April 6, 1965 W. KLAMP 3,176,443

WRAPPING APPARATUS

Filed Dec. 29, 1960 2 Sheets-Sheet 1

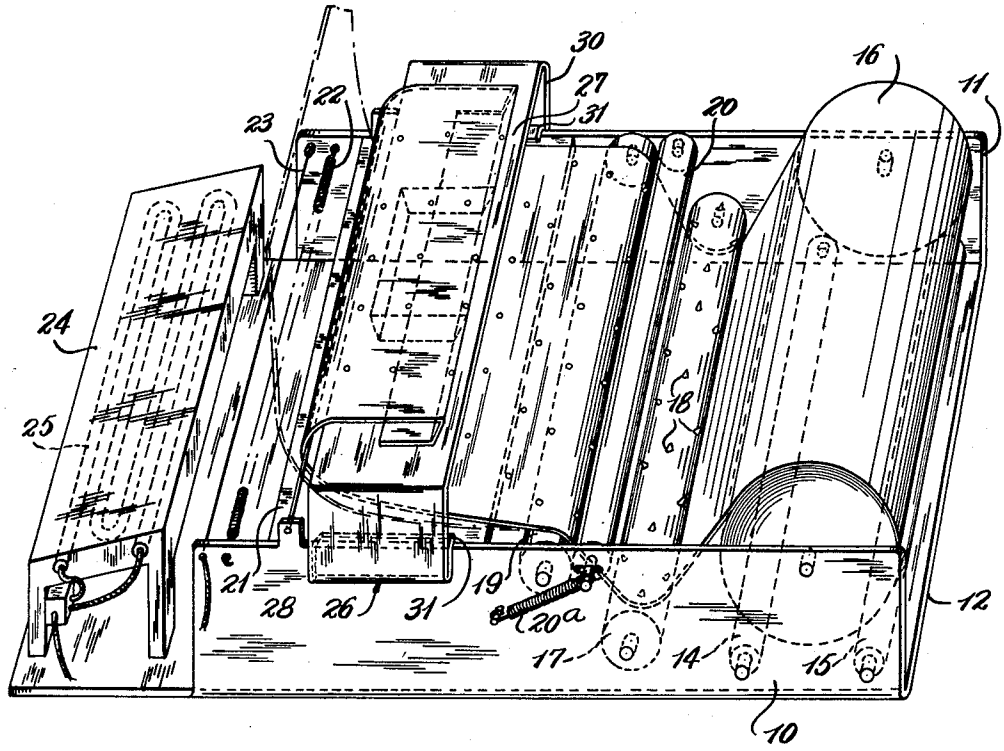


FIG. 1

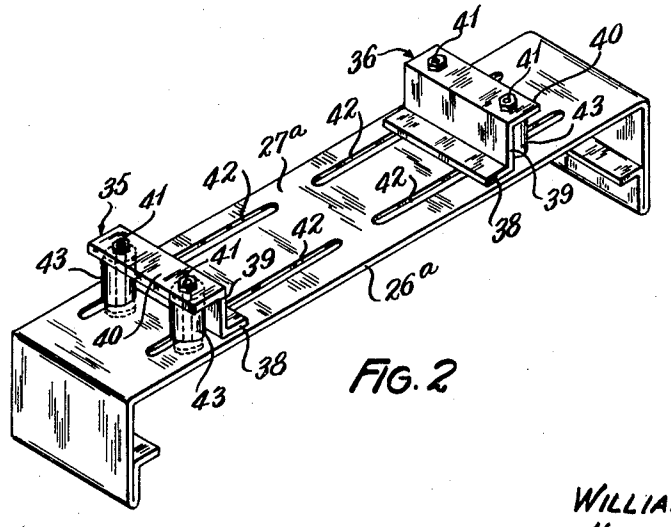


FIG. 2

INVENTOR.
WILLIAM KLAMP
BY Hudson, Boughton, Williams, David & Hoffmann
ATTORNEYS

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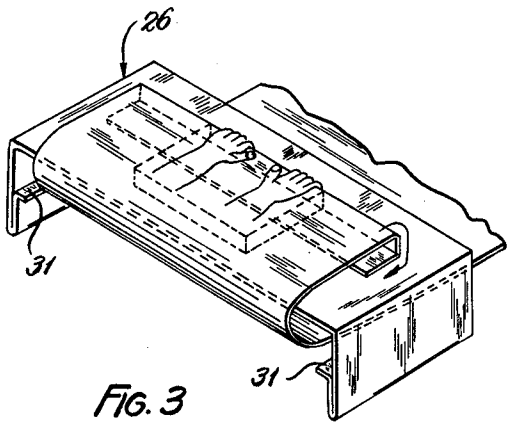


FIG. 3

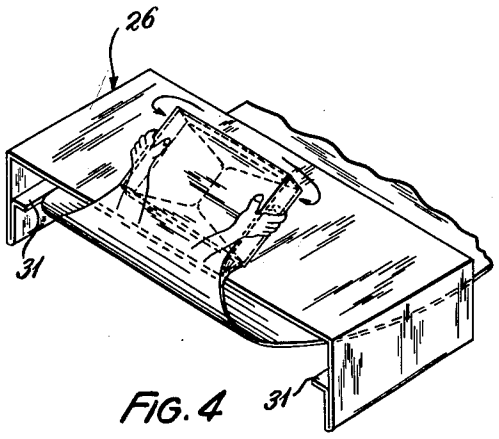


FIG. 4

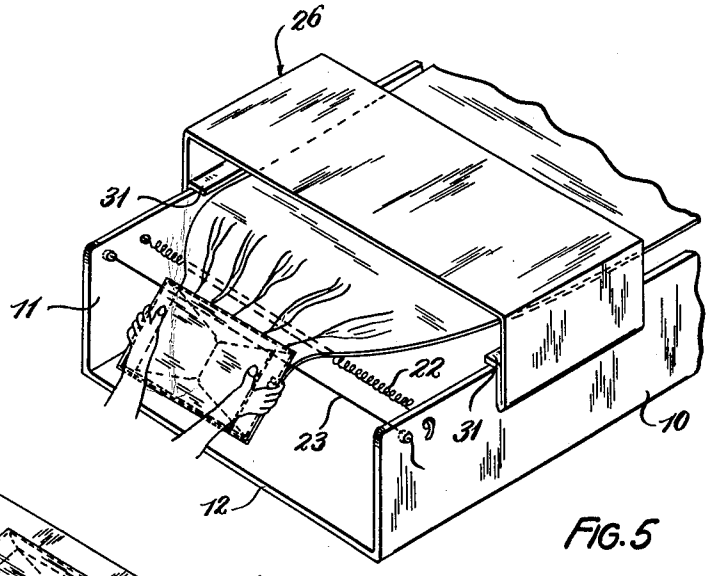


FIG. 5

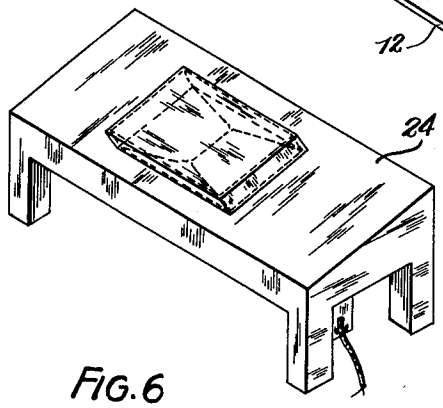


FIG. 6

INVENTOR.
WILLIAM KLAMP
BY Hudson, Boughton, Williams, David & Hoffman
ATTORNEYS

United States Patent Office

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WRAPPING APPARATUS

William Klamp, Rocky River, Ohio, assignor to Cleveland-Detroit Corporation, Cleveland, Ohio, a corporation of Delaware

Filed Dec. 29, 1960, Ser. No. 79,253
3 Claims. (Cl. 53—390)

The present invention relates to wrapping apparatus and, particularly, to wrapping tables for wrapping packages with thermoplastic sheetlike material which is sealed by heating.

It has become common practice to wrap items with a thermoplastic wrapping material which can be heated to form a seal which fastens the wrapping material about the item. Commonly, the item to be packaged, such as grocery produce, is placed in a tray, the thermoplastic wrapping material wrapped around the top and sides of the tray and the material folded under the bottom of the tray and fastened by setting the tray and wrapping on a hot plate to heat the thermoplastic wrapping material to form a bond.

Generally, the wrapping material is a roll which, for space reasons, is disposed rearwardly of the table surface on which the wrapping is done. The wrapping material is generally stored in a roll of material in strip form and when an item is to be wrapped, the wrapping material is drawn from the roll forwardly across the wrapping table, the item to be wrapped placed on the wrapping material, the wrapping material wrapped around the article and folded underneath the bottom thereof on the side thereof remote from the worker and the portion required for the wrap then severed from the strip and fastened to secure the wrapping on the item.

It will be appreciated by those skilled in the art that when wrapping an item by the described method, the proper length of wrap to be used must be pulled from the roll and the item to be wrapped then must be placed on the wrapping material and so positioned that the distance between the item and the leading edge of the strip of wrapping material is such as to provide the length of wrapping material necessary to extend over the item being wrapped and to fold downwardly along the far side of the item from the worker and underneath the item. This means that the item to be wrapped must be placed on the wrapping table a considerable distance away from the worker doing the wrapping rather than at a position immediately adjacent the front edge of the table. Furthermore, if the worker has not pulled sufficient material from the material supply prior to positioning the item, or if the worker places the item to be wrapped too close to the leading edge of the material, and the wrapping operation has started, the shortage of material will become apparent when the worker attempts to fold the wrapping material over the far edge of the item and then downwardly and under the item to be packaged. When the shortage becomes apparent, the start of the wrapping operation must be undone, the item lifted, the wrapping pulled to provide the necessary length and the item again repositioned on the wrapping, and the wrapping operation again initiated. Furthermore, even if the worker has pulled sufficient material from the storage and merely incorrectly positioned the item on the wrapping prior to the start of the wrapping operation so that there is insufficient material between the item and the leading edge of the wrapping material to provide the necessary wrap, and this becomes apparent after the wrapping operation has been started, it will be necessary to undo the start and reposition the article on the wrapping material.

The described method and apparatus for providing a wrapping table with a storage of wrapping material is

not satisfactory for many high-speed wrapping operations. For example, foodstuffs to be wrapped are commonly conveyed by a conveyor to a wrapping position where the wrapper takes the foodstuff, which is generally a tray, from the conveyor and wraps the foodstuff in the manner described. The faster the wrapping operation by the worker, the faster the packaging line will operate and the faster that foodstuffs can be supplied by the conveyor. In addition to requiring considerable time when a mistake in the initial positioning of the item with respect to the wrapping material has occurred, the described wrapping table and method require the worker to lean over the front edge of the table. In applications where the item is being wrapped with a thermoplastic material which is then sealed to complete the packaging, a heat-sealing element, generally in the form of a hot plate, is disposed intermediate the worker and the wrapping table per se and the worker must lean over this element to position and wrap the item. Consequently, it is undesirable to make it necessary for the worker to reach toward the rear of the table to start the wrapping operation, since this requires the worker to stretch over the hot plate, and increases the possibility of accidental contact therewith. In any case, the described wrapping apparatus requires a wrapping table of sufficient length to accommodate the length of wrap to be used and also requires the worker to pull the wrapping material before placing the item on the table.

Accordingly, it is an object of the present invention to provide a new and improved wrapping apparatus including a table surface and a supply of wrapping material disposed rearwardly of the surface and in which the item to be wrapped can be initially placed adjacent the front edge of the wrapping table and which does not require a wrapping table of extended length.

It is further an object of the present invention to provide a new and improved wrapping apparatus in which the wrapping material can be pulled to draw additional wrapping material from a storage disposed rearwardly of the wrapping surface without requiring the repositioning of the item to be wrapped even though the wrapping operation has been started.

It is still another object of the present invention to provide a new and improved wrapping apparatus including a table surface on which the wrapping is done and wherein a heat-sealing element is disposed between the worker and the surface upon which the wrapping takes place, and in which the possibility of accidental contact with the heat-sealing element during the wrapping operation is minimized.

A further object of the present invention is to provide a wrapping apparatus which enables a decrease in the time required to wrap a package.

Further objects and advantages of the present invention will be apparent from the following detailed description of the preferred embodiment thereof made with reference to the accompanying drawings forming a part of the present specification and in which:

FIG. 1 is a perspective view of a wrapping table embodying the present invention;

FIG. 2 is a perspective view showing a modification of one of the elements of FIG. 1; and

FIGS. 3, 4, 5 and 6 illustrate the steps in the wrapping operation.

In accordance with the present invention, a wrapping apparatus is provided wherein sheet material is supplied to the front edge of a wrapping table from a storage disposed rearwardly of the table and in such a manner that the wrapping material does not move across the table surface upon which the wrapping is done. The wrapping material in the storage is so supported and the table is so

constructed that the wrapping material can be pulled upwardly from the front edge of the wrapping table to a position above the table and forwardly toward the operator so that the material may be pulled over a cutoff device disposed forwardly of the wrapping surface per se. In the preferred form of the invention, the wrapping apparatus is adapted for use with thermoplastic wrapping material, and a heat-sealing element is disposed forwardly of the cutoff device.

Referring to the drawings, the wrapping apparatus embodying the present invention is shown as comprising side plates **10, 11** and a bottom plate **12** which carry the parts of the wrapping apparatus and provide a unitary structure which can be readily moved from one location to another. The wrapping apparatus includes a pair of horizontally spaced rollers **14, 15** disposed adjacent the rear end of the apparatus, the right-hand side as the latter is viewed in FIG. 1, and adapted to support a roll of wrapping material **16**. The rollers **14, 15** are fixed to shafts which are journaled in the side plates **10, 11** so that as wrapping material is pulled from the roll **16**, the rollers **14, 15** will rotate to allow rotation of the roll **16**.

The wrapping material is shown as thermoplastic wrapping material which is to be used for wrapping grocery produce and the material is pulled from the top of the roll **16** and is led downwardly underneath a perforating roll **17** rotatably supported between the side plates **10, 11**. The perforating roll has projections **18** thereon which perforate the thermoplastic wrapping material as it passes around the roll **17**. The wrapping material is then led upwardly from the perforating roll **17** and over an idler roller **19** and a cooperating tensioning roller **20**. The rollers **19, 20** are rotatably supported by the side plates **10, 11**, and the upper side of the roller **19** is at approximately the same level as the top edge of the side plates **10, 11**. The tensioning roller **20** is supported for limited movement toward and away from the idler roller and is urged into engagement with the latter by a spring **20***a*. From the roller **19**, the wrapping material is led forwardly over a plate **21** extending between the side plates **10, 11** and having an upper surface flush with the top edges of the plates **10, 11**. The plate **21** provides a support for the wrapping material adjacent the front side of the apparatus. Disposed immediately forward of the plate **21** and supported between the side plates **10, 11** adjacent the top thereof is a spring **22**, and immediately forward of the spring **22** is a cutoff wire **23**. The purpose of the spring **22** and the cutoff wire **23** will be explained in more detail hereinafter.

The side plates **10, 11** terminate short of the forward edge of the bottom plate **12** and a hot plate **24** is supported on the forward portion of the bottom plate **12** and has a generally flat heating surface **25** which has an inclination with respect to the horizontal and which is slightly below the level of the cutoff wire **23**.

The item to be wrapped is placed on a bridge member **26** which includes a table portion **27** that is parallel to and spaced above the plate **21**. The table portion **27** extends across the plate **21** and between the side plates **10, 11** and is supported in a position above the plate **21** by depending portions **28, 30** which depend from the opposite ends of the table portion **27** and which have their lower ends reversibly bent to provide shoulders **31** which extend inwardly from each of the portions **28, 30** and which are adapted to rest on the top edges of the side plates **10, 11** to support the bridge member **26**. It will be noted that the inwardly extending shoulders **31** are disposed intermediate the upper and lower ends of the portions **28, 30** so that the portions **28, 30** extend downwardly along the outer sides of the plates **10, 11** to provide a secure support for the table, and that the bridge is removable.

When in use, the wrapping material is normally positioned where its leading edge is adjacent the cutoff wire **23** and the material is resting on the plate **21**. The worker stands adjacent the forward side, i.e. left-hand as viewed in FIG. 1, of the apparatus and the article to be wrapped, which is illustrated as a tray in FIG. 1, is placed on the table portion **27**. The leading edge of the wrapping material is then picked up so that the forward portion of the material is approximately in the position shown in broken lines in FIG. 1, and if the worker feels that sufficient wrap is available, the wrapping material is wrapped around the far side of the tray from the worker preparatory to the folding thereof to a position underneath the tray, as shown in FIG. 1. If the available wrapping material is short, the operator need only move the leading edge of the material away from the tray and pull on the leading edge of the material to pull more material from the roll **16** against the tensioning provided by the roller **20**. No repositioning of the tray is necessary. The bridge **26** can be moved along the top edges of the sides of the plates **10** and **11** to position the tray in the most convenient position for the worker and the tray can be placed adjacent the forward edge of the table portion **27** when the wrapping operation is initiated, without interfering with the wrapping operation.

It will be noted that since the tray is put into position before the wrap is pulled, the length of wrap pulled can be such as to extend over the cutoff wire **23** if extended straight forwardly since the worker has two hands available to hold it upwardly. If the wrap had to be pulled and the item then placed on the wrap, the worker would only have one hand at the most to handle the wrap while placing the item to be wrapped on the wrapping material and if the needed length extended over the cutoff wire, it might accidentally be severed. Furthermore, there are times when the worker needs both hands available to handle the item to be wrapped.

After the leading edge of the wrapping material has been turned under the edge of the tray on the far side from the operator (FIG. 3), the sides of the wrapping material may be folded down with the fingers of the operator (FIG. 4) and the item lifted and moved away from the table portion and roll **16** to stretch the wrapping material against the tension provided by the tensioning roller **20** and to move the item being packaged and the wrapping material over the cutoff wire **23** (FIG. 5). The cutoff wire **23** is a heated wire and need only touch the thermoplastic material to sever the material. Preferably, the spring **22** is a little above the level of the cutoff wire **23** and when the strip material is severed by the cutoff wire **23**, the spring will flip the leading edges of the strip material off the cutoff wire. It will be noted that the tensioning provided by the tensioning roller **20** will cause the leading edge to shrink back from the cutoff wire after it is severed. After the wrapping material is severed, the package is set bottom down on the hot plate **24** to seal the thermoplastic material.

At times, an item to be wrapped is to be placed on a single flat sheet of cardboard without sides. If the item to be wrapped is comprised of a plurality of oranges or similar produce, it is desirable to provide some means to facilitate the keeping of the item on the cardboard. To this end, a bridge **26***a*, of slightly different construction than the bridge **26**, is shown in FIG. 2 and is provided with guides **35, 36**. The guides **35, 36** comprise Z-shaped members which are slidably mounted on the table portion **27***a* for movement toward and away from each other. Each Z-shaped member includes a horizontal portion **38** which rests on the table portion and extends across the width of the table portion, as viewed in FIG. 2, a vertical portion **39** rising from the outboard side of the horizontal portion **38**, and a horizontal flange **40** extending outwardly from the top of the vertical portion **39**. Each guide member **35, 36** is adjustably connected to the table portion **27***a* by a pair of bolts **41** which pass through the flange **40** of the member and which extend through elongated slots **42** in the table portion. The bolts **41** are also received by bushings **43** disposed between the flange **40** and the top of

the table portion 27*a*. The elongated slots 42 extend parallel to the front edge of the table portion 27*a* and accommodate sliding movement of the guide members toward and away from each other. Any item or items to be wrapped are placed on a single flat sheet of cardboard. The guide members are then adjusted to accommodate the width of the cardboard between the vertical portions 39 thereof so that the vertical portions form vertical rising sides to accommodate the wrapping operation.

From the foregoing, it will be understood that the present invention provides a new and improved apparatus for use by a worker in wrapping packages and that the apparatus decreases the number of steps usually involved in similar wrapping operations, facilitates the obtaining of more wrapping material if the first length selected is too short, and minimizes the possibility of accidental burning of the worker in a wrapping operation where a heat-sealing element is disposed between the worker and the wrapping table. While the preferred embodiment of the present invention has been described in considerable detail, it is hereby my intention to cover all constructions, modifications, and arrangements which fall within the ability of those skilled in the art and within the scope and spirit of the present invention.

Having described my invention, what I claim is:

1. A wrapping apparatus comprising a plate-like sheet supporting structure for supporting a sheet of plastic wrapping material, means adjacent one side of said structure for supporting a roll of plastic sheet material adapted to be drawn from said roll across said structure, a table above said structure for supporting a package to be wrapped, said structure guiding said wrapping material under said table to the side of said structure opposite to said one side, a severing device having an uppermost portion for severing plastic sheet material moved thereagainst disposed adjacent the side of said structure opposite to one side but below the level of said table and outwardly of said structure, said apparatus having an open area above said sheet supporting structure and from said table outwardly beyond said opposite side of said sheet supporting structure and above said uppermost portion whereby sheet material on said sheet supporting structure may be moved from under said table upwardly and outwardly from said sheet supporting structure on the side thereof remote from said one side over but clear of said severing device and over a package on said table and then downwardly into contact with said sheet severing device.

2. A wrapping apparatus comprising a plate-like sheet supporting structure for supporting a sheet of plastic wrapping material, means adjacent one side of said structure for supporting a roll of plastic sheet material adapted to be drawn from said roll across said structure, a table above said structure for supporting a package to be wrapped, said structure guiding said wrapping material under said table to the side of said structure opposite to said one side, a severing device having an uppermost portion for severing plastic sheet material moved thereagainst disposed adjacent the side of said structure opposite to said one side but below the level of said table and outwardly of said structure, said apparatus having an open area above said sheet supporting structure and from said table outwardly beyond said opposite side of said sheet supporting structure and above said uppermost portion whereby sheet material on said sheet supporting structure may be moved from under said table upwardly and outwardly from said sheet supporting structure on the side thereof remote from said one side over but clear of said severing device and over a package on said table and then downwardly into contact with said sheet severing device, and a sealing device having an upper heated surface for sealing disposed outwardly of and below said severing device.

3. A wrapping apparatus comprising a plate-like sheet supporting structure for supporting a sheet of plastic wrapping material, means adjacent one side of said structure for supporting a roll of plastic sheet material adapted to be drawn from said roll across said structure, a table removably supported above said structure, said structure guiding said wrapping material under said table to the side of said structure opposite to said one side, a severing device having an uppermost portion for severing plastic sheet material moved thereagainst disposed adjacent the side of said structure opposite to said one side but below the level of said table and outwardly of said structure, said apparatus having an open area above said sheet supporting structure and from said table outwardly beyond said opposite side of said sheet supporting structure and above said uppermost portion whereby sheet material on said sheet supporting structure may be moved from under said table upwardly and outwardly from said sheet supporting structure on the side thereof remote from said one side over but clear of said severing device and over a package on said table and then downwardly into contact with said sheet severing device, said table having laterally adjustable vertical walls extending generally perpendicular to said sides.

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FRANK E. BAILEY, *Primary Examiner.*

ROBERT A. LEIGHEY, TRAVIS S. McGEHEE, *Examiners.*