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Description

This invention relates to packaging and more particularly to a device to facilitate packaging articles with plastic wrapping material or synthetic plastic binding material.

So-called "stretch-film" - usually a synthetic plastics material such as linear polyethylene having inherent "cling" properties - has been used for the wrapping or packaging of many types of articles, such as pallet-borne articles including bricks, glass containers, packs of beverages such as beer, and of bulky and/or heavy products such as large rolls of newsprint, kraft paper and the like. The stretch film binds the articles together as a single unit to facilitate their handling and transport. Special machines have been developed to "stretch-wrap" such groups of articles.

Background of the Invention

In many cases it may be desired to package together, as for despatch or marketing, pluralities of like or dissimilar articles, either with or without a pallet. For example, in such fields as food distribution, hardware supplies, etc., it may be desirable to package together several articles to be sold together as a unit.

Heretofore, in such applications, a number of articles, which may be separate, or individually packaged in cartons or boxes, may be packaged together with cellulose tape, bands, cord, lashing, metal or plastic strapping, or the like binding materials.

Such packaging methods are time-consuming and labour intensive and, therefore, relatively expensive.

Background Art

Several forms of machine have been proposed to assist in the wrapping of articles with a stretch film. Australian Patent No. 511,642 discloses an automatic wrapping machine for wrapping layers of film web around a load. With this machine, a turntable holds the load in position and rotates relative to a supported roll of stretchable film. A brake is applied to the roll to place tension on the film web so as to stretch the web as it is applied to the rotating load.

This machine is designed for relatively large loads and is, consequently, relatively expensive to manufacture.

Australian Patent No. 519,456 discloses a process using a similar type of wrapping machine, while Australian Patent No. 505,121 discloses another form of apparatus for wrapping a plurality of loads into a unitized load. Similarly, United States

Patent Nos. 4,050,221, 4,271,657 and 4,432,185 all disclose other forms of stretch wrapping machines for wrapping a plurality of packages into a unit or wrapping palletized loads.

Further, UK Patent No. 1 581 674, equivalent to German Patent No. 2 724 100, discloses an automatic wrapping machine wherein rubber friction rollers, associated with brake means, engage the surface of a film roll to apply tension thereto.

The use of such machines requires that the loads be transported to the machine, loaded thereon, clamped or supported in some way while the machine wraps the stretchable film about the load. United States Patent No. 4,102,513 discloses a portable, hand-held dispenser for wrapping a roll of plastic stretch film about an object. The dispenser has a reel assembly on which is mounted the roll of stretchable film. Two handles are connected to the reel assembly for support thereof during use. The support assembly includes a support shaft secured to a base plate and carrying a pair of opposed rotary end supports mounted for rotation on the shaft. The supports engage into the ends of a roll of plastic stretch film. At least one of the supports has a friction brake member operable to act as a brake and restrict rotation of the roll of stretch film on the support shaft. One of the hand grips is operatively associated with the rotary end supports to increase or decrease the drag on the roll and to thereby vary the tension on the film during wrapping. This dispenser, however, requires two hands for operation thereof and requires the braking on the roll of film to be controlled by the operator during use.

European Patent No. 0 081 328 dated November 26, 1982 discloses another form of film dispenser in which the film passes around a pair of rollers which are mounted pivotally relative to the film roll. Tension applied to the film causes one of the rollers to be pressed against the surface of the roll of film, and the rollers are geared together so that one roller rotates at a greater speed than the other to thereby stretch the film longitudinally between the rollers. The dispenser has a wheeled base for movement around a palletized load. While this dispenser is portable, it requires to be rolled along a floor around a palletized load, and a handle is provided at the upper end to facilitate such movement. Further, the stretch of the film is controlled by the difference between the peripheral speeds of the two rollers. As soon as tension on the film is diminished, the forces holding one of the rollers against the surface of the film roll also diminishes thus permitting the roll unrestricted movement and diminishing the stretch between the rollers.

Further, US Patent No. 3 477 656 discloses a wall-mounted paper roll dispenser comprising a

support frame, a spindle extending from the frame and supporting a roll of paper, and a pressure arm, spring biased into engagement with the roll of paper to provide a tensioning effect.

It is therefore desirable to provide an improved device for packaging objects which avoids at least some of the previous packaging problems.

It is also desirable to provide a packaging device which facilitates the use of a plastics film, preferably linear, low-density polyethylene film as a packaging material.

The portable film dispenser to be described can be operated with one hand and allows the user to stretch wrap an article or a group of articles and in which the stretch of the film applied to an article may be controlled as desired.

The film dispenser to be described is of relatively simple construction, of relatively few moving parts and which is relatively easy to use.

Summary of the Invention

According to the present invention there is provided a dispenser for a roll of packaging medium comprising a housing to support the roll of packaging medium, a handle on the housing, a brake roller rotatably mounted on the housing, biasing means biasing the brake roller and the roll together so that the brake roller contacts the surface of the roll of packaging medium with a force proportional to the biasing force wherein the housing is formed with opposed guide channels to receive and rotationally support opposite ends of a support means carrying the roll of packaging medium, said biasing means biasing said roll against the brake roller, and the housing having a dispensing opening through which the packaging medium is dispensed, the opening being arranged to allow the packaging medium in use to pass between the nip of the roll and the brake roller and to engage with and pass around a part of the surface of the brake roller to be dispensed, with the brake roller acting to restrain withdrawal of the packaging medium from the roll thereof.

Preferably, the guide channels in the housing comprise opposed channels formed on opposite sides of the housing and extending from said one end towards a rear end of the housing, the channels being adapted to receive ends of the support means to rotatably support the roll of packaging medium whilst allowing movement of the roll of packaging medium towards said one end under the influence of said biasing means.

Preferably, the support means is either a mandrel or a core tube carrying the roll of medium.

The brake roller may include an integral braking means restricting free rotation of the brake roller.

The braking means may be adjustable and preferably includes an end flange which frictionally engages an end of the brake roller, and brake biasing means biasing the flange against that end. In embodiments of the invention, when the plastics material is drawn from the roll the braking roller restricts rotation of the roll which causes the material to be tensioned and therefore stretched. The degree of tension, and therefore stretch, may be adjustable by adjusting the biasing means, preferably spring tension.

In use of the device of the invention, an end of the plastic stretch-wrap material on the roll, which is mounted for rotation on the holder means, is applied to articles to be wrapped and is held in position while the device and articles are moved apart. The movement causes the plastics material to stretch while simultaneously being wrapped about the article. When the tension in the film reaches a predetermined minimum, sufficient force is exerted to stretch the film and, at the same time, to overcome the effect of the braking means to draw film from the roll.

A linear polyethylene film can be stretched to several times its original length, depending upon its application. Because of inherent elasticity of some types of film, a stretched film may tend to return to its unstretched size or state thereby exerting a pressure on goods or articles wrapped in the film to firmly hold the goods together.

If desired, the dispenser may be designed as a wall-mounted stretch-film dispenser having the same features as outlined above.

In order that the invention is readily understood, hereinafter will be described certain embodiments thereof, by way of example only and with reference to the accompanying drawings.

Description of the Drawings

Figure 1 is a perspective view illustrating an embodiment of the invention;

Figure 2 is a top plan view, partly cut away, of the dispenser of Figure 1;

Figure 3 is a sectional view taken along the lines 7-7 of Figure 2; and

Figure 4 illustrates a modified construction of braking roller.

The figures show a stretch-film dispenser. Referring to the figures, the dispenser in one embodiment comprises a housing 62, moulded of synthetic plastic material and having a front section 63 with a dispensing opening therein and a rear section 64 pivoted together about an axis 66 between open and closed positions. In the open position the film roll is accessible. A clip 67 holds the two housing sections in the closed position as shown in Figure 1.

The housing is provided on opposite sides with a pair of guideways 68 which are able to receive the ends of a film roll core or a core tube 69 so as to be movable along the guideways 68 whilst permitting rotation of a roll 11 of the film material.

The rear housing section 64 is formed with an integral handle 71 while the front housing section 63 carries a braking roller 72. The braking roller 72 comprises a spindle 73 mounted in the front section 63, bearing bushes 74 mounted on each end of the spindle 73 and a substantially rigid, PVC roller 76 rotatably mounted on the bearing bushes 74.

A pair of biasing springs 78 are mounted on a journal 79 coaxial with the pivot axis 66. One leg 81, of each spring 78 is supported by a bar 82 in the rear housing section 64 while the other leg 83 of each biasing spring 78 bears against the core tube 69 carried in the guideways 68. The biasing springs 78 thus bias the core tube 69, and hence the roll 11 towards the braking roller 72. In use, film material passes from the roll 11 between the nip created by the engagement of the roll 11 with the braking roller 72, to be applied to an article or a group of articles to be wrapped with the stretch film material. The braking force applied by the braking roller 72 enables the film to be stretched as it is applied to the articles, the degree of stretch being dependent both on the biasing force and the rotational freedom of the braking roller 72. By passing the stretch film through the nip, the material is always firmly held on the roll 11 and a constant tension is able to be maintained during wrapping.

Referring to Figure 4, the biasing roller 72 may have an inbuilt brake mechanism which is adjustable to vary the rotational freedom of the braking roller 72, in use. The structure illustrated in Figure 4 comprises a pair of flanges 86 and 87 adapted to engage the ends of the braking roller 72. The flanges 86 and 87 are held together by a spring 88 and a screwed spindle 89 connected to a handle 91. By adjusting the axial position of the spindle 89, by threaded movement of the handle 91 and spindle 89, the tension in the spring 88 can be varied to thereby vary the pressure applied by the flanges 86 and 87 on the ends of the braking roller, thereby varying the rotational freedom thereof.

Claims

1. A dispenser for a roll (11) of packaging medium comprising a housing (62) to support the roll (11) of packaging medium, a handle (71) on the housing (62), a brake roller (72) rotatably mounted on the housing, biasing means (78) biasing the brake roller (72) and the roll (11) together so that the brake roller (72) contacts the surface of the roll (11) of packaging me-

dium with a force proportional to the biasing force, wherein the housing (62) is formed with opposed guide channels (68) to receive and rotationally support opposite ends of a support means (69) carrying the roll (11) of packaging medium, said biasing means (78) biasing said roll (11) against the brake roller (72), and the housing (62) having a dispensing opening through which the packaging medium is dispensed, the opening being arranged to allow the packaging medium in use to pass between the nip of the roll (11) and the brake roller (72) and to engage with and pass around a part of the surface of the brake roller (72) to be dispensed, with the brake roller (72) acting to restrain withdrawal of the packaging medium from the roll (11) thereof.

2. A dispenser according to Claim 1 wherein said support means (69) is a mandrel rotatably carried by the guide channels (68) in the housing.
3. A dispenser according to Claim 1 wherein said support means (69) is a relatively rigid roll core tube carrying the packaging medium, ends of the core tube being rotatably supported by the guide channels (68).
4. A dispenser according to any one of Claims 1 to 3 wherein said brake roller (72) includes an integral braking means (86-89, 91) restricting free rotation of the brake roller.
5. A dispenser according to Claim 4 wherein two biasing springs (78) are formed so that they engage protruding end parts of the support means (69) carrying the roll to bias the roll against the brake roller (72).
6. A dispenser according to Claim 5 wherein said biasing springs (78) comprise a pair of spring members carried by the housing, the spring members each having a pair of legs, one leg (81) of each being supported by the housing while the other leg (83) is adapted to engage with an end of the support means to bias the roll towards the brake roller.
7. A dispenser according to any one of Claims 4 to 6 wherein the braking means is adjustable.
8. A dispenser according to any one of Claims 4 to 7 wherein the braking means includes an end flange (86,87) which frictionally engages an end of the brake roller (72), and brake biasing means (88,89,91) biasing the flange against that end.

9. A dispenser according to Claim 8 wherein a pair of flanges (86,87) engage opposite ends of the brake roller.
10. A dispenser according to any one of Claims 1 to 9 wherein said guide channels (68) in the housing comprise opposed channels formed on opposite sides of the housing and extending from said one end towards a rear end of the housing, the channels being adapted to receive ends of the support means (69) to rotatably support the roll (11) of packaging medium whilst allowing movement of the roll of packaging medium towards said one end under the influence of said biasing means.
11. A dispenser according to any one of Claims 1 to 10 wherein the housing is formed of two sections pivoted together and movable between an open position, in which a roll of packaging medium is accessible, and a closed position.
12. A dispenser according to any one of Claims 1 to 11 wherein the packaging medium is stretchable, synthetic plastic film.

Patentansprüche

1. Spender für eine Rolle (11) Verpackungsmaterial, mit einem Gehäuse (62) zum Halten der Rolle (11) Verpackungsmaterial, einem Griff (71) am Gehäuse (62), einer Bremswalze (72), die drehbar am Gehäuse befestigt ist, einer Vorspannvorrichtung (78), die die Bremswalze (72) und die Rolle (11) derart gegeneinander vorspannt, daß die Bremswalze (72) sich an die Oberfläche der Rolle (11) Verpackungsmaterial mit einer Kraft anlegt, die proportional zur Vorspannkraft ist, **dadurch gekennzeichnet**, daß das Gehäuse (62) mit gegenüberliegenden Führungskanälen (68) ausgebildet ist, um gegenüberliegende Enden einer die Rolle (11) Verpackungsmaterial haltenden Trägervorrichtung (69), aufzunehmen und drehbar zu halten, daß die Vorspannvorrichtung (78) die Rolle (11) gegen die Bremswalze (72) vorspannt und daß das Gehäuse (62) eine Ausgabeöffnung aufweist, durch die das Verpackungsmaterial abgegeben wird, wobei die Öffnung derart angeordnet ist, daß das verwendete Verpackungsmaterial den Spalt zwischen der Rolle (11) und der Bremswalze (72) passieren, mit einem Teil der Oberfläche der Bremswalze (72) in Berührung sein und zur Abgabe um einen Teil der Oberfläche der Bremswalze (72) gelangen kann, wobei die Bremswalze (72) derart wirkt, daß der Abzug von Verpackungsmaterial von der Rolle (11) begrenzt ist.
2. Spender nach Anspruch 1, dadurch gekennzeichnet, daß die Trägervorrichtung (69) ein Dorn ist, der von den Führungskanälen (68) im Gehäuse drehbar gehalten ist.
3. Spender nach Anspruch 1, dadurch gekennzeichnet, daß die Trägervorrichtung (69) eine relativ steife zylinderförmige Hülse ist, die das Verpackungsmaterial trägt, wobei Enden der Hülse von den Führungskanälen (68) drehbar gehalten sind.
4. Spender nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß die Bremswalze (72) eine integrierte Bremsvorrichtung (86 - 89, 91) aufweist, die eine freie Rotation der Bremswalze einschränkt.
5. Spender nach Anspruch 4, dadurch gekennzeichnet, daß zwei Vorspannfedern (78) derart ausgebildet sind, daß sie mit vorstehenden Endteilen der die Rolle haltenden Trägervorrichtung (69) in Eingriff sind, um die Rolle gegen die Bremswalze (72) zu vorzuspannen.
6. Spender nach Anspruch 5, dadurch gekennzeichnet, daß die Vorspannfedern (78) ein Paar vom Gehäuse gehaltene Federelemente aufweisen, von denen jedes ein Paar Schenkel besitzt, von denen jeweils ein Schenkel (81) vom Gehäuse gehalten, während der jeweils andere Schenkel (83) mit einem Ende der Trägervorrichtung in Eingriff ist, um die Rolle zur Bremswalze hin vorzuspannen.
7. Spender nach einem der Ansprüche 4 bis 6, dadurch gekennzeichnet, daß die Bremsvorrichtung einstellbar ist.
8. Spender nach einem der Ansprüche 4 bis 7, dadurch gekennzeichnet, daß die Bremsvorrichtung einen Endflansch (86, 87), der mit einem Ende der Bremswalze (72) reibschlüssig in Eingriff steht, und eine Bremsvorspannvorrichtung (88, 89, 91) aufweist, die den Flansch gegen dieses Ende vorspannt.
9. Spender nach Anspruch 8, dadurch gekennzeichnet, daß ein Paar Flansche (86, 87) mit gegenüberliegenden Enden der Bremswalze in Eingriff ist.
10. Spender nach einem der Ansprüche 1 bis 9, dadurch gekennzeichnet, daß die Führungskanäle (68) im Gehäuse gegenüberliegende Kanäle aufweisen, die auf gegenüberliegenden

Seiten des Gehäuses gebildet sind und sich von einem Ende zu einem hinteren Ende des Gehäuses hin erstrecken, wobei die Kanäle Enden der Trägervorrichtung (69) aufnehmen, um die Rolle (11) Verpackungsmaterial drehbar zu halten, während gleichzeitig eine Bewegung der Rolle Verpackungsmaterial zu dem einen Ende hin unter dem Einfluß der Vorspannvorrichtung ermöglicht ist.

11. Spender nach einem der Ansprüche 1 bis 10, dadurch gekennzeichnet, daß das Gehäuse aus zwei Abschnitten gebildet ist, die schwenkbar miteinander verbunden und zwischen einer offenen Stellung, in der eine Rolle Verpackungsmaterial zugänglich ist, und einer geschlossenen Stellung bewegbar sind.
12. Spender nach einem der Ansprüche 1 bis 11, dadurch gekennzeichnet, daß das Verpackungsmaterial eine verstreckbare Kunststoff-Folie ist.

Revendications

1. Distributeur pour un rouleau (11) de matériau d'emballage, comportant un boîtier (62) de support du rouleau (11), une poignée (71) fixée au boîtier (62), un rouleau de freinage (72) monté à rotation sur le boîtier (62), des moyens élastiques (78) tendant à rapprocher le rouleau de freinage (72) et le rouleau (11) de sorte que le rouleau de freinage (72) vienne en contact avec la surface du rouleau (11) de matériau d'emballage avec une force proportionnelle à la force élastique, caractérisé en ce que le boîtier (62) comporte deux rainures de guidage (68) opposées recevant et supportant à rotation les extrémités opposées d'un organe support (69) portant le rouleau (11) de matériau d'emballage, les moyens élastiques (78) tendant à rappeler ce rouleau contre le rouleau de freinage (72), et en ce que le boîtier (62) comporte une ouverture de distribution à travers laquelle le matériau d'emballage est extrait, cette ouverture étant agencée de manière à permettre au matériau d'emballage à utiliser de passer entre le rouleau (11) et le rouleau de freinage (72), et d'être au contact et passer autour d'une portion de la surface extérieure du rouleau de freinage (72) lors de la distribution, le rouleau de freinage (72) agissant de manière à retenir l'extraction du matériau d'emballage du rouleau (11).
2. Distributeur selon la revendication 1, caractérisé en ce que l'organe support (69) est un mandrin porté à rotation par les rainures de

guidage (68) à l'intérieur du boîtier (62).

3. Distributeur selon la revendication 1, caractérisé en ce que l'organe de support (69) est un noyau tubulaire cylindrique creux sensiblement rigide portant le matériau d'emballage, les extrémités de ce tube étant montées à rotation dans les rainures de guidage (68).
4. Distributeur selon l'une des revendications 1 à 3, caractérisé en ce que le rouleau de freinage (72) contient un moyen de freinage (86-89, 91) restreignant la rotation libre du rouleau de freinage.
5. Distributeur selon la revendication 3, caractérisé en ce que deux ressorts (78) de rappel sont agencés pour agir sur des parties terminales en saillie de l'organe support (69) qui porte le rouleau, de manière à rappeler le rouleau (11) contre le rouleau de freinage (72).
6. Distributeur selon la revendication 5, caractérisé en ce que les ressorts de rappel (78) comprennent une paire d'organes ressorts portés par le boîtier, chaque organe ressort ayant une paire de tiges, l'une de ces tiges (89) étant portée par le boîtier tandis que l'autre tige (83) est agencée pour coopérer avec une extrémité de l'organe support de manière à rappeler le rouleau (11) vers le rouleau de freinage (72).
7. Distributeur selon l'une des revendications 4 à 6, caractérisé en ce que les moyens de freinage sont ajustables.
8. Distributeur selon l'une des revendications 4 à 7, caractérisé en ce que les moyens de freinage comportent une collerette terminale (86, 87) qui coopère par friction avec une extrémité du rouleau de freinage (72) et des organes élastiques de freinage (88, 89, 91) rappelant cette collerette contre cette extrémité.
9. Distributeur selon la revendication 8, caractérisé en ce qu'une paire de collerettes (86, 87) coopère avec les extrémités opposées du rouleau de freinage.
10. Distributeur selon l'une des revendications 1 à 9, caractérisé en ce que les rainures de guidage (68) du boîtier comportent des rainures opposées formées sur des faces opposées du boîtier et s'étendant depuis une première extrémité vers l'extrémité arrière du boîtier, les rainures étant agencées pour recevoir les extrémités de l'organe de support (69) de manière à porter à rotation le rouleau (11) de maté-

riau d'emballage tout en permettant le mouvement de ce rouleau vers cette première extrémité sous l'action des organes de rappel.

- 11.** Distributeur selon l'une des revendications 1 à 10, caractérisé en ce que le boîtier comporte deux sections pouvant pivoter l'une par rapport à l'autre entre une position ouverte dans laquelle un rouleau de matériau d'emballage est accessible et une position fermée. 5 10

- 12.** Distributeur selon l'une des revendications 1 à 11, caractérisé en ce que le matériau d'emballage est un film plastique synthétique étirable. 15

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