July 31, 1951 J. G. McKAY 2,562,627

ADJUSTABLE INKING DEVICE

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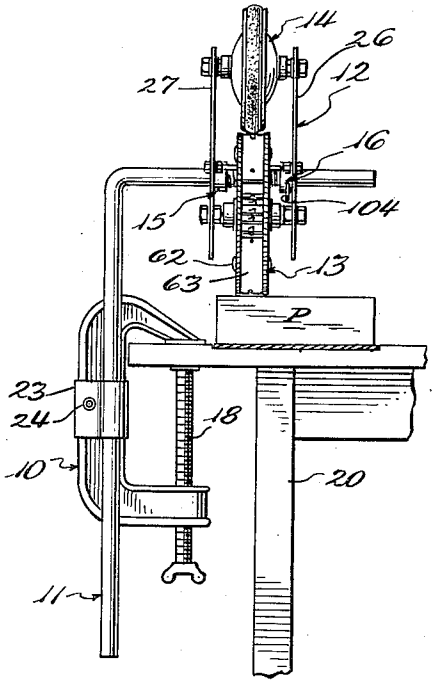


Fig. 1.

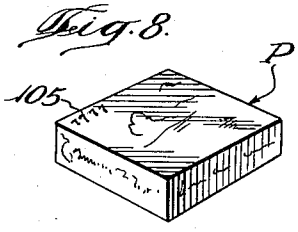


Fig. 8.

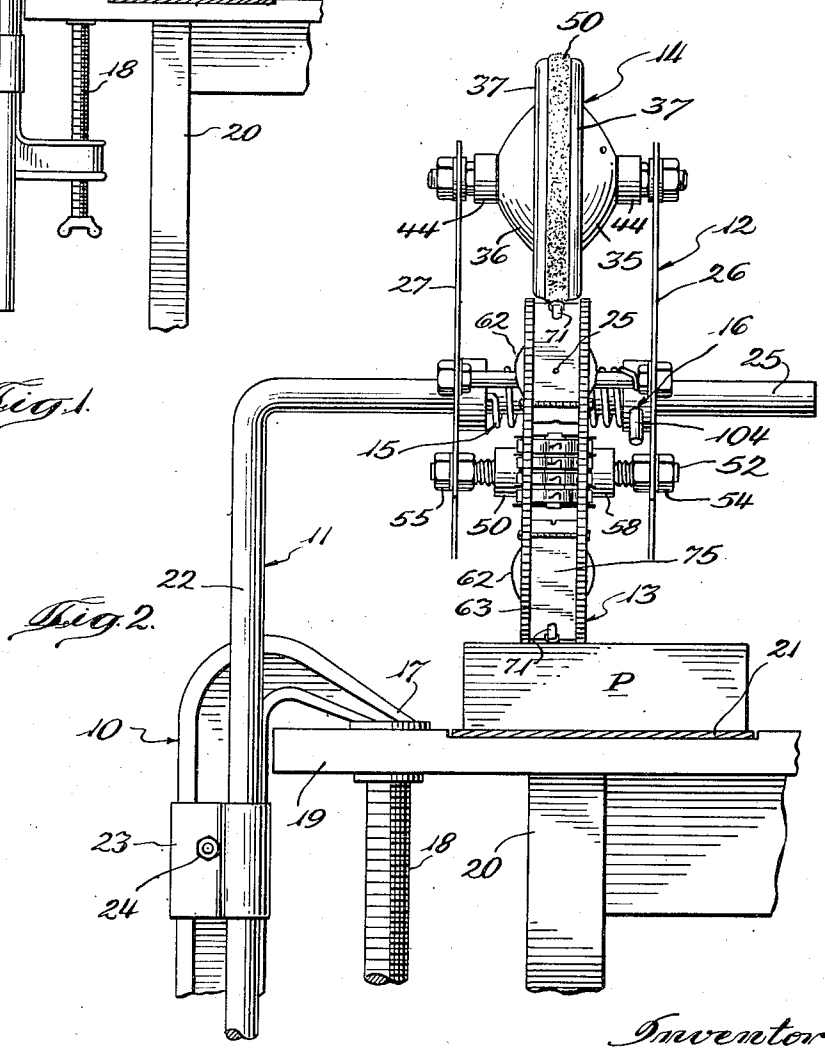


Fig. 2.

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Fig. 3.

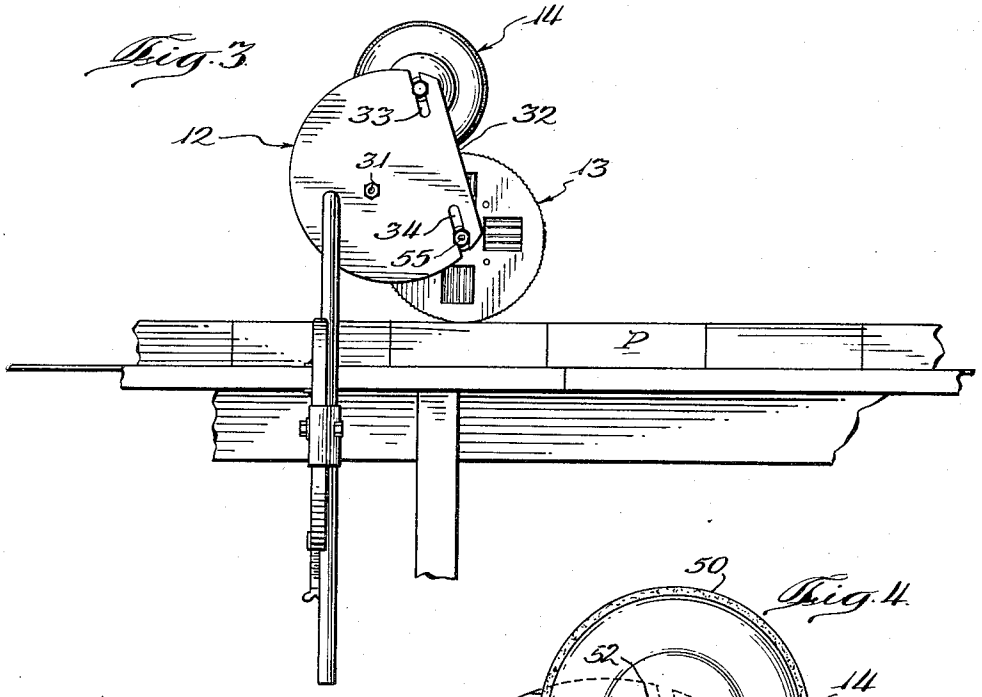


Fig. 4.

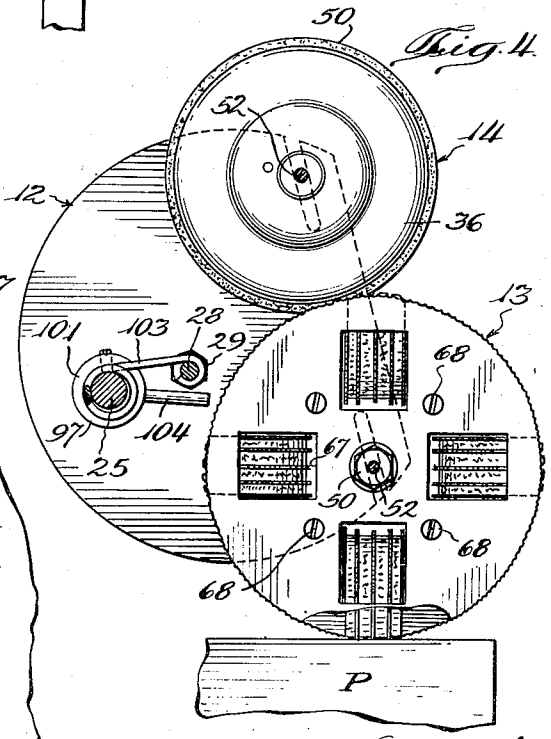
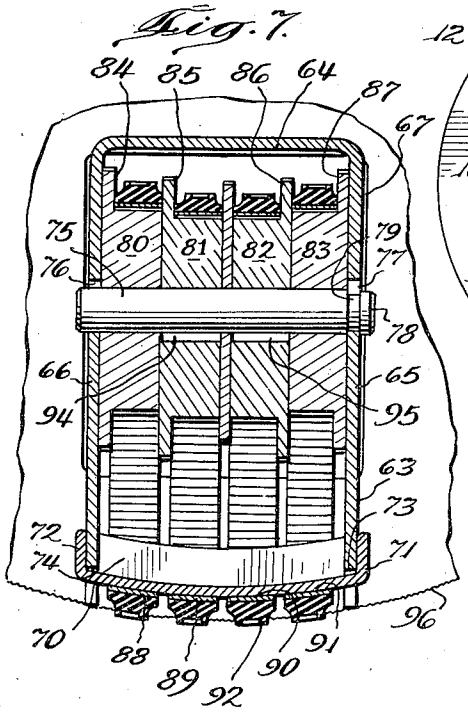


Fig. 7.



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Fig. 5.

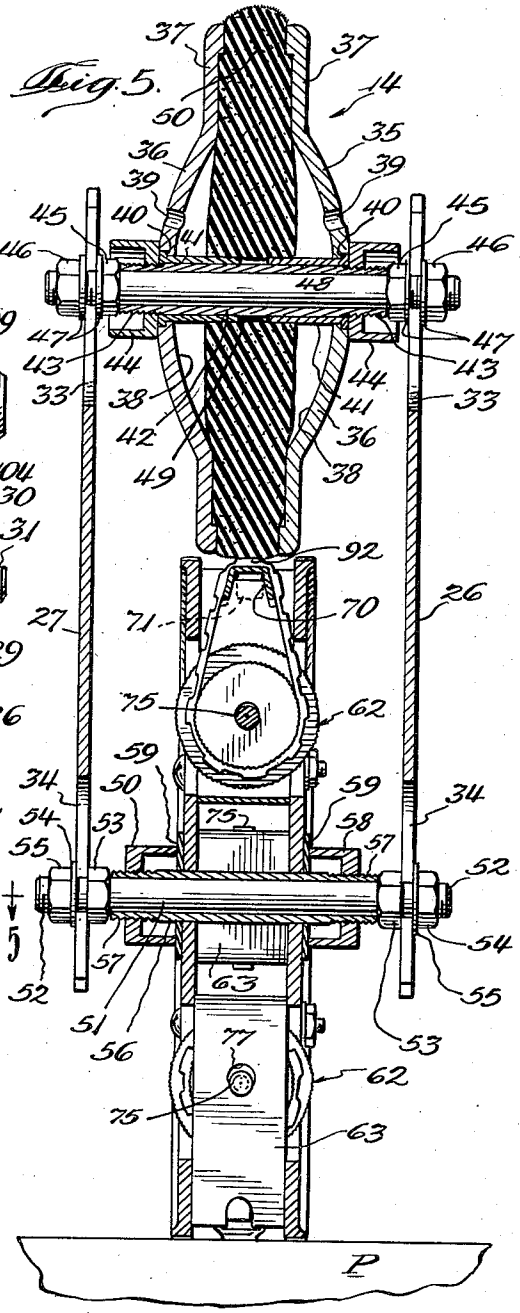
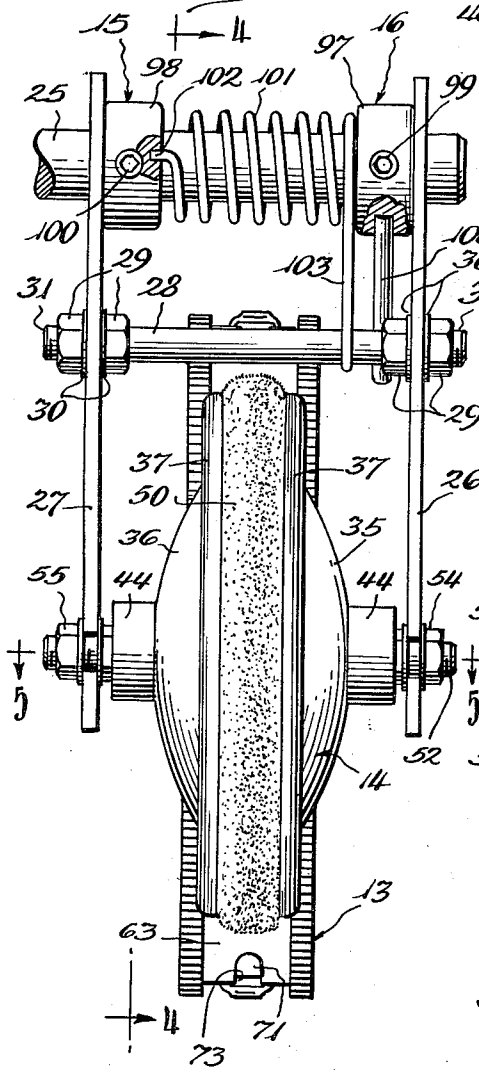


Fig. 6.



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ADJUSTABLE INKING DEVICE

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Application December 2, 1947, Serial No. 789,239

5 Claims. (Cl. 101—367)

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This invention relates to the construction of a device for automatically applying numbers to a moving line of packages by printing same upon the packages.

In the sale of perishable or semi-perishable products such as cookies, cakes, candies, and the like, it is customary in many cases for the distributor to set a limit to the age of the products sold by the retailer. The stale packages are taken back for credit in most cases. In addition, it is essential that the oldest stock be sold first. It is necessary in all such cases that each package be dated in some manner, but to place the date so that same can be read by the ultimate purchaser is undesirable since the fresh stock will be sold first while the older stock will be sold last, if at all. Dates are therefore placed upon the packages in the form of a code which uses a group of numbers. These numbers are meaningless to the purchaser but clearly identify the freshness of the package upon which they appear to the retailer and the distributor, permitting proper arrangement of stock, etc.

Where the margin of profit is small and large volumes are relied upon to bring the necessary return, the dating of packages becomes a major problem. Handling a package is expensive, and hence a code dater must be such that it can be installed upon a conveyer of packages so that the speed with which the packages are produced by the plant is not impaired. Obviously this can be done with costly equipment and paraphernalia, but the most desirable method would have to be quite cheap. In addition, the code dater must be flexible in use so that it can be used almost anywhere. It is not intended that the code dater be changed from its position at a given plant once installed, but in order to evolve such a device which can be installed upon any assembly line or conveyor, each would have to be custom made, thereby increasing the price to a large extent.

The primary object of my invention is to solve all of the problems set forth above and to provide a new and improved device which is simple in construction and operation, economical, and highly flexible.

Another object of the invention is to provide a device of the character described which will include a revolving dating wheel carrying all the possible combinations of numbers which can be used and same being adjustable in a simple and expeditious manner.

Another object of the invention is to provide a novel inking arrangement in which the rate of ink dispensation is readily adjustable; in which a

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large quantity of ink can be held in the roller of the inking device so that the same will operate for a long time without the need of adding ink; in which the pressure of the roller is easily adjusted and the roller itself capable of quick removal or replacement; and in which the printing type is kept clean at all times.

Still a further object of the invention is to provide a new and improved dating device in which same may be removably attached in a sturdy manner to any conveyor, wrapping machine, carton forming machine, or any other place where cartons, labels, boxes, or cases pass on a conveyor.

Many other objects of the invention lie in the various constructional details of the invention, such as in the manner in which the pressure of the print upon the boxes is controlled; the manner in which the dating wheel and the individual changeable date devices are constructed and arranged; and the manner in which the wheels are mounted and arranged.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of this invention, there is illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, this invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

Fig. 1 is a front elevational view of my printing device showing same attached to a conveyor carrying a line of cartons which are to be imprinted with code dates.

Fig. 2 is a similar view on an enlarged scale.

Fig. 3 is a side elevational view of the printing device shown in Fig. 1.

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 6 in the direction indicated.

Fig. 5 is a sectional view through the entire

device taken on a vertical plane along the line 5—5 of Fig. 6 and in the indicated direction.

Fig. 6 is a top plan view of the device.

Fig. 7 is a sectional view taken through one of the individual dating devices to show the construction thereof.

Fig. 8 is a perspective view of a carton showing the manner in which the matter is printed thereon.

At the outset it should be understood that although the device has been described as primarily for use in the code dating of perishable and semi-perishable food stuffs, it is not so limited in its use. My new device can be used to apply any manner of numbers, printing, symbols, dates, or insignia on any line of moving objects.

Referring now to the drawings, it will be seen that one of the great advantages of my device is that it is capable of being made from standard or easily formed parts. The general elements of the device are the clamp 10, which may be a simple large C-clamp, the bracket 11, the frame 12, the printing wheel 13, the inking wheel 14, the pressure device 15 and the stop device 16. All of these are designated generally and will hereinafter be described in more detail.

The clamp 10 is of the conventional type and includes an anvil 17, and a screw 18. In the illustrations the screw 18 engages the bottom of the platform 19 of the conveyor 20 while the anvil 17 engages the top thereof. The conveyor 20 includes a belt 21 which carries the packages P past the device. The bracket 11 has an upright portion 22 which is attached to the clamp body by a metal strap 23 held in position by the nut and bolt 24. Loosening the nut and bolt 24 permits rotation of the bracket 11 about the axis of the upright 22, or axial movement of said upright. In the preferred embodiment, the bracket 11 is formed from shafting to permit this rotation. There is a portion which actually serves as a shaft at the end of the upright 22 and bent at right angles thereto. This shaft portion of the bracket 11 is designated 25. In installing the device upon the conveyor 20, it is essential that the shaft portion 25 be spaced above the surface that is to be imprinted, and that the axis of the shaft 25 be perpendicular to the line of motion of the packages P. This will be brought out presently.

The frame 12 is rotatably mounted on the shaft portion 25. Said frame 12 consists of two identical plate members 26 and 27 held in spaced relationship by a spacer rod 28 and the ends of which are respectively attached to the plate members 26 and 27 by appropriate nuts 29 and washers 30. For this purpose the ends of said spacer may be threaded as shown at 31 and extend through appropriately positioned holes in said plates. Obviously any means of spacing the plates 26 and 27 one from the other will suffice. In the embodiment shown the plates 26 and 27 are formed as substantially circular members having a portion removed along a chord forming the straight edge 32 on each plate member.

Each of the plate members 26 and 27 has open-ended slots 33 and 34 formed therein at opposite sides thereof, spaced from and parallel with the straight edge 32. The upper slots 33 accommodate the inking device 14, while the lower slots 34 accommodate the printing wheel 13. The mountings for these devices are adjustable along the lengths of the slots 33 and 34 so that positions and pressures may be varied within the limit of the extent of said slots.

Attention is directed to Fig. 5 showing a sectional view of the inking wheel 14. The wheel 14 comprises a soft member 50 of circular formation and being highly absorbent. Same may be formed from foam rubber, for example and should have the property of being porous throughout to permit the dispensing of ink thereby. The disc 50 is sandwiched between a pair of cups 35, 36 each having an annular gripping portion 37 and a concave portion at the center thereof as indicated at 38. The concavities are mounted facing one another so that the center of the disc 50 is free to absorb the maximum amount of ink. Openings 39 are provided in the cups 35, 36 so that ink may be introduced into the cavities to be absorbed by the disc 50. The cups 35, 36 are each mounted on the shoulder 40 of a bushing 41 by means of appropriate recesses being formed in the central openings of said cups. The bushings 41 in turn are mounted on a sleeve 42 having threaded ends as shown at 43. Cup-shaped threaded nuts 44 are engaged upon said threaded portions 43 to hold the cups 35, 36, disc 50, and bushings 41 in assembled relationship. The nuts 44 are cup shaped to provide clearance for the nuts 45 which cooperate with nuts 46 and washers 47 for holding the shaft 48 between the plates 26 and 27 so that the sleeve 42 may freely revolve thereon. Note that there is a space 49 between the inner ends of the bushings 41 permitting considerable adjustment of the distance between the cups 35, 36. The natural springiness of the disc member 50 opposes inward movement of the cups 35, 36 one towards the other. It is obvious that the amount of compression to which the edges of the disc 50 are subjected will control the rate at which ink will flow from the center of the disc 50. I have therefore provided a simple and effective ink control which is adjustable merely by turning the nuts 44. This will in no way affect the freedom with which the wheel 14 revolves. If desired, the outer surfaces of the nuts 44 may be knurled in order to permit manual adjustment of the ink flow.

In connection with the description of the inking wheel 14 above, it should be pointed out that the shaft 48 acts as a spacer between the plates 26 and 27.

The printing wheel 13 is mounted in a manner similar to the inking wheel 14. A shaft 51 which as well acts as a spacer is attached between the plates 26 and 27 with its threaded ends 52 protruding through the slots 34. Nuts 53 are fastended upon the threaded ends 52 inside the plates 26 and 27, while the nuts 54 and washers 55 are fastened outside of said plates. A sleeve 56 having threaded ends 57 is mounted upon the shaft 51 for free rotation thereon. Said sleeve carries the wheel 13 by means of the nuts 58 and washers 59.

The wheel 13 comprises a pair of discs 60 and 61 which carry numberers therebetween. Each of said numberers is constructed identically and hence the description of any one will include the rest. Said numberers are indicated generally at 62, and are mounted in a manner to be described. Each numberer includes a substantially U-shaped frame 63 as best shown in Fig. 7. Said frame comprises a base portion 64 and right and left leg portions 65 and 66. Each numberer 62 is

mounted so that the frame 63 borders three sides of a rectangular opening 67 provided therefor in each of the discs 60 and 61. There are provided as many openings 67 as numberers 62 about the circumference of the discs 60 and 61, said rectangular openings 67 being spaced inwardly of the perifery of the discs 60 and 61, and the U-shaped frames facing radially outwards of said wheel. The frames 63 have their thicknesses extending between the inner faces of the discs 60 and 61, and hence space same apart. The bolts and nuts 68 clamp the frames 63 in position.

Across the free ends of the leg portions 65 and 66 there extends a bridge member 70 of generally channel shaped cross section and having the channel ends abutting against the inside faces of the leg portions 65 and 66 for spacing same apart. The ends of the bridge member 70 are provided with ears 71 and 72 which are adapted to engage within the slots 73 and 74 provided on said leg portions 65 and 66 and be bent over thereupon. The frame member 65 is thereby fixed as to its conformation. A feature which is highly important to this invention is the formation of the bridge member 70 in arcuate form and of a curvature corresponding to that of the discs 60 and 61. The reasons for this shortly will be apparent.

The frame 65 is provided with a group of friction wheels and printing strips, the construction of which is generally well known and used in commercially available numberers of this type. Thus, there is provided a shaft 75 carried in the bearing openings 76 and 77. The end 78 of the shaft which engages the opening 77 is provided with a groove 79 for engaging the edge of the opening 77 to permit disassembly in a manner well known. The shaft 75 carries friction wheels 80, 81, 82, and 83, each having the usual knurled flange 84, 85, 86, and 87 respectively. A spacing washer is shown at 59. Flexible printing tapes or bands 88, 89, 90, and 91 are carried by the respective wheels, each tape being endless and extending around the respective wheel and the bridge 70. The tapes all carry rubber printing numbers or letters in the usual manner as indicated at 92. The diameter of the knurled flanges 84 to 87 is greater than the width of the frame 65 and hence the wheel flanges extend outside of the openings 67 so that same may be manipulated from outside of the wheel 13 for changing the face of the characters 92 positioned upon the bridge 70 in the well known manner of operating such numberers.

As stated above, the general construction of the numberers 62 is well-known, but attention is now directed to a constructional detail thereof which is one of the features of the invention. The wheels 80 to 83 are mounted upon the shaft 75 for free rotation thereof when the knurled flanges 84 to 87 are moved. The distance from the shaft to the bridge 70 is substantially different at the ends of the shaft 75 than at the center of the shaft by reason of the curvature of the bridge 70. In order that the tapes 88 to 91 all be under substantially uniform tension, it is necessary to compensate for this variation of distance. The preferred expedient, and one which is highly economical is to provide the wheels 81 and 82 with bearings larger than those of wheels 80 and 83. Such bearings are openings 94 and 95 and they permit the wheels 81 and 82 to be rotated as desired in the same manner as wheels 80 and 83, while the tapes 89 and 90 move eccentrically of the movement of tapes 88 and 91, thereby compensating for the differences in distance above referred to.

By my construction, the necessity of providing special wheels, shafts or tapes is eliminated without loss of operating efficiency.

Having described the inking wheels 14 and the printing wheel 13, the manner of operation thereof should be pointed out. The characters 92 are adjusted to protrude from the edge of the wheel 13 a slight amount. Said edges are milled as shown at 96 in order that same will frictionally engage and be moved by the moving line of packages P. Thus the pressure to which said characters P are subjected can be adjusted for optimum conditions of printing and wear. The wheel 14 is adjusted so that the free edge thereof is engaged by the characters 92 as same rotate past. Movement of the wheels 13 and 14 relative to one another is obtained by adjustment of the respective positions of said wheels in the slots 33 and 34.

The position of the frame 12 along the shaft 25 is adjusted by means of a pair of collars 97 and 98 respectively bearing against the inner faces of the plate members 26 and 27. The collar 98 is a part of the pressure device 15 and the collar 97 is a part of the stop device 16. Each collar is capable of being fixed to the shaft 25 by the set screws 99 and 100. A spring 101 is coiled about the shaft 25 and has one end 102 thereof attached to the collar 98, and the opposite end 103 extending perpendicularly from the shaft 25 to slightly beyond the spacer rod 28 whereby said rod is engaged thereby. The spring 101 therefore serves to urge the frame 12 downwardly, or clockwise as viewed in Fig. 3, about the shaft 25, with the pressure controlled by the amount with which the collar 98 has been rotated about the shaft 25 prior to affixing same thereon. If desired additional openings (not shown) to accommodate the end 102 may be provided about the face of collar 98.

The downward movement above described is limited by a stop member 104 which is attached to the collar 97, and the free end of which extends beneath the spacer rod 28.

The manner of operation of the device is generally as follows: The characters 92 are adjusted in each of the numberers by manipulation of the appropriate wheels 80 to 83, and the stop member 104 is adjusted so that the distance which the periphery of the wheel 13 is spaced above the conveyor belt is slightly less than the thickness of the packages P. The tension of the spring 101 is adjusted so that the packages will engage beneath the wheel 13 and lift same together with the frame 12, rotating said frame a slight amount about the shaft 25 without injuring the covering of said package. As the package P moves past the wheel 13, the milled edges engage the surface of the package causing the characters to be impressed against said package. While the wheel is rotating, ink from the inking wheel 13 is being applied to the characters of the numberer 62 opposite to the one engaging the package.

The position of the impression relative to the package P can be adjusted by changing the position of the frame 12 along the shaft 25. In Fig. 8 the impression 106 is shown placed along an edge of the package P.

It is believed that my invention, its mode of construction and assembly, and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while a preferred

embodiment of the invention has been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of my invention as defined in the appended claims.

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

1. In a device of the character described which is adapted to print characters on packages moving past the same, and which includes rotatable printing means carrying printing characters; an inking device adapted to supply ink to said printing means, comprising a disc member of highly porous, resilient ink-absorbing material, cup members for holding said disc member under compression with the peripheral edges of said disc member exposed and arranged to contact said printing means, openings in said cup members for introducing ink to said disc member, and means for adjusting one cup member relative to the other, thereby regulating the flow of ink from the center of said disc member to the edges thereof.

2. In a device of the character described which is adapted to print characters on packages moving past the same, and which includes printing means carrying printing characters; an inking device adapted to apply ink to said inking characters comprising an absorbent foam rubber disc, cup members for holding said disc under compression with the peripheral edge of said disc exposed and adapted to contact said inking characters, said cup members having annular gripping portions about their peripheries facing inwardly toward one another and a concave portion at their centers facing one another, openings in the cup members for introducing ink to the disc, and means for adjusting said annular gripping portions relative to each other thereby regulating the flow of ink from the center of said disc to the edge thereof.

3. In a device of the character described which is adapted to print indicia on packages moving past the same and which includes printing means: an inking device adapted to supply ink to said printing means comprising an absorbent foam rubber disc, cup members for holding said disc under compression with the peripheral edge of the disc exposed and adapted to contact and carry ink to said printing means, said cup members being mounted at their respective centers on a shaft adapted to rotate with the disc, means

on the shaft for moving said cup members toward one another axially of the shaft thereby adjusting the compression of the foam rubber disc regulating the flow of ink from the center of the disc to the peripheral edge thereof.

4. In a device for printing indicia upon a moving line of packages and which has a character-bearing printing member; an inking wheel for rolling ink upon the characters of the printing member which comprises a disc of highly absorbent, porous rubber of foamy cellular composition, thereby providing capillary passage for ink throughout the disc, a pair of juxtaposed pressure plates arranged with the said disc sandwiched therebetween under compression, and means for varying the spacing between the plates to adjust the compression and thereby adjust the rate at which ink will flow to the edge of the disc, said wheel having means for rotatably mounting the same.

5. A construction as described in claim 4 in which the wheel has a passageway to enable ink to be introduced to the compressed disc.

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