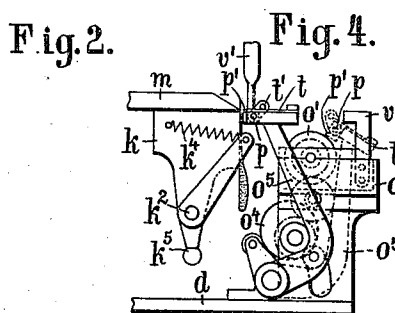
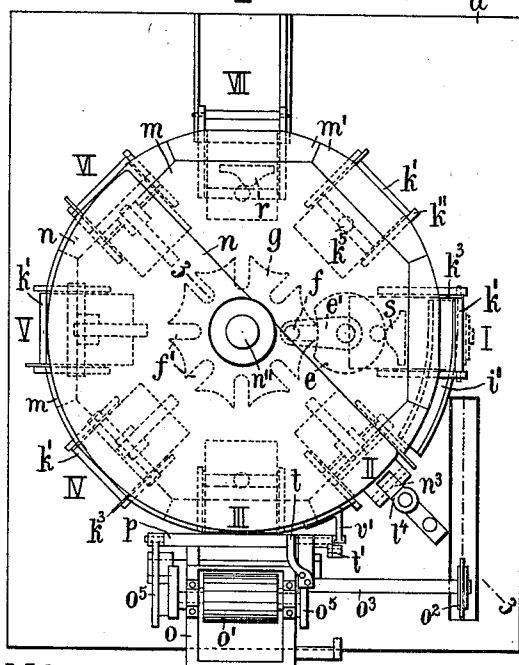
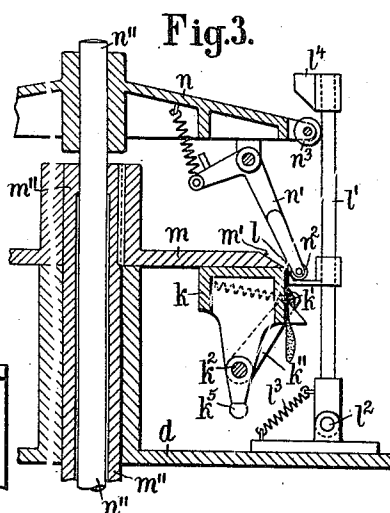
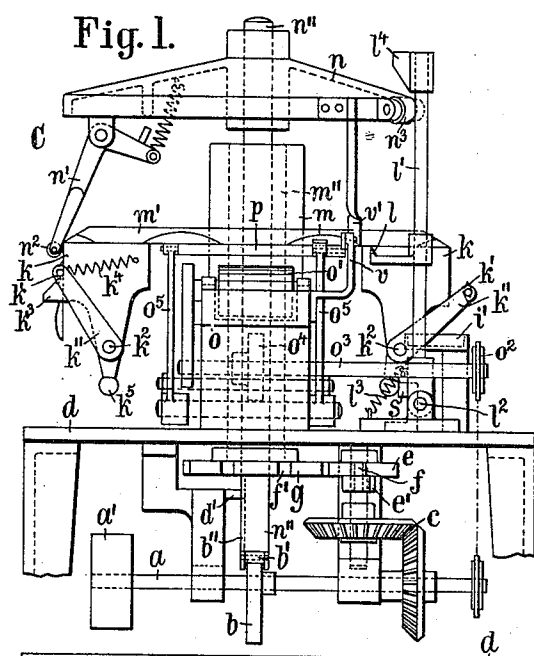


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K. OTTING.
MACHINE FOR CLOSING PAPER BAGS.
FILED MAY 12, 1921.



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MACHINE FOR CLOSING PAPER BAGS.

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(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, KARL OTTING, a citizen of the German Republic, and a resident of Berlin, Germany, have invented certain new and useful Improvements in Machines for Closing Paper Bags (for which I have filed an application in Germany, April 26, 1919), of which the following is a specification.

In bag-filling and closing machines it is difficult to effect a uniform and neat closure of the closing flap of the bag. In some cases the turning of the bag flap after it has been filled and gummed, is effected by means of bent guide bars the shape of which compels the bag flap to turn over and close during the gradual or step-by-step progression of the turret carrying the filled bags.

During the closing movement the bags are held by grippers and clamping devices grip the bags below the closing place. Such guide bars, however, do not produce a uniformly tight closure of the closing flap. Rather, many of the closed bags have irregular and only partial closures, leaving small gaps at the corners so that the contained material can fall out. The faulty closure of the bags is particularly inconvenient in the case of dusty materials which, in the further transport of the bags, are squeezed out even when the bags are conveyed in a horizontal position.

Folding bars are employed in addition to guide bars for turning over and closing the flaps of the bags. These folding bars serve as abutments for the flaps when the bags carried by the gripping device are moved from underneath along a paste roller from which the flaps take the paste. Behind the paste roller the folding bar is moved in a circle so that it completely returns and presses the flap that has been turned back over it.

Also, with this method of closing, throw-outs are unavoidable because the flap of the bag has no positive guidance during the closing movement, and the fold of the flap cannot be previously fixed. Consequently bags are produced having their flaps folded over more or less crookedly and with partial closure.

Finally, if the flap of the bag is folded over the edge of the paste vessel, and is at the same time pressed against the pad containing the paste, as is the case in another closing machine, then the edge of the paste vessel is liable to prevent the paste from reaching right up to the fold of the flap of the bag so that a completely tight closure of the bag is also not assured with that method. Moreover, by applying the paste to the flap of the bag the flap becomes soft and for this reason also can be brought only with difficulty into the desired position for closure.

The present invention effects a completely uniform and tight closure of the bags by the arrangement that the flaps of the bags, before the application of the paste, are each provided with the fold intended for the closure, independently of the application of the paste and in a position of the bag-carrier preceding said application, and then only the flaps are provided with the paste. For this purpose the flaps of the bags are turned sharply over a folding blade that presses against the bags. Owing to the elasticity of the paper the flaps of the bags open during the progression of the turret for the next following operation sufficiently wide that in further carrying out the invention the paste cannot possibly be applied to the folding flap but only below the said flap at the place intended for pasting. Consequently, the flaps of the bags cannot become softened by the adhesive and will not warp. It therefore retains its original stiffness and can be folded sharply in the prepared crease.

As the turret continues its movement, the folding of the flap over the crease prepared by the folding blade is effected by means of special pressing rollers or similar pressing devices at a number of points, so that bags uniformly and tightly closed will drop out at the delivery point of the turret.

The withdrawal of the bags from the magazine and the delivery of the filled bags to the closing turret, may be effected in a known manner by means of a separate filling turret which comprises for the withdrawal of the bags bag-openers that slip into the bags and present them to the filling hopper.

A constructional example of this invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation thereof;

5 Figure 2 is a plan,

Figure 3 is a partial section on the line 3—3 of Figure 2, and

Figure 4 is a side elevation of the paste vessel.

- 10 The closing device C comprises in its essential parts a plate *m* and a canopy *n*. The plate *m* is rotated alternatively to the canopy *n* and the latter is moved up and down while the plate *m* is at rest. Therefore
- 15 the canopy *n* rests with its shaft *n''* with a roll *b'* on a cam *b* of a shaft *a* in bearings of the base plate *d*. The shaft *a* is driven by any known means for instance a pulley *a'*. A stud *d'* on one bearing of the base
- 20 plate *d* engages a groove *b''* of the shaft *n''*, so that this shaft may be moved up and down but not rotated. The rotation of the shaft *a* is further transmitted by a bevel gear *c* to a locking plate *e* engaging another plate *g* having the form of a Maltese-cross. A roll *f* of a crank *e'* connected to the plate *e* engages notches *f'* of the Maltese-cross *g*. This latter is connected to a hollow shaft *m''* to which the plate *m* is
- 30 keyed. Both the cam *b* and the gear *e*, *e'* occupy such a position in regard to each other that the plate *m* and the canopy *n* can be only alternatively moved.

- The bags to be closed may be filled and
- 35 conveyed to the closing device in any known manner for instance by hand or by mechanical means. To receive the filled bags a channel-shaped guide trough *i'* is provided on one side of the machine in the position I
- 40 (Fig. 2), below holders *k* connected to the plate *m*. In the example shown eight holders *k* are provided according to the eight notches *f'* of the Maltese-cross *g*. In rotating the plate *m* into the position I a stop *k³*
- 45 advances the filled bags put in the trough *i'*.

- The filled bags are put in the trough *i'* between the holders *k* of the plate *m* and jamming jaws *k'* the levers *k''* of which are secured to an axle *k²* of the holders *k*. On
- 50 the axle *k²* is further secured an arm *k⁵*, which on account of the rotation of the plate *m* comes within reach of a cam *s* fixed on the base plate *d*. The cam *s* opens by means of the arm *k⁵* the jaws *k'* and so the filled
- 55 bags may be placed between the holders *k* and the jaws *k'*. On further rotating the plate *m*, the stop *k³* carries the filled bags along and the latter are pressed by the jaws *k'* to the holders *k*. after the arms *k⁵* have
- 60 become free from the cam *s*. The pressing movement being effected by the action of the springs *k⁴*, connected with one end to the holders *k* and with the other one to the arm *k¹¹*.

In this position the bag is held during the 65 advance of the closing turret C until the closure has been completed.

After the advance of the closing turret through $\frac{1}{2}$ revolution into the position II a folding blade *l* bears against the bags at the 70 point at which the bag flap is to be folded over.

The folding blade *l* is carried by a rocking arm *l'* which is mounted at *l²* on the base plate *d* and is pulled by a spring *l³* into po- 75 sition for folding.

The canopy *n* is guided vertically above the plate *m* and carries a number of arms *n'* with folding rollers *n²*. The plate *m* is advanced during the time that the canopy *n* 80 is stationed in its highest.

In the downward movement of the canopy *n* it releases the arm *l'* which in its upper position it has pushed back by means of a roller *n³*, acting on its head *l⁴* so that the 85 folding blade *l* bears against the bags on the holders *k*.

The head *l⁴* therefore is provided with a bevelled face on its side opposite to the roll *n³*, which in the upmost position of the 90 canopy *n* pushes back the head *l⁴* and the folding blade *l* connected therewith. In lowering the canopy *n* the head *l⁴* becomes free from the roll *n³* and the folding blade *l* will be pressed against the bags pressed 95 between the holders *k* and the jaw *k'* by the action of the spring *l³*.

At the same time, the roller *n²* situated above the folding blade *l* is moved down with the canopy *n*, and slides from the in- 100 clined surface *m'* of the plate *m* over the sharp edge of the folding blade *l*, whereby it folds the flap of the bags at a sharp angle in the closing direction (Fig. 3).

After the ascent of the canopy *n*, the 105 roller *n²* releases the folded bag flap and further the folding bar 1 is pressed back again by the roller *n³*.

In the forward movement of the closing turret C the bag comes into the position 110 III, opposite the paste box *o*. In it is mounted a pasting roller *o'*, which is rotated by means of a chain gear *o²* and a shaft *o³*. The shaft *o³* acts also by means of a cam *o⁴* upon a pair of arms *o⁵* in the 115 ends of which there is mounted a shaft *p*. This shaft carries opposite the closing turret, a pasting fillet *p'*. The shaft *p* is operated by a tipping lock, in such a manner that in the return of the arms *o⁵*, the shaft *p* 120 sweeps with the pasting fillet *p'*, over the roller *o'*, (as indicated in dotted lines in Fig. 4), and in moving forward places the pasting fillet *p'* vertically so that the latter will transfer the paste to the bag that is 125 presented to it by the holder *k*; (shown in full lines in Fig. 4).

The tipping lock consists of a flat spring *t*

which holds the square shaft *p* in the determined position but allows it to rock into one or the other of the two positions for receiving and applying the paste, into which the shaft *p* is tipped by the two stops *v* and *v'* when the roller *t'*, mounted on an arm of the shaft *p*, strikes against them in the to-and-fro oscillation of the arms *o*⁵.

The application of the paste is effected directly below the folding crease of the bag flap which, owing to the elasticity of the paper has turned up after folding to such an extent as to allow the pasting fillet *p'* to apply the paste freely to the bags.

After a further advance through $\frac{1}{2}$ revolution of the closing turret, the pasted bags are presented in the positions IV, V, VI to other rollers *n*² which during the stoppage of the plate *m* and during the descent of the canopy *n*, slide over the edges formed by the inclined surfaces *m'* and the holders *k*, and thus turn over the creased bag flaps and press them down so as to firmly close the bags.

The pressing down of the bag flap is repeated in the positions V, VI whereby a perfectly secure closure of the bag is effected, since one pressing is often not sufficient.

Finally, in the position VII, the clamping jaws *k'* are pressed by means of a cam *r* acting upon them, which, like the cam *s*, is situated within the range of the arms *k*⁵ that are connected to the clamping jaw levers *k*² so that the closed bags can slide into a discharging chute *q*.

Having thus particularly described the nature of my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A machine for closing paper bags, comprising, in combination a closing turret adapted to rotate in step-by-step motion and to revolve the bags, gripping-devices attached to said closing turret and adapted to grip the bags below the pasting place, a folding blade, means for turning over the bag-flap in the direction of closure, pressing rollers adapted to effect the turning over movement at a number of successive points during the step-by-step motion of said turret, a paste-receptacle, a roller adapted to supply paste from said receptacle, a bar adapted to convey paste from said roller to the pasting place of the bag, and a canopy adapted to move up and down for operating

the means for folding and closing the bag-flap.

2. A machine for closing paper bags, comprising in combination a closing-turret adapted to revolve the bags, gripping devices attached to said closing turret and adapted to grip the bags below the pasting-place, a folding blade, means for turning over the bag-flap in the direction of closure, a paste-receptacle, a roller adapted to supply paste from said receptacle, a bar journaled in arms adapted to swing between said receptacle and the pasting place, a canopy adapted to move up and down for operating the means for folding and closing the bag-flap, for the purpose set forth.

3. A machine for closing bags, comprising in combination, a closing turret adapted to revolve the bags, gripping-devices attached to said closing turret and adapted to grip the bags below the pasting-place, a folding blade, means for turning over the bag-flap in the direction of closure, a paste-receptacle, a roller adapted to supply paste from said receptacle, a bar journaled in arms adapted to swing between said receptacle and the pasting place, a tripping lock adapted to give said bar a reversing motion to take off paste from said roller in one position and to give it off to the bag in its other position, and a canopy adapted to move up and down for operating the means for folding and closing the bag-flap, for the purpose set forth.

4. A machine for closing paper bags, comprising in combination a closing turret adapted to rotate in step-by-step motion and to revolve the bags, gripping-devices attached to said closing turret and adapted to grip the bags below the pasting-place, a folding blade, means for turning over the bag-flap in the direction of closure, pressing-rollers adapted to effect said turning over at a number of successive points during the step-by-step motion of said turret, means for applying paste to the bags, and a canopy adapted to move up and down for operating the means for folding and closing the bag-flap, for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

KARL OTTING.

Witnesses:

ELFRIEDE SADGER,
LEO TOLLES.