No. 687,254. Patented Nov. 26, 1901.

R. McKAY.

BUTTON SETTING MACHINE.

(Application filed Nov. 5, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 3.

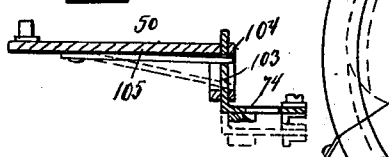


Fig. 1.

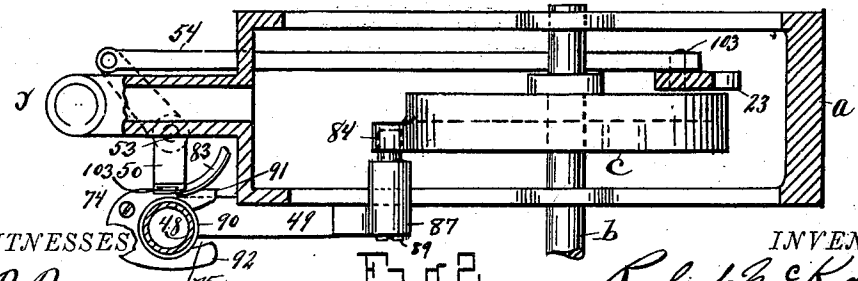


Fig. 2.

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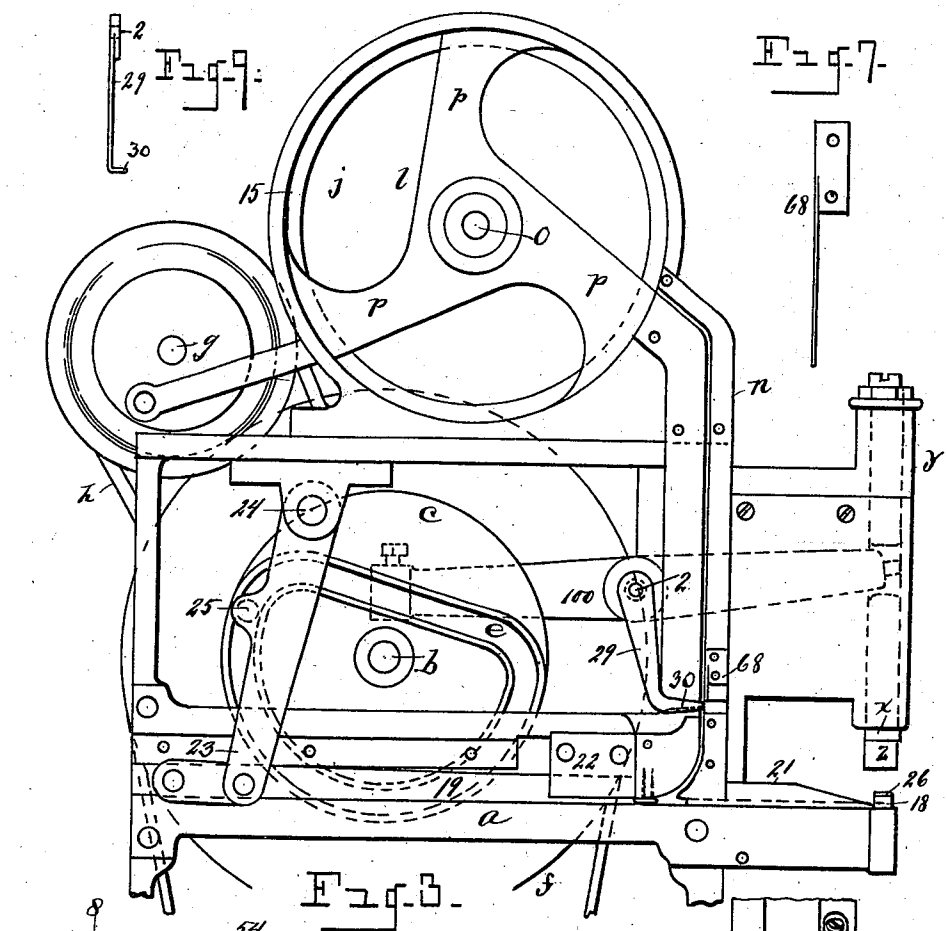


Fig. 3.

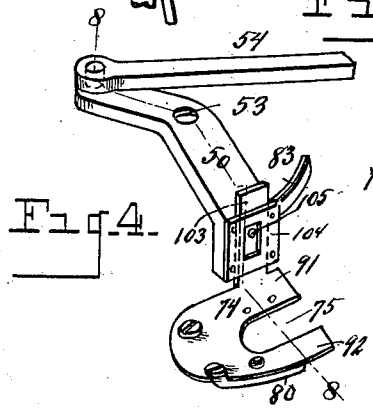


Fig. 4.

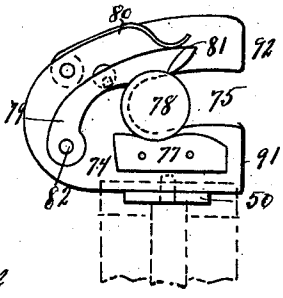


Fig. 5.

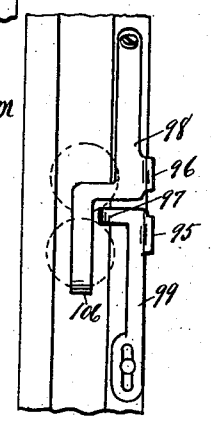


Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE.

ROBERT McKAY, OF DETROIT, MICHIGAN, ASSIGNOR TO THE McKENNEY BUTTON FASTENING COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

BUTTON-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 687,254, dated November 26, 1901.

Application filed November 5, 1900. Serial No. 35,455. (No model.)

To all whom it may concern:

Be it known that I, ROBERT McKAY, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Button-Setting Machines; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in a button-setting machine, having for its purpose more particularly a machine of this class adapted to set pants-buttons and buttons of a similar character, wherein a two-pronged fastener is employed to secure the buttons in place.

The invention consists of the construction, combination, and arrangement of devices and appliances hereinafter described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation. Fig. 2 is a view in section on the line 2 2, Fig. 1. Fig. 3 is a side elevation of the opposite side of the machine from that shown in Fig. 1, with a portion of the fastener-hopper removed. Fig. 4 is a detail view of the button-delivery arm. Fig. 5 is a view in inverted plan of the mechanism attached to the lower end of the button-delivery arm. Fig. 6 is a front elevation of a portion of the button-runway. Fig. 7 is a detail view showing the fastener-dropper mechanism. Fig. 8 is a view in vertical section on the line 8 8, Fig. 4. Fig. 9 is a detail edge view of the blade 29.

Among the objects of the present invention are the improved mechanism for feeding pants-buttons and analogous buttons from the base of the button-runway to the work in proper position for the engagement of the prongs of a two-pronged fastening therewith; also improved mechanism to govern the feed of the buttons in the button-runway.

I carry out my invention as follows: Any supporting-frame is indicated at *a*. A driving-shaft is indicated at *b*, journaled in said frame, upon which is mounted a driving-cam *c*, provided on one side thereof with a cam-groove *d* to actuate the setting-die and certain features of the button-feeding mechanism and on the other side thereof with a cam-groove *e* to actuate certain features of the fastener-feeding mechanism. The cam *c* is in the nature of a double cam, being constructed with cam-grooves *d* and *e*. The shaft *b* is provided with a driving-pulley *f*, driven from any suitable source of power. An additional shaft *g* is also journaled in the frame, driven by a belt *h* from the shaft *b* or otherwise, as may be desired.

Supported upon the frame *a* is a button-hopper *i* and a fastener-hopper *j*, through which a shaft *o* passes, said shaft being provided with a button-feed wheel *k* and a fastener-wheel *l*, rotatable with the shaft *o*, within their respective hoppers.

A button-runway is indicated at *m* and a fastener-runway at *n*. These runways may be of any desired construction. The fastener-feed wheel is constructed with a plurality of arms *p*, three being preferably employed, although it is not designed to limit the invention to any particular number of said arms. I do not, however, confine myself to any specific construction of a fastener-feed wheel nor of the fastener-feeding mechanism nor to any specific construction of the button-feed wheel.

The machine is provided with a die-spindle *x*, the spindle being made reciprocatory within the case *y* and provided with a setting-die *z* at its lower end. To actuate the spindle, the machine is provided with a lever 100, fulcrumed intermediate its ends, as shown at 2, the inner end thereof being provided with a cam-roll 3, engaged in the cam-groove *d* of the cam-wheel *c*. The forward end of the lever is engaged with the die-spindle. The machine is provided with a die or fastener seat 18 and with a plunger or reciprocatory slide 19 to force the fasteners upon said seat. The supporting-frame is provided with a fastener-guideway leading to the seat 18, the forward end of said guideway being covered,

as at 21, through which covered way the fasteners may be delivered to the seat. Said frame is also provided with suitable guides 22 to guide the reciprocation of the plunger 19. The plunger 19 is actuated by a lever 23, fulcrumed, as at 24, said lever provided with a cam-roll 25, engaged in the cam-groove *e* of the cam-wheel *c*. The seat 18 is provided with fastener-holding blades or arms, (indicated at 26.)

It will be obvious that as the fasteners are delivered from the fastener-hopper with the points projecting downward the position of the fasteners must be reversed, and in order to bring the prongs into proper position for setting they must also be given a partial turn to properly aline the prongs—as a quarter-turn, for example. To accomplish this, a fastener-dropper blade 29 is provided at its lower end with a ledge 30, upon which one prong of the fastener may engage. Upon the opposite side of the channel of the runway is located a spring 68, the lower end of which is arranged to exert its tension against the head of a fastener to hold the fastener when the spring is so engaged from dropping therebelow, the spring supporting the fasteners above the lower fastener in the runway. The blade 29 is rigid with the fulcrum-pin 2 of the lever 100, the fulcrum-pin having a fixed engagement with the lever and oscillating in suitable bearings, the blade 29 being thus carried backward and forward with the rocking of the fulcrum-pin 2, so that its lower end will recede from the channel of the runway *n* and advance toward said channel with the rocking of the lever. The lower end of the lever and of the spring 68 are so arranged that upon the advancement of the lower end of the blade the lower end of the spring will be moved forward and away from the fasteners, allowing the fasteners to drop in the runway, so that one prong of the lower fastener will rest upon the ledge 30 of the blade 29. On the opposite movement of the blade the spring 68 advancing at its lower end against the head of the fastener next above the lower fastener will suspend said fastener in place, while the retraction of the blade 29 will permit the lower fastener to drop.

To feed the buttons to the work, it is preferred to employ a tubular button-receptacle, (indicated at 48,) constructed to contain any desired number of buttons, having its upper end located adjacent to the lower portion of the runway *m*. This receptacle 48 is supported upon a plate 49, attached to the case of the machine, and is rotatable in said support, any suitable means being employed to accomplish its rotation. To deliver the buttons from the base of said receptacle, a button-delivery arm 50 is employed, said arm having an oscillatory movement. Said arm is fulcrumed intermediate its ends, a fulcrum-orifice being shown at 53. Said arm may be made oscillatory by means of a connecting-rod 54, united therewith and connected at the opposite end with the lever 23, as indicated at 103.

At the base of the delivery-arm 50 is a carrier-plate 74, preferably constructed with a rearwardly-opening recess 75. Said plate is provided on its under side with a shoulder 77, against which a button (indicated at 78) may be engaged. On the under side of the plate 74 is an oscillatory arm 79, a spring 80 bearing thereagainst and exerting a spring tension thereupon. It will be seen that as the arm 50 oscillates the carrier-plate 74 will transfer the lower button in the receptacle into position to be engaged by the fastening. The oscillating arm 79 is preferably recessed, as indicated at 81, to more securely bind it against a button and hold it against the shoulder 77. The arm 79 is shown fulcrumed at 82. The arm 50 is provided with a friction-arm 83, contacting with the hub 90 to rotate the hub as the arm 50 is actuated.

85 denotes a forked spindle made vertically reciprocatory through a guide-plate 86, attached to the frame, said fork being designed to engage astride the attaching-bar of a button in order to properly aline the eyes of the button or bring the eyes into proper position for the prongs of the fastener to project therethrough.

A bell-crank 87 supports the said fork, said bell-crank actuated by a projection 84 on the cam *c*, the bell-crank being fulcrumed, as shown at 89. It will be seen that as the bell-crank 87 is actuated the fork will be raised and lowered accordingly.

The base of the receptacle 48 is provided with a hub 90, against which the friction arm or plate 83 strikes as the arm 50 is operated. The operation of this portion of the mechanism is as follows: The rod 54 being actuated by the lever 23, the lever 50 is oscillated, thereby bringing the friction-arm 83 in moving contact with the hub 90, thereby rotating the receptacle 48 so as to bring the lower button in said receptacle into proper engagement with the arms of the fork 85. When so engaged, obviously the lower button will be held from further rotation. This will properly locate the eyes of the button. The plate 74 is moved under the receptacle 48 to engage the lower button. The forks 91 and 92 on either side the recess 75 are constructed to ride in between the lower button in the receptacle 48 and the buttons thereabove, thereby supporting the buttons thereabove. As the plate 74 moves thus under the button-receptacle the lower button is engaged by and clamped between the spring-arm 79 and the shoulder 77, and when the arm 50 moves in the opposite direction the button will be withdrawn from the receptacle and carried forward under the die *z* or into position indicated in dotted lines at 78 in Fig. 1. The descent of the die will release the button from the button-delivery arm and its related parts,

the spring-pressed arm 79 yielding for this purpose. The bell-crank 87 being actuated in proper order, the fork 85 is released from the button before the delivery-arm carries the button forward under the die in the manner hereinbefore described. To govern the feed of the buttons in the runway *m*, I employ a bell-crank fulcrumed to the frame, as shown at 94, said bell-crank provided with arms 95 and 96. Upon the upper face of the runway *m* are spring-arms 98 and 99, the arm 99 being provided with a finger 97 to support the adjacent button in the runway, while the arm 98 is constructed with a finger or ledge 106 at its lower end to engage under the lower button in the runway. These spring-arms 98 and 99 are arranged to be moved out of the way of the buttons in the runway by means of the arms 95 and 96. The bell-crank 94 may be actuated in any suitable manner, as by means of a bracket-arm 101 upon the lever 100, contacting therewith in the movement of said lever, a spring 102 retracting the said bell-crank. It will be evident that when the rear end of the bell-crank is tilted forward the spring-arm 98 will be disengaged from the lower button of the runway, the arm 99 of the spring 97 being moved into place to support the buttons thereabove. Thus on opposite movements of the bell-crank 94 a single button is permitted to drop from the spring-arm 98, a button being released from the base of the runway to drop into the receptacle 48 upon each operation of the bell-crank.

The fastener and the button-hoppers are preferably constructed with an inner peripheral groove, (indicated at 15,) the outer ends of the feeding-blades projecting into said groove. Said groove projects outward from the inner chamber or apartment of the hopper, the same being of sufficient width to admit the outer ends of the feeding-blades, but not wide enough to admit the buttons or fasteners, as the case may be. It is found that the prongs of the fastener in a fastener-hopper and the attaching portion of a button in the button-hopper projecting into said groove greatly facilitates the gathering of the fasteners or buttons, as the case may be, upon the feeding-blade.

I prefer that the plate 74 shall be carried by the lever 50 by means of an arm 103, adjustable in a holder-plate 104, secured to the adjacent face of the lever 50, a spring 105 engaging the arm 103 and permitting the blade 74 to yield, as indicated more particularly in dotted lines in Fig. 8.

What I claim as my invention is—

1. In a fastener-setting mechanism, the combination with a fastener-runway provided with a channel, of a lever, a fulcrum in fixed engagement with the lever, a dropper-blade connected with the fulcrum and oscillatory with the rocking of the fulcrum to engage a prong of the fastener in the runway, and a spring to engage the head of a fastening in the runway, said spring actuated by the dropper-blade.

2. In a button-setting machine, the combination with a button-runway, of a setting-die, a rotatable receptacle into which the runway discharges, an oscillatory delivery-arm at the base of the receptacle provided with means for carrying a button from said receptacle under the die, means to rotate said receptacle and a device to engage a button and bring its eyes into desired position.

3. In a button-setting machine, the combination with a button-runway, of a setting-die, a rotatable receptacle into which said runway discharges, and an oscillatory delivery-arm provided with a carrier-plate to carry a button from the base of the receptacle into position to be set, means to rotate said receptacle and a vertically-movable device to engage a button and bring its eyes into desired position.

4. In a button-setting machine, the combination with a button-runway, of a setting-die, a rotatable receptacle into which said runway discharges, and an oscillatory delivery-arm provided with a carrier-plate, means carried by said arm arranged to engage said receptacle and rotate the same.

5. In a button-setting machine, the combination with a button-runway, of a setting-die, a rotatable receptacle into which said runway discharges, a movable fork to engage a button and bring its eyes into desired position, means to actuate said fork, and an oscillatory delivery-arm provided with means for carrying a button, said delivery-arm provided with means to rotate said receptacle.

6. In a button-setting machine, the combination with a button-runway, of a setting-die, a rotatable receptacle into which said runway discharges, an oscillatory delivery-arm provided with a carrier-plate at the base of the receptacle, a spring-arm carried by said plate to engage and hold a button against the carrier-plate, a friction-arm to actuate said receptacle carried by said delivery-arm, and means to engage a button to bring its eyes into desired position.

7. In a button-setting machine, the combination with a button-runway, of a rotatable receptacle into which said runway discharges, an oscillatory delivery-arm provided with a carrier-plate at the base of said receptacle, a spring-arm secured to said plate to engage and hold a button against the carrier-plate, said delivery-arm provided with a friction-arm to rotate said receptacle, a vertically-movable forked spindle below said receptacle to engage the lower button in the receptacle and aline the eyes of the button, and a device to depress said spindle.

8. In a button-setting machine provided with a fastener-seat and with a setting-die, the combination of a button-runway, a ro-

tatable receptale into which said runway discharges, means to feed buttons one by one into said receptacle, means to rotate said receptacle, a carrier device to engage the lower button in said receptacle and carry it under the die, mechanism to aline the lower button in the receptacle with the prongs of the fastener, and means to move the alining mechanism out of the way to permit the operation of the carrier.

In testimony whereof I sign this specification in the presence of two witnesses.

ROBERT McKAY.

Witnesses:
N. S. WRIGHT,
M. HICKEY.