May 27, 1930. A. LEHMANN 1,760,419

PACKING COTTON WOOL FOR DRESSING PURPOSES

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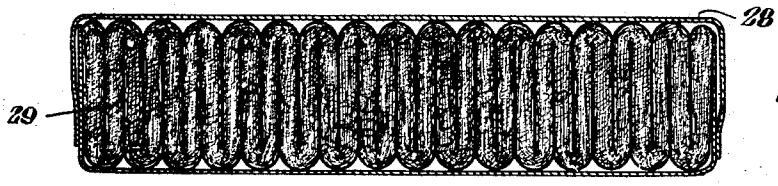

FIG. 1

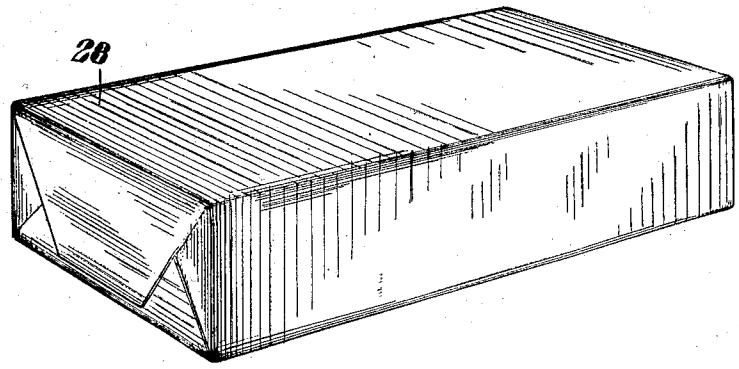

FIG. 2

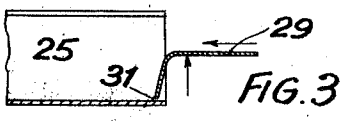

FIG. 3

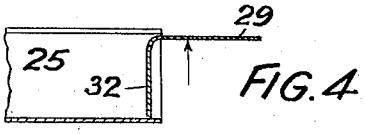

FIG. 4

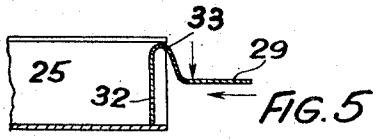

FIG. 5

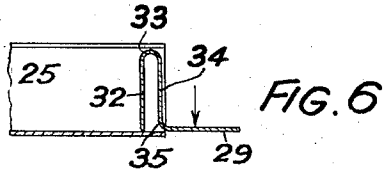

FIG. 6

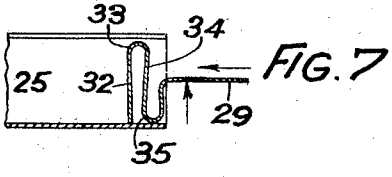

FIG. 7

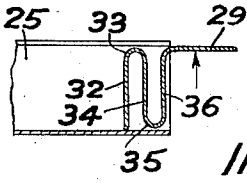

FIG. 8

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FIG. 11

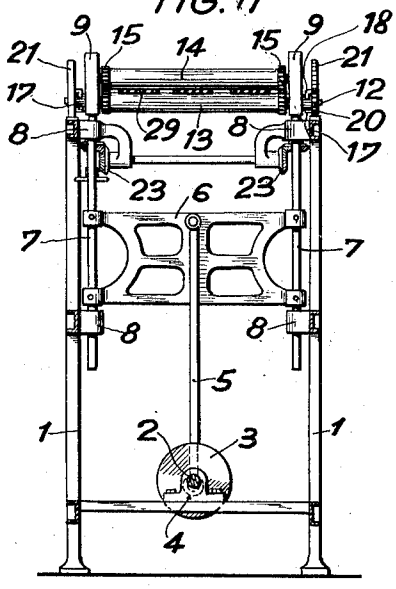


FIG. 13

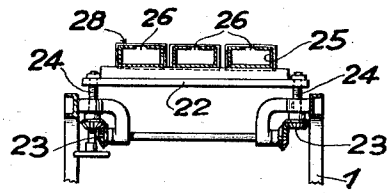


FIG. 12

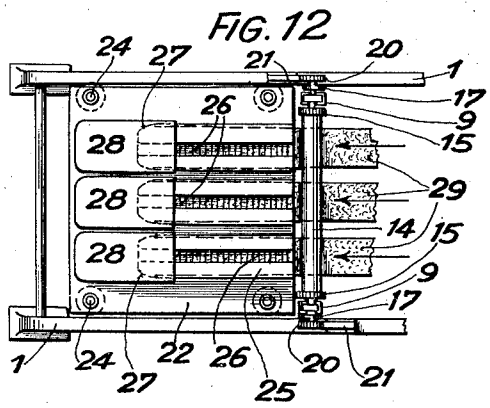
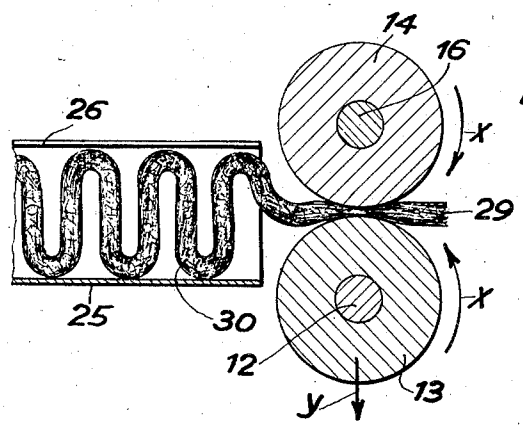


FIG. 9



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PACKING COTTON WOOL FOR DRESSING PURPOSES

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FIG. 10

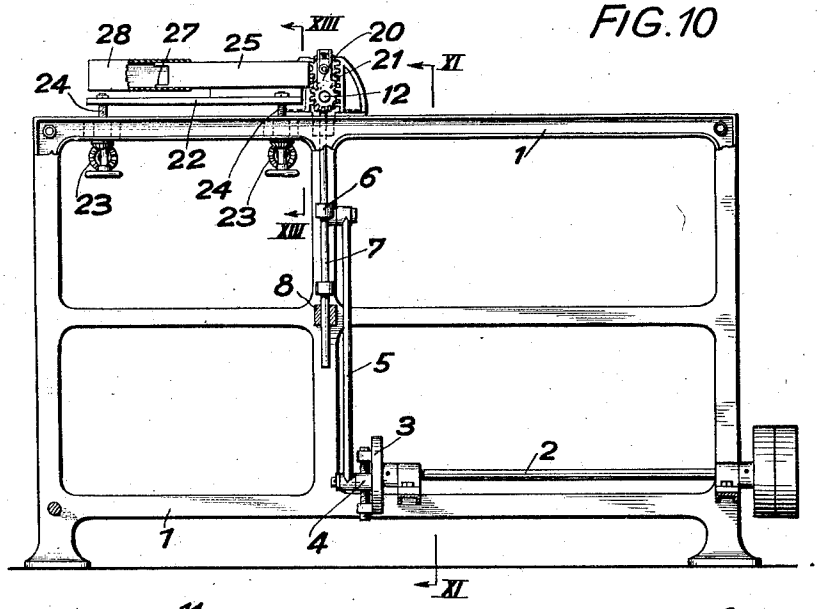


FIG. 14

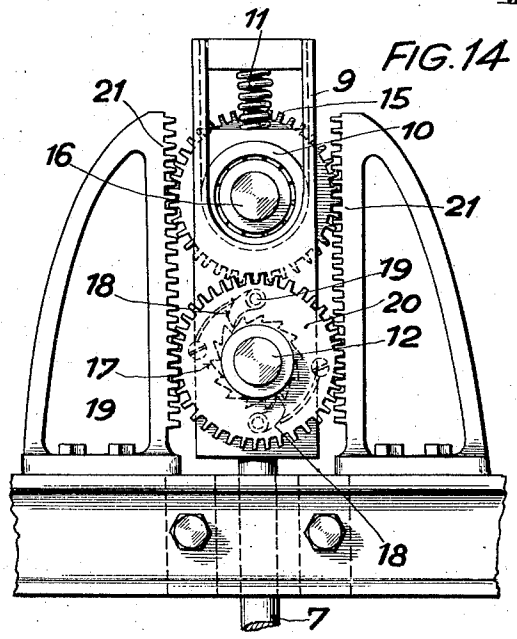
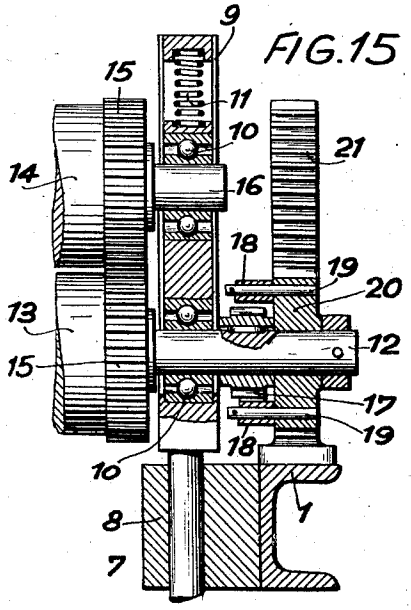


FIG. 15



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UNITED STATES PATENT OFFICE

ANTON LEHMANN, OF FLAWIL, SWITZERLAND

PACKING COTTON WOOL FOR DRESSING PURPOSES

Application filed December 10, 1927, Serial No. 239,159, and in Switzerland December 11, 1926.

The packages of cotton wool for dressing purposes according to the present invention consist of a strip of cotton wool inserted in zig-zag fashion by mechanical means into and enclosed in an envelope. The package is produced by a method and a machine for inserting the cotton wool strips in zig-zag layers into the packages, for instance into paper bags. According to the method a strip of cotton wool is fed longitudinally and horizontally into a package placed horizontally and is simultaneously moved up and down transverse to the feeding direction so that it is placed in vertical zig-zag layers into the package. This may be performed by means of a machine provided with a device for effecting the horizontal positive feed motion of the strips of cotton wool, the device being moved up and down transverse to the direction in which the strip of cotton wool is fed.

The accompanying drawings serve for explaining the invention. In the drawings:

Fig. 1 shows in a longitudinal section a package containing cotton wool for dressing purposes,

Fig. 2 is a perspective view of the package,

Figs. 3–8 show in a diagrammatic manner several stages of carrying out the method,

Fig. 9 shows in a more technical way the manner in which the method is carried into effect,

Fig. 10 is a side elevation of a constructional example of the machine,

Fig. 11 is a section along line XI—XI in Fig. 10,

Fig. 12 is a plan view,

Fig. 13 is a section along line XIII—XIII in Fig. 10,

Fig. 14 shows a detail on a larger scale and in an end view and

Fig. 15 is a vertical section of the detail.

Referring now to Figs. 1 and 2 28 denotes an envelope or bag made of paper or the like, which is preferably closed on one end before the contents are inserted. The cotton wool or wadding 29 for dressing purposes is mechanically inserted in zig-zag fashion and the other end of the bag is then closed. In order to take some of the cotton wool out of the bag the latter is opened at one end and the cotton wool pulled out.

As the strip of cotton wool is mechanically folded in zig-zag fashion the strip of cotton wool can be more compressed than if the cotton wool is inserted by hand, and the folding is more regular so that the same quantity of cotton wool takes up a smaller space. Furthermore owing to the pronounced folding, which cannot be made equally well by hand the cotton wool pulled out in excess may be easily pushed back into the bag 28 as it can readily be folded up again.

To the strip of cotton wool 29 which has the same width as the bag 28 (Fig. 9) a step by step feed motion in the longitudinal and horizontal direction into a guide 25 of the package is imparted by the rollers 13 and 14 which are positively driven in the direction of the arrows. The rollers 13 and 14 are adapted to be simultaneously moved in the direction of the arrow y and opposite thereto, i. e. up and down transverse to the feed direction. In the points in which the up and down movement of the rollers 13 and 14 changes its direction the feed motion is interrupted for a short time. Thereby the strip 29 of cotton wool is placed in vertically folded layers in the horizontal direction into the guide 25 for the bags as is shown in Fig. 9. The feed motion may be obtained by other mechanical elements instead of by rollers, for instance by pulling or pushing mechanisms. Further the up and down movement transverse to the feed direction may be obtained in any manner, for instance by lifting rods, cams and the like.

The method shall now be explained with reference to Figs. 3–8.

First of all the strip of cotton wool 29 is fed by any suitable means horizontally and in its longitudinal direction (see arrow) into the guide 25 for the packing whereby the front end 31 of the strip rests on the bottom of the guide 25 as is shown in Fig. 3. If now the feed device moves in the upward direction as is indicated by the arrow in Fig. 4 the front portion 32 of the strip of cotton wool occupies the position shown in Fig. 4. When

the latter is reached the feed motion is interrupted for a short time and the transverse movement is reversed whereby a good folding 33 is obtained as is shown in Fig. 5 and the soft cotton wool is not squeezed into the widthwise direction. The transverse motion then takes place until the strip of cotton wool after having formed the vertical layer 34, abuts at 35 at the bottom of the guide, whereupon the feed mechanism is rendered inoperative for a short time so that also in this case a normal fold is generated at 35 as is illustrated in Fig. 7. Thereupon the vertical upward movement of the feed device occurs again, whereby a fresh layer 36 is formed and this action continues until after the whole guide is filled with vertical layers of cotton wool arranged in zig-zag fashion which are then pushed into the bag 28 which is then closed.

In the constructional example of the machine illustrated in Figs. 10–15 1 denotes the frame in which the driving shaft 2 is mounted. The latter carries a disk 3 on which an eccentric crank pin 4 is adjustably arranged. With the crank pin 4 a connecting rod 5 cooperates which with its other end is connected to a traverse 6 rigidly fixed at both ends to vertical rods 7 longitudinally displaceable in guide bearings 8 of the machine frame 1. On the top of each rod 7 a bearing frame 9 is arranged. Each bearing frame comprises two ball bearings 10 arranged one above the other, the upper ball bearings 10 being pressed in the downward direction by springs 11. The bearing frames thus take part in the up and down movement of the rods 7. In the lower ball bearings 10 the shaft 12 of a lower feed roller 13 is mounted and in the upper ball bearings 10 the shaft 16 of an upper feed roller 14. Both rollers are operatively connected by means of spur gear wheels 15 situated on both ends of the rollers. Both ends of the shaft 12 of the feed roller 13 extend beyond the bearings 10 and to both ends ratchet wheels 17 are fixed with which two spring loaded pawls 18 cooperate, clearance being provided between the pawls 18 and the teeth of the ratchet wheels 17. The pawls 18 are rotatable on pins 19 fixed to gear wheels 20 freely rotatable one on each end of the shaft 12. Each of the wheels 20 meshes with a toothed rack 21 each of which is arranged beside and outside of the other bearing frame 9 in such a manner that the teeth of both toothed racks point towards the vertical centre plane passing through the shafts 16 and 12 as shown in Fig. 14.

Thereby it is attained that on raising the bearing frame 9 the gear wheels 20 turn on the shaft 12 whereby the pawls 18 on one ratchet wheel give way owing to the springs. Thus on one side of the feed mechanism no turning of the shaft 12 by the gear wheel 20 occurs, however, on the other side of the feed mechanism the pawls cooperate with the ratchet wheel and turn the shaft 12. On lowering the bearing frame 9 the pawls become operative on the opposite side of the feed mechanism so that also during this lowering movement the same movement of the rollers 14 and 15 indicated by the arrows x in Fig. 9 occurs.

On reversing the lifting or lowering movement a short stopping of the turning movement of the rollers 14 and 15 occurs on account of the play provided with the pawls.

At the rear of the feed rollers 14 and 15 a horizontal table 22 is provided on the frame 1 which may be adjusted in height by means of a spur gear drive 23 and screw threaded spindles 24. On the table three horizontally disposed guide bushes 25 of rectangular cross-section are arranged which are provided on the top with a slot 26 and with a tapering rear end 27. The envelopes 28, for instance paper bags, are pushed over the tapering ends 27.

The operation of the above described machine is as follows:

Strips 29 of cotton wool, for instance three strips one beside the other as is shown in Fig. 12, are positively pushed from one side horizontally between the feed rollers 13 and 14 into the guides 25 for the packages. When the machine works the rollers 13, 14 rotate in the direction of the arrows x (Fig. 9) and feed thus the strips 29 longitudinally through the guides 25 towards the packages 28. The rollers 13 and 14 further carry out an up and down or reciprocating movement in the direction of the arrow y and opposite thereto and thereby the strips are placed in vertical layers 30 in zig-zag fashion and get gradually in this form along the channels and the tapered ends 27 into the bags 28. The number of guides 25 is not limited to that shown. They may also be exchangeable against others of a different size, which also necessitates a corresponding adjustment of the stroke of the crank pin 4. Obviously instead of the pawl and ratchet mechanism any other unidirectional mechanism, for instance a free wheel clutch, may be provided.

I claim:

1. A method of inserting a strip of cotton wool into envelopes which consists in positively pushing a strip of cotton wool longitudinally and horizontally into a horizontally disposed packing envelope and simultaneously moving said strip up and down to produce vertical layers arranged in zig-zag fashion and inserted in said envelope by the feed motion and interrupting said feed motion for a short time in the dead centers of said up and down motion.

2. A machine for inserting strips of cotton wool into envelopes, comprising in combination, a feed mechanism adapted to positively

feed a strip of cotton wool endwise and intermittently into an envelope, and means adapted to impart to said feed mechanism a reciprocating movement transverse to said feed motion for folding said strip in zig-zag fashion on being inserted into the envelope, said feed movement being interrupted for a short time when said transverse movement changes its direction.

3. A machine for inserting strips of cotton wool into envelopes, comprising in combination, a pair of positively driven rollers feeding the strip between said rollers in the longitudinal and horizontal direction, a frame in which said rollers are mounted, toothed racks cooperating with said frame, and means to reciprocate said frame along said toothed racks in the vertical direction for endwise feeding and folding said strip vertically in zig-zag fashion.

4. A machine for inserting strips of cotton wool into envelopes, comprising in combination, a pair of positively driven rollers feeding the strip between said rollers in the longitudinal and horizontal direction, shafts on which said rollers are mounted, a bearing frame for said shafts, a toothed wheel loosely mounted on each of said shafts, a unidirectional driving mechanism interposed between each toothed wheel and its shaft, two vertically disposed stationary toothed racks in mesh with said toothed wheels, and means to reciprocate said bearing frame in the vertical direction along said toothed racks for endwise feeding and folding said strip vertically in zig-zag fashion.

5. A machine for inserting strips of cotton wool into envelopes, comprising in combination, a pair of positively driven rollers feeding the strip between said rollers in the longitudinal and horizontal direction, shafts on which said rollers are mounted, a bearing frame for said shafts, a toothed wheel loosely mounted on each of said shafts, ratchet wheels fixed on said shafts, pawls cooperating with said ratchet wheels and pivoted on said gear wheels, two vertically disposed stationary toothed racks in mesh with said toothed wheels, and means to reciprocate said bearing frame in the vertical direction along said toothed racks for endwise feeding and folding said strip vertically in zig-zag fashion.

In testimony whereof I have signed my name to this specification.

ANTON LEHMANN.