Dec. 10, 1968 J. D. CONTI 3,415,508

WRAPPING MACHINE SHEET SELECTOR

Filed March 23, 1966 2 Sheets-Sheet 1

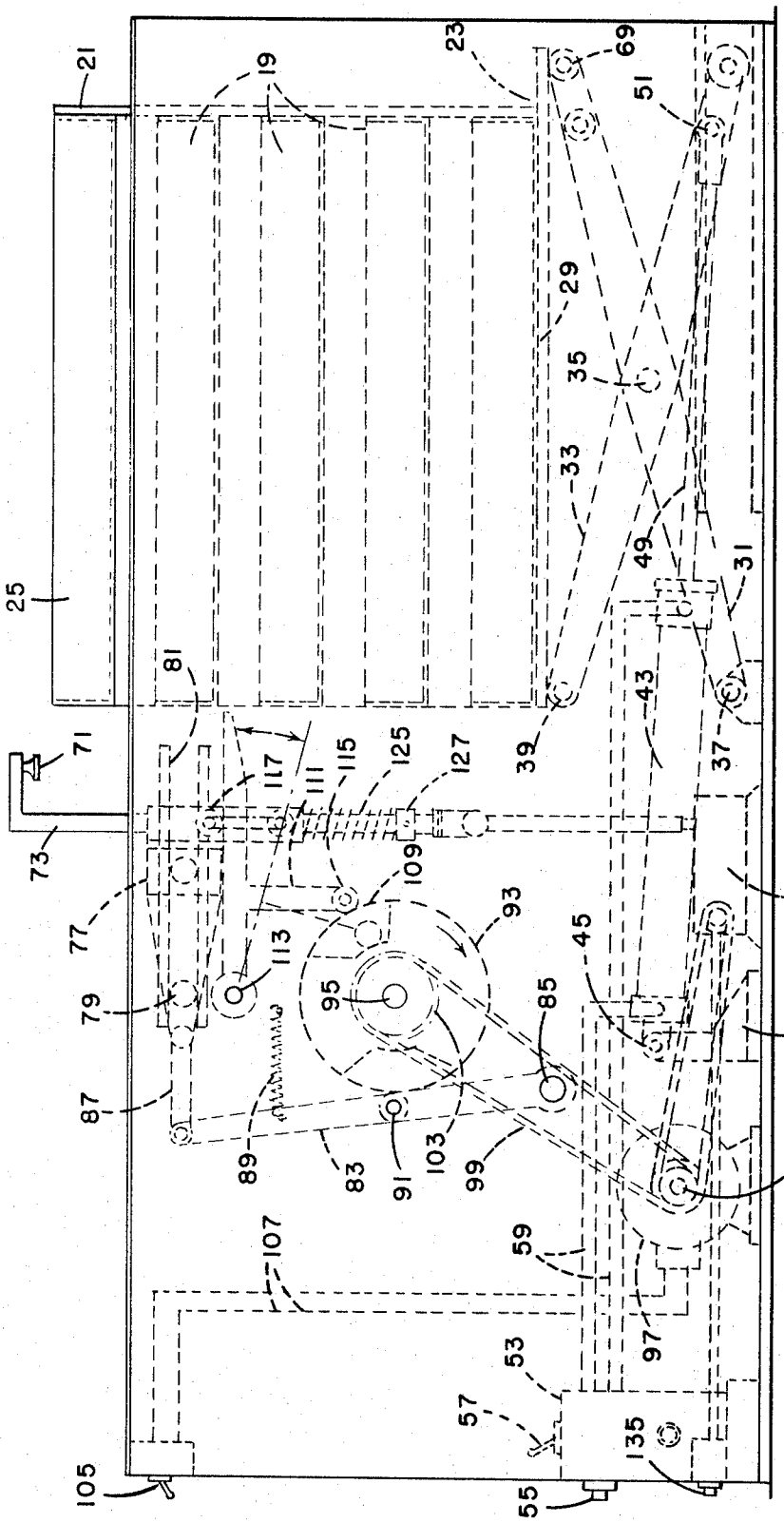


FIG. 1

Dec. 10, 1968 J. D. CONTI 3,415,508

WRAPPING MACHINE SHEET SELECTOR

Filed March 23, 1966 2 Sheets-Sheet 2

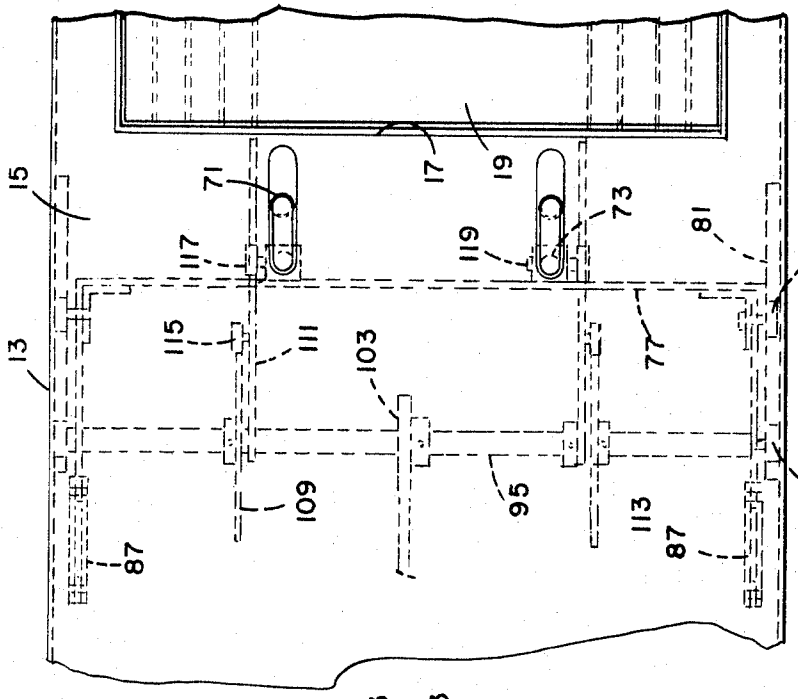


Fig. 3

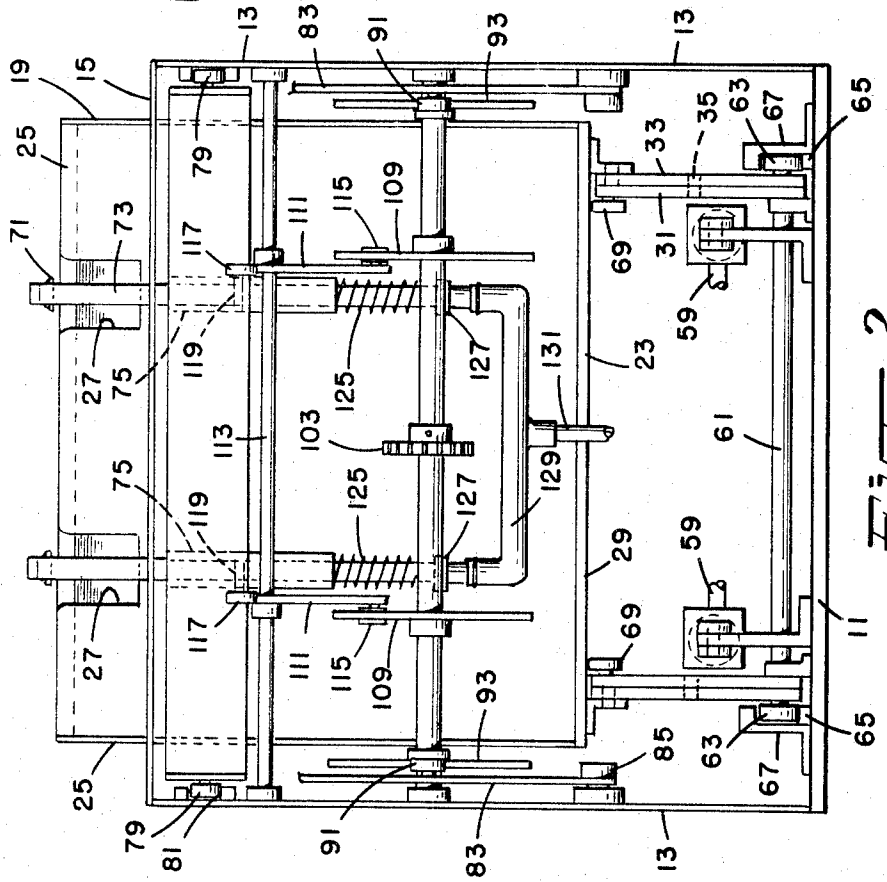


Fig. 2

United States Patent Office 3,415,508 Patented Dec. 10, 1968

3,415,508

WRAPPING MACHINE SHEET SELECTOR

John D. Conti, Elkins Park, Pa., assignor to FMC Corporation, Philadelphia, Pa., a corporation of Delaware

Filed Mar. 23, 1966, Ser. No. 542,442
1 Claim. (Cl. 271—9)

ABSTRACT OF THE DISCLOSURE

Article wrapping apparatus having suction means for delivering individual sheets of wrapping material from selected supply bins and into position for easy access by a wrapping operator.

The present invention relates to an apparatus for removing and delivering individual sheets from a large supply of sheets.

With various articles, such as meats, baked goods, vegetables and other food products, manual wrapping procedures are employed to insure adequately and attractively wrapped packages without waste of wrapping material. In such procedures, individual sheets of wrapping material, which are best suited for the particular article to be wrapped, are individually selected from a large assortment of stacked sheets which are made available to a wrapping operator. Not only are these sheets of wrapping material extremely thin, they generally exhibit a tendency to adhere or cling to each other, which is often aggravated by stacking, thus making sheet separation a tedious and time-consuming task for even a skilled article wrapping operator. Accordingly, the primary object of this invention is to provide a generally new or improved and more satisfactory apparatus for separating individual sheets of wrapping material from stacks of sheets.

Another object of this invention is the provision of an apparatus which is adapted to remove individual sheets of wrapping material from a supply of stacked sheets of wrapping material and deliver the same into position for use by an article wrapping operator.

Still another object is to provide an improved apparatus in which a large assortment of stacked sheets of wrapping material are made available and individually selected and positioned for use by an article wrapping operator.

Still further objects will appear from the following description.

These objects are accomplished in accordance with the present invention by an apparatus having gripping means which are adapted to engage with and remove individual sheets of wrapping material from a selected stack of sheets. Normally stacks of different wrapping material are provided and are contained within individual bins which are adapted to be selectively moved into position for proper engagement by the gripping means.

The sheet gripping means includes at least one and preferably a pair of suction heads which are capable of actually reaching into a selected bin, engaging and holding onto the topmost sheet of the stack of sheets contained within such bin, and then carry the engaged sheet toward a wrapping table and within the easy reach of an article wrapping operator. The suction heads are mounted so as to satisfactorily perform their intended function regardless of the height of the stack of sheets within any particular bin, and are capable of automatic and continuous operation, as where a series of individual sheets are to be removed from the same stack of sheets. Preferably a continuous vacuum is maintained on the suction heads so that portions of each sheet which is removed from a selected bin are held away from a wrapping table or other structure for easy access by the operator.

The stacks of sheets which are contained within the bins may be of different sizes and/or of different compositions to accommodate articles of varying sizes or character. However, for the sake of simplicity, the apparatus of the present invention is hereafter described as employed in manual wrapping of articles of different sizes with various size sheets, as for example of regenerated cellulose supplied as individual stacks and contained within separate bins.

In the drawing:

FIGURE 1 is a side view of the apparatus of the present invention;

FIGURE 2 is an end view of the apparatus shown in FIGURE 1; and

FIGURE 3 is a top view of a portion of the apparatus shown in FIGURES 1 and 2.

With reference to the drawing, the apparatus of the present invention is supported by a rigid structure which includes a base plate **11**, side walls **13** and a wrapping table **15** having an opening **17**. A series of bins **19** are rigidly interconnected to each other in vertically spaced relationship by plates **21** and are supported by an elevator **23** for selective movement through the table opening **17**. The bins **19** are intended to contain sheets of wrapping material of different sizes and each include upstanding walls **25**, the front one of which is formed with a pair of spaced slots **27**, for reasons as hereafter described.

The elevator **23** includes a platform **29**, on which rest the series of bins **19**, and at least one pair of links **31** and **33** which are pivoted to each other at **35** and to the base plate **11** and platform **29** at **37** and **39**, respectively. The links **31** and **33** are turned about the pivot **35** by a conventional hydraulic lifting means which includes a cylinder **43** pivoted at **45** to a support **47** and a piston having a rod **49** pivoted at **51** near the free end of the link **33**. A pump **53**, having an operating switch **55** and flow reversing valve switch **57**, is provided for delivering and discharging hydraulic fluid to and from the opposite ends of the cylinder **43** through conduits **59**.

Preferably, and as illustrated in FIGURE 2, two pairs of links **31** and **33** are employed, with each being actuated by separate hydraulic means which are supplied by the single pump **53**. The two pairs of pivoted links are interconnected to each other by a rod **61** so as to move in unison and thereby insure smooth vertical movement of the elevator **23**. Rollers **63** are provided at the ends of the rod **61** and are guided along horizontal tracks formed by plates **65** and Z-shaped bars **67**. In addition, rollers **69** are also provided at the free ends of the links **31** and ride along the underside of the platform **29** during elevator movement.

Once a bin **19** containing sheets of a desired size is at least approximately aligned with the table **15**, individual sheets are selectively removed from such bin by a pair of suction heads **71** which are fixed to the uppermost ends of a pair of conduits **73**. Sleeves **75** support the conduits **73** for vertical sliding movement and form a part of a carriage **77** which is adapted to be reciprocated toward and away from the bins **19**. Rollers **79** project from the opposite sides of the carriage **77** and ride along horizontal tracks **81** which are fixed to the inside surfaces of the side walls **13**.

A pair of levers **83** are pivoted at **85** to the side walls **13** and are connected by links **87** to the carriage **77**. Tension springs **89** act on the levers **83** for maintaining their follower rolls **91** engaged with the peripheries of plate cams **93**. A shaft **95** carries the cams **93** and is driven by a motor **97** through a chain **99** and sprockets **101** and **103**. Operation of the motor **97** is controlled by a switch **105** which is electrically connected to the motor by wires **107**.

Vertical movement of the conduits **73** relative to the sleeve **75** is regulated by a pair of plate cams **109**, which are also fixed to the shaft **91**. A pair of levers **111** are fixed to a rod **113**, which is rotatably mounted between the side walls **13**, and are provided with follower rolls **115** which ride along the peripheries of the cams **109**. Rollers **117**, having shafts **119** which extend through vertical slots **121** in the sleeves **75** and are fixed to the conduits **73**, are supported by and adapted to ride along the top surfaces of the levers **111**.

The plate cams **93** and **109** are so designed and oriented on the shaft **95** as to cause the levers **111** to move downwardly through the arc as indicated at **123** and again return to their positions as shown in FIGURE 1 while the carriage **77** remains stationary at its position nearest to the bins **19**. In this particular position of the carriage **77**, the suction heads **71** will be disposed above a selected bin **19**. Thus, during the downward movement of the levers **111** the rollers **117** also move downwardly causing their shafts **119** to lower the conduits **73** and the suction heads **71**.

The arc of movement of the levers **111** is such as to permit the suction heads **71** to be lowered into the bottom of the bins **19**. However, the downward travel of the conduits **73** is variable and is arrested when the suction heads **71** contact the topmost sheet of the stack contained within a particular bin while the levers **111** continue their downward movement. As seen in FIGURE 2, the slots **27** formed in the front walls of the bins **19** facilitate unobstructed movement of the suction heads **71** as they are lowered into the bins.

To insure positive movement of the conduits **73**, and thus snug engagement of the suction heads **71** with the topmost sheet in a bin **19**, compression springs **125** are positioned between the bottoms of the sleeves **75** and collars **127** which are fixed to the conduits. The lowermost ends of the conduits **73** are connected by flexible hoses **129** and **131** to a vacuum pump **133** which is operated by a switch **135**.

In the operation of the above described apparatus, the pump **53** is actuated by the switch **55** until the elevator **23** raises a desired bin **19** approximately into alignment with the table **15**. The switches **105** and **135** are then tripped to set the motor **97** and vacuum pump **133** into operation. During the initial rotation of the shaft **95**, the carriage **77** is moved toward the bins **19** where it remains stationary while the plate cams **109** cause the levers **111** to drop. As heretofore described, this movement of the levers **111** permits the suction heads **71** to engage with the topmost sheet in a bin and, in view, of the vacuum applied by the pump **133**, hold onto the same.

The cams **109** now raise the levers **111** and suction heads **71** afterwhich the cams **93** cause the carriage **77** to be retracted into a position as shown in FIGURE 1.

The sheet of wrapping material is still held by the suction heads **71** and, in this position of the carriage **77**, the sheet is in easy reach of the article wrapping operator.

Where a series of sheets are to be removed from a single bin, the motor **97** and vacuum pump **133** are preferably kept in constant operation. If necessary, suitable control means may be incorporated into the apparatus for controlling the speed of the shaft **95** and thus regulating the delivery of the sheets.

I claim:

1. An article wrapping apparatus including a table at one end of which an article may be wrapped, a plurality of spaced bins for containing sheets of wrapping material positioned adjacent to the end of said table opposite to said one end thereof, means for moving said bins relative to said table for aligning a selected bin approximately with the plane thereof, a carriage, means located between the position of said plurality of bins and said one end of said table for guiding said carriage for horizontal movement toward and away from said bins, at least one suction head, means for applying a vacuum to said suction head, means supporting said suction head on said carriage for vertical reciprocating motion relative thereto, means including a cam for reciprocating said carriage along said guiding means to position said suction head alternately above said table and over a selected bin which is approximately aligned therewith, said cam being shaped to maintain said carriage stationary at the end of each stroke of its reciprocating movement, and means operative while said carriage is stationary and only when said suction head is positioned over a selected bin for reciprocating said suction head relative to said carriage, said last mentioned means including a spring for urging said suction head into the lowermost position of its reciprocating motion and into engagement with the topmost sheet in a selected bin and a cam for urging said suction head into its uppermost position of its reciprocating motion.

References Cited

UNITED STATES PATENTS

1,920,388	8/1933	Harrold	271—30
2,925,612	2/1960	Schramm	214—1 X
3,334,891	8/1967	Clausen et al.	271—9 X

FOREIGN PATENTS

301,529	10/1965	Netherlands.
939,740	10/1963	Great Britain.

EVON C. BLUNK, *Primary Examiner.*

R. J. HICKEY, *Assistant Examiner.*

U.S. Cl. X.R.

271—26, 42