

[54] **LABEL EXTRACTOR WITH SWINGING TRANSFER MEMBERS**

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[51] Int. Cl. **B65c 9/00**

[58] Field of Search..... 156/567, 568

[56] **References Cited**

UNITED STATES PATENTS

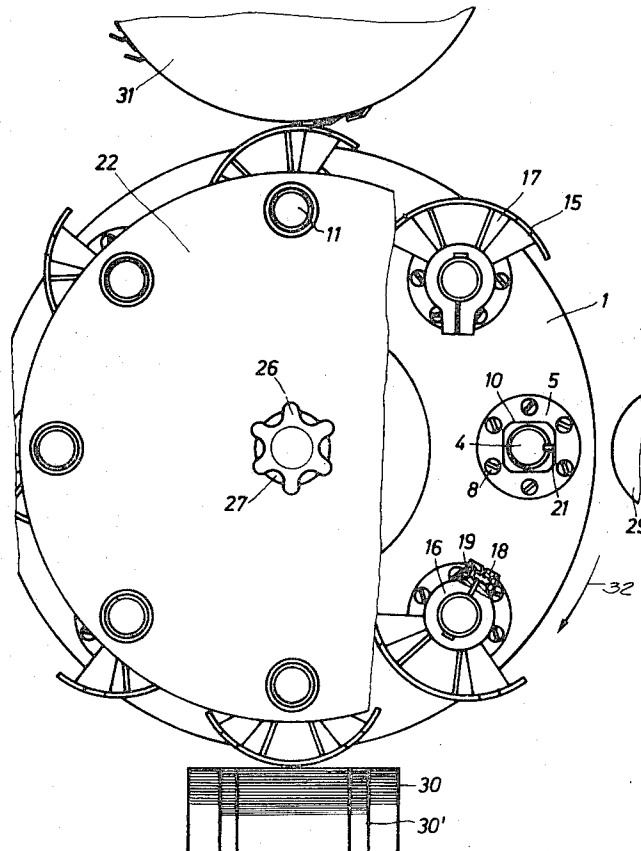
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Attorney—Wheeler, House & Wheeler

[57] **ABSTRACT**

Apparatus for transferring labels from a magazine to containers and including a transfer drum rotor having a series of peripherally located shafts with label transfer pallets swingable therewith and control mechanism for turning the shafts, the shafts and pallets being pre-assembled in adjustably fixed relation and the shafts having parts which interlockingly key with a complementary keyed part on the drum, whereby one shaft and pallet assembly is removable as a unit from the drum for replacement by a substitute shaft and pallet assembly, the shaft of which has a similarly keyed part which interfits with the complementary keyed part on the drum. Keying of the shaft to the drum is desirably accomplished by a bushing which is adjustably clamped to the control mechanism and which has a socket which constitutes the keyed part of the drum.

7 Claims, 4 Drawing Figures



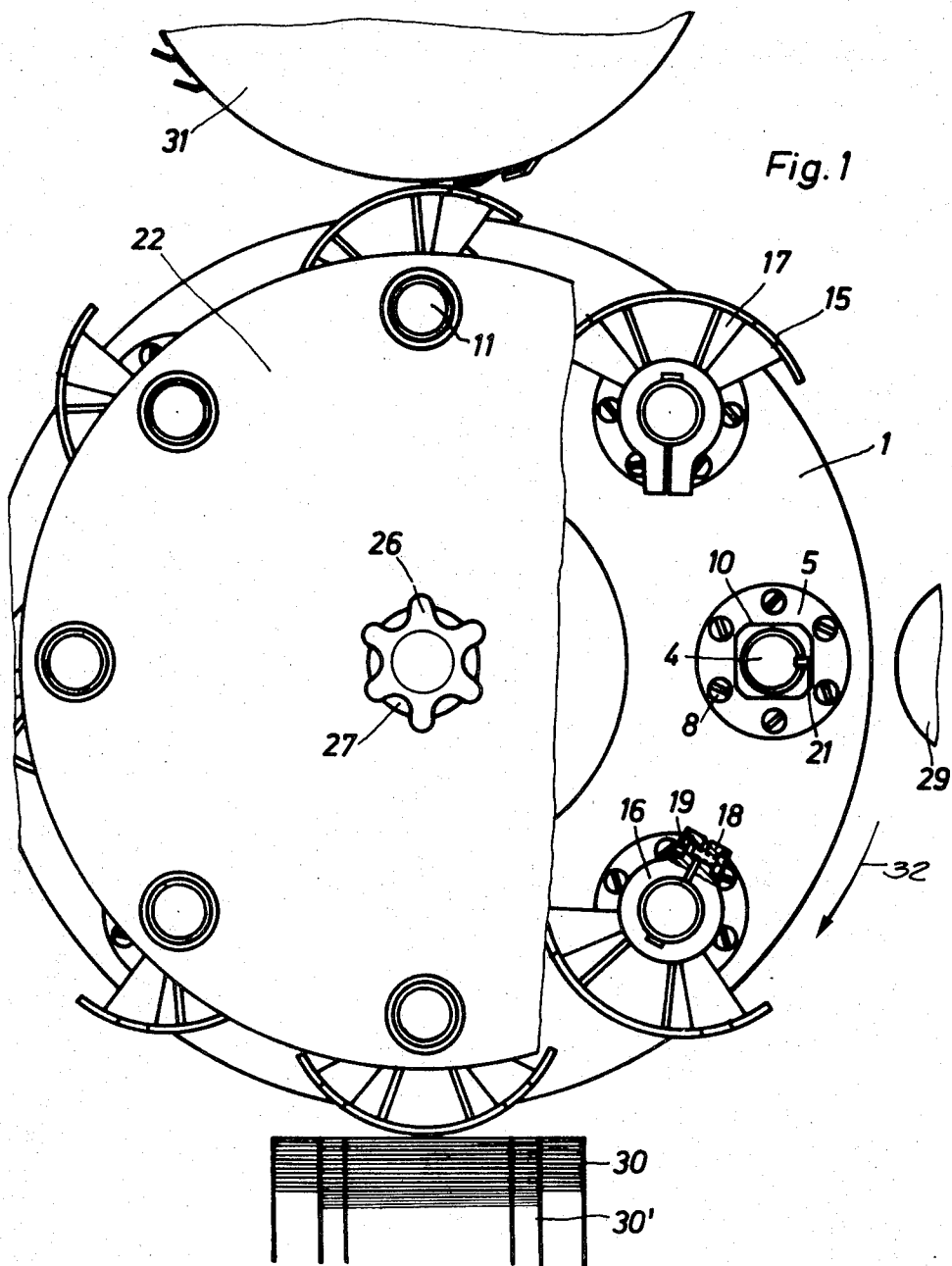


Fig. 3

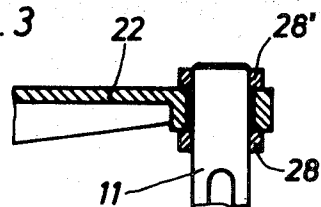
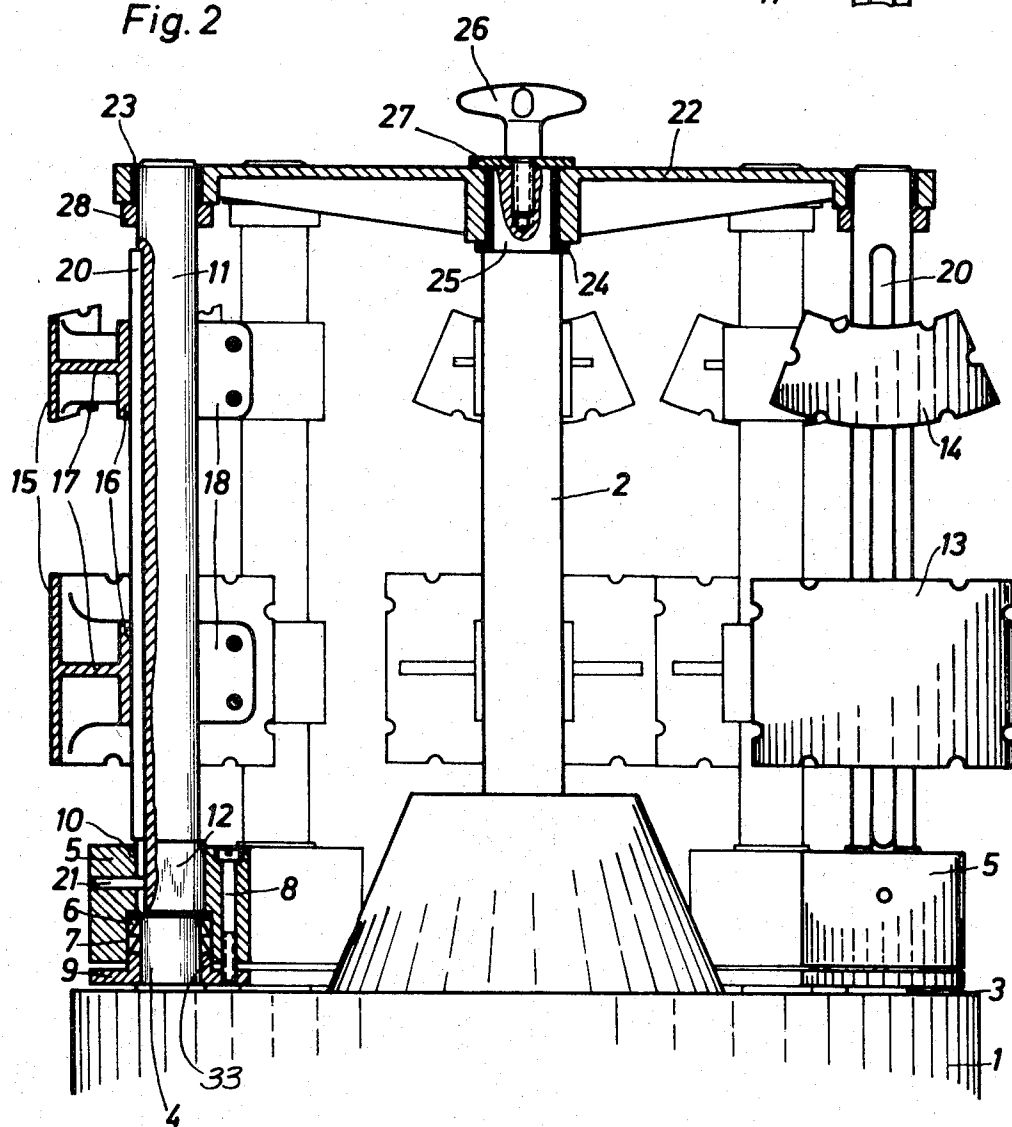


Fig. 2



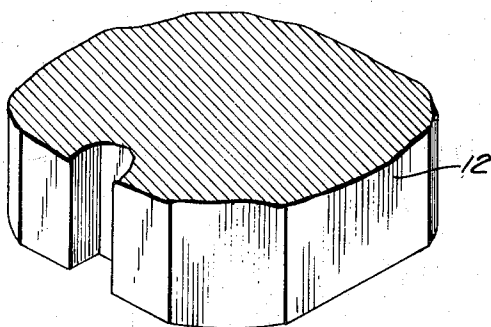
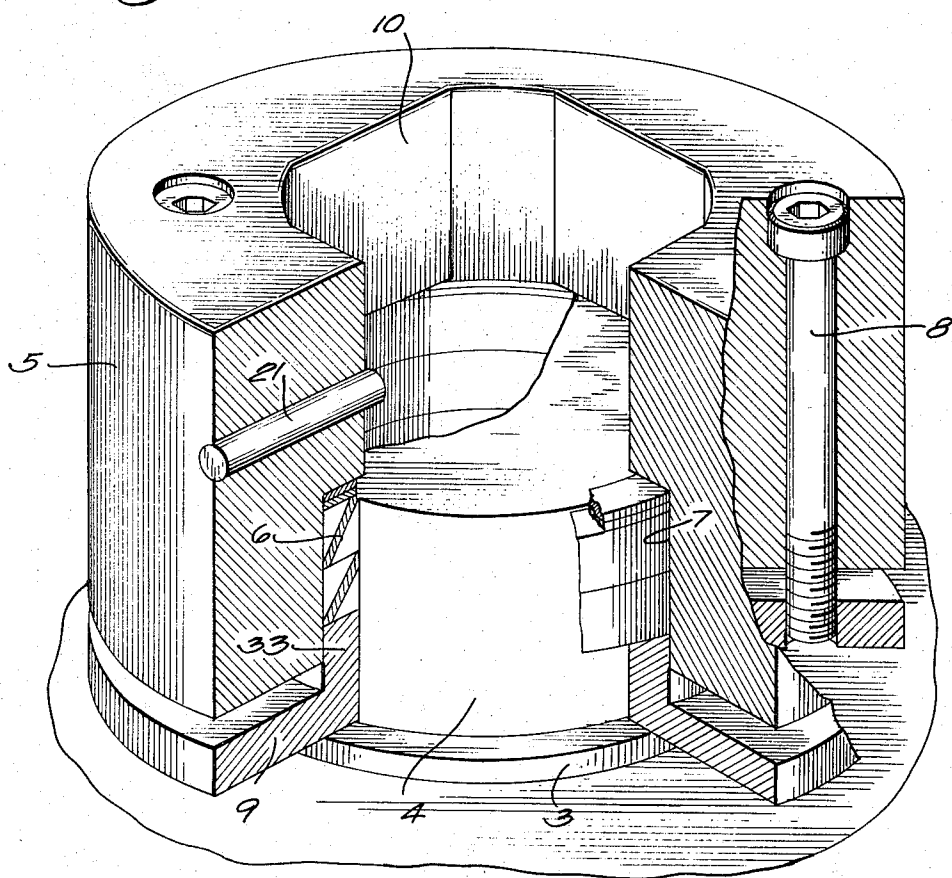


Fig. 4



LABEL EXTRACTOR WITH SWINGING TRANSFER MEMBERS

BACKGROUND OF THE INVENTION

Container labeling machines are typically adapted to handle containers of different sizes and shapes. The apparatus by which labels are extracted from a magazine and transferred to the containers typically comprises label extraction pallets which fit a particular size of label and which are adjustable as to height so as to properly place the label on the container.

Heretofore when container and label sizes and shapes are changed, it has been necessary to remove one size and shape of extraction pallet from the transfer mechanism and to substitute different size or shape of extraction pallet and then to adjust the height and location of the pallet on the transfer drum so as to align properly with the container. Accordingly, considerable manual labor, skill, time, and effort is required to effectuate the conversion of the machine from one label or container to another.

In a prior known device, each extraction pallet on a multi-unit transfer drum must be unscrewed and replaced by a substitute transfer pallet. This is a particularly time consuming process, especially if there are multiple labels per container, as in the case of bottles having body, shoulder and neck labels. Typically, setting gauges must be used to properly orient one extraction pallet with respect to the other on the same shaft and to assure that the respective pallets are at a proper height with respect to the container. Thus the adjustment in height requires considerable care, skill, and time and is a source of considerable trouble and loss of production time on the machine.

SUMMARY OF THE INVENTION

An object of the invention is to greatly simplify and speed up the process of substituting extraction pallets of one size or shape for extraction pallets of a different size or shape, and to avoid any errors in the adjustment and relation of the parts.

In accordance with the present invention, the shafts and extraction pallets are pre-assembled at a point remote from the machine and such a pre-assembled shaft and pallet is substituted for an assembled shaft and pallet removed from the machine. In the pre-assembly process, all adjustments as to the spacing between the pallets and the end of the shaft and between pallets on the same shaft are made by skilled personnel. The mounting structure by which the assembled shaft and pallet is positioned in the transfer drum is such that no gauging is necessary at this point and inexperienced personnel can simply substitute one assembly for the other with full assurance that after the simple assembly steps are completed the new arrangement will be at the correct height and location to perform without error.

In accordance with the present invention, the transfer drum is provided with a keyed part such as a socketed bushing connected to the control mechanism by which the shafts are oscillated in the course of their operation. The ends of the shafts have complementary tongues or keyed portions which interlockingly interfit into the sockets so that the parts are positively keyed together and the ultimate position of the pallets with respect to the control mechanism is positively insured. The end of the shaft and the end of the control mechanism come into abutment to insure a precise height adjustment of

the pallets. No tools are required to make the substitution. Yet there is a positive connection between the control mechanism and the shafts. In the disclosed preferred embodiment of the invention, the shaft and the socket have a polygon configuration or profile and a detent is provided therebetween by which the shaft and socket must be connected in only one relative position.

For relatively infrequent adjustment of the shaft with respect to the control mechanism, a special bushing is provided which is clampingly engaged to the control mechanism and which may be rotated with respect thereto when the clamp is released.

Where the shafts of the transfer drum are short, it is unnecessary to support the upper ends of the shafts. However, where the shafts are long, especially when they carry several transfer pallets, it is advantageous to tie together the upper ends of the shafts by a support plate which is easily removable therefrom when the shafts are to be replaced. Moreover, the support plate can be releasably fixed at the upper ends of the shafts so that it functions as a carrier to remove all of the shafts together when replacement is required.

Other objects, features, and advantages of the invention will appear from the disclosure.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary and somewhat schematic plan view of apparatus embodying the invention, a portion of the support plate being cut away and one of the extraction pallet shafts being removed.

FIG. 2 is a vertical cross section through a transfer drum embodying the present invention.

FIG. 3 is a fragmentary cross section through a portion of the apparatus shown in FIG. 2 and illustrating a modified embodiment in which the shaft ends are releasably fixed to the support plate.

fig. 4 is an enlarged fragmentary perspective view partly broken away and shown in section, through a bushing and shaft end.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Although the disclosure hereof is detailed and exact to enable those skilled in the art to practice the invention, the physical embodiments herein disclosed merely exemplify the invention which may be embodied in other specific structure. The scope of the invention is defined in the claims appended hereto.

Kronseder U. S. Pat. No. 3,532,585 shows an oscillating label transfer drum incorporating basic features over which the present invention is an improvement. In the device shown in the prior patent, the label extraction pallets or adhesion pads are individually removable from the shafts, as when the label size or shape and container size or shape are changed.

The label drum 1 of the present invention is generally similar to the one shown in the prior patent in that it is rotatable about the axis of a central shaft 2 and is powered by mechanism not shown. The drum 1 supports near its periphery a series of spaced upright shafts 11 to which extraction pallets or adhesion pads 13, 14 are releasably secured. Whereas according to the prior practice as above described the respective extraction pallets 13, 14 would be physically removed from the shafts 11, to effectuate the substitution hereinbefore referred to, this is no longer the case with the present invention.

In accordance with the present invention, the pallets 13, 14 are adjustably fixed to the shafts 11 in a preassembly which is not normally changed once the parts have been initially assembled. The pallets 13, 14 have hubs 16 from which the adhesion pad surfaces 15 are supported on the webs 17. The hub 16 is split to provide projecting wings 18 which are spanned by bolts 19 so that the hub 16 can be clamped to the shaft 11. The circumferential position of the pallets 13, 14 with respect to the shaft 11 is determined by a key 20 which fits into complementary grooves respectively formed longitudinally on the surface of the shaft 11 and in the hubs 16.

Each shaft is actuated to turn to swing its pallets 13, 14 in accordance with control mechanism within the drum 1. For each shaft 11 the control mechanism includes a control shaft 3 which has a journal or stem extension 4 projecting upwardly therefrom. A bushing 5 is adjustably mounted on the stem 4 by means of a contractile spring 6. The bushing 5 has a cylindrical counterbore 7 which fits telescopically over the journal 4, the contractile spring 6 being disposed therebetween. A pressure collar 33 with flange 9 is also disposed concentrically about the journal 4. The upper end of the collar 33 bears against the lower end of the contractile spring 6.

The bushing 5 is connected by means of a series of bolts 8 to the flange 9 of the collar 33 so that when the bolts 8 are tightened the contractile spring 6 will squeeze both the journal 4 and the counterbored surface 7 of the bushing 5, thus to lock these two parts together. If the pressure on the bolts 8 is released the spring 6 will relax and the bushing 5 can be turned with respect to the journal 4 and then retightened at a new position.

Near its upper part the bushing 5 is provided with a keyed socket 10 which in the embodiment illustrated consists of a polygon-shaped hole which is adapted to receive a similarly polygon-shaped tongue or extension 12 on the end of shaft 11. Accordingly, when tongue 12 of shaft 11 is inserted into the socket 10 of bushing 5, the shaft 11 is positively keyed to rotate with the journal 4 which is part of the control mechanism.

Precise positioning and locking of the shaft 11 with respect to the bushing 5 is achieved by a set screw or detent pin 21 mounted in the side of the bushing 5. The end of screw 21 is adapted to enter the groove in the side wall of the shaft 11. The set screw 21 functions as a detent to insure that the shaft is positioned in the bushing socket 10 in only one position.

The axial position of the shaft 11 is determined by the abutment between the end of its tongue 12 and the upper end of the journal 4. When an unskilled operator substitutes one assembly of shaft 11 and pallets 13, 14 for another, the shaft 11 is simply placed into the bushing 5 until the said ends abut. Detent 21 is set to lock the parts together.

All relative adjustment of the pallets 13, 14 on the shafts 11 is made at a point remote from the machine and by skilled personnel. Accordingly, the unskilled operators of the machinery simply make the substitution and make no attempt at adjustment.

Where the shaft 11 is relatively short and the bushing 5 has sufficient depth to receive a substantial length of the tongue 12, no further support of the shaft is required. However, for relatively long shafts 11, as shown in FIG. 2, it is desirable that the central post 2 carry a support plate 22 which has a series of peripherally lo-

cated bearing bushings 23 which align with the upper ends of the shafts 11. The plate 22 braces the upper ends of shafts 11 in position. The hub of plate 22 is releasably secured to shaft 2 about a central bushing 24 by means of a star knob 26 screwed into the end of shaft 2 and bearing on a shim 27.

The respective shafts 11 are desirably provided with set collars 28 which will abut the undersurfaces of the bushings 23 when the plate is secure.

In its complete environment, the transfer drum 1 is disposed adjacent label magazines 30, 30' which are at respective levels to coact with the vertically spaced pallets 13, 14. The pallets move past a gluing roll 29 as the drum 1 turns in the direction of arrow 32, thus to pick up a film of glue prior to walking across the foremost labels in the magazines 30, 30'. Continued rotation of the drum 1 will bring the labels on the pallets to a transfer turret 31 which picks the labels off of the pallets and ultimately transfers them to containers.

The label extracting mechanism can be changed from one size to another in a very short time. Star knob 26 is removed and the support plate 22 is removed. Shafts 11 with their pallets 13, 14 are now free and are released from the drum 1 simply by pulling the tongues 12 out of the sockets 10 of the bushings 5. Replacement assemblies of pallets and shafts are then substituted for the removed assemblies by inserting the substitute shafts into the sockets. The support plate is restored and the star knob is again tightened. In each case the pin detent 21 is engaged in the shaft groove to properly orient the pallets rotationwise with respect to the journals 4. Abutment of the ends of the shafts with the ends of the journal automatically adjusts the pallets 13, 14 to the correct height.

FIG. 3 illustrates a modification in which the shafts 11 are adjustably fixed to the support plate 22 by means of paired sets of collars 28, 28'. Accordingly, when the star knob 26 has been removed, support plate 22 can be used as a carrier to concurrently lift and remove all of the shafts 11 from the drum 1. A substitute set of shafts with its own separate support plate carrier 22 is then replaced on the machine.

The invention is not limited to the disclosed apparatus in which the transfer pallets oscillate when the drum is rotating. The invention can also be used in a device where the transfer pallets are equally or unequally rotating either in the same direction as the drum or oppositely thereto. The radius of curvature of the pad surfaces 15 can be the same, smaller or larger than the radius of curvature of the drum 1. Moreover, the pallets 13, 14 can be linked to levers whereby they can swing out beyond the periphery of the drum 1.

The polygon shape or configuration of sockets 10 and tongues 12 is simply an example of a positive keying connection between these parts, as other equivalent configurations can be used.

I claim:

1. In apparatus for transferring labels from a magazine to containers and including a transfer drum rotor having a series of peripherally located shafts, pallets swingable with said shafts, and control mechanism for turning said shafts to impart swinging motion to the pallets, the improvement comprising pre-assembled pallets and shafts in adjustably fixed relation, said shafts having keyed parts, said drum having complementary keyed parts for coaction with the keyed parts of said shafts, whereby one shaft and pallet assembly is remov-

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able as a unit from the drum and is replaced by a substitute shaft and pallet assembly, the shaft of which has a keyed part which interfits with a complementary keyed part on the drum, said keyed parts comprising interfitting sockets and tongues having complementary non-circular configurations.

2. The invention of claim 1 in which said configurations comprise complementary polygons.

3. The invention of claim 1 in which there is a detent between said socket and shaft and by which these parts may be keyed together in one relative position only.

4. The invention of claim 1 in which said socket is formed in a bushing, and coupling means releasably at-

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taching said bushing to said control mechanism.

5. The invention of claim 4 in which said control mechanism includes a stem, said coupling means comprises a contractile spring between the bushing and the stem, and clamp means for tightening said spring on said bushing and stem.

6. The invention of claim 1 in which one end of the shaft abuts an end of the control mechanism, thus to establish the seated position of the shaft.

7. The invention of claim 1 in which the drum has a transfer plate and means securing ends of the shafts thereto for joint handling of all shafts in the drum.

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