

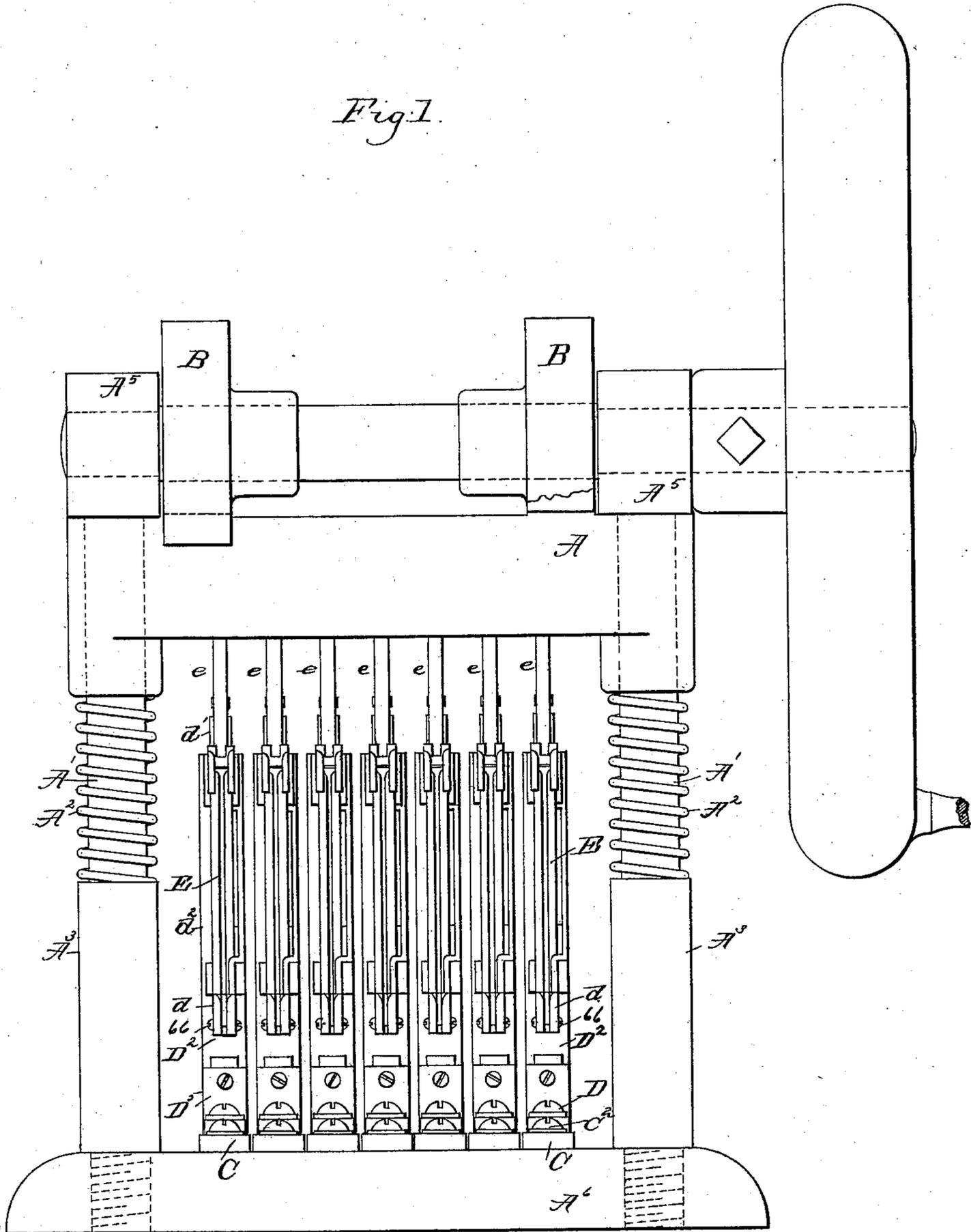
E. O. ELY.

BUTTON FASTENING ATTACHMENT.

No. 365,299.

Patented June 21, 1887.

Fig. 1.



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UNITED STATES PATENT OFFICE.

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BUTTON-FASTENING ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 365,299, dated June 21, 1887.

Application filed March 18, 1885. Serial No. 159,273. (No model.)

To all whom it may concern:

Be it known that I, EDWARD O. ELY, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Button-Fastening Attachments, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Button-setting machines and implements as now made, as far as I am aware, are capable of setting but one button at a time, the material to which the buttons are attached or the implement being moved after fixing each button. These machines and implements are quite extensively used in the manufacture of boots and shoes wherein from six to thirteen buttons are employed on each boot or shoe, the said buttons being set in a curved line. Setting buttons successively one after the other requires quite a little time, and to avoid this waste of time I have devised a machine wherein two or more or all the buttons used on a boot or shoe may be set at one and the same operation, and in a straight or curved line, the parts for setting each button being made adjustable, one with relation to the other, in a horizontal plane, so as to place the buttons in the desired curved line, and so, also, as to place the buttons at the proper distance apart, the devices employed to hold the buttons in place on the material being metal fasteners, which are driven into the material and clinched.

The particular setting mechanism herein shown for each button is substantially as in United States Patent No. 312,987, granted to me February 24, 1885, and the fastening to be used is a staple.

My invention consists, essentially, in an organized button-setting machine containing side by side two or more independent drivers and co-operating anvils, whereby two or more buttons may be attached at one and the same operation or in the same row; also, in the organization in one machine of two or more separate button-setting drivers and anvils, and chutes for the fasteners, each driver and anvil being made adjustable with relation to the other, to thereby enable the buttons to be set in the desired line, curved or otherwise, and at the desired distance apart, as will be hereinafter described, and pointed out in the claims.

Figure 1 in front elevation represents a button setting machine embodying my invention. Fig. 2 is a vertical section of Fig. 1 in the line xx . Fig. 3 is a horizontal section in the line $x'x'$ of Fig. 2. Fig. 4 shows a fastener and connected button, such as I prefer to employ. Fig. 5 shows the anvil in detail; Fig. 6, the washer to be placed thereon, and Fig. 7 a piece of material having the fastener driven only through the washer and clinched into the same.

In the present instance of my invention I employ a cross-head, A, the ends of which embrace and slide on guide rods $A' A'$, extended down through spiral springs $A^2 A^2$, and through sleeves $A^3 A^3$, and screwed into the bed A^6 . The upper ends of the guide-rods have attached bearings A^5 , and the springs A^2 act normally to keep the cross-head elevated to be struck by the cams or projections B on the rotating shaft B' , mounted in the said bearings A^5 .

The drivers e are substantially as in my said patent, their lower ends being suitably shaped to act upon and drive the fasteners to be employed.

The bed-plate A^6 has mounted upon it a series of plates, C, each pivoted or connected at one end to the said bed-plate by a screw-bolt, C' , the other end of the said plate being adjustably held in position on the said bed-plate by means of bolts C^2 , which enter nuts C^3 , placed in a slot, C^4 , of the bed-plate, so that by loosening the said bolts C^2 the said plates may be more or less separated one from the other, the said plates, as herein shown, moving in the arc of a circle; but instead of pivoting the said plates C by the screw or bolt C' , bolts and nuts like those marked C^2 and C^3 may be used. These plates C have mounted adjustably upon them, by the screw D in slots D' , the heads D^2 , having proper guides or bearings for the reception of the shanks of the carriers or devices which receive from the chute E the fasteners s , staples, which I prefer to use, the said fasteners having each a button, b , suspended from it, the shank of the button moving in a slot at the under side of the staple-chute, as shown in Fig. 2. Each shank d' has attached to its lower end, by screws 66, a guide, d , slotted at its front side, as shown at Figs. 1 and 2, for the passage of the button shank or eye as the fastener is driven by the driver e . The shank and its attached slotted

guide form a carrier, and are substantially the same as in my said patent, and the fastener is delivered into the throat of the carrier from the chute in substantially the same manner.

5 The detent M and let-off device L, and the projection 38 to operate them in succession to permit the fasteners and connected buttons to pass them one at a time, as needed, are substantially as in United States application Serial No. 156,835, and are not herein claimed. 10 Herein the projection 38 is shown as connected with a screw or stud, 28, of the driver *e*; but it may be attached to an ear extended from the shank *d'* to the front side of the driver *e*; 15 or a long bar to support the several projections 38 needed, one for each chute, may be attached to the cross-head. The shank *d'* of the carrier is slotted at 2 and bored at its upper end. (See Fig. 2.) The slot 2 permits the 20 passage through it of the pin 3, attached to the rear side of the driver *e*, the said pin having connected with it the lower end of the spring 4, attached at its upper end to a stud, 5, or to other fixed part of the machine. The 25 pin 3 is of a diameter to substantially fill the slot 2, and the spring 4 normally acts to lift the driver and keep its upper end against the under side of the cross-head.

30 The hole in the top of the shank of the carrier receives in it a spiral spring, 6, the said spring receiving within it a headed pin, 7, the spring normally acting to keep the head of the pin elevated, as in Fig. 2, and at a point a little distance below the upper end of the 35 driver when the latter is fully elevated by the spring 4, the guide *d* then resting against the head *D*², as in Fig. 2. The head *D*² has a foot, *D*⁵, in which is adjustably held an anvil, H, composed of steel. The anvil at its upper side 40 is shaped or made to receive and hold a thin metallic washer, *w*, through which the fastener is made to pass after passing through the leather or other usual material, *w'*, the prongs of the fastener being turned inward or toward 45 each other and upward by entering, preferably, an annular groove at the upper side of the steel anvil, the ends of the said prongs as they are turned backward and upward again entering the metal washer, as in Fig. 7. A fastener, *s*, 50 having been placed in the carrier, and being suspended therein with its connected button, as shown in Fig. 2, by the spring 42, which is not herein claimed, the cam B will commence to operate and depress the cross-head A, and 55 the latter will push down the series of drivers *e*, and by the time that the under side of the cross-head reaches the head of the pin 7 the lower end of the driver will have arrived in contact with the upper end of the fastener, 60 ready to act upon and drive the latter out of the guide; but this will not at that time happen, for as soon as the cross-head meets the pin 7 the latter is depressed, and, acting on the spring 6, the latter causes the shank *d'* to 65 descend at the same speed as and in unison with the driver *e* until the lower end of the carrier meets the material in which the fast-

ener is to be driven, when, the cross-head A yet acting on the pin 7, and the carrier being arrested, the spring 6 will be compressed. 70 While the carrier is so arrested and the spring 6 is being compressed, the continued descent of the driver *e*, with its lower end in contact with the head of the fastener, drives the latter out from the carrier and into and through 75 the material on the anvil H, and, if the thin washer *w* is used, through the said washer, as in Fig. 7, meeting the anvil under it, when the latter will cause the prongs of the fastener to be deflected inward and upward and again into 80 and through the washer, as shown in said figure. As the driver descends, the ear holding the projection 38 operates the detent M, and thereafter the said projection 38 operates the 85 let-off L, so that a fastener and connected button is let fall against the front side of the driver while the latter is acting to drive a 90 staple from the guide of the carrier. The upper of the boot or shoe to which the buttons are to be applied, or the piece of leather to be used in the boot or shoe to hold the but- 95 tons, is laid upon the series of anvils, the heads having been adjusted to place the said anvils and the drivers at the proper distances apart, and also in the desired relative positions, ac- 95 cording to whether the buttons are to be set in a curved or in a straight line, and the cross-head will be caused to descend, thus causing the drivers to act upon the upper ends of and 100 drive all the fasteners at one operation.

I have shown all the drivers and carriers as operated by the same shaft through cams thereon and a single cross-head; but it is obvious that other usual devices might be employed to cause the operation of the drivers 105 and carriers at the same time or in quick succession, so as to set several buttons by one motion and at substantially the same time and operation—as, for instance, the cross-head might be divided in pieces, and a series of 110 cams or eccentrics on the shaft B' might actuate each its own piece of the cross-head and one driver. So I do not desire to limit my invention to the exact devices shown by which 115 to actuate the series of drivers, as my invention is, I conceive, broader than that; and I desire my invention to include any modifications wherein several buttons may be attached to a boot or shoe or other article at one oper- 120 ation or at one placing of the article in position in the machine, thus avoiding very much waste of time and securing greater accuracy in placing the buttons in proper position than can be gained by manipulating the material or the tool and setting one button at a time, 125 as now commonly practiced.

In another application, Serial No. 164,272, I have shown and claimed the said washer *w* when combined with a staple.

I claim—

1. In an organized button-setting machine, two or more adjustable heads arranged side by side, combined with and containing each a driver to drive a fastener and means to oper- 130

ate the same, and an anvil on which to clinch the end of the fastener, substantially as described.

5 2. In an organized button-setting machine, a bed-plate and two or more heads made adjustable thereon both horizontally and laterally, combined with a driver and means to operate the same, and an anvil for each head, to operate substantially as described.

10 3. The bed-plate and two or more heads made adjustable thereon both horizontally and laterally, combined with a driver and an anvil, and a chute to guide the fasteners, one driver, anvil, and chute for each head, substantially
15 as described.

4. In a button-setting machine, the anvil provided at its upper side with a recess or chamber to receive a washer, combined with a driver to drive a fastener through the material and the said washer, substantially as described. 20

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

EDWARD O. ELY.

Witnesses:

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F. CUTTER.