Oct. 16, 1934. H. CORRALL ET AL 1,977,573

MACHINE FOR DRAWING THREADS IN FABRICS

Filed March 19, 1932 3 Sheets-Sheet 1

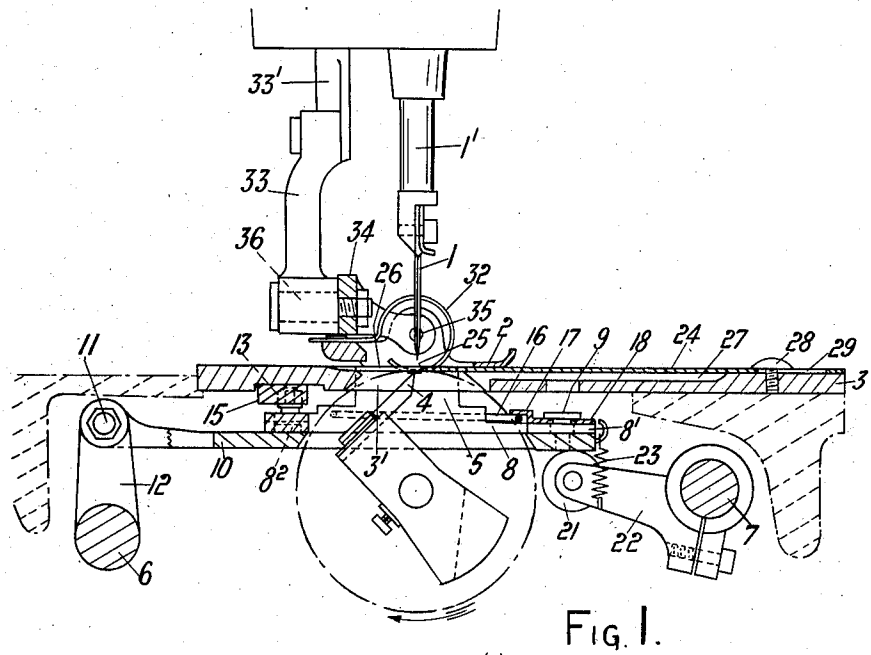

FIG. 1.

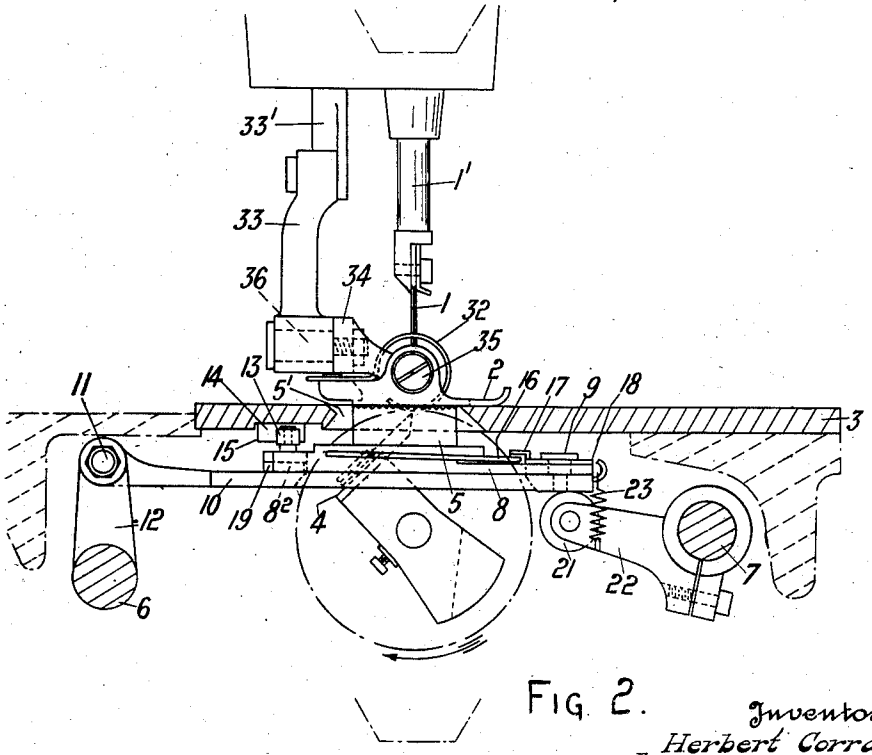

FIG. 2.

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MACHINE FOR DRAWING THREADS IN FABRICS

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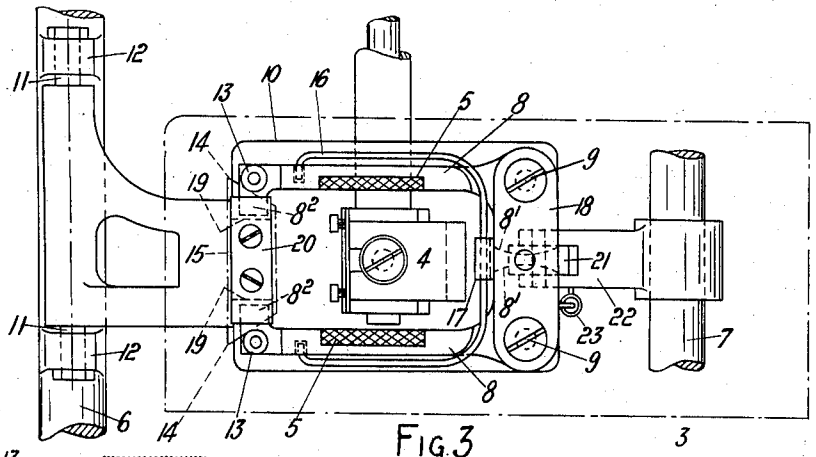

FIG. 3

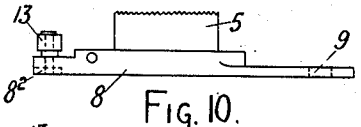

FIG. 10.

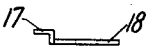

FIG. 13.

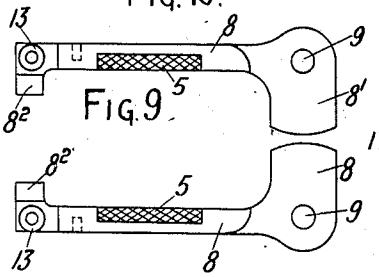

FIG. 9.

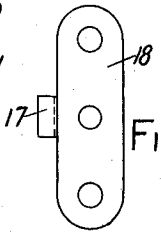

FIG. 12.

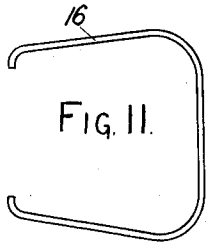

FIG. 11.

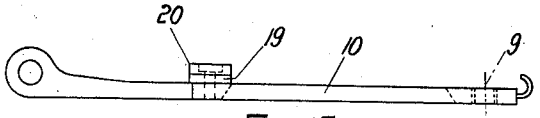

FIG. 15.

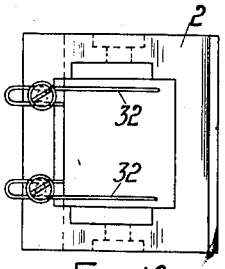

FIG. 16.

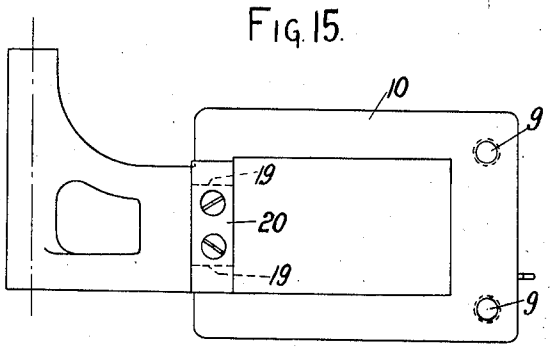

FIG. 14.

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MACHINE FOR DRAWING THREADS IN FABRICS

Filed March 19, 1932 3 Sheets-Sheet 3

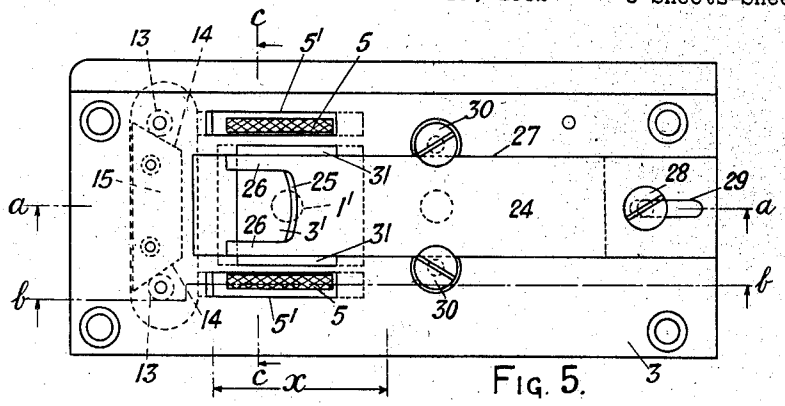

FIG. 5.

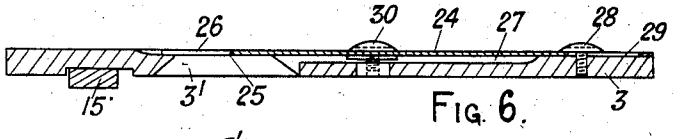

FIG. 6.

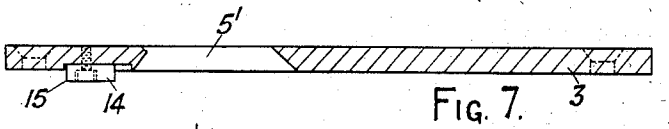

FIG. 7.

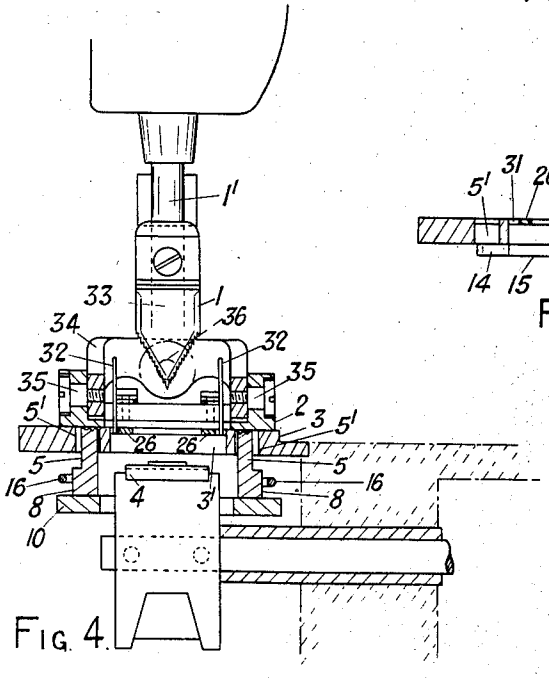

FIG. 4.

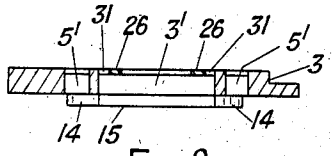

FIG. 8.

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Patented Oct. 16, 1934 1,977,573

UNITED STATES PATENT OFFICE

1,977,573

MACHINE FOR DRAWING THREADS IN FABRICS

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Application March 19, 1932, Serial No. 599,906
In Great Britain April 8, 1931

7 Claims. (Cl. 112—78)

This invention relates to machines for drawing threads in fabrics, of that class having a ledger blade fitted to the throat-plate, a presser bar and a piercer bar above the throat-plate, and a movable thread-cutting blade below the throat-plate.

The machine according to the invention is equipped with fabric-feeding mechanism comprising feed-dogs spring-urged towards one another and movable apart by the action of a cam or wedge in the advance feeding movement of said feed-dogs.

The feed-dogs are carried by bars or levers pivoted at their ends adjacent to the operator and provided at their opposite ends with followers engageable with a cam or wedge.

The ledger blade, accommodated in a recess in the throat-plate and supported at its ends only, is engaged intermediate its ends by the heads of screws threaded into apertures in the throat-plate, so that by adjustment of these screws the blade may be flexed between its points of support to vary the level of its cutting edge.

The invention is illustrated in the accompanying drawings in which Figs. 1 and 2 are vertical sections in the line of feed at the thread-drawing station, the throat-plate and the feeding mechanism in these figures being in section, respectively, on the lines *a*—*a* and *b*—*b* of Fig. 5; Fig. 3 is a plan view of the mechanism below the throat-plate; Fig. 4 is a vertical section at right angles to Figs. 1 and 2, the throat-plate being in section, on the line *c*—*c* of Fig. 5. Fig. 5 is a detail plan view of the throat-plate with the feed-dogs projecting upwardly through slots in the latter; Figs. 6 and 7 are vertical sections also on the lines *a*—*a* and *b*—*b*, respectively, of Fig. 5; Fig. 8 is a vertical transverse section also on the line *c*—*c* of Fig. 5; Figs. 9–15 are detail views of the components of the feeding mechanism; Fig. 16 is a plan view of the presser foot.

Referring to the drawings, 1 denotes the usual serrated piercer blade carried by the vertically reciprocating piercer bar 1′, 2 the presser foot, 3 the throat-plate, 4 a rotary thread-cutter beneath the throat-plate 3, 5 two feed-dogs which project upwardly through slots 5′ in the throat-plate 3, 6 the feed rock shaft and 7 the feed lift rock shaft.

The feed-dogs 5 are unitary with the feed-bars or levers 8 pivoted at 9, at the ends adjacent to the operator, to a carrier frame 10 pivotally connected at 11 to arms 12 unitary with the feed rock shaft 6. Rollers 13 mounted one on the end of each feed-bar or lever 8 remote from the pivot 9 are engageable with divergent faces 14 presented by a cam 15 secured to the underside of the throat-plate 3, whereby the levers 8 and therewith the feed-dogs 5 are spread further apart in the advance movement of the feed-dogs, in opposition to the action of a U-shaped wire spring 16, so as to effect stretching of the fabric in the direction transverse to the line of feed. The spring 16 is held in position under a lug 17 unitary with a keeper plate 18 penetrated by the pivots 9. The levers 8 are unitary with arms 8′ guided between the keeper plate 18 and the frame 10 and with toes 8^2 movable in guideways 19 defined between the upper face of the frame 10 and the undercut ends of a plate 20 secured to the frame. The ends of the frame 10 adjacent to the shaft 7 rests upon a roller 21 carried by an arm 22 secured to the shaft 7; a tension spring 23 being provided to maintain the frame 10 in engagement with the roller 21.

The ledger blade 24 is constituted as a blade spring having a bifurcated operative end overlying a cut-away 3′ in the throat plate and presenting a cutting edge 25 flanked by prongs 26 which are contacted by the lateral portions of the broad cutting edge of the cutter 4 before said broad cutting edge cooperates with the edge 25. The blade 24 is accommodated in a recess 27 in the throat plate and supported at its ends only. The prongs 26 rest on that edge of the cut-away 3′ remote from the operator and the end of the blade adjacent to the operator is anchored to the throat plate by a screw 28 penetrating a slot 29 in the blade 24. By adjustment of screws 30 threaded into apertures in the throat plate, one at each side of the blade 24 intermediate the ends thereof, with their heads engaging the blade, the blade may be flexed between its points of support so as to bring its cutting edge 25 into correct position for cooperation with the cutter 4. By slackening the screw 28 the blade 24 may be adjusted in a direction transverse to its cutting edge 25 to bring said cutting edge into correct position relatively to the cutter 4. The cut-away 3′ is so dimensioned as regards width with respect to the blade 24 that gaps 31 are afforded between the lateral edges of the cut-away and the blade 24. In vertical register with the gaps 31 and projecting thereinto are reflex wire springs 32 carried by the presser foot 2 and adapted to maintain under tension the cross threads of the draw.

The presser foot 2 is of skeleton form, being universally connected to a bracket 33 on the presser bar 33′ by means of a forked bracket 34 pivot-

ally connected at 35 to the presser foot and at 36 to the bracket 33.

In the interest of clarity of illustration the usual serrations on the upper surface of the throat plate, within the area indicated at *x* (Fig. 5), are not shown.

As is understood, in operation, the cutter 4 performs one rotation for each feeding movement and the piercer blade 1 in its descent depresses the longitudinal threads of the draw into the path of the rotary cutter 4 which severs said threads in cooperation with the ledger blade.

What is claimed is:—

1. In a thread-drawing machine, in combination, a throat-plate, a flexible ledger blade fitted to the throat-plate, said ledger blade supported at its ends only and having a cutting edge, a movable thread-cutting blade below said throat-plate, and means for flexing said ledger blade intermediate its ends to vary the level of its cutting edge.

2. In a thread-drawing machine, in combination, a throat-plate, a ledger blade fitted to the throat-plate, said ledger blade being bifurcated at one end and formed with a cutting edge extending between the bifurcations, said ledger blade supported at its ends, a movable thread-cutting blade below said throat-plate, and means engageable with said throat-plate for flexing said ledger blade intermediate its ends to vary the level of its cutting edge.

3. In a thread-drawing machine, in combination, a throat-plate formed in its upper face with a recess and with a cut-away, a flexible ledger blade secured at one end to said throat-plate and overlying said recess, said ledger blade supported by said throat-plate at its opposite end and having a cutting edge overlying said cut-away, screws threaded into said throat-plate and engageable with said ledger blade above the recess for flexing said ledger blade intermediate its ends, and a movable thread-cutting blade below said throat-plate co-operating with said ledger blade.

4. In a thread-drawing machine, a throat-plate, a vertically reciprocatory piercer, a ledger blade, a movable thread-cutting blade below said throat-plate cooperating with said ledger blade, work-advancing feed-dogs spaced crosswise of the direction of feed of the work, a feed-bar pivotally supporting said feed-dogs for vibratory movements toward and from each other about substantially vertical axes, means for actuating said feed-bar, guiding means upon said feed-bar confining said feed-dogs against sidewise tilting movements, means beneath said throat-plate for wedging said feed-dogs apart in their work-advancing movements, a U-shaped spring embracing said feed-dogs and yieldingly urging the feed-dogs towards one another, and work-presser means opposed to said feed-dogs.

5. In a thread-drawing machine, a throat-plate, a ledger blade fitted to said throat-plate, a vertically reciprocatory piercer, a movable thread-cutting blade below said throat-plate cooperating with said ledger blade, a feed-bar below said throat-plate, means for actuating said feed-bar, laterally spaced feed-dog carrying levers pivotally mounted upon said feed-bar for vibratory movements toward and from each other crosswise of the direction of feed, stationary means for effecting separation of said feed-dogs during their work-advancing movements, keeper plates upon said feed-bar engaging the opposite ends of said levers to confine the feed-dogs against sidewise tilting movements, means carried by one of said keeper plates for yieldingly urging said levers into feed-dog approaching movements, and work-presser means.

6. In a thread-drawing machine, a throat-plate provided with a piercer opening and with feed-dog slots at opposite sides of said piercer opening, a ledger blade fitted to said throat-plate and having a cutting edge in said piercer opening, a vertically reciprocatory piercer, a movable thread-cutting blade below said throat-plate cooperating with said ledger blade, a feed-bar below said throat-plate, means for actuating said feed-bar, laterally spaced feed-dog carrying levers each pivotally secured at one end to said feed-bar, a cam secured upon the under side of said throat-plate having divergent wedge-faces disposed rearwardly of said throat-plate piercer aperture, followers carried by said feed-dog carrying levers at their ends opposite to the pivoted ends thereof for engagement with said wedge faces, a spring yieldingly urging the follower carrying ends of said levers toward each other, and work-presser means.

7. In a thread-drawing machine, a throat-plate formed with a cut-away, a ledger blade having a cutting edge overlying said cut-away, a movable thread-cutting blade below said throat-plate cooperating with said ledger blade, and means for securing said ledger blade upon said throat-plate for adjustment of the cutting edge of said ledger blade in said cut-away in a plurality of directions transverse to said cutting edge and to each other.

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