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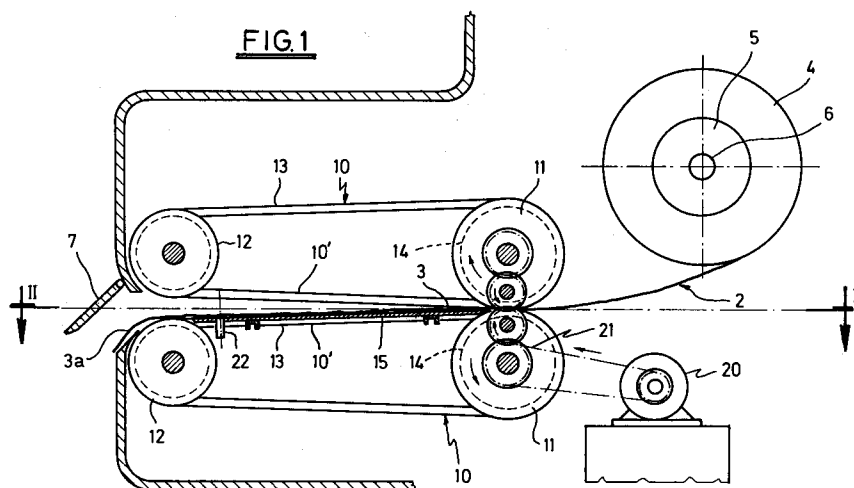
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I- 42100 Reggio Emilia (IT)(54) **Device for automatically dispensing gloves of thin sheet, in particular of synthetic resin, on command.**

(57) The device comprises a thin strip (2) of indefinite length formed from gloves (3) joined together one at a time in succession and provided with transverse pre-fracture lines (3'); there is also provided a pair of small conveyor bands (10), the active branches (10') of which face each other and move in the same direction with the same speed, they being in mutual contact at their upstream end (11) whereas they diverge at their downstream end (12). The strip (2) formed from the gloves is made to advance between the active branches (10') by the action of the conveyor bands (10). A casing (30) encloses the

strip (2) and the conveyor bands (10), and possesses a mouth (31) positioned at the downstream end (12) for the exit of the strip (2) to the outside. The operation of the conveyor bands (10) is controlled by action by the user such that the strip (2) formed by the gloves advances through a finite distance sufficient to make the end of the strip accessible to the user through the exit mouth (31); while the end glove (3) is thus accessible, the next glove upstream is clamped between the upstream ends (11) of the active branches (10').

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This invention relates to the dispensing of thin sheet gloves of synthetic resin (generally polyethylene) or other material, such as paper, the dispensing being effected at particular retail sales points such as supermarkets, or at automatic fuel dispensers for motor vehicles, to prevent contact between the user's hand and the product (for example for hygienic reasons, particularly in the case of supermarkets), or to protect the user's hand (for example in the case of fuel dispensing).

Such gloves are currently dispensed freely and passively, in that the user takes the required glove from a supply means which does not restrict or control the supply (such as a box containing the gloves), with the result that each person can take as many gloves as he wishes.

A problem connected with this type of dispensing is that as the supply is freely available the user can take more glove than he really requires. This can be involuntary in that as there are no active dispensing means, they being taken manually by the user, it can happen that several glove remain joined together with the result that several gloves are taken instead of only one.

In addition, in places not supervised by the appropriate personnel, such as at automatic fuel dispensers, such glove supplies are at the mercy of vandals who can take undetermined and in any case unnecessary quantities of gloves.

This results in an evident unnecessary consumption of such gloves.

The object of the present invention is to provide a glove dispensing device which is able to dispense such gloves in an ordered and controlled manner, and in particular in the case of automatic fuel dispensers (or similar cases) a device able to dispense the gloves individually and only after pre-payment for the fuel or after inserting money into the fuel dispenser.

This and further objects are attained by the invention as characterised in the claims.

The invention is described in detail hereinafter with reference to the accompanying figures, which illustrate one embodiment thereof.

Figure 1 is a schematic vertical side elevational view of the device according to the invention.

Figure 2 is a section on the plane II-II of Figure 1.

According to the invention the gloves, indicated by 3 in the figures, are joined together one at a time in succession to form a thin strip 2 of indefinite length. The strip 2 is provided with transverse pre-fracture lines 3' which enable each glove to be torn from the strip 2 by relatively slight longitudinal pulling.

Specifically, the strip 2 comprises two thin facing superimposed sheets of synthetic resin, on which a welding line 3'' is formed by thermowelding for each glove, to weld the two sheets to-

gether and define the contour of the glove 3. The gloves are arranged one behind another in the same geometrical position, that portion defining the finger region of each glove being joined to that portion defining the wrist region of the next glove. Pre-fracture lines 3' are provided in this joining zone. One of the sides of the strip 2 is shaped in accordance with the profile of the thumb region and wrist region. This latter region is wider than the finger region.

On pulling a glove longitudinally away from the next glove the strip 2 tears along the line 3', so that the gloves 3 separate from each other.

The device of the invention comprises a pair of small motorized conveyor bands 10 with their active branches 10' facing each other and moving in the same direction with the same speed. In addition the active branches are in mutual contact at least at their upstream end, whereas they diverge at their downstream end.

Specifically, each conveyor band 10 comprises an upstream roller 11 of horizontal axis and a downstream roller (or pulley) 12 also of horizontal axis. About the roller 11 and roller 12 there tightly extend two or more endless belts 13 for each conveyor band 10. The upstream rollers 11 have grooves 14 which act as seats for the belts 13 so that the outer surface of the belts 13 is substantially flush with the cylindrical surface of the rollers 11.

The outer surface of the rollers 11 is preferably of elastomer material, as are the belts 13, so as to present surfaces having a relatively high coefficient of friction.

The active branches of the belts 13 are practically horizontal and define said active branches 10'. In addition they slightly diverge from the rollers 11 where they are in mutual contact, towards the rollers 12 where they are slightly spaced apart.

Preferably, between the active branches of the belts 13 of that conveyor band 10 in the lower position there are provided fixed flat plates 15 defining a horizontal slide table the upper surface of which is coplanar with the outer surface of the respective belts 13. The strip 2 can slide on said flat plates 15.

In the illustrated embodiment the strip 2 formed from the gloves is wound in a reel 4 on a roller 5 with its axis parallel to the axes of rotation of the rollers 11 and 12. The roller 5 is idle and its shaft 6 is lightly braked, for example by light friction action.

The strip 2 of gloves unwinds from the reel 4 and passes through the rollers 11, between the active branches 10' of the belts 13 and over that roller 12 in the lower position.

The strip 2 is moved along by the rotation of the rollers 11 and the advancement of the belts 13.

The device of the invention comprises a casing 30 enclosing the conveyor bands 10 and reel 4 and protecting them from persons on the outside. The casing 30 comprises a mouth 31 positioned at the rollers 12, for the exit of the strip 2. Said mouth 31 is as narrow as possible, so as to make the region between the belts 13 where the strip 2 is located as inaccessible as possible.

Via a usual transmission system comprising a chain and sprockets 21 (or other means), a geared motor 20 simultaneously rotates both rollers 11 with equal and opposite movement.

Electrical/electronic means of known type are also provided which following action by the user control the operation of the motor 20 in such a manner as to advance the strip 2 through a finite distance which makes the end of the strip 2 accessible to the user through the exit mouth 31. The length of the active branches 10' is such that whereas the end glove is thus accessible through the mouth 31, the next glove upstream is clamped between the upstream ends of the active branches 10', ie between the rollers 11.

In detail, the operation of the device of the invention is as follows.

Normally the conveyor bands 10 are at rest and the free end of the strip 2 of gloves is in an intermediate position along the path defined by the active branches 10', with the end glove (indicated by 3a in the figure) clamped between the rollers 11 and the belts 13. Consequently the strip 2 is practically inaccessible to persons outside the casing 30, and no glove 3a can therefore be extracted through the mouth 31.

Following action by the user, said control means operate the motor 20, which drives the conveyor bands 10 to cause the strip 2 to advance through a distance substantially equal to the length of one glove 3, ie until the end of the glove 2 projects slightly from the mouth 31 (or at least is manually accessible through the mouth 31), after which the motor 20 stops (position shown in the figures). Advantageously this stoppage is determined by a sensor 22 positioned along the path of travel of the strip 2 between the belts 13, a little to the outside on one side of the strip 2. The sensor 22 halts the motor 20 when it senses the presence of the finger region of the end glove 3a, and is positioned to cause this stoppage when the end of the strip 2 projects slightly from the mouth 31.

At this point the end glove 3a can be pulled through the mouth 31 by the user, to tear it away from the next glove 3 upstream, this being clamped between the rollers 11 and the belts 13. The initial condition is hence restored, with the end of the strip 2 between the active branches 10' and inaccessible from the outside, the device being ready to effect a further cycle and dispense a

further glove 3.

If the dispenser of the invention is combined with an automatic fuel dispenser, the said action by the user can advantageously be that of pre-payment to obtain the fuel. In other words, when the user inserts money into the appropriate members of the fuel dispenser, said control means of the glove dispenser according to the invention are also activated to produce the desired exit of the end of the strip 2 from the mouth 31.

If at the moment of said pre-payment the strip 2 is already projecting from the mouth 31, the control means remain inactive as the sensor 22 is already in the presence of the finger region of the end glove. The device is restored to the position for dispensing a further glove only after the glove projecting from the mouth 31 has been extracted.

In other cases, such as within a self-service sales centre, the action by the user can simply be a pulse provided by an operating button.

The invention hence attains the aforesaid object, ie of dispensing the gloves 3 in a regular and controlled manner in a quantity depending on their effective use, ie in an ordered manner, so preventing vandalism involving unnecessary taking of gloves.

To further safeguard the dispensing of the gloves 3 a door 7 can be provided, automatically operated (by known means not shown in the figures) in such a manner as to open the mouth 31 only on command by said control means, and to close the mouth 31 after the glove 3 has been extracted.

Various modifications of a practical and applicational nature can obviously be made to the device of the invention, but without leaving the scope of the inventive idea as hereinafter claimed.

Claims

1. A device for automatically dispensing gloves of thin synthetic resin sheet on command, characterised by comprising:
 - a thin strip (2) of indefinite length formed from gloves (3) joined together one at a time in succession and provided with transverse pre-fracture lines (3') which enable each glove (3) to be separated from the strip (2) by being pulled longitudinally;
 - a pair of small motorized conveyor bands (10), the active branches (10') of which face each other and move in the same direction with the same speed, they being in mutual contact at least at their upstream end (11) whereas they diverge at their downstream end (12), the strip (2) formed from the gloves being made

to advance between said active branches (10') by the action of the conveyor bands (10);

- a casing (30) enclosing the strip (2) formed from the gloves and the conveyor bands (10), and possessing a mouth (31) positioned at the downstream end (12) of said active branches (10) for the exit of the strip (2) of gloves to the out-side; 5 10
- means for controlling the operation of the conveyor bands (10) on action by the user such that the strip (2) formed by the gloves advances through a finite distance sufficient to make the end of the strip accessible to the user through the exit mouth (31), the length of said active branches (10) being such that while the end glove (3) is thus accessible, the next glove upstream is clamped between the upstream ends (11) of the active branches (10'). 15 20

2. A device as claimed in claim 1, characterised in that said conveyor bands (10) each comprise a pair of rollers (11) and (12) about which two or more belts (13) endlessly extend, the upstream rollers (11) comprising grooves acting as seats for the belts (13) such that the outer surface of the belts (13) is flush with the cylindrical surface of the rollers (11), the outer surfaces of the belts (13) and the cylindrical surfaces of the rollers (11) having a relatively high coefficient of friction. 25 30 35

3. A device as claimed in claim 1, characterised in that the strip (2) formed from the gloves (3) is wound in a reel (4) on a roller (5) having its axis parallel to the axes of rotation of the conveyor band (10), said roller (5) being idle and lightly braked. 40 45 50 55

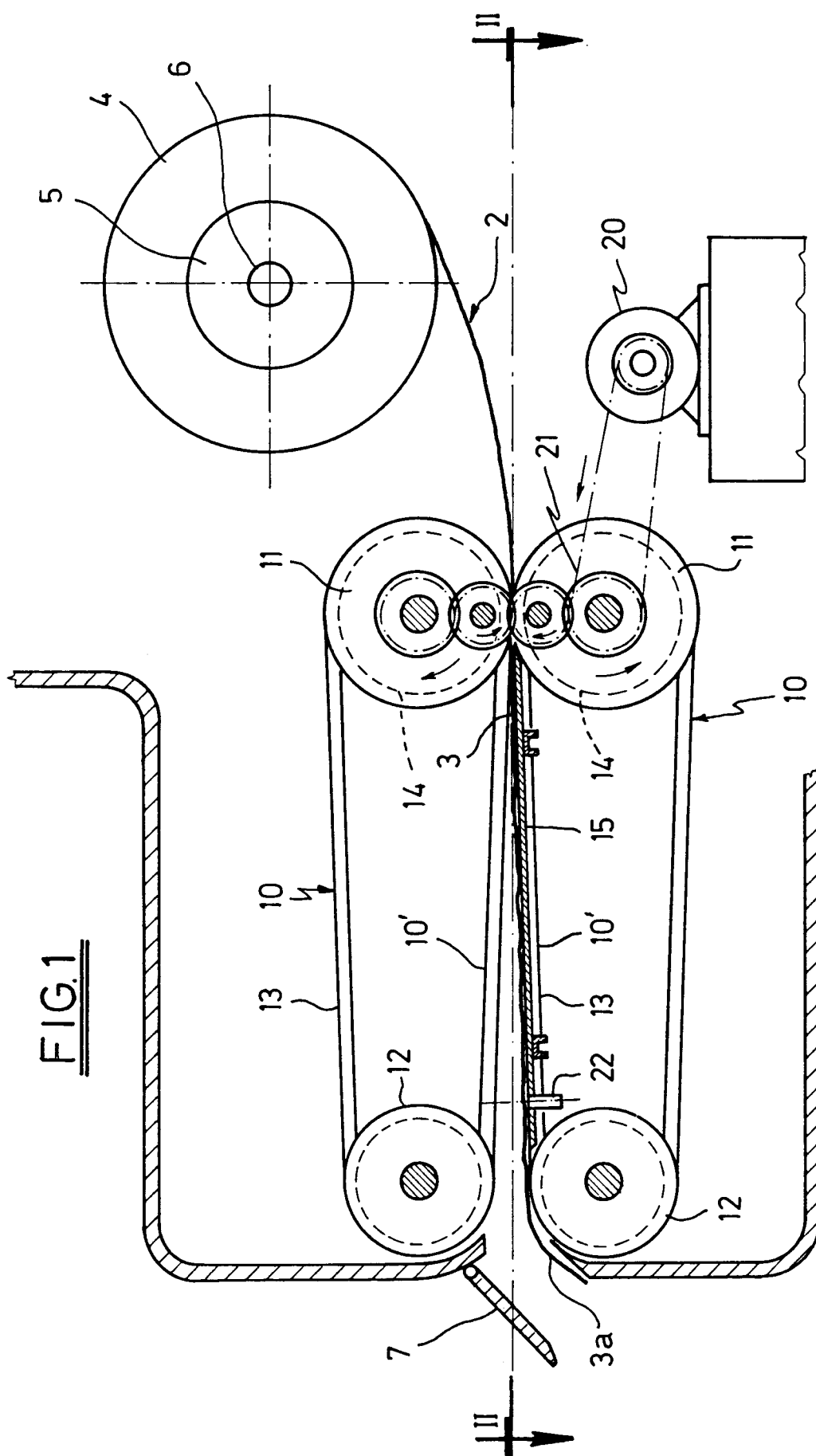


FIG. 2

