

June 17, 1952

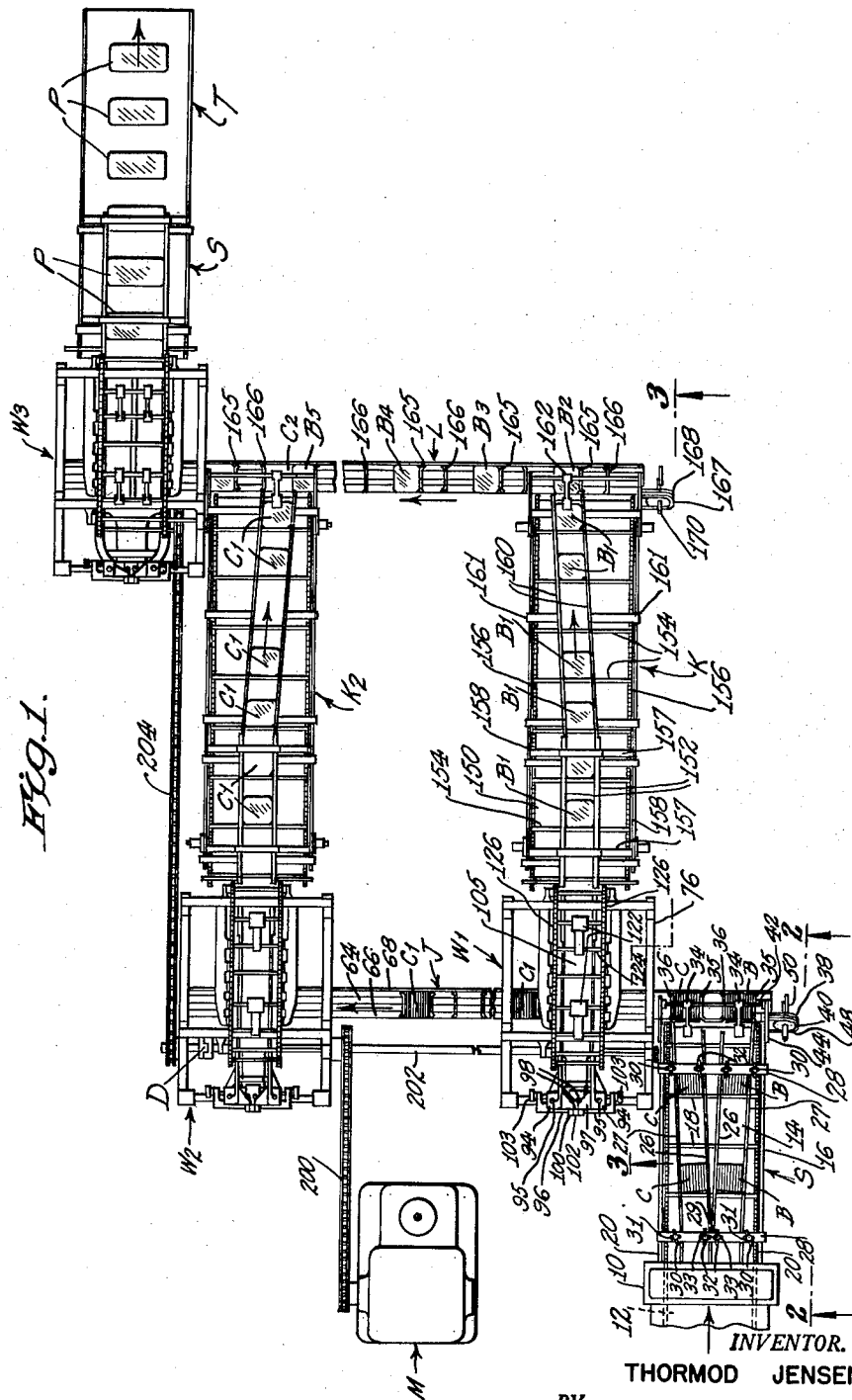
T. JENSEN

2,600,878

LOAF WRAPPING MACHINE

Filed June 9, 1945

3 Sheets-Sheet 1



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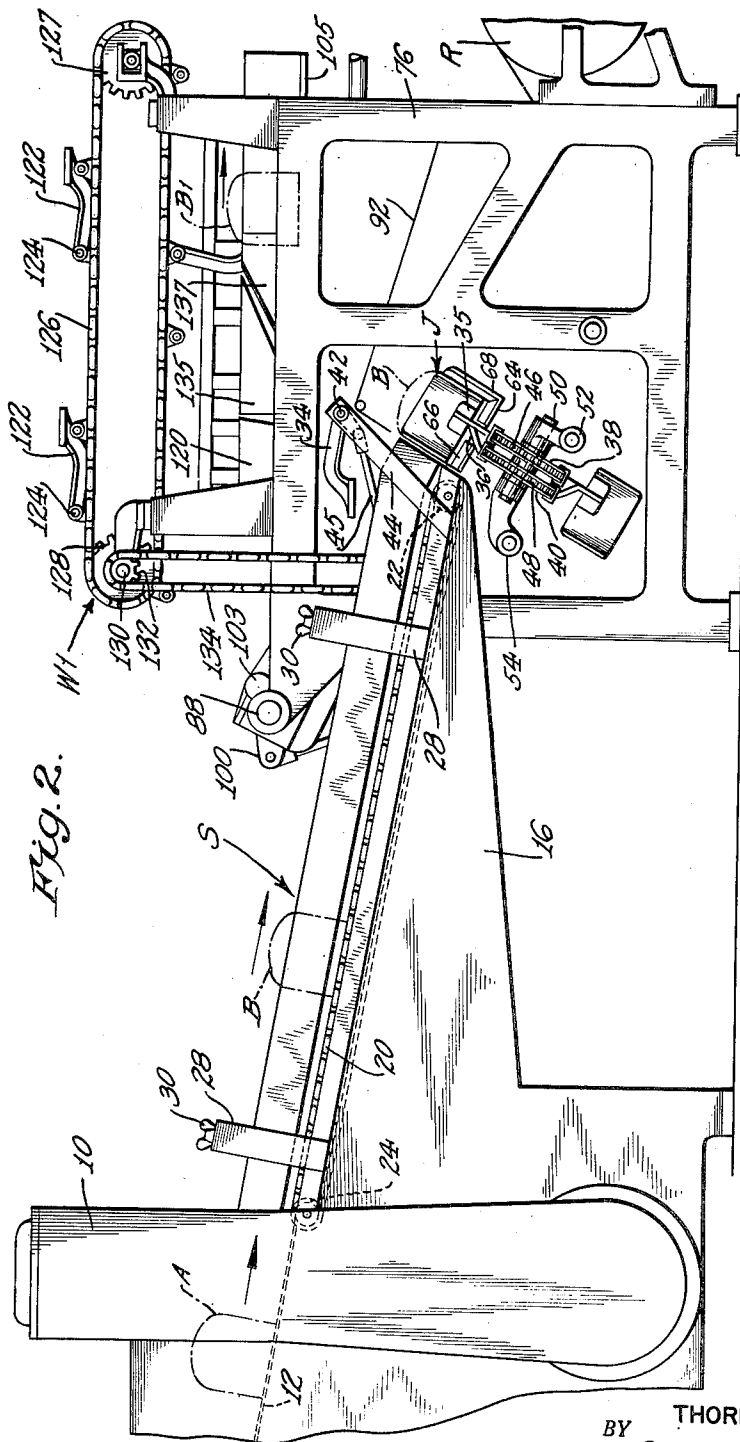
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LOAF WRAPPING MACHINE

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3 Sheets-Sheet 2



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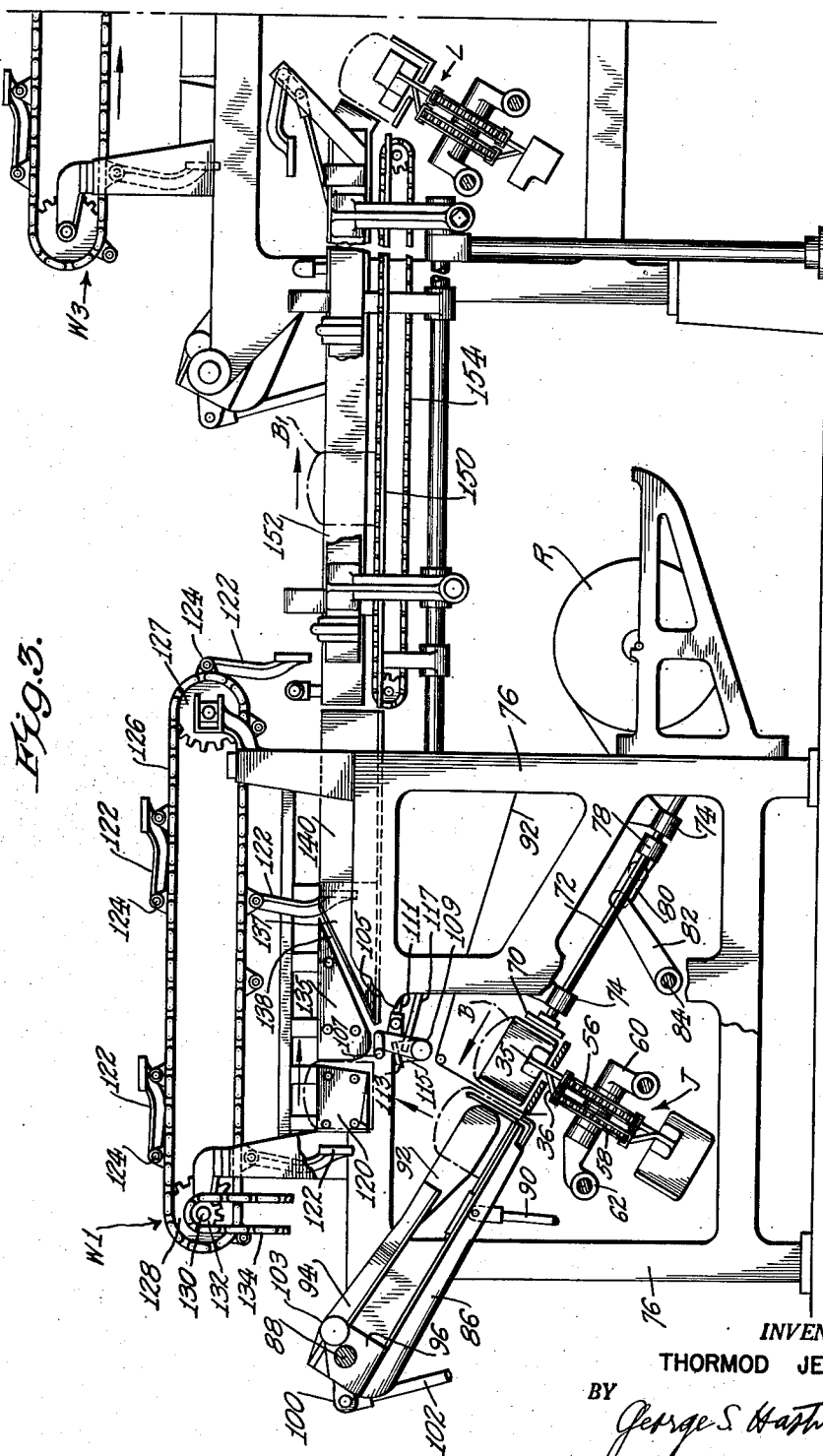
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UNITED STATES PATENT OFFICE

2,600,878

LOAF WRAPPING MACHINE

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5 Claims. (Cl. 53—67)

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This invention relates to wrapping machines, more particularly to machines for wrapping sliced bread loaves in a so-called duplex package which is formed by fully wrapping separate half loaves, then assembling them in end-to-end relationship and applying an outer wrapper.

The main object of the invention is to provide an apparatus for forming multiple unit packages which is capable of operation at a high rate of speed. To this end there is provided an endless conveyor having pairs of flights arranged to provide pockets which are each adapted to receive a half-loaf from a loaf divider operating to subdivide the sliced loaves delivered from a slicing machine. The conveyor then advances one of the half loaves in said pockets to the transfer station of a half-loaf wrapping machine and subsequently advances the other half loaf to the transfer station of a second half-loaf wrapping machine while pairs of separated half-loaves are delivered to pairs of conveyor pockets successively advanced into position to receive a pair of half-loaves from the loaf divider. Thus a pair of separated half-loaves will be delivered to the conveyor simultaneously with the delivery of a pair of half-loaves to the half-loaf wrapping machines, to permit the wrapping of the half-loaves to be carried out at a high rate of speed.

Another object of the invention is to provide an apparatus suitable for wrapping duplex packages and employing conventional wrapping machines, such as a machine of the type shown in the patent to H. Y. Armstrong, No. 1,626,379. To this end the half-loaves are transferred from the conveyor to a pair of conventional wrapping machines which separately wrap the sliced half-loaves. The wrapped half-loaves issuing from the wrapping machines are delivered to conveyors which assemble them in end-to-end relationship and transfer them to a third conventional wrapping machine wherein they are wrapped in a common wrapper to form a duplex package. With my apparatus none of the wrapping machines employed need to be of duplex construction. Therefore conventional wrapping machines may be used in my apparatus without having to be rebuilt. Moreover the conveyors may be of conventional construction.

There is now available apparatus including a duplex type of wrapping machine and a conventional wrapping machine for the formation of multiple unit packages. However the construction of the duplex wrapping machine requires two sets of pushers, tuckers, folders, sealers and coolers in which the separated halves of a sliced

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bread loaf are separately wrapped. The wrapped loaf-halves are then delivered to the conventional wrapping machine wherein the wrapped loaf-halves are wrapped in a common wrapper after being assembled in end-to-end relationship. Due to the required duplexing of the pushers, tuckers, folders, etc., in the duplex machine of said apparatus a very limited range of adjustment is obtained. Ordinarily the permissible range of adjustment of the apparatus referred to requires that the sliced loaf be not shorter than 11 inches and not longer than 12 inches.

Another object of the invention is to provide for handling of various lengths of loaves within the range of adjustment of the machines. With the type of wrapping machine selected to exemplify the invention, the range of adjustment is 7" to 16", and in my apparatus this range of adjustment is permissible. Thus half-loaves between 3½" and 8" in length may be wrapped and then finally wrapped to form multiple unit packages.

With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter described and then set forth in the appended claims.

In the accompanying drawings which form a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a plan view of two standard wrapping machines arranged to receive half-loaves from a slicer unit and separately wrap the half-loaves and deliver them to a third standard wrapping machine wherein the assembled half-loaves are wrapped in a common wrapper;

Fig. 2 is a side elevation on an enlarged scale taken from the line 2—2 of Fig. 1 of one of the machines for wrapping half-loaves and the slicer unit in which the loaves are sliced and separated into half-loaves; and

Fig. 3 is a side elevation on an enlarged scale of the same machine with certain parts broken away taken on the line 3—3 of Fig. 1.

Referring to Figs. 1 and 2 of the drawings, it will be seen that the unsliced bread loaves A are advanced through a slicing machine 10 wherein they are sliced, and the sliced loaves are delivered to a separator unit S wherein they are separated into half loaves B and C. A suitable slicing machine for this purpose is shown in the patent to A. Di Prima, No. 2,253,367, issued August 19, 1941, which is provided with a con-

veyor 12 for advancing the loaves through the slicing machine. The separator unit S has a construction similar to that shown in the Hexter et al. Patent No. 2,332,316, issued October 19, 1943. The sliced loaves emerging from the slicing machine are delivered upon a table 14 of the separator unit S, the table being supported by a frame 16 forming a part of the slicing machine. The sliced loaves are advanced along table 14 by successive bars or flights 18 supported by spaced endless sprocket chains 20 running over sprockets 22 and 24 (Fig. 2) and suitably driven continuously. Two pairs of diverging guides 26 and 27 are supported above the flights 18 from U-shaped bars 28 fastened to frame 16. The inner ends of the two inner guides 26, which may be formed of flexible material, are fastened to a tapered blade 29 which serves to separate the sliced loaves into half loaves B and C while the loaves are advanced along table 14 by flights 18. The outer guides 27 are supported from the bars 28 by wing nuts 30 which pass through elongated slots 31 in the bars 28 and are threaded into lugs on the upper ends of guides 27 in the same manner as shown in Fig. 8 of the above-mentioned Hexter et al. patent. The inner guides 26 are supported by wing nuts 32 passing through elongated slots 33 in the middle sections of bars 28 and threaded into lugs on the upper ends of guides 26. Since the guides 26 are flexible, their outer edges may be swung laterally toward and away from each other upon unloosening the screws 32 supporting their outer ends. The guides 27 may be correspondingly moved in the opposite direction upon unloosening the screws 30 supporting them, to positions wherein they are parallel to the adjusted positions of guides 26. In this manner the guides 26 and 27 may be adjusted to accommodate various lengths of half-loaves.

The separated half loaves B and C advanced by flights 18 are delivered by pusher arms 34 between pairs of opposed flights 35 and 36 of a conveyor J. It should be noted that the flights 35 are secured to links of sprocket chain 38 and the flights 36 are secured to links of sprocket chain 40. The arms 34 are supported by a shaft 42 mounted in brackets 44 fastened to frame 16. The shaft 42 is oscillated by linkage 45 actuated by mechanism (not shown). The movement of arms 34 is so timed that they help to deliver a pair of half loaves B and C simultaneously between two pairs of flights 35, 36, while they dwell in position to receive the half loaves. The sprocket chains 38 and 40 are driven by sprockets 46 and 48 which are mounted upon a shaft 50 (Figs. 1 and 2) mounted in brackets 52 and 54 (Fig. 2) which may be suitably supported. Sprocket chains 38 and 40 also run over idler sprockets 56 and 58 (Fig. 3) which are mounted on a shaft (not shown) supported by brackets 60 and 62. Since the construction and operation of arms 34 and the sprocket chains 38 and 40 is more fully disclosed in the above mentioned Hexter et al. Patent No. 2,332,316, further description thereof is deemed unnecessary except to state that the sprockets 46 and 48 are rotatably adjustable relative to each other to vary the spacing between each pair of flights 35 and 36.

When the spacing of the pairs of flights 35 and 36 is adjusted to accommodate different lengths of loaves, the spacing of the guides 26 and 27 should be correspondingly adjusted. For this purpose the nuts 30 and 33 on bars 28 are unloosened and the guides 26 and 27 are moved

toward or away from each other sufficiently to admit the desired length of half loaves B and C.

The first wrapping machine

The sprocket chains 38 and 40 are intermittently driven by suitable mechanism of conventional construction (not shown) to advance the half loaf B inserted between a pair of flights 35 and 36 to a transfer station in the first wrapping machine W1. The half loaves B and C in the two pairs of flights 35, 36 are thus advanced along a runway of standard construction consisting of spaced laterally inclined strips 64 and 66 and a side wall 68 arranged at right angles to the outer edge of strip 64. The flights 35 and 36 project upwardly through the space between the inner edges of plates 64 and 66 into positions wherein they engage and advance the half loaves along strips 64 and 66.

The side wall 68 is interrupted at the transfer station in the first wrapping machine W1 to which the half loaf B is advanced by flights 35 and 36, to permit the half loaf at said transfer station to be ejected from the pair of flights 35 and 36 into the wrapping machine by a pusher plate 70 carried by a reciprocable rod 72. It will be noted that while the half loaf B is at this transfer station the other half loaf in the adjoining pair of flights 35, 36 occupies a position C1 (Fig. 1) beyond the transfer station for half loaf B. The rod 72 is slidably mounted in brackets 74 supported from the side frames 76 of the wrapping machine W, the front side frame 76 being broken away in Fig. 3 to expose the lifter table 86. Rod 72 is provided with a cross-head 78 on which is pivotally mounted a link 80 connected by an arm 82 to a shaft 84 which is supported in frames 76 and oscillated by a cam (not shown). Thus the pusher plate 70 is advanced between the pair of flights 35 and 36 at the transfer station to deliver the half loaf B to the lifter table 86 which has a hub pivotally mounted on a shaft 88 supported in frames 76. The lifter table 86 is swung upwardly from the inclined position shown in Fig. 3 at which it receives the half loaf B to a horizontal position, by a link 90 operated by a cam (not shown). The web of wrapping material 92 is drawn off a roll R of wrapping material and guided through a web feed mechanism (not shown) to a position wherein the leading end of the wrapping material is positioned between the loaf half B at the transfer station and the lifter table 86. The web-feed mechanism may be of any suitable construction such as shown in Gwinn Patent No. 1,626,409, issued April 26, 1927.

As the half loaf B is delivered to the lifter table 86 it presses the wrapping material 92 against a tension plate of conventional construction which is slidably mounted on the lifter table, and thus the half loaf B is partially enfolded in the leading end of the web of wrapping material. During this transfer operation the wrapping material is tucked over the ends of the half loaf B by a pair of tuckers 92 which are fastened to a pair of arms 94. The arms 94 are secured by bolts 95 on a pair of brackets 96 slidably mounted on shaft 88 at either side of the hub of lifter table 86, the bolts 95 passing through suitable slots in brackets 96. The brackets 96 are provided with cams 97 which are held by springs (not shown) against rollers 98 carried by a block 100 loosely mounted on shaft 88 between the forked ends of the hub of table 86. A link 102 pivotally connected to block 100 is actuated to

rock block 100 on shaft 88 and thereby spread the tuckers apart while the loaf half B is delivered to the lifter table. Reference may be had to Fig. 7 of the Werden Patent No. 2,367,160 for further description of the manner in which the brackets 96 and block 100 are mounted on the shaft 88. Each of the brackets 96 is provided with an adjusting screw 103 which is threaded into the adjoining arm 94. Upon unloosening the bolts 95 the spacing of the arms 94 may be regulated by turning screws 103 and thus the spacing of the tuckers 92 may be varied to accommodate different lengths of loaves. When the half loaf B has been delivered to the lifter table the block 100 rocks back to its initial position and the tuckers 92 tuck the wrapping material against the ends of the half loaf B. Since the construction just described is similar to that disclosed in the wrapping machine designated "24" in the Fig. 6 of the above mentioned Hexter et al. Patent 2,335,750, issued November 30, 1943, further description thereof is deemed unnecessary.

The lifter table 86 is then raised to its horizontal position at which the partially wrapped half loaf B is advanced upon a sealer table 105 in a manner which will be hereinafter described. During the ascent of the lifter table, additional wrapping material is drawn off the roll R and the web of wrapping material is draped over the rear face of the half loaf B by a cam-actuated lap roller (not shown). A clamp roller 107 mounted in a pivoted frame 109 then presses the web of wrapping material against a roller (not shown) mounted on the free end of the lifter table, the frame 109 being operated by a connecting link 111 from suitable mechanism such as shown in the Jensen Patent 2,118,513 issued May 24, 1938. Prior to the advance of the partially wrapped half loaf B upon the sealing table 105 the wrapping material is severed by a knife 113 mounted on a pivoted frame 115 actuated through a link 117 from a suitable cam (not shown).

During the ascent of the lifter table the ends of partially wrapped half loaf B pass between the top folders 120 which engage the portion of the wrapping material extending above the top edges of half loaf B and fold it downwardly over the tuckers 92. The half loaf B is now in position to be advanced on to the sealing table 105 by one of a series of pushers 122 of well known construction, carried by rods 124 connecting parallel endless sprocket chains 126 which run over sprockets 127 and 128 supported by suitable brackets secured to frames 76, the sprockets 128 being mounted on a shaft 130 provided with a sprocket 132 driven by a sprocket chain 134. When the partially wrapped half loaf B is engaged by pusher 122 it is advanced between plough folders 135 which fold inwardly the wrapper flaps extending from the leading face of half loaf B. The partially wrapped half loaf B now passes between the bottom folders 137, and the wrapper flaps at the bottom of the half loaf enter the slots 138 between the inclined edges of folders 135 and 137 and are folded upwardly against the ends of half-loaf B. The completely wrapped half loaf B1 is further advanced between heated end sealers 140 which cause the overlapped end flaps of the wrapper to adhere to each other. Since the structure for supporting the folders 120, 135 and 138, and the sealers 140 is fully described in the above-mentioned Hexter et al. patent, further description thereof is deemed unnecessary.

The wrapped and sealed half-loaf B1 is delivered by the pusher 122 into a conveyor K which is similar in construction to the conveyor 20 of the above-mentioned Hexter et al. patent except for certain differences which will be hereinafter described. The conveyor K hereof includes a seal cooling unit consisting of a table 150 upon which the wrapped half-loaf B is delivered by the pusher 122. The seal cooling unit includes a pair of parallel refrigerated members 152 extending along the table 150 and spaced sufficiently to engage the heat sealed ends of the wrapped half-loaf B while the same is advanced by conveyor flights 154 carried by spaced driven sprocket chains 156. The construction of the seal cooling unit is the same as that shown in the above-mentioned Hexter et al. patent except that the members 152 hereof are spaced closer together than the corresponding outer members 172 and 174 of the Hexter et al. patent and the inner members 172 and 174 of the Hexter et al. patent are omitted. The members 152 hereof are supported by brackets 157 fastened to adjustable rails 158 corresponding to the rails 182 supporting the outer members 172 and 174 of said Hexter et al. patent wherefore my members 152 may be adjusted toward and away from each other to accommodate different lengths of half-loaves B. From the seal cooling unit the wrapped half-loaf B1 is advanced by the conveyor flights 154 between guides 160 which are supported in the same manner as the guides 196 of the Hexter et al. patent. However the guides 196 of the Hexter et al. patent are arranged in converging relationship, whereas my guides 160 are parallel and are inclined relatively to members 152 to guide the wrapped half-loaves B1 along table 150 to a predetermined position wherein they are engaged by an oscillating arm 162 similar to arm 32 and thus transferred to a conveyor L. However, my guides are supported by brackets 161 fastened to the adjustable rails 158. Therefore the spacing of my guides 160 will be varied to admit different lengths of wrapped half-loaves B1 when the members 152 are adjusted.

Like the conveyor J the conveyor L is provided with a runway similar to the runway of the conveyor J and including a pair of laterally inclined spaced strips forming the bottom of the runway and a side wall secured to the outer edge of one of the strips. The conveyor flights 165 and 166 of conveyor L are similar in construction to the flights 35 and 36 of conveyor J and similarly project upwardly through the space between the strips forming the bottom of the runway. The flights 165 and 166 are supported on sprocket chains 167 and 168 respectively, which are driven by separate sprockets on a shaft 170, and these sprockets are rotatably adjustable relative to each other on shaft 170 to vary the spacing of flights 165 and 166 to accommodate pairs of wrapped half-loaves B1 and C1 of various lengths. Since the construction of conveyor L is the same as that of the conveyor J except that the flights 165 and 166 are sufficiently spaced to admit a pair of wrapped half-loaves B1 and C1, further description of its structure is deemed unnecessary.

The second wrapping machine

It will be noted that the half-loaf which occupies the position C1 on the conveyor J (Fig. 1) while the half-loaf B at the transfer station is delivered to the wrapping machine W1, will eventually be advanced to a transfer position in the second wrapping machine W2. The spacing

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of the flights 35 and 36 and the length of the sprocket chains 38 and 40 is predetermined so that while a half-loaf B is at the transfer station in the wrapping machine W1 a half-loaf C will be at the transfer station in the second wrapping machine W2. The construction of the wrapping machine W2 is similar to the wrapping machine W1, and further description thereof is deemed unnecessary except to state that when a wrapped half-loaf B1 is delivered to the conveyor K a wrapped half-loaf C1 will be delivered to the conveyor K2 which has a construction similar to conveyor K including a similar spacing of the conveyor flights. The conveyors K and K2 are timed to simultaneously advance wrapped half-loaves B1 and C1 to the conveyor L. Thus a wrapped half-loaf C1 will be delivered to the conveyor L in a position C2 between a flight 166 and a wrapped half-loaf B1 previously delivered in front of the opposed flight 165. The spacing of the flights 165 and 166 and the length of the sprocket chains on which they are supported are so predetermined that when a wrapped half-loaf B1 is delivered to position B2 in front of one of flights 165 it will be advanced successively to positions B3 and B4 and finally will reach a position B5 where it dwells while a wrapped half-loaf is being delivered into the position C2 in the space between the flight 166 and the wrapped half-loaf B5. With my construction of the conveyor L this relationship will be maintained although flights 165 are adjusted toward or away from the flights 166, because the flights 165 will be aligned with the outer guide 160 and the flights 166 will be aligned with the corresponding outer guide of conveyor K2.

The third wrapping machine

The conveyor L intermittently advances the wrapped half-loaves B1 and C1 assembled in end-to-end relationship between the flights 165 and 166 thereof to a predetermined transfer station in a third wrapping machine W3. The wrapping machine W3 may have a construction similar to that of the wrapping machine designated "24" in the above-mentioned Hexter et al. patent and shown in Fig. 6 thereof, wherefore description of wrapping machine W3 hereof is deemed unnecessary. However it will be noted that pairs of wrapped half-loaves B1 and C1 are wrapped in a common wrapper to form packages P whose ends are heat sealed, and the sealed packages P are delivered to a seal cooling unit S which advances the packages P upon a delivery table T. The construction of the seal cooling unit is similar to the seal cooling unit of the conveyor K1, and therefore further description of unit S is believed unnecessary.

Each of the wrapping machines W1, W2 and W3 is driven from a motor M which is equipped with a variable speed drive from which is driven a sprocket chain 200. A shaft 202 driven by the sprocket chain 200 is suitably connected to the wrapping machines W1 and W2 for driving the same. A sprocket chain 204 driven from shaft 202 is connected to the machine W3 to drive the same.

The operation of the entire apparatus will now be briefly described. The sliced half-loaves issuing from the slicer 10 are advanced by the bars 18 supported on the sprocket chains 20 past the tapered blade 29 and thereby subdivided into half-loaves B and C. The separated half-loaves B and C are advanced along table 14 by bars 18 until they are deposited in the pockets formed

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by the pairs of flights 35, 36 of the conveyor J. It should be noted that when the guides 26 and 27 of the separator unit S are adjusted to accommodate different lengths of half-loaves, and the chains 38 and 40 supporting flights 35 and 36 are correspondingly adjusted to vary the size of the pockets between flights 35 and 36, the outer ends of the guides 26 and 27 will be aligned with the pairs of flights 35 and 36 between which the half-loaves are to be deposited.

The half-loaves B and C delivered between the pairs of flights 35, 36 are then advanced by the flights to a position where the half-loaf B at the transfer station of the wrapping machine W1 will be delivered to the wrapping machine W1 by pusher 71 for wrapping to form a half-loaf package B1. The conveyor J subsequently advances the half loaf C to the transfer station of the wrapping machine W2 into which it is delivered for wrapping to form the half-loaf package C1. In this connection it may be noted that the distance from centers of the pair of half-loaves B and C in the pairs of flights 35, 36 at loaf-receiving position shown in Fig. 1 to the centers of the half-loaves at the transfer stations of the wrapping machines W1 and W2 remains constant regardless of the adjustment of the sprocket chains 38 and 40 to admit different sizes of half-loaves. Therefore for all adjustments of the sprocket chains 38 and 40 to admit different sizes of half-loaves the half-loaves at the transfer stations in wrapping machines W1 and W2 will be at proper positions for delivery thereto after the tuckers and folders thereof have been adjusted to the desired size of half-loaf.

The wrapped half-loaves B1 issuing from the wrapping machine W1 are delivered by the conveyor K into a position B2 in front of one of the flights 165 of the conveyor L. The wrapped half-loaves B1 are advanced by flights 165 from the position B2 to the position B5, and a wrapped half-loaf is delivered by the conveyor K2 into the space between the package at B5 and the adjoining flight 166. The wrapped half-loaves are thus assembled in end-to-end relationship and then advanced to the transfer station of the wrapping machine W3 for wrapping in a common wrapper to produce the "pantry" package. It should also be noted that when the sprocket chains 167 and 168 of conveyor L are adjusted by displacing them in opposite directions to accommodate different sizes of packages, that the distance from the inner end face of the package at position B5 to the center of the transfer station in wrapping machine W3 will always remain constant. Moreover the distance from the inner end face of the package at position B2 on conveyor L to the inner end face of the package at position B5 will remain constant regardless of the adjustment of the flights of conveyor L. Therefore, when the sprocket chains 167 and 168 of conveyor L are adjusted for different sizes of packages, the position of the outer ends of the inner guides 160 of conveyor L and the corresponding guide of conveyor K2 need not be varied, but the outer ends of the outer guide 160 of conveyor K and the corresponding outer guide of conveyor K2 will have to be displaced to align them with the adjusted positions of the flights 165 and 166, respectively, of the pockets in which packages B2 and B5 are located. Accordingly, since the members 152 of conveyor K and the corresponding members of conveyor K2 are adjusted equally in opposite directions to admit different sizes of packages, the outer guide 160 and the

corresponding outer guide of conveyor K2 are swung outwardly to align their outer ends with the adjusted positions of the flights 165 and 166. The inner ends of the inner guide 160 and the corresponding inner guide of conveyor K2 are swung into alignment with the adjusted positions of the inner member 152 and the corresponding inner member of conveyor K2 while their outer ends are maintained in the same position. Thus the guides 160 of conveyor K2 will be aligned with the adjusted positions of the flights of conveyor L and the members 152 and the corresponding members of conveyor K2, and yet will be in positions parallel to each other.

If it is desired to wrap whole loaves only, the jaw clutch D through which the sprocket chain 204 is driven from the shaft 202 is disengaged. The wrapping machine W3 may be then driven from its own motor drive (not shown) to wrap whole sliced loaves delivered to it by the conveyor L from a slicing machine (not shown). It will be understood that the wrapping machines W1 and W2 are not operated when wrapping machine W3 is used to wrap whole sliced loaves.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

What is claimed is:

1. An apparatus for assembling pairs of wrapped half-loaves in end-to-end relationship for wrapping in a common wrapper, comprising an intermittently moving conveyor adapted to advance assembled pairs of wrapped half-loaves endwise into a wrapping machine; and a pair of conveying devices operating to advance sidewise and deliver pairs of wrapped half-loaves to said conveyor, said conveyor including pairs of opposed flights, each pair of flights being spaced sufficiently to admit a pair of half-loaves therebetween from said conveying devices, said flights being so arranged that when said conveyor dwells one pair of flights will be disposed adjacent one of said conveying devices to receive a wrapped half-loaf therebetween while another pair of flights is disposed adjacent the other of said conveying devices to receive a wrapped half-loaf from the other of said conveying devices whereby pairs of half-loaves will be assembled in end-to-end relationship between pairs of flights on said conveyor for delivery to a wrapping machine.

2. An apparatus for assembling pairs of wrapped half-loaves in end-to-end relationship for wrapping in a common wrapper, comprising an intermittently moving conveyor adapted to advance pairs of wrapped half-loaves endwise into said wrapping machine; and a pair of conveying devices operating to deliver pairs of wrapped half-loaves sidewise to said conveyor, said conveying devices each including a pair of guides engaging the ends of the half-loaves conveyed therein, and said conveyor including pairs of opposed flights, each pair of flights being spaced sufficiently to admit a pair of half-loaves therebetween from said conveying devices and adjustable toward and away from each other by equal amounts to admit pairs of half-loaves of different lengths, said flights being so arranged that when said conveyor dwells one pair of flights will be disposed adjacent one of said conveying devices to receive a wrapped half-

loaf therebetween while another pair of flights is disposed adjacent the other of said conveying devices to receive a wrapped half-loaf from the other of said conveying devices whereby pairs of half-loaves will be assembled in end-to-end relationship between pairs of flights on said conveyor for delivery to a wrapping machine, one guide of each pair of said guides being aligned with the center of the space between the pair of flights adjacent thereto when the conveyor dwells, and the other guide of each pair of guides being aligned with one of said adjacent pair of flights and adjustable to maintain this alignment irrespective of adjustment of the flights toward and away from each other.

3. An apparatus for delivering half-loaves to a pair of laterally spaced wrapping machines to be separately wrapped, comprising an intermittently traveling conveyor, a plurality of pairs of flights on said conveyor, means mounting said flights of said pairs of flights spaced sufficiently to admit a half-loaf between each pair of flights, said flights being so arranged that when said conveyor dwells two adjoining pairs of flights will be positioned to receive a pair of half-loaves simultaneously at a predetermined receiving station adjacent a side of one of said machines while another pair of flights between which a half-loaf was inserted at said receiving station dwells at a predetermined transfer station in said one of said machines to permit delivery of a half-loaf therefrom to said one of said wrapping machines, and another pair of flights between which a half-loaf was inserted at said receiving station will be positioned without and adjacent the other of said wrapping machines to be subsequently advanced to a transfer station in said other of said wrapping machines to permit delivery of a half-loaf therefrom to other of said wrapping machines, and means for simultaneously delivering a pair of half-loaves sidewise into the two pairs of flights at the receiving station of said conveyor while a pair of half-loaves is being transferred at said transfer stations from said conveyor to said wrapping machines.

4. An apparatus for delivering half-loaves to a pair of laterally spaced wrapping machines to be separately wrapped, comprising an intermittently traveling conveyor, a plurality of pairs of flights on said conveyor, means mounting said flight of said pairs of flights spaced sufficiently to admit a half-loaf between each pair of flights, said flights being so arranged that when said conveyor dwells two adjoining pairs of flights will be positioned to receive a pair of half-loaves simultaneously at a predetermined receiving station adjacent a side of one of said machines while another pair of flights between which a half-loaf was inserted at said receiving station dwells at a predetermined transfer station in said one of said machines to permit delivery of a half-loaf therefrom to said one of said wrapping machines, and another pair of flights between which a half-loaf was inserted at said receiving station will be positioned adjacent the other of said laterally spaced wrapping machines to be subsequently advanced to a transfer station in said other of said laterally spaced wrapping machines to permit delivery of a half-loaf therefrom to the second wrapping machine; and means for delivering a pair of half-loaves sidewise into two pairs of flights at said receiving station of said conveyor, devices operative substantially simultaneously with said means

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for transferring a pair of half-loaves at said transfer stations from said conveyor to said wrapping machines, supports mounting said flights of each pair of flights for adjustment by equal amounts toward and away from the center of space therebetween to accommodate half-loaves of different lengths, whereby the distances from the centers of the spaces between the two pairs of flights at said receiving station to the centers of said transfer stations will remain constant regardless of the adjustment of said flights toward and away from each other so that the half-loaves at the transfer stations may be delivered to their respective wrapping machines.

5. The combination with conveyors forwarding sidewise individually wrapped half-loaves of sliced bread in separate relatively widely spaced paths, of a wrapping machine arranged to wrap pairs of said individually wrapped half-loaves when assembled end-to-end to form a multiple unit package and having a transfer pusher for pushing loaves to wrapping position, said wrapping machine having an in-feed conveyor extending transversely of the paths of said individually wrapped half-loaves and carrying pairs of opposed flights spaced to receive two half-loaves in end-to-end relation between each pair of opposed flights, laterally spaced delivery stations along said infeed conveyor and mechanism for intermittently moving said conveyor, said mechanism including means for locating each set of flights first in position adjacent one of said stations to receive one of said half-loaves

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delivered by one of said spaced conveyors adjacent one end of the space between pairs of flights, and second to locate each pair of flights carrying a wrapped half-loaf in position adjacent one of said stations to receive another of said half-loaves adjacent the other end of the space from the other of said spaced conveyors between said pair of flights to form an assembly of a pair of half loaves and finally into the range of action of said pusher to transfer the assembly of a pair of half-loaves to wrapping position in said wrapping machine for final wrapping to complete the multiple unit package, and guides at each of said stations for guiding a wrapped half-loaf between said flights, and between a half-loaf and a flight, respectively.

THORMOD JENSEN.

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