

No. 623,939.

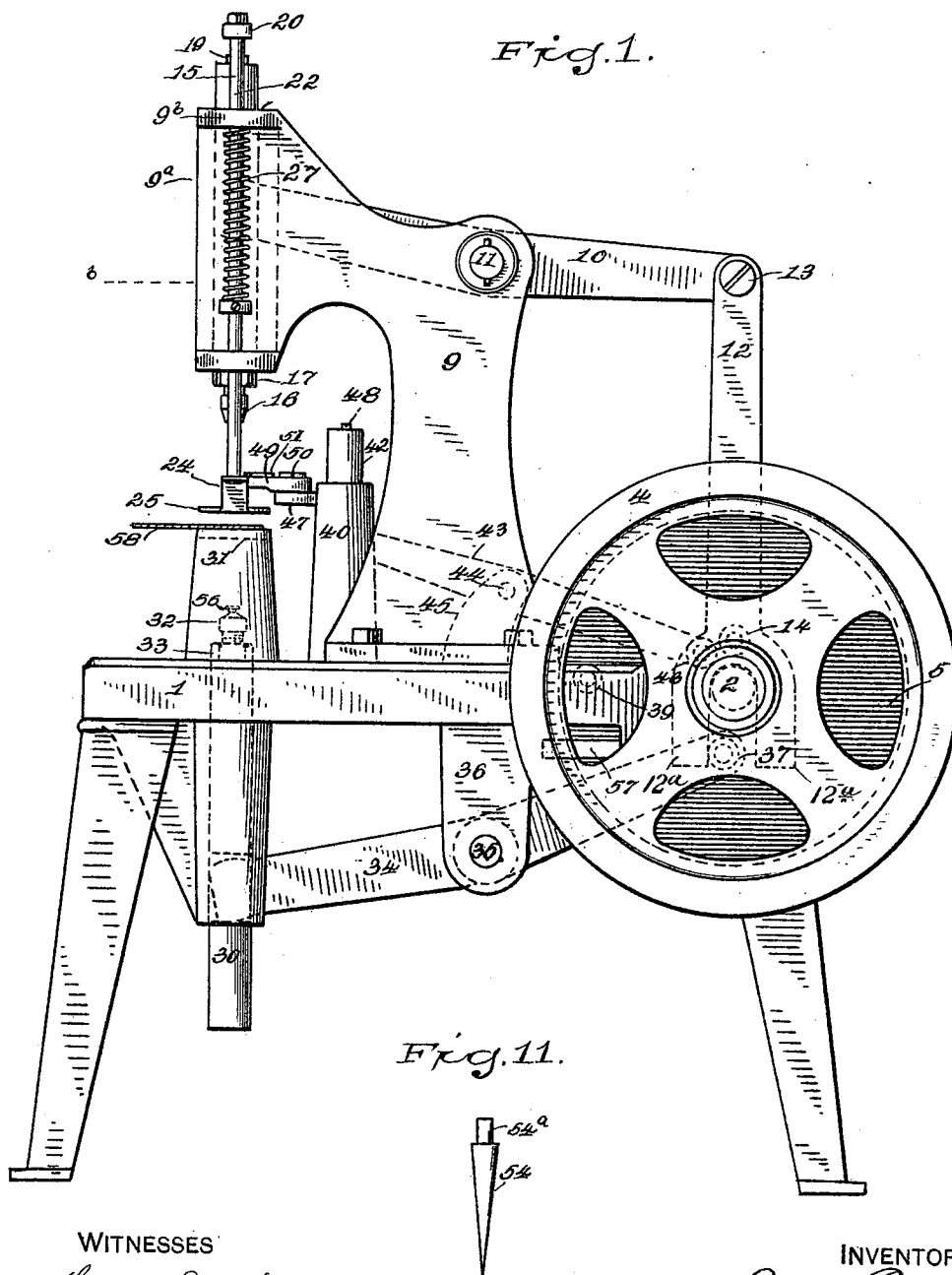
Patented Apr. 25, 1899.

A. BERG.
BUTTON ATTACHING MACHINE

(Application filed May 4, 1898.)

(No Model.)

3 Sheets—Sheet 1.



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Fig. 2.

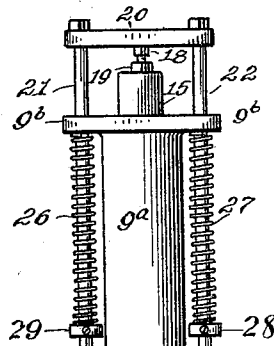


Fig. 12.

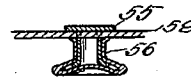


Fig. 3.

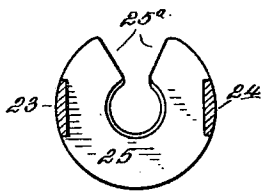


Fig. 10.



Fig. 9.

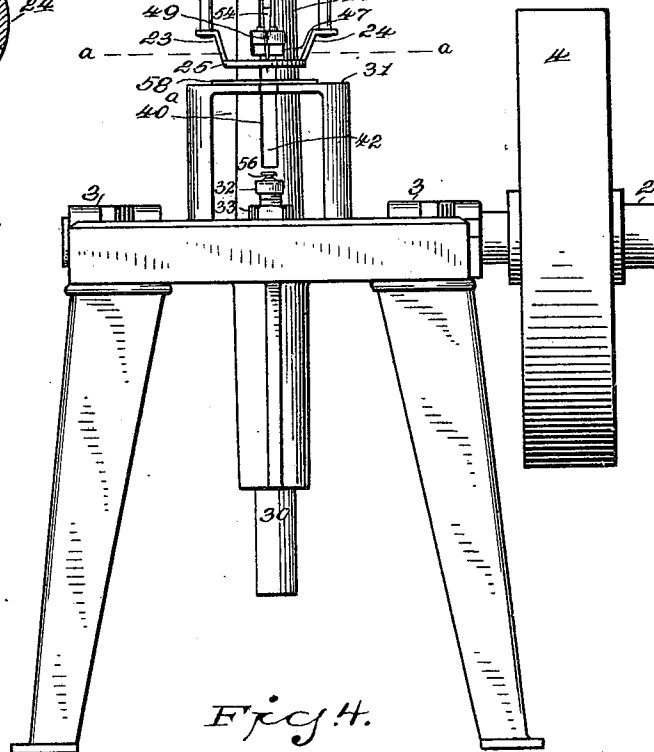
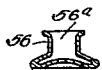
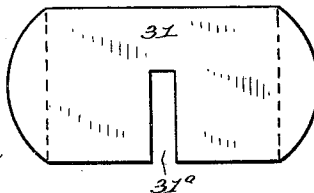


Fig. 4.

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Fig. 5.

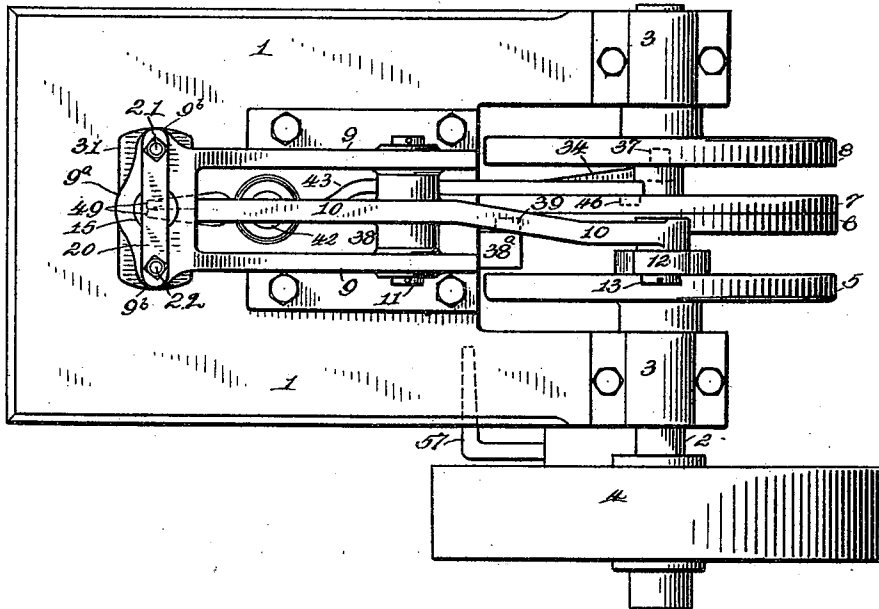
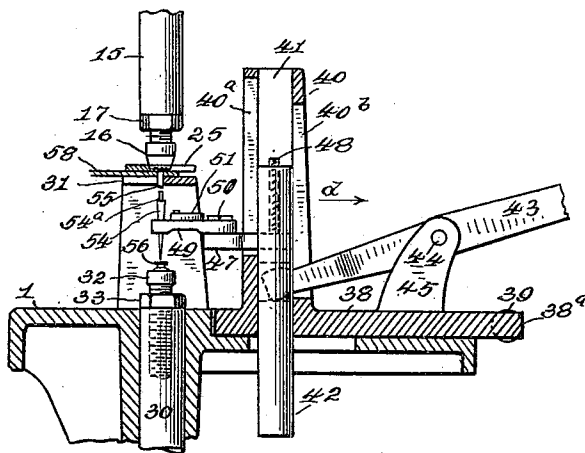


Fig. 6.



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Fig. 7.

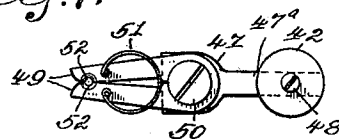
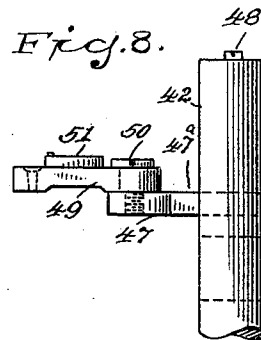


Fig. 8.



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UNITED STATES PATENT OFFICE.

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COULTER & MCKENZIE MACHINE COMPANY, OF SAME PLACE.

BUTTON-ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 623,939, dated April 25, 1899.

Application filed May 4, 1898. Serial No. 679,724. (No model.)

To all whom it may concern:

Be it known that I, ANDREW BERG, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Button-Attaching Machines, of which the following is a specification.

My invention relates to button-attaching machines; and it consists in certain details of construction to be more fully set forth in the following specification and such features believed to be new and novel particularly pointed out in the claims.

To enable others to understand my said invention, reference is had to the accompanying drawings, in which—

Figure 1 represents a side elevation of the machine with all the operating elements in their normal positions. Fig. 2 is a front elevation with the cams operating the movable parts connected with the button-attaching devices removed. Fig. 3 is a detail upper plan view of the presser-foot and broken view of its arms through line *a* of Fig. 1. Fig. 4 is a detail upper plan view of the work-supporting table. Fig. 5 is an upper plan view of the machine. Fig. 6 is a central sectional view of the machine-bed, work-supporting table, presser-foot, and the movable slide for supporting the mechanism of the cloth-piercing-tool carrier, showing such carrier below the work-supporting table, broken view of the operating-lever therefor, and broken view of the vertically-operating anvil-carrying plungers. Fig. 7 is a detail upper plan view of the spring-actuated fingers of the cloth-piercing-tool carrier and vertically-operating plunger of said cloth-piercing device. Fig. 8 is a detail side elevation of the said spring-fingers and supporting-arm to which they are pivotally connected and a broken view of the vertically-operating plunger therefor. Fig. 9 is a detail sectional view of one of the button-sections. Fig. 10 is a detail view of the other of said button-sections. Fig. 11 is a detail view of the cloth-piercing tool. Fig. 12 shows the two sections of the button united to a section of cloth.

Its construction and operation are as follows:

1 represents the bed of the machine.

2 is the driving-shaft, mounted in the boxes 3 of said bed. This shaft carries the driving-pulley 4 and the cams 5, 6, 7, and 8 for operating the movable parts of the machine presently to be more fully described.

9, Figs. 1 and 5, is a standard attached to the said bed and carrying the lever 10, pivotally supported on the pin 11 of said standard.

12 is a vertical connecting-rod pivotally supported to the horizontal lever 10 by the screw 13. The lower end of the connecting-rod 12 carries (see Fig. 1) the roll 14, which roll operates in an irregular-shaped cam-groove (not shown) in the vertical face of the cam-plate 5. The lower end of the connecting-rod 12 is provided with the forked end 12^a, as shown at Fig. 1, which forked end, embracing the shaft 2, will maintain said connecting-rod in a perpendicular position, and thus prevent the lateral displacement of the roll 14.

The forward end of the horizontal lever 10 pivotally engages with a slot in the vertically-operating plunger 15, mounted in the head 9^a of the standard 9.

16 is the upper riveting-anvil, whose threaded shank is screwed into the lower end of the said plunger, and it is secured in any of its adjusted positions by means of the jam-nut 17. In the upper end of this plunger is the adjusting-screw 18, carrying the jam-nut 19. Said adjusting-screw is adapted to engage with the cross-bar 20 of the presser-foot mechanism for the purpose presently to be more fully explained.

21 and 22 are the presser-foot guide-rods, whose upper ends are secured to the cross-bar 20, while their lower ends are secured to the arms 23 and 24 of the presser-foot 25. These rods operate freely in the ears 9^b and 9^c of the head 9^a.

26 and 27 are coiled springs, one on each rod, such springs being placed between the collars 28 and 29 of said rods and the ears 9^b of the said head.

30 is a plunger operating from beneath the table 31 and carrying the adjustable anvil 32 and its jam-nut 33, similar to the upper plunger, just described.

34, Figs. 1 and 5, is a lever pivotally mounted on the pin 35 of the ears 36, projecting below

the bed of the machine. The forward end of this lever is pivotally connected with the plunger 30, while its opposite end carries the roll 37 to engage with a cam-groove (not shown) in the face of the cam-plate 8.

38 (see more particularly Fig. 6) is a slide having a projecting finger 38^a, carrying the roll 39, which roll is adapted to engage a cam-groove (not shown) in the vertical face of the cam-plate 6, Fig. 5.

40 is a projection rising from the slide 38 and integral therewith, which projection is provided with the central bore 41 for the vertically-operating plunger 42 to operate in.

43 is a lever pivotally mounted on the pin 44 of the ears 45 of said slide, which lever is pivotally connected with the plunger 42 at its forward end, while the rear end carries the roll 46, adapted to engage with a cam-groove (not shown) in the vertical face of the cam-plate 7, Fig. 5.

47, Figs. 1, 6, 7, and 8, is an arm having a reduced portion or shank adapted to enter a hole formed transversely through the plunger 42, and said arm is secured in any of its laterally-adjusted positions by means of the set-screw 48 in the upper end of said plunger.

49 is a pair of spring-controlled fingers pivotally mounted upon the outer end of this arm by means of the screw 50, and 51 is a U-shaped spring adapted to normally close said fingers. Near the outer end and on the inner vertical face of each of said fingers are the semicircular grooves 52, adapted to hold the cloth-piercing tool 54. (See also full-size view of said tool at Fig. 11.)

40^a and 40^b, Fig. 6, are vertical slots in the projection 40 to allow of vertical movement of the arm 47 and lever 43.

The cloth-piercing tool is shown at Fig. 11, and it consists of the tapered body portion 54, running to a sharp point, and the straight reduced portion or shank 54^a.

55, Fig. 10, is the base of the button, and it is provided with the hollow recess 55^a, adapted to be seated on the shank 54^a of the cloth-piercing tool. (Shown at Fig. 11.)

56, Fig. 9, is the button-section having the recess 56^a, adapted to receive the body portion of the base 55, and such recess is enlarged at the bottom to enable the end of the body portion of said base to spread when the necessary pressure is applied so as to unite the two sections, as shown at Fig. 12.

57, Figs. 1 and 5, is a trip-lever connecting with the clutch mechanism of the press (not shown) and is operated by trip mechanism (not shown) below the bed, and as these are well-known devices no further reference to them need be made.

The operation of the machine is as follows: All of its parts being in their normal positions, as shown at Figs. 1 and 2—viz., the presser-foot 25 being raised above the table 31 and held in suspension by means of the set-screw

18 of the plunger 15 engaging with the cross-bar 20, the fingers 49 being located between the upper anvil 16 and said presser-foot, the lower anvil 32 being at its lowest point below said table—the cloth 58, to which the buttons are to be attached, is placed on the said table. The button-section 56 is placed on top of the lower anvil 32 and the base of such button is placed on the shank of the cloth-piercing tool 54, as shown. When, therefore, the machine is started up, the plunger 15 will descend, and by so doing will release the tension on the presser-foot springs 26 and 27, which operation will permit the presser-foot 25 to drop on the cloth 58 and hold the same firmly to the table. Immediately following this movement the finger-carrying plunger 42 will descend, so as to cause the point of the cloth-piercing tool to enter the cloth just sufficient to steady it, where it will dwell for an instant until the anvil 16 rests on the top surface of the base 55 of the button, so as to hold said piercing-tool firmly in an upright position, and will dwell there until the slide 38, Fig. 6, is drawn back by its cam in the direction of arrow *d*. This backward movement of said slide will also disengage the fingers 49 from their engagement with the cloth-piercing tool, which tool will be held firmly, as before mentioned, until the plunger 42 has descended, so as to bring the said fingers below the table, wherefore the said slide is moved forward, so as to bring the semicircular recesses of said fingers on a line with said cloth-piercing tool above the table, where said fingers will remain stationary until the plunger 15 descends and forces said tool through the cloth and into the embrace of said fingers. This operation will also leave the body portion of said button-base in the opening or eyelet thus formed in the cloth, with its flange portion resting on the upper surface thereof and the upper anvil resting firmly thereagainst. While the parts thus described are in this position, the plunger 42 will descend far enough to permit the shank of the cloth-piercing tool to be disengaged from the recess of the said button-base, (see Fig. 6,) whereupon the slide 38 will again retreat, so as to carry the said eyelet-tool to the rear of the table. The way is now clear for the lower anvil, carrying the button, to ascend and, in conjunction with the upper anvil, unite the two sections firmly together, and by the time the two anvils have receded back to their normal position the upward movement of the plunger 15 will also carry the presser-foot up with it. In the meantime the fingers or cloth-piercing-tool carrier will have risen in time to be projected forward, so as to bring the cloth-piercing tool in axial line with the anvils in readiness for a repetition of the operation just described.

The opening 25^a, Fig. 3, of the presser-foot is for the purpose of allowing the cloth-piercing tool to be brought to the center of said

foot. The opening 31^a, Fig. 4, of the table is for the accommodation of the button-sections when attached.

Heretofore in automatic button-attaching machines of the character described it has in some cases been the practice to force the body portion of the lower section or base of the button through the cloth, thereby making its own eyelet or hole. This operation leaves not only a ragged hole, which hinders a good contact of the sections, but the operation will not always cut out a clean section, so that the blank cut from the cloth is liable to get lodged between the button-sections and prevent good results in riveting said sections together.

It has always been a recognized fact that an eyelet-piercing tool as above used gave the best results; but no satisfactory method has heretofore been developed whereby it could be automatically handled. In my improved construction, as above described, this has been fully accomplished.

It is quite evident that the automatic feature of the cloth-piercing carrier could be employed successfully on a machine for the same purpose but differently constructed from the one shown.

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

1. The combination, in a button-attaching machine, with a cloth-piercing tool, of an automatically-operating carrier for said cloth-piercing tool, said carrier receiving said tool from one side of a garment and returning it to the opposite side, for the purpose set forth.

2. In a button-attaching machine, the combination, with mechanism for uniting the two sections of a button to a garment, of a cloth-piercing tool and an automatically-operating cloth-piercing-tool carrier, said carrier adapted to receive said tool from one side of the garment and return it to the opposite side, for the purpose set forth.

3. In a button-attaching machine with a cloth-piercing tool, the combination, with mechanism for uniting the two sections of a button to a garment, of an automatically-operating carrier for said tool, said carrier adapted to normally hold the said tool above the garment, means whereby said carrier is released from said tool and carried below the garment to reengage with such tool and return it to its original or normal position, for the purpose set forth.

4. In a button-attaching machine with a cloth-piercing tool, the combination with

members for uniting the two sections of a button to a garment, of an automatically-operating carrier for said tool, said tool adapted to carry one of the button-sections, a work-supporting table, said carrier adapted to hold said tool above the table, means for releasing said carrier and causing the same to disappear below the table and reengage with said tool and return it to its original or normal elevated position, for the purpose set forth.

5. In a button-attaching machine with a cloth-piercing tool, the combination, substantially as shown, of two automatically-operating members carrying riveting or heading members for uniting the two sections of a button to a garment, a work-supporting table a spring-actuated presser-foot, means, substantially as shown, for operating said devices, an automatically-operating cloth-piercing-tool carrier adapted to hold said tool above said bed until the point of said tool is anchored in the garment and hold it there temporarily until the said carrier is released and caused to disappear below said bed to receive said tool after it has passed through the garment, for the purpose set forth.

6. In a button-attaching machine with a cloth-piercing tool, the combination, of automatically-operating members adapted to unite the two sections of a button to a garment, of an automatically-operating cloth-piercing-tool carrier, consisting of spring-controlled fingers connected to a vertically-operating slide or plunger, said plunger operating in a horizontally-operating member, for the purpose set forth.

7. The combination, in a machine for attaching buttons to garments, of the two anvil-carrying plungers operating in the same line, means for operating said plungers, a spring-controlled presser-foot, a work-supporting table, a cloth-piercing tool and an automatically-operating carrier therefor, means whereby said carrier is released from said tool and carried below said table and adapted thereby to receive said tool after passing through the garment and return it to its normal position above said table, for the purpose set forth.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 23d day of April, A. D. 1898.

ANDREW BERG. [L. S.]

Witnesses:

R. J. WITTERWELL,
FRANK L. COGILL.