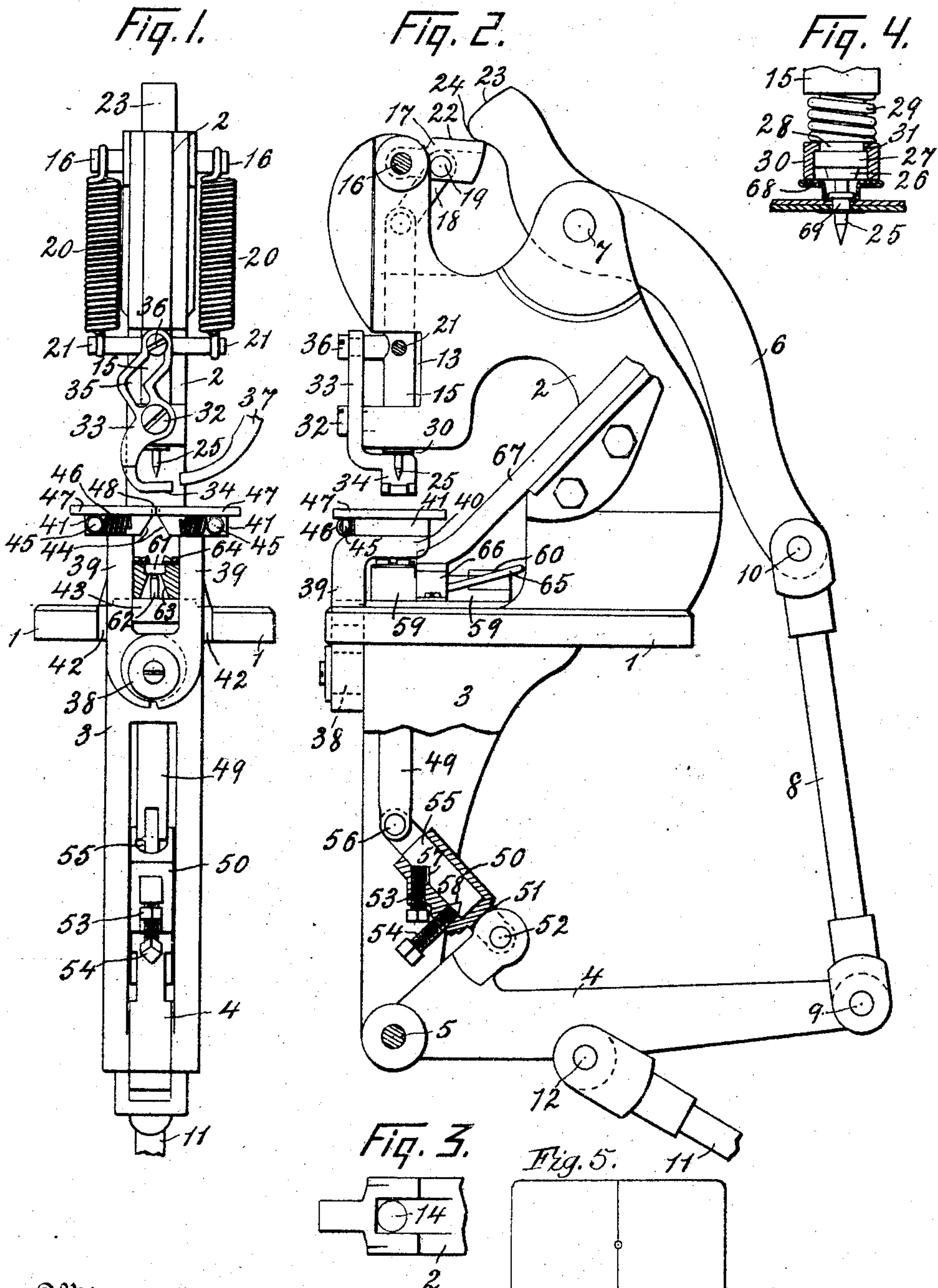


D. A. CARPENTER.
 BUTTON SETTING MACHINE.
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BUTTON-SETTING MACHINE.

No. 908,952.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DANIEL A. CARPENTER, a citizen of the United States, residing in the city, county, and State of New York, have invented a new and useful Button-Setting Machine, of which the following is a specification.

This invention relates to improvements in button-setting machines for attaching buttons to garments with tubular fasteners, the object of the invention being to simplify the construction and improve the operation of such machines.

The invention consists of a button-setting machine embodying the mechanism herein-after described and claimed.

On the accompanying sheet of drawings Figure 1 is a front elevation of the main portion of such a machine; Fig. 2 a side and sectional elevation thereof; Fig. 3 a plan of a fragment of the frame; Fig. 4 a detail illustrating a feature of the operation; and Fig. 5, a plan of the work-table.

Similar reference numerals designate like parts in different views.

The machine described and claimed herein may be provided with a treadle to enable it to be actuated by foot pressure. It is usually used however with driving mechanism comprising a shaft driven by a pulley and acting through a clutch, the button-setting machine proper and driving mechanism being supported by a common standard, which is not shown.

The machine comprises a plunger carrying a needle, a perforated work-table, and a rivet driving tool. Both the plunger and riveting tool travel in fixed guides formed in the frame of the machine. The frame is a casting composed of the base 1 and the upper and lower parts 2 and 3. To the part 3 at its lower end and between its sides a lever 4 is pivoted by a pin 5, and to the part 2 between lugs formed thereon a lever 6 is pivoted by a pin 7. A link 8 is connected at its lower end with the lever 4 and at its upper end with the lever 6 by pins 9 and 10 respectively. A link, 11, by which the lever 4 is actuated, is pivoted to that lever by a pin 12. This link may be connected either with a treadle, or with driving mechanism mounted on the standard of the machine as described.

On the front of the upper part 2 of the frame is a recess 13, and in the casting above and below the recess is a round hole

14 (Fig. 3) which forms a guide for the plunger 15. Directly over the plunger is a pin 16 whose axis is at right angles to the prolonged axis of the plunger. A block 17 is mounted on the pin 16, and in this block is a slot which is indicated by a dotted line in Fig. 2, and in which a link 18 is pivoted by a pin 19, this link being pivoted at its lower end to the plunger 15. The plunger, link 18 and block 17 are normally held in the positions in which they are shown in Fig. 2 by a suitable spring or springs such as the springs 20, these springs being attached to the pin 16 at their upper ends and at their lower ends to a pin 21 fixed in that part of the plunger which is within the recess 13 in the frame. The block 17 is then in contact with the lever 6 which bears on the flat surface 22 of the block. This surface is parallel to the plane which contains the axes of the pins 16 and 19. The surface 23 on the upper or front end of the lever 6 is cylindrical, its axis being that of the pin 7, and the part 24 of the face of the lever next to and below the surface 23 is curved as appears by Fig. 2, its radius of curvature being quite short. The sum of the distances between the axes of the pins 7 and 19 and the surfaces 23 and 22 respectively is preferably a little less than the distance from the axis of the plunger to the axis of the pin 7. On the needle 25 are formed a die-block 26 and a fixed collar 27 (Fig. 4) and a screw threaded stem. The plunger next to its lower end has a reduced portion 28 on which is a coil spring 29 and a loose collar or sleeve 30. These are secured on the plunger between the collar 27 and the shoulder at the upper end of the reduced portion 28, the threaded stem of the needle being screwed into the plunger so that the collar 27 is tightly held against the end of the plunger. The sleeve 30 is provided with an internal flange which is normally held by the spring 29 in contact with the collar 27, the sleeve then extending downward around the shoulder 27 and die-block 26. The external diameter of the sleeve 30 is equal to that of the plunger.

A button holder is pivoted to the front of the frame by a screw 32. This holder comprises an upright plate 33 through which the screw 32 passes and a slotted foot 34 which normally extends under the plunger. The plate 33 contains a slot 35,

through which extends a pin 36, which is affixed to the plunger within the recess 13 in the frame. The machine may be provided with a button-hopper from which buttons may be fed through a chute 37 to the button-holder.

The work-table is supported by a stud 38, formed on the front of the part 3 of the frame below the base 1. On this stud two posts 39 are pivoted together, there being at the upper end of each of these posts a rearwardly extending arm 40 on which is a block 41. The posts 39 with the arms 40 and blocks 41 are preferably cast in two pieces. The posts 39 extend through recesses 42 in the front of the base 1 and normally make contacts with a block 43, formed on the base 1 and extending between the posts. Beveled surfaces 44 are formed on the inner ends of the block 41, and in the front edge of each of these blocks is fixed a pin 45. A coil spring 46 which normally holds the posts 39 in contact with the block 43, is secured by its ends to the pins 45. The top 47 of the table is composed of two plates which are affixed to the blocks 41 and which are normally held close together edge to edge, and in whose meeting edges are notches that form a perforation 48 having substantially the diameter of the interior of the stem of a tubular fastener in which the needle fits snugly.

The rivet-driving tool 49 fits in a guide formed in the base 1 and part 3 of the frame. It is provided with an ordinary picker supported by a spring within the body of the tool and is connected with the lever 4 by a link. As it is sometimes desirable to adjust the driving tool from the front of the machine to enable buttons to be properly attached to garments or other articles differing in thickness the peculiar connecting link shown is preferable to a common link. This link comprises a hollow block 50 which, by means of a lug 51 formed thereon and the pin 52, is pivotally attached to the lever 4, and in which are two set screws 53 and 54. A rod 55, which is pivoted by a pin 56 to the driving tool 49, fits in the block 50, and in this rod are notches 57 and 58 into which the screws 53 and 54 extend respectively. To lengthen this link the screw 54 is first loosened and then the screw 53 is so turned as to force the rod outward. This may be conveniently done from the front of the machine when the link is upright. As the screw 54 is conical at its inner end and the recess 58 is also conical, it is evident that when the screw 54 is loosened the rod 55 may be drawn or forced outward until the wall of the recess is brought into contact with the lower side of the conical surface of the screw.

A receiver for the fasteners rests on the

base 1 under the work table. It is composed of two blocks 59 which are pivoted together at their rear ends by a screw 60 which extends through them into the base. At the front ends of these blocks a cup shaped pocket 61 is formed therein in which the heads of the fasteners fit so that their stems are in alinement with the picker 62 of the driving tool. Below this recess the blocks 59 have beveled surfaces 63, and on the blocks are thin plates 64 projecting over the edges of the pocket 61. The blocks are normally held close together at their front ends by a spring, such for example as the bow spring 65. A bridge or strap 66 which is fastened at its ends to the base 1, extends over these blocks behind the pocket 61, and to this bridge is attached the lower end of a fastener-chute 67, from which fasteners are fed one at a time into the receiver from a hopper which is not shown.

It will be understood that when the axis of the pin 19 is brought into or nearly into vertical alinement with the pin 16, by depressing the rear end of the block 17, the plunger will be forced downward to its lowest position, and when it is in that position the lower edge of the sleeve 30 is quite near the table and the needle 25 is within the perforation 48 in the table.

The buttons which are fed into the button-holder from the chute 37, or by hand, are like the button 68 shown in Fig. 4, and are supported by their flanges in the holder, their hubs being contained in the slot in the foot of the holder. The garments are laid on the table under the button-holder. When the lever 4 is actuated, the plunger is forced downward to its lowest position by the action of the lever 6 on the block 17, before the upper end of the driving tool reaches the beveled surfaces 44 of the blocks 41. With the downward movement of the plunger the needle 25 descends through the hole in the button, and the foot of the button holder is withdrawn from under the button by the action of the pin 36 traveling downward in the slot 35, the point of the needle having reached the garment before the button is released by the button holder. When the plunger is in its lowest position the needle has penetrated the garment and entered the perforation 48 in the table. As the driving tool 49 moves upward the picker 62 enters the stem of the fastener in the pocket 61 and the fastener is carried upward by the driver, which separates the blocks 59 at their front ends by acting on the beveled surfaces 63. The picker is then arrested by the needle below the top of the table, and the driving tool continuing to move upward separates the two parts of the table by acting on the beveled surfaces 44, and forces the fastener upward on the needle through the garment and clenches it against the die

within the hub of the button. As the parts of the table are separated by the driving tool as described the spring 46 yields and the posts 39 turn on the stud 38. The plunger reaches its lowest position before the lever 6 has completed its movement and is thereafter held in that position by the lever until the riveting operation is completed, for although the lever 6 continues to move until the driving tool reaches its highest position no further movement is imparted to the block 17 after the cylindrical surface 23 meets the flat surface 22 of the block.

The driving tool at the end of its upward movement acts on the sleeve 30 through the head of the fastener 69 the garment and the button, and forces this sleeve upward on the plunger against the pressure of the spring 29, the fastener being meanwhile upset against the die at the base of the needle. The spring 29 and sleeve 30 strip the button from the needle as the driving tool descends and thus prevent the button from being carried upward by the plunger to interfere with the return movement of the button holder. The plunger is raised by the action of the springs 20 on the pin 21 and the button holder is restored to its normal position by the pin 36 traveling upward in the slot 35.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a button-setting machine the combination of a work-table comprising separable plates normally held together edge to edge and containing notches that form a perforation having substantially the diameter of the interior of the stem of a tubular fastener; a plunger carrying a needle made to closely fit in said perforation, the plunger being movable from its normal position until the needle is within the perforation; mechanism to impart the required forward movement to the plunger, a part of this mechanism being separately movable, and mechanism comprising a rivet-driving tool coöperative with the plunger and needle in driving and clenching the rivets.

2. In a button-setting machine the combination of a work-table comprising separable plates normally held together edge to edge and containing notches that form a perforation having substantially the diameter of the interior of the stem of a tubular fastener; a plunger carrying a needle made to closely fit in said perforation, the plunger being movable from its normal position until the needle is within the perforation; a block pivoted on a fixed axis cutting at right angles the prolonged axis of the plunger; a link connecting said block with the plunger; a lever operative on and in sliding contact with said block to actuate the plunger; and mechanism comprising a rivet-driving tool coöperative with the

plunger and needle in driving and clenching the rivets.

3. In a button-setting machine the combination with a plunger carrying a needle, and mechanism coöperative therewith in attaching buttons to garments with tubular fasteners, of a device operative on the buttons to strip the buttons and fasteners from the needle.

4. In a button-setting machine for attaching buttons to garments with tubular fasteners the combination of a plunger carrying a needle, a perforated work-table, a button-holder above the work-table, and below the needle when the latter is in its normal position, and a device mounted on the plunger and movable into contact with buttons below the holder and operative to strip the buttons and fasteners from the needle.

5. In a button-setting machine for attaching buttons to garments with tubular fasteners the combination of a plunger carrying a needle, a perforated work-table, a button-holder above the work-table and below the needle when the latter is in its normal position, and a spring-pressed sleeve mounted on the plunger and movable into contact with buttons below the holder and operative to strip the buttons and fasteners from the needle.

6. In a button-setting machine the combination with a plunger carrying a needle and mechanism comprising a rivet-driving tool coöperative with the plunger and needle in driving and clenching rivets, of a work-table comprising supports mounted on a fixed axis in front of and at right angles to the axis of the driving tool; and a top extending normally between the driving tool and plunger and composed of separable sections movable with said supports on said fixed axis from their normal positions to allow the driving tool to pass between them.

7. In a button-setting machine the combination with a plunger carrying a needle, and mechanism comprising a rivet-driving tool coöperative with the plunger and needle in driving and clenching rivets, of a work-table comprising supports mounted on a fixed axis in front of and at right angles to the axis of the driving tool and connected together by a spring, and a top extending normally between the driving tool and plunger and composed of separable sections movable with said supports on said fixed axis from their normal positions by the action on them of the driving tool.

8. In a button-setting machine the combination with a rivet driving or similar tool and an actuating lever, of an adjustable connecting link comprising a sleeve; a rod fitting in and projecting from the sleeve; and screws passing through threaded holes in the sleeve and extending into recesses in

the rod, the axis of one of the screws being inclined to that of the rod and sleeve.

9. In a button-setting machine the combination with a rivet driving or similar tool
5 and an actuating lever of an adjustable connecting link comprising a sleeve, a rod fitting in and projecting from the sleeve and containing recesses, and screws extending into the sleeve and into the recesses in the

rod one of said screws being operative to 10 move the rod lengthwise in the sleeve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL A. CARPENTER.

Witnesses:

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O. H. GLENDINNING.