May 6, 1969 J. D. CONTI 3,442,064

ARTICLE WRAPPING APPARATUS

Filed June 10, 1966

Sheet 1 of 2

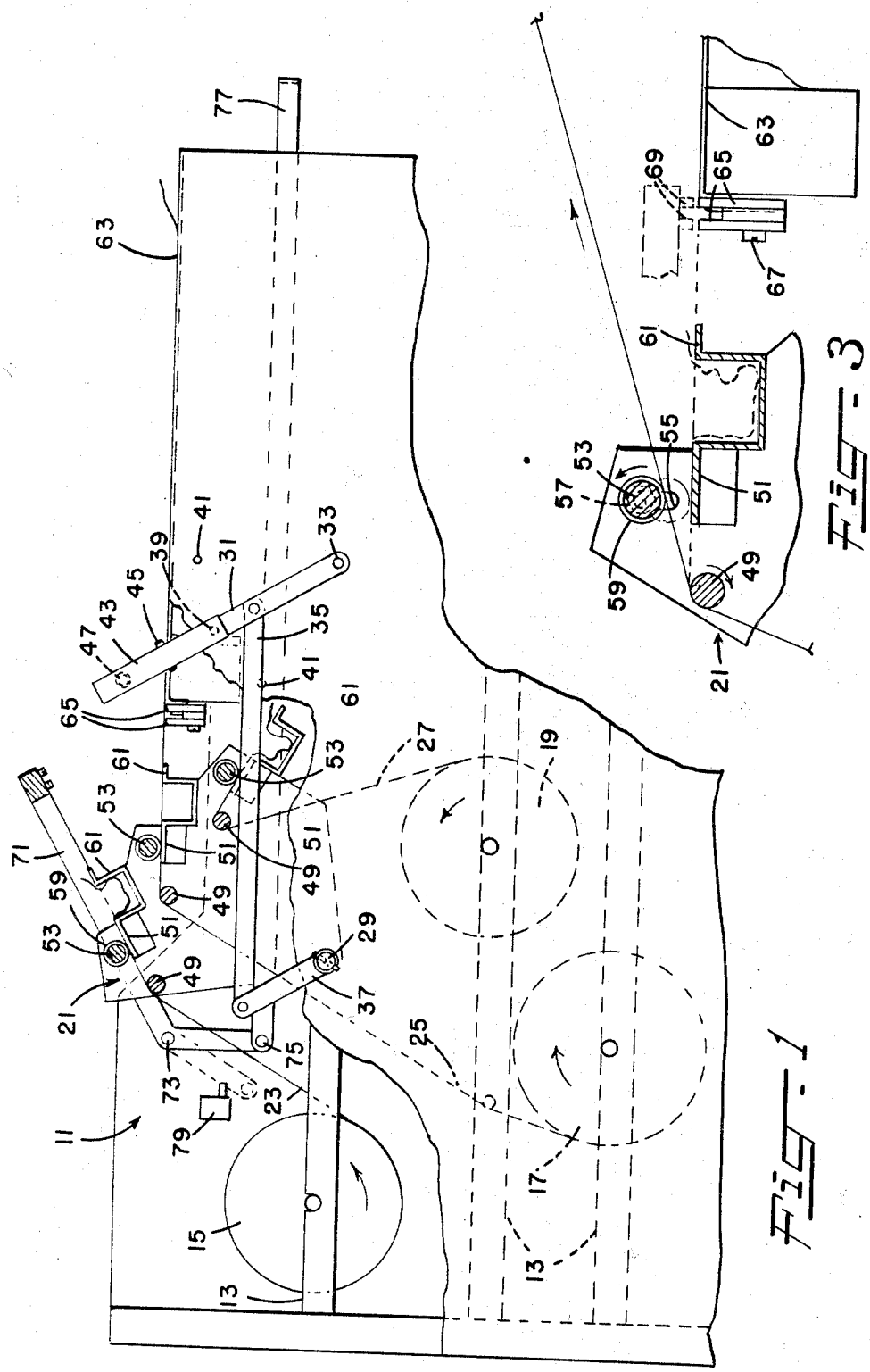



FIG - 3

FIG - 1

May 6, 1969 J. D. CONTI 3,442,064

ARTICLE WRAPPING APPARATUS

Filed June 10, 1966

Sheet 2 of 2

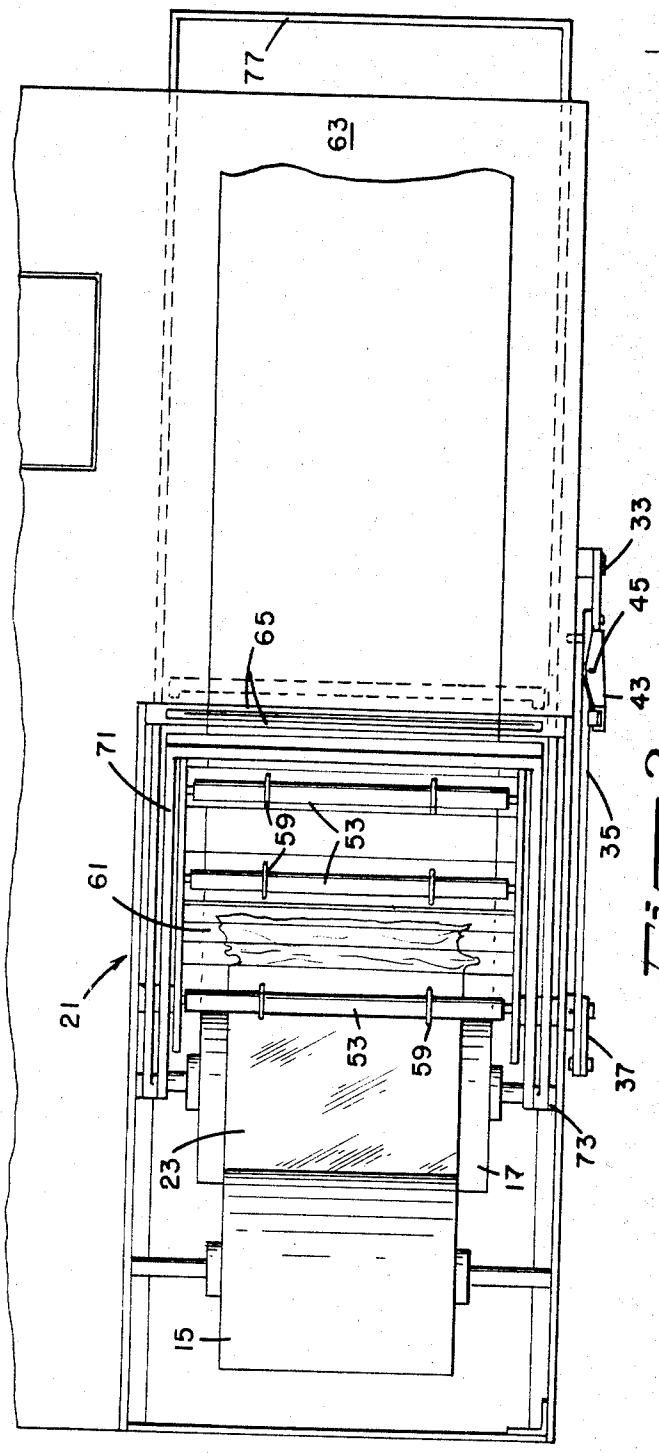



FIG. 2

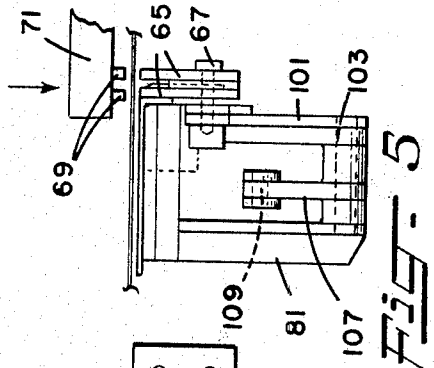



FIG. 5

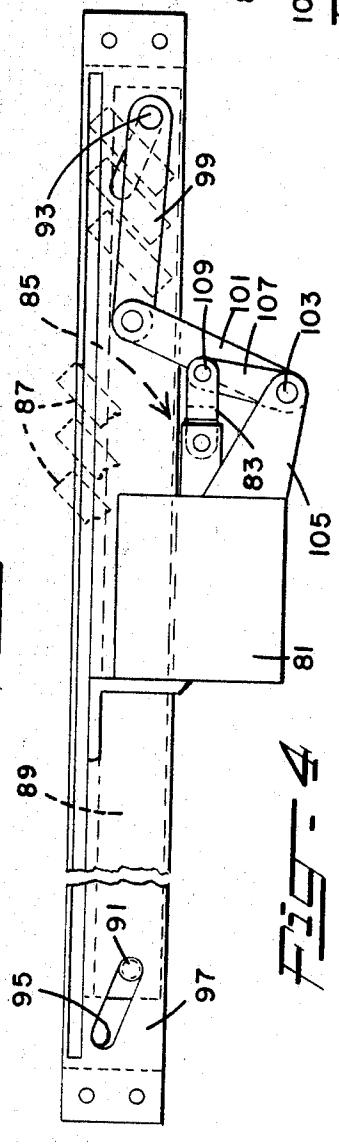



FIG. 4

United States Patent Office

3,442,064

Patented May 6, 1969



3,442,064

# ARTICLE WRAPPING APPARATUS

John D. Conti, Elkins Park, Pa., assignor to FMC Corporation, Philadelphia, Pa., a corporation of Delaware

Filed June 10, 1966, Ser. No. 556,608

Int. Cl. B65b 67/08, 11/02

U.S. Cl. 53—390

5 Claims

## ABSTRACT OF THE DISCLOSURE

Article wrapping apparatus in which the leading ends of individual rolls of wrapping material are retained in positions for easy access by an operator, and in which a desired length of wrapping material may be severed from a supply roll by a knife while the wrapping material itself is nipped against movement.

The present invention relates to an improved article wrapping apparatus.

Meats, produce and other articles are commonly wrapped in transparent, heat-sealable wrapping materials to provide packages which are attractive, neat and protective and yet permit the article to be seen. Such wrapping material is generally provided as individual or precut sheets and thus requires that each article wrapping operator be provided with a supply of different size sheets to accommodate articles which vary in size. Aside from creating inventory problems, the use of individual or precut sheets of wrapping material can be wasteful since reliance is placed upon the skill of the operator to select a sheet of proper size for the particular article being wrapped.

More recently, equipment has been provided which facilitates the use of wrapping material in roll form. Such equipment, while simplifying inventory problems, still requires a supply of rolls of wrapping material of different widths for wrapping articles which vary in size. More important, equipment which is available for use with wrapping materials in roll form requires frequent roll changes when articles of many different sizes are to be wrapped and involves a lacing operation of the wrapping material with each roll change which is not only time consuming but often wasteful of wrapping material. Further, with such known wrapping equipment, the use of a cutting knife has generally proved to be unsatisfactory since frequent adjustment and replacement of the same is necessary in an attempt to enable the machine to provide clean cuts continuously across the entire width of the wrapping material. Accordingly, a primary object of this invention is to provide a generally new or improved and more satisfactory article wrapping apparatus.

Another object is the provision of an improved article wrapping apparatus in which a plurality of rolls of wrapping material of different widths are made available to an article wrapping operator.

Still another object is the provision of an improved wrapping apparatus in which wrapping materials of different widths are made available to an article wrapping operator without necessitating time-consuming and wasteful lacing operations.

A further object is to provide an improved article wrapping apparatus having a cutting knife, which is adapted to perform satisfactorily for long periods, and in which the newly formed leading end of a roll of wrapping material is positioned for easier access and gripping by an article wrapping operator.

A still further object is to provide an article wrapping apparatus, for use in wrapping articles of different sizes, which is simple in construction, facilitates economical use of wrapping material and is easy and safe to operate.



These objects are accomplished in accordance with the present invention by an apparatus in which a plurality of supply rolls of wrapping material are mounted for independent rotation, with their respective leading end portions being releasably held in a movable retainer for selectively positioning such leading end portions in the vicinity of a wrapping platform. More particularly, the retainer is provided with a separate gripping means for each of the wrapping materials, with each of such gripping means including a fixed plate over which a wrapping material is adapted to be drawn and a roller which, under its own weight, presses such wrapping material against the fixed plate. Preferably, resilient rings, as for example of rubber, are spaced longitudinally of such rollers and project beyond the peripheries thereof so as to exert a frictional grip on the wrapping materials and a more snug engagement thereof with their respective fixed plates. Located adjacent to each of the wrapping material gripping means is a trough into which are received the leading end portions of the respective wrapping materials.

Once a wrapping material has been unwound from a desired supply roll, drawn through the retainer and placed upon the platform in position for wrapping, cooperating nipping means are put into operation to nip the wrapping material from the opposite sides thereof. More specifically, the nipping means includes a pair of spaced, fixed nipping members, which extend transversely across the paths of the wrapping materials at a location between the retainer and the wrapping platform, and a similar pair of spaced nipping members which are movable toward and into opposition with the fixed pair of nipping members. For simplicity in construction and ease of operation, the movable nipping members are carried by a pair of pivoted arms which are actuated through a press bar against which the operator can merely lean his body, thus leaving his hands free for performing the usual article wrapping movements.

Located between, and normally below the top surface of the fixed nipping members, is a cutting knife having a serrated cutting edge. This knife is projected toward and laterally across the wrapping material after it has been nipped. As more fully described hereafter, nipping of the wrapping material and projection of the cutting knife are achieved in sequence by a single operation of the press bar. Once the nipping members are released from the wrapping material, the newly formed leading end of the roll of wrapping material merely drapes itself within an adjacent trough where it will not interfere with the other wrapping materials, yet can be easily reached by the operator.

In the apparatus of the present invention, the use of a serrated edge cutting knife is of particular importance. The initial piercing of the wrapping material by the spaced tips of the serrated knife edge and a concomitant lateral movement of the knife assures a clear continuous cut across the wrapping material. Moreover, such knife experiences little wear, is highly satisfactory with very flexible materials such as cellophane and polypropylene and, of special importance, its effeciency is not affected by variations in the thickness of the wrapping material. With the serrated-edge knife employed in the apparatus of the present invention, problems encountered with conventional anvil and shear type cutters, such as the need for precise cutting edges, frequent and sensitive knife alignment, and excessive wear, are completely absent.

In the drawing, FIGURE 1 is a side view of the apparatus of the present invention, with a portion thereof being broken away to show interior details thereof;

FIGURE 2 is a top view of the apparatus shown in FIGURE 1;

FIGURE 3 is a fragmentary view illustrating, on an

enlarged scale, a portion of the apparatus shown in FIGURE 1;

FIGURE 4 is a detailed front view of the cutting knife of the apparatus of the present invention; and

FIGURE 5 is a fragmentary view showing the position of parts of the apparatus immediately prior to nipping and cutting of a wrapping material.

With reference to the drawing for a more detailed description of the invention, the apparatus includes a suitable supporting frame, indicated generally at **11**, having pairs of slotted brackets **13** on which are rotatably supported supply rolls **15**, **17**, and **19** of wrapping material which may be, for example, of different widths.

A retainer **21** for the leading end portions of wrapping materials **23**, **25**, and **27**, drawn from the rollers **15**, **17**, and **19**, respectively, is carried by a shaft **29** which is rotatably supported by the frame **11**. For reasons as will hereafter become more apparent, the retainer **21** is adapted to be oscillated relative to the frame **11** and fixed in adjusted position by an operating lever **31** which has a fulcrum at **33** and is connected to the shaft **29** by a link **35** and a lever **37**. The operating lever **31** is locked in a desired adjusted position by a pin **39** which is received in any one of a series of openings **41** formed in the frame **11**. This locking pin **39** slides freely through an opening in the lever **31** and projects from the lower end of channel **43** (see FIGURE 2) which is pivoted at **45** to the operating lever itself. The pin **39** is normally urged toward the frame **11** by a spring **47** which acts upon the upper end of the channel **43** and thus it is merely necessary to squeeze together the operating lever **31** and the upper end of the channel **43** to secure release of the locking pin **39** and movement of the retainer.

Lacing of the wrapping materials **23**, **25**, and **27** through the retainer **21** is achieved by passing the same over separate retainer guide rods **49** and into independent holding or gripping means, each of which includes a fixed plate **51** and a roller **53**. As best seen in FIGURES 2 and 3, the ends of the rollers **53** are of reduced diameter and are received, for free sliding movement, in slots **55** formed in the retainer itself. Nuts **57** may be threaded onto the ends of the rollers **53** to maintain the same engaged within the slots **55**. The rollers **53** are of sufficient weight as to press the wrapping materials snugly against the fixed plates **51** of the respective gripping means, yet permit the wrapping material to be easily drawn through the retainer by sliding freely along the respective slots **55** when a tension is applied to the wrapping materials. Preferably, and as illustrated in the drawing, the rollers **53** are each provided with a series of spaced rings **59**, formed of rubber or other resilient material, which project beyond the roller peripheries. These resilient rings **59** frictionally grip the wrapping materials and serve also to more snugly press the wrapping materials against the respective fixed plates **51**.

Directly in front of each of the plates **51** of the respective gripping means is a trough **61** within which the leading end portions of the wrapping materials individually drape themselves so as not to interfere with each other yet be in a position for easy access by the operator. As illustrated in FIGURES 1 and 3 of the drawing, the troughs **61** are open at their ends so as to enable the operator to extend his fingers beneath the wrapping material and easily grip the same along its opposite edges.

The wrapping material unwound from the rolls **15**, **17**, and **19** and drawn through the retainer **21** is placed on a wrapping platform **63** where the operator can effect article wrapping. Located between the retainer **21** and the platform **63** are a pair of spaced nipping members **65** which extend across the path of the wrapping materials and are fixed at **67** to the frame **11**. A similar pair of spaced nipping members **69** is carried by lever arms **71** which are pivoted at **73** to the frame **11** and also at **75** to the ends of a U-shaped push bar **77**. Suitable guides, not shown, support the push bar for sliding movement



when such bar is depressed, as by having the operator merely lean against the same. When depressed, the lever arms **71** will be turned about their pivots **73** to place the nipping members **69** in opposition to the nipping members **65** and thus engage and hold, from opposite sides, a wrapping material which may be located therebetween.

A switch **79** is carried by the frame **11** in position to be actuated by the lever arms **73** during the terminal portion of their movement by the push bar **77**. This switch **79** is electrically connected to a solenoid **81** which, when actuated, retracts a plunger **83** for projecting a cutting knife **85**, as more fully described hereafter.

As illustrated in FIGURE 4, the knife **85** includes a series of sharpened blades **87** which are removably secured to a plate **89** to thus provide the knife with a serrated cutting edge. An advantage of this construction is that the blades **87** may be replaced as required. However, a unitary knife formed with a serrated cutting edge may be substituted without departing from the scope of the invention.

The plate **89** is supported by laterally extending pins **91** and **93** which are received within and slidable along inclined slots **95** formed on the opposite walls of a knife support block **97**. As best seen in FIGURES 3 and 5, this support block **97** is disposed between the nipping members **65** and is thereby fixed to the frame **11**. The pin **93** is connected through a link **99** to a lever **101** which is fixed to a shaft **103**. Brackets **105**, depending from the solenoid **81**, rotatably support the shaft **103**. A lever **107** is fixed at one end to the shaft **103** and is pivoted at its opposite end at **109** to the solenoid plunger **83**. Thus, as the solenoid **81** is actuated to retract its plunger **83**, the shaft **103** is rotated in a counterclockwise direction, as viewed in FIGURE 4, to project the knife plate **89** upwardly and laterally across the paths of the wrapping materials.

In the operation of the above described apparatus, the operating lever **31** is first moved to oscillate the retainer **21** and position the leading end portion of the desired wrapping material in alignment with the wrapping platform **63**. The operator can the grasp the leading end of the wrapping material by extending his fingers through the opposite open ends of the trough **61** and then draw the same onto the platform **63**. As tension is applied to such wrapping material, the roller **53** slides freely along the slots **55** of the retainer **21** and thus enables the wrapping material to move easily through the retainer and its gripping means.

By merely leaning against the push rod **77**, the operator can nip the drawn wrapping material between the cooperating pairs of nipping members **65** and **69** and concomitantly actuate the solenoid **81** to effect cutting of the wrapping material. If desired, strips of rubber or other friction material may be fixed to the opposing edges of the nipping members to prevent the wrapping material from slipping relative thereto during the cutting stage. Once the push rod **77** is released, the weight of the levers **71** automatically returns the push rod **77** to its outermost position and also elevate the nipping members **69** into a position as shown in FIGURE 1.

Once released from between the nipping members, the newly formed leading end of the wrapping material merely drapes itself into the adjacent trough **61** where it remains accessible to the operator and yet does not interfere with the other wrapping materials or with the movement of the retainer **21**.

Regardless of the position into which the retainer **21** is moved, it will be noted that the rollers **53**, by their own weight, press the wrapping material snugly against the respective opposing plate **51**. The frictional properties of the rings **59** on the respective rollers **53** assist in snugly holding the wrapping materials against their respective support plates **51** and thus there is little chance of the wrapping materials sliding away from their laced paths.

It is to be understood that changes and variations may be

made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. An article wrapping apparatus including a frame, means carried by said frame for supporting a plurality of rolls of wrapping material for independent rotation, a retainer carried by said frame having separate means for gripping the respective leading end portions of each roll of web material in said retainer, an article wrapping platform onto which a length of wrapping material may be positioned after it is unwound from a roll of wrapping material and drawn through said retainer, means for moving said retainer to position the gripping means of a selected web material adjacent to said platform, a pair of fixed, spaced nipping members positioned between said retainers and platform and extending across the wrapping material path, a pair of cooperating nipping members carried by arms pivoted to said frame, means for moving said arms to position said pairs of nipping members in opposition to each other to thereby nip a length of unwound wrapping material therebetween, a knife positioned between said fixed nipping members and normally extending below the top surface thereof, and means activated by said arm moving means for projecting said knife through a portion of the wrapping material between said pairs of nipping members.

2. An article wrapping apparatus as defined in claim 5 further including resilient rings spaced longitudinally of said roller and projecting beyond the periphery thereof.



3. An article wrapping apparatus as defined in claim 5 further including an individual trough formed integrally with said plates for receiving the newly formed leading ends of the rolls of wrapping material as they are formed after a desired length has been severed therefrom.

4. An article wrapping apparatus as defined in claim 1 wherein said knife has a serrated cutting edge and is reciprocated laterally of said fixed nipping members concomitantly with its projection.

5. An article wrapping apparatus as defined in claim 1 wherein said separate gripping means each include a fixed plate over which a wrapping material is adapted to travel and a roller for pressing such wrapping material snugly against said fixed plate under the force of gravity.

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,463,717 | 7/1923 | Munn | 53—219 X |
| 3,035,381 | 5/1962 | Hosso | 53—390 X |
| 3,112,589 | 12/1963 | Willbrandt | 53—390 X |
| 3,176,443 | 4/1965 | Klamp | 53—390 |
| 3,298,265 | 1/1967 | Millican et al. | 53—390 X |
| 3,348,356 | 10/1967 | Curtis | 53—390 X |
| 3,239,993 | 3/1966 | Cherrin | 53—390 X |

TRAVIS S. McGEHEE, *Primary Examiner.*

U.S. Cl X.R.

53—219; 242—55.3