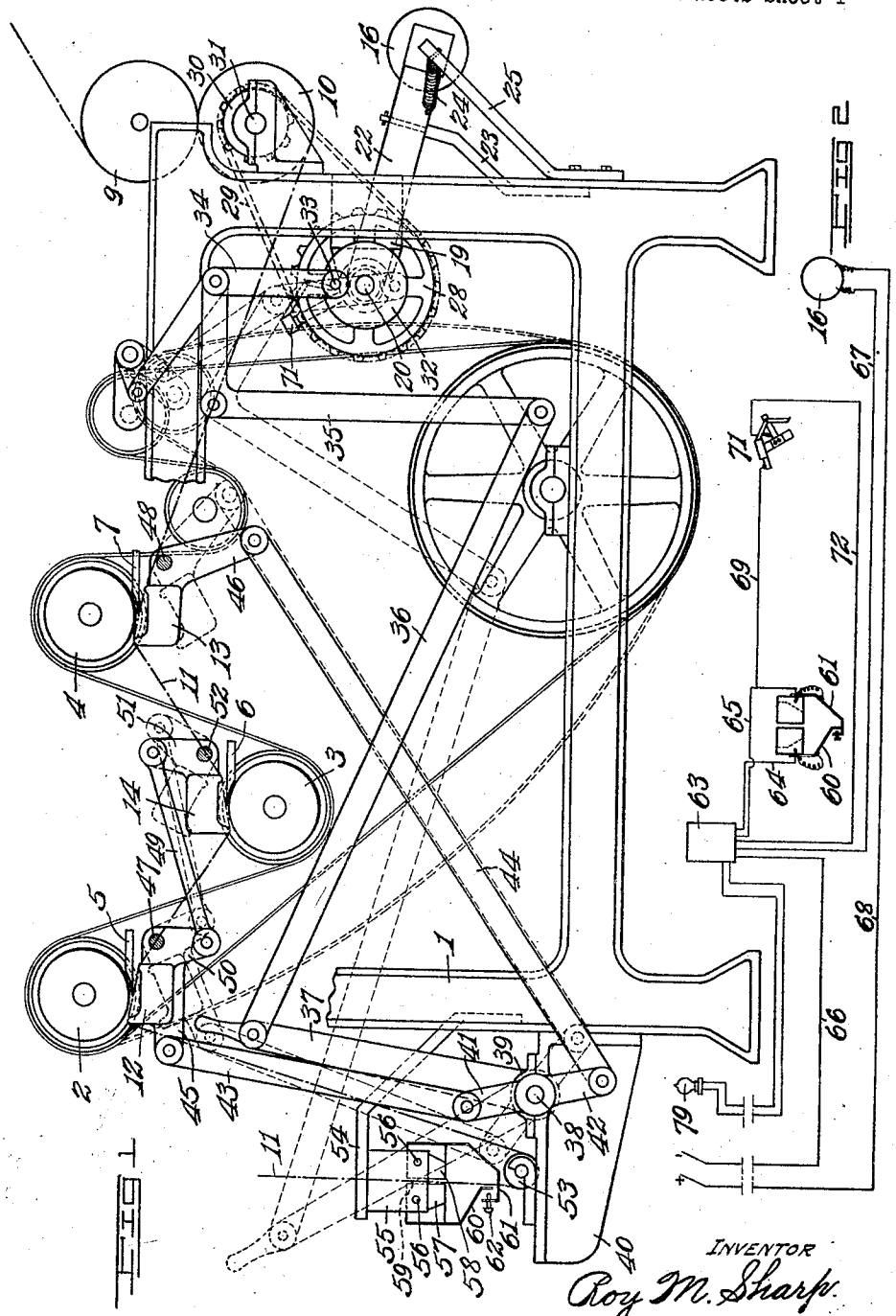
March 2, 1926. 1,574,942

R. M. SHARP

RETRACTING MECHANISM FOR THE CLOTH RESTS OF CLOTH SURFACING MACHINES

Filed July 23, 1925 2 Sheets-Sheet 1



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Filed July 23, 1925 2 Sheets-Sheet 2

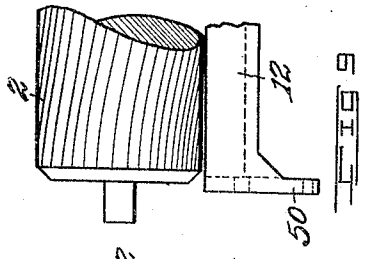


FIG 6

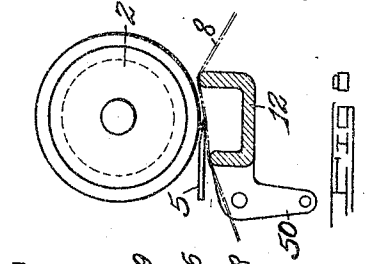


FIG 8

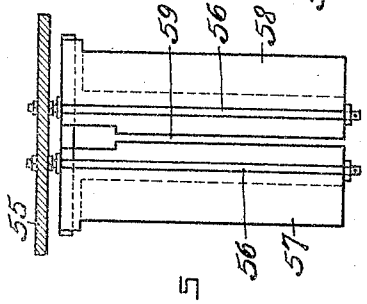


FIG 5

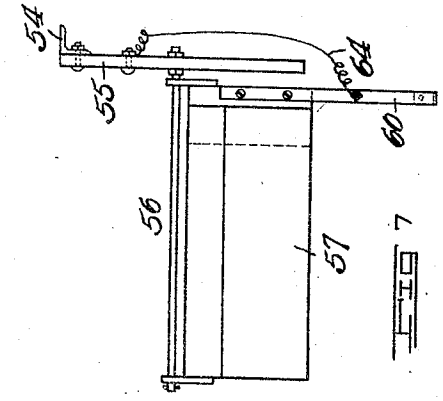


FIG 7

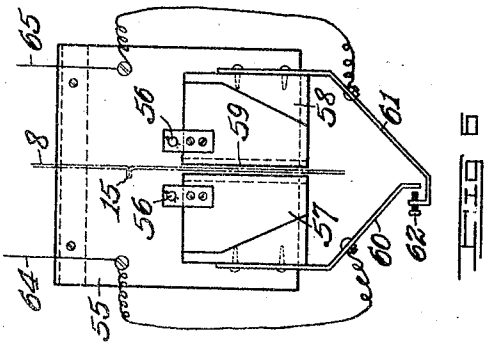


FIG 9

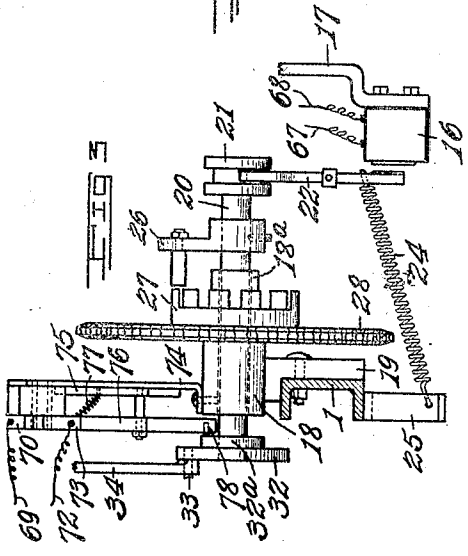


FIG 3

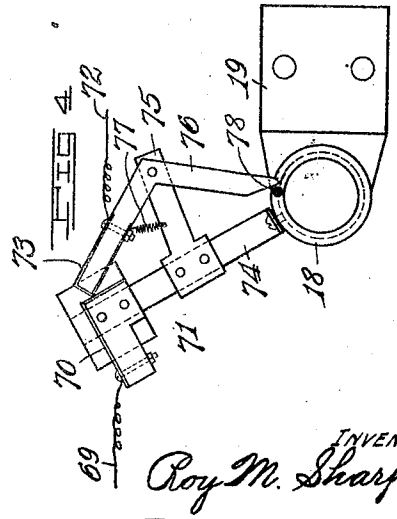


FIG 4

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Patented Mar. 2, 1926. 1,574,942

UNITED STATES PATENT OFFICE.

ROY M. SHARP, OF WHEELING, WEST VIRGINIA, ASSIGNOR TO J. L. STIFEL & SONS, OF WHEELING, WEST VIRGINIA, A CORPORATION OF WEST VIRGINIA.

RETRACTING MECHANISM FOR THE CLOTH RESTS OF CLOTH-SURFACING MACHINES.

Application filed July 23, 1925. Serial No. 45,644.

To all whom it may concern:

Be it known that I, ROY M. SHARP, a citizen of the United States of America, and resident of Wheeling, county of Ohio, and State of West Virginia, have invented certain new and useful Improvements in Retracting Mechanisms for the Cloth Rests of Cloth-Surfacing Machines, of which the following is a specification.

This invention relates broadly to machines for shearing projecting loose ends of threads, knots and the like from the surfaces of cloth fabrics, particularly cotton and silk, as a preliminary to printing the fabric, and it relates more particularly to an automatic mechanism for controlling the shiftable cloth rests for such machines.

The primary object of the invention is to provide, in a fabric shearing, or surfacing, machine, mechanism whereby the cloth rests which are associated with the shearing blades are automatically shifted to open position upon the close approach to said blades, or the foremost thereof, of the seams by which the ends of adjacent lengths of the fabric are joined in the formation of a continuous web or strip, thereby to pass said seams by the blades without engagement with the latter.

Heretofore, each individual machine of the character mentioned has required the constant presence of an attendant who, as the connecting seams of the advancing strip approaches the shearing mechanism, must promptly, or at the proper moment, manually shift the cloth rests to positions wherein the seams of the strip are allowed to pass said shearing blades without being contacted by the latter; otherwise, said blades would ordinarily shear into the cloth at the increased thickness produced by the seam, resulting in mutilation of the cloth and a consequent prevention of the further orderly advance of the latter.

As hereinbefore indicated, it is the aim of the present invention to provide means adapted to be actuated by each successive seam in the fabric strip and at a predetermined point in the close approach of the same to the foremost of the series of shearing blades to shift the cloth rests from their positions in cloth-presenting relation to said blades and to maintain said rests in such withdrawn position until the seam has passed by the last of the series of blades.

In describing the invention in detail, reference is herein had to the accompanying drawings, in which—

Figure 1 is a partial side elevation of a shearing machine embodying my invention;

Figure 2 is a diagrammatic view illustrating the electric wiring;

Figure 3 is an enlarged top plan view of the shiftable gearing and associated parts;

Figure 4 is an enlarged side elevation of the circuit breaker for the magnet energizing electric circuit;

Figure 5 is a top plan view of the seam-actuated closing device for the pilot circuit;

Figure 6 is an outer end elevation of the same;

Figure 7 is a side elevation of the same;

Figure 8 is a detail view, partially in end elevation and partially in section, illustrating the shearing elements and the associated cloth rest; and—

Figure 9 is a side elevation of a fragmentary portion of the same.

Referring to said drawings, 1 indicates generally the frame of a shearing machine of an ordinary commercial type, said frame having journaled thereon in the usual arrangement a plurality of spirally ribbed shearing rolls, or "revolvers", 2, 3 and 4 which operate in association with adjacent stationary shearing blades 5, 6 and 7, respectively, for shearing projecting thread-ends and fibers from the opposite surfaces of the fabric web or strip.

The fabric or cloth 8 to be acted upon, provided in the form of a continuous strip of great length formed by stitching together the adjacent ends of shorter lengths, is advanced lengthwise through the machine by suitable means, as by suitably located traction rolls 9 and 10, being caused to traverse a tortuous path which is indicated in Fig. 1 by the dot-and-dash line designated 11.

Underlying the revolvers 2 and 4, respectively, are the usual pivotally mounted cloth rests 12 and 13 by means of which the traveling strip of cloth is normally held elevated in closely underlying relation to said revolvers and the blades 5 and 7; and overlying the revolver 3 is the pivotally mounted rest 14 whereby said strip is normally held depressed in closely overlying relation to said revolver 3 and the therewith associated blade 6, said cloth rests serving so to guide said strip relative to said

rolls and blades that the latter will effectively perform their function.

In order that the double thickness of cloth at the seams 15, employed in joining the ends of adjacent lengths in the formation of the strip, would be caused to traverse a path in which said seams do not encounter the shearing blades, thereby to prevent the cloth mutilation hereinbefore referred to, suitable link and lever mechanism has heretofore been employed whereby said cloth rests could be manually moved from cloth-presenting relation to the shearing blades. In the present invention automatic mechanism is employed for the same purpose, said mechanism comprising link and lever shifting devices connected to each cloth rest, a magnet coil, means adapted to be actuated by said coil, when energized, whereby said shifting devices are actuated, an energizing electric circuit for said coil, and a closer for said circuit arranged to be successively operated by the seams in the cloth upon the close approach of such seams to the foremost of said cloth rests.

As herein shown, the magnet coil, designated 16, is suitably supported, as by a bracket arm 17, at or adjacent to the rear end of the frame 1. Journaled in a bearing 18 carried by a supporting arm 19 fixed on said frame is a short transverse shaft 20. Said shaft, which is both rotatable and longitudinally shiftable in said bearing, carries thereon an annularly channeled wheel 21, and received in the channel of said wheel is the yoke-like end of a shifting arm 22 which is pivotally mounted intermediate its ends upon a stationary support, as the arm 23, carried by the frame. The opposite, or outer, end of the shifting arm 22 is so located with respect to the magnet coil 16 that, when the latter becomes energized, it will be drawn into engagement with the coil against the tension of a retractile coil spring 24 which is interposed between said outer end and a fixed member, as 25, carried by the frame. Said spring normally maintains said shifting arm in a position wherein the latter holds the shaft 20 retracted in its inward position. In said position a member 26 carried by said shaft and forming the movable part of a clutch, is withdrawn from operative relation to its companion member 27, which latter is fixed to a sprocket wheel 28 that is rotatably mounted upon the bearing 18, or upon a reduced portion 18ª of said bearing. Rotation is communicated to said sprocket wheel through a chain 29 which connects it to a constantly rotated sprocket 30 carried by the shaft 31 upon which the traction roll 10 is mounted.

Following interengagement of the clutch member 26 with its companion member 27, rotation is imparted to the shaft 20 and, through the latter, to a disk 32 carried on the outer end thereof. Said disk carries on its outer face an eccentrically located wrist-pin 33 upon which is pivotally mounted an end of a link 34 that has its opposite end pivotally connected to the overhanging shorter arm of a bell-crank lever 35 which is pivoted on the frame 1 at a suitable point. The depending longer arm of said bell crank is connected by a pitman 36 to the free upper end of a crank arm 37 carried by a shaft 38 which is journaled in bearings 39 on the lower front end portion of the frame, or upon a bracket 40 carried by the latter. Additionally, said shaft 38 carries crank arms 41 and 42 which are connected by links or pitmen 43 and 44, respectively, to arms 45 and 46 carried in fixed relation to the cloth rests 12 and 13, respectively.

The cloth rests 12, 13 and 14 are normally held disposed in their cloth-presenting relation to the adjacent shearing devices, as shown in full lines in Fig. 1, by means of weights (not shown) which are associated therewith, this being the usual construction employed in prior machines of this character. However, as the disk 32 rotates from its normal at-rest position shown in full lines in Fig. 1, the rests 12 and 13 are rocked downward on their pivotal mountings 47 and 48 to the dotted line position shown, thus lowering the traveling strip of cloth out of operative relation to the shearing blades 5 and 7. At the same time, through the intermediacy of a pitman 49 connecting suitably arranged crank arms 50 and 51 carried by the rests 12 and 14, respectively, said rest 14 is rocked upward on its pivotal mounting 52 for withdrawing the cloth from the shearing blade 6. Thus, as is evident, promptly following the energizing of the magnet coil 16, the various cloth rests are withdrawn to positions permitting the cloth to be drawn through the machine without coming into contact with any of the shearing blades; and the time during which the strip is so withdrawn is that required for the travel of the strip from the closing device for the electric circuit to and past the last of the series of shearing blades.

In its travel to the machine herein described, the strip of cloth passes vertically downward to and under a roller 53 journaled adjacent to the lower front end portion of the frame 1, as upon the bracket 40, and thence passes upward to and over the foremost cloth rest 12. Supported adjacent to said roller 53, as upon a bracket 54 carried by the frame is a depending panel 55 in which are mounted the adjacent ends of two parallel bolts or rods 56, and pivotally suspended from said rods are two parallel horizontal members 57 and 58 which are separated to provide a vertical slot-like pas-

sage or throat 59 through which an edge portion of the cloth strip in its vertical travel to the roller 53 must pass, said throat having a width but little in excess of that required to accommodate a single thickness of the cloth. Carried by one of said pivotally suspended members, as the member 57, is a depending metal contact 60, and carried by the other of said members is a metal contact 61, the latter being extended downward under and thence upward in front of the contact 60 and carrying a screw terminal 62 which is adapted for adjustment relative to the adjacent terminal of said contact 60. Said contacts 60 and 61 are located in an electric pilot circuit which includes a clapper switch 63 of a well understood form and conductors 64 and 65, respectively, interposed between said contacts 60 and 61 and said clapper switch. Said clapper switch is further located in a main circuit to the magnet coil, said circuit comprising a conductor 66 leading from a source of electric current, said clapper switch, a conductor 67 leading from said switch to said magnet coil, and a return conductor 68 leading from said coil to the source of current.

The pilot circuit hereinbefore described is closed by the passage into and through the throat 59 of a seam 15 which acts to swing the members 57 and 58 apart the slight distance required to produce circuit-closing engagement between the contact 60 and the screw terminal 62. The closing of said pilot circuit serves to actuate the clapper switch 63 to move to main circuit closing position for energizing the magnet coil; and in its said position said switch also closes a holding circuit whereby the main circuit is retained closed throughout a definite interval of time, which interval is that which elapses in a complete revolution of the disk 32.

The holding circuit referred to includes the clapper switch 63, conductor 65, a conductor 69 which branches from said conductor 65 and leads to the stationary contact 70 of a normally closed circuit breaker switch 71, and a conductor 72 returning to said clapper switch from the movable contact 73 of said circuit breaker. Said circuit breaker switch comprises a bracket 74 which is fixed upon a suitable stationary part of the machine structure, as upon the bearing 18, and which carries the fixed contact 70 on its outer end. A rearwardly directed arm 75 carried by said bracket 74 intermediate its ends has pivoted on its outer end the angle portion of a lever 76 of approximately right-angle, or bell-crank, form, one arm of which carries the movable contact 73. A retractile coil spring 77 interposed between said lever 76 and a stationary part, as the arm 75, normally maintains said lever in the position in which said contact 73 rests upon said contact 70. The other arm of said bell crank lever 76 depends to a point adjacent to the shaft 20 wherein it is disposed in the path of movement of a horizontally disposed pin 78 carried by the inner face of the disk 32, or by the hub 32^a of the latter.

The disk 32 normally occupies a position in which the pin 78 lies directly in front of the depending arm of the lever 76, as shown in Figs. 3 and 4. Rotation of said disk from said position, effected through the inter-engagement, as aforesaid, of the clutch members 26 and 27, continues throughout one complete revolution, the main coil-energizing circuit being held closed until the pin 78 passes beneath the end of the depending arm of the bell-crank lever 76. In its close approach to said position, said pin engages said lever arm and carries the latter forward therewith, swinging said lever on its pivotal mounting and effecting resultant breaking of the electric holding circuit through the withdrawal of the movable contact 73 from engagement with the stationary contact 70. The breaking of said holding circuit, as aforesaid, effects instantaneous deenergizing of the magnet coil 16, whereupon the shifting arm 22, actuated by its spring 24, is swung back to its normal position, disengaging the clutch elements 26 and 27. Further, as is evident, the cloth rests will have, at the end of the complete revolution of the disk 32, resumed their normal operative positions.

A signal lamp 79 may be employed for visually indicating to persons distant from the machine whether the shifting mechanism is functioning properly, said lamp being located in a lighting circuit with the clapper switch 63 in a well-understood arrangement which provides for closing and opening said circuit in unison with the closing and opening of the coil energizing circuit.

What is claimed is—

1. In a cloth surfacing machine, the combination with shearing elements, and rests normally disposed in cloth-presenting relation to said elements, of a constantly rotated member, a normally idle rotatable member, connections between said rotatable member and said cloth rests whereby rotation of the former actuates movement of the latter from cloth presenting position, and means controlled by abnormal thicknesses of the advancing cloth whereby said rotatable member is automatically shifted into driven relation to said rotated member.

2. In a cloth surfacing machine, the combination with shearing elements, cloth advancing means, and rests normally disposed in cloth-presenting relation to said elements, of mechanism for retracting said rests, said mechanism comprising a normally inactive rotatable member, connections between said member and said rests whereby rotation of the former actuates retracting movement of

said rests, and means actuated by abnormal thicknesses in the cloth whereby said member is rendered active.

3. In a cloth surfacing machine, the combination with shearing elements, cloth advancing means, and rests normally disposed in cloth-presenting relation to said elements, of mechanism for retracting said rests, said mechanism comprising a constantly rotated member, a rotatable member shiftable into and out of driven relation to said rotated member, connections between said shiftable member and said rests whereby rotation of the former actuates retracting movement of the latter, and electrical means for effecting shifting of said shiftable member to its driven position, said means being adapted to be activated by an abnormal thickness in the cloth at a predetermined point in the travel of the latter.

4. In a cloth surfacing machine, the combination with shearing elements, cloth advancing means, and rests normally disposed in cloth-presenting relation to said elements, of mechanism for retracting said rests, said mechanism comprising a constantly rotated member, a rotatable member shiftable into and out of driven relation to said rotated member, connections between said shiftable member and said rests whereby rotation of the former actuates retracting movement of the latter, means including an electrically energizable element for effecting movement of said shiftable member to its driven position, a normally open electric energizing circuit for said element, and closing means for said circuit including contacts adapted to be moved into engagement by an abnormal thickness in the traveling cloth.

5. In a cloth surfacing machine, the combination with shearing elements, cloth advancing means, and rests normally disposed in cloth-presenting relation to said elements, of mechanism for retracting said rests, said mechanism comprising a constantly rotated member, a rotatable member shiftable into and out of driven relation to said rotated member, connections between said shiftable member and said rests whereby rotation of the former actuates retracting movement of the latter, means including an electrically energizable element for effecting movement of said shiftable member to its driven position, an electric energizing circuit for said element, and means actuated by a seam in the cloth whereby closing of said circuit is effected.

6. In a cloth surfacing machine, retracting mechanism for the cloth rests, comprising a constantly rotated member, a rotatable member shiftable into and out of driven relation to said rotated member, connections between said shiftable member and said rests whereby rotation of the former actuates the latter to move from and return to normal position, means normally holding said shiftable member in its idle position, an electrically energizable element, means actuated by said element when energized for moving said shiftable member to operative position, a normally open energizing circuit for said energizable element, said circuit being adapted to be closed by seams in the advancing cloth at a predetermined point in the travel, and means for opening said circuit.

7. In a cloth surfacing machine, the combination with shearing elements, and shiftable rests normally disposed in cloth presenting relation to said elements, of a constantly rotated member, a normally stationary rotatable member, connections between said rotatable member and said rests whereby rotation of the former actuates shifting movement of the latter from and to their normal position, clutch mechanism for effecting shifting of said rotatable member into and out of driven relation to said constantly rotated member, and means set in operation by successive seams in the advancing cloth whereby said clutch mechanism is actuated to move said rotatable member to operative position at a predetermined point in the travel of said seams.

8. In a cloth surfacing machine, the combination with shearing elements, and shiftable rests normally disposed in cloth presenting relation to said elements, of a constantly rotated member, a normally stationary rotatable member, connections between said rotatable member and said rests whereby rotation of the former actuates shifting movement of the latter from and to their normal position, clutch mechanism for effecting shifting of said rotatable member into and out of driven relation to said constantly rotated member, and means set in operation by successive seams in the advancing cloth whereby said clutch mechanism is actuated to move said rotatable member to operative position at a predetermined point in the travel of said seams, said means including an electrically energizable element, a normally open energizing circuit for said element, and a circuit closing device.

9. In a cloth surfacing machine, the combination with shearing elements, and shiftable rests normally disposed in cloth presenting relation to said elements, of a constantly rotated member, a normally stationary rotatable member, connections between said rotatable member and said rests whereby rotation of the former actuates shifting movement of the latter from and to their normal position, clutch mechanism for effecting shifting of said rotatable member into and out of driven relation to said constantly rotated member, and means set in operation by successive seams in the advancing cloth whereby said clutch mecha-

nism is actuated to move said rotatable member to operative position at a predetermined point in the travel of said seams, said means including a normally deenergized magnet coil, a normally open electric energizing circuit for said coil, a clutch shifter adapted to be actuated by said coil when energized, and means adapted to be moved by successive seams in the advancing cloth for closing said electric circuit.

10. In a cloth surfacing machine, the combination with shearing elements, and shiftable rests normally disposed in cloth presenting relation to said elements, of a constantly rotated member, a normally stationary rotatable member, connections between said rotatable member and said rests whereby rotation of the former actuates shifting movement of the latter from and to their normal position, clutch mechanism for effecting shifting of said rotatable member into and out of driven relation to said constantly rotated member, and means set in operation by successive seams in the advancing cloth whereby said clutch mechanism is actuated to move said rotatable member to operative position at a predetermined point in the travel of said seams, said means including a normally deenergized magnet coil, a normally open electric energizing circuit for said coil, a clutch shifter adapted to be actuated by said coil when energized, means adapted to be moved by successive seams in the advancing cloth for closing said electric circuit, said circuit including a circuit breaking device adapted to be actuated at predetermined times.

In testimony whereof, I affix my signature.

ROY M. SHARP.