

J. A. FIRSCHING.
CLOTH CUTTING MACHINE.
APPLICATION FILED FEB. 15, 1909.

954,025.

Patented Apr. 5, 1910.

3 SHEETS—SHEET 1.

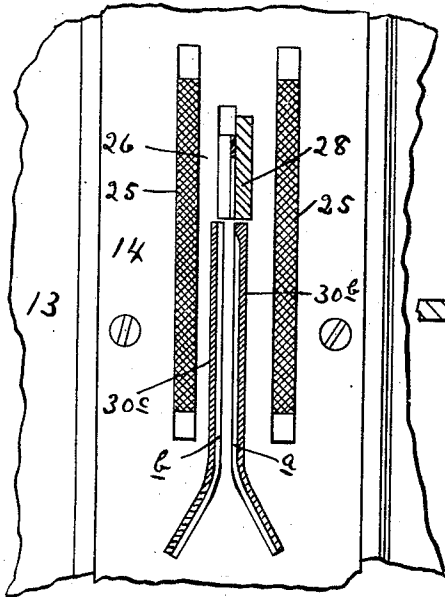


Fig. 5.

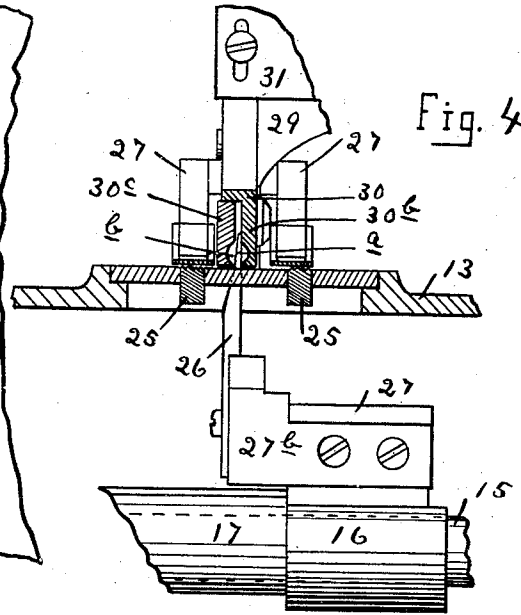


Fig. 4.

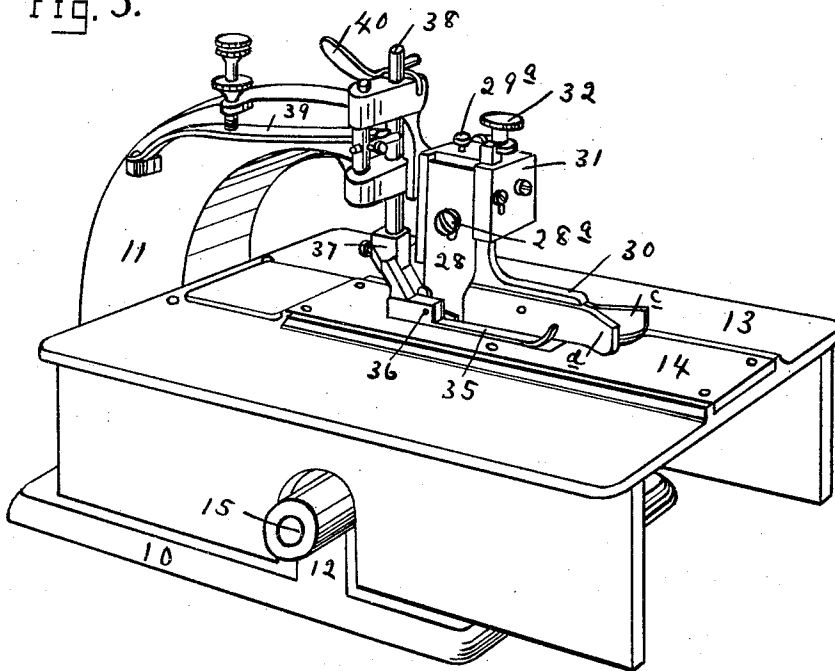


Fig. 1.

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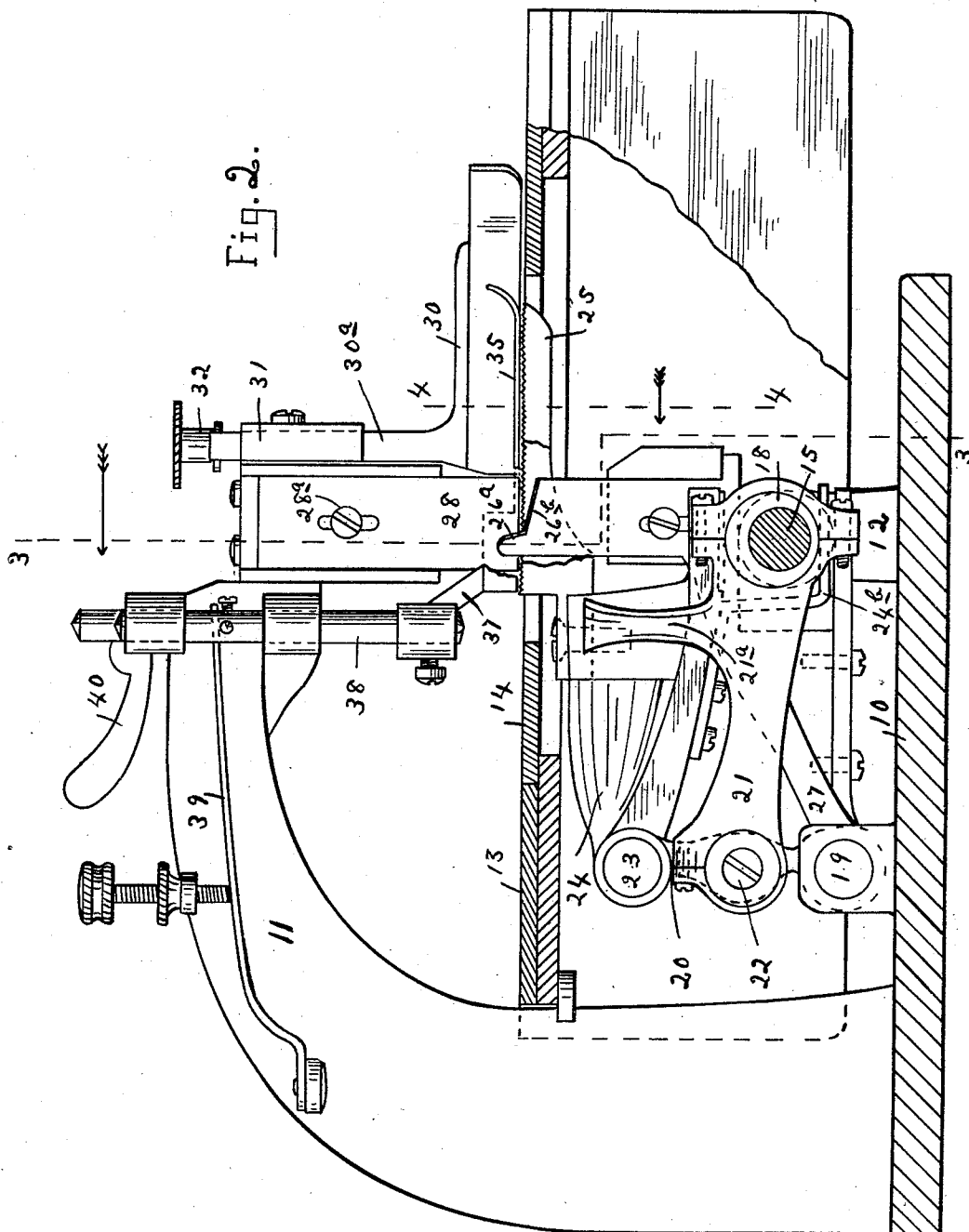
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3 SHEETS—SHEET 3.

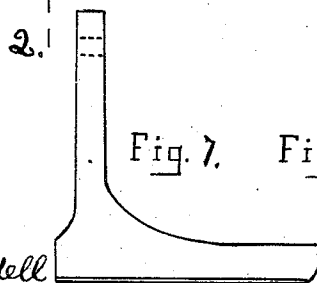
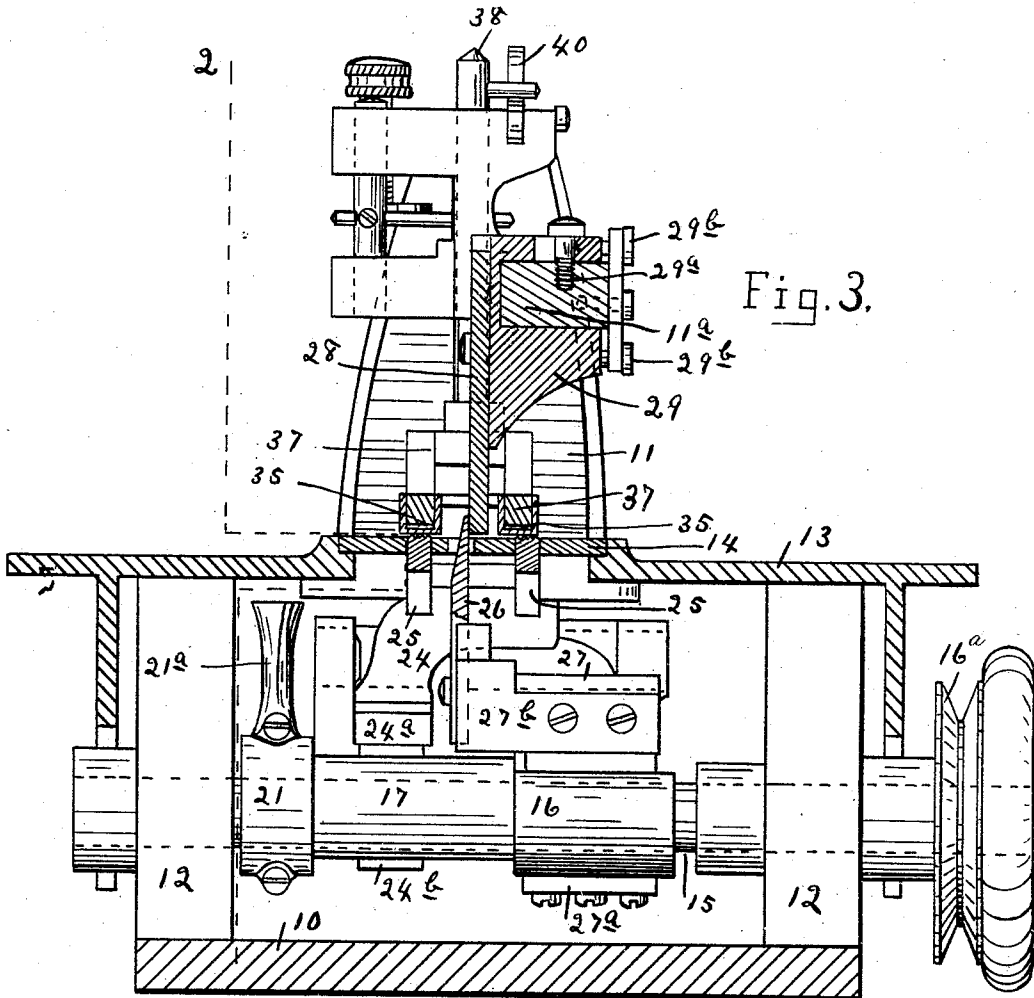
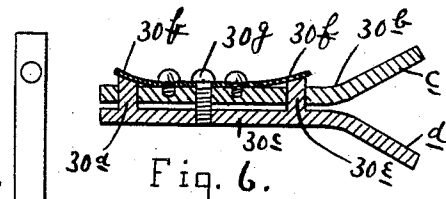


Fig. 7. Fig. 8.



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UNITED STATES PATENT OFFICE.

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CLOTH-CUTTING MACHINE.

954,025.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed February 15, 1909. Serial No. 478,007.

To all whom it may concern:

Be it known that I, JOSEPH A. FIRSCHING, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Cloth-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form part of this specification.

The object of my present invention is to provide a machine for cutting fabrics, particularly knitted fabrics adjacent to a welt. The portion of the knitted fabric from which the wrist bands are made in knitted underwear is usually knitted in continuous strips with a roll or welt knitted in at suitable intervals. The fabric has to be cut adjacent to these welts and the closer and more accurately the cutting can be made the better appearance the finished garment presents.

The particular object of my present invention is to provide a machine, which will follow the welt and cut the fabric in such close proximity thereto that the severed ends of yarn will not present an objectionable appearance and may be retired into the welt or fabric usually completely by stretching the goods after cutting, whereby the end presents the appearance of a piece of fabric where the knitting was started or finished at the welt.

Figure 1 shows a perspective view of a machine embodying my improvements. Fig. 2 is a partial side elevation and a partial vertical section taken on line 2, 2 of Fig. 3. Fig. 3 is a cross-sectional view taken on line 3, 3 of Fig. 2 showing in elevation the parts to the left of the sectional line. Fig. 4 is a partial section taken on line 4, 4 of Fig. 2 showing parts of the mechanism to the left of the sectional line in side elevation. Fig. 5 is a plan view of a section of a table with feed dogs in position therein, and also a sectional view of the welt guide and upper cutter in planes close to the surface of the top of the table. Fig. 6 is a longitudinal sectional view of the welt guide. Fig. 7 is a side elevation and Fig. 8 a front end view of a modified form of welt guide.

The machine is built on a frame work consisting of a base plate 10 having at the rear a rigid overhanging arm 11 and adja-

cent to the front provided with posts 12, 12, on which arm and posts is supported, the main table 13 preferably having an inlaid throat plate 14, which in effect constitutes a portion of the table. Mounted in suitable bearings on the frame and preferably in posts 12 is the main shaft 15 adapted to be driven by a pulley 16^a secured on a projecting end of the shaft. This shaft carries three cams 16, 17 and 18 adapted to operate the feed dogs and cutter, as hereinafter pointed out.

To the rear of the shaft 15 is located a rocking frame 20 hinged at its lower end on a shaft 19 mounted in suitable bearings on the base plate 10. For rocking the frame 20 forwardly and backwardly at its upper end it is connected with the cam at 18 by a connecting rod 21, which at its forward end engages and surrounds the cam 18 and at its rear end engages on a pin 22 substantially midway of the height of the rocking frame 20. This connecting rod 21 preferably includes an extension 21^a containing an oil hole extending to the bearing on the cam 18. To the upper end of the swinging frame 20 is hinged on the short shaft 23 the feed dog carrier 24. To the upper portion of the forward end of the feed dog carrier 24 are secured the two feed dogs 25, 25, the operative portions of which are provided on their upper faces with serrations adapted to engage with the fabric and operate through slotted openings in the throat plate 14. The lower forward portion of the feed dog carrier 24, indicated by 24^a, engages on top of the cam or eccentric 17, and it also carries an angular extension 24^b, which engages under the cam or eccentric 17 whereby the feed dogs are moved both up and down positively by the cam. The lower movable cutter blade 26 is directly mounted on an adjustable base 27^b, which in turn is mounted on the forward end of the cutter carrier 27. This cutter carrier is hinged at its rear end by being mounted on the shaft 19, before referred to, and at its forward end engages particularly on top of the eccentric 17, whereby the cutter is lifted, and also by a part 27^a with the underside of the eccentric or cam 16 whereby the cutter is moved downwardly. The operative end of the cutter 26 works in conjunction with a stationary blade 28 located above the plane of the upper surface of the table and supported by the overhanging arm 11 in a fixed position.

In order to permit the blade 28 to be suitably adjusted, it is adjustably secured by a screw 28^a on the hanger 29, which in turn is adjustably secured on the end 11^a of the overhanging arm 11 by means of adjusting screws 29^a and 29^b. The lower cutting edge of the blade 28, which as before stated is located just above the plane of the table (the upper surface of the throat plate 14), is preferably straight and parallel with the surface of the table, while the operative end of the lower cutter 26 is provided with a tooth-like projection 26^a lying against one side of the blade 28 and preferably never sufficiently withdrawn to disengage with the sloping or inclined shearing or cutting edge 26^b. Located in front of and in the plane of the stationary cutter 28 is the welt guide 30. This guide is provided with a shank 30^a adjustably engaged in the guide holder 31, which guide holder is adjustably mounted on the end of the overhanging arm 11 of the frame. For controlling the vertical adjustment of the welt guide 30 with reference to the surface of the table, there is preferably provided an adjusting screw 32 engaging with the upper end of the shank 30^a.

The welt guide, as shown in Figs. 1, 2, 4 and 6 consists of a part or member 30^b integral with the shank 30^a and an adjustable member 30^c having guide posts or studs 30^d, and 30^e sliding through openings in the part 30^b engaged at their ends by springs 30^f tensioned to force the members 30^b and 30^c apart. To adjustably secure these members against being forced apart there is provided an adjusting screw 30^g passing through the member 30^b and threaded into the member 30^c. Formed in the opposed faces of the parts 30^b and 30^c of the welt guide, as near to the lower edge (face) as may be and parallel therewith, are substantially semicircular grooves *a* and *b*. The forward ends of the parts 30^b and 30^c of the welt guide are flared outwardly as indicated at *c* and *d* and these grooves in the face of the parallel portions are preferably carried more or less out toward the front end of the flaring portions. The groove *a* in the member 30^b of the welt guide is not carried entirely through to the rear end of the guide but terminates just short of the rear end in the plane of the inner face of this member of the guide, as appears particularly in Fig. 5.

The inner face of the member 30^b of the welt guide will be adjusted more or less as near as may be to the plane of the face of the stationary cutter 28 against which at its lower end the movable cutter 26 operates. Arranged directly over the two feed dogs 25 is a presser foot consisting of two members 35, 35. These two members are joined at their rear and are hinged at 36 in the holder 37 so that their forward ends, which are upturned as shown, may have an up and

down floating movement whereby they will readily pass over any varying, irregular thicknesses of fabric. The presser foot is mounted by means of the holder 37 on a vertical bar 38 mounted in fixed bearings 70 on the overhanging end of the arm 11. A spring 39 is provided engaging on a pin on the bar 38 for forcing the presser foot down on to the table, and a cam lever 40 is provided for manually raising the presser foot. 75

When the machine is put in motion the feed dogs 25 are dropped down below the surface of the table, pushed forward, elevated as to their operative faces slightly above the surface of the table and moved rearwardly with great rapidity. The operator enters the end of a welt of the fabric to be cut in the forward end of the welt guide and moves it back manually until the edge becomes engaged between the presser foot and the front end of the feed dogs, at which time the machine takes control and feeds the fabric forward to the cutters. The form of the welt guide is such as to pick up from the general surface of the fabric the welt and hold it up in a vertical plane. Just before it reaches the stationary cutter the side of the welt adjacent to the stationary cutter is thrown over by the peculiar form at the rear end of the guide, while the body of the fabric passes freely under the lower end of the stationary cutter 28. At the time the machine is put in operation the movable cutter 26 is moved up and down with reference to the stationary cutter with great rapidity, and the edge of the fabric passing in between the lower end of the stationary blade and the upper end of the movable blade is severed with great rapidity and accuracy. The projection 26^a as well as causing the two cutters to coöperate to the best advantage prevents any fabric from passing the cutters without being severed. The control of the welt guide over the fabric is absolute and it directs the fabric to the cutters with the greatest accuracy and certainty; so much so that the machine can be adjusted so as to cut the fabric so close to the welt without injury to the welt that it is exceedingly difficult or impossible to determine that a cutting has taken place at this point. 115

In Figs. 7 and 8 is shown a modified form of welt guide, the principal difference from the one previously described being that it is non-adjustable. Other points of this modified form of guide are that the wall at one side of the tubular slotted guide opening extends somewhat below the plane of the opposite wall, and this wall has an external groove as indicated at *m*. This form of guide is particularly adapted for use with what is known as "drawn thread" work where different yarn is supplied and knitted 7

in at the welt, producing usually a thin band in the fabric adjacent to the welt in which the wall of the guide edge farthest downwardly is adapted to run.

Other modifications and changes in and from the construction herein described may be made without departing from my invention as hereinafter intended to be claimed.

What I claim as new and desire to secure by Letters Patent is:

1. The combination, in a machine for cutting welted fabric, of a guide adapted to engage the welt of said fabric, means for feeding the fabric with the welt thereof passing through said guide, and cutting means at the rear of said guide, substantially as set forth.

2. The combination, in a machine for cutting welted fabric, of a table having openings therein, feed dogs operating in said openings, a guide adapted to engage the welt of said fabric and supported above the table adjacent thereto, and means for cutting said fabric, substantially as set forth.

3. The combination in a machine for cutting welted fabric, of a guide adapted to engage said fabric and its welt at both sides of said welt, means for feeding the fabric with the welt thereof passing through said guide, and cutting means at the rear of said guide, substantially as set forth.

4. The combination in a machine for cutting welted fabric, of a table provided with openings, parallel feed dogs operating in said openings, a guide adapted to engage the welt of said fabric, means for supporting said guide above the table adjacent thereto and substantially parallel with said feed dogs, and cutting means at the rear of said guide, substantially as set forth.

5. The combination, in a machine for cutting welted fabric, of a table, a guide adapted to engage the welt of said fabric, means for supporting said guide directly above the table and in close proximity thereto, means for feeding said fabric across said table with the welt running in said guide, and cutting means at the rear of said guide, substantially as set forth.

6. The combination, in a machine for cutting welted fabric, of a table provided with openings, parallel feed dogs operating upwardly through said openings, a presser foot coöperating with said feed dogs, a guide adapted to engage the welt of said fabric, means for supporting said guide above the table adjacent thereto, and cutting means at the rear of the welt guide, substantially as set forth.

7. The combination in a cloth cutting machine of a table, a welt guide supported above the table in close proximity thereto having a slotted tubular opening substantially parallel to the face of the table, means for feeding the fabric across the table with the welt

running in the welt guide and cutters arranged at the rear of the welt guide, substantially as set forth.

8. The combination in a cloth cutting machine of a table, a welt guide supported directly above the table and having a slotted tubular opening substantially parallel with the surface of the table, means for feeding the fabric across the table with the welt running in the guide and means for cutting the fabric at the edge of the welt as it leaves the guide, substantially as set forth.

9. A welt guide having a face adapted to be opposed to and coöperate with a table or surface and having a slotted tubular opening parallel with said face, substantially as set forth.

10. A welt guide having a face adapted to coöperate with a table or surface and a slotted tubular passageway substantially parallel with the face formed in two adjustable parts whereby the size of the slot and passageway may be varied, substantially as set forth.

11. The combination in a cloth cutting machine of the character described of a table, a welt guide supported over the table with its face in close proximity thereto and having a slotted tubular opening for the welt, a pair of parallel feed dogs operating upwardly through slots in the table and moving in a direction substantially parallel with the plane of the welt guide, a presser foot supported from above and coöperating with said feed dogs, a fixed cutter blade supported from above with its lower end in close proximity to the table and adjacent to the rear of the welt guide, and a movable cutter operating upwardly through the table in connection with the stationary cutter, substantially as set forth.

12. In a cloth cutting machine the combination of a table, a fixed cutting member supported from above with its lower operative end in close proximity to the table, a movable cutter operating upwardly through the table and means for feeding the fabric between the cutters, substantially as set forth.

13. The combination in a cutting machine of a table, a fixed cutter member supported above the table in close proximity thereto, a movable coöperating cutter operating upwardly from below and having a projection adapted to continuously engage with the fixed cutter and an inclined cutting edge, substantially as set forth.

14. In a cutting machine the combination of a table, a pair of feed dogs operating upwardly through slots in the table, a cloth guide arranged between the planes of the feed dogs and supported from above over the table and a two-part presser foot coöperating with the feed dogs, substantially as set forth.

15. A welt guide having a working face adapted to be opposed to a table or surface, a slotted tubular opening substantially parallel to the face of the guide and converging walls at the entrance to said slotted tubular opening, substantially as set forth.

16. A welt guide having a substantially semicircular groove adjacent to its working face in one side and a substantially semicircular groove in the other side in a position opposed to the aforesaid semicircular

groove, one of said semicircular grooves terminating short of the rear end of the guide, substantially as set forth.

In witness whereof, I have affixed my signature, in presence of two witnesses, this 13th day of February, 1909.

JOSEPH A. FIRSCHING.

Witnesses:

EMMA S. HESSE,
SARAH E. CLARK.