(No Model.) 4 Sheets—Sheet 1.

E. CORNELY.

CUTTING AND GRINDING DEVICE FOR SEWING OR EMBROIDERING MACHINES.

No. 418,909. Patented Jan. 7, 1890.

FIG. I.

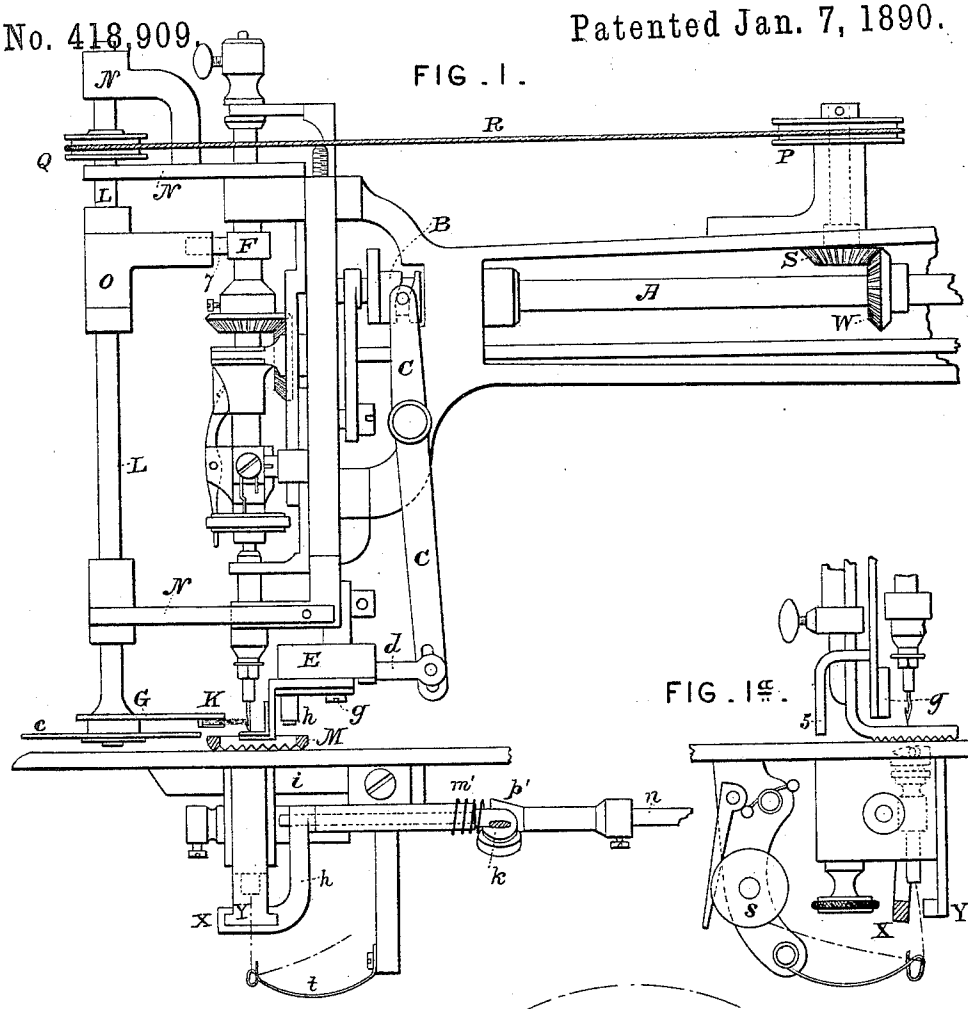


FIG. I a.

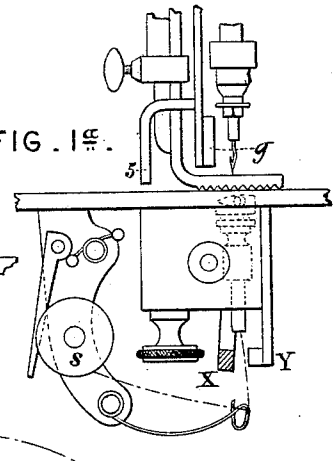


FIG. II.

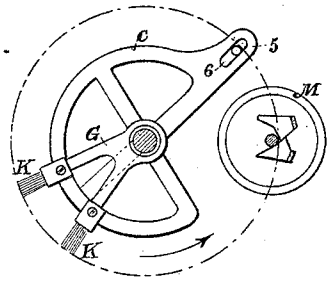
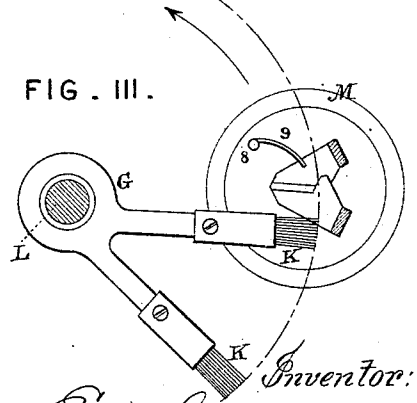


FIG. III.



Attest:
Geo. T. Snallwood.
C. J. Fredrick

Inventor:
Emile Cornely
by A. Bolk
his attorney

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 4 Sheets—Sheet 2.

E. CORNELY.

CUTTING AND GRINDING DEVICE FOR SEWING OR EMBROIDERING MACHINES.

No. 418,909. Patented Jan. 7, 1890.

FIG. IV.

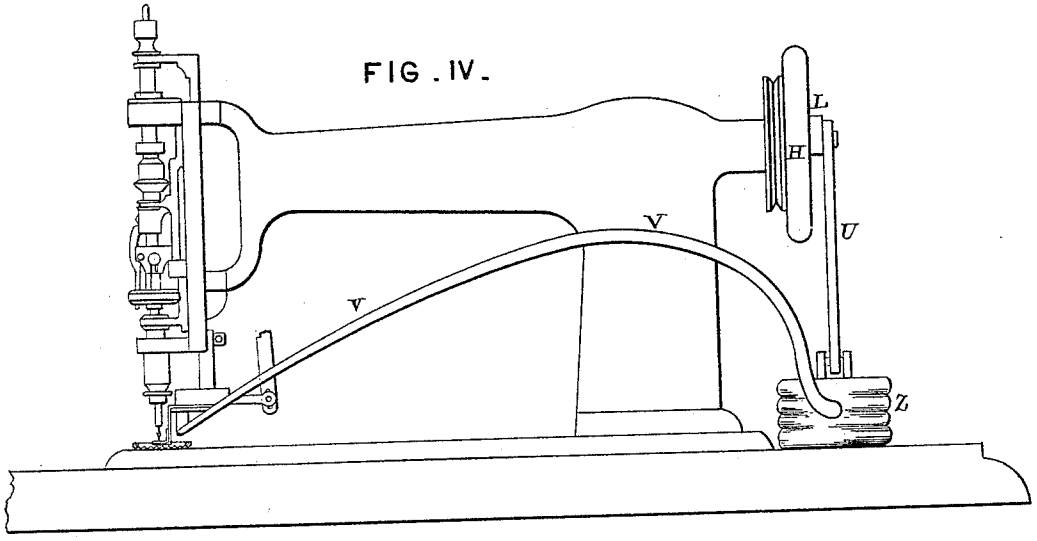
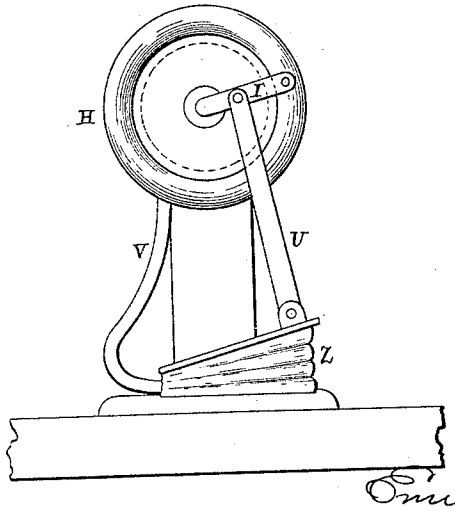


FIG. V.



Attest:
Geo. T. Smallwood.
C. J. Hedrick

Inventor:
Emile Cornely
by A. Pollok
his attorney

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 4 Sheets—Sheet 3.

E. CORNELY.

CUTTING AND GRINDING DEVICE FOR SEWING OR EMBROIDERING MACHINES.

No. 418,909. Patented Jan. 7, 1890.

FIG. VI.

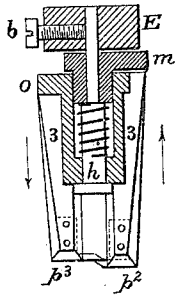


FIG. VII.

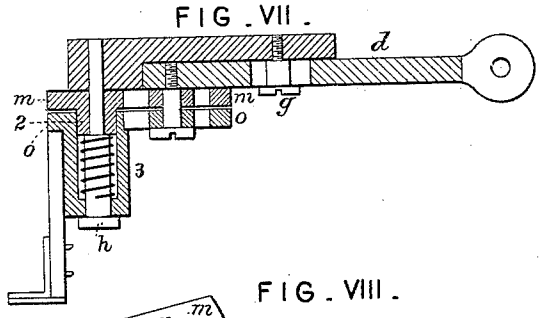


FIG. VIII.

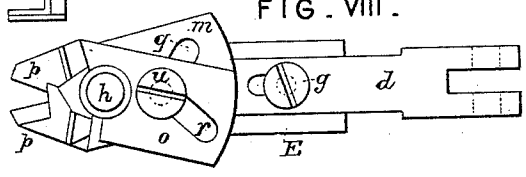


FIG. IX.

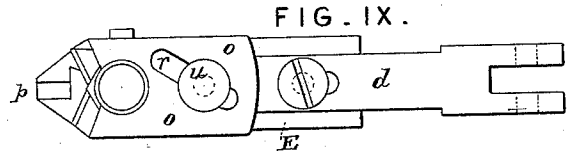


FIG. X.

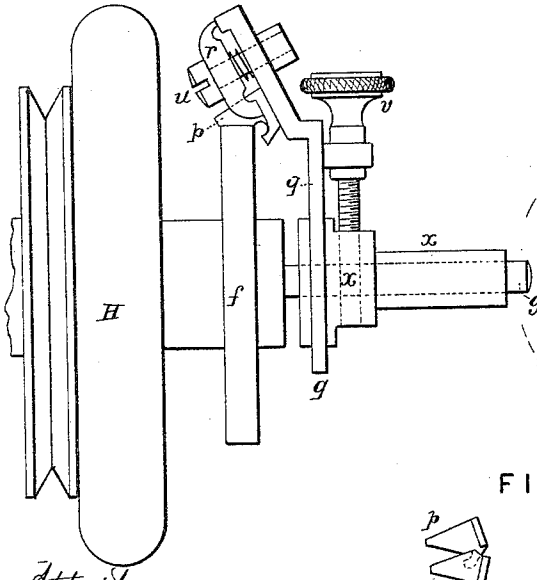


FIG. XI.

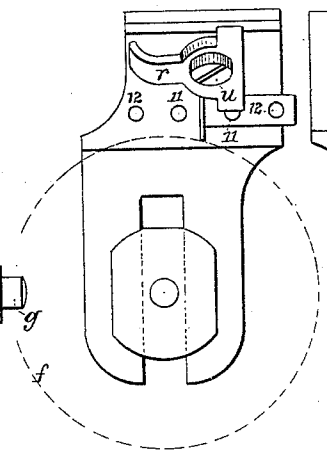


FIG. XII.

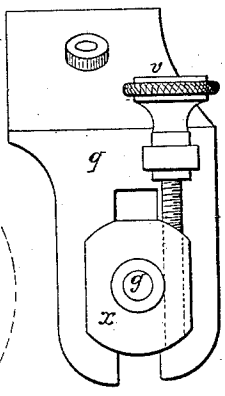
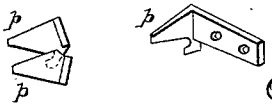


FIG. XIII.



Attest.
Geo. T. Smallwood.
C. J. Hedrick

Inventor:
Emile Cornely
by Pollok
his attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 4 Sheets—Sheet 4.

E. CORNELY.

CUTTING AND GRINDING DEVICE FOR SEWING OR EMBROIDERING MACHINES.

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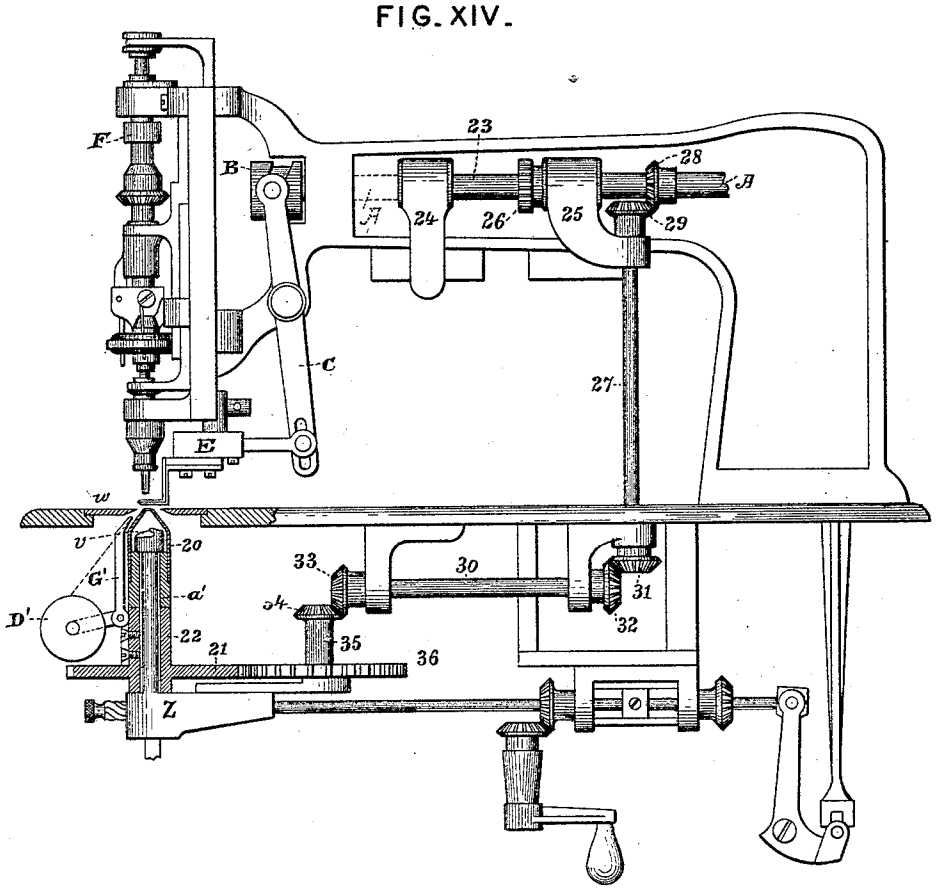
FIG. XIV.



Attest:
Geo. T. Smallwood.
Philip Mauro

Inventor
Emile Cornely by
V. Pollok his attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

EMILE CORNELY, OF PARIS, FRANCE.

CUTTING AND GRINDING DEVICE FOR SEWING OR EMBROIDERING MACHINES.

SPECIFICATION forming part of Letters Patent No. 418,909, dated January 7, 1890.

Application filed July 13, 1886. Serial No. 207,929. (No model.)

To all whom it may concern:

Be it known that I, EMILE CORNELY, temporarily residing at Washington, in the District of Columbia, a resident of the city of Paris, in the Republic of France, have invented new and useful Improvements in the Cutting Apparatus for Sewing or Embroidering Machines, which is fully set forth in the following specification.

My invention relates to certain improvements to the machine for which Letters Patent of the United States were granted to me as assignee of Leon Bertrand on the 15th day of April, 1884, No. 297,057.

The said machine consists, substantially, in a sewing or embroidering machine provided with an automatic cutting apparatus, which cuts each stitch after it has been drawn up by the needle, whereby a velvet or peluche seam is produced.

In my patent, No. 346,091, dated July 29, 1886, I have explained how the cut-off loops are removed by a system of revolving brushes, which strike against the needle after the loops have been cut by the scissors, and which brushes throw the cut-off ends outward and away from the seam to prevent them from becoming sewed into the work by the consecutive stitches.

On the drawings the several figures represent detached views of the improvements, which will be referred to in the following description.

Figure I is a partial elevation; Fig. I^{A}, a partial elevation at right angles to Fig. I; Figs. II and III, details of the brush and cutters; Figs. IV and V, a side and rear elevation, respectively, showing the air-blast mechanism; Figs. VI to XIII, detail views, and Fig. XIV, a view partly in elevation and partly in vertical section.

In Figs. I and I^{A}, I have again represented the head of the machine, together with the cutting apparatus of Patent No. 297,057, and with the brushes K and their transmission of motion, as well as the fliers X Y for holding the thread, which are the subject-matter of my patent application of December 30, 1885.

Figs. II and III represent a new arrangement of the brushes K, which are secured to the shaft L. Instead of employing a brush-wheel, as described and shown in the patent application of December 30, 1885, I employ a few brushes only, but which are timed with the main shaft of the machine in such a manner that the first of the brushes will strike the needle just at the moment when the loop has been cut off by the scissors, and will thus carry it off at the right moment. Thus a considerable economy is obtained in the use of the brushes, which are liable to rapid wear. By these means the speed of the revolving brushes may also be reduced, and if they make one revolution only to each turn of the main shaft A their shaft L need not be coupled to the feed-bar F, nor need it rise and fall with the feed, as in this case the brushes will not come in contact with the foot M when it rises, they being then in a direction opposed to it, as represented at Fig. II. Upon working with silk thread the cut-off loops are more or less torn by the brushes and their fibers are spread like a light down over the work, and thus much injure its appearance. To prevent this inconvenience I apply a blast of air to the machine, which, by means of tubes, is conducted close to the needle, to remove the fibers before they can settle on the material.

In Figs. IV and V I have represented, as an example, a pair of bellows driven by the small fly-wheel H of the machine. A crank-arm 1 is secured to the face of the fly-wheel H, and a pitman U is connected to it and to the movable part of the bellows Z, whence the tubing V passes to the needle of the machine, and the blast from the bellows created by its movement passes through the tube V to the needle to chase away any small fibers or down resulting from the work.

The scissors *p* of the machine, as described and shown in Patent No. 297,057, are represented at Figs. VI, VII, VIII, and IX. To make these scissors cut well, their blades must be slightly inclined one toward the other, and they must be pressed together by means of a spring, which insures always a close contact of the two blades. *o* and *m* are the two plates to which the scissors are secured and by which their motion is produced. The circular boss

2 on the plate *m* is fitted into the sleeve 3 of plate *o*, and the pivot-stud *h* is passed through both and is secured to the block E by means of a screw *b*. The spring of the stud *h* thus presses against the plates *m* and *o* and spreads them one from the other; but inasmuch as the lower blade p^2, Fig. VI, is secured to the upper plate *m* and the upper blade p^3 to the lower plate *o* the two blades will be pressed together by the action of the spring of stud *h*, and thus the two blades will act effectually and will always be in good cutting condition when properly sharpened.

In Figs. X, XI, and XII I have represented an apparatus for sharpening the blades. *f* represents an emery-wheel or grinding-stone which is secured to the small fly-wheel H of the machine. *g* represents a stud which is fitted into the end of the shaft of wheel H, and on which is also closely fitted a box *x*, so that it can slide longitudinally on stud *g*. A frame *q* is fitted within proper ways upon the box *x*, and it can be adjusted thereon, by means of the set-screw *v*, to shift it toward or from the stud *g*. The blade *p* to be ground is set upon the studs 11 and 12 of the inclined part of frame *q*, and is secured thereon by means of the clamp *r* and its screw *u*, and the angle of the incline is such that the edge of the blade *p*, when presented to the emery-wheel *f*, will have the proper bevel cut thereon to produce a perfect cutting-edge, which will be always the same and perfectly true. Fig. XIII shows details of the blades *p*.

The operation of the grinding mechanism will be readily understood from the foregoing description. The blade being placed in the clamping-frame *q*, the latter is adjusted by screw *v* to such position that the face of the blade bears against the grinding-wheel *f*, which is rotated with shaft A, the operator retaining hold of the head of screw *v*, thus holding the frame *q* and the blade stationary. By sliding box *x* back and forth the operator can bring every part of the face of the blade to bear upon the periphery of the grinding-wheel, and by turning screw *v* the pressure of the blade upon the wheel can be properly regulated.

In certain kinds of goods where great strength is required for the velvet work a second thread may be employed in the production of the seam by winding said second thread around the under side of each chain-stitch by means of a continuously-revolving thread-carrier which works below the cloth-plate of the machine. Such a rotating thread-carrier, together with the mechanism by which it is operated, is illustrated in Fig. XIV, which is a view partly in elevation and partly in vertical section. It will only be necessary in connection with this figure to describe the operation of the devices for winding a second thread around the sewing-thread beneath the cloth-plate. Directly below the needle is a hollow cone 20, supported by a tube *a'*, which is fixed to the casting Z. The cone 20 has a hole at the top for the passage of the needle. The cone 20 covers the oscillating looper *v*, which is of the usual construction. The wheel 21 is provided with a hub 22, and is mounted loosely on tube *a'*. The hub 22 carries the thread-carrier G' and its spool D'. As the wheel 21 rotates, the thread from the end of the thread-carrier G' is wound around the sewing-thread, there being one revolution of the thread-carrier for each reciprocation of the needle. The wheel 21 receives its motion from the main shaft A of the machine by means of the gearing shown. Alongside of the main shaft is a supplemental shaft 23, having bearings in brackets 24 25. A gear 26 on shaft 23 engages a gear (not shown) on main shaft A. The vertical shaft 27 receives motion from shaft 23 through pinions 28 29, and transmits its motion to shaft 30 through pinions 31 32. From shaft 30 motion is communicated to the short shaft 35 through pinions 33 34, and the gear 36 on the latter shaft engages with and rotates the wheel 21.

It is obvious that parts of the invention may be used without the whole, and that modifications may be made in the details of construction without departing from the spirit of the invention.

I claim—

1. The combination, with the stitch-forming mechanism, including a vertically-moving needle, a feed-ring, and means for imparting thereto a rising and falling as well as a horizontal motion, of cutters for severing the thread after the needle rises, a shaft and connections for operating the same, and a brush carried by said shaft and so disposed thereon as to strike the needle just as the thread is cut, the feed-ring rising when the brush is turned out of the way, substantially as described.

2. In a sewing-machine employing cutters for severing the thread, the combination, with a rotating shaft and grinding-wheel thereon, of a support for the blade to rest upon, said support being mounted on an axial extension of said shaft, and a clamp for holding said blade upon said support, the latter being inclined to present the blade to the grinding-wheel at the proper angle, substantially as described.

3. In a sewing-machine employing cutting-blades, the combination, with a rotating shaft and grinding-wheel thereon, of a box adjustable longitudinally with respect to said shaft, and a supporting-frame for holding the blade and presenting it to the grinding-wheel, said frame being adjustable radially with respect to said shaft, substantially as described.

4. The combination, with the stitch-form-

ing mechanism and the cutters for severing the sewing-thread after the formation of each stitch, of the rotating thread-carrier supported below the cloth-plate, and operating means, as specified, whereby a thread is wound around the sewing-thread on the under side of the work, substantially as described.

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

EMILE CORNELY.

Witnesses:
EDWARD P. MACLEAN,
JOSEPH B. BOURNE.