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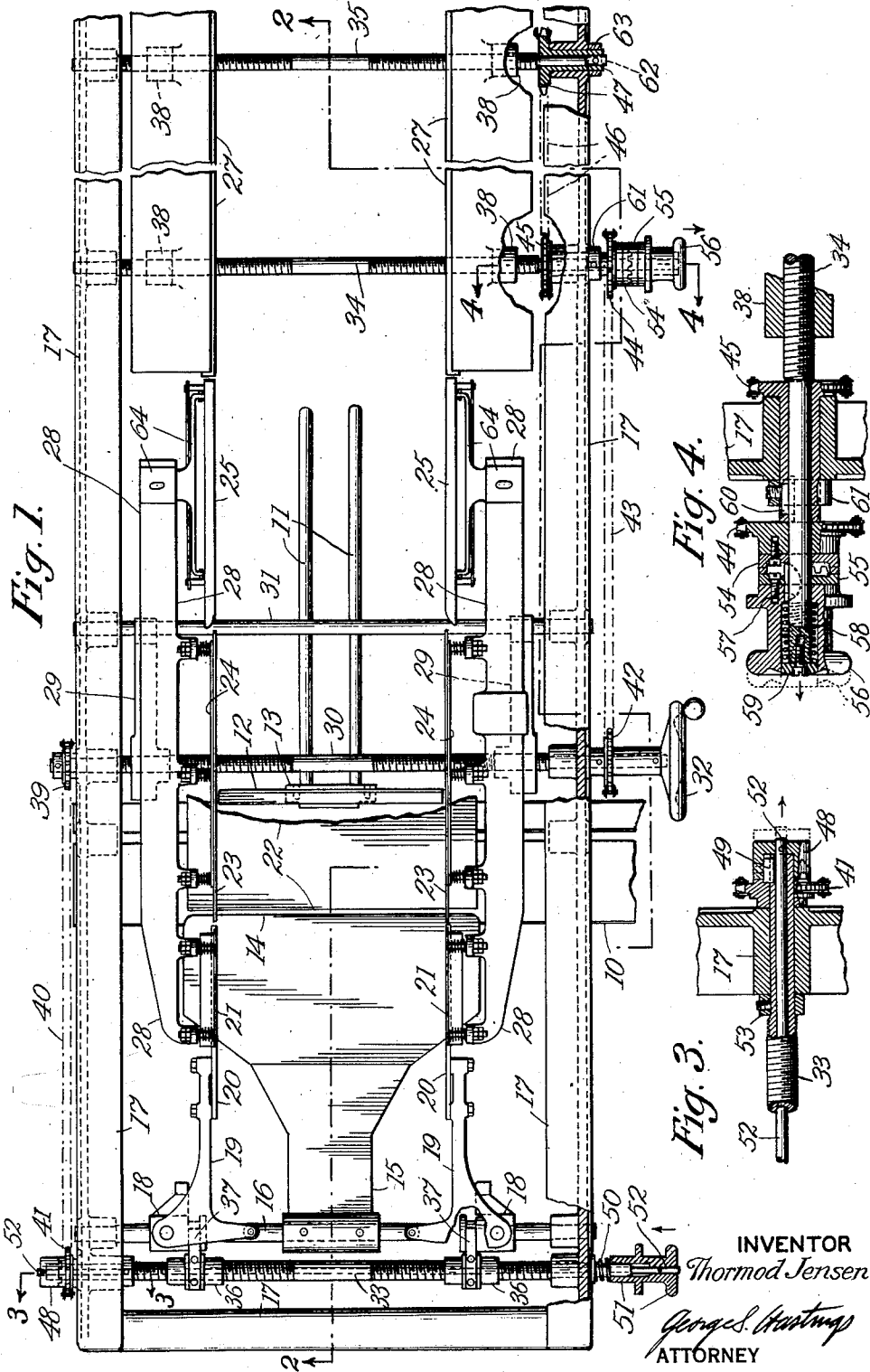
T. JENSEN

2,320,362

BREAD WRAPPING MACHINE

Filed Aug. 19, 1938

2 Sheets-Sheet 1



INVENTOR
Thormod Jensen
George S. Hastings
ATTORNEY

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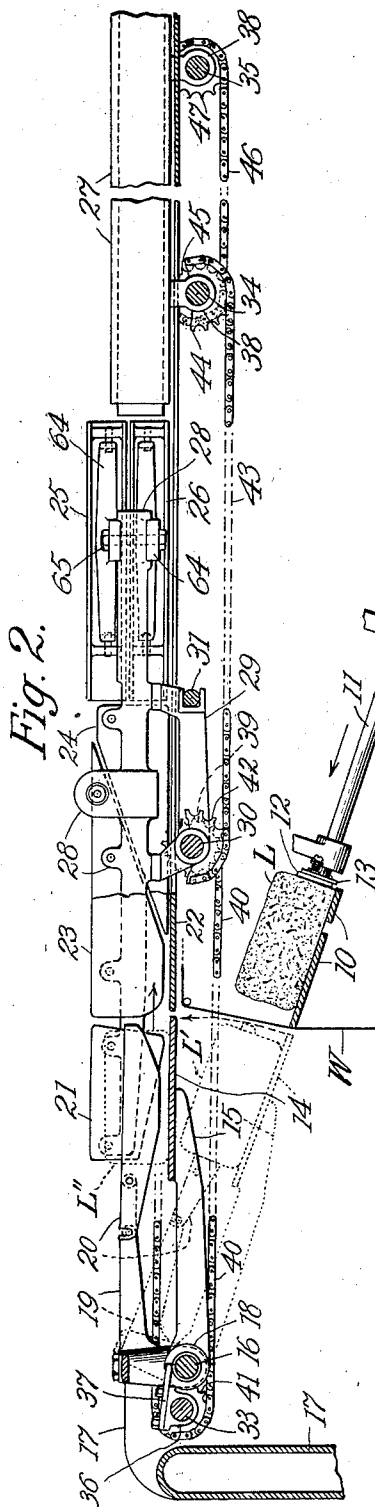
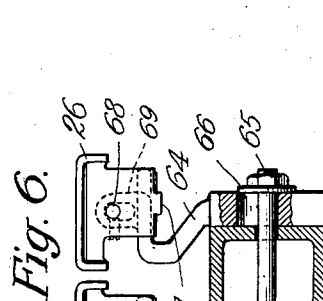
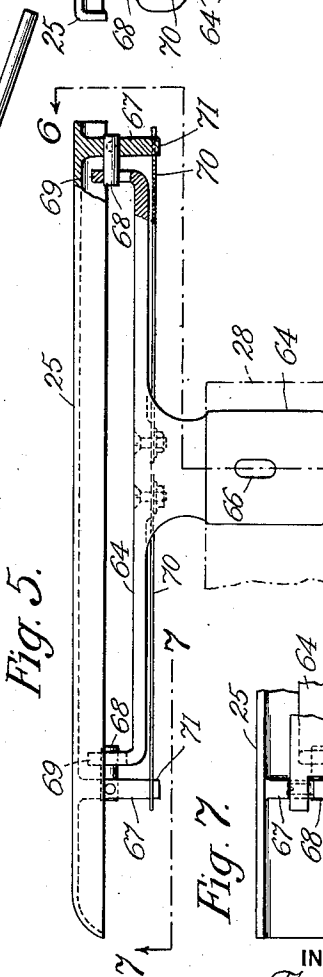
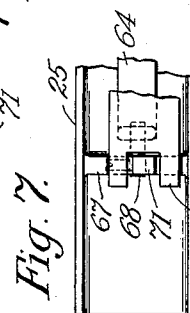
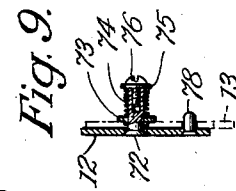
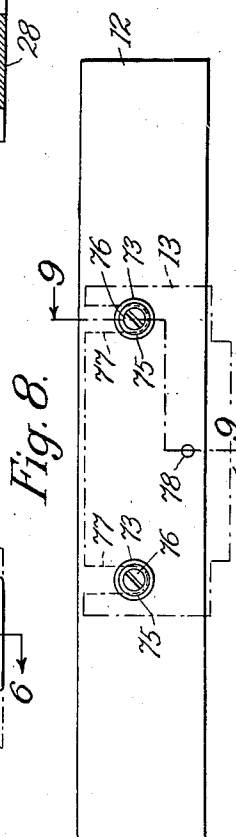
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BREAD WRAPPING MACHINE

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2 Sheets-Sheet 2



INVENTOR
Thormod Jensen
BY *George S. Hastings*
ATTORNEY

UNITED STATES PATENT OFFICE

2,320,362

BREAD WRAPPING MACHINE

Thormod Jensen, Laurelton, N. Y., assignor to
American Machine & Foundry Company, a corporation of New Jersey

Application August 19, 1938, Serial No. 225,697

11 Claims. (Cl. 93—2)

This invention relates to wrapping machines, and more particularly to machines for wrapping bread wherein improved mechanism is provided for manipulating selected parts of the machines while they are in operation.

In certain types of modern bread wrapping machines the loaves of bread enter the wrapping mechanism thereof after having encountered a wrapper which customarily is waxed paper, regenerated cellulose having a thermoplastic coating, or other suitable material hanging in its path while being moved into the wrapping mechanism by means of suitable mechanism such as a pusher. Thence the loaf is presented to a folding mechanism which folds the wrapper against the ends of the loaf, then to a sealing device which fuses the coating on the wrappers to effect a seal, and finally the wrapped loaves may be advanced to the cooling device which congeals the molten wax or other wrapper coating material, and thus completes the wrapping operation.

In order to compensate for any variations in wrapping material or any other conditions which may be present, the tuckers, folders and sealers, and the cooling devices should each be separately adjustable to and from one another in order to handle satisfactorily all of the requirements of the loaves constituting a single day's bake. It has been found that quite frequently different batches of loaves, owing to variations in pre-baking conditions and in oven temperature, may vary in size, so that it is often necessary, if perfect loaf wrapping is to be accomplished, that the operative width of the wrapper folding and sealing sections of the entire machine be changed from time to time. Besides their convenient adjustability, it has been found that the various folding and sealing parts as well as the loaf forwarding mechanism which comes into direct contact with the loaves or wrappers must, for best results, be made quickly and easily demountable in order that these parts may be removed and replaced with the greatest expediency for cleaning whenever necessary.

To achieve the desired adjustability, according to this invention, the tuckers, folders, sealers and coolers may be mounted on the portions of shafts provided with right and left hand threads. These shafts are interconnected by sprockets and chains so that by turning a hand wheel on one of them all can be turned simultaneously, and thus the wrapping width of the pathway along which the loaves travel, can be adjusted by one single operation. The screw shafts controlling the tuckers and those controlling the coolers are pro-

vided with suitable means such as spring closed clutches which are releasable by a push or pull so that each group of elements may, if desired, be adjusted separately without disturbing the position of the others.

The sealers in the improved machine are made in two separate parts, an upper and a lower sealer plate. Each sealer plate is fixed to an adjustably mounted holder in order to be movable relative one to the other to provide the best sealing results for overproofed or "overhanging" loaves. In the present embodiment the sealers are affixed to their holders by means of pin slots and spring mountings which are readily detachable.

It is, therefore, an object of the invention to provide a bread wrapping machine having a single control for adjusting the several parts of the folding, heat sealing, and cooling structure. A further object of the invention is to provide an improved bread wrapping machine in which provision is made for adjusting all of the several elements arranged to fold, seal and cool the wrapper folds or adjust them individually to meet the conditions imposed by the type of loaf being handled.

In some cases, especially where overproofed bread has to be wrapped, it has been found that the end folds and seals are imperfect. This is largely due to the fact that the portion of the loaf above the pan projects outward and forms an overhang during baking which causes difficulty in properly sealing the wrapper on the ends of the loaf. An additional object, therefore, of this invention is to provide improved sealing mechanism in which each loaf end sealing device is made up of at least two separate parts having an upper and a lower sealing plate, each mounted upon an adjustable holder so as to make it possible to properly position each seal separately for effectively sealing the wrapper against the ends of the loaf.

It has also been found in the operation of the type of bread wrapping mechanism having a pusher which introduces the loaves into the machine, that part of the pusher has a tendency to work loose from the main assembly, drop therefrom, and, therefore, cause an interruption of the operation of the machine. Hence it is a further object of the machine to provide a loaf feeding pusher unit wherein a loaf contacting member is suitably mounted on the fixed head of the pusher structure, in order that the plate can be quickly removed by a pull and be reset by pushing it back into place, and yet at all times be firmly

held against disassembling during the operation of the machine.

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

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 having parts broken away, of the wrapping and sealing portion of a bread wrapping machine equipped with the improved adjusting and demounting devices;

Fig. 2 is a side sectional elevation of the improved machine, on line 2—2 of Fig. 1;

Fig. 3 is a detail sectional view on line 3—3 of Fig. 1, showing the arrangement of a push clutch on the adjusting shaft for the tuckers;

Fig. 4 is a detail sectional view on line 4—4 of Fig. 1, showing the arrangement of a pull clutch on the adjusting shaft of the coolers;

Fig. 5 is an enlarged plan view of one of the heat sealers;

Fig. 6 is an end elevation of the same on line 6—6 of Fig. 5;

Fig. 7 is a partial rear elevation along line 7—7 of Fig. 5;

Fig. 8 is an enlarged rear elevation of the improved pusher plate; and

Fig. 9 is a sectional end elevation on line 9—9 of Fig. 8.

Referring to Figs. 1 and 2, the loaf L to be wrapped is fed endwise along an inclined guideway 10 by a suitable conveyor (not shown) to a position thereon aligned with a pusher unit 11 arranged to move successive loaves transversely from the guideway 10 against the pendant end of a wrapper web W in the path of loaf movement and on to a swinging platform 14 where it assumes a position L' and is thereby partially enfolded in the web W. It will be noted from Fig. 2 that the pusher unit comprises a head 13 fixed upon rods 11 and reciprocable therewith to feed loaves off the guideway 10 as above described. In the relatively rapid operation of the machine it has been found that occasionally the loaf engaging plate 12 affixed to head 13 may work itself loose and either fall upon the guideway 10 or drop out of the machine, thereby necessitating a shut-down and replacement of the plate. In order to obviate the same, the plate 12 has been provided with means for mounting it upon the head 13 in such manner that it is firmly held thereto but can, if desired, be removed. The securing of the plate 12 to the head will be described more in detail hereinafter.

Platform 14 upon which the loaves are successively advanced from the guideway 10 is fixed to bracket 15 mounted on shaft 16 supported in frame 17 of the bread wrapping machine. The various mechanisms for feeding the web W, actuating the pusher 11 and rocking the shaft 16 may be similar in construction to those shown in Patent No. 1,851,295, granted March 29, 1932, to F. R. Schmitt. Slidably mounted upon shaft 16 are sockets 18 carrying arms 19 which support tuckers 20 suitably spaced to admit each loaf and thus forming front end tucks in the wrapper partially folded thereabout. The tuckers move with the platform 14 from position L' (Fig. 2) as each loaf located thereon is raised into position L'' where the folders 21 engage the top flaps

of the wrapper and fold them down against the loaf end. Following this operation the loaf is then advanced by a conveyor (not shown) along the table 22 in the direction of the arrow (Fig. 2), whereupon folders 23 and 24 complete the folding of the wrapper flaps upon the loaf. Upon further forward movement of the loaf along the guideway 22, sets of heat sealing members 25, 26 located on either side of the path of movement of the loaf engage and fuse the coating on the wrapper ends. The loaves are then advanced to the cooling members 27 where the heated seals are congealed to complete the enwrapping of the loaves.

The folders 21, 23 and 24 and sealers 25, 26 are mounted on frames 28 which are carried by brackets 29 supported by shafts 30 and 31. In order to effect the movement of the folders and sealers to and from each other to adjust the machine for handling various lengths of loaves, the shaft 30 has been provided with right and left hand threads engaging the brackets 29, and a hand wheel 32 for rotating the shaft to make the desired adjustment.

In order to adjust the tuckers and cooling members simultaneously with the folders and sealers, threaded shafts 33, 34 and 35 similar to shaft 30 are provided and are connected by means of sprockets and chains with the threaded shaft 30. The shaft 33 is mounted in frame 17 near the platform shaft 16 and provided with right and left hand threads fitted into screw sockets 36 to which are attached bars 37 engaging in annular grooves of sockets 18 which carry arms 19 of the tuckers 20. Coolers 27 are directly mounted on oppositely threaded portions of shafts 34 and 35 by means of screw sockets 38. A sprocket 39 on shaft 30 is connected by a chain 40 with a sprocket 41 on shaft 33, while a second sprocket 42 on shaft 30 is connected by a chain 43 with a sprocket 44 on shaft 34 which in turn has a sprocket 45 connected by a chain 46 with a sprocket 47 on shaft 35. In this manner the motion of shaft 30 can be transmitted to all the screw shafts, and the tuckers and coolers move in or out in unison with the folders and sealers whenever hand wheel 32 is turned.

The sprocket 41 carries one member of a jaw clutch 48, Fig. 3, through which the shaft 33 is driven, the male member of which is slidable on a key 49 in shaft 33 and is held in coupled relation with the other clutch member by spring 50, Fig. 1. The latter presses against a knob 51 attached to one end of a rod 52 passing through shaft 33 and carrying the male clutch member at its other end. By pushing the knob 51 against the spring 50 the clutch 48 is released and the shaft 33 can be turned by the knob 51 without affecting the sprocket 41 which is loose thereon. Thus the tuckers may be independently adjusted. A collar 53 secures the shaft 33 against axial movement.

The sprocket 44 is loose on shaft 34, Fig. 4, and carries the female member 54 of a clutch whose male member 55 is affixed to a knob 56 slidable on a key 57 in shaft 34 and held in engagement by a spring 58 bearing against a shoulder 59 attached to the end of shaft 34. The sprocket 45 is permanently attached to shaft 34 by a key 60 and has a collar 61 on its hub to prevent axial movement of the shaft. The sprocket 47 is affixed to shaft 35 by a key 62, and on its protruding end carries a collar 63 to hold the shaft 35 in place. Pulling the knob

56 disengages the clutch 55, so that the permanently connected shafts 34 and 35 may then be turned without affecting sprocket 44, thus affording the means of adjusting the coolers 27 independently of the tuckers, folders and sealers.

In Figs. 5, 6 and 7, the improved sealer is shown. As heretofore stated, each sealer consists of an upper sealer plate 25 and a lower sealer plate 26, each attached to a separate holder 64. These holders are mounted on the frames 28 by bolts 65 passing through transverse slots 66 in their fastening lugs, thus enabling their individual lateral adjustment to the shape of the loaves. Between the lugs 67 of each sealer plate is mounted an electric or other heating element, not shown, having horizontal pins 68 projecting inwardly and the holders 64 being bar shaped with transversely extending slotted ends 69 fitting with sufficient clearance between the lugs 67 of the sealer plate to permit the pins 68 to enter them. To the holders 64 are fastened flat springs 70, the free ends of which are bifurcated to engage with notches in the tip 71 of the lugs 67, these springs pushing the sealer plates 25, 26 forwardly on their holders 64 and preventing longitudinal displacement thereof. To remove a sealer it is only necessary to lift one end of the springs 70 out of the notches and to move the sealer longitudinally to disengage the pin 68 at the other end, and then move the sealer plate back in the opposite direction to withdraw the remaining pin.

The improved pusher plate mounting is shown in Figs. 8 and 9. To the plate 12 are attached two posts 72 on which flanged collars 73 are held in tension by springs 74 bearing against washers 75 affixed to their ends by screws 76. The head 13, which is fastened to rods 11, has slots 77 registering with the posts 72 so that the yielding collars 73 of the pusher plate may be slid behind the head, a pin 78 projecting from the former snapping into a hole provided in the latter when the pusher plate is in place.

What is claimed is:

1. In a wrapping machine, the combination with a set of tuckers for tucking the ends of a wrapper enfolding an article, of a set of folders for folding the tucked ends of the wrapper inwardly on the ends of the article, a set of heat sealers for heat sealing the folded ends of the wrapper, a set of members for cooling the heat sealed wrapper ends, mechanism connecting said tuckers for separately adjusting the same toward and away from each other, mechanism connecting said folders and heat sealers for adjusting the same toward and away from each other, mechanism connecting said coolers for separately adjusting the same toward and away from each other, and means connecting said mechanisms and operating to simultaneously adjust all the members of all of said sets equally and oppositely toward and away from each other to accommodate packages of various lengths.

2. In a wrapping machine, the combination with a set of tuckers for tucking the ends of a wrapper enfolding an article, of a set of parallel folders for folding the tucked ends of the wrapper inwardly on the ends of the article, a set of parallel heat sealers for heat sealing the folded ends of the wrapper, a set of parallel members for cooling the heat sealed wrapper ends, mechanism connecting said tuckers for separately adjusting the same toward and away from each other, mechanism connecting said folders and heat sealers for adjusting the same toward and

away from each other, and mechanism connecting said coolers for separately adjusting the same toward and away from each other, and means connecting said mechanisms and operating to simultaneously adjust all the members of all of said sets toward and away from each other to accommodate packages of various lengths, said heat sealers each including a pair of superposed independently adjustable sealer bars respectively engaging the upper and lower portions of the wrapper folded over the adjacent end of the package, whereby the upper sealer may be adjusted to accommodate the overhang of an over-proofed loaf of bread.

3. In a wrapping machine, the combination with a set of tuckers for tucking the ends of a wrapper enfolding an article, of a set of folders for folding the tucked ends of the wrapper inwardly on the ends of the article, a set of heat sealers for heat sealing the folded ends of the wrapper, a set of members for cooling the heat sealed wrapper ends, mechanism connecting said tuckers for separately adjusting the same toward and away from each other, mechanism connecting said folders and heat sealers for adjusting the same toward and away from each other, mechanism connecting said coolers for separately adjusting the same toward and away from each other, and means connecting said mechanisms and operating to simultaneously adjust all the members of all of said sets toward and away from each other to accommodate packages of various lengths, said cooler adjusting mechanism including a manually disengageable clutch for disconnecting said means from said coolers, and a shaft driven through said clutch and having oppositely threaded portions screwed into said coolers to permit independent adjustment of said coolers to move them out of operative position when desired.

4. In a wrapping machine, the combination with a vertically movable lifter table having a set of tuckers for tucking the ends of a wrapper enfolding an article, of a set of folders for folding the tucked ends of the wrapper inwardly on the ends of the article, a set of heat sealers for heat sealing the folded ends of the wrapper, mechanism connecting said tuckers for adjusting the same toward and away from each other, mechanism connecting said folders and heat sealers for adjusting the same toward and away from each other, and means connecting said mechanisms and operative to simultaneously adjust all the members of all of said sets equally and oppositely toward and away from each other to accommodate packages of various lengths, said table having a horizontal pivot whereon it is swingably mounted, and said tucker adjusting mechanism including bars connected to said tuckers and a screw shaft parallel to said pivot and provided with oppositely threaded portions screwed into said bars respectively, said shaft being disconnectable from said means to permit independent adjustment of said tuckers.

5. In a wrapping machine, the combination with a set of tuckers for tucking the ends of a wrapper enfolding an article, of a set of folders for folding the tucked ends of the wrapper inwardly on the ends of the article, a set of heat sealers for heat sealing the folded ends of the wrapper, mechanism connecting said tuckers for separately adjusting the same toward and away from each other, mechanism connecting said folders and heat sealers for adjusting the same

toward and away from each other, and means connecting said mechanisms and operative to simultaneously adjust the members of each set thereof toward and away from each other to accommodate packages of various lengths, said mechanisms including shafts having oppositely threaded portions respectively, screwed into one of the members of each set of tuckers, folders and sealers, said means connecting said shafts, a hand wheel on one of said shafts, and a clutch on the shaft connecting said tuckers adapted to disengage it from said means for adjustment of said tuckers independently of said hand wheel.

6. In a wrapping machine, the combination with a vertically movable lifter table having a set of tuckers for tucking the ends of a wrapper enfolding an article, of a set of folders for folding the tucked ends of the wrapper inwardly on the ends of the article, and separate mechanisms connecting said tuckers and folders for separately adjusting the same toward and away from each other, and means connecting said mechanisms and operative to simultaneously adjust all the members of all of said sets equally and oppositely toward and away from each other to accommodate packages of various lengths, said table having a horizontal pivot whereon it is swingably mounted, and said tucker adjusting mechanism including bars connected to said tuckers and a screw shaft parallel to said pivot and provided with oppositely threaded portions screwed into said bars respectively.

7. In a wrapping machine, the combination with a set of tuckers for tucking the ends of a wrapper enfolding an article, of a set of folders for folding the tucked ends of the wrapper inwardly on the ends of the article, and separate mechanisms connecting said tuckers and folders for separately adjusting the same toward and away from each other, and means connecting said mechanisms and operative to simultaneously adjust the members of each set thereof toward and away from each other to accommodate packages of various lengths, the tucker adjusting mechanism being disconnectable from said means to permit independent adjustment of said tuckers and folders relatively to each other.

8. In a wrapping machine, the combination with a lifter table moving from a lower level at which it receives an article partially enfolded in a wrapper to an upper level, of a set of tuckers movable with said table and adapted to engage and tuck said wrapper, a set of supports whereon said tuckers are pivotally mounted, mechanism for adjusting said supports toward and away from each other with their tuckers while said table is in operation, to compensate for variations in the length of the packages, said table being provided with a horizontal pivot whereon

it is swingably mounted, and said mechanism including bars loosely mounted on said tuckers, a screw shaft parallel to said pivot and provided with oppositely threaded portions screwed into said bars respectively.

9. In a wrapping machine, the combination with a lifter table movable from a lower level at which it receives an article partially enfolded in a wrapper to an upper level, of a set of tuckers movable with said table and adapted to engage and tuck the ends of said wrappers, set of folders for folding the tucked ends of the wrapper inwardly on the ends of the article, and mechanism connecting said sets of tuckers and folders and operative to simultaneously adjust the tuckers and folders at each end of the article equally and oppositely toward and away from each other to accommodate packages of various lengths.

10. In a wrapping machine the combination with a pivoted lifter table swingable from a lower level at which it receives an article partially enfolded in a wrapper to an upper level, of a set of tuckers movable with said table and adapted to engage and tuck the ends of said wrapper, a set of folders for folding the tucked ends of the wrapper inwardly on the ends of the article, and mechanism connecting said sets of tuckers and folders and operative to simultaneously adjust the tuckers and folders at each end of the article equally and oppositely toward and away from each other to accommodate packages of various lengths.

11. In a wrapping machine, the combination with a vertically movable lifter table having a set of tuckers for tucking the ends of a wrapper enfolding an article, of a set of folders for folding the tucked ends of the wrapper inwardly on the ends of the article, and separate mechanisms connecting said tuckers and folders for separately adjusting the same toward and away from each other, and means connecting said mechanisms and operative to simultaneously adjust all the members of all of said sets equally and oppositely toward and away from each other to accommodate packages of various lengths, said table having a horizontal pivot whereon it is swingably mounted, said tucker adjusting mechanism including a screw shaft provided with oppositely threaded portions mounted on a stationary part of said machine, screw followers threaded to said portions and connections between said tuckers and said followers for adjusting said tuckers toward and away from each other as the result of the rotation of said screw, said connections being articulated at the pivot axis of said table so as to permit adjustment of the tuckers without interfering with the movement of the table.

THORMOD JENSEN.