

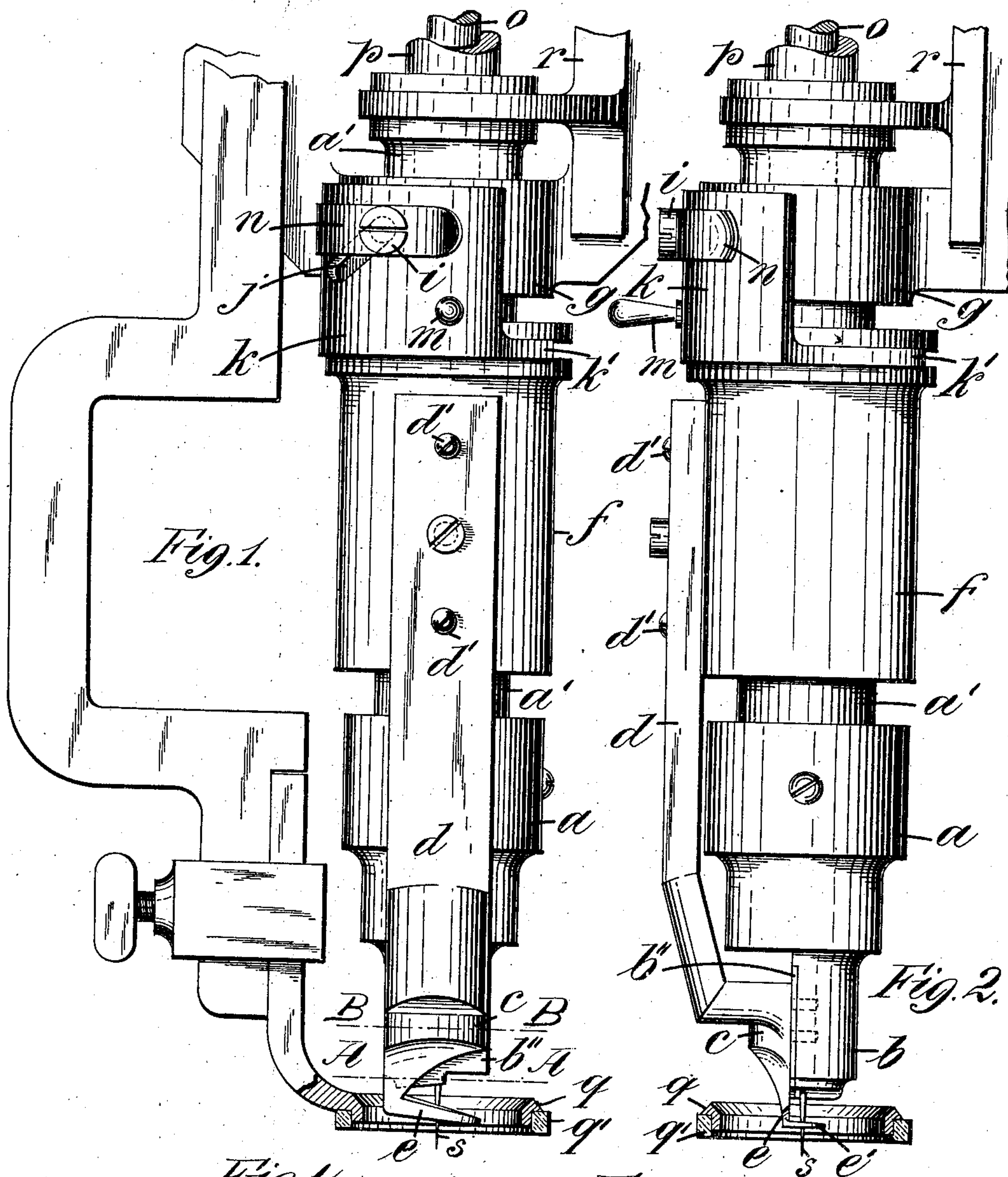
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W. BOWDEN.
TRIMMING MECHANISM FOR EMBROIDERING MACHINES.

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NO MODEL.



Witnesses

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TRIMMING MECHANISM FOR EMBROIDERING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 768,419, dated August 23, 1904.

Application filed December 1, 1902. Serial No. 133,362. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BOWDEN, a subject of the King of Great Britain and Ireland, residing at Manchester, in the county of Lancaster, England, have invented new and useful Improvements in Sewing-Machines for Embroidery and the Like, of which the following is a specification.

This invention relates to improvements in embroidery-sewing machines which are especially applicable to the machines of the well-known Bonnaz type, but which are also applicable to other sewing-machines of the same class. Its objects are to insure the applied cloth to be cut much more smoothly than at present is possible and much more closely to the line of stitches which unite the two cloths.

The characteristic feature of the present improvements is a scissors-like cutting device, together with means for operating, controlling, and adjusting that device.

The accompanying drawings illustrate the improvements as embodied in a Bonnaz embroidery-sewing machine, and it will be understood that they may be similarly embodied in other machines of the same class.

In the drawings, Figure 1 shows a side elevation; Fig. 2, a front elevation; Fig. 3, a cross-section taken along the line A A, Fig. 1; Fig. 4, a cross-section along the line B B, Fig. 1; and Figs. 5 and 6, an elevation and an inverted plan, respectively, of a modified form of nipple.

The nipple *a* is removably fixed upon the nipple-tube *a'*, which is vertically reciprocated independent of the needle-bar. The needle-bar tube and the nipple-tube are both of the usual construction and are reciprocated by the existing known devices. The lower end of the nipple, however, has a materially-modified construction, one part of it being cut away to form a vertical plane *b* as close as is found practicable with the vertical needle-bore in its center. On the nipple-tube I mount the sleeve *f*, which has a groove around its upper circumference, which is engaged by curved arms *k'* integral with the curved plate *k*, attached by a set-screw *i* and an inclined slot *j* to the bearing *g*. On the sleeve *f* there

is fixed by set-screws *d'* *d'* a carrier *d* for the lower member *e* of the cutting device, which carrier is cranked under the nipple, where it is provided with a flat part *c*, corresponding with the nipple flat *b*. The lower end of this flattened part has the lower member of the cutting device attached to it or formed from its substance. The member is formed by making a deep lateral notch in the lower part of *c*, thus leaving an inclined upper edge to the part *e*, which edge is made and kept sharp. This part is also curved, as shown by Fig. 3, *e'*, and ends in a sharp point. This curved part crosses the path of the needle *s* and prevents cloth which has been cut from falling off when angles and sharp turns are being produced in the work. Its point also facilitates the introduction of the member through the upper layer of the cloth. This is effected by causing the point *e'* to penetrate the applied cloth and then giving it a part of a turn. The upper member of the cutting device is a thin steel plate *b''* with an inclined and sharpened lower edge, the plate being removably secured upon the nipple flat *b* by pins or other equivalent devices. Because of the contact between the parts *b''* and *c* and because *b''* can slide freely upon the part *c* the angular motion of the nipple, but not its vertical motion, is communicated through the carrier *d* to the blade *e*, and it inevitably follows that the cutting parts of the blades *b* and *e* are always in close contact and that a scissors-like action results from the relative motion of the part *b*.

Below the set-pin *i* in the inclined slot *j* there is fixed in the curved plate *k*, before described, a small handle or projection *m*, whereby the said plate can be turned through a moderately wide angle. If it be so turned, the inclined slot rides up or down the set-pin *i*, and the curved plate is thereby raised or lowered, the sleeve and the connected lower member of the cutting device necessarily participating in the vertical movement. When it is desired, therefore, to raise or lower the cutting member *e*, it is necessary only to move the handle *m* through the required angle. A spring *n* is forced on the curved plate by the head of the set-pin *i* in order to produce resistance to the

movement of the plate and to prevent its accidental displacement.

As only that part of the lower end of the nipple which extends from the circumference to just beyond the needle-bore is required for fixing thereto the blade b'' , about three-fourths instead of nearly one-half of it may be cut away, as shown by Fig. 3, or, if preferred, it may be shaped as shown by Fig. 6.

Since by these improvements the cutting is effected much more closely than at present to the stitches, the raveling out of the warp and weft ends in the applied cloth edges, which produces a ragged untidy appearance, is entirely avoided. The sharp upper edge of the cutting-blade e being inclined, as shown by Fig. 1, and being between the upper applied cloth and the lower foundation-cloth, the motion of the stretched applied cloth up the edge of the blade has in itself a shearing action on the applied cloth which in some cases suffices to sever it without the aid of the other blade. In like manner if the part e be blunt or be substituted by an equivalent part which will locally lift the applied cloth the inclined sharp lower edge of the blade b will exert a shearing action, which also in some cases suffices to sever the cloth. It is to be understood, therefore, that I do not limit myself to the simultaneous use of the two cutting-blades, although in the majority of cases it is necessary or advantageous to employ both.

The parts of the machine illustrated by the drawings and not hereinbefore referred to are parts of existing machines of the Bonnaz type—that is to say, the needle-bar o , the needle-bar tube p concentric with the needle-bar, the feeder q , provided with an india-rubber ring q' , and the slide r for moving the nipple-tube a' upon and independently of the vertical motion of the needle-bar tube p . The nipple-tube a' takes part in the angular motion only of the needle-bar tube.

As hereinbefore described and as illustrated

by the drawings, the carrier and the fixed blade are made in a single piece. This is not necessary, and to avoid cost in case of breakage of the knife the latter may be constructed separately and be removably attached to the carrier in the same manner as the blade e is attached to the flat of the nipple b' .

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a sewing-machine of the class described, the combination of a needle-bar, a nipple having a flat vertical side close up to the needle-bar, a cutting-blade directly attached to the flat side of the nipple, a lower knife having a lateral extension crossing the path of the work, a carrier to which said knife is attached, means for raising and lowering the carrier and means for reciprocating the needle-bar, said knives being adapted to produce a shearing cut.

2. In a sewing-machine of the class described, the combination of a nipple-tube, a sleeve thereon having a groove formed around its upper part, a curved plate fitted and capable of manipulation on the nipple-tube bearing and having an inclined slot therethrough, a set-pin fixed on the nipple-tube bearing and extending through the inclined slot, a curved part integral with the curved plate and engaging with the circular groove on the sleeve, for the purpose of permitting angular motion and obtaining vertical movement of the sleeve, an upper cutting-blade attached to the nipple close to the needle-bore, a lower cutting-blade, a loose sleeve on the nipple-tube and a carrier by which said cutting-blade is attached to the loose sleeve.

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

WILLIAM BOWDEN.

Witnesses:

WILLIAM EDWIN HEYS,
GEORGE MOHL.