Nov. 10, 1925. 1,561,103

A. F. NEY

MACHINE FOR CLOSING CARTONS

Original Filed June 29, 1923 2 Sheets-Sheet 1

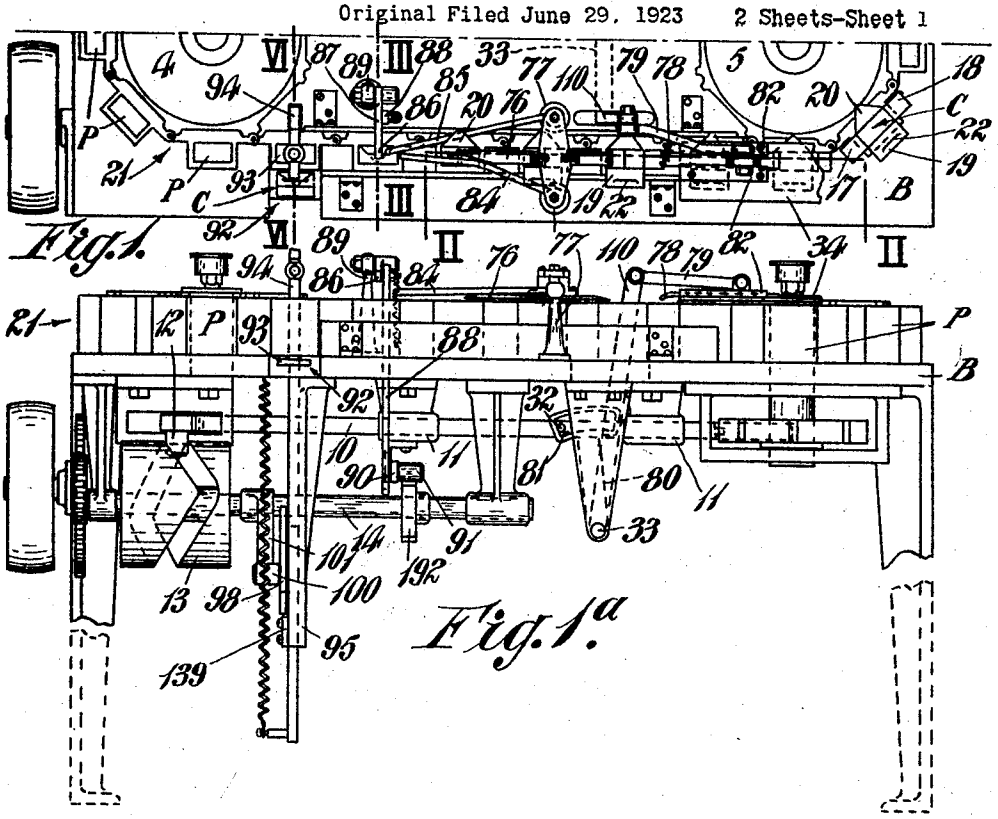


Fig. 1.

Fig. 1a

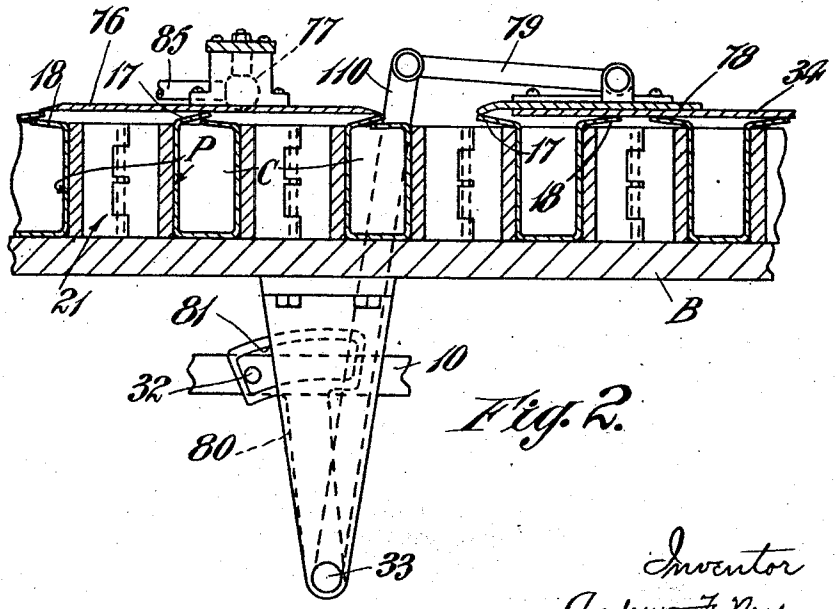


Fig. 2.

Inventor
Andrew F. Ney
By Henry Orth & Co
Atty.

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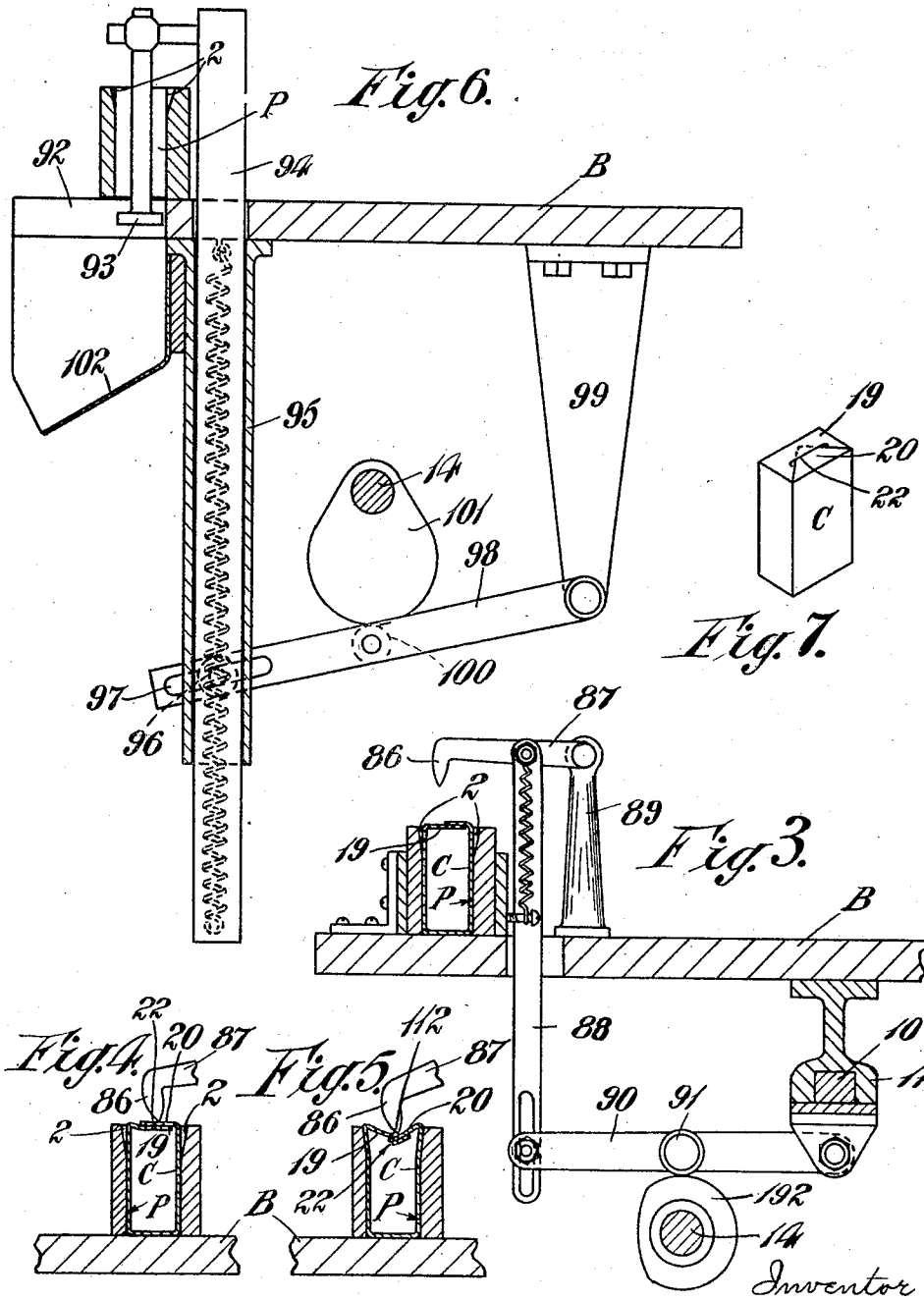


Fig. 6.

Fig. 7.

Fig. 3.

Fig. 4.

Fig. 5.

Inventor
Andrew F. Ney.
By Young Orth & Co
Attys.

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UNITED STATES PATENT OFFICE.

ANDREW FRANCIS NEY, OF EAST KEW, AUSTRALIA.

MACHINE FOR CLOSING CARTONS.

Original application filed June 29, 1923, Serial No. 648,549. Divided and this application filed September 22, 1924. Serial No. 739,226.

To all whom it may concern:

Be it known that I, ANDREW FRANCIS NEY, a subject of the King of Great Britain, residing at East Kew, in the State of Victoria, Commonwealth of Australia, have invented certain new and useful Improvements in Machines for Closing Cartons, of which the following is a specification, being a division of my application Serial No. 648,549, filed June 29, 1923.

The present invention refers to machines for closing the top flap pieces of rectangular cartons that have been filled with material such as granular or powdered material, as for instance jelly crystals.

Such cartons usually have either two or four flap pieces and in the latter case in closing the carton a pair of same approach each other and may overlap and are covered by a third flap piece having a central slit into which the end of the remaining or fourth flap, usually formed with a peak or tapered, is inserted. In the case of cartons having only two flaps only the latter function is necessary.

The present invention usually forms part of a complete packaging or carton filling machine, and is shown as associated with parts of the latter.

Figure 1 is a plan of the front half of the machine for closing cartons with four flaps.

Fig. 1a is an elevation thereof.

Figure 2 is a longitudinal vertical section on line II—II of Fig. 1.

Figure 3 is a transverse section on line III—III of Figure 1.

Figures 4 and 5 are enlarged sectional views illustrating the last operations of interlocking the flaps of the cartons.

Figure 6 is a vertical section on line VI—VI of Figure 1.

Figure 7 is a view of the closed carton.

The filled cartons C with flaps 17, 18, 19 and 20 are caused to travel intermittingly for instance by means of an endless chain carrier 21 passing around sprockets 4, 5 and provided with bottomless pockets P formed with flared mouths 2 and sliding along a base B, which pockets contain the filled cartons.

Above the cartons is a fixed narrow overhead longitudinal plate 76 mounted on a bridge fixed to standards 77 and a horizontally reciprocating finger or folder 78. The latter operates in guides 82 on a plate 34 and is pivoted on an arm 79 pivoted on a vertical lever 110 on a rock shaft 33 which latter at its other end has an arm 80 formed with a lateral slot 81 engaged by a pin 32 on a reciprocating rod or bar 10. This bar is suitably journalled in bearings 11 and provided at one end with a roller 12 engaging a slotted cam 13 on a shaft 14.

As the carton advances the end of plate 76 engages the advance flap 17 and turns it inwardly to an angle approximately 30 degrees to the horizontal, then the folder 78 advances and its end engages the opposite flap 18 and turns it into horizontal position. When the carton continues, plate 76 presses flap 17 down over flap 18 and the other flaps 19 and 20 are engaged respectively by overhead inclined arms 84, 85 Figure 1, which arms converge and the arm 84 is bent to complete its folding operation before arm 85 functions so that the flap 20 which is formed with a peak is the one overlying the flap with the slit and also the two previously flattened flaps 17 and 18 if there are four flaps on the cartons.

The final operation is the depression of the flap 19 formed with the slit 22 and the peaked flap 20 to finally lock the peak in the slit. This operation is performed by a downwardly bent finger 86, Figures 3, 4 and 5 on an arm 87 pivoted on standard 89 and connected to a vertical rod 88 spring controlled and connected with an approximately horizontal arm 90 having a roller 91 engaging a cam 192 on the shaft 14.

The point of the finger 86 in depressing the slitted flap and the peaked flap moves towards the inner side as in Figures 4 and 5 and in doing so its peak is flipped over the outer edge 112 of the slit 22 and into the latter so that when the finger rises the peak of the flap 20 progresses further into said slit and so securely closes the filled carton. During this action the front and rear sides of the cartons are momentarily pressed outwardly, such movement being permitted by the extra width provided in the pockets by the flared mouth 2 thereof and the release of the finger permits the carton to resume its shape and thereby assist the peak to enter the slit 22.

The carton as shown in Figure 7 then moves a step forward and is pushed through a slot or opening 92, Figure 6, formed in the base plate, by a discharge plunger 93 the

shank of which is mounted on a vertically reciprocated spring controlled rod 94 working in a vertical guide 95 and cover plate 139 and connected by a pin 96 and slot 97 with an arm 98 pivotally mounted on a bracket 99 and provided with a roller 100 engaging a cam 101 on the main shaft 14. The cartons discharged through slot or opening 92 are delivered into a chute 102 leading to the packers.

It will be understood that when the carton is formed only with two closure flaps, one formed with a peak and the opposite one with a slit, the reciprocating folder 78 and the fixed plate 76 are unnecessary.

I claim:—

1. In machines for closing cartons provided with flaps, one formed with a slit and another with a peak, an intermittingly travelling carrier provided with carton receiving pockets formed with flared mouths, means to fold the flaps with the peaked one overlying the slit one, a pivoted arm formed with a downwardly bent finger above the flaps and means to reciprocate said arm in contact with the flaps whereby the peak of one flap is inserted in the slit of the other flap.

2. In machines for closing cartons provided with flaps, one formed with a slit and another with a peak, an intermittingly travelling carrier provided with carton receiving pockets formed with flared mouths, a pair of converging arms for folding in the flaps, one of said arms arranged to fold the slit flap in advance of the peaked one, a pivoted arm formed with a downwardly bent finger above the flaps and means to reciprocate said arm in contact with the flaps whereby the peak of one flap is inserted in the slit of the other flap.

3. In machines for closing cartons provided with four flaps, one formed with a slit and the opposite one with a peak, a carrier for the cartons, a fixed plate for inwardly folding the advance flap, a reciprocating folder for similarly folding the rearmost flap, a pair of converging arms for folding the peaked and slit flaps and a pivoted reciprocating finger for finally inserting the peak of one flap in the slit of the slit flap.

4. In machines for closing cartons provided with four flaps one provided with a slit and the opposite one with a peak, an intermittingly travelling carrier provided with carton receiving pockets formed with flared mouths, a flap flattening horizontal plate fixed above the carrier, a reciprocating flap folder at the rear of said plate, a pair of converging arms in advance of said plate for folding the peaked and slit flaps and a pivoted reciprocating arm formed with a downwardly projecting finger above said peaked and slit flaps.

Dated this 29th day of July, 1924.

ANDREW FRANCIS NEY.