

April 19, 1927.

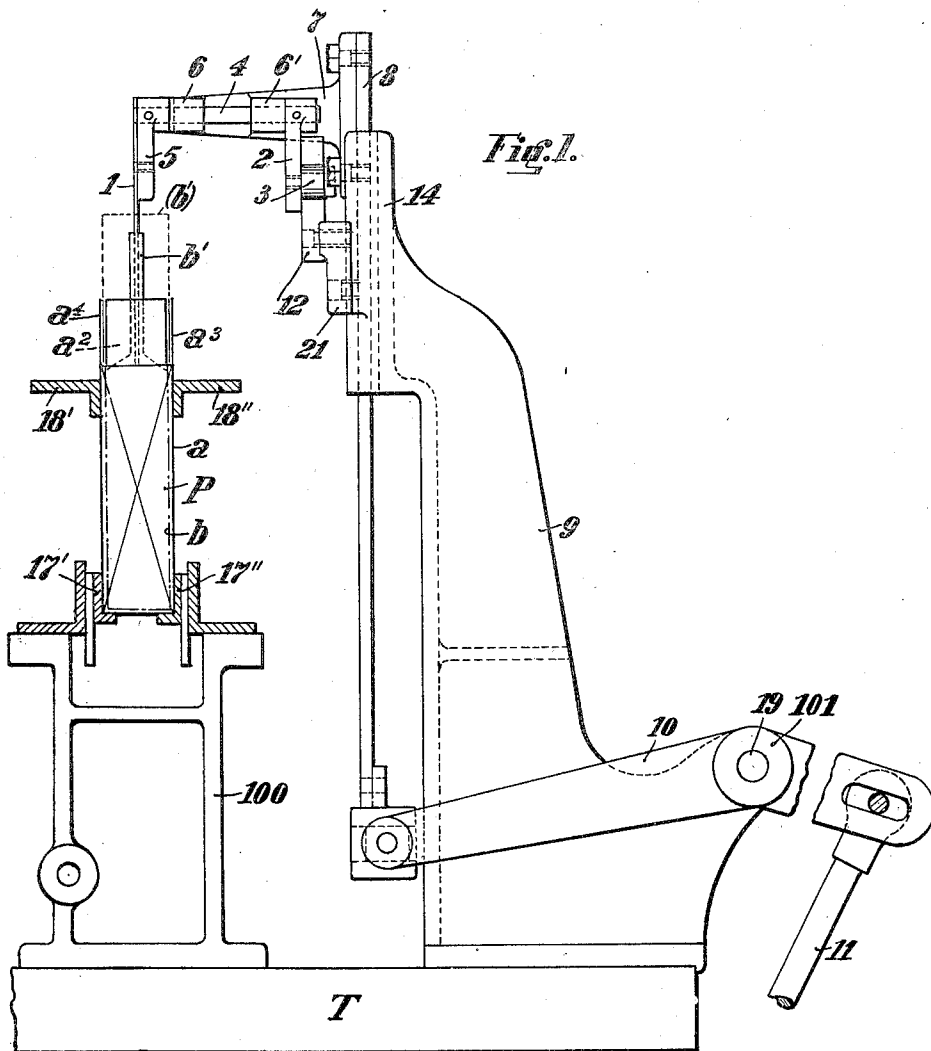
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P. GANGLER

CLOSING PARCELS

Filed Oct. 6, 1923

5 Sheets-Sheet 1



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April 19, 1927.

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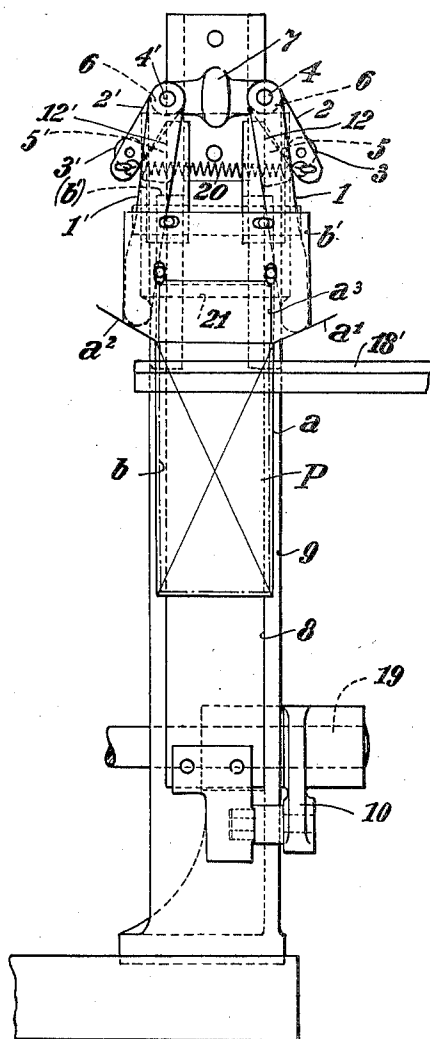
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Fig. 2.



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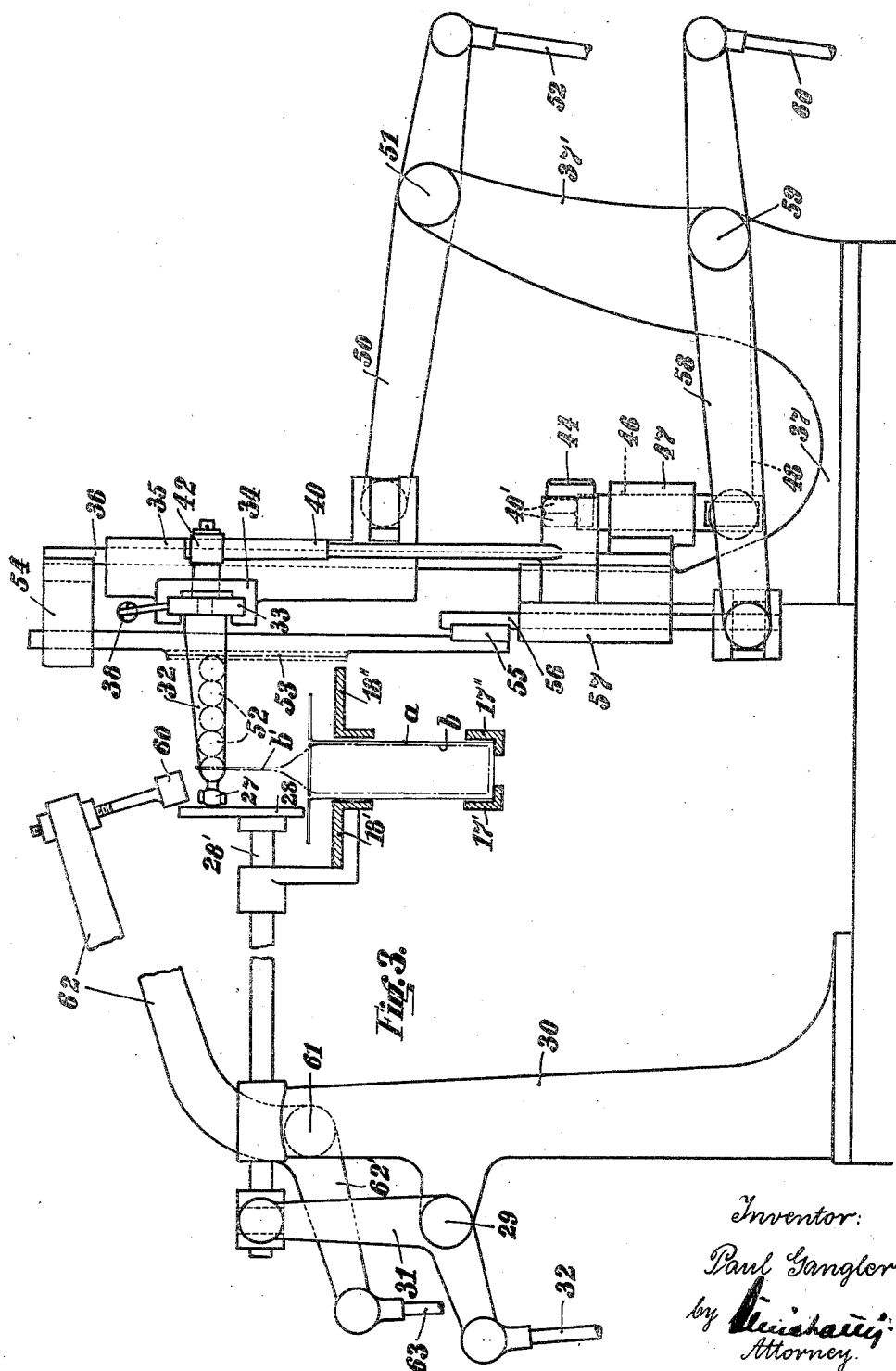
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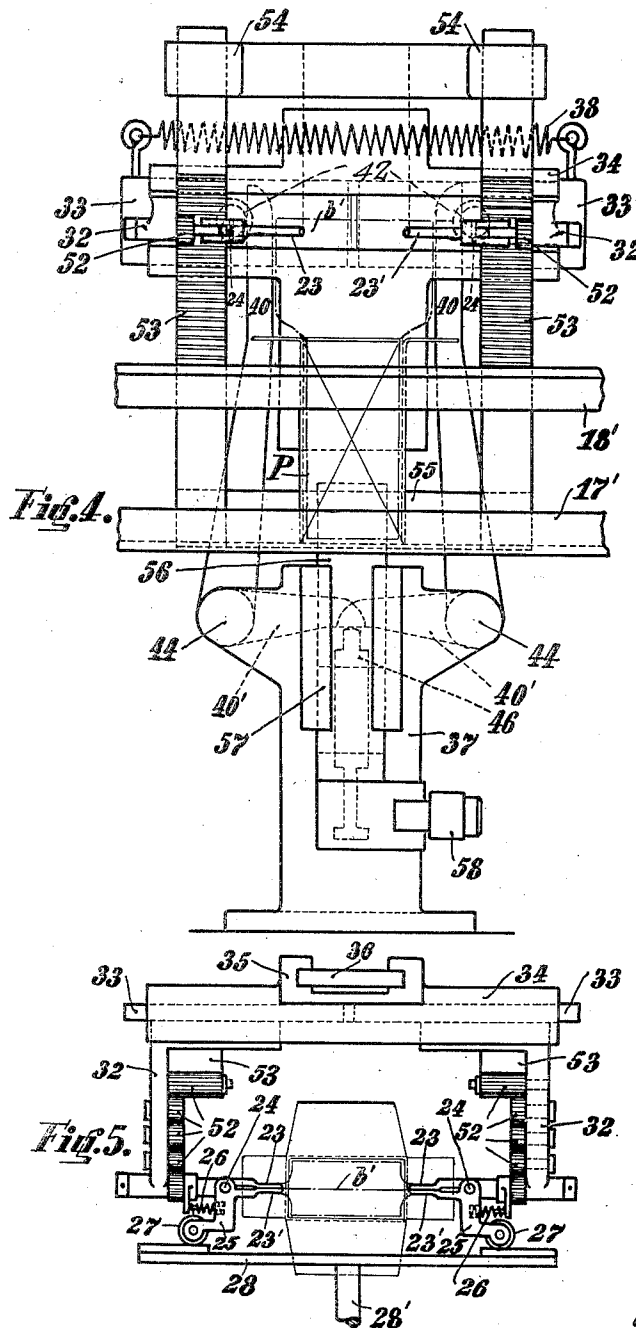
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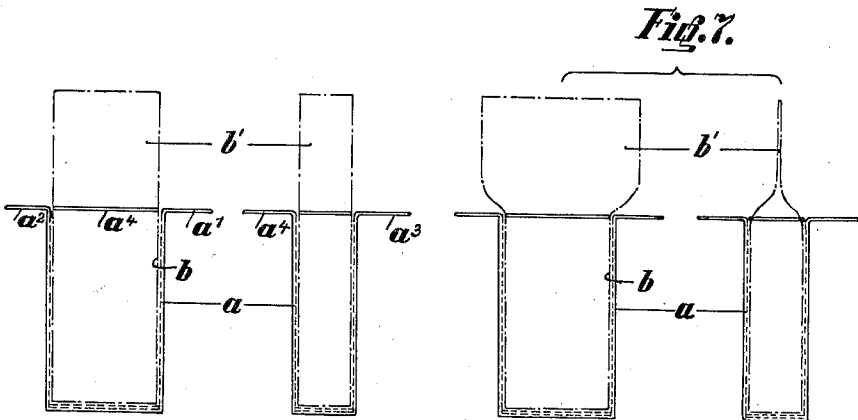
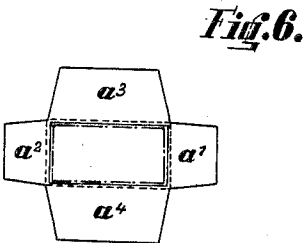
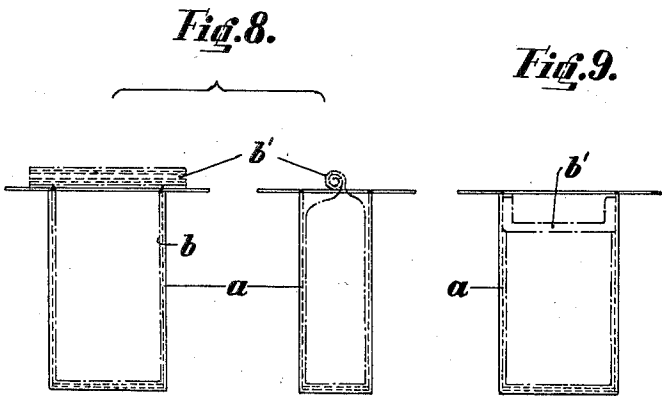
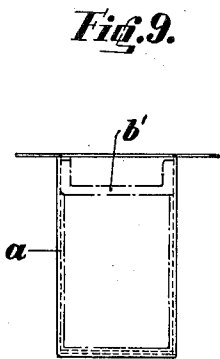
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Filed Oct. 6, 1923

5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE.

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CLOSING PARCELS.

Application filed October 3, 1923, Serial No. 666,987, and in Germany October 17, 1922.

My invention refers to the handling of parcels formed of an outer envelope and an inner bag, such as for instance a carton and a bag of parchment paper or the like inserted therein, such cartons being employed for instance in packing powders such as cocoa. The invention more especially refers to the closing of the inner bag after it has been filled with the powder and comprises means for carrying out this operation in a particularly effective manner. According to the present invention, the folding procedure practiced up till now by hand is carried out mechanically and in a simple and reliable manner which is fully equivalent to the closing by hand. According to this invention, the empty portion of the inner bag which projects from the outer envelope, after having been flattened by pressing or drawing, is gripped by rotary coiling members and is converted into a coil, the distance between the bag and said members being decreased at the same time, whereupon the coiled portion of the bag is inserted into the outer envelope or folded in some other manner, the outer envelope being thereafter closed in a well known way.

In the drawings affixed to this specification and forming part thereof, a machine embodying my invention and adapted for carrying out the operations described above is illustrated diagrammatically by way of example.

In the drawings—

Figure 1 is an elevation viewed in the direction of feed of the device for flattening that portion of the inner bag which projects from the outer envelope, some of the parts of this device and also the parcel being shown in section.

Figure 2 is an end view,

Figure 3 is an elevation showing the device for coiling the projecting portion of the inner bag, the feeding truck being shown in section.

Figure 4 is an end view shown from the left of the device disclosed in Figure 3, some parts being omitted for the sake of clearness.

Figure 5 is a plan view of part of the device and

Figures 6-9 illustrate the different phases of the folding procedure,

Figure 6 showing the parcel in side view, end view and plan view before this procedure is started, while

Figure 7 shows it in side and end view with the projecting portion of the inner bag flattened.

Figure 8 shows similar views of the parcel after the projecting portion of the inner bag has been coiled and

Figure 9 is an elevation of the parcel with the upper portion of the inner bag coiled and pressed into the carton.

Referring to the drawings which represent a packing machine in which the parcels P are fed, one after the other, through the machine, the angular bottom members 17', 17'' and top ledges 18', 18'' form a straight feed track. A well known feeding device (not shown) feeds the parcels, step by step, through the several stations in which the parcels are filled, closed labelled and so on by well known devices suited to this purpose. The angular members 17', 17'' are fixed to supports 100 mounted on the machine table T. In the example shown in the drawings, the parcel P consists of an outer carton a with four flaps a¹, a², a³, a⁴ and of an inner envelope or bag b, the empty upper portion b' of which projects from the carton. The parcel shown in the drawing has already been filled and shall now be closed, first of all by flattening the projecting portion b'.

The means for thus flattening this portion of the bag form the object of my co-pending application for patent of the United States executed of even date herewith and comprises blade-shaped spreading members 1 and 1' fixed to arms 5, 5' which are mounted on bolts 4, 4'. These bolts are rotatably located in lateral eyes 6, 6' of a support 7 fixed to a rail 8. This rail is arranged to be reciprocated vertically in a guide 14 of the standard 9 by means of a lever 10 turning on bolts 19 located in a bearing 101 of the standard 9 and an eccentric rod 11 ac-

tuated in a well known manner by an eccentric on the main shaft (not shown). On the inner ends of the bolts 4, 4' are fixed arms 2, 2' which carry rollers 3, 3' held in contact with switch members 12, 12' by means of a spring 20. The switch members are arranged for lateral adjustment on a plate 21 which is mounted on the lateral rails of the guide 14 for vertical adjustment.

This device operates as follows: On the parcel P reaching this part of the machine, the device above described is in its upper position (not shown in the drawing) in which the rollers 3, 3' are applied against the upper end of the bevelled portions of the switch members 12, 12' whereby the spreading members 1, 1' are caused to assume an inoperative inner position. The device is now moved into the lower position shown in the drawing by lowering rail 8. This causes the spreading members 1, 1' to enter the projecting portion b' of the inner envelope or bag b and, owing to the cooperation of the switch members 12, 12' and guide rollers 3, 3', to be gradually moved into their lower and outer end position shown in the drawing. In this manner the upper portion b' of the inner bag is spread flat.

After these parts have been carried back into their initial position, the parcel P is fed forwards to the station shown in Figs. 3-5 where the flattened portion b' is coiled and pressed into the carton a.

The members for coiling the flattened portion b' shown in the drawing consist of two mandrels disposed on either side of the flat portion of the bag in the direction of feed of the parcel and are formed like pincers or nippers in order to enable them to grip this portion. Each mandrel consists of a fixed arm 23 and a movable arm 23' which is pivoted at 24 to the fixed arm and provided with an angularly bent arm 25 carrying a roller 27 and acted upon by a closing spring 26. These mandrels are opened by means of a plate 28 which is adapted to be displaced, with regard to the rollers 27 and fixed to a displaceable rod 28' which is acted upon by an angle lever 31 pivoted at 29 to support 30 and by the connecting rod 32 of an eccentric (not shown) for actuating the arms 25.

The mandrels and nippers 23, 23' are rotatably located in brackets 32 which can be moved horizontally with regard to each other. To this end the brackets 32 are fixed to slides slidably guided in a guide 34, this guide being in turn provided with a guide 35, for vertical reciprocating motion on a vertical rail 36 fixed to the support 37 mounted on the table T.

The slides 33 are connected by a spring 33 which tends to pull them together but such

tendency is counteracted by two angular levers 40, 40' fulcrumed to the support 37 at 44, 44. Each upright arm 40 of said angular levers engages against a roller 42 at the rear of each slide, and their horizontal arms 40' bear on a slide 46 which is adapted to be reciprocated in a guide 47 at the rear of the support 37 by a rocking lever 48 which is fulcrumed in an extension 37' of the support at 59 and actuated by an eccentric, not shown.

When the slide 46 is raised, the arms 40 will be moved apart and push the slides 33 away from each other against the action of the spring 38. The brackets 32 and the mandrels 23, 23' will partake in this displacement. On the other hand, when the slide 46 is lowered, the spring 38 will be free to move the slides 33 toward each other to the extent permitted by the rocking motion of the arms 40.

The vertical reciprocating motion of guide 34 by aid of the guide 35 mounted on rail 36 is brought about by lever 50 rotatably arranged at 51 on an extension 37' of the support 37 and actuated by means of a rod 52 from an eccentric (not shown).

The coiling mandrels 23, 23' are caused to rotate by means of toothed wheels 52 rotatably located on brackets 32 and meshing with racks 53 which are guided at their upper ends in guides 54 fixed to the rail 36 and are fixed with their lower ends by means of a transverse rod 55 on a slide 56 which is guided for vertical reciprocation in a guide 57 on the support 37. The slide 56 is reciprocated by means of a lever 58 pivoted at 59 to the support 37 and actuated by a rod 60 from an eccentric, not shown.

This device operates as follows:—On the inner bag b having been flattened according to Fig. 7 and having reached the coiling station, the coiling mandrels 23, 23' are in their raised outer position (not shown). By moving rod 28' and the plate 28 forwards, the rollers 27 are moved backwards, the mandrels 23, 23' are opened and by spring 38 at the same time moving levers 40, 40' inwards, as the slide 46 is now lowered by its rocking lever 48, the slides 33 and the mandrels are moved towards each other into the position shown in Fig. 5. As the rod 28' recedes, the mandrels are closed by the spring 27 and grip the flattened portion of the bag from both sides. The racks 53 are now raised by the means described above, whereby the toothed wheels 52 and the mandrels 23, 23' are set rotating. At the same time, the guide 34 moving downwards under the action of its lever 50, lowers by means of lever 50 the mandrels according as the coiling of the portion b' of the bag advances, whereby this portion is finally coiled as shown in Fig. 8. After this has been effect-

ed the slide 34 is raised by the lever 50 and the coiling mandrels again assume their original position. The coiled portion of the bag can now be pressed into the carton *a* by means of a plunger 60 (Fig. 9), the plunger 60 being lowered into the carton by a double armed lever 62, 62' located on the support 30 at 61 and by the connecting rod 63 of an eccentric (not shown).

10 The inner bag having thus been closed, the flaps *a*¹—*a*⁴ of the carton *a* are closed and the label is pasted on by well known means.

15 I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:—

20 1. In a device for closing a filled bag, means for flattening the empty portion of the bag, horizontal rotary means adapted to grip the uppermost edge of said flattened empty portion, means for rotating said horizontal rotary means, causing them to coil the said empty portion, and means for reducing the relative distance of the said horizontal means from the top of the filled portion of the bag while coiling the empty portion.

25 2. In a device for closing a filled bag inserted in a carton, means for flattening the empty portion of the bag, horizontal rotary means adapted to grip the uppermost edge of said flattened empty portion, means for rotating said horizontal rotary means, causing them to coil the said empty portion, means for reducing the relative distance of the said horizontal means from the top

of the filled portion of the bag while coiling the empty portion, and means for pressing the coiled empty portion into said carton.

3. In a device for closing a filled bag, means for flattening the empty portion of the bag, a pair of rotary mandrels adapted to grip the top edge of said flattened empty portion, means adapted to rotate said mandrels for coiling the gripped empty portion, and means for reducing the relative distance of the said mandrels from the top of the filled portion of the bag while coiling the empty portion.

4. In a device for closing a filled bag, means for flattening the empty portion of the bag, a pair of rotary mandrels adapted to grip the top edge of said flattened empty portion, means for moving said mandrels into and out of their gripping position, means for rotating said mandrels in said gripping position for coiling the said empty portion, and means for moving the mandrels toward the top of the filled portion of the bag while coiling the empty portion.

5. In a device for closing a filled bag, means for flattening the empty portion of the bag, a pair of rotary mandrels adapted to grip the uppermost edge of said flattened empty portion, slides carrying said mandrels and being displaceable in a horizontal guide relatively to each other for moving said mandrels into and out of their gripping position, said horizontal guide being capable of vertical reciprocating motion for moving said mandrels toward the top of the filled portion of the bag, and movable racks for rotating said mandrels.

In testimony whereof I affix my signature.

PAUL GANGLER.