

April 18, 1939.

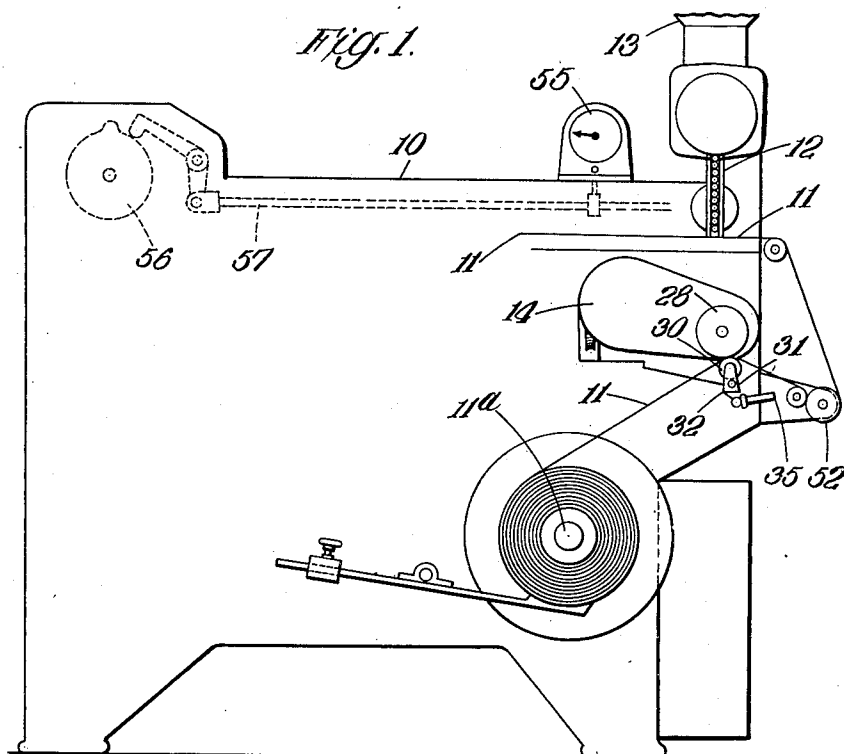
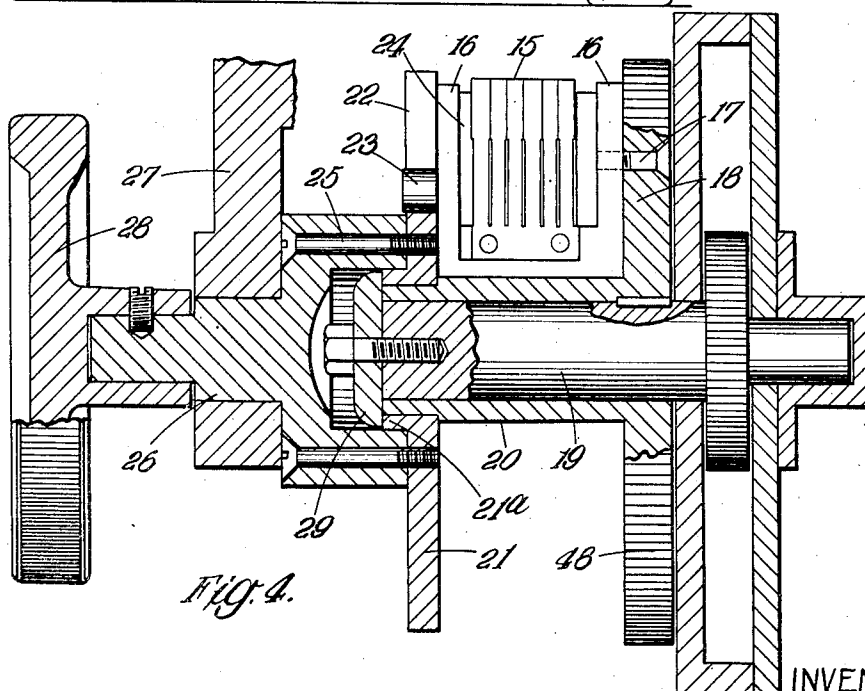
D. R. ANSTEE

2,154,884

PRINTING OR MARKING MECHANISM, PARTICULARLY FOR
USE IN CONNECTION WITH PACKAGING MACHINES

Filed June 15, 1935

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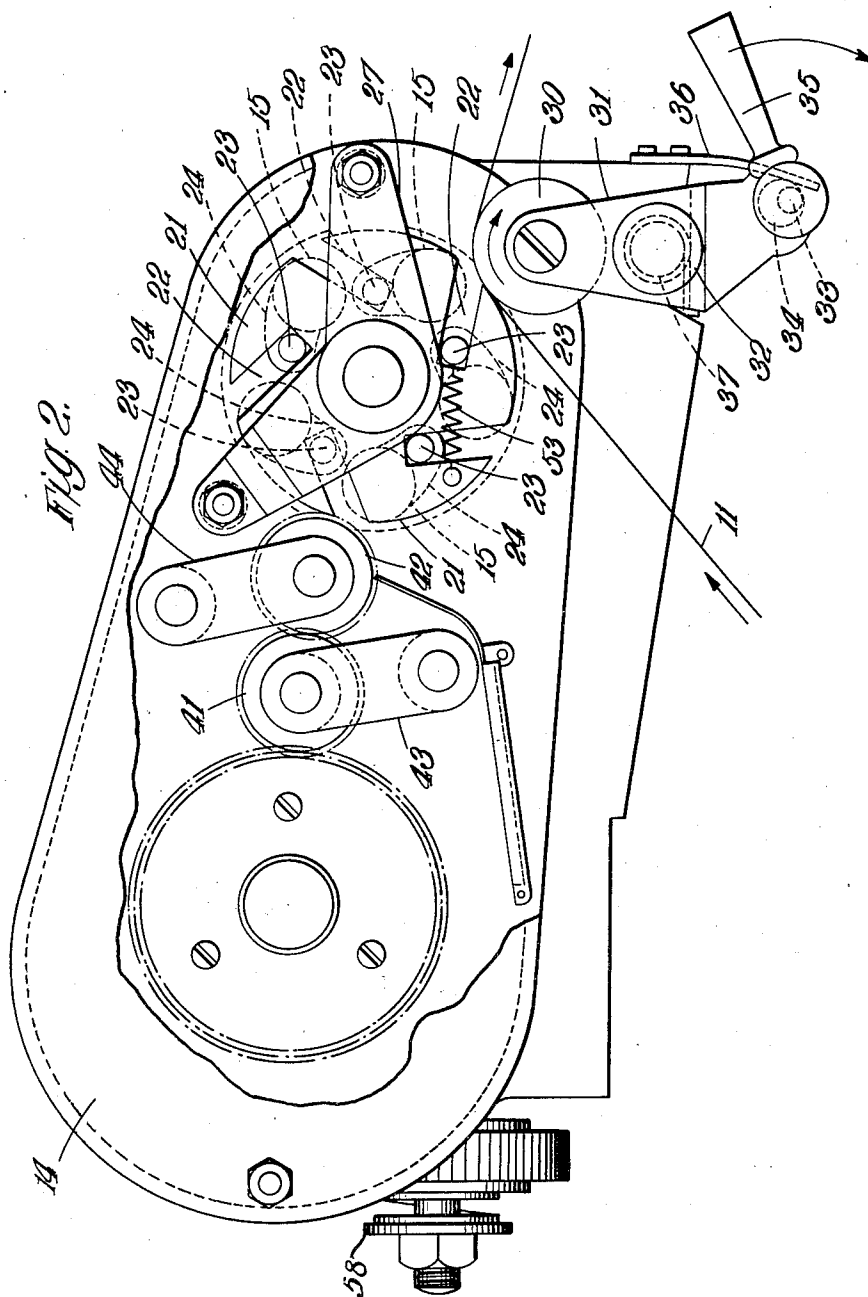
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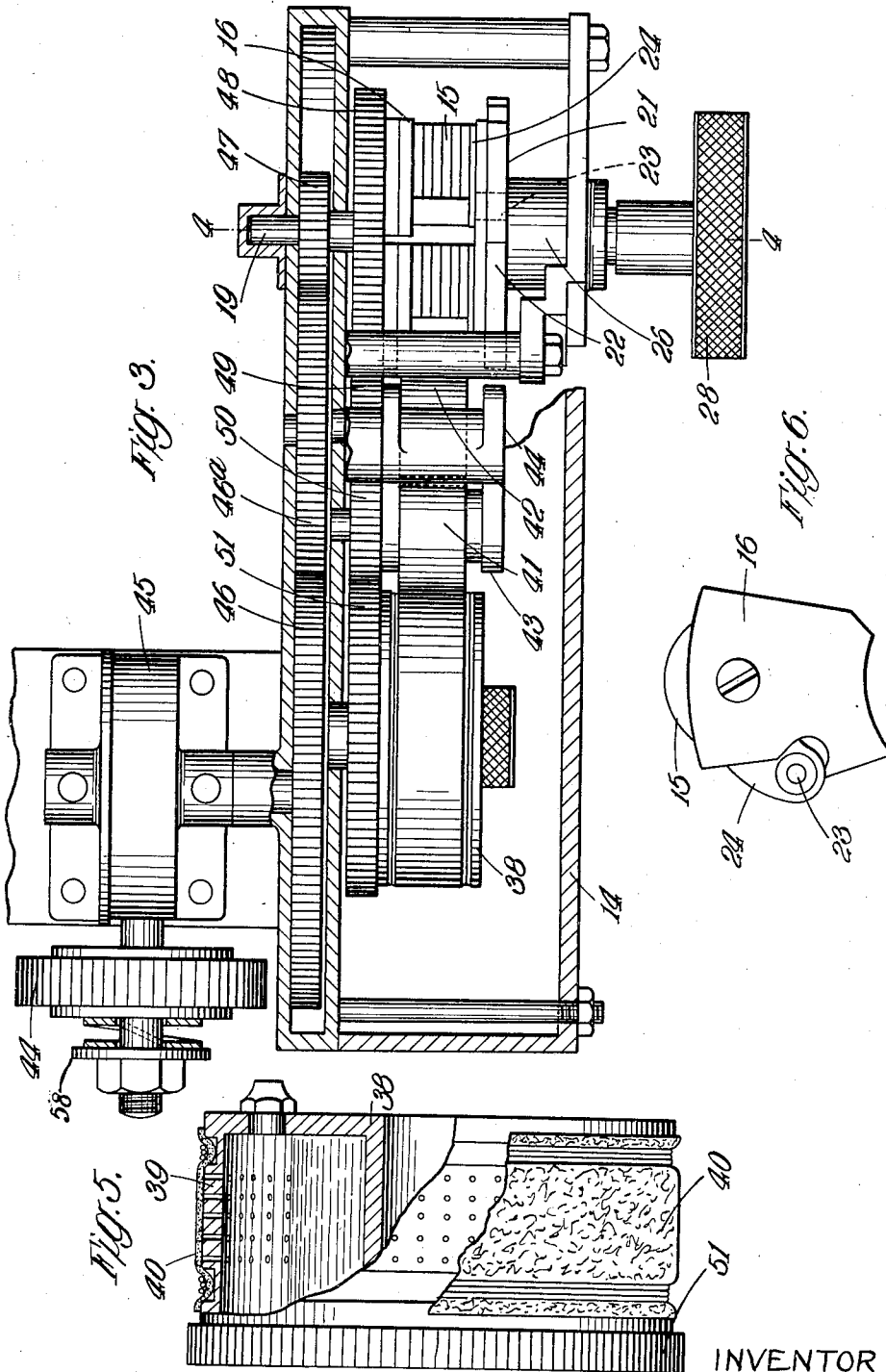
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UNITED STATES PATENT OFFICE

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PRINTING OR MARKING MECHANISM, PARTICULARLY FOR USE IN CONNECTION WITH PACKAGING MACHINES

David Rich Anstee, Slough, England

Application June 15, 1935, Serial No. 26,747
In Great Britain July 25, 1934

4 Claims. (Cl. 101—76)

This invention relates to printing or marking mechanism for use in connection with packaging machines. The invention is more especially concerned with printing or marking mechanism for packaging machines of the kind in which a series of articles such as medicinal tablets are successively placed in spaced relation on a tape or strip which is folded over at the sides to cover the spaced tablets and is subsequently sealed, for example by pressure applied to the overlapping portions of the tape or strip between the spaced tablets. The sealed strip-like package containing the tablets is then folded transversely at uniformly spaced points along its length so that the tablets are disposed in two rows in a compactly folded package which can be inserted in a carton or the like ready for sale. The packing of the articles and the sealing and folding of the packages are effected in a suitable packaging machine and the arrangement may be such that any desired number of tablets can be packed in the manner aforesaid to form complete packages containing a small quantity, say ten, or larger quantities such as thirty or forty or more if desired.

The chief object of the present invention is to provide means especially for use in or for co-operation with packing machines as above referred to, whereby the packages can be marked with identification or recording numbers or other indications to enable any particular package to be readily traced at any time before or after sale if desired.

According to this invention the printing or marking mechanism is such that it can print or mark an identification or recording number or mark on each package (or on a series of packages) containing the desired number of articles, preferably several of these numbers or marks being printed or marked on a single package, and provision is made whereby the identifying numbers or marks are changed for successive packages (or successive series of packages), or at any predetermined time. The arrangement may be such that the tape or strip in which the articles are packed is printed or marked with the identification numbers or marks during the packaging operation, and preferably the printing or marking of the tape or strip is effected at a position or stage prior to the placing of the article on the tape or strip and prior to the folding of the strip. It is generally preferred to provide printing mechanism in which inking rollers and type are used for printing say numbers on the tape or strip, but any suitable means for marking, im-

pressing or perforating the tape or strip may be employed. The improved printing mechanism comprises a number of novel features, and although it is especially suitable for use in connection with the particular type of packaging machine above referred to, it can be employed in connection with other machines or mechanisms. Broadly stated, the printing mechanism comprises an ink supply drum or roller and a rotary printing device that is constituted by a series of similar printing units having similar type wheels bearing numbers and associated with carry-over mechanism and a trip mechanism of any appropriate kind, as used in counting mechanism for operating the "units" wheel of each printing unit. Ordinarily the printing device rotates and the several units print the same number on the tape or strip until such time as it is desired to change the number, i. e. after a predetermined number of the articles have been packed or placed on the tape or strip. Means are provided that can be operated either by hand or automatically for changing the number on the several printing units simultaneously at any desired or predetermined time by means of the trip devices associated with the several printing units, for example, after the desired number of the articles have been placed on the tape or strip in which they are eventually wrapped or contained. Means are also provided whereby when it is desired to change the number to be printed, a roller or the like which maintains the tape or strip in a position to be engaged by the type wheels can be moved to allow or cause the tape or strip to move away from the said type wheels so as to avoid likelihood of smudging during the changing of the number.

The ink supply drum may be hollow to contain the ink under pressure which may be supplied by means of a pump or the like, the periphery of the drum being perforated or otherwise adapted for egress of the ink and surrounded by a felt or other absorbent material to receive the ink. The inside of the drum may be lined with felt to prevent excessive flow, so that during operation the ink passes through the perforations so as to be absorbed by the felt or other layer. The drum is preferably rotated by appropriate gearing from any suitable part of the packaging machine and suitable ink transfer rollers which may comprise a pair of rubber or other rollers mounted on pivoted arms, may be employed to transfer the ink to the aforesaid type units.

In order that the invention may be clearly

understood and readily carried into effect, the same will now be more fully described with reference to the accompanying drawings, in which:—

Figure 1 is a general or outline view of a packing machine of the kind hereinbefore referred to with one form of the printing or marking mechanism according to this invention applied thereto.

Figures 2 and 3 are respectively an enlarged side view and an enlarged plan of the printing mechanism.

Figure 4 is a transverse sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a detail view of the ink supply drum.

Figure 6 is a side view of one of the printing or type units.

Referring to Figure 1, the packing machine is generally represented by the reference numeral 10. The packing or wrapping strip of paper or other material indicated at 11 is unwound from a spool 11a and passes flatwise into the machine to receive upon it the tablets or other articles which are placed on the moving strip at predetermined intervals from a chute or guide 12 to which the tablets are supplied from a hopper 13, the tablets after being placed on the strip being carried along on the moving strip in spaced relation to the position in the machine where the strip is folded over longitudinally at the edges to cover the tablets, whereupon the folded strip is then folded transversely at positions between the tablets. Provision is made whereby the folded strip is cut at requisite positions so as to produce the packages containing a definite number of the tablets. The cut strips containing the tablets after being folded transversely can be inserted in cartons or outer cases in any appropriate manner. A waxed wrapping strip is generally used, but any other suitable material may be employed. The type of machine referred to is well known so that it is unnecessary in the present case to describe in detail the various parts or operations. In the present invention a printing mechanism is provided that is contained within a casing 14 secured to the frame of the machine, the said printing mechanism comprising a series of printing wheels or units indicated at 15. The printing wheels or units are similar in formation and construction and each unit comprises a series of rotatable wheels as shown more particularly in Figure 3 with similar peripheral type, the wheels or discs being co-axially mounted and provided with carry-over mechanism, so that after each wheel has rotated to the extent of one revolution, the next wheel is revolved to the required extent. This form of mechanism is well known in connection with various types of counting mechanism so that it is unnecessary to describe this part of the device in greater detail. The several similar printing units 15, of which five are shown in the drawings (see particularly Figure 2) are mounted in supports 16 that are secured by screws 17 to a circular plate 18 keyed on a shaft 19 (see Figure 3) and having a sleeve or boss 20 surrounding the said shaft. Freely mounted on the end of this shaft is a plate 21 having a series of slots 22, one for each printing unit, disposed at an inclination as shown in Figure 2. Into these slots project pins or rollers 23 that are provided on levers or pawls 24 associated with the printing units and adapted when angularly moved to cause the units wheel of the printing mechanism to be moved to the extent of one unit or figure when it is required to change the number on the printing wheels 15. The said slotted plate 21 is secured by screws 25 to a shaft

26 fitting around a boss on the end of the plate 21 and within a bracket or support 27 as shown more particularly in Figure 4, the outer end of this shaft 26 having a hand gripping wheel 28 secured thereon. The shaft 26 is rotatably mounted in the said bracket or support 27, so that it, together with the plate 21 is capable of relative movement to the plate 18 having the boss or sleeve 20 on which the plate 21 is rotatably mounted. On the end of the shaft 19 is a retaining shoulder plate 29 that bears against the end of the boss 21a on the plate 21. In the example shown there are five similar printing units which revolve as a whole with the plate 18 and normally with the plate 21, and the type on each unit can successively print on the tape or strip 11 at a position where the latter passes over a roller 30 mounted on a lever 31 pivoted at 32 and having at its lower part a shaft 33 provided with an eccentric 34 and a hand lever 35, which latter can be depressed to cause the eccentric 34 to move against a stop 36 for the purpose of angularly moving the lever against the action of a torsion spring 37, so that the roller 30 with the strip or tape 11 thereon can be moved away from and out of printing contact with the units 15. The spring 37, however, operates to return the lever 30 and to maintain the parts in the normal or printing position when the hand lever 35 is released. The ink is supplied to the type units from an ink supply drum 38 which is rotatably mounted on a suitable supporting spindle and is of hollow formation to contain the ink which may be under pressure, the periphery of the ink drum being perforated as shown at 39 (see Figure 5) and surrounded by felt or other absorbent material 40 which can absorb the ink that passes through the perforations. A felt lining may be provided within the drum if desired. The ink can be supplied to the printing type from the supply drum 38 by means of transfer rollers 41 and 42 which are in contact with each other and with the ink drum 38 and the type wheels 15 respectively. The transfer rollers are mounted on pivoted levers 43 and 44 as shown more particularly in Figure 2. For the purpose of imparting rotation to the printing or type unit comprising the plate 18 and the several printing units 15, rotary motion is transmitted from a suitable rotating part of the machine through a gear wheel 44, worm gearing 45 and gear wheels 46 and 46a, the latter meshing with a gear wheel 47 on the shaft 19 on which the plate 18 is keyed. The plate 18 may be provided with peripheral teeth 48 which mesh with a gear wheel 49, this latter gear wheel and a gear wheel 50 being associated with transfer rollers, the gear wheel 50 meshing with teeth or a gear wheel 51 provided on the ink supply drum. The ink drum may be eccentrically mounted so that it can be adjusted to regulate the ink supply as may be required without the teeth of the gear wheels 51 and 50 being disengaged. The tape or strip 11 passing from the spool 12 passes over the rubber or other suitable roller 30 which is held in position so that it can be printed upon by the successive printing units during the rotation of the plate 18, the strip after having been printed upon then passing around a blotting roller 52 whence it passes into the machine in the ordinary way to receive the tablets 11 from the chute 12. After the requisite number of tablets have been placed on the travelling tape or strip as required for any particular size of package, the arrangement is such that a tablet is missed to provide a space on the strip where the latter is eventually transversely cut. The pins 23 engaging the slots

22 in the plate 21 afford a driving connection between the plate 21 and the type units 15, but as the speed of rotation is comparatively slow, the rotating hand wheel 28 connected with the slotted plate can readily be gripped to hold the plate 21 against rotation whilst the printing or type units continue to rotate.

After the requisite number of articles have been placed on the strip, say for any particular number contained in a single package, or any number comprised in several packages, during which time a series of similar numbers on the different printing or type units 15 have been printed on the tape or strip by the rotatable printing unit, the numbers on the type units 15 are changed in order that the next package or series of packages can be marked with a different number or series of numbers. For this purpose the machine attendant grips the hand wheel 28 which is rotating at a comparatively slow speed so as to retain or hold the plate 21 against rotation. The printing units, however, continue to rotate with the continuously rotating plate 18, but as the plate 21 having the slots 22 is now held stationary, the pins 23 associated with the levers 24 are caused to travel towards the open ends of the said slots thereby angularly moving the lever and causing the "units" printing wheel to be moved to the extent of one unit so that by this arrangement all the "units" printing wheels of the different type units are changed to provide the next number that is to be successively printed on the tape or strip by the several type units. When it is desired to carry-over from the units wheel to the next wheel, the carry-over mechanism which is not shown, is automatically operated. After the change of number on the several type units has been effected in the manner aforesaid and the operating handle or wheel has been released, the parts associated with the printing mechanism are automatically restored to the normal position, for example by a spring 53 acting on the said slotted plate 21, so that the various pins 23 on the levers 24 return to the inner and closed ends of the slots ready for the next change of number. The various type units are therefore set simultaneously in the manner aforesaid and continue to print the next number on the travelling tape or strip for the requisite number of times, whereupon the number on the several type units is again changed in the manner aforesaid, this operation continuing during the running of the machine. It is preferable to move the roller 30 away from the contacting position with the type units at the time the change of number is effected, and therefore the operator actuates the hand lever 35 in order that the lever 31 carrying the roller 30 can be moved away from the type unit so that the tape 11 is not in printing contact during the actual changing movements of the type wheels, thus avoiding likelihood of the tape or strip being smudged by the movement of the type wheels. This operation is effected just prior to the gripping of the hand wheel, and after the change of number has been effected, the operating handle or lever 35 can be moved or released, whereupon the spring 37 moves the arm 31 and the roller 30 into the printing position. In order that the machine attendant may know when to grip the aforesaid hand wheel 28, an indicator 55 (see Figure 1) may be provided, and this indicator may comprise a pointer that is adapted to travel intermittently around a numbered dial, the pointer preferably being operated by a moving

part of the machine as indicated at 56 through a lever and rod connection 57 shown in dotted lines in Figure 1, so that when the pointer reaches the number on the dial corresponding to the number of articles placed or packed, or corresponding to the number of completed packages, the operator then grips the hand wheel to enable the wheels of the type units to be changed as aforesaid. If, for any reason it is desired to retard the operation, a press button may be provided which can be operated by the machine attendant to prevent the pointer on the indicator from moving. Instead of operating the type units to effect a change of number by hand controlled trip means, an arrangement may be provided whereby the trip mechanism can be operated automatically at the requisite moment and the aforesaid tape supporting roller 30 may also be moved into and out of the operative position, if desired. A safety clutch may be provided as indicated at 58 in Figure 3, between the operating part of the packaging machine and the printing or marking mechanism.

What I claim and desire to secure by Letters Patent of the United States is:

1. Printing or marking mechanism, particularly for use with a packaging machine, comprising a rotary device carrying a number of printing or marking units, an actuating lever for imparting rotation to each unit, a member rotatable with the printing or marking units and having slots engaged by the actuating levers, means for rotating said member, and means for holding said member against rotation to allow relative movement between the slots and the actuating levers to occur for the purpose of simultaneously changing the numbers or indicia on the printing or marking units.

2. Printing or marking mechanism particularly for use with a packaging machine, comprising a rotary device means for rotating said device, supports on said device, printing or marking units carried by said supports, an actuating lever associated with each unit for imparting rotation thereto, a plate rotatable with said device and being formed with slots, a lever having a part fitting in one of the slots in said plate, and means for holding the plate against rotation, the slots in the plate being constructed and arranged so as to allow said parts to move along them when the plate is held stationary and thereby allow the actuating levers to be moved so as to rotate the printing or marking units and thereby change the numbers or indicia on said printing or marking units.

3. Printing or marking mechanism according to claim 2, in which the slotted plate has associated with it a hand wheel that normally rotates with it, but which can be gripped to hold the plate against rotation so that relative movement between the latter and the printing or marking units can take place.

4. Printing or marking mechanism according to claim 1, in which a tape or strip wherein the articles are packed is printed upon or marked by the aforesaid units comprising a roller that maintains the tape or strip in a position to be printed on and means operable when it is desired to change the identification number or the like to move the said roller to permit the tape or strip to move away from the printing position.

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