E. REICHARDT.

FESTOONING, EDGING, AND EMBROIDERING MACHINE.

APPLICATION FILED FEB. 20, 1912.

1,054,713.

Patented Mar. 4, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

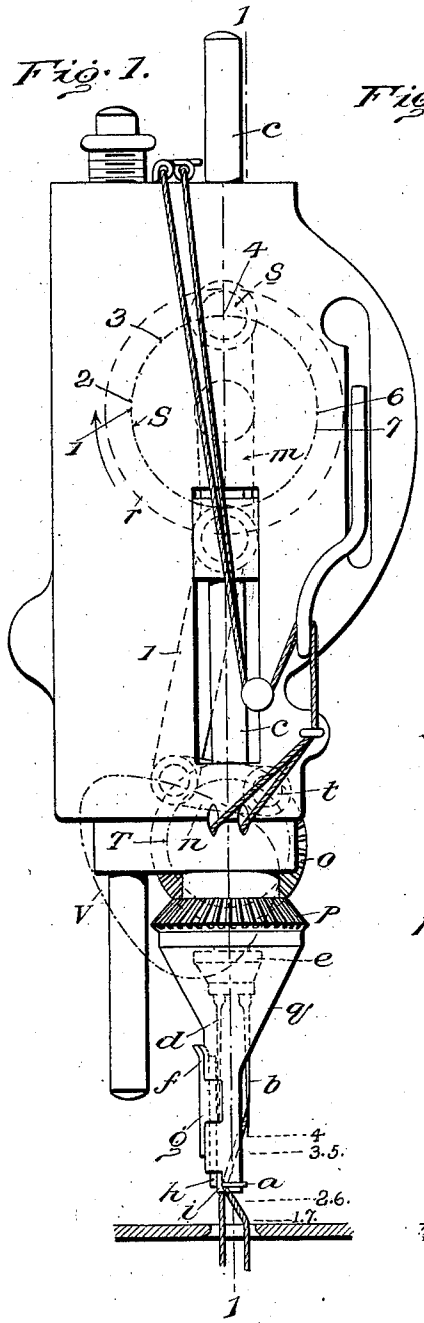



Fig. 2.

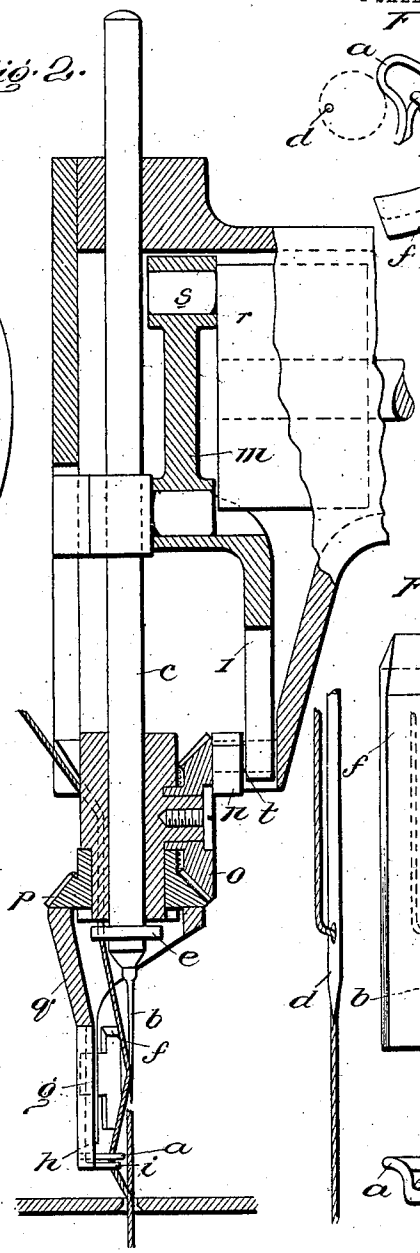



Fig. 5.

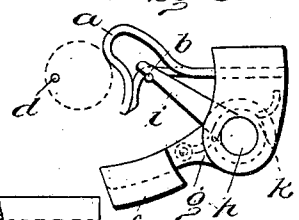



Fig. 4.

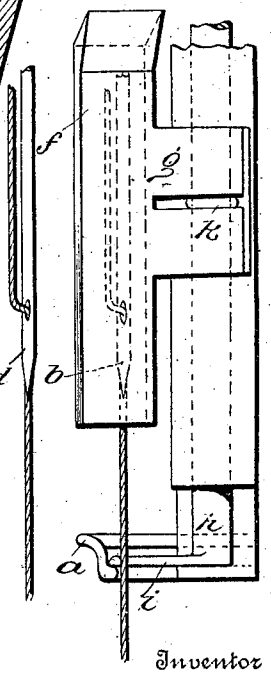
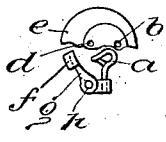



Fig. 3.




Witnesses

James H. Anderson

E. E. Warfield

Inventor

Erich Reichardt.

by

Mauro, Cameron, Lewis & Massie

Attorneys

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2 SHEETS—SHEET 2.

Fig. 8.

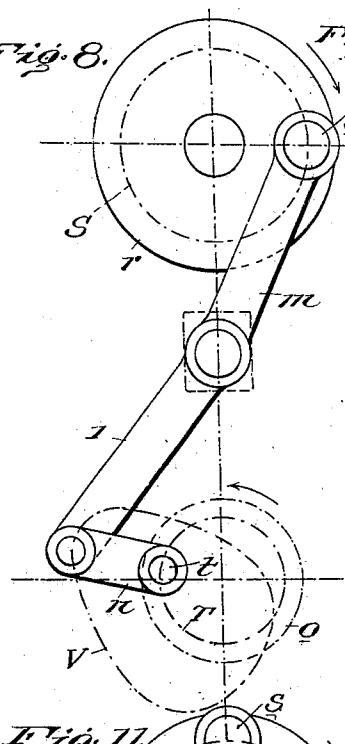



Fig. 9.

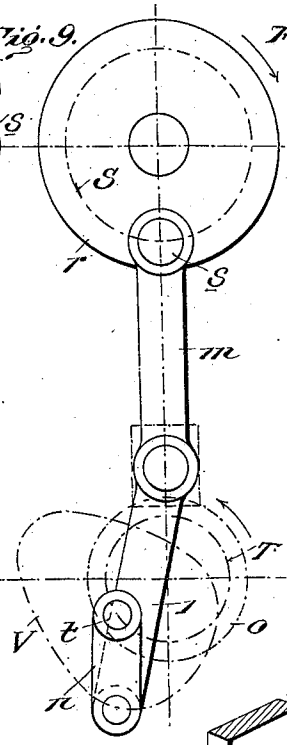



Fig. 10.

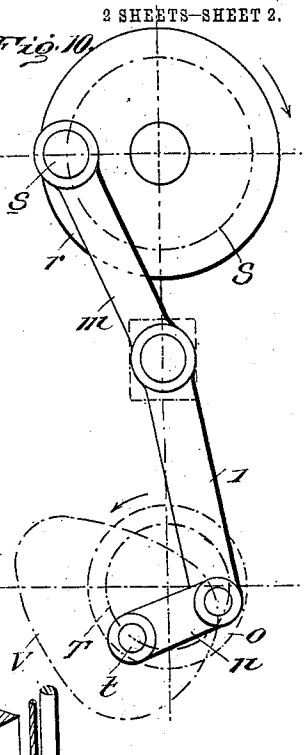



Fig. 11.

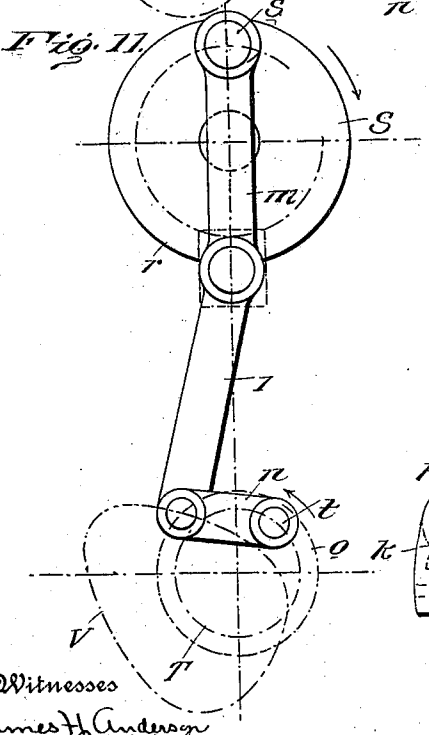



Fig. 7.

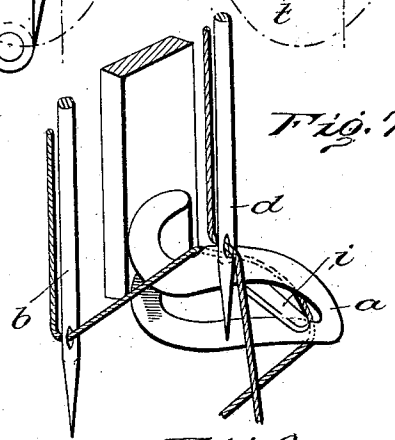
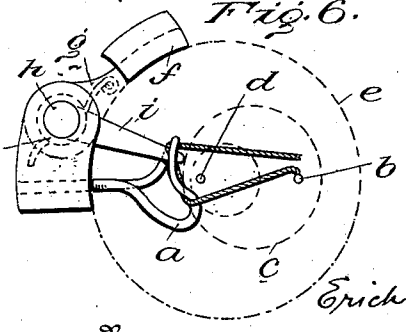



Fig. 6.




Witnesses

James H. Anderson

E. E. Warfield

Inventor

Erich Reichardt

By Mauro, Cameron, Lewis & Shasore

Attorneys

# UNITED STATES PATENT OFFICE.

ERICH REICHARDT, OF PARIS, FRANCE, ASSIGNOR TO ROBERT CORNELY, OF PARIS, FRANCE.

## FESTOONING, EDGING, AND EMBROIDERING MACHINE.

1,054,713. Specification of Letters Patent. Patented Mar. 4, 1913.

Application filed February 20, 1912. Serial No. 678,932.

*To all whom it may concern:*

Be it known that I, ERICH REICHARDT, resident of Paris, France, have invented a new and useful Improvement in Festooning, Edging, and Embroidering Machines, which is fully set forth in the following specification.

The well known festooning or edging machines, in which the thread of one of the needles is seized by one or more hooks, fingers or like, which carry said thread in the shape of a loop under the point of the other needle through which loop then penetrates said other needle, present the great inconvenience that these hooks or loop carriers perform very complicated oscillating motions in two different directions. These motions require a great number of levers, hinges and sliding surfaces which all wear out rapidly and thus occasion irregular work.

The object of the present invention is to obviate these inconveniences by replacing all these to and fro motions by a rotating motion, by means of which the whole mechanism runs much lighter, wears out very little and allows a much higher speed of the machine. In the drawings this rotating motion of the loop carrier has been represented as an example only, as it is clear that the same results may be obtained by other mechanical means.

Figure 1 is a front elevational view of an embroidering machine embodying my improvements, Fig. 2 a side view partly in section taken on the line 1—1 of Fig. 1, Figs. 3, 4, 5 and 6 show different positions of the loop carrier on a large scale. Fig. 7 is a perspective view on a large scale showing how the loop carrier *a* carries the thread of needle *b* under the point of needle *d* and Figs. 8, 9, 10 and 11 show the motion of the loop-carrier hereafter to be described.

The speed of revolution of the loop-carrier *a* may be constant or variable, in the example shown in the drawings this speed is represented variable, as this presents certain advantages for the formation of the festooning or embroidering seam.

When the needles *b* and *d* have attained a sufficient height above the loop carrier *a*, this latter loop-carrier *a* seizes the thread of needle *b* while the loop-carrier *a* performs at high speed half a circle in front of the needles, while at the descending motion of the needle-bar *c*, this speed of the loop-carrier *a* is decreased nearly to zero and in this latter position (Fig. 6) the needle *d* penetrates into the loop presented by the loop-carrier *a*.

The path of revolution of the loop-carrier *a* is eccentric to the center between the two needles *b* and *d* for the reason that for taking hold of the thread it must pass under needle *b* and must be behind needle *d* when the needles penetrate into the cloth and also because it must seize the thread of needle *b* only. When the needles have penetrated into the cloth, the loop of thread seized by the hook of the loop-carrier *a* must be removed from said hook, which can be accomplished by any suitable means. In the present example an abutment *e* provided on needle-bar *c* concentrically to the circle of rotation of loop-carrier *a*, presses when the needle-bar *c* descends against another abutment *f* which is secured to a shaft *h* by means of a lever *g*. This abutment *f* is thus displaced laterally, thus imparting a turning motion to shaft *h* and to finger *i* which is secured at the lower end of shaft *h*, this finger *i* thus describes an arc of a circle. This finger *i* is displaced within the recessed hook of the loop-carrier *a* from the rear to the front, thus removing the thread loop from the loop-carrier *a* and closing the entrance of this hook during all the time the abutments *e* and *f* remain in contact, until the needle-bar *c* rises again when the abutments *e* and *f* are released from each other, at which time the finger *i* comes back to its initial position under the action of spring *k*. This arrangement prevents the hook *a* from seizing again the loop or from seizing any other thread during the formation of the seam.

The rotating motion of the loop-carrier *a* with variable speed can be obtained in different manners. In the present example, the pitman *m* which imparts the up and down motion to the needle-bar *c* is provided with an angular prolongation *l*, which by means of pitman *n* drives a cog wheel *o* which transmits its motion to another cog wheel *p* upon which is secured the bracket *q* of the loop-carrier *a*.

The dotted curves and circles show the paths described by the different elements above described, the numbers show their corresponding positions during their motions and the arrow gives the direction of

rotation of the main shaft *r* which imparts the up and down motion to the needle-bar *c*. The circles S and T are the paths described by the pitman connections *s* and *t* secured to part *r* and to the cog wheel *o*.

In consequence of the angular prolongation *l* of pitman *m* of the needle-bar *c*, the lower end of this lever *m—l* describes a heart shaped curve V in opposite direction to the motion of the upper end *s* of pitman *m*. The center of this curve V is so far away from the center of circle T that the thus transmitted motion has a very variable speed. At position 1, the hook *a* of the loop-carrier is behind the needles *b* and *d*, the points of the needles rise out of the cloth, hook *a* of the loop-carrier begins at position 2 to accelerate its motion, at 3 the needles have reached a sufficient height, so that between 3 and 4 the hook *a* of the loop-carrier can pass under needle *b* (Figs. 4 and 5) and at 4 the hook *a* of the loop-carrier can draw a part of the thread left by the preceding stitch (Figs. 1, 2, 3). From 3 to 5 the hook *a* of the loop-carrier has described about half of a circle in front of the needles, then its speed begins to decrease and the needle *d* can penetrate into the loop between positions 5 and 6. At this moment the speed of the loop-carrier *a* is nearly reduced to zero, the needles penetrate into the cloth and the loop is withdrawn from the hook *a* (Fig. 6) by the action of finger *i*.

While from positions 7 to 1 the needles remain engaged in the cloth, the hook *a* of the loop-carrier describes about a quarter of a circle behind the needles.

Claims—

1. In a machine of the character described, the combination of a reciprocating needle bar carrying two needles, a loop-carrier for looping the thread of one needle under the point of its companion needle and means for revolving said carrier around both needles in one continuous direction and eccentrically to the middle point between the needles.

2. In a machine of the character described, the combination of a reciprocating needle bar provided with a pair of needles, a loop-carrier for looping the thread of one needle under the point of its companion needle, and means for revolving said carrier around both needles in one continuous direction.

3. In a machine of the character described, the combination of a reciprocating needle bar provided with a pair of needles, a loop-carrier for looping the thread of one needle under the point of its companion needle and variable speed operating means for revolving said carrier around both needles in one continuous direction.

4. In a machine of the character described, the combination of a needle bar provided with a pair of needles, a loop-carrier for looping the thread of one needle under the point of its companion needle, a pair of intermeshing bevel gears on one of which is mounted said loop-carrier, and a pitman having a pivotal connection with said needle bar to reciprocate the latter and having an angular prolongation, and a pitman connection between said elongation and the other gear to impart variable speed to said loop-carrier as it revolves around both needles.

5. In a machine of the character described, the combination of a reciprocating needle bar having a pair of needles, a loop-carrier and means for revolving the same around said needles and an automatic loop removing device for removing the thread from the loop-carrier at a predetermined point of its revolution.

6. In a machine of the character described, the combination of a reciprocating needle bar having a pair of needles, a bracket mounted to rotate around said needle bar, a loop-carrier on said bracket revolving around said needles and a finger mounted on said bracket adapted to be moved against spring pressure by said needle bar to remove the thread from the looper at a predetermined point of its revolution.

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

ERICH REICHARDT.

Witnesses:
H. C. COXE,
R. CORNELY.