

April 20, 1954

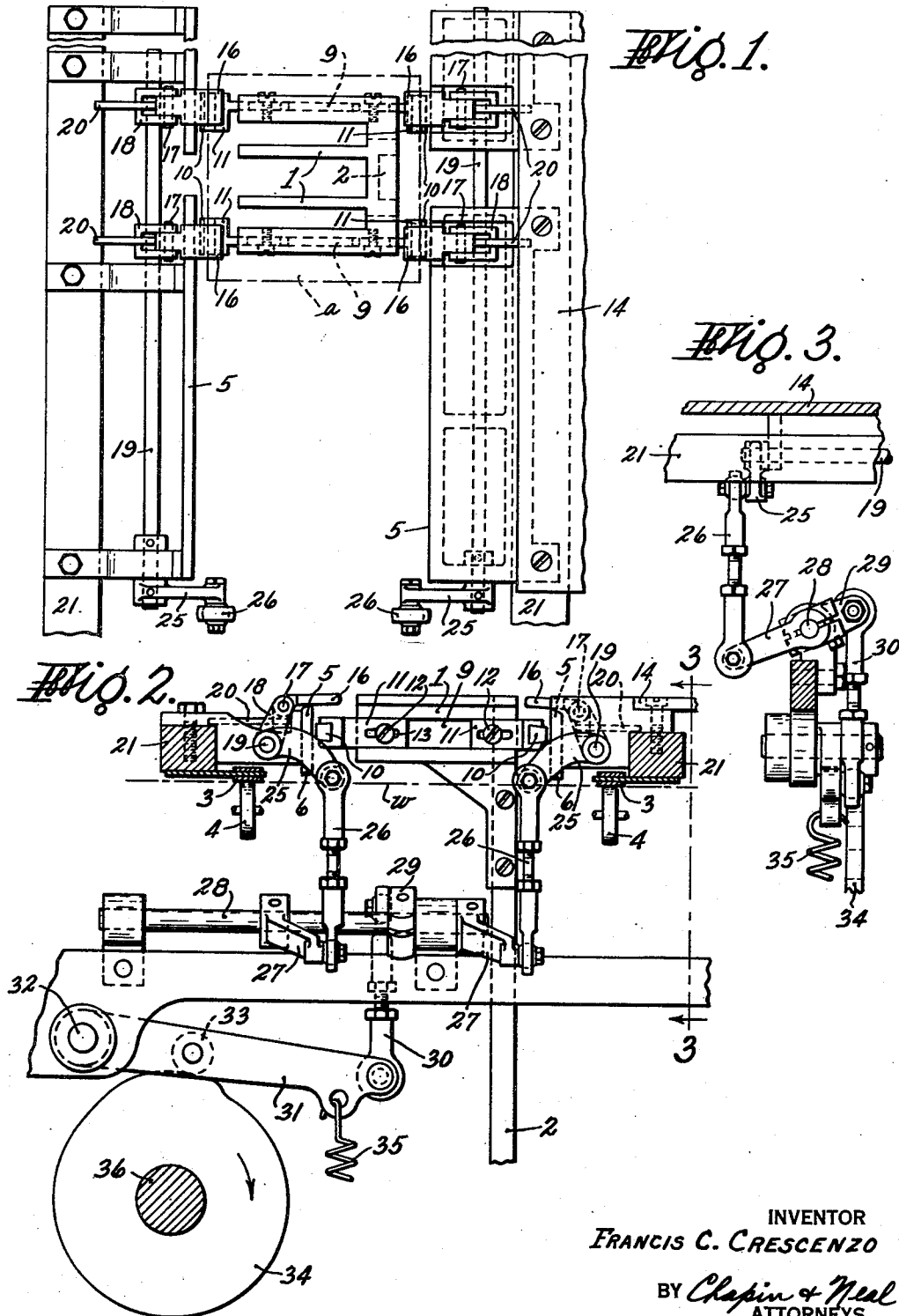
F. C. CRESCENZO

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WRAPPER CONTROL MECHANISM FOR WRAPPING MACHINES

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3 Sheets-Sheet 1



April 20, 1954

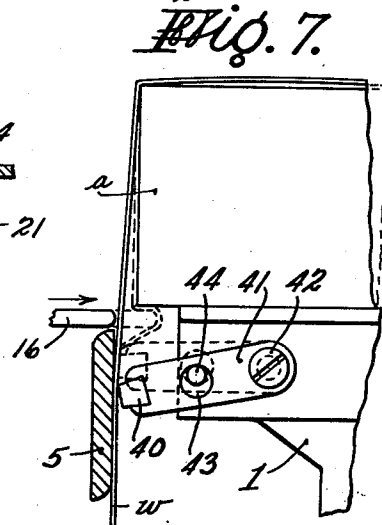
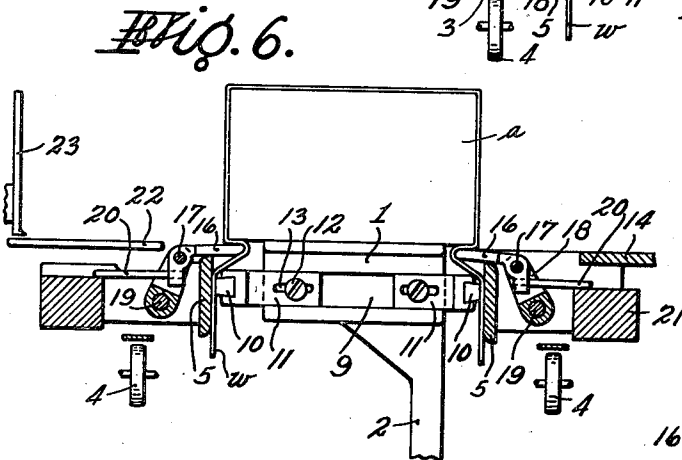
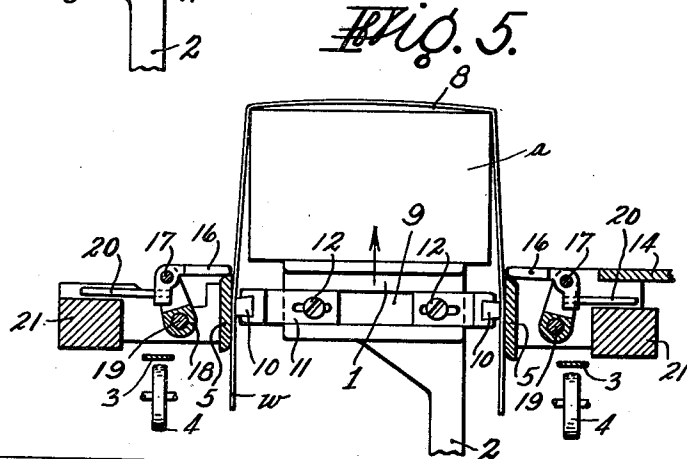
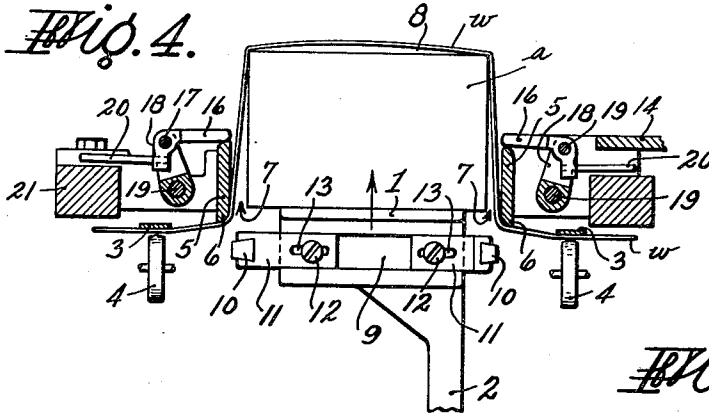
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WRAPPER CONTROL MECHANISM FOR WRAPPING MACHINES

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3 Sheets-Sheet 2



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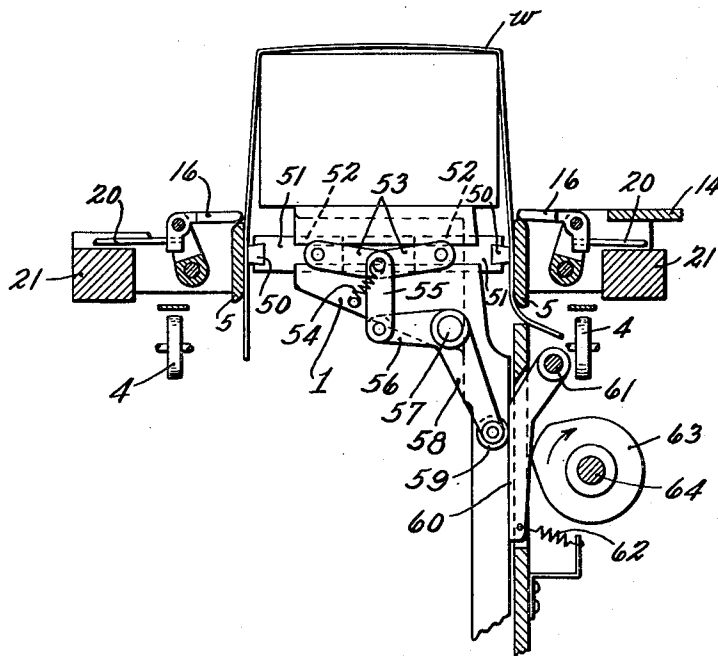
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WRAPPER CONTROL MECHANISM FOR WRAPPING MACHINES

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3 Sheets-Sheet 3

Fig. 8.



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WRAPPER CONTROL MECHANISM FOR WRAPPING MACHINES

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14 Claims. (Cl. 53—129)

1

The invention relates to wrapping machines of the type in which the article to be wrapped is carried by an article advancing means such as an elevator against a wrapper and through an opening formed between spaced members by which the side portions of the wrapper are draped over the top and sides of the article. More particularly the invention relates to improved means by which the draping of the wrapper is accomplished and subsequent folding operations are initiated.

The principal object of the invention is to provide an improved control over the tightness or looseness of the wrapper, such control being particularly desirable in the wrapping of fragile articles such as crackers and similar products.

Other and further objects will be made apparent in the following specification and claims.

In the drawings,

Fig. 1 is a plan view of the apparatus embodying the invention;

Fig. 2 is an end elevational view of the structure shown in Fig. 1;

Fig. 3 is a detail sectional view substantially on line 3—3 of Fig. 2;

Figs. 4, 5 and 6 are diagrammatic views showing successive steps of the operation;

Fig. 7 is a detail view showing a modification; and

Fig. 8 is a detail view showing a further modification.

Referring to the drawings, an article elevator, shown at 1, is carried by one or more rods 2 which are vertically reciprocated in a well-known manner by suitable means not shown. When the elevator is at its lowermost position (not shown), an article *a* is placed on the elevator by any suitable means. Upon upward movement of the elevator the top of the article engages a wrapper, indicated at *w*, which has been fed across the path of the elevator by belts 3 and rollers 4 or other suitable wrapper feeding means. Continued upward movement of the elevator carries the article and wrapper between fixed wall members 5 positioned at opposite sides of the path of the elevator, the lower edges 6 of the members 5 acting in the construction shown as the means to drape the side portions of the wrapper downwardly along the sides of the article as shown in Fig. 4.

The wall members 5 are spaced outwardly from the side faces of the article to provide gaps, as indicated at 7, between the faces of the wall members and the adjacent faces of the article.

The presence of gaps 7 with a nearly complete release of the wrapper by its feeding means per-

2

mits the wrapper to be loosely draped about the top and sides of the article as indicated by the slack shown at 8. Because of the looseness of the wrapper there is a tendency for it to become displaced and to prevent this, and for a further purpose later explained, presser members 10 are provided which as shown are adjustably carried by the elevator below the article supporting surface thereof. The members 10 which are preferably formed of rubber, fibre, plastic or similar material, are shown as mounted in the ends of brackets or fingers 11, slidable for adjustment in grooves 9. The brackets 11 are secured to the elevator by screws 12 passing through slots 13 formed in the brackets thus providing means by which the brackets 11 may be adjusted to bridge the gaps 7 and position the members 10 to press the trailing side portions of the wrapper against the faces of the wall members 5 with a predetermined degree of pressure as the elevator raises the article to the level of the table 14, Fig. 5.

The presser members are so positioned that before the trailing wrapper portions are completely freed from the control of the feeding belts and rolls 3—4 the presser members engage the wrapper and press the trailing side portions against the wall members 5 with sufficient pressure to prevent displacement of the wrapper. The surfaces of the pressure members 10 engage the wrapper with greater frictional resistance than do the smooth surfaces of the wall members so that the presser members slide the trailing wrapper portions upwardly with the elevator, free of tension and without tendency to tighten the wrapper about the article.

A pair of fingers 16 are positioned outwardly of and above the wall members at opposite sides of the uppermost position of the elevator. Each finger 16 is pivoted, as at 17, between the forks of forked arms 18 which are secured to rock shafts 19. The fingers are normally positioned outwardly of the wall members 5 as shown in Figs. 4 and 5, the free ends of the fingers resting on the upper edges of the wall members 5. Tail pins 20, extending outwardly and engageable with cross members 21, guide the fingers in the inward movement and limit the upward swinging movement of the fingers.

After the article reaches its uppermost position as shown in Figs. 5 and 6, the shafts 19 are rocked toward each other to move the fingers 16 inwardly between the presser members 10 and the bottom of the article as shown in Figs. 2 and 6. As the fingers move inwardly they engage the wrapper and draw it inwardly beneath the lower edges of

3

the article as shown in Fig. 6, taking up the slack in the wrapper and drawing additional material from the side edge portions upwardly between the presser members 10 and the side walls. The wrapper is thus tightened around the article under a tension controlled by the pressure exerted by the presser members, the pressure being controlled by the screw and slot adjustment 12-13 and the resilience of members 10. With the parts in the position of Fig. 6 the elevator is lowered leaving the partially wrapped article supported by the fingers 16, after which a bottom folder indicated at 22 is advanced to lay the adjacent extension of the wrapper beneath the article, and a pusher 23 transfers the article to the table 14 to complete the encirclement of the article in a known manner.

The fingers 16 may take any suitable form and be actuated by any suitable means. As shown, each shaft 19 (Figs. 1, 2 and 3) is provided at one end with an arm 25 fixed thereto and connected by an adjustable link 26 to arm 27 fixed to a shaft 28. Shaft 28 carries an arm 29 fixed thereto and connected by a link 30 to one end of a cam lever 31 pivoted at 32 and carrying a cam roll 33 which is held in engagement with an edge cam 34 by a spring 35. Cam 34 is fixed on a shaft 36 which may be one of the power shafts of the wrapping machine, driven by an electric motor or other source of power.

In Fig. 7 a modified form of mounting for the presser members is shown. In the latter figure each presser member 40, which is identical with the members 10 previously described is carried at one end of an arm 41, the other end of which is pivoted at 42 to the elevator 1. Arm 41 is provided intermediate its ends with an opening 43 in which a pin 44, fixed to the elevator, engages to form a lost motion connection. As the elevator, article and wrapper moves upwardly between the wall members, the arm 41 swings to the lowest position permitted by the engagement of pin 44 in the opening 43, as shown in full lines in Fig. 7, the presser members 40 engaging, and exerting a predetermined pressure on, the trailing sides of the wrapper to prevent displacement of the latter as the article and wrapper moved upwardly, as previously described. This condition continues until the elevator reaches its uppermost position. When fingers 16 move inwardly and carry the wrapper beneath the edge portions of the article, as shown in dotted lines in Fig. 7 the wrapper draws the presser members upwardly to the dotted line position of Fig. 7, the pressure exerted by the presser members increasing as the arms 41 swing upwardly and reaches a maximum as the arms reach a straight line position, thus providing increased tension for tightening the wrapper. As the elevator returns to its lower position the arms 41 are held in straight line position by the pins 44, maintaining the maximum pressure.

By the present invention the wrapper is held in position as the article moves upwardly to drape the wrapper over the article without exerting substantial pressure on the upper side edges of the article, the presser members sliding the wrapper upwardly along the wall members 5 with at least sufficient pressure to hold the wrapper in place. The initial inward movement of the fingers 16 takes up the slack and brings the wrapper against or closely adjacent the sides of the article, the further movement of the fingers drawing the extending side portions of the wrapper upwardly and around the article under a predetermined

4

tension suitable to the article being wrapped. While a relatively light pressure of members 10 is adequate to maintain the wrapper in place and move it upwardly a greater pressure serves equally well for that function of the presser members. The actual pressure employed will be that needed to secure the necessary tension on the wrapper as the fingers 16 are moved in to effect the desired degree of tightness of the wrapper around the article.

In Fig. 8 is shown a further modification for controlling the tightness or looseness of the wrapper. As there shown, the presser member 50, which may be identical with members 10 and 40, are carried by respective slides 51 mounted in ways 52 formed in the elevator 1. It will be understood that a pair of slides are provided at each end of the elevator, only the pair at the near end of the elevator being shown. The opposed slides are connected together by toggle links 53. The members of each pair of slides are normally drawn toward each other by a spring 54 which connects the knee of their toggle to the elevator. The knee of each toggle is connected by a link 55 to an arm 56 which is connected to a rock shaft 57 carrying a rocker arm 58. Rock shaft 56 is journaled in the elevator and arm 58 carries a cam roll 59 which engages the surface of a lever 60, pivoted to the frame of the machine at 61, as the elevator is reciprocated. Cam lever 60 is held by a spring 62 against a cam 63 fixed on a shaft 64 which is driven in timed relation to the movement of the elevator in any suitable manner. The cam 63 is so contoured as to move the presser members into or from pressing engagement with the wrapper through the linkage above described. Thus the presser members may be moved away from the wrapper as the latter is engaged by the fingers 16 to partially or completely relieve the wrapper from the tension imparting pressure of the presser members. Similarly the contour of the cam controls the degree of pressure exerted by the members 50 during the upward movement of the elevator. By the arrangement described complete control of the tension on the wrapper is provided at all positions of the elevator and consequent control of the tightness or looseness of the wrap is afforded.

What is claimed is:

1. In a wrapping machine having means for advancing an article, means for feeding a wrapper across the path of advance of the article to be engaged by the article and advanced therewith, and means for draping the wrapper over the top and sides of the article as the latter is advanced by the advancing means; wall members positioned at the sides of the path of advance of the article, and means movable with the said advancing means to press the side portions of the wrapper into sliding engagement with said wall members to advance the wrapper independently of the article and prevent movement of the wrapper relative to the article as the latter is advanced by the article advancing means.

2. In a wrapping machine having means for advancing an article, means for feeding a wrapper across the path of advance of the article to be engaged by the article and advanced therewith, and means for draping the wrapper over the top and sides of the article as the latter is advanced by the advancing means; wall members positioned at the sides of the path of advance of the article, and means adjustably carried by the advancing means to press the side

5

portions of the wrapper into sliding engagement with said wall members to impose an advancing force on the wrapper independently of the article and prevent substantial movement of the wrapper relative to the article as the latter is advanced by the article advancing means.

3. In a wrapping machine having means for advancing an article, means for feeding a wrapper across the path of advance of the article to be engaged by the article and advanced therewith, and means for draping the wrapper over the top and sides of the article as the latter is advanced by the advancing means; wall members positioned at the sides of the path of advance of the article, and means extending outwardly from the sides of the advancing means rearwardly of the article engaging face thereof to press the side portions of the wrapper into sliding engagement with said wall members to prevent substantial movement of the wrapper relative to the article as the latter is advanced by the advancing means.

4. In a wrapping machine having means for advancing an article, means for feeding a wrapper across the path of advance of the article to be engaged by the article and advanced therewith, and means for draping the wrapper over the top and sides of the article as the latter is advanced by the advancing means; wall members positioned at the sides of the path of advance of the article, means movable with said advancing means to press the side portions of the wrapper into sliding engagement with said wall members to prevent substantial movement of the wrapper relative to the article as the latter is advanced by the advancing means, and folding members engaging the said side portions of the wrapper between the article and said pressing means to draw the side portions of the wrapper from between said walls and presser means and part way beneath the article under tension predetermined by the pressure exerted by said pressing means.

5. In a wrapping machine having means for advancing an article, means for feeding a wrapper across the path of advance of the article to be engaged by the article and advanced therewith, and means for draping the wrapper over the top and sides of the article as the latter is advanced by the advancing means; wall members positioned at the sides of the path of advance of the article, means movable with said advancing means to press the side portions of the wrapper into sliding engagement with said wall members to prevent substantial movement of the wrapper relative to the article as the latter is advanced by the advancing means, and folding members engaging the said side portions of the wrapper between the article and said pressing means to draw the side portions of the wrapper from between said walls and presser means and part way beneath the article under tension predetermined by the pressure exerted by said pressing means, said pressing means being connected by a toggle and means to make the toggle to increase the pressure exerted by the pressing means as the wrapper is drawn beneath the article by the folding members.

6. In a wrapping machine of the type having a vertically reciprocable elevator for receiving an article to be wrapped together with means for feeding a wrapper across the path of movement of the article on the elevator and means for draping the wrapper over the article as the latter is moved upwardly by the elevator; fixed wall mem-

6

bers positioned above the draping means, said walls being spaced outwardly from the path of movement of the elevator to provide a gap between the wall members and the article on the elevator, and means movable with the elevator to press the downwardly extending side portions of the wrapper into sliding engagement with said walls as the elevator moves upwardly.

7. In a wrapping machine of the type having a vertically reciprocable elevator for receiving an article to be wrapped together with means for feeding a wrapper across the path of movement of the article on the elevator and means for draping the wrapper over the article as the latter is moved upwardly by the elevator; fixed wall members spaced outwardly from the path of movement of the elevator to provide a gap between the said wall members and the article on the elevator, the lower edges of said wall members providing the means for draping the wrapper over the article as the latter is moved upwardly by the elevator, and means extending outwardly from the sides of the elevator below the article supporting surface of the elevator and bridging said gaps to press the downwardly extending side portions of the wrapper into sliding engagement with said walls as the elevator moves upwardly.

8. In a wrapping machine having a vertically reciprocable elevator for receiving an article to be wrapped and means for feeding a wrapper across the path of movement of the article on the elevator; fixed wall members positioned above the path of the wrapper and at opposite sides of the path of the elevator, the wall members including means for draping the side portions of the wrapper downwardly along the sides of the article as the latter is moved upwardly by the elevator between said wall members, said wall members being spaced outwardly from the path of movement of the elevator to provide a gap between the wall members and the article on the elevator, and means carried by the elevator below the article supporting surface thereof and bridging said gaps to resiliently press the trailing side portions of the wrapper against the wall members to slide the wrapper in draped form upwardly over the surfaces of the walls, free of tension, as the elevator moves upwardly.

9. In a wrapping machine having a vertically reciprocable elevator for receiving an article to be wrapped and means for feeding a wrapper across the path of movement of the article on the elevator; fixed wall members positioned above the path of the wrapper and at opposite sides of the path of the elevator, the wall members including means for draping the side portions of the wrapper downwardly along the sides of the article as the latter is moved upwardly by the elevator between said wall members, said wall members being spaced outwardly from the path of movement of the elevator to provide a gap between the wall members and the article on the elevator, and means carried by the elevator below the article supporting surface thereof and bridging said gaps to resiliently press the trailing side portions of the wrapper against the wall members to slide the wrapper in draped form upwardly over the surfaces of the walls, free of tension, as the elevator moves upwardly, said last-named means being movable toward and from the the wall members to vary the pressure imposed by said means on the wrapper.

10. In a wrapping machine having a vertically reciprocable elevator for receiving an article to

7

be wrapped and means for feeding a wrapper across the path of movement of the article on the elevator; fixed wall members positioned above the path of the wrapper and at opposite sides of the path of the elevator, the wall members including means for draping the side portions of the wrapper downwardly along the sides of the article as the latter is moved upwardly by the elevator between said wall members, said wall members being spaced outwardly from the path of movement of the elevator to provide a gap between the wall members and the article on the elevator, presser means movably mounted on the elevator below the article supporting surface thereof and means to move said presser members toward said wall members to press the trailing side portions of the wrapper against the wall members to slide the wrapper in draped form upwardly over the surfaces of the walls free of tension as the elevator moves upwardly including means to vary the pressure applied by said presser members.

11. In a wrapping machine having a vertically reciprocable elevator for receiving an article to be wrapped and means for feeding a wrapper across the path of the elevator; fixed wall members positioned above the path of the wrapper and at opposite sides of the path of the elevator, the wall members including folding edges for draping the side portions of the wrapper downwardly along the sides of the article as the latter is moved upwardly past said folders by the elevator, said wall members and folding edges being spaced outwardly from the vertical planes defining the path of movement of the side faces of the article to provide a gap between the faces of the wall members and the adjacent faces of the article, resilient presser members extending outwardly from the sides of the elevator below the article supporting surface thereof and bridging said gaps to engage and press the trailing portions of the wrapper against the wall members as the elevator moves to its uppermost position, folding fingers positioned outwardly of and above the wall members, and means to move said members inwardly between said presser members and the underside of the article, to take up the slack in the wrapper above said presser members and to draw additional wrapping material from between the presser members and the wall members under predetermined tension imposed by the pressure of the presser members against the wall members.

12. In a wrapping machine having means for advancing an article, means for feeding a wrap-

8

per across the path of advance of the article to be engaged by the article and advanced therewith, and means for draping the wrapper over the top and sides of the article with side portions of the wrapper trailing the article as the latter is advanced by the advancing means; means acting on the trailing portions of the wrapper only and imparting an advancing force to said trailing portions, independently of the article, to restrain relative movement between the wrapper and article as the latter is advanced by the article advancing means.

13. In a wrapping machine having means for advancing an article, means for feeding a wrapper across the path of advance of the article to be engaged by the article and advanced therewith, and means for draping the wrapper over the top and sides of the article with side portions of the wrapper trailing the article as the latter is advanced by the advancing means; means engaging the trailing portions of the wrapper only and imparting an advancing force to said trailing portions independently of the article to restrain relative movement between the wrapper and article as the latter is advanced by the article advancing means, and folding members engaging the side portions of the wrapper between the article and said wrapper engaging means to fold said side portions in part at least against the bottom of the article against the restraint imposed by said wrapper engaging means.

14. In a wrapping machine having means for advancing an article, means for feeding a wrapper across the path of advance of the article to be engaged by the article and advanced therewith, and means for draping the wrapper over the top and sides of the article with side portions of the wrapper trailing the article as the latter is advanced by the article advancing means; means engaging the trailing portion of the wrapper only and imposing a predetermined advancing force to said trailing portions, independently of the article, to control the relative movement of the wrapper and article as the two are advanced by the article advancing means.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,556,187	Waterstone	Oct. 6, 1925
1,814,166	Kux	July 14, 1931
2,208,776	Sandberg	July 23, 1940