

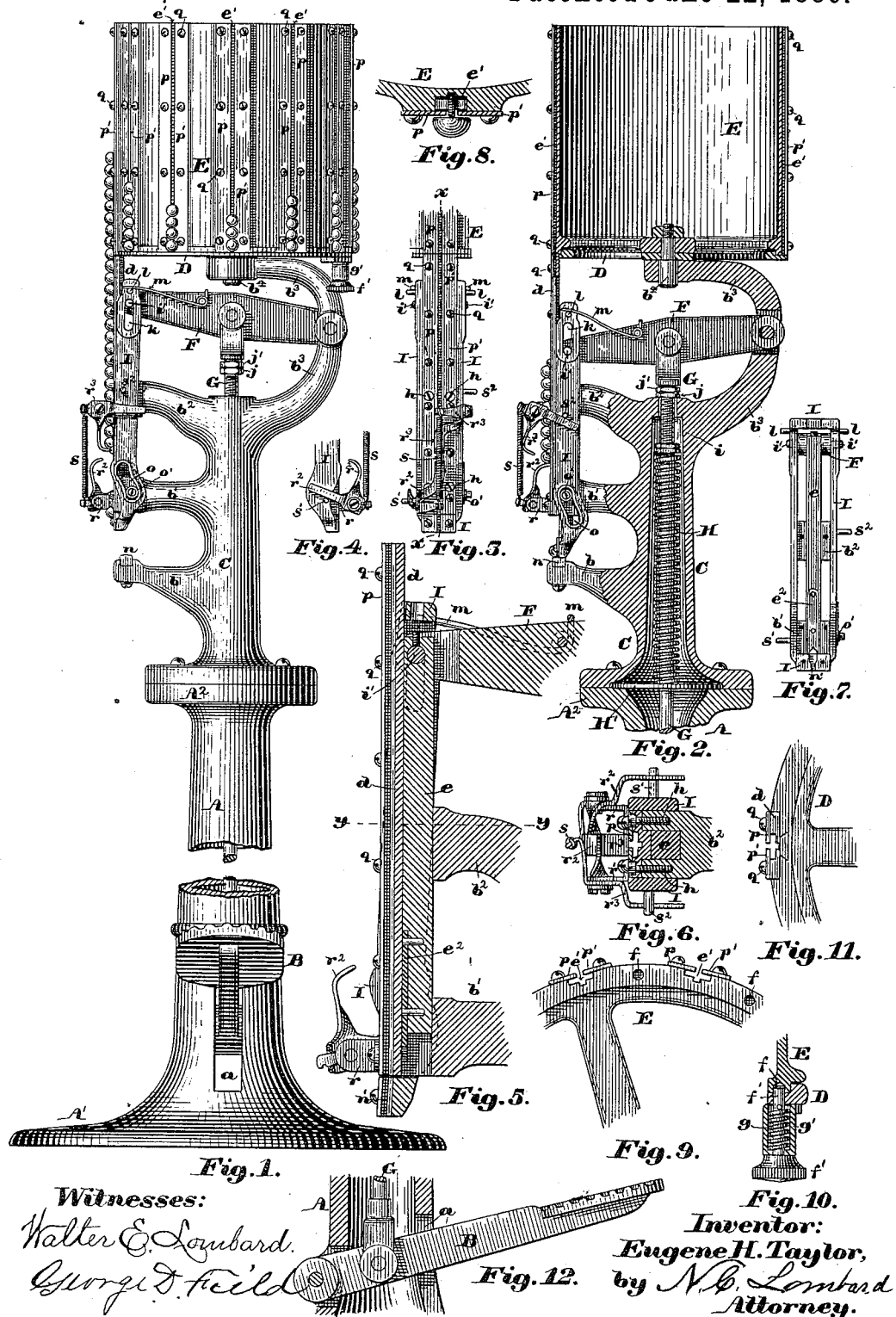
(No Model.)

E. H. TAYLOR.

MACHINE FOR ATTACHING BUTTONS.

No. 344,220.

Patented June 22, 1886.



# UNITED STATES PATENT OFFICE.

EUGENE H. TAYLOR, OF LYNN, MASSACHUSETTS, ASSIGNOR TO IRA J. SAUNDERS, OF SAME PLACE.

## MACHINE FOR ATTACHING BUTTONS.

SPECIFICATION forming part of Letters Patent No. 344,220, dated June 22, 1886.

Application filed February 10, 1886. Serial No. 191,430. (No model.)

*To all whom it may concern:*

Be it known that I, EUGENE H. TAYLOR, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Attaching Buttons, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to that class of button-attaching machines in which the buttons and the fastenings are automatically fed to a position with the fastener perpendicularly beneath the setting-tool; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the drawings, and to the claims to be hereinafter given.

Figure 1 of the drawings is a side elevation of a machine embodying my invention. Fig. 2 is a partial vertical section of the head or upper portion of the machine. Fig. 3 is a front elevation of the fixed raceway, the receiver-frame, and a portion of the cylinder and its supporting-rim contiguous to said raceway. Fig. 4 is a side elevation of the receiver and certain parts contiguous thereto, viewed from a direction opposite to Fig. 1. Fig. 5 is a vertical section on line *xx* on Fig. 3, drawn to an enlarged scale. Fig. 6 is a horizontal section on line *yy* on Fig. 5. Fig. 7 is a front elevation of a portion of the head of the machine, with the cylinder, its supporting disk or rim, and the fixed raceway removed. Fig. 8 is a horizontal section through a portion of the cylinder, showing the construction of the staple-receiving grooves formed upon the exterior of said cylinder. Fig. 9 is an inverted plan of a portion of the cylinder, and showing the holes for receiving the bolt for locking the cylinder in position. Fig. 10 is a vertical section of a portion of the cylinder, its supporting disk or rim, and the socket for the locking-bolt, with said bolt and its operating-spring in elevation. Fig. 11 is a plan of the fixed raceway and a portion of the cylinder-supporting disk or rim connected thereto, so as to prevent a rotation of said disk or rim; and Fig. 12 is a side elevation of the treadle-lever for operating the driver.

In the drawings, A is a column, provided

with a broad base, A', for supporting it in an upright position, with the flange A<sup>2</sup> at its upper end, and with ears near its base, to which the treadle-lever B is pivoted, said column having a slot, *a*, extending through the same for the passage of said treadle-lever.

To the flange A<sup>2</sup> is bolted the frame C, which consists of a hollow column, and the anvil-support *b* and arms *b'* *b''*, which support the fixed vertical raceway or chute *d*, and in which are formed bearings for the reciprocating plunger *e*. The frame C is also provided with the curved arm *b''*, the end of which is directly over the center of the column, and has secured thereto by a pivot-bolt, *b''*, the supporting disk or rim D and the cylinder E, the support D, which may be a spoked wheel or a circular plate or disk, being prevented from revolving about the bolt *b''* by a notch cut in its front edge, which engages with the upper end of the fixed raceway *d*, as shown in Fig. 11.

The cylinder E has formed upon its periphery a series of longitudinal grooves, *e'*, extending from the top to the bottom thereof, and of a cross-section corresponding in size and shape to the T-shaped groove formed in the raceway *d*. The cylinder E has formed in its lower end as many detent-holes *f* as there are grooves *e'* upon its periphery, with which holes the locking-bolt *f'* engages to lock the cylinder in position, with one of the grooves *e'* in line with the groove in the raceway *d*, said bolt *f'* being forced into said hole by the spring *g*, inclosed in the socket *g'*, secured to or formed upon the disk or rim D, as shown. The raceway *d* is secured in a fixed position to the arms *b'* *b''* by the screws *h* *h*, and serves as a cap to the bearings in said arms, in which the rectangular plunger *e* reciprocates. The upper end of the plunger *e* is pivoted to the forked free end of the lever F, pivoted by its other end to the arm *b''*, and having pivoted to the middle of its length the upper end of the rod G, the lower end of which is pivoted to the treadle B, as shown in Figs. 1, 2, and 12.

H is a spiral spring, which surrounds the rod G within the tubular portion of the frame C, between the plate H', resting upon the upper end of the column, and the adjustable collar *i*, fitted to the threaded upper portion of the rod G, but within the chamber of the frame

C, said spring serving to move the treadle B, rod G, lever F, and the plunger *e* upward when the foot of the operator is removed from the treadle B. The threaded upper portion of the rod G is also provided with the threaded collar *j* and check-nut *j'*, above the tubular column of the frame C, to serve as a stop to limit the downward movement of the treadle B, rod G, lever F, and plunger *e* when the operator places his foot upon the treadle B to set or attach a button. The plunger *e* has secured to its front side and at its lower end the steel driver *e'*, as shown in Figs. 5 and 7. A four-sided frame, I, surrounds and incloses the plunger *e*, driver *e'*, the front portions of the arms *b'* and *b''*, and the front end of the lever F, and is suspended from the pin *i'*, which connects the plunger *e* to the lever F, which pin projects at each end beyond the lever F into slots *k*, formed in the frame I, near its upper end, for the purpose of such suspension, all as shown in Figs. 1, 2, and 7. The frame I has set in opposite sides thereof, just above the slots *k*, pins *l*, upon which the front ends of the springs *m* act to press said frame I downward, so as to keep the upper ends of the slots *k* in contact with the pin *i'* until the downward movement of the frame I is arrested by its lower end coming in contact with the anvil *n*, set in the arm or support *b*.

In the lower cross-bar of the frame I is formed a T-shaped groove, *n'*, extending from its upper to its lower side, the sides of the widest portion of which are each formed of two perpendicular lines connected by a curved line, as shown in Fig. 7. When the plunger is in its uppermost position, with the lower end of the driver *e'* slightly above the lower end of the raceway *d*, the upper side of the lower bar of the frame I is in contact with the raceway, and the groove *n'* in said bar coincides with and forms an extension of the groove in said raceway, as shown in Fig. 5.

The frame I has formed in one side thereof, near its lower end, a curved slot, *o*, into which the anti-friction roll *o'*, mounted upon a stud set in the side of the arm *b'*, projects, and upon the cam-shaped edges of which said roll acts as said frame is moved up and down to move the lower end of said frame laterally, so that when the lower end of said frame comes into contact with the anvil *n*, or the work resting thereon, the widest part of the groove *n'* in the lower bar of said frame I will be directly beneath and in line with the driver *e'*, so that as the driver continues to move downward it will pass down the groove *n'* and drive the button-fastening staple through the material and turn its ends inward upon the under side of the material. The lips which form the front wall of the widest portion of the raceway-groove, and also the sides of the narrower groove or slit in which the eyes of the button move, are formed by the two removable plates *p* and *p'*, secured to the main casting of the raceway by the screws *q q*, which plates are provided with the ears *r* and *r'*, which project outward there-

from, as shown. The ears *r* and *r'* have pivoted thereto the elbow-levers *r<sup>2</sup>* and *r<sup>3</sup>*, respectively, one arm of each of which is directly in front of the raceway-groove, and has its end curved inward toward said raceway, so that when not forcibly retracted its end will come in contact with the plates *p* and *p'* and arrest the downward movement of the buttons and their attached staples. Each of the levers *r<sup>2</sup>* and *r<sup>3</sup>* is provided with a third arm, to the end of which is connected one end of the spiral spring *s*, the tension of which tends to hold the curved stop-arms of said levers in contact with the plates *p* and *p'*.

The frame I has set in its left-hand side, near its lower end, the pin *s'*, which, when the frame is moved upward, comes in contact with an arm of the lever *r<sup>2</sup>*, and raises it so as to retract the curved stop-arm of said lever from beneath the button in the raceway between said curved stop-arm and the curved stop-arm of the lever *r<sup>3</sup>*, when said button will drop into the groove formed in the lower cross-bar of the frame I, where its downward movement is arrested by the prongs of the staple coming in contact with the contracted side walls of the wider part of the groove *n'* of the raceway, and by which it is conveyed into a position with said staple beneath the driver preparatory to being driven into and clinched to the material resting upon the anvil, when the frame I and the plunger *e* descend. When the frame I descends, the pin *s'* moves away from the lever *r<sup>2</sup>*, and the tension of the spring *s* causes the stop-arm of said lever to come into contact, with the plates *p* and *p'* in position to arrest the downward movement of the column of buttons, when the stop-arm of the lever *r<sup>3</sup>* is retracted, which is done by the pin *s<sup>2</sup>* coming in contact with an arm thereof, which occurs soon after the lower stop arm comes in contact with the plates *p* and *p'*, as above described. The grooves in the periphery of the cylinder I are charged or filled by hand with fastening-staples with their points downward, and each passed through the eye of a button, the shank of the eye of which is in and guided by the front or narrow part of the raceway-groove while the button-heads are outside of the grooves, and the cylinder is moved intermittently by hand to bring a filled groove over the raceway when the buttons in another groove have been all discharged into the raceway.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a machine for attaching buttons, the combination of a stationary raceway for guiding the staples and their connected buttons to the setting-tools, and a cylinder having a series of longitudinal grooves extending from end to end thereof, and each constructed to be charged with a series of staples and their connected buttons, said cylinder being arranged and adapted to be intermittently revolved to bring said grooves successively into line with said stationary raceway.

2. In a machine for attaching buttons, the

combination of a fixed raceway arranged to guide the staples and their connected buttons, a reciprocating driver or setting-plunger arranged parallel with and in close proximity to  
 5 said raceway, and with its setting end above the delivery end of the raceway, an anvil or clinching-die located beneath and in line with said setting-plunger, but removed therefrom, a receiver suspended from and reciprocated  
 10 by a pin set in said setting-plunger and provided with a cam-slot, and a fixed pin to engage with said cam-slot, whereby said receiver may be moved obliquely from a position in contact beneath and in line with the fixed  
 15 raceway to a position in contact with the anvil or the work resting thereon, and directly beneath and in line with the setting-plunger, and returned to its former position by the reciprocation of said plunger.

20 3. In a machine for attaching buttons, the combination of a staple-raceway for guiding the staples, with their connected buttons, to the setting-tools, two independent stop-levers for separating the lower button from the remaining buttons in the raceway, and a reciprocating frame provided with two pins, constructed and arranged so that one pin shall retract one stop-lever when said frame moves upward and the other pin shall retract the  
 30 other stop-lever when the frame moves downward.

4. The combination of a fixed staple-raceway, a revoluble cylinder provided upon its exterior with a series of longitudinal grooves  
 35 constructed and arranged to receive a number of staples with their points downward, and with buttons attached, and a locking device for securing said cylinder in position with either of said grooves in line with the fixed raceway,  
 40 substantially as described.

5. The combination, in a button-attaching machine, of a revoluble cylinder provided

with a series of longitudinal grooves upon its exterior, each constructed and adapted to receive a number of staples with their points  
 45 downward, and with buttons attached, a fixed or non-revoluble base disk or rim constructed to support said cylinder and cover or close the lower end of all of said grooves but one, a locking device for securing said cylinder in  
 50 any one of as many positions as there are grooves in its periphery, and a fixed raceway arranged beneath said cylinder and in line with the staple-containing groove not covered by the base disk or rim, substantially as described.  
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6. The combination of the fixed staple-raceway *d*, the driver-plunger *e e'*, the frame *I*, having at its lower end the receiver *n'*, and provided at or near its upper end with the  
 60 straight slots *k k*, and near its lower end with the curved or cam slot *o*, the roll *o'*, mounted upon a fixed stud, the anvil *n*, located beneath and in line with the driver, the vibrating lever *F*, the pin *i'*, extending into the slots *k k*,  
 65 and the spring *m*, constructed and arranged to act upon the frame *I* to press it downward.

7. The combination of a fixed staple-guiding raceway, a reciprocating driver, a vibratory lever for operating said driver, the frame  
 70 *I*, suspended from and operated by said lever, the pins *s'* and *s''*, set in said frame, the levers *r''* and *r'''*, and the spring *s*, all constructed, arranged, and adapted to operate substantially as and for the purposes described.  
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In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 8th day of February, A. D. 1886.

EUGENE H. TAYLOR.

Witnesses:

N. C. LOMBARD,  
 WALTER E. LOMBARD.