Dec. 1, 1925.

1,563,715

C. BOULANGER

PACKING MACHINE

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fig. 1

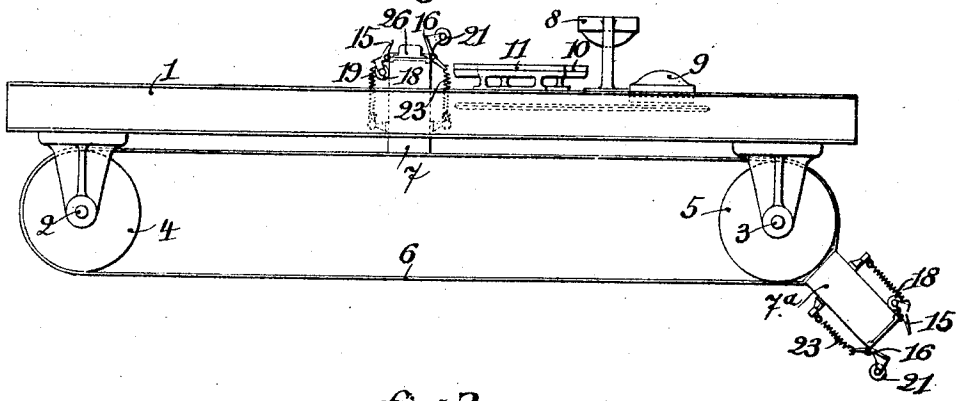


fig. 2

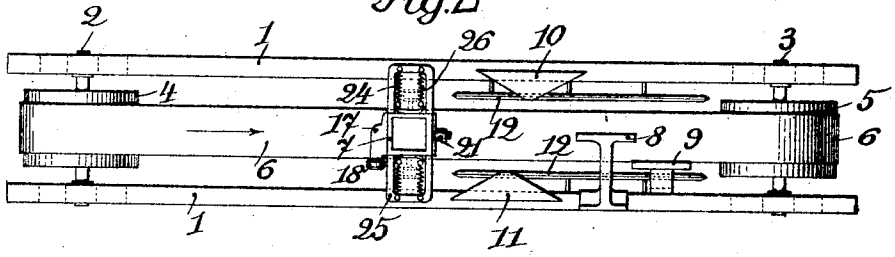
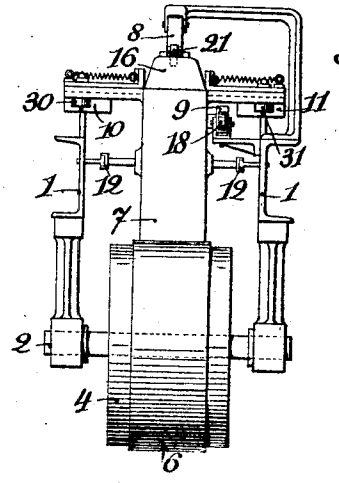


fig. 3



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Fig. 7

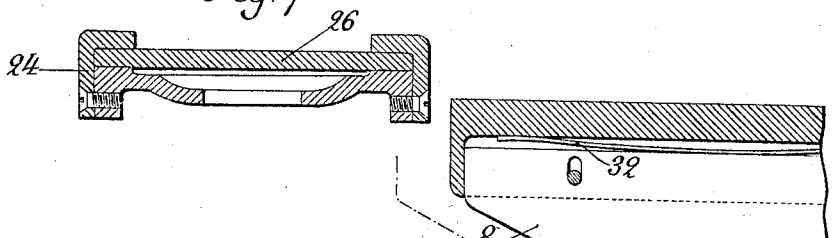
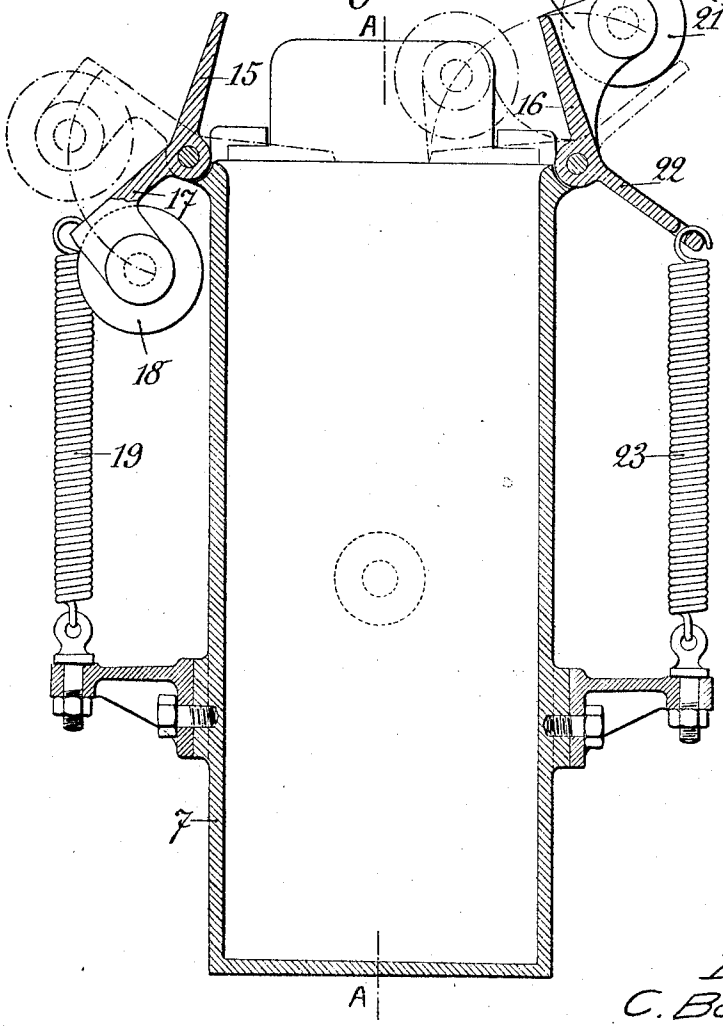


Fig. 4



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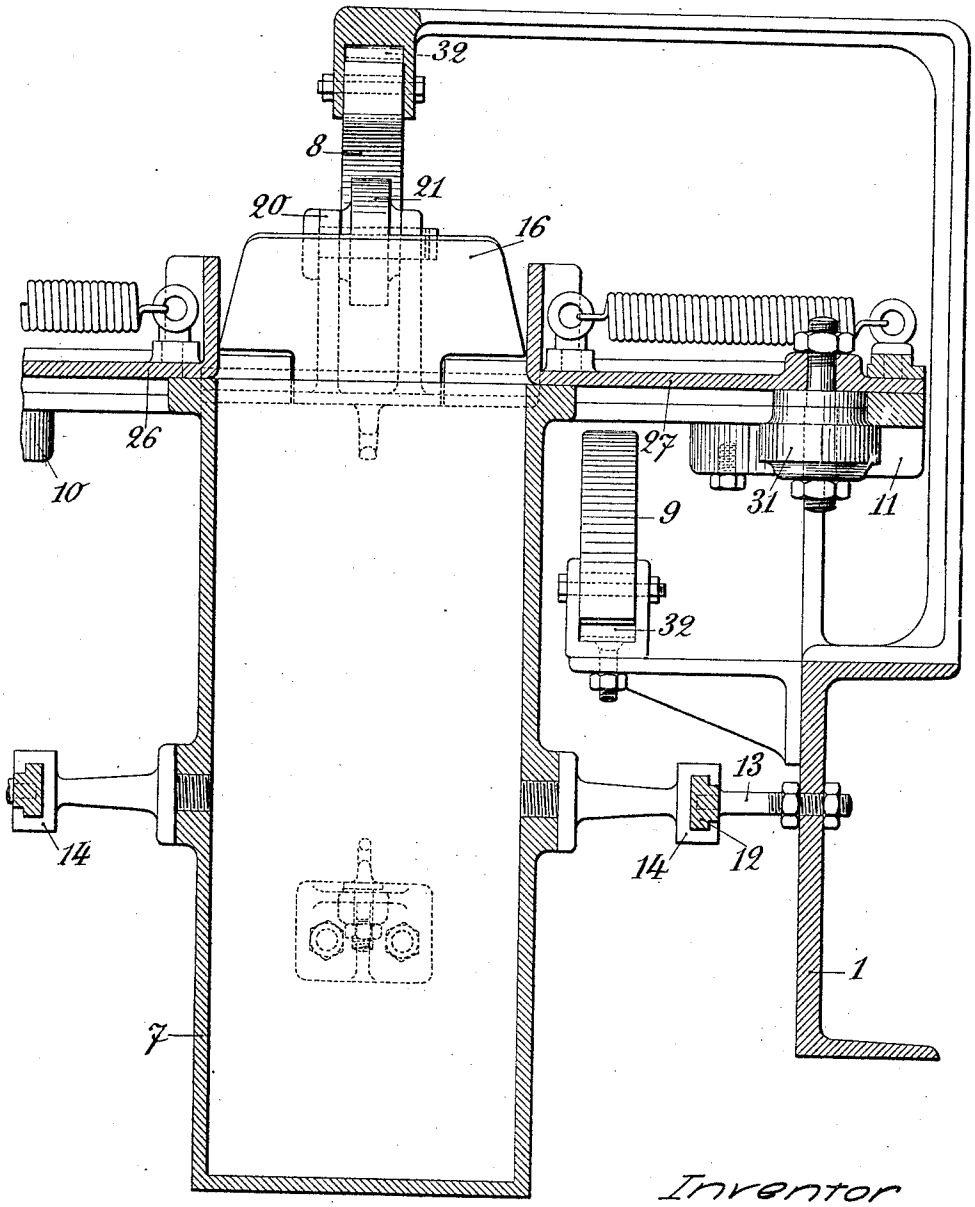
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Fig. 5



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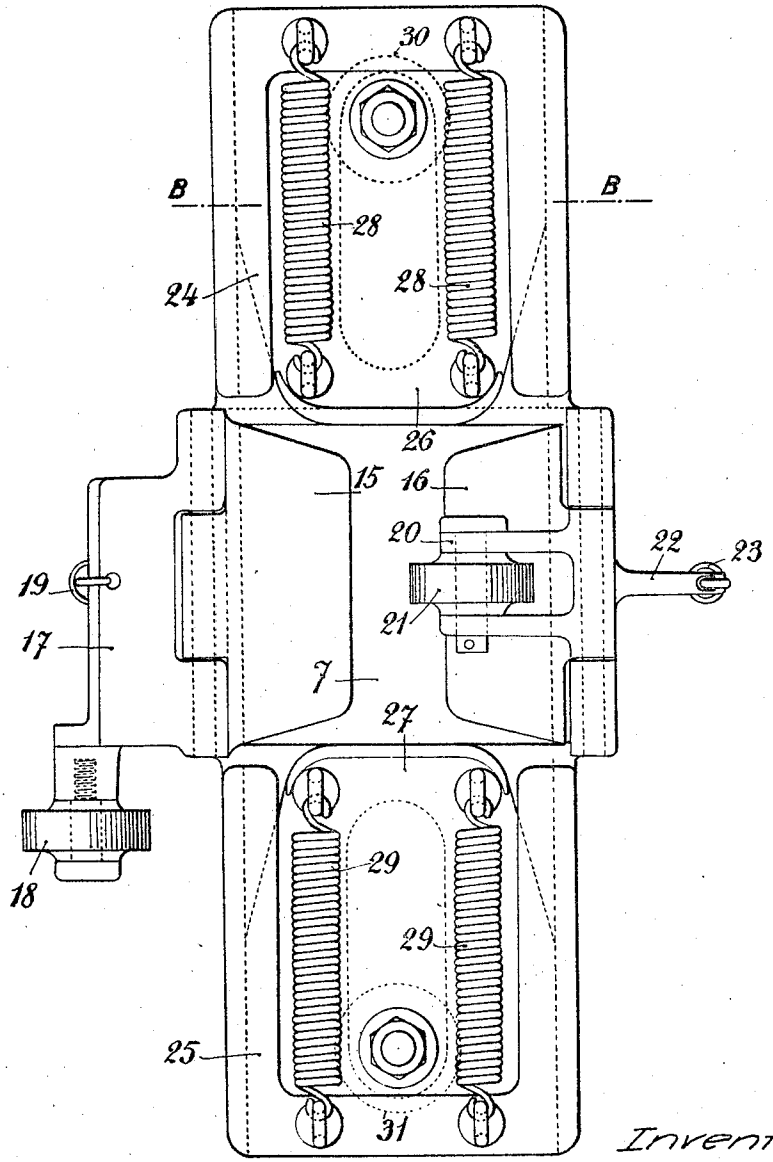
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Fig. 6



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Fig. 8

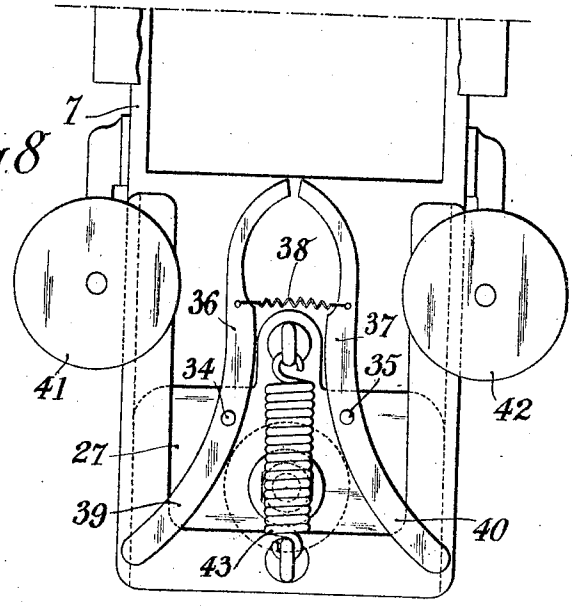
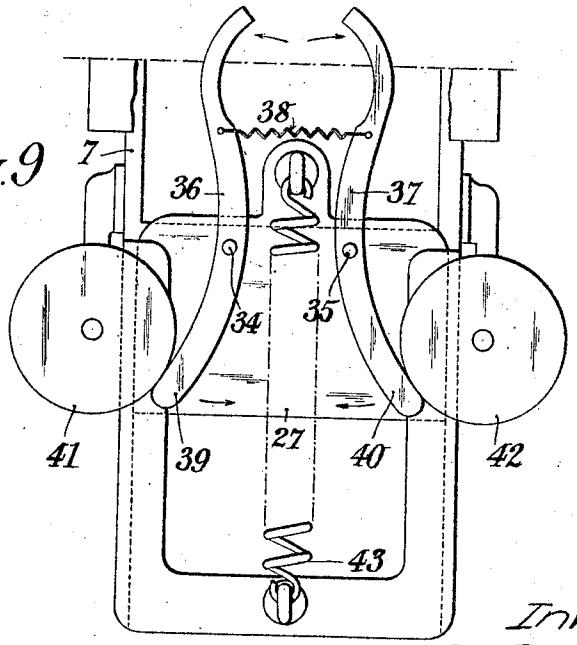


Fig. 9



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UNITED STATES PATENT OFFICE.

CHARLES BOULANGER, OF MALAUNAY, FRANCE, ASSIGNOR TO SOCIETE ANONYME ANCIENS ETABLISSEMENTS GEORGES PELLERIN, OF MALAUNAY, FRANCE.

PACKING MACHINE.

Application filed April 5, 1924. Serial No. 704,440.

To all whom it may concern:

Be it known that I, CHARLES BOULANGER, a citizen of the Republic of France, and residing at Malaunay, Seine-Inferieure Department, in the Republic of France, industrial, have invented certain new and useful Improvements in Packing Machines, of which the following is a specification.

The present invention relates to a machine for the closing of sacks or bags containing material, and chiefly paper bags into which a fatty substance has been poured when in the hot state, the packing operation being performed after the material has become cooled. The said machine can further be employed for the packing of a great variety of substances in the form of paste, powder or grains.

The said machine, which is constructed on the Boulanger system, comprises an endless belt conveyor having secured thereto a plurality of boxes containing and transporting the filled bags; said boxes have disposed at the upper part suitable sliding members and pivoted flaps which are successively controlled by cams mounted on the path of the said conveyor, whereby the top part of the paper (or other) bags is folded in order to close the same. The said flaps are then brought by springs into the initial position.

The said boxes travel forward with the conveyor and are overturned at a certain point whereby the closed bags are discharged from the boxes by their own weight.

Since each box is provided with individual elements for folding purposes, while the machine frame comprises a simple set of cams controlling the said elements, the said machine can be constructed with facility and at a small expense, and its operation can be readily verified and regulated. Should it be necessary, it is an easy matter to remove a given box whose elements are defective and to substitute a box which is in good condition and ready to operate.

In the appended drawings:

Fig. 1 is a general elevational view of the machine.

Fig. 2 is a plan view.

Fig. 3 is a side elevation.

Fig. 4 is a vertical section of a box, with the flaps in the open position.

Fig. 5 is a section on the line A—A of Fig. 4.

Fig. 6 is a plan view of said box, with the flaps in the closed position.

Fig. 7 is a section on the line B—B of Fig. 6.

Figs. 8 and 9 show a modification of the device. Fig. 8 is a plan view of the device in the inoperative position, and Fig. 9 is a like view in the operative position.

In Figs. 1, 2 and 3, 1 is a main frame supporting the axles 2, 3 upon which are respectively mounted the drums 4, 5. Upon the said drums is disposed an endless band 6 to which the boxes 7 are secured by their lower part in a removable manner. The boxes situated on the upper strand of the said endless band are adapted to receive paper (or other) bags holding the required material which has been introduced into the same in the pasty condition if necessary. The said boxes then travel before two sets of cams 11, 10, 8 and 9 mounted on the frame 1 and controlling suitable flaps and sliding members for closing the paper bags. When passing before the cams, the said boxes are guided by laterally-disposed rails 12 which are secured by supports 13 to the main frame 1, and having slidable thereon the supports 14 mounted upon the boxes 7; said boxes are open at the top and have the flaps 15, 16, pivoted to their edges. The flap 15 is provided with an arm 17 carrying a roller 18 and connected by a reaction spring 19 with the body of the box. The flap 16 is provided with a fork 20 carrying a roller 21 and with an arm 22 to which is attached a reaction spring 23. When passing under the cam 8, the roller 21 will be lowered, thus causing the flap to descend and to fold over the corresponding edge of the paper bag; the flap then returns to its original position by the action of the spring 23.

The roller 18 is raised shortly afterward by the cam 9, thus causing the flap 15 to fold down the other edge of the bag, and it then returns into the first position by means of the spring 19. Upon the other faces of the box 7 are disposed the guides 24, 25 in which are slidable the members 26, 27 which are brought back by the springs 28, 29. The sliding member 26 is provided with a roller 30 controlled by the cam 10, while the sliding member 27 is provided with a roller 31 controlled by the cam 11; said cams have a relative displacement, Fig.

2, so that the sliding members 26, 27 are driven successively upon the paper bag, thus folding down the corresponding sides of the latter.

In order to compensate for the small differences of level in the filling of the bags, the cams 8 and 9 have preferably an elastic mounting, e. g. by interposing a spring strip 32 between the cams and the back part of the recess in which each cam is guided. During the movement of the endless band according to the arrow, Fig. 2, the elements will act in the following order: The roller 31 first comes into contact with the cam 11, and then the roller 30 with the cam 10; in this manner the two sides of the paper bag are folded upon each other; the roller 21 then passes under the cam 8, and the roller 18 over the cam 9, thereby folding down the remaining sides of the bag upon the preceding. When the boxes attain the position 7^a, the contents of each box is automatically discharged by its own weight, and the boxes are ready for another filling when arriving at the other end of the conveyor.

Should it be necessary, we may employ a device for the supply of adhesive substance, which is so arranged and actuated as to deposit a drop of the adhesive substance upon the last edge of the bag before it is folded over, whereby it will be glued or pasted to the preceding edges.

In the modification shown in Figs. 8 and 9, the sliding member 27 has mounted thereon the axles 34, 35 upon which are respectively pivoted the clamps 36, 37 urged together by the spring 38 and provided with curved extensions 39, 40; during the forward travel of the said sliding member the said extensions come respectively into contact with the rollers 41, 42 mounted on supports secured to the box 7. The sliding member 27, instead of being brought back by two springs, is preferably urged by a single spring 43 attached to its middle part. At the end of the stroke of the sliding member towards the axis of the box, the curved ends of said clamps will engage between the rollers 41 and 42 and will thus be moved together, so that the clamps will open, thereby folding down the corresponding side of the bag within the box in an approved manner. Obviously, a like arrangement is mounted upon the second sliding member 26.

Claims:

1. In a paper bag closing machine, the combination of a main frame, an endless conveyor band mounted thereon, suitable boxes secured at their bottom to the said conveyor band and adapted to contain the paper bags filled with the products to be packed, movable folding elements disposed upon the said boxes and adapted to fold the sides of the bags, cams mounted on the said frame and directly controlling the said folding elements during the travel of the said boxes, and stationary rails which are suitably disposed upon the said frame and guide the said boxes during the folding operation.

2. In a machine for closing sacks, the combination of a main frame, an endless conveyor disposed thereon, boxes attached at the bottom part to the said conveyor and adapted to contain paper bags filled with the substance to be packed, two pivoted flaps and two sliding flaps urged by springs upon each of the said boxes, rollers mounted upon each of the said flaps, and cams disposed upon said frame and successively engaged by the said rollers.

3. In a machine for closing sacks, the combination of a main frame, an endless conveyor disposed thereon, boxes attached at the bottom part to the said conveyor and adapted to contain paper bags filled with the substance to be packed, two pivoted flaps and two sliding flaps urged by springs upon each of the said boxes, a double-branched clamp pivoted to each sliding flap, cams disposed on each box and controlling the said clamp whereby the latter is opened when the sliding member is driven toward the centre of the box, and cams disposed upon the said machine frame and acting successively upon the said pivoted flaps and the said sliding flaps.

4. In a machine for closing sacks, the combination of a main frame, an endless conveyor disposed thereon, boxes attached at the bottom part to the said conveyor and adapted to contain paper bags filled with the substance to be packed, two pivoted flaps and two sliding flaps urged by springs upon each of the said boxes, a double-branched clamp pivoted to each sliding flap, and a spring connecting the two branches of each clamp and urging them together.

In testimony that I claim the foregoing as my invention, I have signed my name.

CHARLES BOULANGER.