July 12, 1966 H. SHAW ET AL 3,260,033

APPARATUS FOR APPLYING A TOP WRAPPER TO A PILE OF DISCRETE ARTICLES

Filed Aug. 21, 1963 5 Sheets-Sheet 1

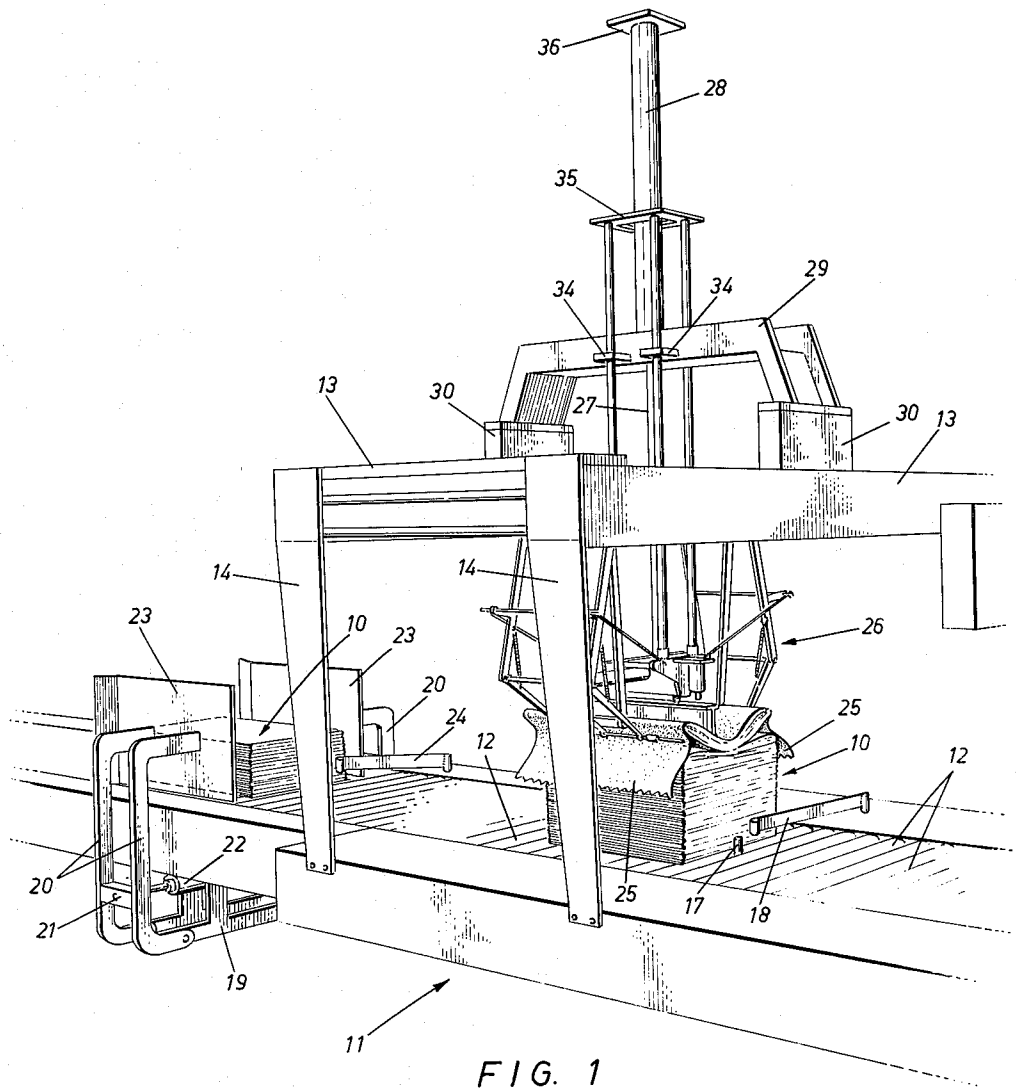


FIG. 1

INVENTORS
HARRY SHAW
ALBERT J. PEARCE
GEORGE S. BLAIR

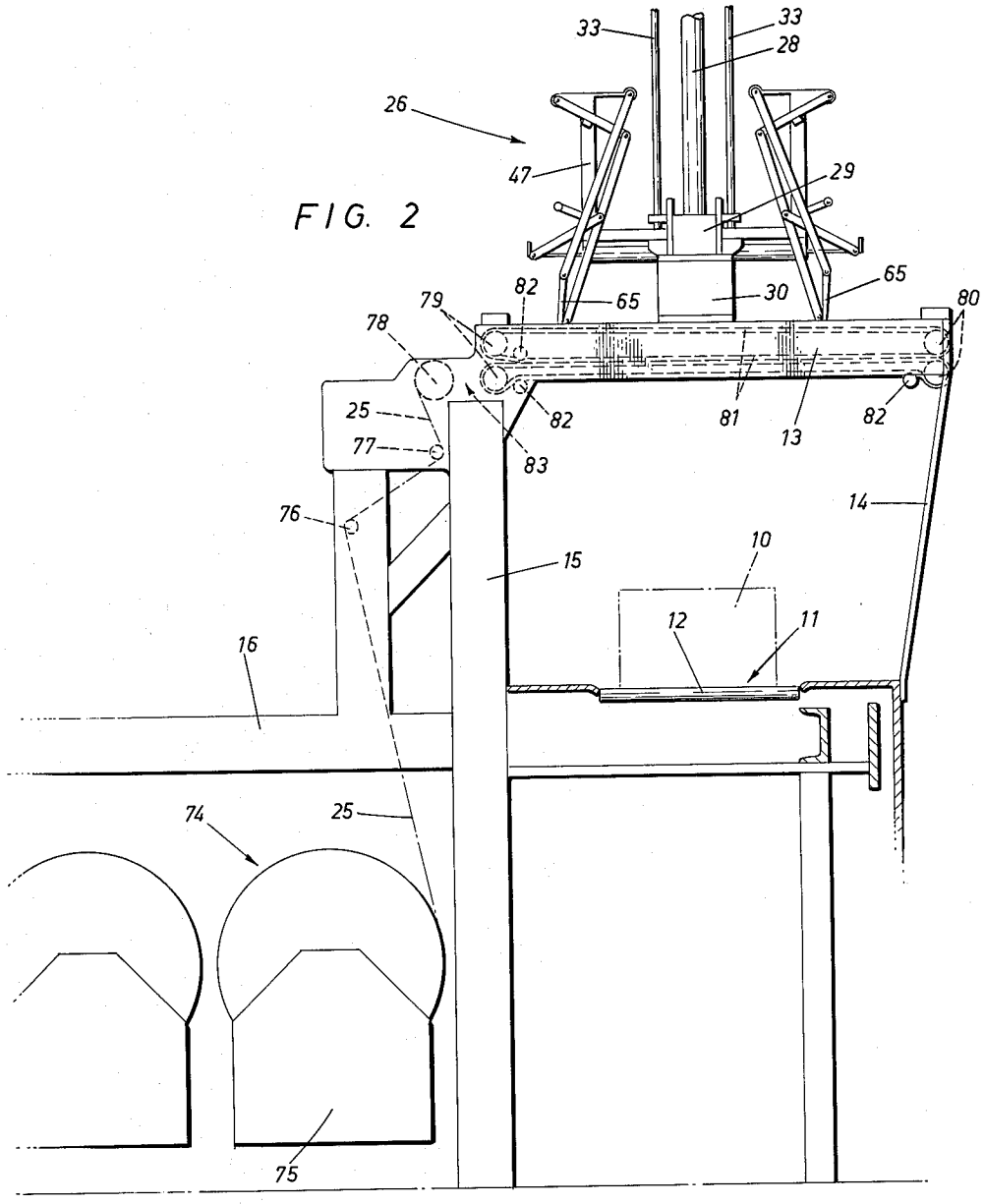
BY Douglas S. Johnson
Attorney

July 12, 1966 H. SHAW ET AL 3,260,033

APPARATUS FOR APPLYING A TOP WRAPPER TO A PILE OF DISCRETE ARTICLES

Filed Aug. 21, 1963 5 Sheets-Sheet 2

FIG. 2



INVENTORS
HARRY SHAW
ALBERT J. PEARCE
GEORGE S. BLAIR

BY Douglas S. Johnson

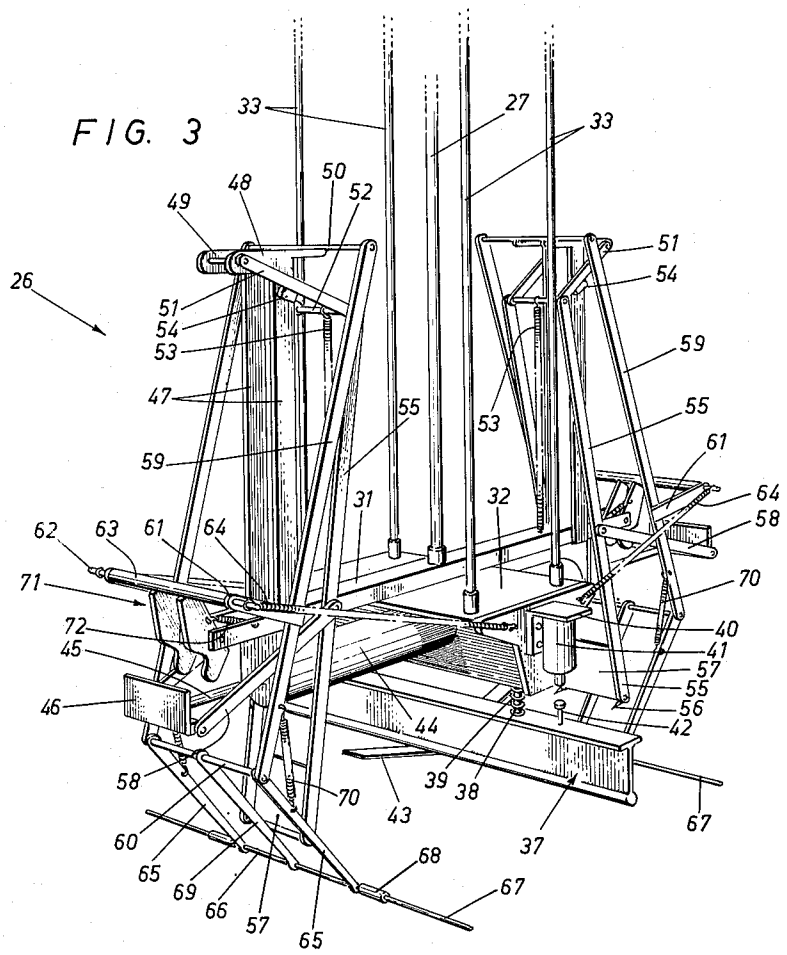
Attorney

July 12, 1966 H. SHAW ET AL 3,260,033

APPARATUS FOR APPLYING A TOP WRAPPER TO A PILE OF DISCRETE ARTICLES

Filed Aug. 21, 1963 5 Sheets-Sheet 3

FIG. 3



INVENTORS
HARRY SHAW
ALBERT J. PEARCE
GEORGE S. BLAIR

BY Douglas S. Johnson

Attorney

July 12, 1966 H. SHAW ET AL 3,260,033

APPARATUS FOR APPLYING A TOP WRAPPER TO A PILE OF DISCRETE ARTICLES

Filed Aug. 21, 1963 5 Sheets-Sheet 4

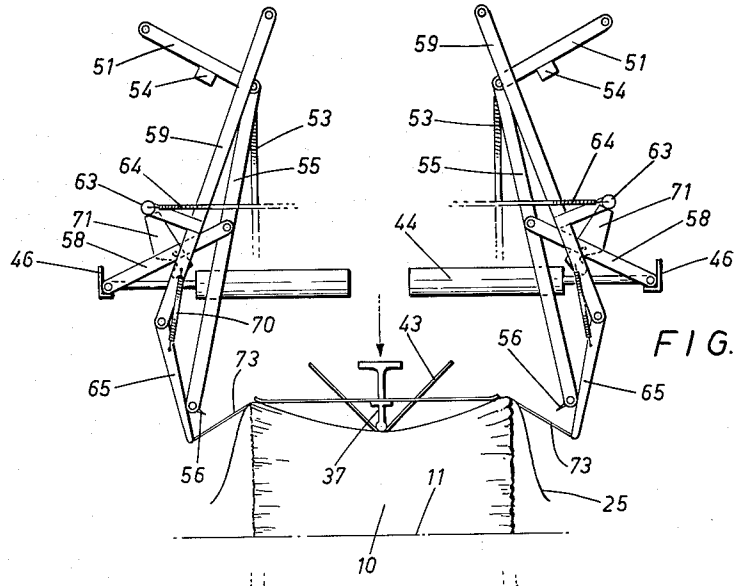


FIG. 4

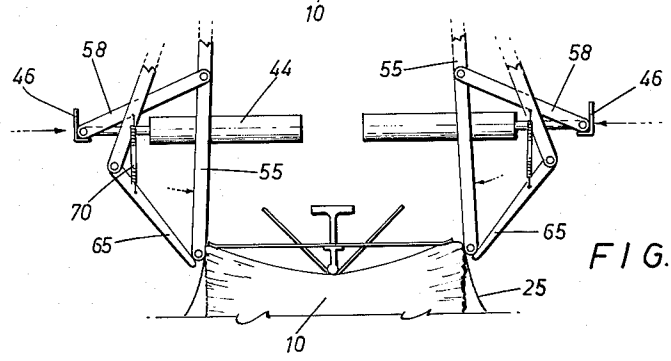


FIG. 5

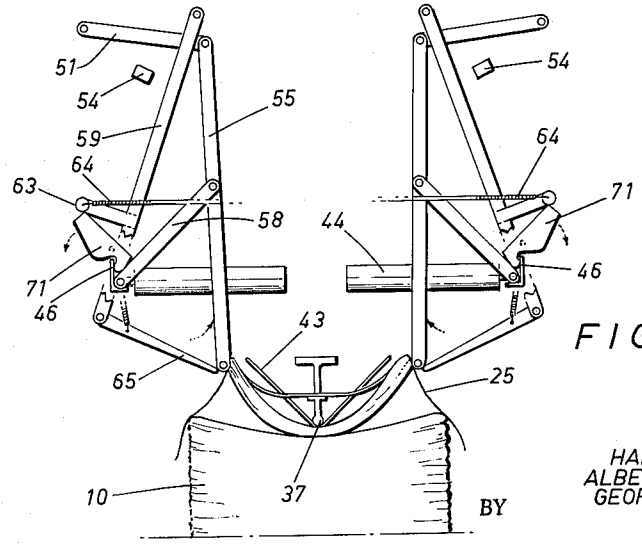


FIG. 6

INVENTORS
HARRY SHAW
ALBERT J. PEARCE
GEORGE S. BLAIR

BY

Douglas S. Johnson
Attorney

July 12, 1966 H. SHAW ET AL 3,260,033

APPARATUS FOR APPLYING A TOP WRAPPER TO A PILE OF DISCRETE ARTICLES

Filed Aug. 21, 1963 5 Sheets-Sheet 5

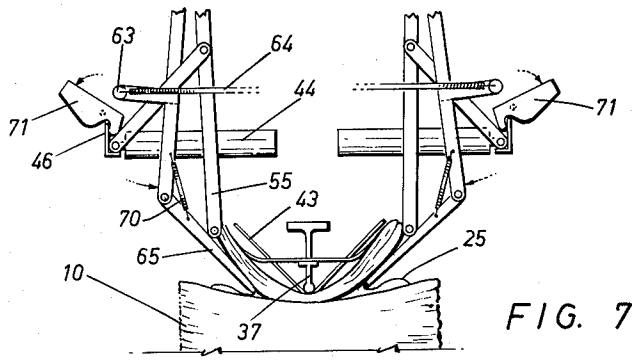


FIG. 7

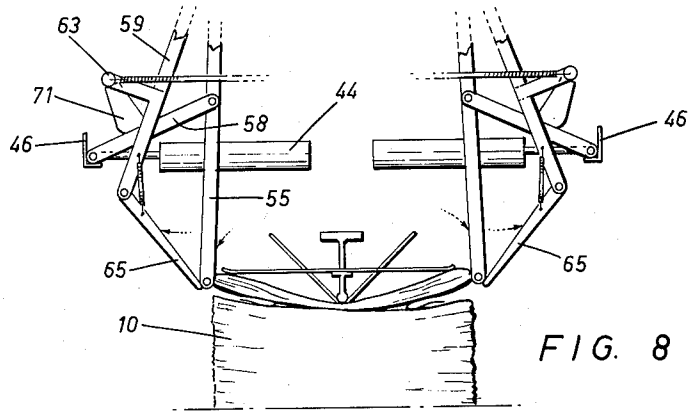


FIG. 8

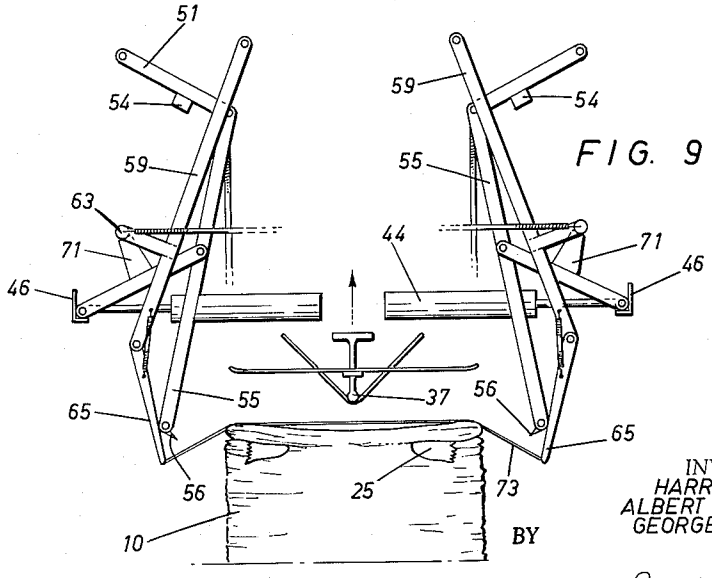


FIG. 9

INVENTORS
HARRY SHAW
ALBERT J. PEARCE
GEORGE S. BLAIR

BY

Douglas S. Johnson

Attorney

United States Patent Office 3,260,033 Patented July 12, 1966

3,260,033

APPARATUS FOR APPLYING A TOP WRAPPER TO A PILE OF DISCRETE ARTICLES

Harry Shaw, Aurora, Ontario, Albert J. Pearce, Toronto, Ontario, and George S. Blair, Willowdale, Ontario, Canada, assignors to Toronto Star Limited, Toronto, Ontario, Canada

Filed Aug. 21, 1963, Ser. No. 303,566
Claims priority, application Canada, July 10, 1963, 722,944
25 Claims. (Cl. 53—196)

This invention relates to apparatus and method to applying a sheet of wrapping material to a top of a pile of relatively flat flexible articles after which the overlying ends of the wrapping material are inserted on opposite sides of the pile between predetermined layers of the flat flexible articles to be retained in position by the weight of the layers above and has particular reference to applying wrapping material to the top of a pile of folded newspapers.

To provide the necessary protection to newspapers during their transit to the newspaper vendors it is customary to wrap them in strong wrapping paper which is subsequently tied in position by flexible wire or similar means. According to common practice newspapers which have been printed and folded are carried to the mailing room on a conveyor and then gathered into piles commonly called lifts. Each lift passes over a sheet of wrapping paper called the bottom wrapper and then both travel along together due to the weight of the lift keeping the bottom wrapper in position; it is then the custom to place a sheet of material on top of the pile, this is the top wrapper. After this the ends of the top and bottom wrappers are folded around the sides and tied in place.

It will be appreciated that the maintenance of the top wrapper in position prior to the tying operation cannot be accomplished in the manner employed for securing the bottom wrapper and as a result the method employed hitherto is manual and comprises locating the top wrapping material simply by folding it in at the sides of the lift, the ends being retained by the weight of the newspapers above. Afterwards the lift is conveyed to the tying station.

It is desirable to employ a fairly strong wrapping paper to provide the necessary protection to these bundles of newspapers during transit, but since such paper possesses a fair degree of resilience, even with the manual method, a certain adeptness must be exercised to make it conform to the required configuration around the lift. It follows that methods of fixing the wrapping material mechanically by tucking overlying ends in at the sides of the lift have to overcome this tendency of the wrapping material to spring out from the sides of the bundle.

Furthermore, mechanical methods of tucking in the overlying ends have to take into account that the newspapers are folded to form the lift with the result that whereas two adjacent sides of the bundle present a surface composed of discrete articles easily capable of separation one from the other, the other two sides of the lift present a comparatively uninterrupted surface composed of the individual pages of the newspapers. Hence, the mechanical means for tucking in the overlying ends of the wrapping material applied to the top of the lift must be designed so as to separate cleanly and without damage a predetermined pair of individual sheets of the newspaper; on the other hand, although it is much simpler to separate the individual newspapers on the opposing side because they are defined by the folds, the retention of the wrapping material between one folded paper and the next simply by the weight of the ones above is difficult because the curvature of the fold promotes the tendency of the resilient

wrapping paper to spring out before the effect of the weight of newspapers above can exert the requisite pinch to keep the wrapping paper in place.

It is, therefore, the object of this invention to provide a method and means for applying top wrappers to lifts or bundles.

According to this invention apparatus is provided which secures the top wrapper in position on top of the lift, after which the ends of the wrapper depending against the sides of the lift are tucked mechanically between upper and lower portions of the lift.

The invention is hereinafter more particularly described and illustrated by way of example in the accompanying drawings in which:

FIGURE 1 is a perspective view of a preferred embodiment of the apparatus illustrating the tucking operation;

FIGURE 2 is an elevational view of the apparatus of FIGURE 1 in position to take the wrapping paper down into contact with the lift;

FIGURE 3 is an enlarged perspective view of part of the apparatus of FIGURE 1 prior to the tucking operation;

FIGURES 4 to 9 are diagrammatic representations in that order of the sequence of operations of the apparatus in wrapping the top wrapping paper about the lift.

As shown in FIGURE 1 lifts of printed and folded newspapers **10** travel along a conventionally supported conveyor **11**, either by actuating the rollers **12** or by providing the requisite free fall. The lift **10** passes below a pair of spaced channel members **13** conveniently supported at one end by a pair of vertical members **14** attached to one side of the conveyor **11** and at the other end by a pair of vertical members **15** of a side frame **16**. A stop **17** actuated by a sensing device **18** is provided on the roller table to arrest the movement of the lift **10** and position it directly below and intermediate of the channel members **13**.

Previous to entry of the lift **10** below the channel members **13** conventional apparatus is provided to align successive lifts **10** in the same position on the conveyor **11**. A suitable form of such apparatus is shown in FIGURE 1 and comprises a pair of transverse frame members **19** attached to the underside of the conveyor **11**. A bracket **20** is pivotably mounted at each end of the frame members **19** and are disposed with respect to the conveyor **11** so that a pair of brackets **20** extends upwards on each side but spaced therefrom. Each pair of brackets **20** is connected by a cross piece **21** which is attached to a piston and cylinder structure **22** supported by the transverse frame members **19**. The upper ends of the pair of brackets **20** on each side of the conveyor **11** are secured to a vertical plate **23** which has sufficient clearance between its lower edge and the rollers **12** to enable it to be moved inwards across the face of the conveyor **11**. The forward ends of the plates **23** are tapered outwards to facilitate entry of the lift **10**. A sensing device **24** is attached to the conveyor **11** and on contact between the lift **10** and the device **24** the latter actuates the pistons **22** thus moving the plates **23** inward to exert pressure against the opposed sides of the lift **10** and ensure the same alignment on the conveyor **11**.

The wrapping material **25** is shown in FIGURE 1 in the process of being tucked between an upper and lower portion of the lift **10**. The apparatus for performing the operation of securing the top wrapper **25** in position on the lift **10** and then tucking the sides of the wrapping paper **25** between the folds of the newspapers will now be described being generally denoted by the numeral **26** in FIGURES 1, 2 and 3. The apparatus **26** is carried by the free end of a piston **27** actuated by hydraulic means, not shown, in a vertically disposed cylinder **28**, the lower end of which is supported by an inverted substantially U-

shaped bracket 29; an opposed pair of vertical blocks 30 support the ends of the U-shaped bracket 29 and the vertical blocks 30, in turn, securely rest on the spaced channel members 13. The arms of the U-shaped bracket 29 and the vertical blocks 30 have a combined height sufficient for the lowest extremity of the apparatus 26 to clear the spaced channel members 13 at the upper limit of travel of the piston 27.

Secured to the free end of the piston 27 is a hollow beam 31 disposed transversely with repect to the direction of travel of the conveyor 11 and secured to the underside of the beam 31 is a member 32 disposed longitudinally with respect to the direction of travel of the conveyor 11. Vertical guide rods 33 are attached close to each corner of the member 32 and each guide rod 33 is slidably engageable in an abutment 34 attached to the side of the U-shaped bracket 29; the upper ends of the guide rods 33 are secured to the underside of a rectangular plate 35 which has an aperture large enough to provide clearance for the cylinder 28 which it surrounds. The upwards travel of the rectangular plate 35 and hence the upwards tranvel of the piston 27 is limited by the outward projection of another rectangular plate 36 surmounting the upper end of the cylinder 28.

Disposed beneath the member 32 and also longitudinally with respect to the direction of travel of the conveyor 11 is a bulb T bar 37 which is connected to the member 32 by a pair of spaced rods 38, the ends of which are journalled in both the member 32 and the bulb T bar 37 so as to bias them apart by means of springs 39 surounding the spaced rods 38. At one end of the member 32 an angle section 40 is secured which carries a microswitch 41 positioned in line with a contact 42 located on the bulb T bar 37 below. As shown in FIGURE 3 at least one V-shaped spring 43 is attached to the bulb of the T bar 37.

It will be evident from FIGURE 3 that the remainder of the apparatus 26 is comprised of identical components on each side of the vertical plane taken along the length of the bulb T bar 37 on both longitudinal sides of the member 32 and it will be sufficient to described the apparatus 26 on one side only, it being understood that the corresponding parts on the other side will bear the same numerals. It will also be noted by reference to FIGURE 3 that components on one side of a vertical plane taken on the middle of the beam 31 are identical with the components on the other side of this vertical plane.

Disposed below and parallel to the beam 31 and secured normally to the side of the member 32 is a cylinder 44; a piston 45 projects outwardly from the cylinder 44 and is actuated hydraulically by means not shown, the free end of the piston 45 being attached to an L-shaped bracket 46. A pair of spaced apart bars 47 are attached to the beam 31 intemediate of its end and the piston 27; the bars 47 extend vertically and each terminates in a short cross piece 48 disposed parallel to the beam 31. Traversing the cross pieces 48 close to their outward ends is a spindle 49 and traversing the inward ends of the cross pieces 48 is another spindle 50 projecting from the sides of the cross pieces 48 to a somewhat greater degree than the spindle 49. Pivotably mounted at each end of the spindle 49 is a first arm 51 projecting inwards and downwards in the direction of a piston 27, but terminating at a distance somewhat short thereof. The ends of the first arms 51 are connected by a brace member 52 and a spring 53 secured to the brace member 52 intermediate of its ends projects downwards and is connected at its other end to the beam 31. The downward movement of the arms 51 as a result of the tension in the spring 53 is arrested by a stop 54 secured to the side of the bars 47.

A second arm 55 is pivotably mounted at the ends of the brace member 52 to project downwards clear of the sides of the beam 31 and the cylinder 44, and also outward of the piston 27, terminating at a point some distance above the rollers 12, but below the plane of the bulb T bar 37 at the point of lowest travel of the piston 27; adjacent to the lower end of the second arm 55 and projecting inwards is a pin 56 having a point sufficiently fine to cleanly separate two sheets of a newspaper. The second arm 55 is movable in a vertical plane parallel to that of the beam 31 and the ends of the second arm 55 are connected by a brace member 57.

Pivotably secured to the second arm 55 intermediate of its ends is a link arm 58 projecting downwards and outward with respect to the second arm 55 but also movable in a vertical plane parallel to that of the beam 31; the other end of the link arm 58 is pivotably secured to the side of the L-shaped bracket 46.

Pivotably mounted at each end of the spindle 50 is a third arm 59 projecting downwards and outward with respect to the piston 27 at an angle somewhat greater than that of the second arm 55 and terminating at a level below that of the cylinder 44 but above the level of termination of the second arm 55; the third arm 59 is movable in a vertical plane parallel to that of the second arm 55. The lower ends of the third arms 59 are connected by a cross bar 60.

Intermediate of the ends of the third arm 59 and secured normally thereto is a member 61 which terminates at a horizontal plane above that of the beam 31. Traversing the ends of the member 61 is a rod 62, the ends of which project beyond the sides of the member 61. A tube 63 is journalled on the rod 62 intermediate of the ends of the members 61. A spring tensioned tie rod 64 secured to the projecting end of the rod 62 is connected to the side of the plate 35.

Pivotably mounted at the end of the third arm 59 is a fourth arm 65 projecting inwards and downwards with respect to the piston 27 and terminating at a level below that of the second arm 55. The lower ends of the fourth arms 65 are connected by a rod 66 having extensions 67 on which are journalled rollers 68; a brace 69 connects the cross bar 60 and the rod 66 intermediate of their ends whilst a spring 70 bridges the pivotably connected third arm 59 and fourth arm 65 to bias them together, this movement being checked by interaction of the lower part of the brace 69 with the brace 57.

The hollow beam 31 has its upper and lower faces cut away at the ends to accommodate a pair of plate cams 71, substantially quadrangular in shape, pivotably mounted at the sides of the beam 31; each of the cams 71 is biased by a spring 72 which rotates it inwards in a vertical plane to contact the tube 63 which then rides up the inner edge of the cam 71 on its continued rotation. On reaching the top of the cam 71 the tube 63 starts to ride down the inclined surface of the upper edge of the cam 71 but the movement of both is arrested due to the frictional effect provided by the inward action of the spring tensioned tie rod 64. Each cam 71 projects downwards to a plane where it will intercept the inward movement of the L-shaped bracket 46 attached to the piston 27 and to facilitate engagement the cams 71 are recessed on their outer edges.

As shown more clearly in FIGURE 4 the fourth arm 65 on one side of the plate 35 is preferably connected by resilient means 73, e.g. a rubber band, to the corresponding fourth arm 65 on the other side of the plate 35, and hence on the same side with respect to the cylinders 44; the rubber band 73 clears the end of the bulb T bar 37.

The wrapping material 25 may be previously placed in position by separate means but as shown in FIGURE 2 a convenient apparatus to position the wrapping material 25 above the lift 10 utilizes the channel members 13 in co-operation with the side frame 16. The wrapping material 25 is wound around a spindle 74 suitably journalled on brackets 75 mounted in the frame 16; as shown a supplementary roll of material is provided for use when

a roll is being removed and inserted in the machine. The wrapping material **25** passes over an idler roller **76** and under another idler roller **77** and then over a driven roller **78** to enter the aperture between a pair of spaced pulleys **79** located close to one end of the channel members **13**. A similar pair of pulleys **80** is located at the opposite end of the channel members **13** and endless springs **81** which travel around the pulleys **79** and **80** are tensioned by smaller pulleys **82** to bring the endless springs **81** into contact. After the wrapping material **25** enters the aperture of the first pair of spaced pulleys **79** it is then gripped lightly but firmly by the endless springs **81** and carried along until the end of the wrapping material **25** reaches the pulleys **80** at which point cutting means **83** actuated by a timing device, not shown, severs the wrapping material **25** which is then held in place by the springs **81** above the lift **10**.

The sequence of operation of the tucking apparatus **26** is illustrated diagrammatically in FIGURES 4 to 9 read successively. It will be understood, however, that initially the apparatus **26** is located in the vertical position shown in FIGURE 2, it being raised to this level by the piston **27** so that the extremities of the fourth arms **65** are clear of the channel members **13**. As already described the wrapping material **25** is fed in between the ends of the springs **81** after it has been severed by the cutting means **83** in response to a timing device, not shown, the same timing device activating the supply of hydraulic fluid to the cylinder **28** and the bulb T bar **37** which then starts to travel down in response to the downward movement of the piston **27**. Since the wrapping paper **25** is held lightly between the endless springs **81** the pressure of the bulb T bar **37** is sufficient to release the wrapping material **25** from the springs **81** and it is then taken down by rapid movement to be held in place by the T bar **37** against the top of the lift **10**. The rubber band **73** connecting the ends of the corresponding fourth arms **65** assists in conforming the wrapping material **25** over the top and sides of the lift **10**. The apparatus **26** is now in the operating position shown in FIGURE 4.

Further pressure of the piston **27** causes the spaced rods **38** to move in their journals with further downward movement of the plate **35** which brings the microswitch **41** into touch with its contact **42** on the bulb T bar **37** to activate the exhaustion of the fluid from the horizontal cylinders **44**. The pistons **45** start to move inwards with the result that the link arms **58** activate the second arms **55** towards the side of the lift **10**, as shown in FIGURE 5 and the pins **56** effect the initial separation of an upper part of the lift **10** from a lower part. In this process the fourth arms **65** due to their being pivoted about the lower ends of the arms **59** which are stationary will rotate in some degree towards a substantially horizontal plane.

On further movement of the second arms **55** inwards a lifting action takes place at the edges of the lift **10** mainly due to the movement of the first arms **51** about their pivots but also due in part to arcuate movement of the lower end of the second arms **55**. As a result of this lifting action the lift **10** is divided into an upper and a lower part; in the preferred embodiment the upward movement of the edges of the lift **10** is individually contained by the V-shaped spring **43**. During this lifting movement, the culmination of which is shown in FIGURE 6, the fourth arms **65** further rotate towards a substantially horizontal plane located between the undersurface of the upper part of the lift **10** and the upper surface of the lower part of the lift **10**. After sufficient lift has been effected by the second arm **55** the brackets **13** strike the cams **71** rotating them outward thereby releasing the spring tensioned tie bars **64**. As a result the fourth arms **65** move rapidly inwards to effect a tucking action of the wrapping paper **25** between the upper and lower part of the lift **10** as illustrated in FIGURE 7. By the time this has been effected the pistons **45** have reached the end of their inward travel and start to return, with the result that the second arms **55** move outwards and downwards. Due to the pressure exerted by the cross brace members **57** against the vertical brace members **69** the fourth arms **65** also move outwards and they will have a downwards motion due to rotation about the ends of the arms **65**. The movement outwards and downwards of both the second arm **55** and the fourth arm **65** results in maintenance of the tucked wrapping paper **25** in place due to the effect of the weight of the upper part of the lift **10**.

On sufficient movement outward of the pistons **45** the cams **71** are free to rotate inwards and the tubes **63** ride upwards on the inner edge of the cams **71** to pass over the top and then engage with the inclined upper edge. After the pistons **45** have reached the end of their travel the apparatus **26** is in the position shown in FIGURE 9 after which it is moved vertically to the position shown in FIGURE 2.

While certain embodiments have been illustrated and described for the purpose of disclosure, it will be understood that the invention is not limited thereto, but contemplates such modifications and other embodiments as may be utilized without departing from the invention.

The embodiments of the invention in which an exclusive privilege or property is claimed are defined as follows:

1. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, first means for applying a mid portion of said wrapping paper against the top of said pile, with end portions of said wrapping paper depending against said sides, means responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof and means responsive to separating said upper part from said lower part for tucking said end portions between said separated upper part and said lower part.

2. In combination a conveyor, driving means for said conveyor, a pile of discrete articles carried by said conveyor, stop means for terminating the movement of said pile on said conveyor, support means surmounting said conveyor and positioned above said pile arrested by said stop means, means for feeding a web of wrapping material above said arrested pile, means carried by said support means and positioned above said web of wrapping material responsive to said feeding means for applying a mid portion of said wrapping material against the top of said pile with end portions of said wrapping paper depending about said sides, means responsive to actuation of said application means for separating an upper part of said pile from a lower part at least at the edges thereof, means responsive to separation of said upper part for tucking said end portions between said separated upper part and said lower part.

3. Apparatus according to claim **1** wherein the pile of discrete articles is a lift of folded newspapers.

4. Apparatus according to claim **2** having means for aligning said articles on said conveyor.

5. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles comrising, a substantially horizontal member positioned above said wrapping paper and in a vertical plane parallel to said sides of said pile, means secured to said member for activating said member in a substantially vertical plane whereby said member bears said wrapping paper against the top of said pile, means for supporting said activating means, means responsive to said activating means for separating at said sides an upper part of said pile from a lower part at least at the edges thereof and means responsive to separation of said upper part for tucking said end portions between said separated upper part and said lower part.

6. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, a substantially horizontal member posi-

tioned above said wrapping paper and in a vertical plane parallel to said sides of said pile, a substantially vertical first piston and cylinder structure positioned above said pile, said piston being connected to said member, means supporting said cylinder, means for actuating said piston in said cylinder whereby said member bears said wrapping paper against the top of said pile, means responsive to application of said wrapping paper against the top of said pile for separating at said sides an upper part of said pile from a lower part at least at the edges thereof and means responsive to separation of said upper part for tucking said end portions between said separated upper part and said lower part.

7. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, first means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, substantially vertical support means carried by said first means and spaced therefrom, a first arm pivotably attached to the upper end of said vertical support means and directed downwards and inwards towards said first means, a second arm pivotably attached to the lower end of said first arm and depending outwards and downwards with respect to said first means and terminating in a horizontal plane between the top and bottom of said pile, point means adjacent to the lower end of said second arm facing towards said pile, means responsive to said first means for actuating said second arm towards said pile whereby said point means separates an upper part and a lower part of said pile and means responsive to separating said upper part from said lower part for tucking said end portions between said separated upper part and said lower part.

8. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, first means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, a substantially horizontal member disposed in a plane at right angles to said sides of said pile and secured to said first means, a vertical member secured to said horizontal member depending upwards and spaced from said first means, a first arm pivotably attached to the upper end of said vertical member and directed downwards and inwards towards said first means, a second arm pivotably attached to the lower end of said first arm and depending outwards and downwards with respect to said first means and terminating in a horizontal plane between the top and bottom of said pile, point means adjacent to the lower end of said second arm facing towards said pile, means responsive to said first means for actuating said second arm towards said pile whereby said point means separates an upper part and a lower part of said pile and means responsive to separating said upper part from said lower part for tucking said end portions between said separated upper part and said lower part.

9. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, first means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, substantially vertical support means carried by said first means but spaced therefrom, a first arm pivotably attached to the upper end of said vertical support means and directed downwards and inwards towards said application means, a second arm pivotably attached to the lower end of said first arm and depending outwards and downwards with respect to said first means and terminating in a horizontal plane between the top and bottom of said pile, point means adjacent to the lower end of said second arm facing towards said pile, a link arm secured to said second arm intermediate of its ends and directed outwards and downwards with respect to first means, means responsive to said first means for actuating the other end of said link arm whereby on inward movement thereof said second arm moves towards said pile and said point means separates an upper part and lower part of said pile at said sides and means responsive to separating said upper part from said lower part for tucking said end portion between said separated upper part and said lower part.

10. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, first means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, substantially vertical support means carried by said first means but spaced therefrom, a first arm pivotably attached to the upper end of said vertical support means and directed downwards and inwards towards said application means, a second arm pivotably attached to the lower end of said first arm and depending outwards and downwards with respect to said application means and terminating in a horizontal plane between the top and bottom of said pile, point means adjacent to the lower end of said second arm facing towards said pile, a link arm secured to said second arm intermediate of its ends and directed outwards and downwards with respect to first means, a second cylinder carried by said first means disposed above but at substantially right angles to said side of said pile, a piston in said cylinder, the free end of which is attached to the other end of said link arm, means responsive to said first means for actuating said piston whereby on inward movement thereof said link arm moves inwards and upwards to move said second arm towards said pile and said point means separates an upper part and a lower part of said pile at said sides and means responsive to separating said upper part from said lower part for tucking said end portions between said separated upper part and said lower part.

11. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, a substantially horizontal member positioned above said wrapping paper and parallel to said sides of said pile, means for activating said member in a substantially vertical plane whereby said member bears said wrapping paper against the top of said pile, means for supporting said activating means, means responsive to said activating means for separating an upper part of said pile from a lower part at least at the edges thereof, means responsive to separation of said upper part for tucking said end portions between said separated upper part and said lower part, connecting said first horizontal member to said activating means a second horizontal member positioned in the same vertical plane as said first horizontal member, spring biased rods having ends journalled in said first and second horizontal members, a microswitch attached to said second horizontal member, a contact secured to said first horizontal member in the same vertical plane of movement as said microswitch whereby on applying said first member against said wrapping paper on said pile said spring biased rods move in said journals to bring said microswitch into touch with said contact on said second member to actuate said means for separating said upper part of said pile from said lower part.

12. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending against said sides, means movable towards the sides of said pile responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof, and means responsive to said separating means for tucking said end portions between said separated upper part and lower part and means for restraining said tucking means until said separation of said upper part from said lower part.

13. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pipe of discrete articles, comprising, means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending against said sides, means movable towards the sides of said pile responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof, means responsive to said separating means for tucking said end portions between said separated upper part and lower part, means for restraining said tucking means until said separation of said upper part from said lower part and means responsive to said separating means for releasing said restraining means after separation of said upper part from said lower part.

14. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles comprising, means for applying a mid portion of said wrapping paper against the top of said pile the end portions of said wrapping paper depending against said sides, means movable towards the sides of said pile responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof, means responsive to said separating means terminating in a plane below said separating means for tucking said end portions between said separated upper part and said lower part, means for restraining said tucking means until said separation of said upper part from said lower part and spring means for rotating the end of said tucking means to the plane of separation of said upper part from said lower part before said restraining means is released.

15. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, means for applying a mid portion of said wrapping paper against the top of said pile the end portions of said wrapping paper depending against said sides, means movable towards the sides of said pile responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof, means terminating in a plane below said separating means and responsive thereto for tucking said end portions between said separated upper part and said lower part, means for restraining said tucking means until said separation of said upper part from said lower part, spring means responsive to said separating means for rotating the end of said tucking means to the plane of separation of said upper part from said lower part before said restraining means is released and means responsive to said separating means for releasing said restraining means.

16. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, means for applying a mid portion of said wrapping paper against the top of said pile the end portions of said wrapping paper depending against said sides, means movable towards the sides of said pile responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof, means terminating in a plane below said separating means and responsive thereto for tucking said end portions between said separated upper part and said lower part, means for restraining said tucking means until said separation of said upper part from said lower part, spring means responsive to said separating means for rotating the end of said tucking means to the plane of separation of said upper part from said lower part before said restraining means is released, means for releasing said restraining means responsive to said separating means and spring means for actuating said tucking means responsive to said releasing means.

17. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, first means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, second means responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof, substantially vertical support means carried by said first means and spaced therefrom, a third arm pivotably attached to the upper end of said vertical support means and projecting downwards and outwards with respect to said first means, a fourth arm pivotably mounted at the lower end of said third arm and projecting inwards and downwards with respect to said first means and terminating below said second means and means for actuating said fourth arm responsive to separating said upper part from said lower part to tuck said portions between said separated upper part and said lower part.

18. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, first means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, second means responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof, substantially vertical support means carried by said first means for applying a mid portion to said wrapping paper and spaced therefrom, a third arm pivotably attached to the upper end of said vertical support means and projecting downwards and outwards with repect to said first means, a fourth arm pivotably mounted at the lower end of said third arm and projecting inwards and downwards with respect to said first means and terminating below said second means and spring means actuating said fourth arm responsive to separating said upper part from said lower part to tuck said portions between said separated upper part and said lower part.

19. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, first means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, second means responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof, substantially vertical support means carried by said first means for applying a mid portion to said wrapping paper and spaced therefrom, a third arm pivotably attached to the upper end of said vertical support means and projecting downwards and outwards with respect to said first means, a fourth arm pivotably mounted at the lower end of said third arm and projecting inwards and downwards with respect to said first means and terminating below said second means, spring means actuating said fourth arm responsive to separating said upper part to tuck said portions between said separated upper part and said lower part and means restraining said spring means until said separation of said upper part from said lower part.

20. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles comprising, first means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, second means responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof, substantially vertical support means carried by said first means for applying a mid portion to said wrapping paper and spaced therefrom, a third arm pivotably attached to the upper end of said vertical support means and projecting downwards and outwards with respect to said first means, a fourth arm pivotably mounted at the lower end of said third arm and projecting inwards and downwards with respect to said first means and terminating below said second means, spring means actuating said fourth arm responsive to separating said upper part from said lower

part to tuck said portions between said separated upper part and said lower part, means restraining said spring means until said separation of said upper part from said lower part and means responsive to said separating means for releasing said restraining means after separation of said upper part from said lower part.

21. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles comprising, means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, first opposed means responsive to actuation of said first means for separating at said opposed side of said pile an upper part of said pile from a lower part at least at the edges thereof, spring means attached to said first means restricting the separation of said upper part of said pile from said lower part and second opposed means, responsive to separation of said upper part from said lower part, for tucking said end portions between said upper part and said lower part at opposed sides of said pile.

22. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, first opposed identical means responsive to actuation of said first means, each separating at said opposed sides of said pile an upper part of said pile from a lower part at least at the edges thereof, second opposed identical means, responsive to separation of said upper part from said lower part, for tucking said end portions between said upper part and said lower part at opposed sides of said pile, and flexible means responsive to said application means connecting said second opposed means extending over the top of said wrapping paper to conform it against said sides.

23. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, first opposed means responsive to actuation of said first means, each separating at said opposed sides of said pile an upper part of said pile from a lower part at least at the edges thereof, spring means attached to said application means for restricting the separation of said upper part of said pile from said lower part, second opposed means responsive to separation of said upper part from said lower part, for tucking said end portions between said upper part and said lower part at opposed sides of said pile and flexible means responsive to said application means connecting said second opposed means extending over the top of said wrapping paper to conform it against said sides.

24. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, first means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, second means responsive to actuation of said first means for seperating an upper part of said pile from a lower part at least at the edges thereof, means responsive to said separating means for tucking said portions between said separated upper part and said lower part comprising, a substantially horizontal beam member carried by said first means movable in a vertical plane above said pile normal to said sides thereof, spaced substantially vertical support means carried by said horizontal member intermediate of its ends, pivotably attached to the upper end of each of said vertical support means a third arm projecting downwards and outwards with respect to said first means, a brace connecting the lower ends of said third arms, pivotably mounted at the lower end of each of said third arms a fourth arm projecting inwards and downwards with respect to said first means and terminating below said second means, first spring means connecting said third arm to said fourth arm urging said fourth arm inwards to a horizontal plane with its free end towards the side of said pile, said inward movement being restrained by said second means, second spring means connecting said brace and said first means urging said fourth arms towards said side of said pile and means restraining said second spring means comprising, a cam pivotably counted adjacent the free end of said horizontal member and third spring means connecting said cam and said horizontal member whereby said cam bears outward against said brace, and means releasing said restraining means when said fourth arm has reached a substantially horizontal position.

25. Apparatus for securing a length of wrapping paper over the top and opposed sides of a pile of discrete articles, comprising, first means for applying a mid portion of said wrapping paper against the top of said pile with end portions of said wrapping paper depending about said sides, second means responsive to actuation of said first means for separating an upper part of said pile from a lower part at least at the edges thereof, means responsive to said separating means for tucking said end portions between said separated upper part and said lower part comprising, a substantially horizontal beam member carried by said first means movable in a vertical plane above said pile normal to said sides thereof, spaced substantially vertical support means carried by said horizontal member intermediate of its ends, pivotably attached to the upper end of each of said vertical support means a third arm projecting downwards and outwards with respect to said first means, a brace connecting the lower ends of said third arm, pivotably mounted at the lower end of each of said third arms, a fourth arm projecting inwards and downwards with respect to said first means and terminating below said second means, first spring means connecting said third arm to said fourth arm urging said fourth arm inwards to a substantially horizontal plane with its free end towards the side of said pile, said inward movement being restrained by said second means, second spring means connecting said brace and said first means urging said fourth arms towards said side of said pile, and means restraining said second spring means comprising, a cam pivotably mounted adjacent the free end of said horizontal member, third spring means connecting said cam and said horizontal member whereby said cam bears outward against said brace, means releasing said restraining means comprising, a cylinder positioned below said horizontal beam and secured to said first means, a piston movable in said cylinder, secured to the end of said piston a plate which terminates in a substantially horizontal plane above that of the lowest level of said cam whereby on actuation of said piston in said cylinder said plate bears against said cam tilting it outwards and downwards to release said brace when said fourth arm has reached a substantially horizontal position.

No references cited.

FRANK E. BAILEY, *Primary Examiner.*

L. S. BOUCHARD, *Assistant Examiner.*