

May 18, 1965

H. W. ELFERS

3,183,644

PACKING MACHINE

Filed Sept. 7, 1961

2 Sheets-Sheet 1

FIG. 1

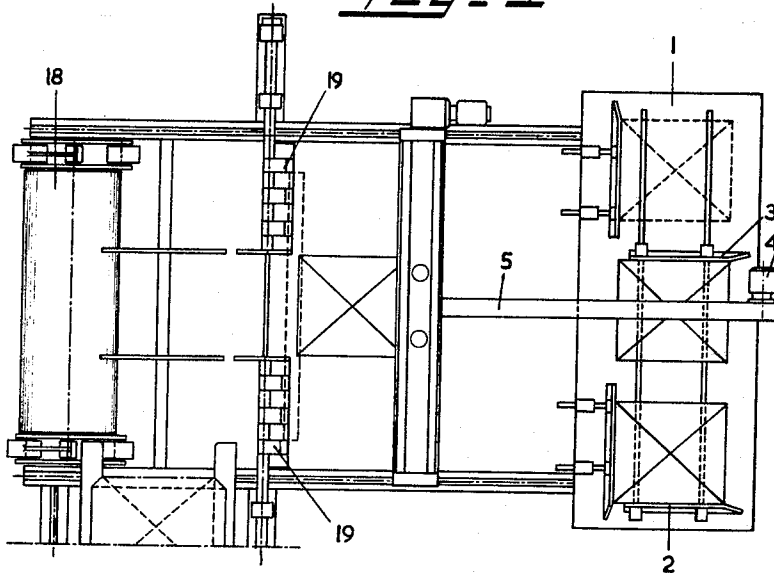


FIG. 2

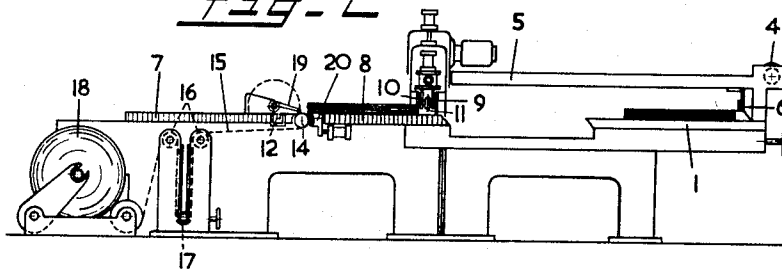
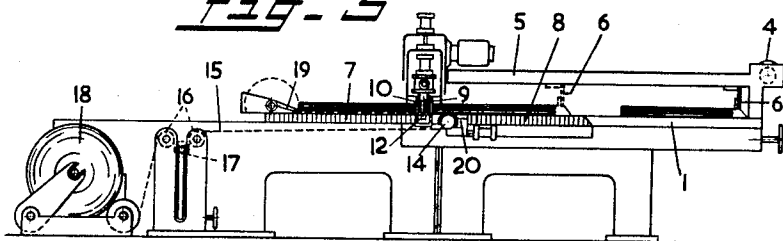


FIG. 3



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FIG. 4

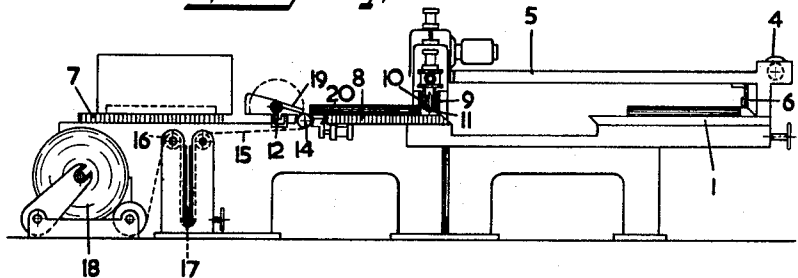


FIG. 5

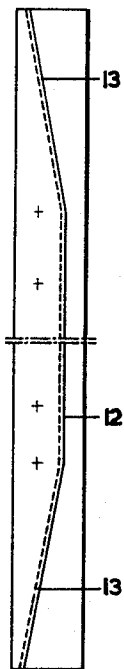
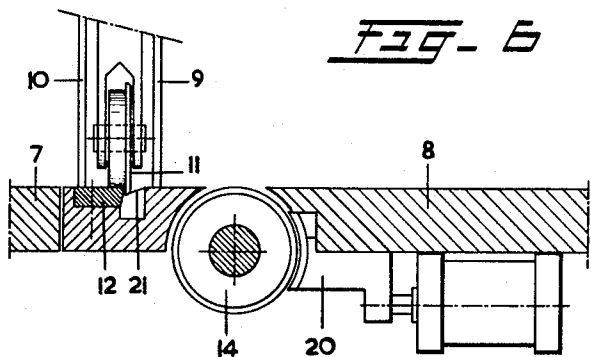


FIG. 6



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PACKING MACHINE

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255,802

9 Claims. (Cl. 53—389)

The present invention relates to a method for successively wrapping up one flat object at a time, more particularly a stack or a ream of paper, as well as to an apparatus for carrying out said method.

In packing reams of paper, especially in mechanizing this packing operation, care should be taken that the sheets of paper do not relatively shift, while allowance should be made for a very great number of variations in length, width and height of the ream. The invention renders it very well possible to satisfy these requirements if a web of packing material is laid against the lower side of said object as said object is being relatively transferred from a first supporting element to a second supporting element, which elements are spaced by a slit, said packing material being pulled through said slit and being progressively and simultaneously laid against the lower side of said object and on the upper side of said second supporting element.

An apparatus which according to the invention renders it possible to carry out this method is characterized by the combination of a table formed by two jointly reciprocatory sections between which there is interposed at least one guiding means for guiding a web of packing material, first holding means so mounted as to be stationary relative to the frame of the apparatus and second holding means so mounted as to be stationary relative to the movable table, said first and second holding means being adapted to alternately hold the end of the web of packing material, a severing device for periodically severing a terminal length from said web of packing material, as well as displacing means for displacing the object to be wrapped up relative to the table, at least one of said displacing means being adapted to be periodically moved up and down.

The invention will be elucidated with reference to the accompanying drawings showing an embodiment of an apparatus for carrying out the method. Further features of the invention will become apparent from the description of said embodiment.

In the drawing which is mainly schematic:

FIGURE 1 is a plan view of a portion of the apparatus;
FIGURE 2 is a side view of the apparatus in the position according to FIGURE 1;

FIGURE 3 and FIGURE 4 are each a side view of a different operative position;

FIGURE 5 is a single detail of the severing device;

FIGURE 6 is a cross sectional view of a portion of the table adjacent the severing device and one of the holding means.

The supply end of the apparatus is provided with a table 1, pushing means 2 and 3 respectively, by means of which successively reams of paper can be pushed to the centre of the table, from which place they are further fed through the apparatus by a pushing means 6 which is moved along the frame beam 5 by means of a source of power 4.

In said direction of feed a table comprising the sections 7 and 8 is so mounted on the frame of the apparatus as to be reciprocatory. Above said table, substantially in the centre thereof if the table is in its final position adjacent the infeed side, according to FIGURE 3, a set of vertically movable spaced apart displacing plates 9 and

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10 is so mounted as to be adjustable in longitudinal direction, a cutting wheel 11 being provided between said plates, which roller is adapted to reciprocate transversely to the direction of feed of the reams, during which reciprocatory movement said cutting wheel is adapted to cooperate with a shear blade 12 when the table is in its one final position. Blade 12 is connected with and in consequence moves along with said table.

In order to ensure that the cooperation of the blades 11 and 12 will always be correct also in the case of a slight deviation in the final position of the table, the shear blade 12, vide FIGURE 5, is provided with bevel sides 13 and the rolling blade 11 is mounted resiliently so as to be slightly movable in a direction transversely to the shear blade and about an axis transversely to said shear blade 12. Between the table sections 7, 8 a reversing roller 14 for reversing the direction of movement of the web of packing paper 15 is mounted for movement along with said table, which web via stationary rollers 16 and a weighted roller 17 is drawn off a supply roller 18, or, especially in the case of rapidly running machines, is positively supplied intermittently. In the final position of the table 7, 8 as shown in FIGURE 2 the web 15 has its leading end engaged by clamping elements 19 that are adjustable in transverse direction and that are adapted to be tilted over, whereupon the table, as seen in the drawing, will move towards the right, during which movement via the roller 14 a terminal length of the packing paper will be laid on top of the table section 7. At the same time the stack of paper which is arrested by the displacing member 10 that has meanwhile moved down, will slide from the table section 8 onto the table section 7, while the table section 7 will lay the terminal length of wrapping paper moving on to said section against the lower side of the stack of paper, whereupon in the final position of the table according to FIGURE 3 the packing paper is severed by the blades 11, 12, while a brake shoe 20 moving along with the table section 8 and functioning as a holding means will clamp the newly formed end of the web of packing paper against the roller 14. After the severance of the web of paper the table again moves to the left and the clamping elements 19 are so far tilted over that the severed length of packing paper can move on over said elements. The displacing plates 9, 10 have meanwhile been raised, so that the newly supplied ream of paper can pass under said plates.

After the table has reached its left final position according to FIGURE 2 the table section 7 moves on over a slight distance in order to transfer the ream of paper lying on the severed piece of packing paper to the further packing means which may be of a relatively arbitrary nature. After the brake shoe 20 has been released again and the clamping elements 19 have engaged the new end of the packing paper that has come within their reach and after the displacing means 9, 10 have moved down again, a same cycle will start for wrapping up the next ream of paper.

The means for actuating the various elements mentioned may be of a pneumatic, electro-magnetic or of another nature. They are naturally operated in a suitable timed relationship and will not be further described hereinafter. The elements which displace or arrest the reams of paper are adjustable in view of the variations in the dimensions of the reams. For the greater part the means for effecting said adjustments are not of very particular nature and accordingly they have not been further shown in the drawings. It should be noted, however, that the rolling blade 11 together with its supporting construction is connected to the table 1 which is longitudinally adjustable, so that the displacement of this table is always equal to the displacement of the rolling blade in the case of adjustments in longitudinal direction. This is also de-

cisive for the working stroke of the table 7, 8. In order to achieve a joltless movement of the reams of paper over the zone of the table in which the shear blade 12 is countersunk a resilient strip which is flush with the table top is located opposite said blade.

I claim:

1. A packaging machine for packing successive stacks of paper sheets in sheet wrapping material, comprising a frame, two table portions mounted on said frame spaced from each other to define a slit between them, said table portions having substantially horizontally extending stack supporting surfaces thereon and being connected to each other for movement back and forth along said frame, guide means mounted in said slit for guiding a web of wrapping material through said slit, clamping means fixed relative to said frame and positioned at a point adjacent said slit when said table portions are at one end of the back and forth movement, said clamping means being adapted to clamp the edge of a web of wrapping material and hold it while said table portions are moved, cutting means at least part of which is positioned above said table portions adjacent said slit when said table portions are at the other end of the back and forth movement and adapted to cut the web of wrapping material, and an arresting means movable up and down above the table portions at a point adjacent said cutting means, whereby when said table portions are at one end of the back and forth movement and the end of a web of wrapping material is guided through said slit and clamped in said clamping means and a stack of paper sheets is positioned on the table portion between said slit and said arresting means and is held fixed relative to the frame by said arresting means, and said table portions are moved until the slit is adjacent said arresting means at the other end of the back and forth movement, the web of wrapping material is drawn through said slit and laid along the table portion between the moving slit and the clamping means beneath the stack of sheets and the last mentioned table portion is moved beneath said stack of sheets.

2. A machine as claimed in claim 1, in which said guide means is a guide roller having a circumferential surface

and rotatably mounted on said table portions and movable therewith.

3. A machine as claimed in claim 2, in which said guide means further comprises at least one brake shoe mounted on one of said table portions and movable into engagement with the circumferential surface of said rotatable roller.

4. A machine as claimed in claim 1, in which said table portions are mounted on said frame so as to be movable relative to each other at the end of a joint movement in one direction for adjusting said stack relative to a subsequent packing means.

5. A machine as claimed in claim 1, in which said cutting means has at least one cutting element movable along with said table.

6. A machine as claimed in claim 5, in which said cutting element is an elongated shear blade countersunk into the top of one of the table portions and at least one part of said cutting means above the table portions is a rolling blade movable transversely of the direction of movement of said table portions.

7. A machine as claimed in claim 6, in which said shear blade has at least one gradually receding end for guiding said rolling blade when it engages said shear blade.

8. A machine as claimed in claim 6, in which said rolling blade is mounted resiliently so as to be slightly movable in a direction transversely to said shear blade and about an axis transversely thereof.

9. A machine as claimed in claim 6, in which a resilient strip is mounted opposite said shear blade and is flush with the table top.

References Cited by the Examiner

UNITED STATES PATENTS

2,860,462	11/58	Sykes	53—389 X
2,879,636	3/59	Zuercher	53—389 X

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