in which the buttons rest, the fork being adapted to be depressed by the action of the anvil 7 on the buttons.
125

In the operation of the machine the fasteners are fed through the chute 37 from the reservoir 34, but the buttons are placed by hand in the button holder. The garment 49 is laid on the table 47. When power is applied to
130 the treadle the levers 5 and 26 are actuated together causing the anvil 7 to descend and

the anvil 22 to rise, and the cam 12 to turn on its pivot. The cam pushes the lug 12' forward and turns the shaft 16, and this depresses the forward ends and raises the rear ends of the bars 17, and the bars are also forced together at their forward ends, turning on the pins 18, by the action of the rollers 20 on the block 19. The bars are thus held by the cam for a short interval.

The anvil 22 is forced upward in the first place by the link 28, which raises the needle and with this the anvil, and the needle enters the stem of the fastener resting in the receiver 42. The pressure of the anvil against the beveled sides of the cavity in the bottom of the receiver, opens this and the fastener is carried upward by the anvil with the needle projecting above the stem of the fastener. The needle pierces the garment and the fastener is driven through it by the anvil and through the opening in the bars 17 which form a garment-rest resisting the thrust of the needle and fastener against the garment.

When the fastener has been inserted in the garment with its head or flange close to the under side thereof, as appears in Fig. 7, the cam 12 ceases to act on the lug 12', having turned far enough so that the toe of the cam passes behind that lug, then the pin 15 acts on the lug 15' and by this means and the spring 21 the forward ends of the bars 17 are raised and separated quickly, and are held up against the button holder by the spring.

The anvil 22 continues to move upward carrying with it the garment with the fastener inserted therein, while the anvil 22 descends upon the button, and the fastener enters the button and is upset within it, as shown in Fig. 8 of the drawings. The anvil 22 reaches the highest point to which it can be elevated by the link 28, before the fastener is upset, then the needle stops, and the further upward movement of the anvil is produced by the link 27, which acts directly upon the anvil and forces this upward alone, so that the needle does not strike the button or otherwise interfere with its attachment to the garment.

The bars 17 do not move when the anvils return to their respective positions, for as above explained the cam 12 travels only in one direction, so it cannot again actuate the bars before the next upward movement of the operating lever.

By opening the receiver in the manner described, to release the rivet, the anvil 22 likewise actuates the separator connected with the receiver, throwing the upper finger 41 outward, and the lower one 40 inward, as shown in Figs. 6 and 10, and when the anvil descends and the receiver closes under the action of the spring 44, the fingers again assume the respective positions in which they are shown in Fig. 9, and the lowest rivet then becomes free to slide down into the receiver, for use with the next button.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for attaching buttons to garments, the combination of a movable anvil 22, a needle extending through the anvil and adapted to slide therein, an operating lever, and separate links connecting the anvil and needle with the lever, substantially as described.

2. In a machine for attaching buttons to garments, the combination of a movable anvil 22, a needle 23 extending through the anvil and provided with a base 25 adapted to support the anvil, and actuating mechanism connected with the base of the needle, whereby the anvil may be advanced by the action of the base of the needle upon the anvil, substantially as described.

3. In a machine for attaching buttons to garments, the combination of the movable anvil, a needle extending through the anvil and provided with a base adapted to support the anvil, an operating lever, and links connecting the anvil and base of the needle respectively with said lever, substantially as described.

4. In a machine for attaching buttons to garments, the combination of the movable anvil, the needle inserted therein and provided with a base adapted to support the anvil, an operating lever, the link connecting the base of the needle with said lever, and the slotted link connecting the anvil with said lever, substantially as described.

5. In a machine for attaching buttons to garments, the combination of an anvil and needle 22 and 23, the latter extending through and adapted to slide within the former, the lever 26, the slotted link 27, and the link 28, substantially as described.

6. In a machine for attaching buttons to garments, the combination of an anvil and needle 22 and 23, the latter extending through and adapted to slide within the former, the pivoted lever 26, and links pivoted to said lever at unequal distances from its fulcrum and pivoted respectively to the anvil and needle, substantially as described.

7. In a machine adapted to insert rivets or fasteners in garments, the combination of a movable garment-rest provided with a bearing surface for a cam, the cam 12 pivoted on the side of the machine and having the slot 13, the link 14 having a pin projecting through the slot in the cam, a guide for said pin extending around the axis on which the cam turns, and a lever to which the link 14 is pivoted, substantially as described.

8. In a machine adapted to insert rivets or fasteners in garments, the combination of a movable garment-rest provided with a bearing surface for a cam, the cam 12 pivoted on the side of the machine and having the slot 13, the link 14 having a pin projecting through the slot in the cam, a channel 9 having the shape of an ellipse and forming a guide for the pin, a stop adapted to divert the pin from one branch of the channel to the other, and a

lever to which the link 14 is pivoted, substantially as described.

9. In a machine for attaching buttons to garments, the combination of an anvil, the pivoted bars 17, a rocking support 16 for the bars, and cams whereby the bars are advanced toward and retracted from the anvil and are closed and opened, substantially as described.

10. In a machine for attaching buttons to garments, the combination of an anvil, the pivoted bars 17, a rocking support 16 for the bars, the cam arranged to act thereon and mechanism to actuate the cam, the block 19, and a spring tending to force the rear ends of the bars nearer together, substantially as described.

11. In a machine for attaching buttons to garments, the combination of an anvil having a seat for the button, an anvil having a seat for the fastener, a garment rest composed of two movable bars or plates located on the opposite side of the garment from the last mentioned anvil and resting normally with their edges apart and with the space between them wider than the hub of the button, a spring tending to keep the bars in their normal positions, an operating lever, and mechanism comprising an element maintained in permanent operative connection with said lever, and a bearing surface connected with the bars and subject to contact with said element, and means whereby a like contact of parts is prevented during the entire return movement of the lever, substantially as described.

12. In a machine for attaching buttons to garments, the combination of an anvil having a seat for the button, an anvil having a seat for the fastener, a garment rest composed of two movable bars or plates located on the opposite side of the garment from the last mentioned anvil and resting normally with their edges apart and with the space between them wider than the hub of the button, a spring tending to keep the bars in their normal positions, and mechanism comprising a rotary cam, and a part or parts connected with the bars and subject to a single period of contact with the cam during each revolution thereof, substantially as described.

13. In a machine for attaching buttons to garments by means of tubular fasteners, the combination of a movable anvil provided with a seat conforming to the base of the fastener and with a channel equal in diameter to the interior of the stem of the fastener, a needle adapted to slide in this channel and to project from the anvil into the stem of the fastener, a garment rest composed of two separable bars or plates located on the opposite side of the garment from this anvil and adapted to be held with their edges together and provided with notches which form an opening adapted to receive the stem of the fastener, and operating mechanism connected with the bars and anvil, substantially as described.

14. In a machine for attaching buttons to

garments by means of tubular fasteners, the combination of an anvil provided with a seat conforming to the base of the fastener and with a channel equal in diameter to the stem of the fastener, a needle adapted to slide in this channel and to project from the anvil into the stem of the fastener, a garment rest composed of two movable bars or plates located on the opposite side of the garment from this anvil and adapted to be held with their edges apart at a certain distance from the anvil and also with their edges together at a less distance from the anvil and provided with notches which form an opening adapted to receive the stem of the fastener, and operating mechanism, substantially as described.

15. In a machine for attaching buttons to garments by means of tubular fasteners, the combination of an anvil provided with a seat for the fastener, a needle inserted therein and adapted to project from the face of said anvil and to recede with respect to said anvil for the button, and a garment rest between the anvils and on the opposite side of the garment from the anvil containing the needle, one at least of said anvils being movable toward the other, substantially as described.

16. In a machine for attaching buttons to garments, the combination of an anvil and mechanism adapted to advance the fastener, a needle adapted to pierce the garment and to be advanced from and retracted into this anvil, an anvil adapted to support the button, a movable garment rest composed of two plates or bars held edge to edge on the opposite side thereof from the needle, and mechanism whereby the bars are separated and the needle retracted with respect to the anvil, after the fastener has been forced through the garment, substantially as described.

17. In a machine adapted to feed rivets or fasteners and insert them in garments, the combination of a movable anvil, a chute, a receiver at the end of the chute adapted to be opened by the anvil, and a separator connected with the receiver and adapted to be actuated thereby, substantially as described.

18. In a machine adapted to feed rivets or fasteners and insert them in garments, the combination of a movable anvil, a chute, and a separator having the pivoted bars 38 and 39, with fingers 40 and 41, adapted to be actuated by the anvil, substantially as described.

19. In a machine adapted to feed rivets or fasteners and insert them in garments, the combination with a movable anvil and a chute, of a receiver and separator made of two pivoted bars formed into the receiver at the end, and the separator near the end, of the chute, substantially as described.

20. In a machine adapted to feed rivets or fasteners and insert them in garments, the combination with a movable anvil and a chute of a receiver and separator made in two parts 38 and 39, pivoted at 43 to the chute,

and provided with a spring which tends to keep the receiver closed, substantially as described.

21. In a machine adapted to feed rivets or fasteners and insert them in garments, the combination with an anvil adapted to move upward, and a chute, of a receiver made in two parts pivoted to the chute, and having a recess 45 forming a prolongation of the chan-

nel of the chute, and having below this recess a cavity with its sides sloping inward from the bottom, and provided with a spring which tends to keep the parts together, substantially as described.

DANIEL A. CARPENTER.

In presence of—

CHAS. COLEMAN MILLER,
PAUL K. AMES.