June 7, 1938. J. E. BLOSSER ET AL 2,119,982

SANITARY NAPKIN MACHINE

Original Filed May 26, 1933 2 Sheets-Sheet 1

Fig. 1.

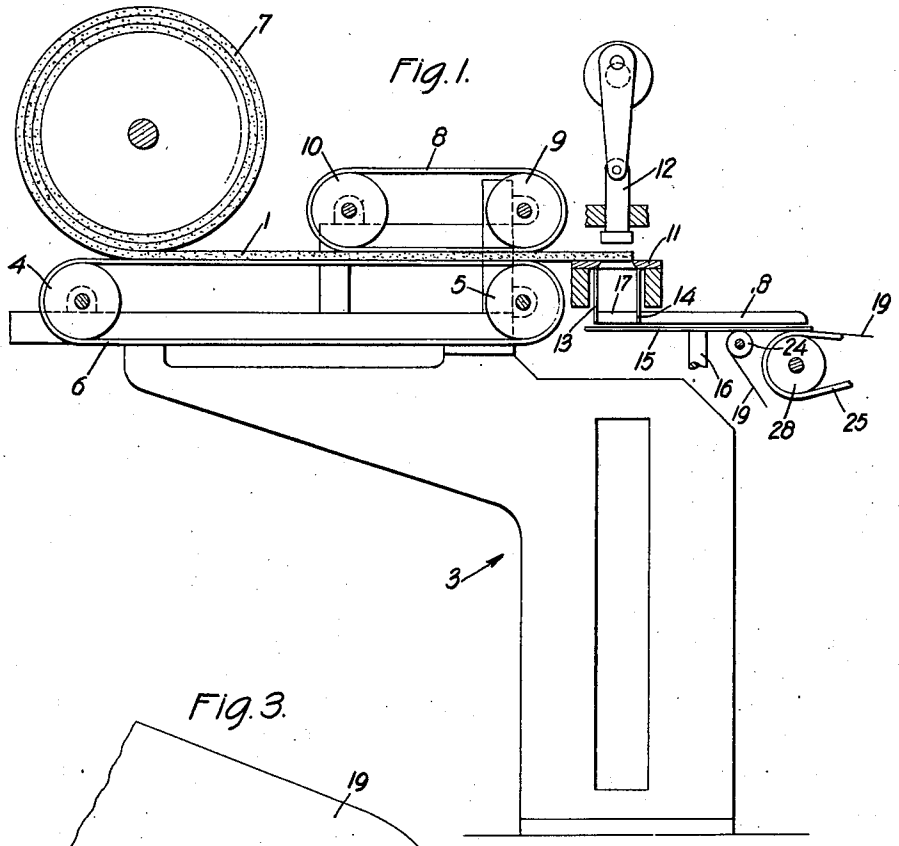


Fig. 3.

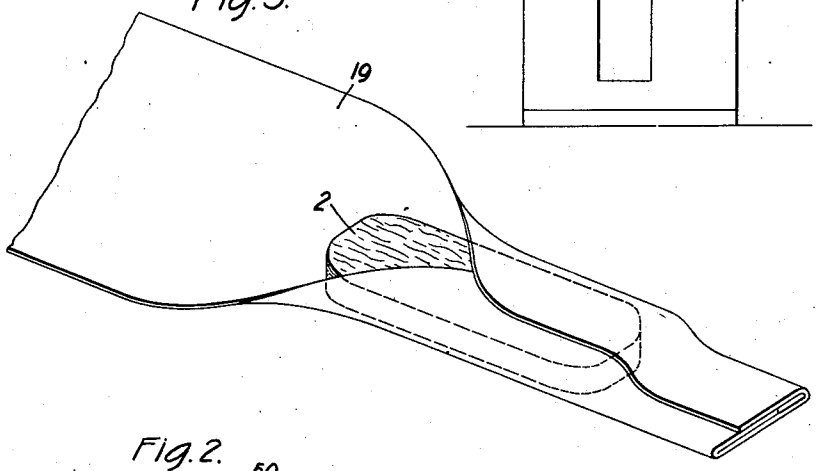
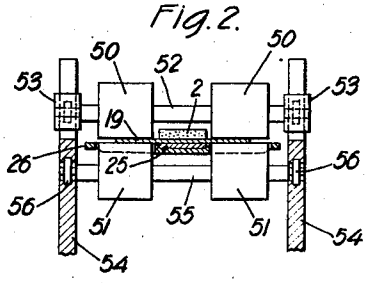


Fig. 2.



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SANITARY NAPKIN MACHINE

Original Filed May 26, 1933 2 Sheets-Sheet 2

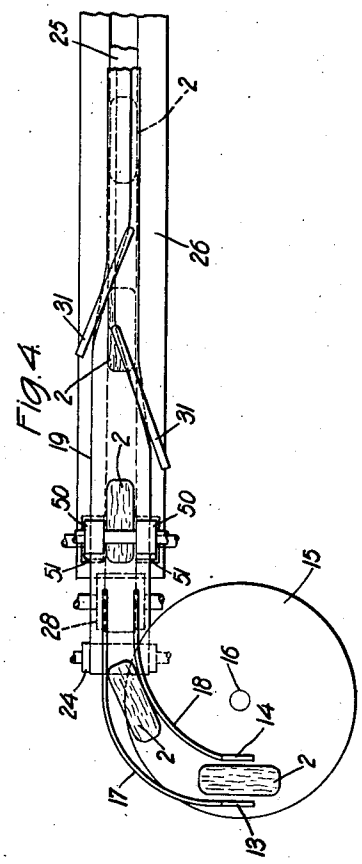

Fig. 4.

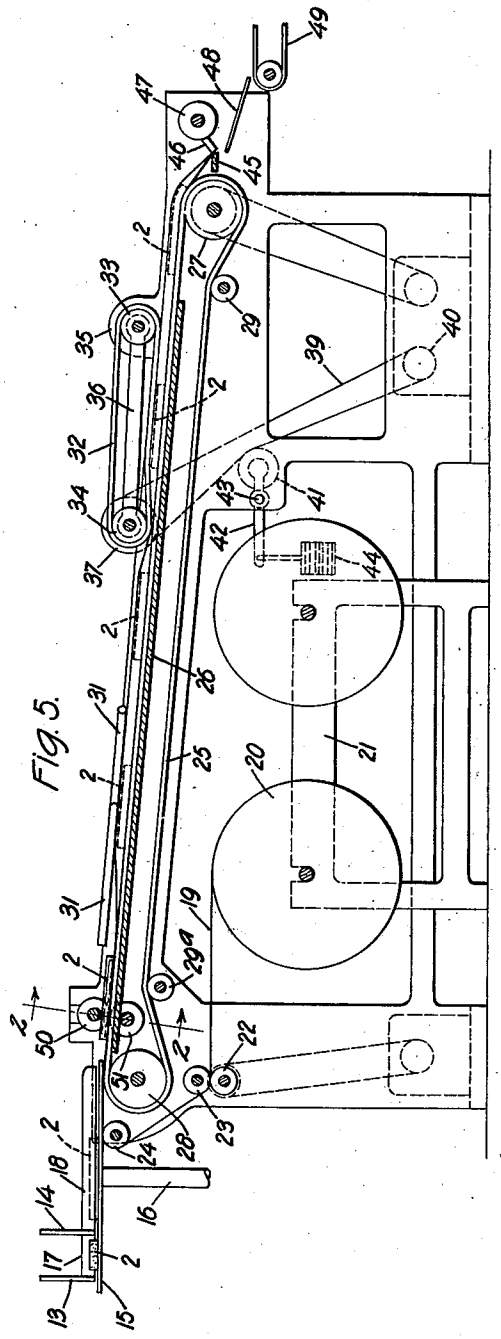

Fig. 5.

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SANITARY NAPKIN MACHINE

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Application May 26, 1933, Serial No. 672,950
Renewed March 2, 1935

9 Claims. (Cl. 154—29)

This invention relates to apparatus for making sanitary napkins and more particularly for making napkins of the type in which the absorbent body portion is formed of a multiplicity of sheets of crepe tissue paper.

In the manufacture of crepe tissue paper, it is not feasible to produce the corrugations longitudinally of the web. The corrugations always run transversely of the web and hence it is the usual practice to deliver to the napkin making apparatus reels of the pad material in which the corrugations extend transversely of the webs in order that a web of sufficient length may be employed to supply the machine for a substantial period.

The reel web is ordinarily as wide as or a little wider than the length of one of the pads to be made from it. Thus the lengths of the pads are formed from the widths of the web and the widths of the pads are cut from the lengths of the web. This enables a large number of pads to be cut from a web of given length and also causes the corrugations to be disposed longitudinally of the pads, which is to be desired.

It has been the practice heretofore to feed the pad web to a severing mechanism for cutting off the individual pads and then to feed the severed pads with a web of wrapping gauze at right angles to the direction in which the pad web is fed, so that while traveling with the gauze they may have the side margins of the gauze folded about them. Such an arrangement, however, involves an awkward disposition of mechanism which is wasteful of factory space. The mechanism for effecting these successive operations necessarily is made generally in the form of an L because of the provision of the two feeders acting at right angles to one another.

It is an object of the present invention to contrive a novel mechanism for dealing with the pad and gauze material whereby this disadvantage may be overcome. To this end it is a feature of the invention that provision is made of mechanism whereby the filler web is advanced and severed, the pads after severance are turned through substantially 90° and are then advanced lengthwise in the same direction as before and delivered at evenly spaced intervals onto a gauze web. The pads are advanced with the gauze web, still in the same direction. During the advance of the pads with the gauze web, the gauze is folded about the pads and severed between successive pads.

A further feature of the invention has to do with the means for turning the cut pads and delivering them onto the gauze. Such means desirably comprise a continuously running turntable and suitable pad guiding and deflecting means for causing the turntable to give over control of each pad to the traveling gauze after the pad has been turned through substantially ninety degrees.

Other objects and advantages will hereinafter appear.

In the drawings forming part of this specification,

Figure 1 is a fragmentary, sectional, side elevation illustrating mechanism for feeding and severing the pad web and an introductory portion of a mechanism for wrapping the severed pads in gauze;

Figure 2 is a detail, transverse, sectional elevation taken on the line 2—2 of Figure 5 looking in the direction of the arrows;

Figure 3 is a fragmentary perspective view showing the gauze partially wrapped about one of the pads;

Figure 4 is a fragmentary, plan view of the introductory end of the pad wrapping mechanism, and pad transferring and turning means located between the pad severing and pad wrapping mechanisms; and

Figure 5 is a fragmentary side elevation illustrating principally the gauze feeding, folding and severing mechanisms.

The machine for feeding the pad web 1 and for severing individual pads 2 from it comprises a frame 3 which supports end rollers 4 and 5 of an intermittently operated supporting and feeding belt 6. The end roller 5 may be intermittently operated for advancing the pad web 1. The web is progressively unwound from a reel 7, which reel rests upon the conveyor belt 6. The pad web is drawn forward intermittently by the conveyor belt 6 and an auxiliary conveyor belt 8 which runs upon end rollers 9 and 10. The pad web is delivered over a hollow die member 11 and is severed by a reciprocating punch 12 which is timed to operate while the pad web is idle and at a time when an end portion of the pad web is positioned over the opening in the die member 11. Each pad as it is severed falls between vertical side guides 13 and 14 onto a table 15. The side guides are carried by the die base. The table 15 is carried by a vertical shaft 16 and is continuously rotated by said shaft. Arcuate extensions 17 and 18, formed respectively on the guide members 13 and 14, extend over the table and over a web of gauze 19 in which the pads are to be folded. Each pad is turned by the table

through aproximately 90° and is delivered through the guide extensions 17 and 18 onto the gauze. The gauze travels at a higher linear speed than the periphery of the table, and draws the pads away from the table as they come into engagement with it. The guide extensions 17 and 18 are substantially parallel at the delivery ends thereof and serve to straighten out the pads delivered onto the gauze.

A reel 20 is journalled in a frame member 21 and supplies a web of gauze 19 to the machine. The gauze is drawn from the reel 20 by a feeding couple comprising a driven roller 22 and a cooperating roller 23. The gauze passes thence around a roller 24 and onto a conveyor belt 25 which is substantially narrower than the gauze and which may run in a trough of a supporting table 26. The table 26 is substantially wider than the conveyor belt 25 and is wide enough to support the full width of the gauze web. The pads 2 are delivered successively onto the longitudinal central zone of the gauze web 19, that is, upon that portion of the gauze web which travels on belt 25. The belt 25 runs upon end rollers 27 and 28 and is driven by the former. Idler rollers 29 and 29a also coact with the idle stretch of the belt for supporting and guiding it. The gauze and the pad supported thereon travel with the belt 25 past folding arms 31 which act to fold in the side margins of the gauze over the successive pads in the manner illustrated in Figure 6. The folded gauze with the enclosed pads continues thence along the conveyor belt 25 beneath an auxiliary feed belt 32.

This feed belt 32 is a driven belt and coacts with the belt 25 to pull the gauze and the supported pads through the folding mechanism. The belt 32 runs upon end rollers 33 and 34. The former roller is journalled in frame members 35 and the latter roller is journalled in the free ends of arms 36, which arms are pivotally supported coaxially with the roller 33. The roller 34 is, therefore, free to rise and fall as it encounters the successive pads and the gaps between the pads.

A pulley 37, fast on the shaft 38 of roller 34, is driven by a belt 39 so as to cause the belt 32 to travel in unison with the belt 25. Since the roller 34 is intended to rise and fall and to exert no objectionable pressure upon the pads, the belt 39 is made slack and a yieldable slack take-up device is provided for preventing slipping of the belt 39 with reference to the pulley 37 and with reference to the driving pulley 40. The slack take-up device comprises an idler roller 41 mounted on one end of a lever 42, which lever is pivoted at 43 upon the frame. The end of lever 42 at the opposite side of the fulcrum from roller 41 is provided with a suitable weight 44 for holding the roller 41 pressed against the belt 39.

The conveyor 25 delivers the wrapped pads between a fixed cutting blade 45 and a blade 46 which is carried by a constantly rotating shaft 47. The rotation of the shaft 47 is so timed with relation to the other parts of the mechanism that the wrapping gauze is severed substantially midway between successive pads. From the severing mechanism the wrapped pads slide down a table 48 onto a conveyor 49 which conducts them to mechanism for folding the ends of the gauze wrappers about the pads.

It will be observed that the main conveyor 25 and the auxiliary conveyor 32 adequately provide for the feeding of the gauze and the pads past the folding mechanism. There is a liability, however, as the gauze approaches the folding mechanism, for it to become wrinkled or laterally displaced. To avoid such faulty handling of the gauze, provision is made of two pairs of light idler rollers 50 and 51 which coact through openings in the table 26 to grip the margins of the gauze and keep them spread out in a flat condition. The rollers 50 are mounted on a shaft 52 which is supported by ball bearings 53 in machine frame members 54. The rollers 51 are carried by a shaft 55 which is supported by ball bearings 56 in the frame members 54. With the arrangement described the gauze is positively drawn forward through the machine from a point near the delivery end thereof, and the margins of the gauze are kept in order by the idler rollers 50 and 51 acting on the gauze outside the lateral bounds of the conveyor belt 25.

We have described what we believe to be the best embodiments of our invention. We do not wish, however, to be confined to the embodiment shown, but what we desire to cover by Letters Patent is set forth in the appended claims.

We claim:

1. In a sanitary napkin machine, in combination, means for propelling a web of absorbent material, means for punching a pad from the leading end of the web at a single operation comprising an upper plunger member and a lower hollow die member through which the severed pad passes, and a turntable beneath the hollow die member for catching each pad as it is severed and turning it through substantially a right angle.

2. In a sanitary napkin machine, in combination, means for propelling a web of gauze and a web of filling material in substantially the same direction, means for punching a pad widthwise from the length of the filling material of the web at a single operation, comprising an upper plunger member and a lower hollow die member through which the punched pad passes, and a turntable beneath the hollow die member for catching each pad as it is severed, turning it through substantially a right angle and delivering it lengthwise onto the gauze web.

3. In a sanitary napkin machine, in combination, means for propelling a web of gauze and a web of filling material in substantially the same direction, means for punching a pad widthwise from the length of the filling material of the web at a single operation, comprising an upper plunger member and a lower hollow die member through which the punched pad passes, parallel vertical guides extending downward from the hollow die member, a turntable adjacent the lower extremities of the guides, and curved horizontal extensions of the guides extending just above the turntable and tangentially away therefrom for causing the pads to be turned and delivered longitudinally onto the gauze.

4. In a sanitary napkin machine, in combination, means for feeding a web of gauze, a continuously running turntable for delivering pads to the gauze, pad guiding means cooperative with the turntable for controlling the delivery of pads to the gauze, and means for folding the gauze about the spaced pads.

5. In a sanitary napkin making machine, in combination, a rotatable turntable, guides cooperating therewith, means for severing filler pads and causing them to be deposited on the turntable, and means for receiving the pads from the turntable and wrapping them in gauze.

6. In a sanitary napkin machine, in combination, a conveyor for supporting and feeding a web of gauze, a turntable for delivering pads

at spaced intervals onto the gauze, means for folding the gauze about the pads as the gauze and pads travel together upon the conveyor, means cooperating with the conveyor to pull the gauze past the folding means, and idler rollers engaging the margins of the gauze in advance of the folding means to maintain the gauze unwrinkled and to hold the gauze against sidewise movement.

7. In a sanitary napkin machine, in combination, means for propelling a web of gauze and a web of filling material in substantially the same direction, means for punching a pad widthwise from the length of the filling material, comprising an upper plunger member and a lower hollow die member through which the punched pad passes, and means for catching each pad as it passes downward from the hollow die member, turning it through substantially a right angle and delivering it lengthwise onto the gauze web.

8. In a sanitary napkin machine, in combination, means for supporting and conveying a web of gauze, a movable pad supporting and turning device for changing the direction of the length of a pad through substantially a right angle to deliver the pad longitudinally onto the gauze, means for folding marginal portions of the gauze about the pads, and means cooperative with the conveying means to pull the web past the folding means.

9. In a sanitary napkin machine, in combination, means for supporting and conveying a web of gauze, a pad turning device for delivering pads longitudinally onto the gauze, means for folding marginal portions of the gauze about the pads, and means cooperative with the conveying means to pull the web past the folding means, comprising a pivoted arm, a roller coaxial with the pivot of said arm, a second roller journalled in the arm at a substantial distance away from the pivot thereof and free to ride on the gauze and the pads, a belt running on said rollers, means for driving said rollers and belt, and for automatically maintaining the pressure of the belt against the gauze substantially uniform.

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