

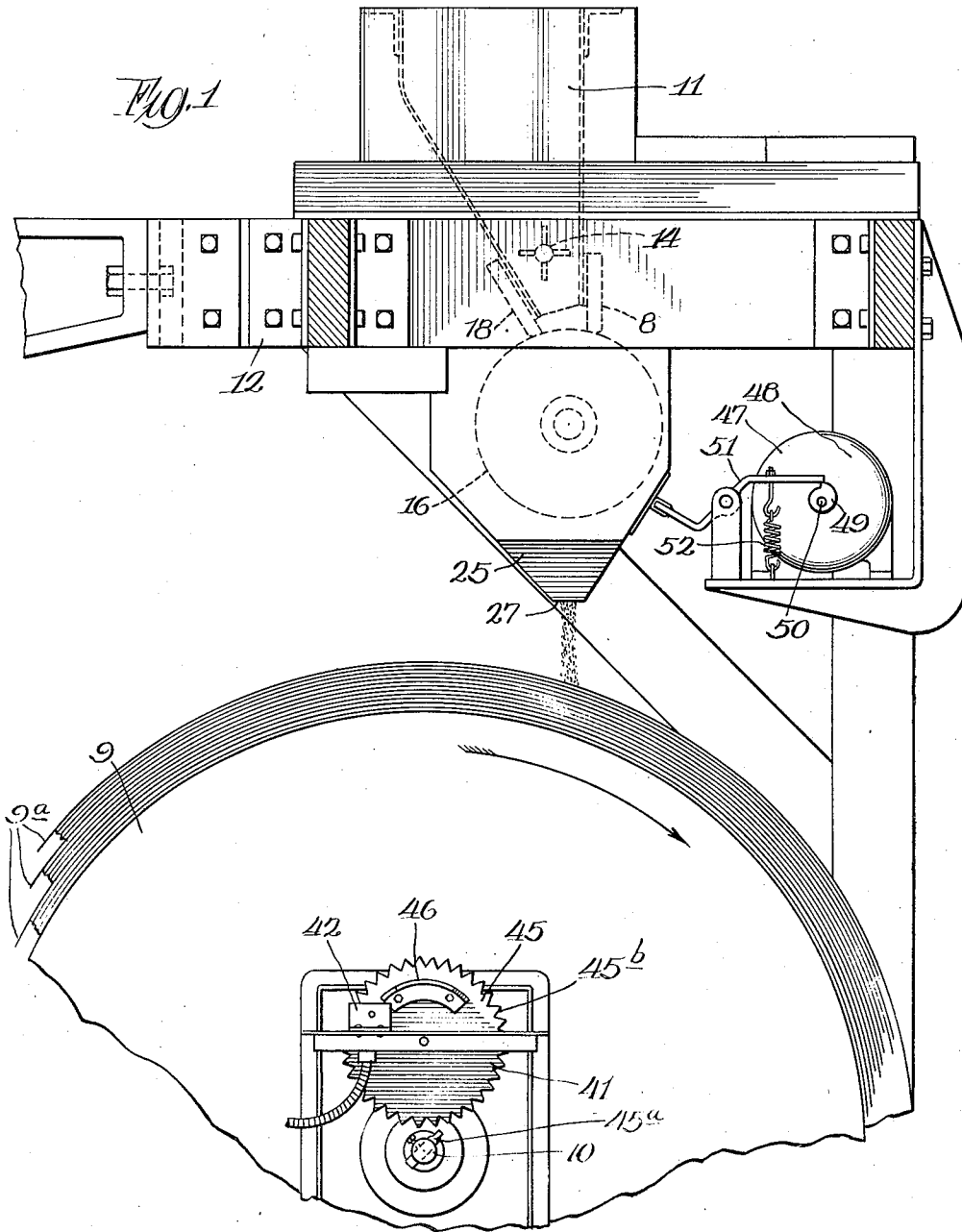
May 22, 1928.

1,670,587

E. MAHLER
PROCESS AND APPARATUS FOR APPLYING DEODORIZING AND
DISINFECTING POWDER TO SANITARY PADS

Filed Aug. 6, 1924

4 Sheets-Sheet 1



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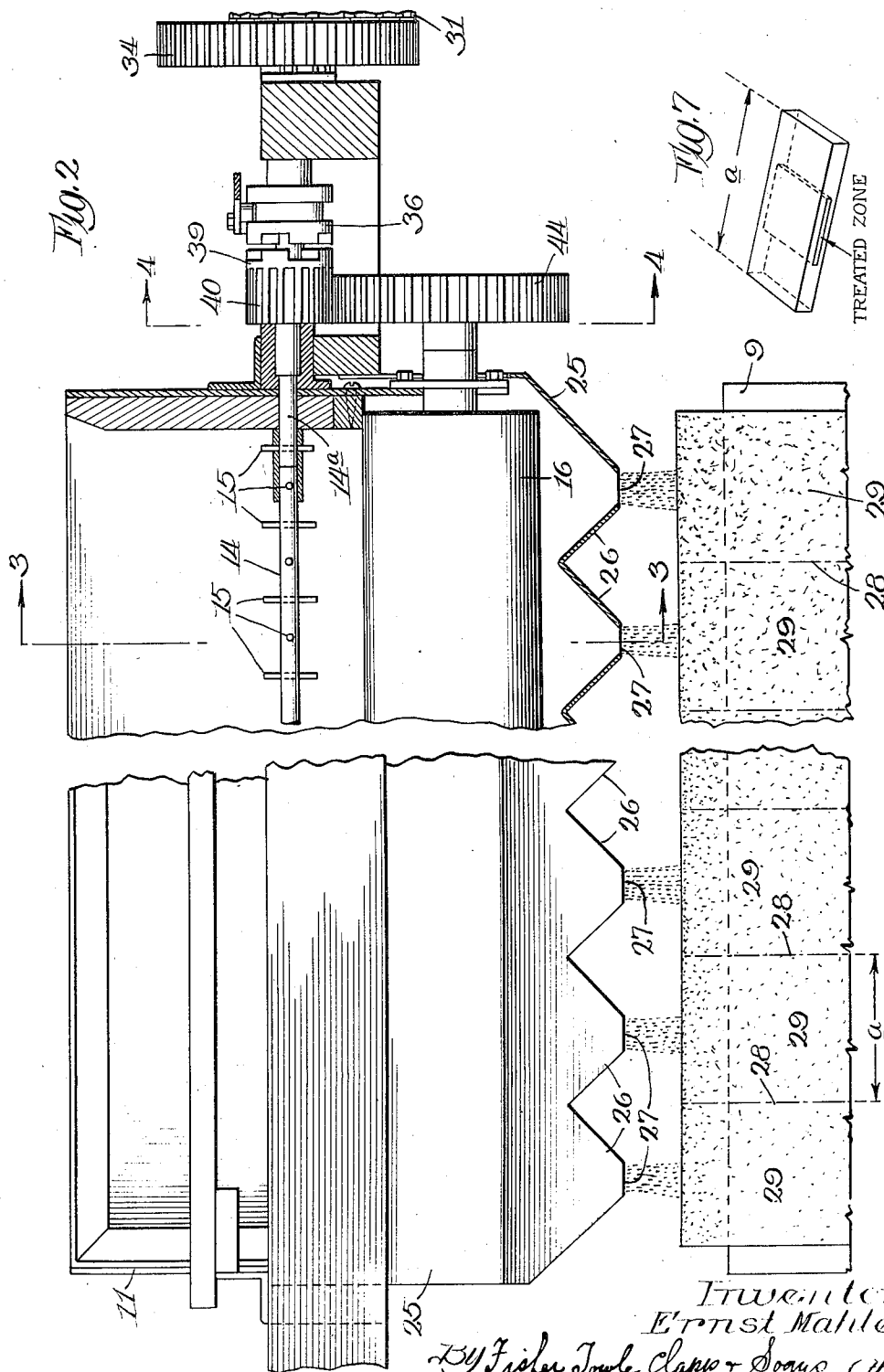
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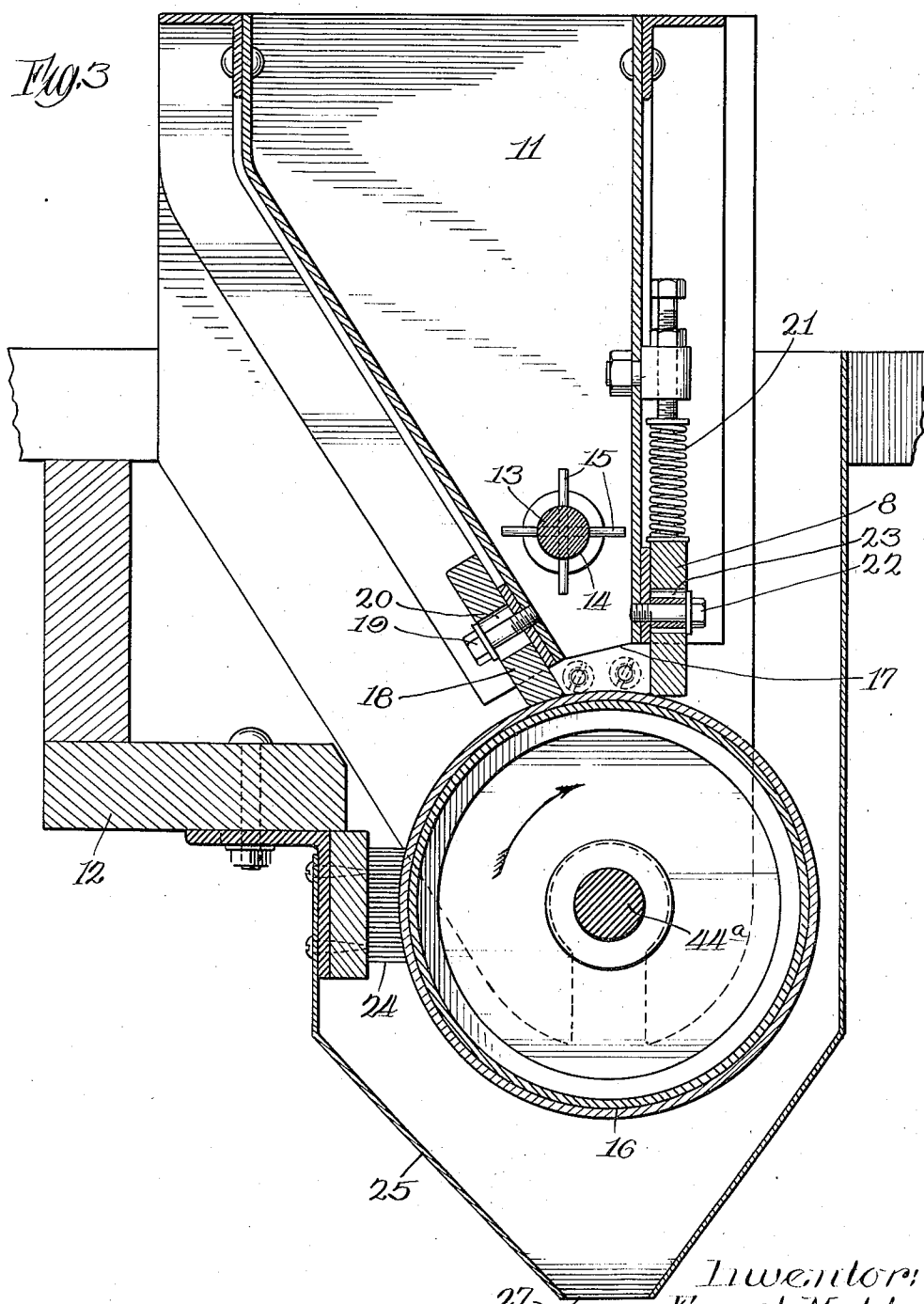
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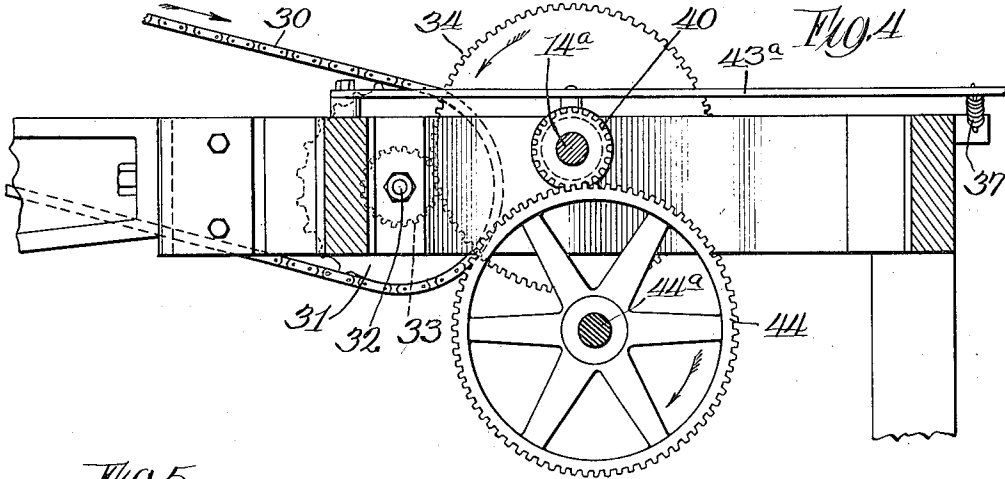
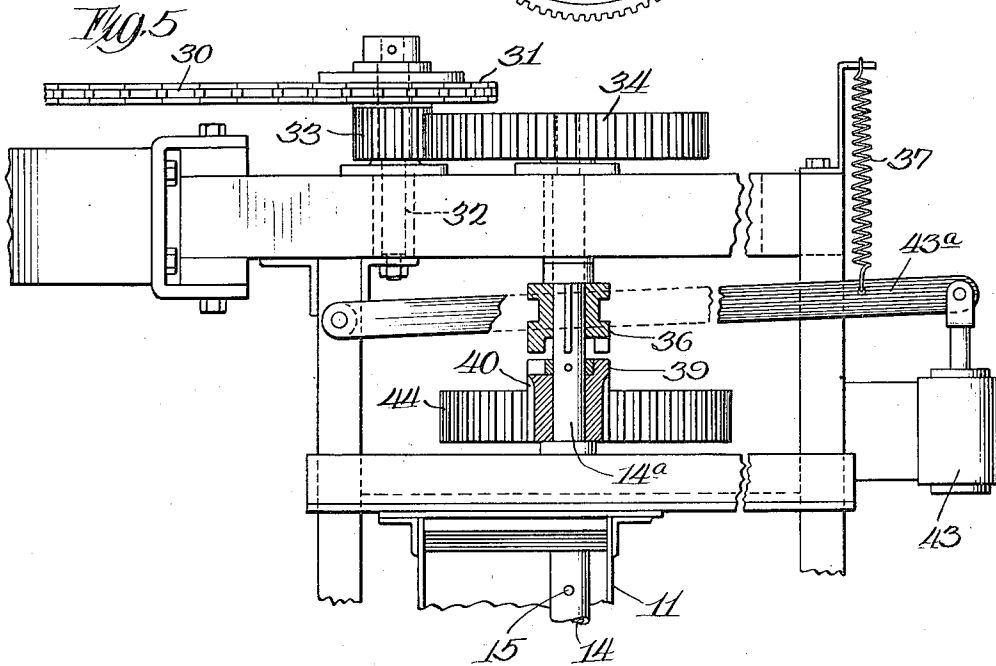
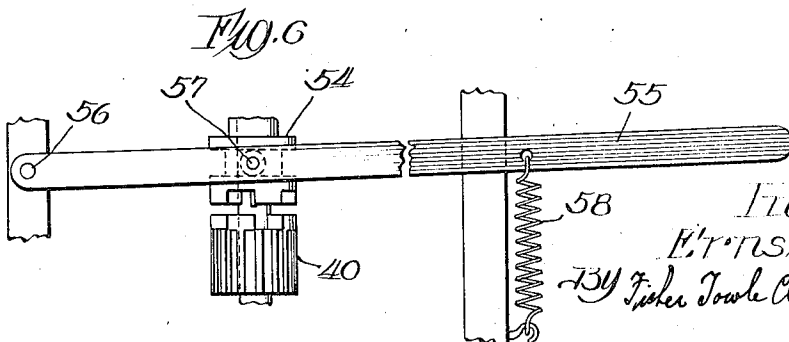
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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE.

ERNST MAHLER, OF NEENAH, WISCONSIN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO INTERNATIONAL CELLUCOTTON PRODUCTS CO., OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE.

PROCESS AND APPARATUS FOR APPLYING DEODORIZING AND DISINFECTING POWDER TO SANITARY PADS.

Application filed August 6, 1924. Serial No. 730,401.

This invention relates to improvements in process and apparatus for applying deodorizing and disinfecting powder to sanitary pads.

5 The term chemical, as used herein, means any material or agent by which the desired deodorizing or disinfecting effect is secured.

Among its principal objects are to provide an improved method and apparatus for 10 treating absorbent pads to enable the chemical to be distributed within the interior of the pad, to permit the chemical to be distributed over localized areas of the layers, and in general to provide an economical and 15 efficient apparatus and process for distributing said chemical.

The particular application of my invention which I shall describe in detail forms a step in the manufacture of wood-pulp 20 fillers for sanitary napkins. These fillers are made of several plies or sheets of thin crepe paper which is made on the usual paper making machines and then wound upon a large revoluble drum. According to 25 the preferred practice, a hopper containing a supply of the deodorant or disinfectant in powder form is equipped with means for applying this powder to the periphery of a transfer drum located therebeneath and the 30 particles of powder adhering thereto are removed therefrom by means of a brush. These detached particles preferably fall into a trough having a series of equi-spaced funnel-shaped outlets arranged above the 35 winding drum and are thereby deposited upon the paper in spaced parallel strips or zones as such paper is wound upon this drum. The spacing between the centers of said outlets is equal to the length of a napkin filler. 40

The operation of the dusting mechanism may be either continuous or intermittent. I prefer the intermittent operation in which the powder is applied only to the inner 45 layers of the napkin as this eliminates dust nuisance and the possibility of the chemical contacting with the person when the napkin is used. The intermittent operation may be accomplished either manually or auto- 50 matically and in the preferred embodiment of my device I have incorporated a counting device which is actuated by the winding drum. This device operates a switch to

automatically start and stop the dusting mechanism at predetermined points in the 55 winding operation.

As soon as sufficient plies of crepe paper have been wound upon the drum, say thirty or forty, the drum is stopped and the cylindrical absorbent layer removed therefrom 60 by slitting same along a line extending parallel with the roll axis. The multi-ply layer is then laid out flat and subjected to the action of a series of circular saws arranged on a common axis parallel with the 65 drum axis and spaced apart a distance equal to the length of a filler, which divide it into a plurality of strips each of a width equal to the length of the napkin filler. These strips have a treated zone running through 70 their center and are subsequently transversely cut into sections which constitute the fillers for the napkins.

The many other objects and advantages of the invention will be better understood by 75 reference to the following specification when considered in connection with the accompanying drawings illustrating a selected embodiment thereof, in which:—

Fig. 1 is a side elevation, partially in section, of a dusting machine embodying the 80 principles of my invention.

Fig. 2 is a front elevation, partially in section, of the machine shown in Fig. 1.

Fig. 3 is an enlarged vertical section on 85 the line 3—3 of Fig. 2.

Fig. 4 is a vertical section on the line 4—4 of Fig. 2.

Fig. 5 is a detail plan view of a portion 90 of the operating mechanism.

Fig. 6 is an enlarged detail view of a modified form of control mechanism.

Fig. 7 is a perspective view of one of the fillers, showing the treated zone.

Referring to the drawings, the paper as 95 delivered from the paper-making machine is wound upon a large drum 9 on the shaft 10 preferably directly driven by such machine. Above this drum and extending longitudinally thereof is a hopper 11 open 100 at the top to receive a supply of the powder which is to be applied to the napkins. This hopper is supported by a suitable frame as 12 and an agitator 13 is preferably incorporated in the hopper. In the present embodiment this agitator comprises a revoluble shaft 14

to which, at regular intervals, are secured radially projecting pins as 15.

Beneath the hopper is located a rotary transfer drum as 16 which preferably has its periphery covered with a material such as felt. The hopper is open at the bottom as at 17 so that the powder will be deposited on the drum 16. An adjustable extension plate 18 is preferably secured to the base of the hopper and its lower edge contacts with the periphery of the drum 16 to scrape superfluous powder therefrom. Clamping bolts 19 pass through slots 20 in this plate to enable the plate to be set in the proper position. A similar plate 8 is mounted on the hopper on the opposite side of the discharge opening 17 from the plate 18. This plate 8 is normally yieldingly pressed against the periphery of the drum by springs as 21. Bolts 22 pass through slots 23 in this plate to secure the same to the hopper wall but these bolts preferably permit free up and down movement of the plate at all times.

A brush 24 having bristles preferably of wire is mounted on the frame so that the outer extremities of the bristles contact with the periphery of the drum 16 in the manner indicated in Fig. 3. This brush preferably extends the entire length of the drum and acts to dislodge the adherent particles of powder as the drum rotates. These particles drop into a trough 25 located beneath the drum. The base portion of this trough is preferably formed in the shape of a series of funnels 26 arranged in a row in the manner indicated in Fig. 2. Each of these funnels is provided with a discharge opening as 27. These discharge openings are preferably so spaced that the powder will be deposited on the paper being wound on the drum 9 in a series of narrow parallel strips. In order that the reason for this may be fully understood, I have indicated by dot and dash lines as 28 (Fig. 2) the trace of the saw cuts to be made in the sheet after the winding has been completed and the sheet severed from the drum in the manner described. It will be noted that each opening 27 is disposed above the center of the corresponding strip 29. In this way the central portion of the strip will receive powder when the dusting mechanism is operating but no powder will be deposited upon the outer or edge portions of the strip. In the manufacture of napkin fillers, I prefer to make the strips 29 about nine inches and the treated zone about four inches wide, leaving an untreated zone or strip of about $2\frac{1}{2}$ inches on each side or edge.

The dusting mechanism is driven from a shaft (not shown) of the paper-making machine by means of a chain 30 and sprocket 31, the sprocket being revoluble upon a stud shaft 32 mounted in the frame. A pinion 33 is secured to the hub of this sprocket and is permanently in mesh with a gear 34 fixed

upon the outer end of the shaft 14^a connected to the agitator shaft 14.

A clutch member 36 is splined upon the shaft 14 and this member is yieldingly held by a spring 37 from the co-operating clutch member 39 formed on the hub of a pinion 40 free upon the same shaft. In order to permit automatic operation of this clutch, I have provided a counting device 41 on the shaft of the drum 9 which operates a switch 42 in an electric circuit including a solenoid 43 controlling the clutch lever 43^a. The pinion 40 is permanently in mesh with a gear 44 fixed upon the shaft 44^a on which is secured the drum 16. This drum will be operated to cause powder to be deposited on the paper being wound on the drum 9 only when the clutch members are in engagement. The counting or timing device is preferably designed to cause the clutch to remain out of engagement while a predetermined number of plies of paper are wound on the drum, to permit the clutch to be engaged for a predetermined number of revolutions of the drum, and then to release the clutch to prevent further application of powder while the remaining plies are wound. In the present embodiment this timing device comprises a star-wheel 45 which is advanced one tooth space for each revolution of the winding drum shaft 10, said shaft 10 being fitted with a dog or finger 45^a which, when rotating, engages the teeth 45^b of the star-wheel. On the star-wheel 45 there is fixed a concentric mutilated-flange cam 46, which, when it engages the button of a switch 42, closes the circuit of the solenoid 43, and starts the depositing apparatus. As soon as the circuit is broken, the spring 37 pulls the clutch member 36 out of engagement with the member 39. The drum 16 then ceases to turn.

In order to prevent the powder adhering to the sides of the trough 25 and forming into lumps, a vibrating device as 47 may be attached to this trough. This device in the present embodiment comprises a small electric motor 48 having a one-toothed cam 49 attached to its shaft 50 to impart a vibrating motion to a short lever 51 held against it by a spring 52. This vibrating motion is transmitted to the trough by the contact of the lever against the side.

Obviously, owing to the impossibility of stopping the paper machine, it is desirable to make as few stoppages of the paper drum as possible when stripping the layers. Therefore, in practice, I prefer to build up a plurality (in this instance three) of layers of filler on the winding drum 9 before stopping the winding process. Hence, waste is minimized. To facilitate separation of the individual napkin layers, I may insert a single sheet of colored paper as at 9^a after the completion of each layer-cycle.

In Fig. 6 of the drawing is illustrated a

modified form of control mechanism for the clutch member 54, corresponding to the member 36 of the previous embodiment, and this may be substituted for the solenoid control 5 previously described. In this mechanism a control lever 55 is fulcrumed on the frame at 56 and connected to the member 54 at 57 in the usual manner. A spring 58, connecting the lever with the frame, normally retains the clutch members in engagement. 10 The control lever may be shifted either manually or automatically to disengage the members.

The described details of construction and 15 arrangement being merely illustrative of a single phase of my invention, the scope of the same should be determined by reference to the appended claims, said claims to be construed as broadly as possible consistent 20 with the state of the art.

I claim as my invention:

1. The method of making sanitary napkin fillers which consists in winding a strip of filler material on a drum to form a multi- 25 ply layer thereon, chemically treating a circumferential zone on one of said plies of less width than the width of said strip and transversely cutting said multi-ply layer into strips of the desired width so as to form a 30 relatively long but narrow filler having a treated zone extending across its width but shorter than the length of the filler.

2. The method of making sanitary napkin fillers which consists in winding a sheet of 35 filler material on a drum to form a multi-ply layer thereon, chemically treating a plurality of spaced circumferential zones of predetermined width on one of the plies, cutting said multi-ply layer into sections each of which 40 includes a circumferentially treated zone and transversely cutting said sections into filler strips of the desired width.

3. The improvement in the art of making sanitary napkin fillers which consists in 45 winding a strip of absorbent material upon a drum, sprinkling a chemical upon axially separated circumferential zones of the material during the winding operation and subsequently sub-dividing the material into 50 multi-ply filler strips, each including a portion of one of said zones.

4. The improvement in the art of making sanitary napkin fillers which consists in 55 winding a strip of absorbent material upon a drum, sprinkling a chemical upon said material in separated, parallel, circumfer-

entially extending zones spaced according to the length of filler desired, and subsequently slitting the material between said zones to form multi-ply pad strips, each including 60 one of said zones, and of width equal to the length of filler desired.

5. Apparatus for making a chemically treated multi-ply absorbent pad which comprises a drum, means for rotating said drum 65 to wind thereon in successive convolutions an absorbent sheet of which the pad is to be formed, and mechanism for automatically chemically treating a pre-determined portion of the whole number of convolutions dur- 70 ing the winding operation.

6. Apparatus for making a chemically treated multi-ply absorbent pad which comprises a drum, means for rotating said drum 75 to wind thereon in successive convolutions an absorbent sheet of which the pad is to be formed, mechanism for chemically treating certain of said convolutions during the winding process, and means for automati- 80 cally starting and stopping the operation of said mechanism.

7. Apparatus for making a chemically treated multi-ply absorbent pad which comprises a drum, means for rotating said drum 85 to wind thereon in successive convolutions an absorbent sheet of which the pad is to be formed, and automatically operated mechanism for sprinkling a chemical upon separated zones of certain of said convolutions 90 during the winding process.

8. Apparatus for making a chemically treated multi-ply absorbent pad which comprises a drum, means for rotating said drum 95 to wind thereon in successive convolutions an absorbent sheet of which the pad is to be formed, and automatically operated mechanism for sprinkling a chemical in powder form upon separated, parallel, circumferen- 100 tially extended zones of certain of said convolutions during the winding process.

9. Apparatus for making a chemically treated multi-ply absorbent pad which comprises a drum, means for rotating said drum 105 to wind thereon in successive convolutions an absorbent sheet of which the pad is to be formed, mechanism for chemically treating certain of said convolutions during the winding operation, and means for automatically actuating said mechanism in timed relation with said drum.

ERNST MAHLER.