No. 675,893. Patented June 11, 1901.

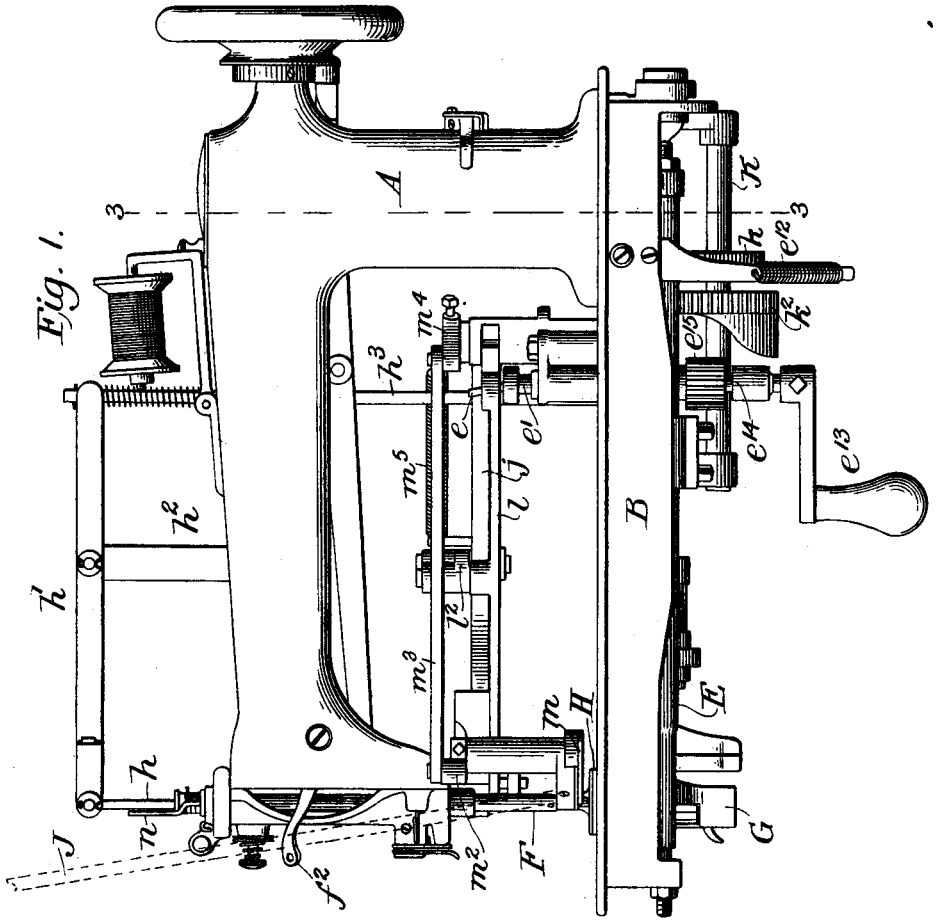
# A. H. KURSHEEDT & J. A. GROEBLI.

## SEWING MACHINE FOR SEWING SPANGLES ON FABRICS.

(Application filed Mar. 26, 1900.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.

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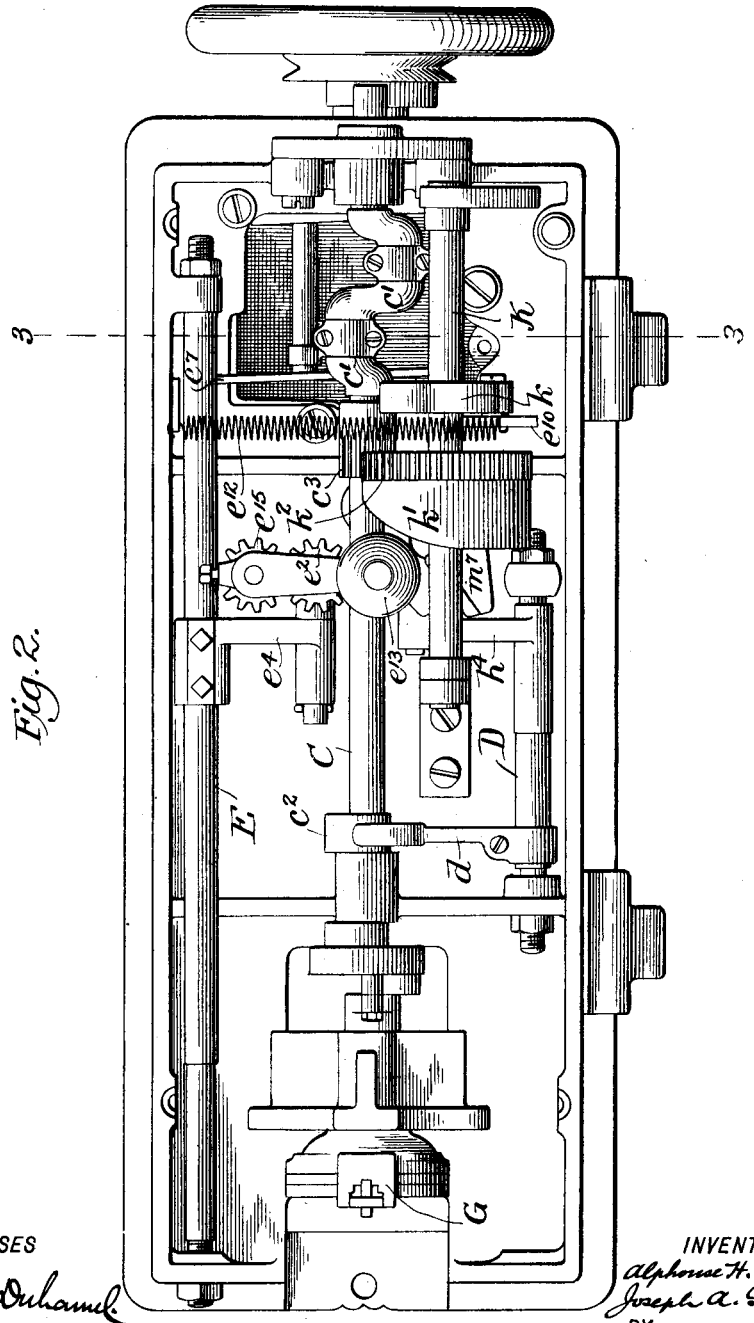
(No Model.) 4 Sheets—Sheet 2.

Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

Fig. 4.

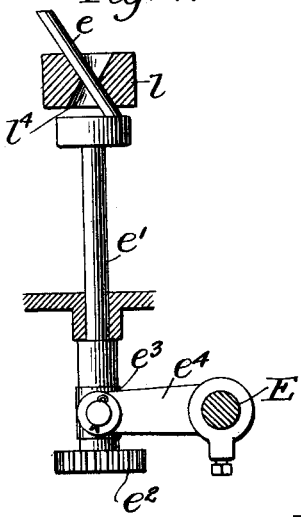


Fig. 3.

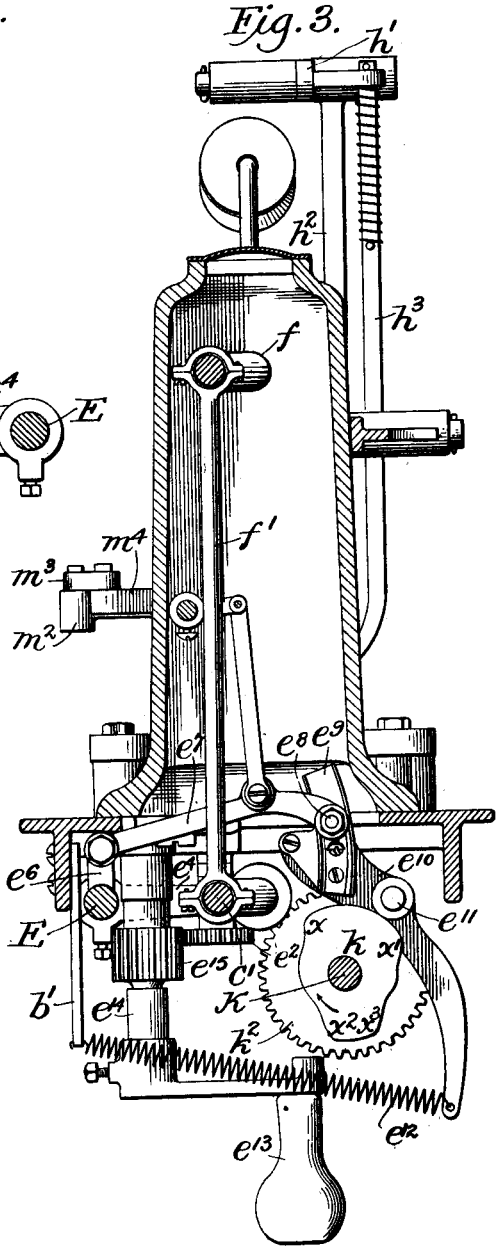


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Fig. 5.

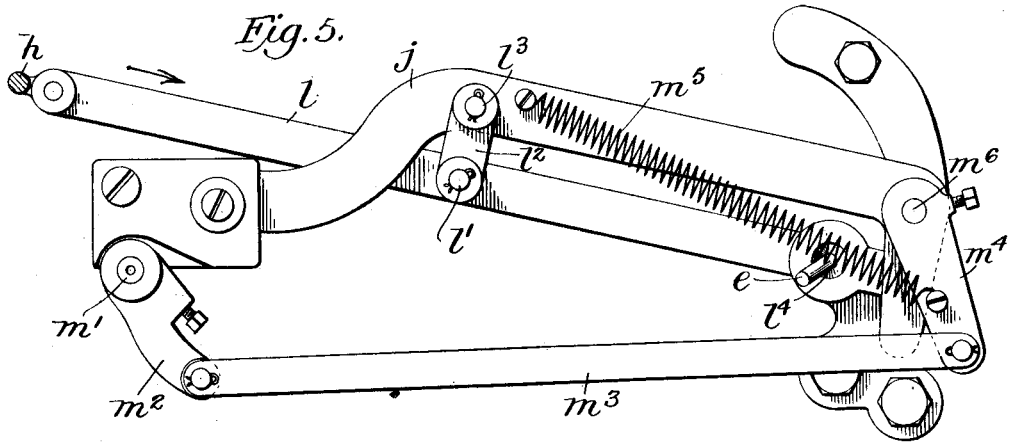


Fig. 6.

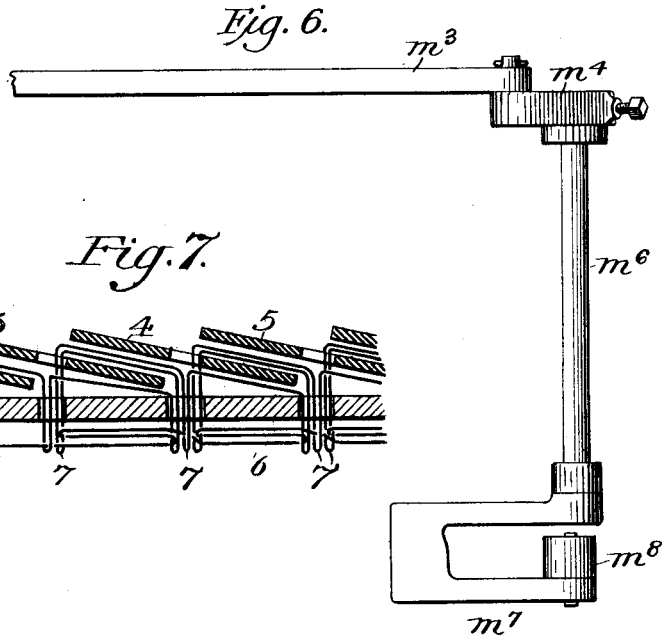


Fig. 7.




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ALPHONSE H. KURSHEEDT AND JOSEPH A. GROEBLI, OF NEW YORK, N. Y., ASSIGNORS TO SAID KURSHEEDT.

## SEWING-MACHINE FOR SEWING SPANGLES ON FABRICS.

SPECIFICATION forming part of Letters Patent No. 675,893, dated June 11, 1901.

Application filed March 26, 1900. Serial No. 10,208. (No model.)

*To all whom it may concern:*

Be it known that we, ALPHONSE H. KURSHEEDT and JOSEPH A. GROEBLI, residents of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Sewing-Machines for Sewing Spangles on Fabrics, of which the following is a specification.

Our invention relates to sewing-machines especially adapted for sewing spangles on fabrics, by which we mean plate-like objects usually employed for ornamental purposes on fabrics, and we hereinafter employ the term "spangle" or "spangles" to distinguish the said articles from shank-buttons and the like.

The machine forming the subject-matter of our present invention is an improvement upon the machine described and claimed in United States Letters Patent No. 591,079, dated October 5, 1897, and issued to A. H. Kursheedt as assignee of Alphonse H. Kursheedt and Joseph A. Groebli.

The machine shown in the aforesaid patent was adapted to normally advance the work in a continuous manner—that is to say, if the handle K, shown in the said patent, which regulates the direction of the feed or the work-advancing movement, were held stationary the work-advancing movement would be intermittent, but always in the same direction. The present invention has for its object to produce a machine in which if the handle be held stationary the movements of the feeding-foot will be alternately in opposite directions, so that by properly moving and raising the feeding-foot, which is accomplished automatically, the fabric will be moved to cause the machine to produce an ornamental fabric of the general character shown in United States Letters Patent No. 583,490, granted June 1, 1897, to A. H. Kursheedt, one of the present applicants.

This invention will now be described with reference to the accompanying drawings, which show by way of illustration a machine in which the invention is embodied.

The characteristic features of the invention will be pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the machine. The said side elevation corresponds to the side elevation, Fig. 1, in United States Letters Patent No. 591,079, heretofore referred to. Fig. 2 is an underneath plan view of the machine on an enlarged scale. Fig. 3 is a vertical transverse section of the machine, the section being taken on line 3 3 of Figs. 1 and 2. Fig. 4 is a side elevation, partly in section, of the means for directing the work advancing and retracting movements of the feeding-foot. Fig. 5 is a plan view of the operating-levers for the feeding-foot and spangle-carrier, the said system of levers being shown on an enlarged scale. Fig. 6 is a side elevation of the lever $m^3$ and its connections, which serve to operate the spangle-carrier; and Fig. 7 is an enlarged sectional view of the work produced.

This machine which we have illustrated is but one of the many forms in which our invention may be clothed, and it will be understood that we do not limit ourselves thereto, nor do we limit ourselves to a machine which sews the spangles overlapping or lapping each other nor to a machine which sews with a long stitch to clear the edge of a spangle and locate the sewing-point of the next spangle, as a plurality of the stitches may be used for that purpose.

Stated generally, the machine which we have illustrated comprises a sewing mechanism which may be of any ordinary and desired kind, shown in the present instance as a vibrating needle-bar F and a shuttle G, which may be operated after the manner of a machine of the well-known Wheeler & Wilson type. The machine further comprises a spangle-feeding mechanism for feeding the spangles to the sewing mechanism. The spangle-feeding mechanism shown in the drawings is similar to the spangle-feeding mechanism shown in our patent heretofore referred to. It is obvious, however, that this spangle-feeding mechanism need not necessarily be the particular feeding mechanism illustrated. The machine further comprises work-moving mechanism, which is shown in the present instance as of the same general type as the work-advancing mechanism referred to in the prior patent in so far as it consists in general of a universal feeding-foot, with means for moving the same and means for lifting the feeding-foot and for determin-

ing the direction of throw or movement of the said feeding-foot. These mechanisms and their interactions will be explained.

In the drawings, A is the arm of the machine, and B the base or work plate of the machine. The main cam-shaft C extends through the base of the machine and is suitably operated by pitmen $f'$ from the main shaft $f$. This main shaft $f$ operates the needle-bar F and the take-up mechanism $f^2$. The main cam-shaft C transmits motion to various other parts of the machine and drives the shuttle mechanism or movement G, which may be of any desired character. The feeding-foot H is carried by a bar $h$, which is raised and lowered by one set of mechanism and moved laterally by another set of mechanism. The raising and lowering of the feeding-foot is effected by means of the arm $h'$, which is pivoted to the standard $h^2$ and is pivoted to the bar $h$ and to the rod $h^3$, which extends downward and is secured to the arm $h^4$, carried upon the rock-shaft D. (See Fig. 2.) The rock-shaft D is provided with a forked arm $d$, which engages with a cam $c^2$ on the main driving-shaft C. This rock-shaft D makes one complete swing for every complete revolution of the main cam-shaft C. The swinging movement of the feeding-foot is effected in the following manner: The shaft K is provided with a gear $k^2$, which meshes with the pinion $c^3$ on the main cam-shaft $c$. The ratio of the gearing in the machine shown is such that the shaft K rotates once during three revolutions of the main cam-shaft. Other ratios may be employed. This cam-shaft K has fixed thereto a cam $k$, (best shown in Figs. 2 and 3,) which cam $k$ is adapted to actuate mechanism intervening between the same and the rod $h$.

Referring for the present to Fig. 5, a link $l$ is shown connected to the rod $h$, so as to move the same laterally. This link $l$ is pivoted at $l'$ to a link $l^2$, which is pivoted at $l^3$ upon a bracket $j$, suitably supported upon the work-plate B of the machine. The link $l$ is provided at or near its rear end with an aperture $l^4$, which consists of two frusto-conical recesses, with their narrowest portions meeting, all substantially as shown in Fig. 4. An inclined pin $e$ is carried upon a rising-and-falling spindle $e'$, which carries at its lower end a pinion $e^2$ and is provided with a collar $e^3$, pivotally secured to an arm $e^4$, mounted upon a rock-shaft E. This rock-shaft E receives motion from an arm $e^6$, which is actuated by a link $e^7$, pivotally secured to a block $e^8$, slidably carried in a grooved arm $e^9$, secured to a lever $e^{10}$, which is pivoted to the frame of the machine and is provided with a bowl $e^{11}$, which coöperates with the cam $k$. The cam $k$ rotates in the direction of the arrow, Fig. 3, and is provided with four lifts $x$ $x'$ $x^2$ $x^3$ for imparting four lateral motions to the feeding-foot alternately in one direction and then the other when the direction-determining mechanism is stationary. The arm $e^{10}$ is provided with a spring $e^{12}$, which is secured at one end to the arm $e^{10}$ and at the other end to a fixed part $b'$ of the machine. As will be well understood, the rotating cam $k$ will cause the lever $e^{10}$ to swing on its pivot, thereby swinging the lever $e^6$ and rocking the shaft E, which gives a rising-and-falling motion to the spindle $e'$, thereby causing the inclined pin $e$ thereof to operate against the cam-faces of the aperture $l^4$ in the link $l$ and produce a back-and-forth movement of the said link. It will of course be understood that the lifting mechanism for the feeding-foot will be operated in harmony with the mechanism for moving it laterally, so that the movements imparted to the said feeding-foot will be effective for the desired purpose. The mechanism just described is likewise combined with means for determining the direction of throw or movement imparted to the feeding-foot. It is obvious that by setting the pin $e$ in the desired position it will be effective to determine the direction of movement of the link $l$, and thus determine the direction of movement of the feeding-foot. For instance, if the spindle $e'$ be turned into such position that the pin $e$ is inclined toward or in the direction of the rod $h$ longitudinally of the link $l$ an upward movement of the spindle $e'$ will cause the link $l$ to be retracted in the direction of the arrow in Fig. 5, and a downward movement of the said spindle will cause the said link to be advanced. Similarly if the spindle be rotated until the pin is in the opposite position—namely, pointing away from the rod $h$—the movement of the link $l$ will be a forward movement for a rise and a backward movement for a descent of the spindle $e'$, and in intermediate positions the movement of $h$ will be correspondingly changed. Thus by rotating the spindle $e'$ the direction of movement of $h$ may be determined. This may be done by the operator through the medium of the handle $e^{13}$, carried upon a spindle $e^{14}$ and provided with a broad pinion $e^{15}$, which meshes with the pinion $e^2$.

In describing the operation of the machine hereinafter we shall assume that the direction-determining mechanism has been so operated as to bring the pin $e$ into position to produce a forward movement of the feeding-foot $h$ in the direction in which it is desired to feed the work and that it remains set in this position. The spangle-feeding mechanism shown in the drawings is of the character shown in our patent before mentioned. The spangle-carrier $m$, which corresponds to the spangle-carrier $G^8$, (shown in Fig. 19 of the aforesaid patent,) is carried upon a spindle $m'$, provided with an arm $m^2$, pivotally connected by a link $m^3$ to an arm $m^4$, carried upon a vertical spindle $m^6$ (see Figs. 5 and 6) and provided with a spring $m^5$, which connects the same to the bracket $j$, before mentioned. The spindle $m^6$ is provided at its lower end with a yoke $m^7$, carrying a bowl $m^8$, which is adapted to contact with the cam $k'$, carried upon the shaft K. The spangle-carrier thus moves in

harmony with the other mechanism, and it will be observed that it will effect one complete swing for every three rotations of the main cam-shaft, which will be effective to impart to the needle three complete oscillations to form three stitches and three complete rising-and-falling movements of the feeding-foot and four lateral movements of the feeding-foot through the medium of the cam *k*, three of which movements are feeding movements and one an idle movement, as will be clearly explained. The machine is likewise provided with a suitable presser-foot, which is carried upon the bar *n* and moves in harmony with the needle, the said presser-foot serving to bear upon the work when the feeding-foot is off the same and is suitably driven by appropriate mechanism from the shaft *f*, which will be fully obvious to those skilled in the art.

The detailed harmonious operation of the machine is as follows: Starting with the spangle-carrier in its extreme forward position, with the spangle in the path of the needle, with the feeding-foot bearing upon the fabric and the presser-foot behind the needle, the operations are as follows: As the driving-wheel turns the needle receives a downward movement, passing through the eye of the spangle, and descends through the cloth, the spangle-carrier being retracted and the presser-foot following the needle until it touches the spangle. The needle is then in its lowermost position. As the driving-wheel continues to turn the needle and feeding-foot rise together, the presser-foot still remaining on the spangle. When the needle has reached the full height of its stroke, the feeding-foot descends, the presser-foot rises, the needle descending again. At the same time the feeding-foot slides forward to feed the work. When the feeding-foot has completed its forward motion, the needle enters the cloth and descends therethrough, the presser-foot following the motion of the needle, as before, and reaching contact with the fabric when the needle is in its lowermost position. Then the needle and feeding-foot rise, the feeding-foot being lifted and executing a swing to the rear during the rise of the needle without touching the work. This is the idle movement before mentioned. Thereupon the feeding-foot descends upon the fabric, the presser-foot is lifted, the needle again descending as the presser-foot rises, the feeding-foot receiving a forward slide to feed the work as the needle descends, the needle passing through the fabric followed by the presser-foot, which descends and bears against the fabric, whereupon the needle and feeding-foot rise, the feeding-foot descends, the feeding-foot slides rearwardly to retract the work, the presser-foot rises, and the spangle-carrier comes forward into a position to bring the spangle into the path of the needle. The result of the foregoing operations is to produce work in the following manner, it being understood that a fabric is placed upon the cloth-plate of the machine and spangles are properly supplied through the tube J: The needle descends through the spangle. The needle and shuttle-threads are interlocked and the needle rises through the fabric. The feeding-foot makes a forward step or movement to feed the material half the width of a spangle. The needle again executes a stitch, this time at the edge of the sewed-down spangle, the feeding-foot making a backward swing through the air, which swing is an idle swing, as the feeding-foot is not in contact with the work. The fabric is given another forward movement or step and another stitch taken, whereupon the fabric is given a backward movement of one step, at the same instant the spangle being brought by the spangle-carrier into position to be entered by the needle, so that the next spangle will be sewed with its eye at the edge of the preceding spangle, so that the stitch which was made in the spangle from eye to edge will be covered. Each spangle is thus sewed to the fabric with a stitch, which does not cross the spangle, but runs from the eye of the spangle over the edge thereof, which stitch we term an "overedge-stitch."

In Fig. 7 we have shown on a very enlarged scale a diagrammatic view of a spangled fabric produced on the machine shown in the drawings. In Fig. 7, 1 represents the fabric. 2, 3, 4, and 5 represent spangles. These spangles are held upon the fabric by a shuttle-thread 6 and a needle-thread 7, whose course may be readily traced.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a spangle-sewing machine especially adapted to sew a row of overlapping spangles to fabric, the combination of sewing mechanism and an automatic device for bringing spangles to the sewing-point, of an automatic feed mechanism for the work comprising in its structure means for imparting to the work one or more steps or movements in a given direction the total movement being in excess of a single stitch and a shorter movement of retraction whereby a row of overlapping spangles may be sewed through the eyes or bodies of the spangle by overedge-stitches, as described.

2. In a machine for sewing spangles to fabrics especially adapted to sew a row of overlapping spangles to fabrics, the combination of sewing mechanism, an automatic spangle-feeding mechanism and automatic means for moving or feeding the work in harmony with the needle motions to sew a row of overlapping spangles through the eyes or bodies of the spangles to a fabric by an overedge-stitch, as described.

3. In a spangle-sewing machine especially adapted to sew a row of overlapping spangles to a fabric, the combination of spangle-feeding mechanism, sewing mechanism and work feeding or advancing mechanism combined

with means for imparting to the said work-advancing mechanism a plurality of feeds in a forward direction an idle movement rearwardly and a feed in a rearward direction whereby a row of overlapping spangles may be sewed to a fabric.

4. In a spangle-sewing machine especially adapted to sew a row of overlapping spangles to a fabric, the combination of sewing mechanism, automatically-operated spangle-feeding mechanism and work-advancing mechanism, of automatically-operated cam mechanism for imparting to the work one or more complete oscillations in the interval between the spangle-feeding operations whereby a row of overlapping spangles may be sewed to a fabric.

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