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(54) Improvements in stretch wrapping.

(57) A wrapper which comprises a moveable support for at least one reel of wrap film, the support being associated with a moveable turntable (4) adapted to rotably support the goods or assembly of goods to be wrapped, means being incorporated for rotating the turntable to produce enwrapment by the film.

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IMPROVEMENTS IN STRETCH WRAPPING

This invention relates to wrapping, and is particularly although not exclusively applicable to stretch wrapping that is to say the packaging of goods by enwrapping them in a film of thermoplastic material having elastic properties. In conventional stretch wrapping, the film is wrapped around the goods while maintained in a stretched condition to provide a tensioned enclosure for the goods which displays resiliance, high strengthand in most cases good visibility. Such film is referred to as stretch film.

The technique of, and equipment for, stretch wrapping is now well known and has been applied to a variety of goods or assembly of goods provided on, for example, a pallet or a trolley.

The stretch wrapping of an assembly of goods on a pallet or on a trolley poses unique difficulties arising mainly from the need to transport such a loaded pallet or trolley to existing stretch wrapping equipment. These difficulties are particularly acute in the case of relatively large pallets or trolleys which are relatively heavily loaded, since these are not conventionally constructed for ease of transit over extended distances associated with large warehousing facilities.

It has been proposed, for example in United Kingdom patent No. 1 487 512 to overcome such difficulties by a method of stretch wrapping in which a roll of stretch wrap film is adapted to be secured to the goods or assembly of goods to be packaged and to be preccesed round the goods or assembly of goods to produce enwrapment.

The equipment used for this prior method of stretch wrapping is however highly dependent on operator skill, has in practice been found to be extremely slow due to the lack of adequate equipment mobility and requires a substantial free area of warehouse floor space to enable it to operate at all. Moreover, the difficulty of accurately moving such prior art wrapping equipment has been found to produce an unacceptably high incidence of unsatisfactory wrapping.

It is accordingly one object of the present invention to produce a simplified method of stretch wrapping of goods or of an assembly of goods and which overcomes the difficulties herein recited.

The present invention according to its broadest aspect provides a wrapper comprising a moveable support for at least one reel of wrap film, the support being associated with a moveable turntable adapted to rotatably support the goods or assembly of goods to be wrapped, means being incorporated for rotating the turntable to produce enwrapment by the film.

Adoption of the present invention enables unnecessary movement of the goods or assembly of goods to be avoided and in addition enables wrapping to be easily undertaken at various conveniently spaced stations in storage and/or distribution areas such as warehouses.

Suitably, traction means are provided for moving the support turntable combination to a required wrapping station.

In a preferred embodiment of the invention, the means for moving the support/turntable combination are provided on the support which suitably is in the form of a steerable trolley of known kind and conveniently having its own electrical or other drive unit. Ideally, a drive unit where provided is powered from a secondary battery source which also may be mounted on the trolley together with its own co-operating charger unit.

The trolley of the present invention preferrably also is adapted to carry the drive unit for rotating the turntable when required for wrapping. The turntable drive unit also conveniently is powered from the battery source provided on the trolley so that rotation and traction can be separately provided independently of any external power source. This aspect of the present invention also enables the stretch wrapper to be easily used in relatively remote areas of a warehouse where no conventional mains power source is readily available.

The trolley may be adapted to rotatably support a single roll or multiple rolls of wrap film depending on the size of goods or combination of goods to be wrapped and may in addition be provided with roll storage facilities. The roll supports may be stationary on the trolley or may be adapted for oscilliting axial movement to enable the span of wrapping to exceed the axial length of a roll.

Suitably, the wrapper is a stretch wrapper.

An embodiment of the invention will now be particularly described by way of example with reference to the accompanying drawing which is a schematic/view of a self powered stretch wrapper.

Referring to the drawing, this illustrates stretch wrap equipment comprising a trolley indicated generally at 2 together with an associated co-operating turntable indicated generally at 4. In this embodiment of the invention, the turntable is secured permanently to the trolley but may, in an alternative arrangement be releasibly secured.

The trolley 2 is conventionally supported for traction across the floor of a warehouse by being provided with fixed wheels or castors (not shown) together with at least one steering wheel 6, suitably ganged to a pivoted joystick 8, which carries operating and interlocking switches and the like. In particular, the joystick 8 carries the actuator switch effective to energise the trolley driving motor provided in conventional and well known manner. In

this embodiment of the invention, the trolley driving motor is coupled to the steering wheel 6 ganged to the joystick.

The trolley driving motor is energised by connection to a secondary battery pack 10 (in this embodiment a lead acid battery pack) provided on the trolley deck. The use of such a battery pack together with an associated charger 12 provides a self contained power supply enabling the trolley and the turntable to be moved independently from station to station where stretch wrapping is required. This battery pack also can be used to drive other wrapping functions such as film roll excursion.

Also mounted on the trolley 2, is a framework retaining a mandrel 12 for rotatably supporting two rolls 14, 16 of stretch wrap film. A releasable upper journal 18 permits these rolls to be loaded onto and exhausted roll formers to be released from, the mandrel which permits free rotation.

Stretch film from the rolls 14, 16 is arranged to pass over a microfinish metal faced idler roller 20 also mounted on the framework and subsequently over a rubber coated tensioning roller 22 whose resistence to rotation is determined by an adjustable clutch mechanism 24. The clutch mechanism accordingly is effective to control the tension of the stretch film being wound around goods or assembly of goods stacked on the turntable unit 4.

The turntable unit indicated generally at 4 comprises a turntable 26 per se mounted by way of a suitable bearing arrangement upon a turntable platform (not shown). The turntable platform that surrounds the turntable 26 is suitably secured to the trolley 2 and is also provided with suitable wheels in well known manner to enable it to move with the trolley from wrapping station to wrapping station. A hinged ramp 28 permits goods or an assembly of goods loaded on, for example, a trolley or a wheeled pallet to be moved from the warehouse floor and onto the turntable 26 for enwrapment. The hinged ramp 26 can be elevated to the vertical or beyond during traction of the stretch wrapper to reduce the overall volume being

moved and to reduce the risk of damage by collision.

Suitable guides and stops may be provided on both the ramp 28 as well as on the turntable 26 to control movement of a trolley or pallet.

An electric motor 30 also secured to the trolley deck and also energised from the battery pack 10 through a suitable switch is effective to rotate the turntable 26 by way of a suitable transmission system such as a belt and pulleys. The energising switch is, in the embodiment adapted to produce a gradual speed-up of the motor 30 from rest to avoid unnecessary snatch and consequent stress on the stretch film being unwound from the rolls 14, 16. Storage bins 32, 34 are provided for replacement rolls of wrapping film.

In use of the stretch wrapper, joystick 8 is lowered into the steering position and to release any interlocking switches provided. The drive switch is then energised to produce traction to the required wrapping station. At station, the drive is disengaged, the hinged ramp 28 is lowered and a trolley preloaded with goods or an assembly of goods is wheeled onto the turntable 26 to be arrested in the correst wrapping position by the combination of guides and end stops provided.

The leading edges of stretch film derive from rolls 14, 16 by way of idle roller 20 and tensioning roller 22 is secured to the trolley which is subsequently rotated on the turntable by energising motor 30. After a preset number of revolutions of the turntable 26, effective to produce the required number of layers of wrapping film, the film is cut by a guillotine mechanism (not shown) and the trolley is removed from the turntable 26 by way of ramp 28.

The sequence of enwrapments may be repeated at the same station or at different stations by moving the stretch wrapper as described.

It will be appreciated that the stretch wrapper of the invention overcomes the disadvantages of prior art systems by taking the equipment to where wrapping is required without the need for highly expensive duplication of stationary stretch wrapping equipments or of unnecessarily moving goods or assemblies of goods whether mounted on a trolley pallet or the like or not.

The present invention avoids also the disadvantages of known stretch wrappers which are herein described and which have been found manifestly unsatisfactory.

While the invention has been described with reference to a self contained power supply, it is equally applicable to alternative arrangements where for example power is supplied by overhead gantry or by rails on which the equipment could move.

It will equally be appreciated that while the equipment of the invention has been described with reference to stretch wrapping it is equally applicable to wrapping with any sheet material such as PVC, paper acetate films and the like.

While it is envisaged that larger wrappers will be moved under power, smaller units may be moved by hand.

CLAIMS

1. A wrapper comprising a moveable support for at least one reel of wrap film, the support being associated with a moveable turntable adapted to rotably support the goods or assembly of goods to be wrapped, means being incorporated for rotating the turntable to produce enwrapment by the film.

2. A wrapper as claimed in claim 1, wherein traction means are provided for moving the support-turntable combination to a required wrapping station.

3. A wrapper as claimed in claim 2, wherein the traction means are provided on the support.

4. A wrapper as claimed in any preceding claim, wherein the support is in the form of a steerable trolley.

5. A wrapper as claimed in claim 4, wherein the trolley embodies an electrical or other traction unit.

6. A wrapper as claimed in claim 5, wherein the trolley embodies a secondary battery source for driving the electrical traction unit.

7. A wrapper as claimed in claim 6, wherein the trolley embodies a charger unit for the secondary battery source.

8. A wrapper as claimed in any preceding claim embodying a drive unit for rotating the turntable.

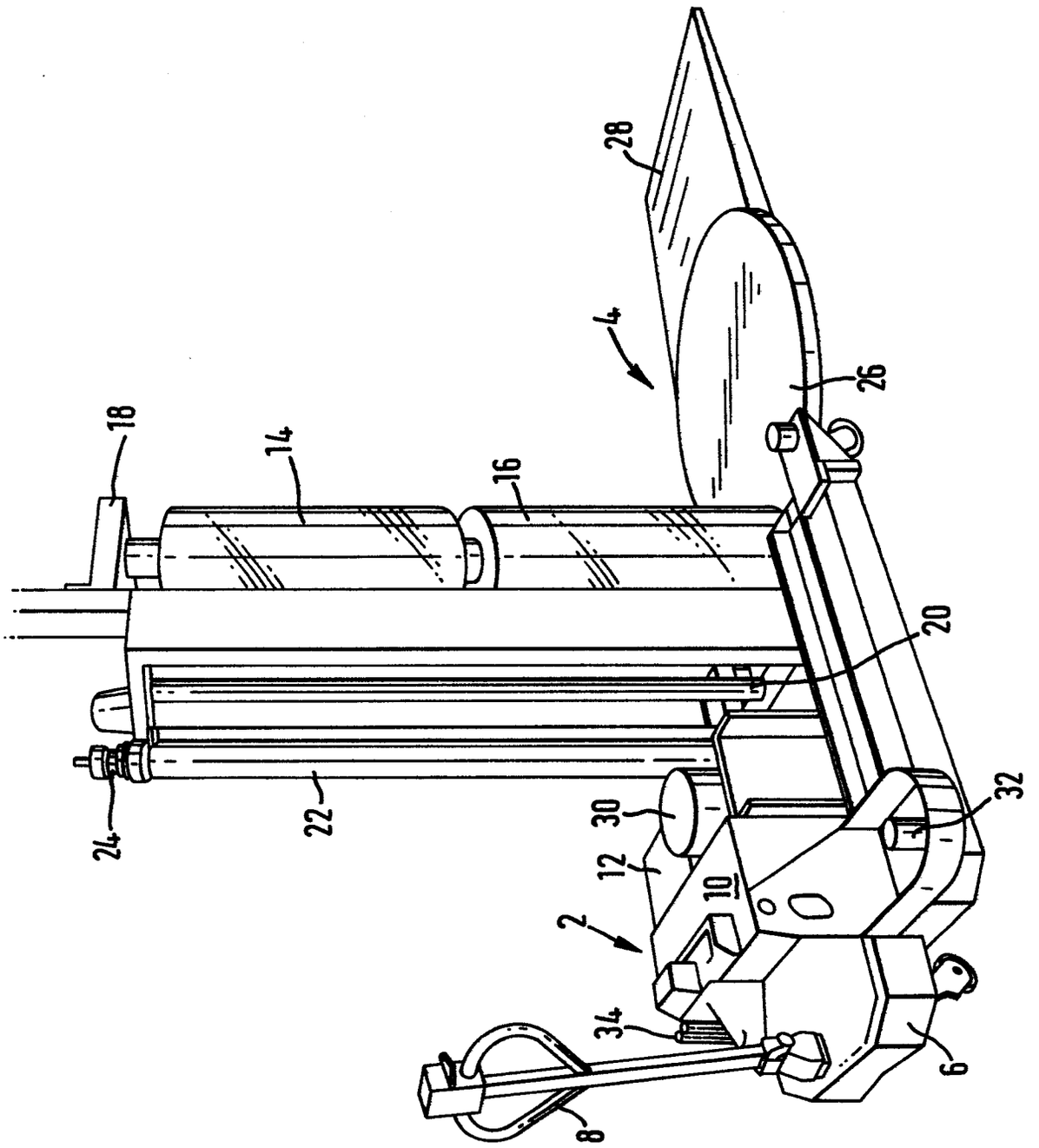
9. A wrapper as claimed in any one of claims 5 to 8 wherein the turntable drive unit is mounted upon the trolley.

10. A wrapper as claimed in claim 9, wherein the turntable drive unit is powered from a secondary battery source.

11. A wrapper as claimed in claim 10, wherein the secondary battery source is provided on the trolley.

12. A wrapper as claimed in any one of claimes 8 to 11 wherein the drive unit for the turntable can be energised independently of the traction unit for the support-turntable combination.

13. A wrapper as claimed in any preceding claim, wherein the roll supports are moveable or stationery.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EUROPEAN SEARCH REPORT

Application number

EP 85 30 7171

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	EP-A-0 086 045 (KEOGH-PETERS) * Page 24, lines 3-30; figure 1 *	1	B 65 B 11/04

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

B 65 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	09-01-1986	CLAEYS H.C.M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
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