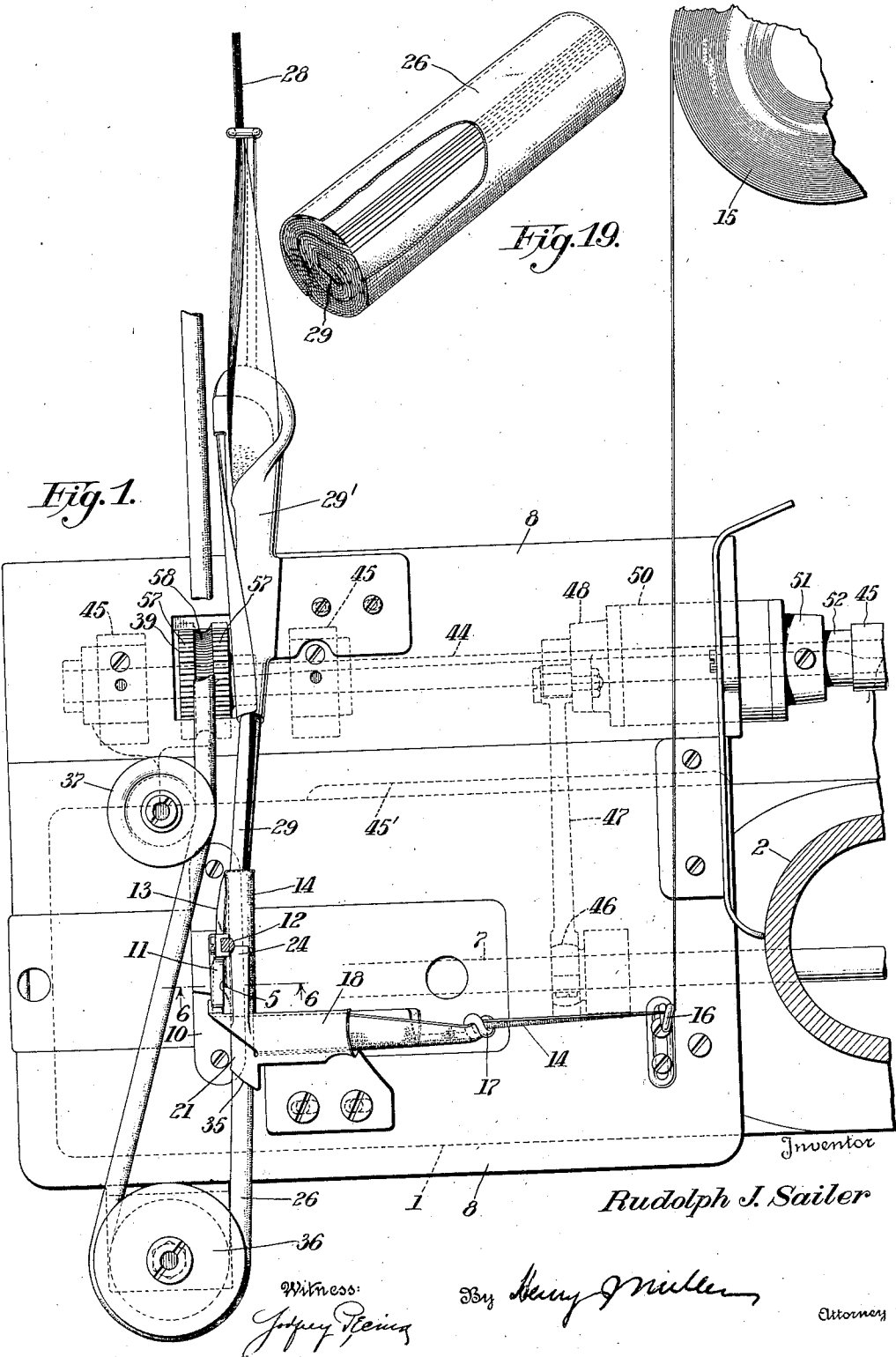


Sept. 8, 1936.

R. J. SAILER
SEWING MACHINE
Filed Jan. 13, 1934

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4 Sheets-Sheet 1



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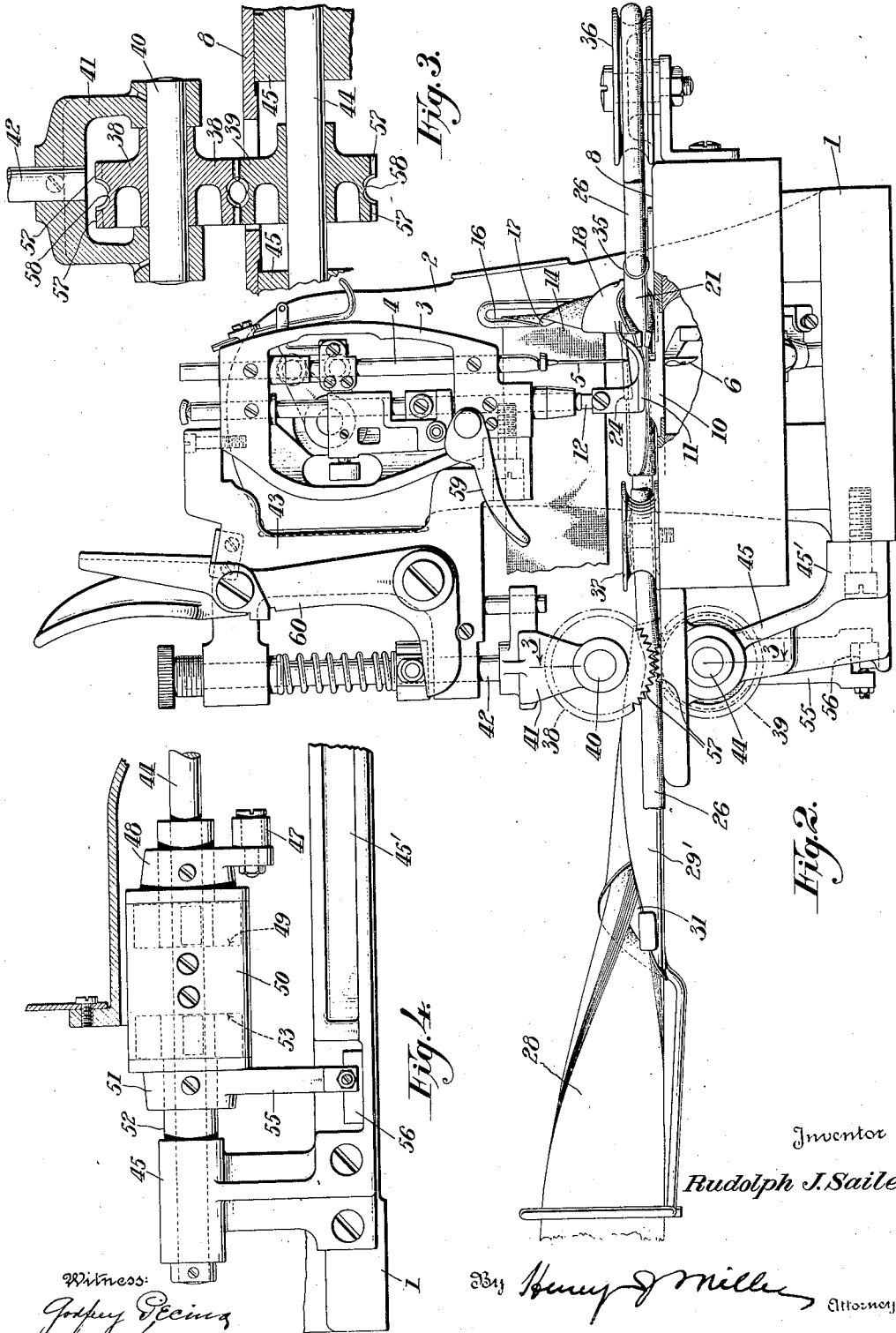
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SEWING MACHINE

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4 Sheets-Sheet 2



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SEWING MACHINE

Filed Jan. 13, 1934

4 Sheets-Sheet 3

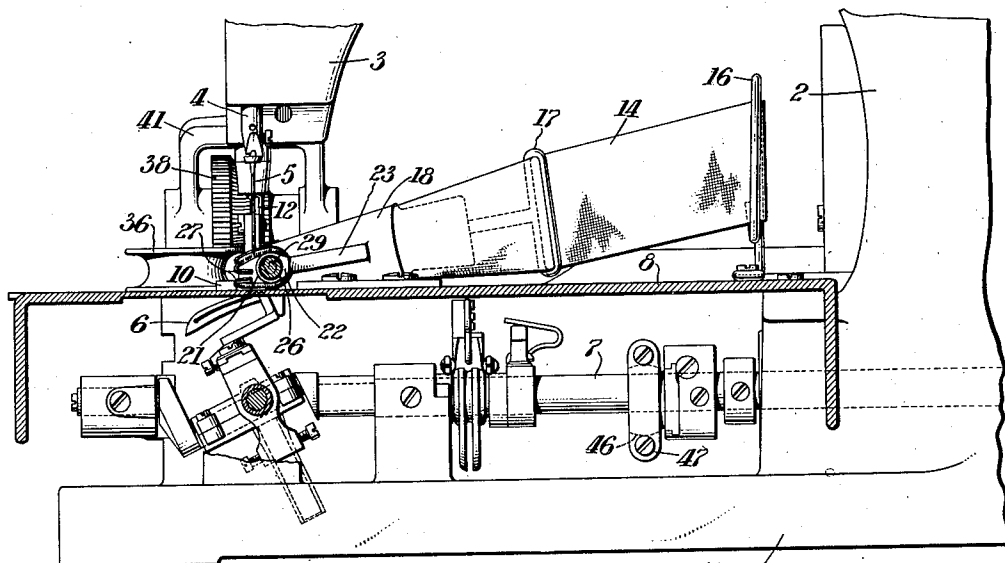


Fig. 5.

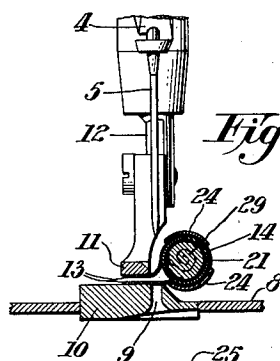


Fig. 6.

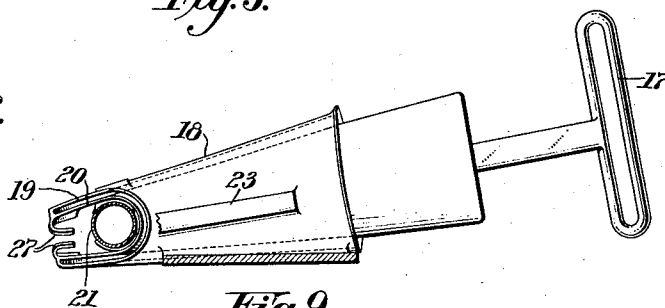


Fig. 9.

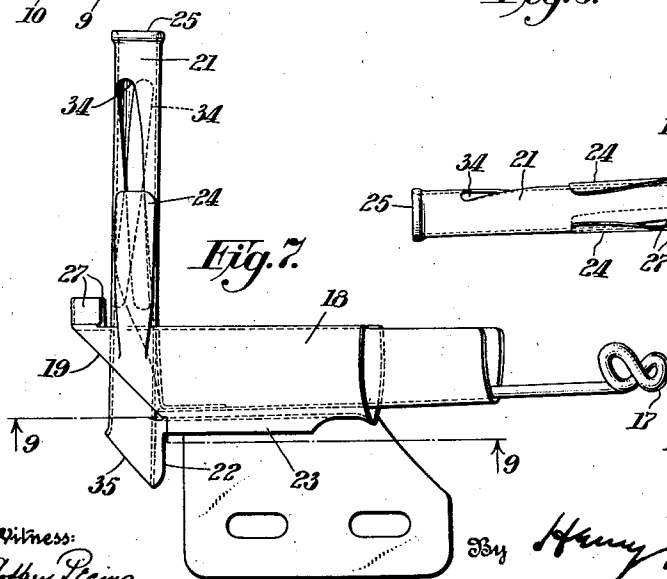


Fig. 7.

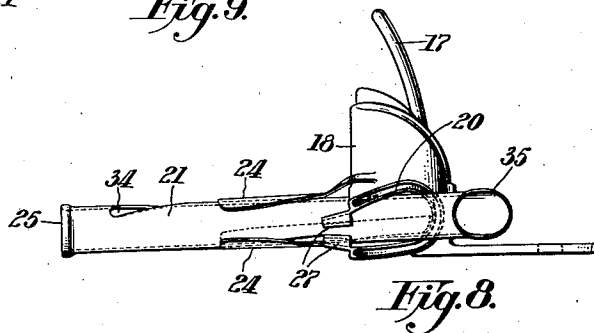


Fig. 8.

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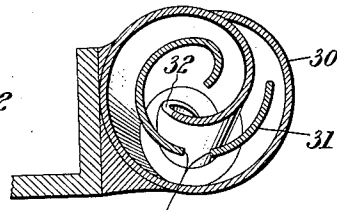
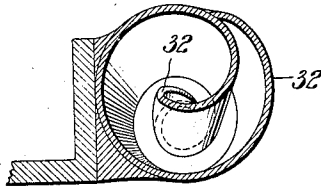
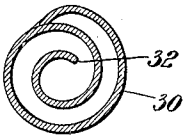
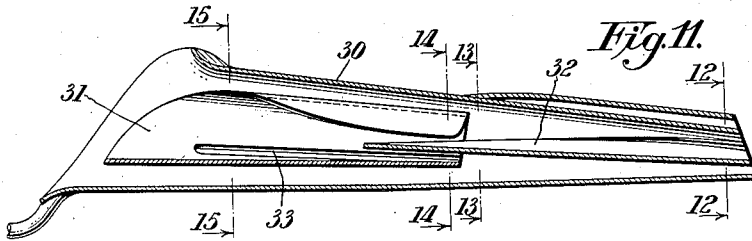


Fig. 12.

Fig. 13.

Fig. 14.

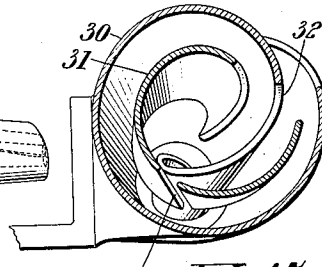
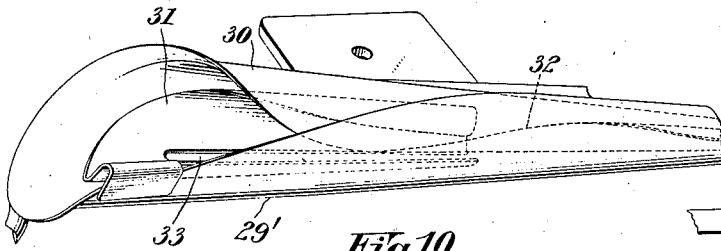


Fig. 10.

Fig. 15.

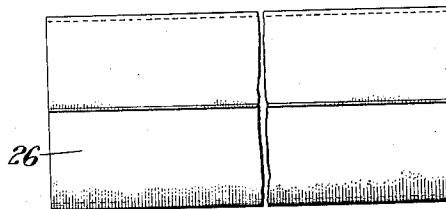
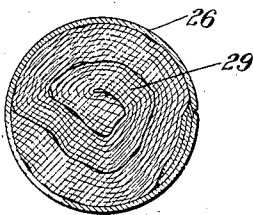


Fig. 18.

Fig. 17.

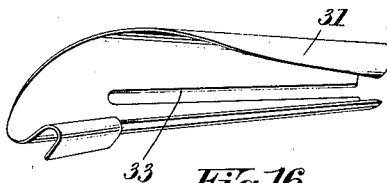


Fig. 16.

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UNITED STATES PATENT OFFICE

2,053,744

SEWING MACHINE

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N. J., a corporation of New Jersey

Application January 13, 1934, Serial No. 706,472

7 Claims. (Cl. 112—2)

This invention relates to absorbent surgical pads such, for example, as the small cylindrical saliva-absorbent pads known as dental rolls and commonly used by dentists as oral packing in tooth-filling operations.

The invention has for an object to provide a sewing machine for making an improved absorbent surgical pad of cylindrical contour and uniformly spongy texture throughout, having high absorptive properties and comparatively free of hard spots and relatively large voids.

A further object of the invention is to provide a machine for making such pads in one continuous roll from strip-material, to be subsequently cut transversely into individual pads of the desired length.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations, and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

In the accompanying drawings, Fig. 1 is a plan view of the bed of a sewing machine embodying the invention. Fig. 2 is an end elevation of the machine. Fig. 3 is a section on the line 3—3, Fig. 2. Fig. 4 is a fragmentary rear side elevation of the machine, showing the puller-feed actuating clutch. Fig. 5 is a fragmentary front side elevation of the machine. Fig. 6 is a section on the line 6—6, Fig. 1. Fig. 7 is a plan view of the fabric sheath guiding and inverting tube and associated lead-in guide. Fig. 8 is a view from the left of Fig. 7. Fig. 9 is a section on the line 9—9, Fig. 7. Fig. 10 is a perspective view of the spiral core-folding guide. Fig. 11 is a longitudinal vertical section through the core-folding guide. Figs. 12, 13, 14 and 15 are, respectively, sections on the lines 12—12, 13—13, 14—14 and 15—15, Fig. 11. Fig. 16 is a perspective view of the inner folding scroll shown in Figs. 10 and 11. Fig. 17 is an elevation of a surgical pad such as produced by aid of the machine of my invention. Fig. 18 is a transverse section of the pad shown in Fig. 17, and Fig. 19 is a perspective view of the pad with a portion of the sheath broken away to show the core.

The machine, in the preferred embodiment illustrated, preferably comprises a conventional chain-stitch sewing machine having a bed 1 and gooseneck 2 terminating in the overhanging head 3 for the reciprocatory needle-bar 4 carrying the

eye-pointed needle 5 with which cooperates the usual looper 6 driven by the main-shaft 7 below the cloth-plate 8 which is raised above and carried by the bed 1.

The needle reciprocates through the needle-hole 9 in a throat-plate 10 having a portion of its upper surface at and in rear of the needle-hole 9 raised somewhat above the level of the cloth-plate 8, as shown in Fig. 2.

The usual four-motion feed-dog is preferably omitted, and the presser-foot 11, carried by the presser-bar 12, is arranged not to bear upon the raised portion of the throat-plate 10, but to be spaced slightly thereabove, as shown in Fig. 6, so as to function principally to strip the cloth being stitched from the rising needle. The narrow gap thus provided between the throat-plate and presser-foot receives the superposed and outwardly protruding edge-portion 13 of a longitudinally folded absorbent fabric-sheath-strip 14 and holds them in juxtaposition during the sewing.

The absorbent fabric-sheath-strip 14 is preferably led forwardly over the cloth-plate 8 from the supply reel 15, Fig. 1, to and through a looped wire guide-post 16 and through the wire guide-loop 17 to the folding guide 18 which is of the conventional "English" binder type having a U shaped passageway therethrough and provided at its inclined delivery end 19, Fig. 7, with a U shaped inner edge 20, Fig. 9, around which the longitudinally folded fabric-strip is inverted and drawn away at an angle of substantially 90° to the direction of travel of the fabric strip before inversion thereof.

There is embraced within the delivery end of the folder 18 a fabric-sheath guiding and inverting tube 21 externally and longitudinally of which the folded and inverted fabric-sheath-strip passes from the fabric-strip inverting edge 20 of the folder 18. The tube 21 is supported only at its forward end, Fig. 7, as by being soldered to one leg 22 of an angle-bracket the other leg 23 of which may be soldered to the front wall of the folder 18. Upper and lower transversely curved leaf-spring members 24, soldered or otherwise secured to the folder 18, bear yieldingly upon the fabric-sheath strip externally of the tube 21 and closely confine the sheath-strip in tubular form while it is being stitched.

The stitched tubular sheath passes rearwardly from the stitching point to the free end 25 of the tube 21 where it is inverted or turned inside-out and is drawn together with the core 29 as a continuous roll 26 forwardly within the tube 21, the

raw-edges 13 of the fabric-strip being now concealed within the sheath. The folder 18 is also preferably provided at its delivery end with the upper and lower edge-confining and guiding fingers 21, Fig. 9, for the sheath-strip as it leaves the folder.

The core 29 of the present surgical pad is preferably made from multi-ply absorbent paper strip-stock indicated at 28. For making dental rolls having a finished diameter of approximately $\frac{3}{8}$ inch, I prefer to use multi-ply absorbent paper strip-stock approximately 2 inches wide and having a number of plies sufficiently to form a snugly filled spongy roll. I pass this strip-stock through a specially designed spiral folder 29' which longitudinally folds the multi-ply strip 28 and curls it widthwise into a smooth and snugly filled but not tightly packed spongy cylindrical core 29 and directs such core into the receiving end 25 of the tube 21 around which the fabric-sheath is inverted to envelop the core which is now substantially free of large voids and is of substantially uniformly spongy texture throughout.

Referring to Figs. 10 to 15, inclusive, the folder 29' comprises an outer spirally rolled and longitudinally tapered scroll 30 and an inner scroll 31 of about half the length of the outer scroll supported within the mouth or receiving end of the outer scroll. The inner edge 32 of the outer scroll progresses as a condensing spiral from the large receiving end to the small delivery end of the folder. The inner scroll 31 is spaced from the outer scroll and prevents premature collapse and crumpling of the paper strip as it is being curled up transversely and progressively into spiral form in its passage through the folder. The slot 33 in the inner scroll 31 and the slots 34 in the tube 21 permit the use of a pointed implement or pusher to assist in threading the beginning ends of the strips through the respective devices.

From the delivery end 35 of the tube 21, the sheathed core 26 runs forwardly in one continuous length to and around the guide pulley 36 and thence rearwardly past the guide-pulley 37 to the co-acting upper and lower puller-feed rolls 38, 39.

The upper feed-roll 38 is supported by the shaft 40 journaled in the bracket 41 fixed to the lower end of a vertical spring-pressed bar 42 slidably mounted in the guide-bracket 43 which is screwed to the frame-head 3.

The lower feed-roll 39 is fixed to the shaft 44 which is journaled in bearing brackets 45 rising from the bed extension 45' screwed to the bed 1.

Step-by-step feeding movements are imparted to the shaft 44 by means of a conventional adjustable feed-eccentric 46 on the main-shaft which is connected by a pitman 47 to the live oscillatory clutch-roll spider 48 loose on the shaft 44 and having a clutch-roll carrying portion entering a clutch-cavity 49 in one end of the cylindrical member 50 fast to the shaft 44. A stationary anchor clutch-roll spider 51 fast to the bearing bushing 52 has an anchor clutch-roll carrying portion entering a cavity 53 in the other end of the cylindrical member 50. The stationary spider 51 has depending from it a rigid arm 55 the forked lower end of which embraces an anchor block 56 screwed to the bed-extension 45'. The mechanism of the live and stationary clutch-roll spiders 48, 51, with the intermediate cylindrical member having clutch-roll cavities in its opposite ends, is the conventional pull-feed operating clutch disclosed, for example, in the patent application of Irving F. Webb; Serial No. 648,854;

filed Dec. 27, 1932, which has resulted in Patent No. 1,980,603, issued November 13, 1934.

In the present instance the feed-rolls 38 and 39 have intermeshing raised toothed portions 57 in outer zones at opposite sides of intermediate and transversely ridge grooved portions 58 in intermediate zones which grip the sheathed core 29 and constitute the only work-feeding mechanism used in the machine. Thus, the lower feed-roll 39 drives the upper feed-roll 38; both feed-rolls being positively driven in step-by-step fashion in cooperatively timed relation with the needle 5. The pull-feed mechanism thus serves to regulate or define the length of the stitches made in the sheath 14 by the stitch-forming mechanism.

The usual lifting levers 59 and 60 are provided for the presser-bars 12 and 42, respectively.

It is understood that the continuous roll 26 issuing from the machine is subsequently to be cut in the desired lengths to form the surgical pads, such as shown in Fig. 19.

The invention is not to be understood as limited to the details of construction and relative arrangements of parts of the preferred embodiment of the invention shown and described, as various modifications may obviously be made by those skilled in the art within the spirit and scope of the invention.

Having thus set forth the nature of the invention, what I claim herein is:—

1. In a sewing machine, in combination, a fabric-sheath guiding and inverting tube, means for presenting an absorbent core to said tube, stitch-forming mechanism including a reciprocatory needle arranged to stitch said sheath in tubular form externally of said tube, and step-by-step-operating puller-feed mechanism timed in cooperative relation with said needle and arranged to operatively engage a portion of the sheathed core which has emerged from said tube.

2. In a sewing machine, in combination, a fabric-sheath guiding and inverting tube, means for spirally curling a continuous multi-ply strip of absorbent material into a core and directing said core into said tube, stitch-forming mechanism including a reciprocatory needle arranged to stitch said sheath in tubular form externally of said tube, and step-by-step-operating puller-feed mechanism timed in cooperative relation with said needle and arranged to operatively engage a portion of the sheathed core which has emerged from said tube.

3. In a sewing machine, in combination, a frame including a bed and overhanging bracket-arm, a fabric-sheath guiding and inverting tube mounted on said bed, means for directing an absorbent core forwardly and presenting it to the receiving end of said tube, stitch-forming mechanism including a reciprocatory needle arranged to stitch said sheath in tubular form externally of said tube, a main-shaft connected to drive the stitch-forming mechanism, puller-feed mechanism disposed at the rear of said bracket-arm and connected to be driven by said main-shaft, and guiding means mounted forwardly of said tube and around which the sheathed core emerging from said tube runs forwardly and thence rearwardly to said puller-feed mechanism.

4. In a sewing machine, in combination, a frame including a bed and overhanging bracket-arm, a fabric-sheath guiding and inverting tube mounted on said bed, a spiral strip-folder adapted to spirally curl and snugly but not tightly compact a continuous multi-ply strip of absorbent paper to form a spongy core of substantially uni-

form texture, said strip-folder being disposed in rear of the bracket-arm in position to direct said core forwardly into the receiving end of said tube, stitch-forming mechanism including a reciprocatory needle arranged to stitch said sheath in tubular form externally of said tube, a main-shaft connected to drive the stitch-forming mechanism, puller-feed mechanism disposed at the rear of said bracket-arm alongside said strip-folder, and guiding means mounted forwardly of said tube and around which the sheathed core emerging from said tube runs forwardly and thence rearwardly to said puller-feed mechanism.

5. In a sewing machine, the combination with stitch-forming mechanism including a reciprocatory needle, of a guide-tube disposed transversely of and alongside the path of said needle, means for spirally folding continuous absorbent strip material to form a snugly but not tightly curled spongy core and directing said core into said guide-tube, means for longitudinally folding a covering strip about said guide-tube and presenting the edges of said strip to said needle, said guide-tube having a free end about which the stitched covering strip is inverted and drawn into and through said guide-tube in covering relation to said spirally folded core, and step-by-step operating puller-feed mechanism acting upon said covered core.

6. In a sewing machine, the combination with stitch-forming mechanism including a reciprocatory needle, of a guide-tube disposed transversely of and alongside said needle, means for presenting continuous absorbent strip material in the form of a spongy core to said guide-tube, means for longitudinally folding a covering strip about said guide-tube and presenting the edges of said strip to said needle, said guide-tube having a free end in rear of said needle about which the stitched covering strip is inverted and drawn forwardly into and through said guide-tube in covering relation to said core, a puller-feed mechanism in rear of said guide-tube, and a pulley in front of said guide-tube around which the core and its enveloping stitched covering strip run to said puller-feed mechanism.

7. In a sewing machine, in combination, a fabric-sheath guiding and inverting tube, means for longitudinally folding continuous absorbent strip material spirally to form a snugly but not tightly curled spongy cylindrical core distinct from said sheath and directing said core to said tube, stitch-forming mechanism including a reciprocatory needle arranged to stitch a fabric-sheath in tubular form externally of said tube, and means for feeding the sheathed core through said tube.

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