

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CLOTH-CUTTING ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 123,242, dated January 30, 1872.

To all whom it may concern:

Be it known that I, JACOB L. COLES, of the city of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Cutting Apparatus for Attachment to Sewing-Machines and a novel method of arranging, connecting, and operating the same, in conjunction with sewing mechanism and an apparatus for describing oval or elliptical forms, the whole being especially intended for the purpose of cutting oval tips and stitching the same to the linings of hats; and I do hereby declare that the following specification, taken in connection with the drawing furnished and forming a part thereof, is a true and clear description of the same.

Referring to the drawing, Figure 1 represents my cutting apparatus in perspective. Fig. 2 represents the same in end view. Fig. 3 represents the same attached to a sewing-machine, combined with driving mechanism and apparatus for describing oval or elliptical forms.

In all the figures, A represents the base-plate. It has at each end a bearing fitted to receive the journals of a horizontal feed-shaft, B. When my apparatus is attached to a sewing-machine the top of the table is cut away sufficiently to receive the downward-projecting portion of the apparatus, which is secured to the table by the means of screws or bolts. C represents the arm-plate. It is provided at each end with bearings, to which a horizontal driving-shaft, D, is fitted. The arm-plate is secured to the base-plate at one end by two screw-bolts, which pass through eyes in the arm-plate into tapped holes in the base-plate. The eyes in the arm-plate are considerably larger than the bolts, so that when the bolts are loosened the arm-plate may be adjusted laterally, and then be secured in any desired position. Projecting upward from the base-plate and downward from the arm-plate, at a point about midway between the two ends, are two corresponding lugs or ears, *a* and *b*, through which, at right angles thereto, an adjusting-screw, *c*, is fitted, with a set-nut thereon interposed between the lugs, for the purpose of securing the adjusting-screw in any desired position after adjustment. The driving-shaft D is provided at one end with a grooved pulley, E, for receiving a belt from a

main driving-pulley below the table, more fully hereafter described. Adjacent to the pulley E on the driving-shaft is a small gear, which engages with a larger gear which is secured upon the end of the feed-shaft B. F represents a cam-faced wheel which is secured to the outer end of the driving-shaft D. Its face is provided with a continuous groove, *d*, in the form of a round-cornered square. G and G' represent the blades of cutting-shears. The blade G' is horizontal and stationary, and is secured to the outer end of the base-plate. The blade G is pivoted to the stationary blade at one end by a large pintle, *e*, which moves with the blade. A pin, *f*, projects outward from the face of the pintle, and a flat spring, *g*, is arranged to engage therewith, in such a manner that its tendency is to constantly hold the outer end of the blade G in an elevated position. This spring is only of service when the groove and the friction-roller become so worn as to cause intervening space, for until then the blade is under the full control of the cam-groove. The blade G has projecting from its rear side a stud provided with a friction-roller, which is fitted to fill the groove *d* in the cam-wheel F in such a manner that every rotation of the wheel will cause the pivoted shear-blade G to perform four full distinct cutting operations. As it is essential that the cutting-edges be always in close relation to each other, I have provided a ready means of adjustment in the lugs *a* and *b* and the adjusting-screw *c*. The set-nut between the lugs is loosened, and also the bolts which connect the arm-plate to the base-plate, and then by turning the adjusting-screw the arm-plate can be slightly thrown out of line at the outer end, which will cause the edges of the shears to bear closely against each other. H represents a work-plate which is attached to the stationary blade. Its upper surface is on a horizontal line with the edge of the shears and the work-plate of the sewing-machine with which it is used, while the line of the shears should be parallel with the line of the feed-motion in the sewing-machine. To the outer end of the feed-shaft a feed-wheel, K, is secured, which projects upward through a slot prepared for it in the platform H. The edge of this wheel is roughened so as to give it a frictional contact with the

fabric to be cut. A spring presser-foot, operating in the usual manner, and provided with a lifting-lever, is suspended over the feed-wheel from a hanger extending outward from the end of the arm-plate over the cam-wheel. A roller, I, is applied to the presser-foot in order that the fabric may be passed through without injury.

In Fig. 3 my apparatus is represented as combined in a novel manner with a sewing-machine of the Grover & Baker pattern, and with a certain apparatus for describing ovals which was patented by me August 8, 1871. It will be observed that the cutting and stitching mechanism are so placed with relation to each other and to the oval apparatus that the oval platform L can be presented first to the shears, then to the sewing-machine.

As heretofore constructed and arranged the oval platform, with a piece of tip fabric secured thereon, would be first presented to the rotary shears, operated by a hand-crank, for the purpose of cutting an oval tip; then, while still lying upon and secured to the platform, it would be presented to the sewing mechanism and united to the side lining. The labor of operating the hand-crank has always been severe upon the operative, and therefore objectionable, and it also prevents the operative from having the free use of both hands, when required, for adjusting the fabric and securing satisfactory and perfect results. The rotary shears operated by hand, as heretofore employed, in connection with oval turning mechanism, are liable to draw and twist delicate fabrics more or less out of shape, as the turning of the oval platform is wholly accomplished by the drawing action of the rotary shears.

One feature of my present improvement is the combination and arrangement of the cutting and stitching mechanism with relation to the driving mechanism so that the operative can, by the action of the foot or feet, communicate motion to the cutting and stitching mechanism alternately, and have both hands free to adjust and control the operations on top of the table.

It is, of course, essential that while the shears are in operation the sewing-machine shall not be in motion, and vice versa. I therefore have mounted upon a projecting stud a suitable auxiliary grooved balance-wheel, M, which is placed on a line with and is belted to the pulley E on the shears above. An auxiliary treadle, N, is placed adjacent to the main treadle, and connected to the pulley M by a pitman.

With this arrangement considerably more work can be accomplished than with the hand apparatus, and by having the fabric fed to the shears, as herein described, the results are more satisfactory. Rotary shears are much more expensive than the reciprocating, and require much greater skill to sharpen, as the plates are liable to spring or warp. Two or more sets of reciprocating blades can be provided for each apparatus at a small expense, and the labor of taking them out, when dull, and replacing sharper ones, is but very slight, and the apparatus need not be idle during the sharpening process.

Owing to the fact that with my apparatus the operative has two hands always at liberty to guide and control the oval turn-table, it is practicable to operate upon fabrics which are too delicate to withstand the drawing action of either the feed-motion or the rotary shears.

In cases where it is desirable to use the feed-motion on very delicate fabrics, it is advisable to employ an oval piece of paper or cloth of sufficient size to extend at all times slightly beyond the line of the feed-wheel, but not to the line of the shears, in order that the abrading action of the wheel upon the fabric may be wholly avoided, and more especially when the friction-wheel I is also employed.

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

1. The combination of blade-shears and rotary mechanism for giving to one or both of the blades a vertical reciprocating movement, with feeding mechanism for conveying the fabric continuously to and from the shears, substantially as and for the purposes specified.

2. The combination, with a sewing-machine table supporting a sewing and an oval guiding apparatus, of cutting mechanism, substantially as described, the cutting and sewing mechanism being operated by balance or fly wheels moved independently, as and for the purposes specified.

3. The combination of the reciprocating shears, the cam-wheel, driving-shaft, and adjusting-screw C, as and for the purposes specified.

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Witnesses:

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