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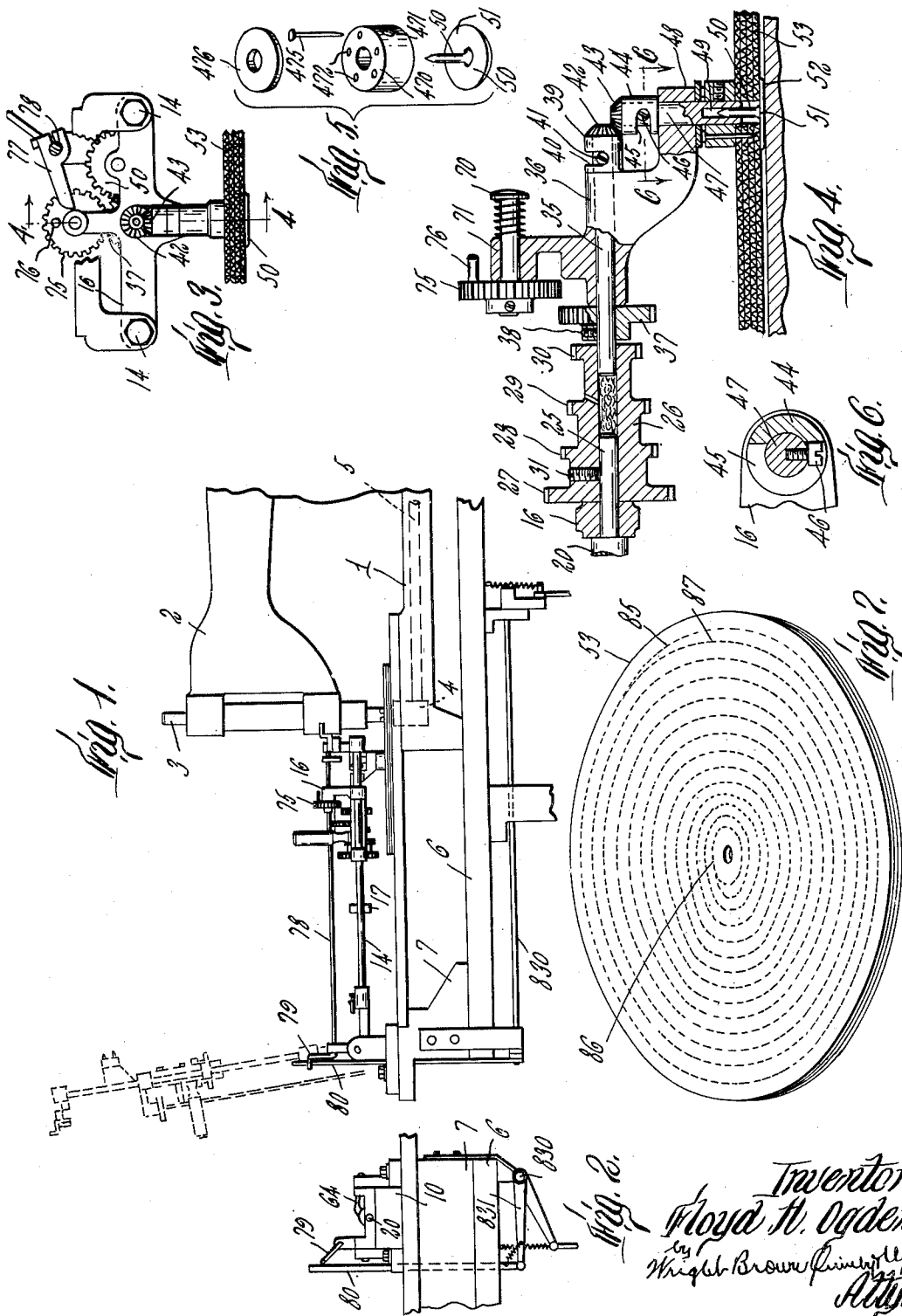
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2,521,085

MACHINE FOR SEWING BUFFING WHEELS

Filed Sept. 11, 1947

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

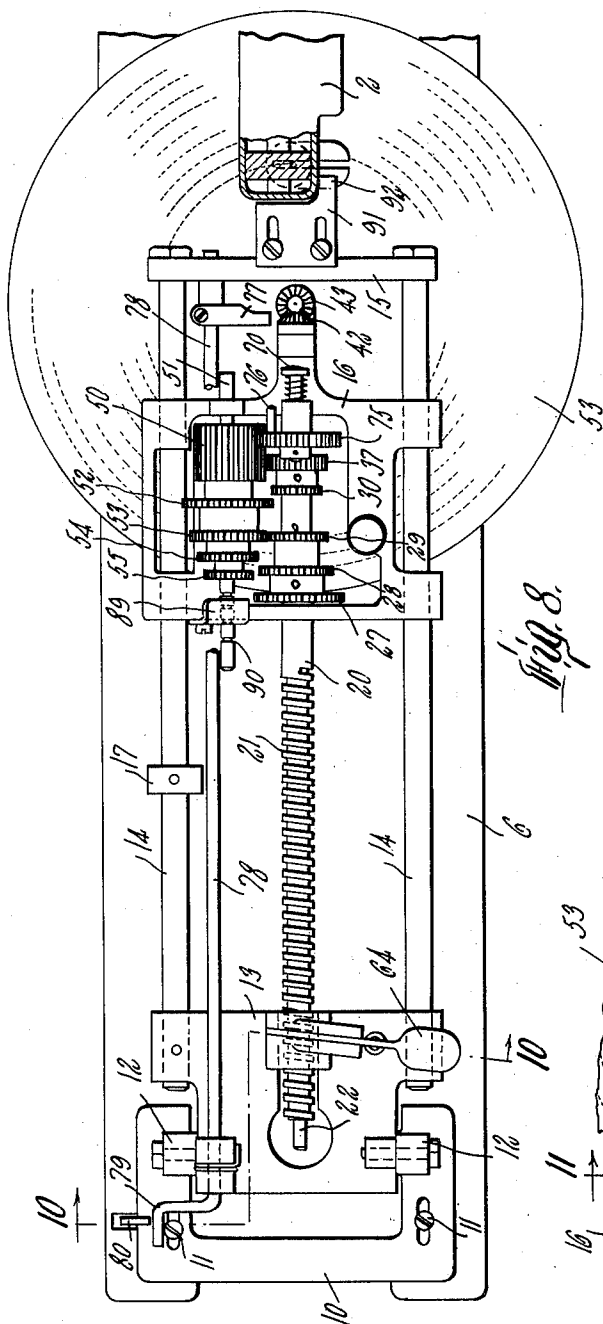


Fig. 8.

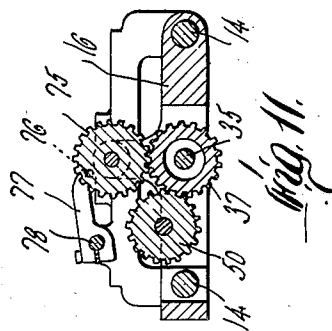


Fig. 11.

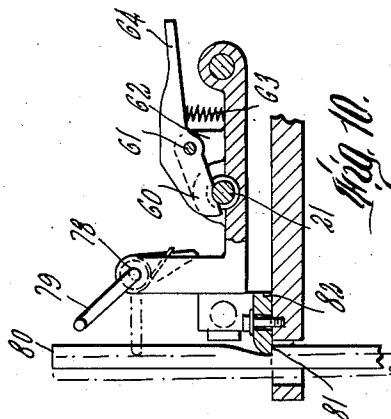


Fig. 10.

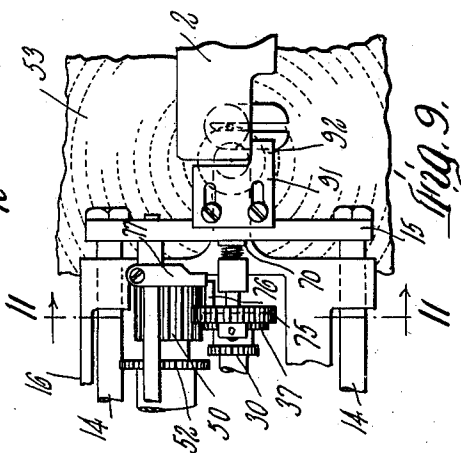


Fig. 9.

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UNITED STATES PATENT OFFICE

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MACHINE FOR SEWING BUFFING WHEELS

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4 Claims. (Cl. 112—2)

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This invention relates to machines for sewing together the plies of a fabric or "rag" buffing wheel, in accordance with which inner and outer annular lines of stitching are connected by stitching in spiral formation, the entire stitching being continuous from end to end. More particularly the invention relates to the attachment for a sewing machine by means of which the rag wheel is automatically guided to the stitching mechanisms and the feed mechanism of a sewing machine to produce the desired stitching on the buffing wheel material.

One object of the present invention is to provide an attachment for a sewing machine provided with improved means actuated by the power feed of the sewing machine for guiding the buffing wheel to perform the stitching operations in the desired pattern.

A further object is to provide such an attachment hingedly supported by the sewing machine so that it may be swung up away from the stitching mechanism for easy placement and removal of the work.

A further object is to provide means for automatically stopping the operation of the machine at the end of the desired cycle of operations.

Further objects and advantages will appear from a description of an embodiment of the invention shown in the accompanying drawings, in which:

Figure 1 is a fragmentary front elevation of a sewing machine provided with an attachment embodying the invention, the parts being shown in full lines in an intermediate portion of the cycle and in dotted lines in inoperative position.

Figure 2 is a fragmentary left hand end elevation of the same.

Figure 3 is a right hand end elevation to a larger scale and partly broken away of the sewing mechanism applied to the sewing machine.

Figure 4 is a detail sectional view on line 4—4 of Figure 3.

Figure 5 is an exploded perspective view of a portion of the mechanism drive.

Figure 6 is a detail sectional view on line 6—6 of Figure 4.

Figure 7 is a perspective view of a completed buffing wheel showing the stitching therein.

Figure 8 is a top plan view showing the mechanism and a portion of the sewing machine partly broken away and in section.

Figure 9 is a view similar to a portion of Figure 8, but showing the parts near the end of the machine cycle.

Figures 10 and 11 are detail sectional views on line 10—10 of Figure 8 and 11—11 of Figure 9, respectively.

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Referring first to Figures 1 and 8 of the drawings, at 1 is shown a portion of a sewing machine having the head 2 which carries a reciprocating needle bar 3, the head extending over the base portion of the machine in which there is positioned a suitable work feeding means shown somewhat diagrammatically at 4 and driven in time with the motion of the needle bar by an actuating shaft 5. This mechanism may be of any usual construction and per se forms no part of the present invention.

Fixed to the base of the sewing machine or extending from a table supporting it, is a frame 6 having a bracket 7 at its outer end. On this bracket is adjustably fixed a U-shaped member 10, the adjustment comprising screw and slot connections at 11 for this U-shaped member with the bracket 7. This member 10 has a pair of spaced ears 12 thereon to which is pivoted a frame comprising an end member 13 and a pair of side bars 14 secured to the member 13 and extending in parallel relation away from the head member 13. The bars 14 are joined at their outer ends by a transverse member 15 and between the members 15 and 13 there is slidable on the bars 14 a carriage 16. This carriage is movable between a stop 17 adjustable lengthwise of one of the bars 14 and the end plate 15. The carriage 16 has journaled therein a shaft 20, the intermediate portion of whose length is threaded to provide a lead screw portion 21. The outer end of this shaft 20 has the threads cut away to form a non-threaded end portion 22.

As best shown in Figure 4, the inner end of the shaft, which has a bearing in a side frame member of the carriage 16, is of reduced diameter as at 25, and it extends into a multiple gear 26 having the gear portions 27, 28, 29 and 30 of different diameters arranged along its length. This multiple gear 26 is secured to the shaft 20, as by means of a set screw 31. The portion 25 extends only part way through the multiple gear 26, leaving room for the outer end of a shaft 35 journaled in the end portion 36 of the carriage and in the multiple gear 26. The shaft 35 is held against axial motion in the carriage 16 by means of a gear 37 inside of the carriage frame and secured to the shaft 35, as by means of a set screw 38, and a cylindrical block 39 journaled on the opposite end portion of the shaft 35. This block 39 has a cylindrical portion provided with a notch 40 which extends for somewhat more than one half of its circumference and within which is engaged a screw 41 carried by the shaft 35. The free end of this block 39 is formed as a bevel gear 42 which meshes with a similar gear 43 on

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the upper end of a cylindrical block 44. This block 44 is also provided with a peripheral slot 45 therein which extends throughout somewhat more than half its circumference, and riding in this slot is a screw 46 threaded into a vertical shaft 47 on which the block 44 is journaled. This shaft 47 is journaled in a horizontal extension 48 of the carriage and has a hollow lower end 49 for the reception of a pointed shank 50 of a center pin 51. This center pin may have a head 52 upon which may be placed superposed disks 53 of cloth to form a buffing or "rag" wheel. These cloth plies or disks 53 at their outer edges underlie the needle bar 3 at the start of the sewing operation. The sewing machine feed mechanism, acting against the under face of the lower of these cloth layers, feeds these layers toward the sewing mechanism of the sewing machine, and in so doing, rotates the work pieces about their centers and about the pin 51. Rotation of the work pieces is employed to rotate the shaft 47. This is done by a collar 470 fixed to the shaft 47, as by means of a set screw 471, this collar 470 having one or more lengthwise perforations 472 therethrough arranged around the shaft 47 and through which headed pins 475 may be placed, the pointed ends of these pins engaging in the work pieces 53 and being retained therein by a washer 476 overlying their heads and between their heads and the under face of the bracket 48. An advantage obtained by the use of the pins 475 is that they may be removed and replaced easily by the operator without requiring the attention of a service-man. After lost motion has been taken up between the screw 46 and its slot 45 and the screw 40 and its slot 41, rotation of the work rotates the shaft 35, which, as will later appear, acts to rotate the driven shaft 20 which when its threaded portion is in active position, produces a steering motion of the work transverse to the direction of feed as produced by the sewing machine feed mechanism.

During the first revolution of the work pieces, during which time the lost motion between the screws 41 and 46 and their respective slots is being taken up, the shaft 20 is stationary so that there is no component of feed motion except that produced by the sewing machine feed. This causes the work pieces to be rotated substantially about their centers and the shank 50, and all this action takes place until the stitching mechanism has placed stitching in substantially a complete circle around the outer margins of the work disks.

When this single rotation of the work pieces has been effected, the screws 41 and 46 are brought up against the ends of their respective notches, taking up all the lost motion, so that further rotation of the shaft 47 drives the drive shaft 35. Driving of the shaft 35 is also made to drive the shaft 20. To this end, the gear 37 on the shaft 35 meshes with a long gear 50 fixed to a shaft 51 journaled in the carriage 16 in parallel relation to the shafts 35 and 25. The shaft 51 also has secured thereto a series of gears 52, 53, 54 and 55, and this shaft 51 may be moved axially while the gear 51 remains in mesh with the gear 50 to bring any selected of the gears 52 to 55 into mesh with the gears 30, 29, 28 and 27, respectively.

In Figure 8, the gear 55 is shown in mesh with the gear 24 so that rotation of the shaft 35 acts to rotate the shaft 20 at a given rate relative to the rotation of the shaft 35, depending upon the relative size of the gears 55 and 20. Thus, after the lost motion between the screws 40 and 44,

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and their respective slots 41 and 45, has been taken up, which is after a substantially complete rotation of the work disks has taken place, the shaft 20 begins to turn. The threaded portion 21 of this shaft may have engaged therewith a latch 60 pivoted at 61 between bracket elements 62 upstanding from the end member 13. The member 60 is normally held in such engagement, as shown in Figure 10, by a spring 63, but it may be released by exerting downward pressure on its outer end portion 64. While the latch 60 is in engagement with the threaded bushing 21, and the shaft 20 is turned, the shaft 20 is caused to move axially as it is rotated, the latch 60 acting as a fixed nut. This causes the shaft 20 with the carriage 16, to move along the guide bars 14 toward the end member 15 of the frame and causes the central axis portion of the work to be moved toward the needle bar at a gradual rate so that as the sewing continues the stitching spirals inwardly from the outer circular line made while there was no feed by the carriage because of the taking up of the lost motion in the drive mechanism for the shaft 20, as previously described.

This continues until after a spring bumper 70, journaled and axially movable in an upward bracket extension 71 of the carriage, strikes against the end frame member 15. Further motion of the carriage then holds back the bumper 70 while the motion of the carriage continues, so that a gear 75 fixed to the bumper is moved axially into mesh with the gear 37 on the drive shaft 35. Further motion of the drive shaft 35 produces a rotation of the gear 75 until a pin 76 projecting therefrom strikes against the lower face of an arm 77, lifting this arm 77 (see Figure 3), and rocking a shaft 78 to which this arm 77 is clamped. This shaft 78 has a crank end portion 79 (see Figures 8 and 10), which, when the shaft 78 is rocked from normal position shown in full lines of Figure 10 to the dotted line position, engages the side of a stop bar 80 and forces this stop bar 80 from the full to the dotted line position shown in Figure 10, releasing a latch lug 81 thereon from a latch plate 82, this releasing the rod 80 for axial motion. A spring 83 (Figure 2) lifts the bar 80 and rocks a rock shaft 830 connected to the bar 80 through an arm 831. The shaft 830 is connected to suitable mechanism (not shown) for stopping the operation of the machine. This may be a clutch control or other suitable mechanism. At about the time the gear 75 comes into mesh with the gear 37, the threaded portion 21 of the shaft 20 comes out of mesh with the latch 60, which thereupon engages the cylindrical or non-threaded end portion 22 so that the shaft 20 is no longer moved axially by its rotation. The stitching, however, continues after this portion of the shaft 20 engages the latch 60 until such time as the gear 75 rotates throughout the angular distance necessary to bring the pin 76 into position to engage the stop rod 80 and release the machine for stopping. Since during this part of the rotation of the shaft 20 the carriage 16 does not move along the guide bars 14, the work pieces merely continue rotation about the shank 51 so that a circular stitching line is made toward the center of the fabric disks as shown in Figure 7 before the machine stops. The outer circular row of stitching 85 is thus connected to an inner circular row by a continuous line of spiral stitching 87, all of these, however, being made by a single continuous stitching operation of the sewing machine.

The various gears 27 to 30 and 52 to 55 are employed in order to adjust the rate of motion of the carriage 16, which thus determines the spacing of adjacent convolutions of the spiral line of stitching. The gears 52 to 55 may be adjusted to the desired position by moving the shaft 51 axially by hand, a pivoted latch plate 89 carried by the carriage 16 being adapted to rest in any selected of four peripheral grooves 90 spaced along the shaft 51 to retain the shaft 51 in any selected of these axial positions.

The adjustment of the plate 19 determines the size of the inner circular stitching row and the diameter of the outer circular row of stitches 85 is determined by the setting of the stop 17 which limits the outward motion of the carriage 16 to the starting position. The end plate 15 of the frame has fixed thereto a normally horizontal plate 91 by screw and slot connections, this plate 91 having an extension 92 pressed into engagement with the sewing machine head 2 by the thrust of the feeding mechanism on the work.

The pivotal connections of the plate 13 to the plate 18 permit the lifting of the inner end of the frame into the dotted line position shown in Figure 1 out of contact with the work, thus facilitating the insertion and removal of the work when desired.

From the foregoing description of an embodiment of this invention, it should be evident to those skilled in the art that various changes and modifications might be made without departing from its spirit or scope.

I claim:

1. The combination with a sewing machine having sewing mechanism and means for feeding a plurality of superposed fabric disks to said sewing mechanism, of means for steering said disks relative to said mechanism, and means for driving said steering means comprising a shaft substantially perpendicular to said disks, a collar secured to said shaft and having a perforation eccentric to said shaft, a headed pin carried in said perforation and engageable in said disks, and a member overlying said collar and the head of said pin and retaining said pin in said perforation whereby turning of said disks by said feed mechanism rotates said shaft.

2. The combination with a sewing machine having sewing mechanism and means for feeding a plurality of superposed fabric disks to said sewing mechanism, of means for steering said disks relative to said mechanism, and means for driving said steering means comprising a shaft substantially perpendicular to said disks, a collar secured to said shaft and having a series of perforations arranged around and substantially parallel to said shaft, a headed pin carried in each of said perforations and engageable in said disks, and a disk overlying said collar and the head of said pins and retaining said pins in said perforations, whereby turning of said fabric disks by said feed mechanism rotates said shaft.

3. The combination with a sewing machine

having sewing mechanism and means for feeding a plurality of superposed fabric disks to said mechanism, of means driven by the feed of said disks for moving said disks laterally of the feed direction to cause the stitching of said disks to be made in a spiral path, said driving means comprising a carriage mounted for motion transverse to the feed direction, a drive shaft journaled in said carriage, mechanism operatively coupling said shaft to be driven by the motion of said disks produced by said feeding means, a shaft having threaded and unthreaded portions and driven by said drive shaft, a member on said carriage engageable with said driven shaft effective when engaging said threaded portion to cause the rotation of said driven shaft to move said carriage axially of said driven shaft, a gear journaled on said carriage and movable axially, a spring bumper operatively connected to said gear to move said gear axially, a drive gear on said drive shaft with which said carriage gear may be brought axially into mesh when said spring bumper is depressed at the end of the desired extent of motion of said carriage, a sewing machine control, and an element carried by said carriage gear for actuating said control to stop the machine after a predetermined extent of rotation of said carriage gear after it has meshed with said drive gear and while said engageable member is in engagement with an unthreaded portion of said driven shaft.

4. The combination with a sewing machine having stitching mechanism and mechanism for feeding work comprising a plurality of superposed disks of fabric to said stitching mechanism, of mechanism actuatable by the feeding motion of the work for guiding the work to said stitching mechanism to cause said stitching mechanism to stitch the disks in circular fashion adjacent to the outer edges and centers of said disks and in spiral formation therebetween, said actuated mechanism being hingedly mounted spaced from said stitching mechanism for lifting out of contact with the work to facilitate placing and removal of the work with respect to said stitching mechanism and having an element engaging a portion of the sewing machine and pressed thereagainst by the feed imparted to said disks during operation of the sewing machine.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
331,607	Binns	Dec. 1, 1885
390,685	Mallett	Oct. 9, 1888
393,252	Mallett	Nov. 20, 1888
564,598	Diehl	July 28, 1896
1,470,932	Perras	Oct. 16, 1923