

April 20, 1954

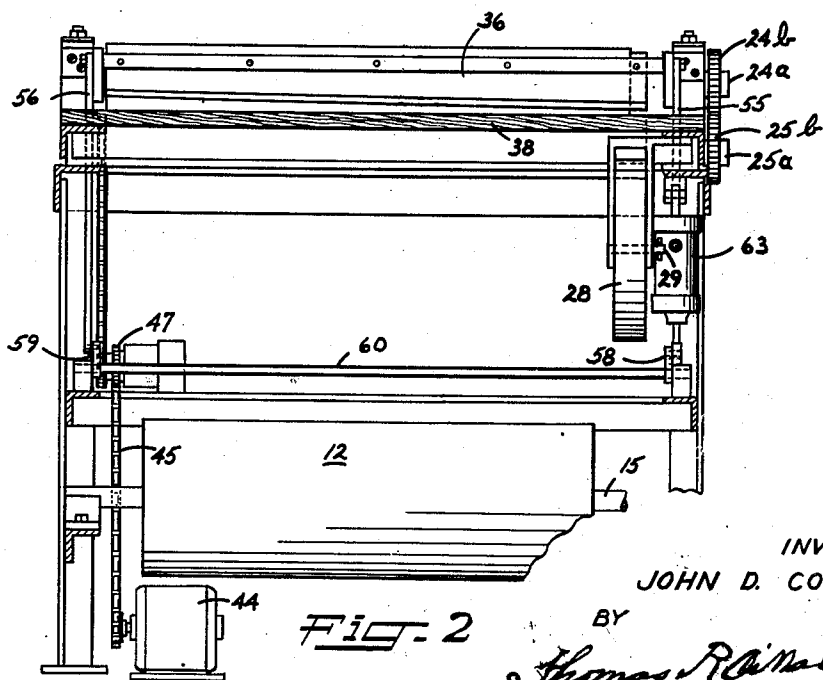
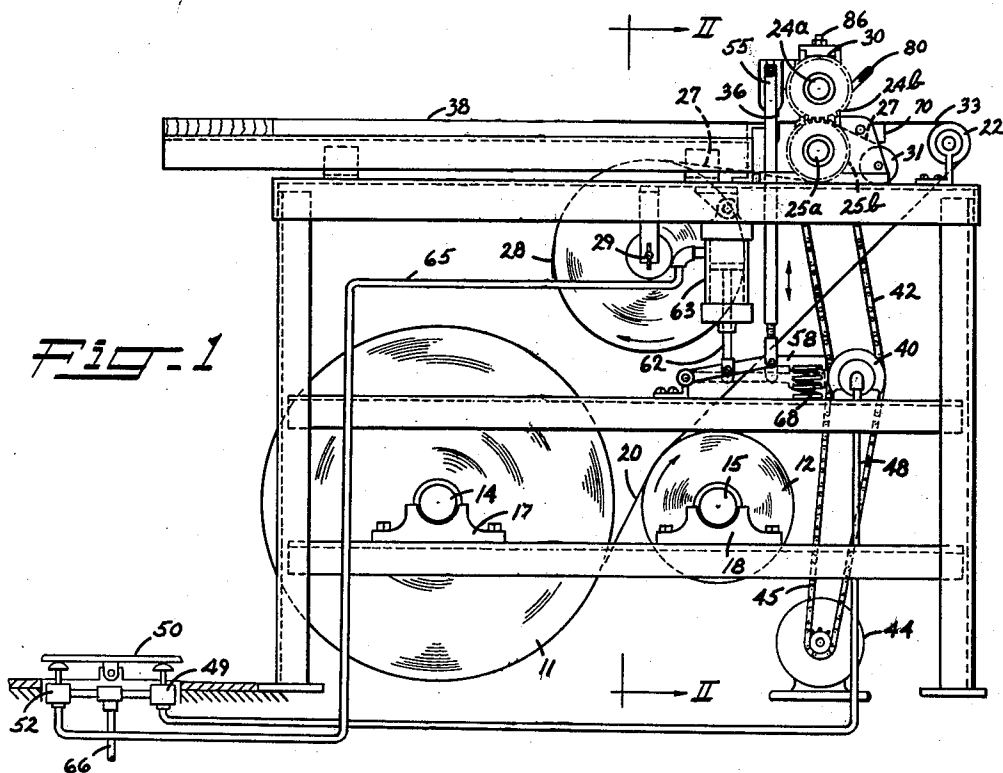
J. D. CONTI

2,675,746

WRAPPER MAKING MACHINE

Filed Feb. 8, 1949

3 Sheets-Sheet 1



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April 20, 1954

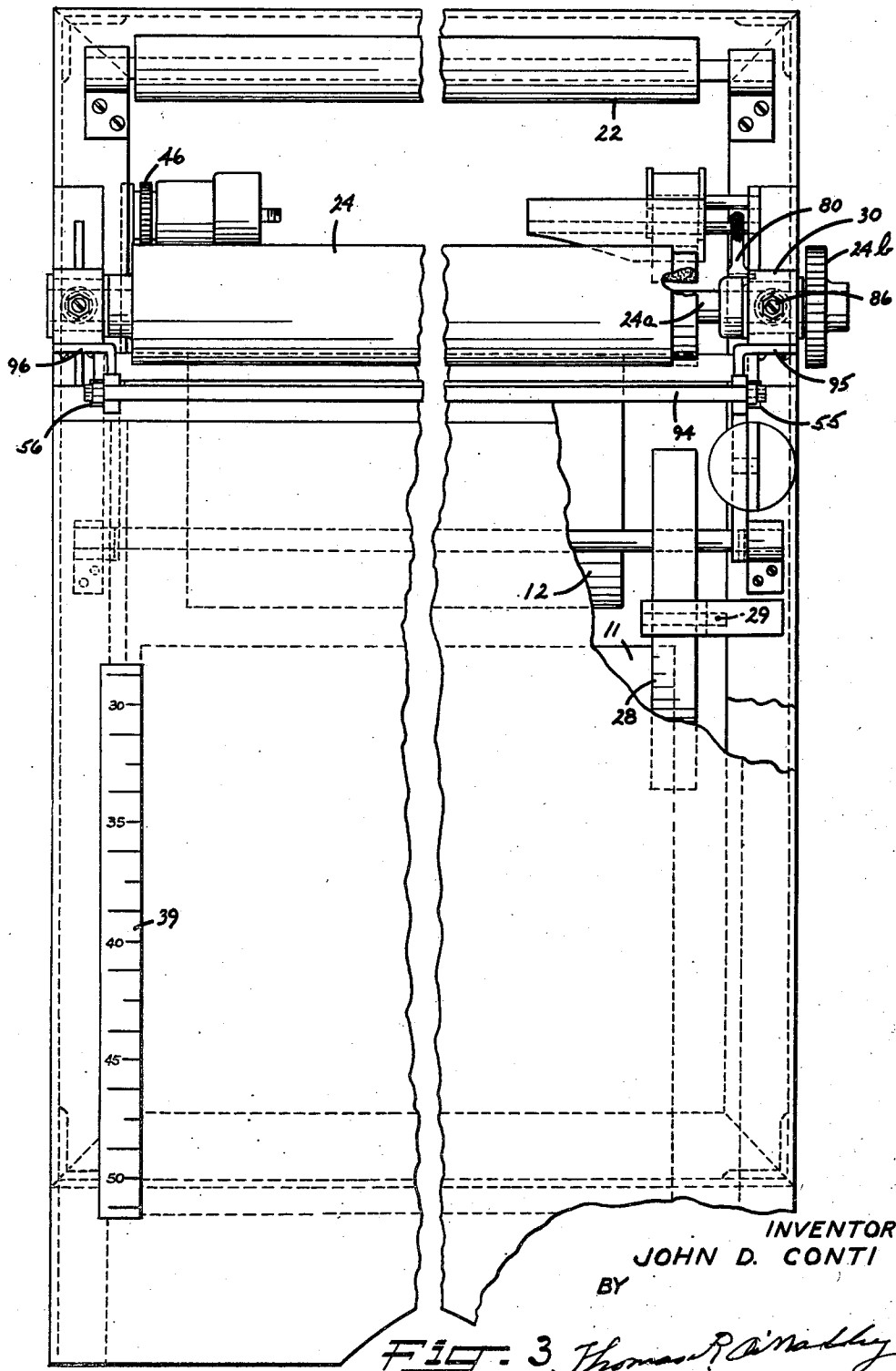
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3 Sheets-Sheet 3

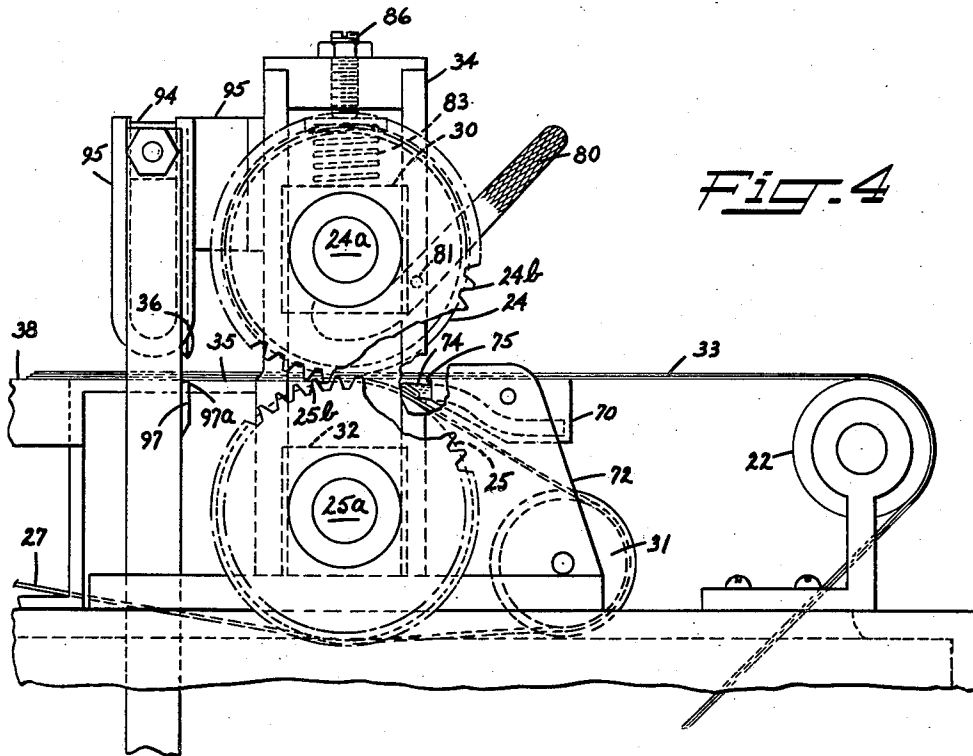


FIG. 4

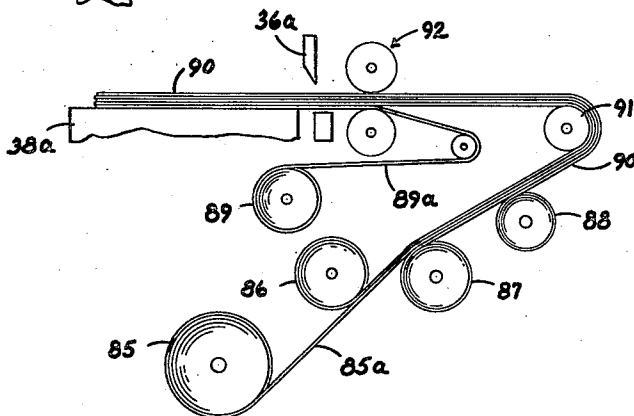


FIG. 5

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2,675,746

WRAPPER MAKING MACHINE

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Application February 18, 1949, Serial No. 77,119

6 Claims. (Cl. 93—1)

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This invention relates to forming a multi-layer wrapping material and particularly to apparatus capable of attaching an adhesive strip along an edge of a sheet of the material.

It is an object of the invention to prepare wrapping material comprising a plurality of layers of different materials and an adhesive portion whereby the wrapping material may be applied to articles of manufacture in a single deft manual operation. It is another object to provide an automatic apparatus for making said wrapping material. It is a further object that the apparatus for making the wrapping material will serve also as a means upon which the wrapping of articles may be performed. Still another object of the invention is to provide an apparatus or machine of such flexibility of operation that it may be used to prepare a series of wrappers varying in sizes throughout the series, and if necessary, to accommodate the varying sizes in a series of articles delivered to the machine for wrapping.

Other objects, features, and advantages of the invention may become obvious from the following description and the accompanying drawings in which:

Fig. 1 is a side elevation of the machine;

Fig. 2 is a section of the machine taken along line II—II in Fig. 1;

Fig. 3 is a plan view of the wrapper making machine with sections broken away to show specific structure of the machine, this view being on a larger scale than Figs. 1 and 2;

Fig. 4 is a side elevation of a portion of the machine illustrating all portions of the wrapper being brought together between a pair of nip rolls; and

Fig. 5 is a diagrammatic representation in elevation of a modified apparatus for applying additional layers to the wrapper.

Briefly, the invention comprises a machine for making a wrapper consisting of a plurality of layers of sheet materials and an adhesive strip attached to and overlapping an edge of the widest of the layers. The machine supports the edge and the separate layers so that as the various materials are pulled from their respective rolls, they come together in the desired alignment to form a single continuous wrapper. The machine is equipped with a wrapping platform and a power-operated shearing device so that the continuous wrapper may be divided into individual wrappers of any desired length and wrapped about articles delivered to the machine. The machine illustrated by the Figures 1 to 4 is designed to make a two-layer wrapper having an

adhesive strip of which a longitudinal portion is secured along a side margin of the wrapper and the remaining longitudinal portion of the strip extends clear of the wrapper.

In order to facilitate the description of the operation of the machine, the machine will be described with respect to the forming of the wrapper comprising a layer of paper and a layer of cellophane, although the machine is adaptable to making a wrapper from any combination of materials desired. Referring now to Fig. 1, a layer 20 of paper is drawn from a roll 11 over a roll 12 of a cellophane sheet. The rolls are supported on shafts 14 and 15 which may be easily and quickly lifted from their respective bearings 17 and 18 to replace the rolls 11 and 12, when exhausted of sheet material, with full rolls. The paper sheet 20 which leaves the roll 11, comes into contact with the cellophane sheet being concurrently removed from the roll 12. The two sheets of cellophane and paper are drawn together as one assembly 33' over a guide roll 22 which aligns the running sheet material for entry into the nip rolls 24 and 25 which pull the sheet material through the machine.

The nip rolls 24 and 25 also pull an adhesive tape or band 27 from a supply roll 28 of this material supported on a quickly removable pin 29. The tape 27 is properly aligned with the nip rolls 24 and 25 by a guide roll 31 so that approximately one-half of the adhesive surface of the band is fed into the machine along an outer margin of the widest layer of the assembly 33 entering the nip rolls. The other half of the band extends laterally from the edge of the assembly 33 with its adhesive surface exposed, unattached, and facing upwardly. The assembly 33 with the tape 27 attached thereto passes over a frame member 35 and under a knife 36 in leaving the nip rolls 24 and 25, then onto a receiving platform 38, shown in Fig. 3, provided with a scale 39 (see Fig. 3). The knife 36 hereinafter described in greater detail may be operated to sever the wrapper at any length desired.

During the cutting of the assembly 33, it is necessary to stop the movement of the sheet by controlling the nip rolls 24 and 25 so that the knife 36 may be operated noncontemporaneously with operation of the nip rolls. These rolls may be controlled by such means as an air-operated clutch 40 connected with the roll 25 by a chain drive. Clutch 40 is driven from means such as the electrical motor 44 by a chain 45 (best shown in Fig. 2), a driving sprocket 46 of the motor, and the sprocket 47 of the clutch. The clutch 40

consists of a simple unit of a conventional type in which driving and driven members of the clutch are resiliently separated when not engaged by force exerted by an air cylinder or receiver contained therein; when engagement takes place, power is transmitted to the nip rolls through the chain 42 passing around sprockets on the clutch and the nip roll 25. The air pressure necessary to operate the clutch may be supplied to it through a line 43 connected with a valve 49 operated by a foot pedal 50 mounted at a point convenient for an operator.

One or both of the nip rolls 24 and 25 may be positively driven as desired; in the embodiment illustrated in the first four figures, both rolls are gear driven. A gear 25b is secured upon the shaft 25a which drives a gear 24b secured on the end of shaft 24a of the roll 24. Shafts 24a and 25a of the nip rolls rotate within bearings 30 and 32 which may slide vertically within the frame 34; the machine has a similar bearing arrangement at either end of the nip rolls. The tension of the springs 33 at both ends of the rolls is adjustable by set screws 36 to obtain any pressure desired between the nip rolls 24 and 25.

In the event that it is necessary to extract or remove materials from between the nip rolls 24 and 25, a lever 30 pivoting on a pin 31 secured to the frame of the machine may be used to lift one end of the roll in opposition to the compression spring 33 extending between the bearing 30 and a frame member 34. A similar spring engages the bearing at the opposite end of the roll 24.

The knife 36 is pneumatically controlled by means of a valve 52 which may be operated by the pedal 50. The knife 36 is linked by connecting rods 55 and 56 extending from opposite sides of the knife to a pair of levers 58 and 59 positioned at opposite sides of the machine and at opposite ends of a torsion rod 60 which transmits rotation to the lever 58 imparted to the lever 59 by the push rod 62 of an air cylinder 63. The air cylinder 63 is controlled by air under pressure carried to the cylinder through a line 65 and released thereinto by a valve 52. The valves 52 and 49 are connected with a compressed air supply maintained in the line 66. When not forced downwardly by operation of the air cylinder 63, the levers 59 and 58 are maintained in an upward position corresponding to the retracted position of the knife by resilient means such as the spring 68.

When using tapes or strips which are coated with a composition which must be moistened to obtain sufficient cohesiveness to adhere the tape or strip to paper, cellophane, etc., a liquid reservoir 70 is secured to a machine frame member 72. A wick 74 is provided of which the greater portion lies in a liquid contained within the reservoir but a portion of which projects from an opening 75 through the side of the reservoir.

The knife 36 is attached to a reciprocable bar 94 extending the entire width of the machine transversely with respect to the movement of the wrapping material. The ends of the bar 94 extend through substantially vertical slots in the brackets 95 and 96 which limit the bar and the knife to reciprocation in a direction normal to the surface of the wrapping material. The connecting rods 55 and 56 which reciprocate the bar and the knife are wider than the slots and when secured pivotably to the end of the slide bar 94 prevent endwise movement of the bar relative to the brackets 95 and 96. A face 97

of the frame member 35 is recessed to provide a surface and shearing edge 97a which the knife 36 may engage when cutting the assembly 33.

The first four figures of the drawing refer to an embodiment of the invention by which a two-layer continuous wrapper may be prepared. The apparatus of this invention may be modified, however, to produce a wrapper having any number of layers desired. In Fig. 5 apparatus is diagrammatically illustrated for producing a four-layer wrapper which is fundamentally similar to the two-layer wrapper machine described hereinabove. Rolls 85, 86, 87 and 88 contain continuous sheets of any desired materials. In the operation of the machine, a sheet material 85a from the roll 85 is led past the rolls 86, 87 and 88. Ends of continuous sheets are likewise unrolled upon the sheet 85a from the rolls 86, 87 and 88 to form a four-layer assembly 90 which passes around the guide roll 91. As in the previously described embodiment, an adhesive strip 89a is pulled from a roll 89 and fed into the nip rolls 92 so that a portion of the tape adheres to an edge of the sheet assembly 90. The machine may be provided with a knife 36a and a platform 38a as in the machine for making the two-layer product. The various layers of the sheet assembly may be of various widths or any width arrangement suitable to the wrapping operation to be performed. Likewise the rolled sheets in the supply packages 85, 86, 87 and 88 are of widths corresponding to the widths of the various layers desired. In the operation of this machine, the outside layer of the sheet assembly is normally the widest and the one to which the adhesive strip is attached. In the apparatus of Fig. 5, the layer supplied from roll 86 will be the bottom layer of the sheet assembly proceeding from the nip rolls 92 and the layer to which the adhesive material is attached. As shown, the apparatus is used to build a four-layer assembly 90. However, it may be used to form a sheet assembly comprising any lesser number of layers merely by lacing the machine with material from the number of rolls corresponding to the layers desired in the sheet.

The apparatus of the invention is suitable for forming multiple-layer wrappers from sheets of material including films, paper, fabrics, and fibrous mats, in any combination or arrangement desired. The adhesive material may be applied at either or both sides of a sheet assembly by slight modification of the machine illustrated and described. A wrapper-forming machine according to the invention has been found particularly valuable in applying wrappers to a series of articles, each of which may differ in size and shape from the others. For example, in packaging rolls of cellophane or paper of varying widths such as needed to fill a single shipping order, the machine is controlled to issue and sever portions of the wrapping material having lengths in accordance with the size of the individual rolls being wrapped. The wrapper is then applied to the article in a rapid manual operation. The invention is highly useful in packaging other articles of irregular size and shape which are difficult to wrap by completely automatic means. Moreover, by means of this invention, multiple-layered wrappers may be applied with great saving of time over that consumed in placing the layers about the packages separately.

While preferred embodiments have been described, it is to be understood that they are

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merely illustrative of the invention, and that changes and variations may be made herein without departing from the spirit and scope as defined in the appended claims.

I claim:

1. Apparatus for preparing a wrapping assembly comprising a frame; a wrapping table positioned on the frame; a supply roll of sheet material; means mounted on the frame beneath the wrapping table for rotatably supporting the sheet material supply rolls; a supply roll of an adhesive material; means mounted on the frame beneath the wrapping table for rotatably supporting the roll of adhesive material; a guide roll mounted at one end of the frame; a pair of nip rolls positioned on the frame between the guide roll and the adjacent extremity of the wrapping table, the lateral disposition of the adhesive and sheet material supply rolls being arranged with respect to the nip rolls so as to superimpose the adhesive material upon and secure it along a longitudinal edge of the sheet material as they are directed from their respective supply rolls about the guide roll and between the nip rolls; means positioned at said extremity of the wrapping table for severing the sheet and adhesive materials transversely; rotary driving means positioned beneath the wrapping table; means including a hydraulically operated clutch for engaging the driving means with and disengaging it from one of the nip rolls; hydraulic means for operating the material severing means; and means including a control treadle positioned adjacent the base of the wrapping table for sequentially actuating the severing means and the clutch engaging means.

2. Apparatus for preparing a wrapping assembly comprising a frame; a wrapping table positioned on the frame; a supply roll of sheet material; means mounted on the frame beneath the wrapping table for rotatably supporting the sheet material supply roll; a supply roll of an adhesive material; means mounted on the frame beneath the wrapping table for rotatably supporting the roll of adhesive material; a guide roll mounted at one end of the frame; a pair of nip rolls positioned on the frame between the guide roll and the adjacent extremity of the wrapping table, the lateral disposition of the adhesive and sheet material supply rolls being arranged with respect to the nip rolls so as to superimpose the adhesive material upon and secure it along a longitudinal edge of the sheet material as they are directed from their respective supply rolls about the guide roll and between the nip rolls; means positioned at said extremity of the wrapping table for severing the sheet and adhesive materials transversely; rotary driving means positioned beneath the wrapping table; means including a hydraulically operated clutch for engaging the driving means with and disengaging it from one of the nip rolls; hydraulic means for operating the material severing means; a fluid supply; means including a control valve connecting the fluid supply with the material severing operating means; means including another control valve connecting the fluid supply with the hydraulic clutch; and a centrally pivoted treadle member positioned adjacent the base of the platform for sequentially actuating the valves.

3. A wrapping table assembly for manually wrapping various sized articles comprising a substantially horizontal platform, a framework on which said platform is mounted, means on the framework for supporting a supply roll of sheet wrapping material to be intermittently fed across

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the platform, a pair of feed rollers mounted on the framework adjacent the platform, driving means for said feed rollers, means on the framework for supporting a supply roll of relatively narrow tape, a guide roller for the tape mounted in the framework adjacent one end of the feed rollers and having the center of said guide roller substantially in line with the terminus of the pressure surface of said feed rollers whereby the tape is fed in pressure contact between the feed rollers to partially underlie a marginal edge of the sheet wrapping material, a cutter mounted on the framework between the feed rollers and the platform, means accessible to an operator at the opposite end of the platform for actuating said cutter, and means accessible to an operator at the opposite end of the platform for starting and stopping the feed roller driving means.

4. A wrapping table assembly for manually wrapping various sized articles comprising a substantially horizontal platform, a framework on which said platform is mounted, means on the framework for supporting a supply roll of sheet wrapping material to be intermittently fed across the platform, a guide roller for said sheet wrapping material mounted on the framework adjacent one extremity thereof and having its upper edge substantially in line with the top of the platform, a pair of feed rollers mounted on the framework between the platform and said guide roller, driving means for said feed rollers, means on the framework for supporting a supply roll of relatively narrow tape, a flanged guide roller for the tape mounted in the framework adjacent one end of the feed rollers and having the center of said guide roller substantially in line with the terminus of the pressure surface of said feed rollers whereby adhesively coated tape is fed in pressure sealing contact between the feed rollers to partially underlie a marginal edge of the sheet wrapping material, a cutter mounted on the framework between the feed rollers and the platform, means accessible to an operator at the opposite end of the platform for actuating said cutter, and means accessible to an operator at the opposite end of the platform for starting and stopping the feed roller driving means.

5. A wrapping table assembly for manually wrapping various sized articles comprising a substantially horizontal platform, a framework on which said platform is mounted, means on the framework under the platform for supporting a supply roll of sheet wrapping material to be intermittently fed across the platform, a guide roller for said sheet wrapping material mounted on the framework adjacent one extremity thereof and having its upper edge substantially in line with the top of the platform, a pair of feed rollers mounted on the framework between the platform and said guide roller, driving means for said feed rollers, means on the framework for supporting a supply roll of relatively narrow tape, a double flanged guide roller mounted in the framework adjacent one end of the feed rollers and having the center of said guide roller substantially in line with the terminus of the pressure surface of said feed roller whereby the tape is fed in pressure contact between the feed rollers to partially underlie the sheet wrapping material, means between said double flanged guide roller and the feed rollers for applying adhesive to the tape, a cutter mounted on the framework between the feed rollers and the platform, means accessible to an operator at the opposite end of the platform for actuating said

cutter, and means accessible to an operator at the opposite end of the platform for starting and stopping the feed roller driving means.

6. A wrapping table assembly for manually wrapping various sized articles comprising a substantially horizontal platform, a framework on which said platform is mounted, means on the framework for supporting a first supply roll of sheet wrapping material, means on said framework for supporting a second supply roll of sheet wrapping material, means on the framework for supporting a supply roll of relatively narrow tape material, a guide roller mounted on the framework adjacent one extremity thereof and having its upper edge substantially in line with the top of the platform over which both webs of sheet wrapping material pass, a pair of feed rollers mounted on the framework between the platform and the guide roller, guide means for directing the tape between the feed rollers to press substantially half of the tape against the under marginal edge of one of the sheet wrapping webs, interconnected driving means for each of said feed rollers, a cutter mounted on the framework between the feed rollers and the platform, means accessible to an operator at the opposite end of the platform for actuating said cutter, and means accessible

to an operator at the opposite end of the platform for starting and stopping the feed roller driving means.

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