March 18, 1941. G. W. VON HOFE 2,235,054

PRINTING MEANS FOR LABELING MACHINES AND THE LIKE

Filed Feb. 17, 1940 3 Sheets-Sheet 1

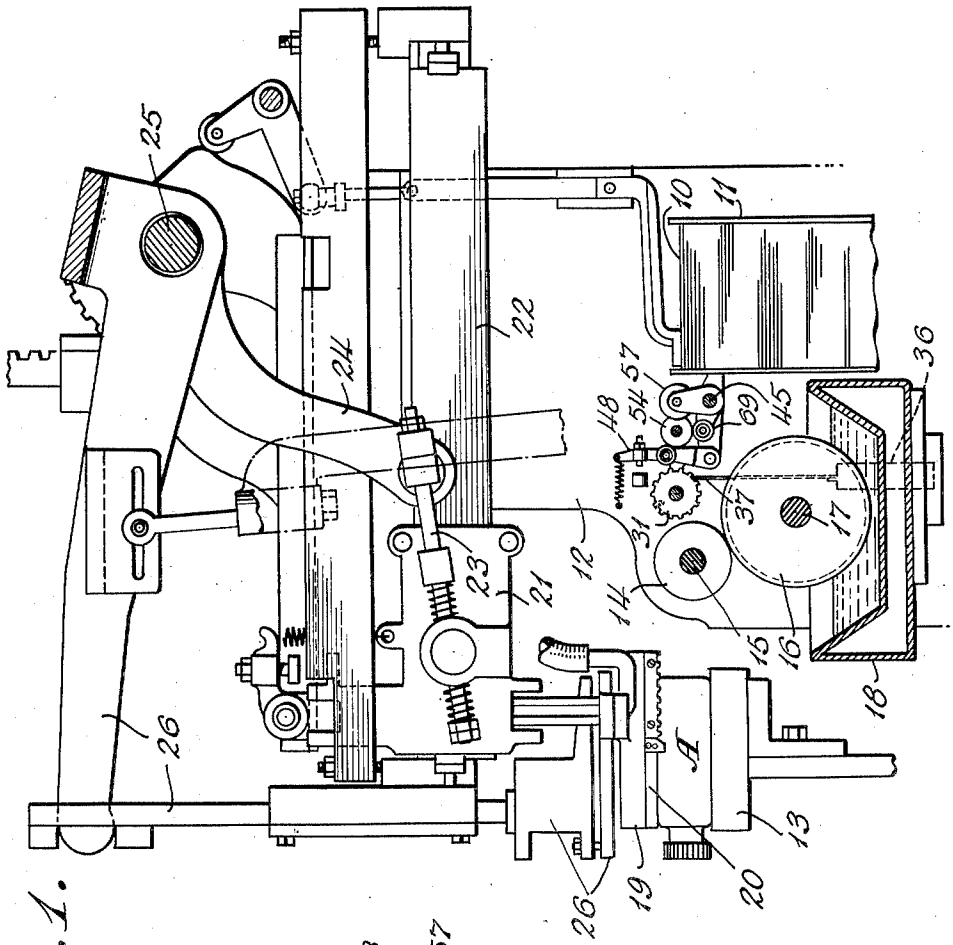


Fig. 1.

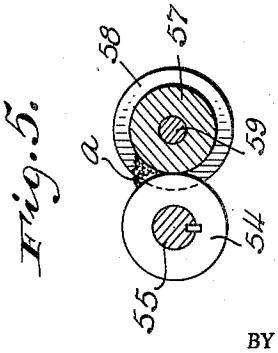


Fig. 5.

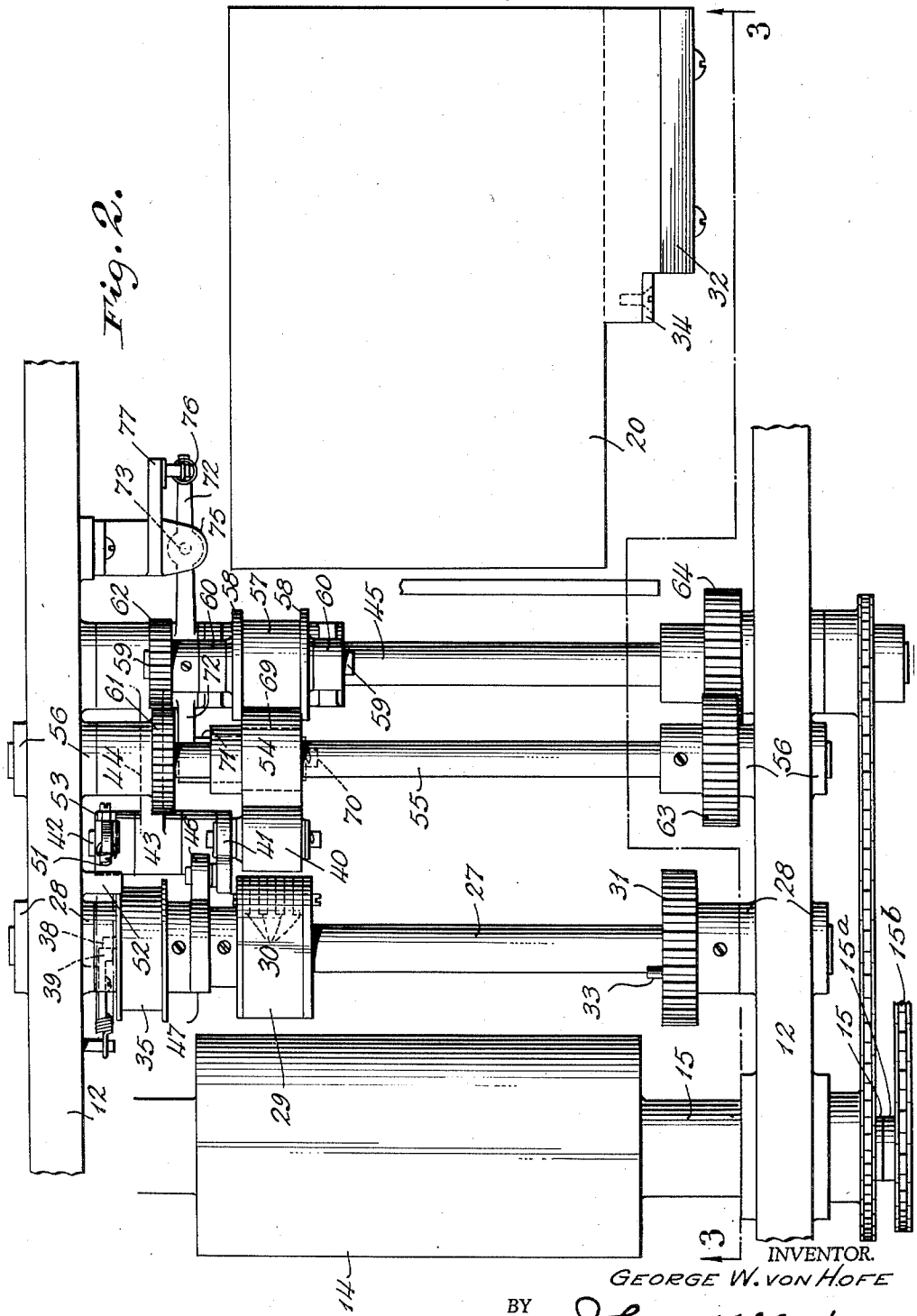
INVENTOR.
GEORGE W. VON HOFE
BY
ATTORNEY

March 18, 1941. G. W. VON HOFE 2,235,054

PRINTING MEANS FOR LABELING MACHINES AND THE LIKE

Filed Feb. 17, 1940 3 Sheets-Sheet 2

Fig. 2.



March 18, 1941. G. W. VON HOFE 2,235,054

PRINTING MEANS FOR LABELING MACHINES AND THE LIKE

Filed Feb. 17, 1940 3 Sheets-Sheet 3

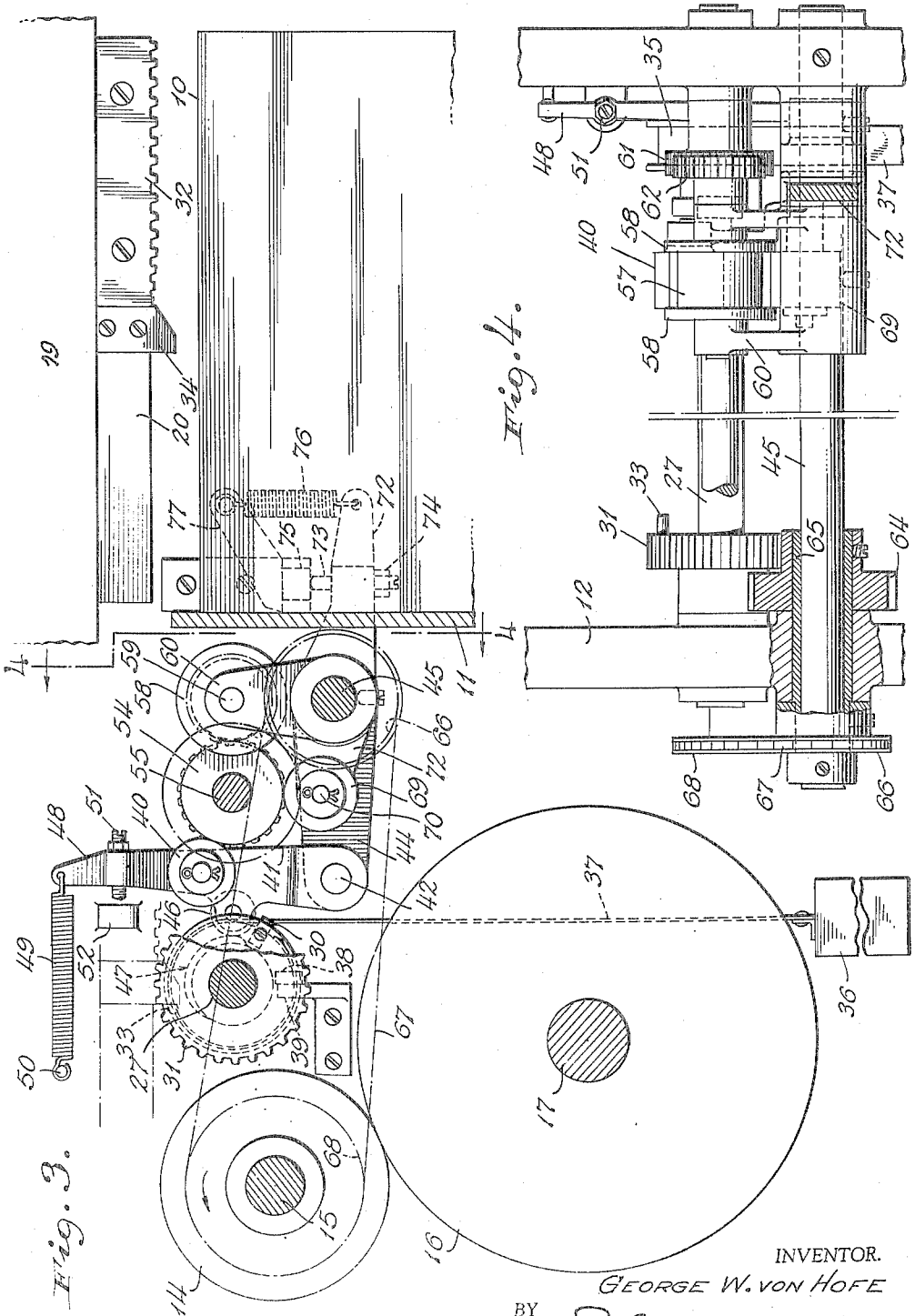


Fig. 3.

Fig. 4.

INVENTOR.
GEORGE W. VON HOFE
BY John A. Schlenker
ATTORNEY

Patented Mar. 18, 1941

2,235,054

UNITED STATES PATENT OFFICE

2,235,054

PRINTING MEANS FOR LABELING MACHINES AND THE LIKE

George W. von Hofe, Bound Brook, N. J., assignor to New Jersey Machine Corporation, Hoboken, N. J., a corporation of New Jersey

Application February 17, 1940, Serial No. 319,372

19 Claims. (Cl. 216—2)

The invention relates to printing means for labeling machines and the like, and has for its object to provide a novel printing mechanism for producing predetermined imprints upon a surface of the labels during the manipulation thereof by the labeling machine. The invention contemplates further the provision of novel means for imprinting predetermined code or other indications upon the backs of the labels prior to the application of a coating of adhesive thereto. In addition, the invention has for its object the provision of novel printing means of the indicated character capable of being readily incorporated in labeling machines or the like of existing types. Other more specific objects will appear from the description hereinafter and the features of novelty will be pointed out in the claims.

In the accompanying drawings, which illustrate an example of the invention without defining its limits, Fig. 1 is a fragmentary side elevation, partly in section, of a labeling machine with the novel printing means embodied therein; Fig. 2 is an enlarged plan view of the novel printing means and associated parts of the labeling machine; Fig. 3 is a sectional view on the line 3—3 of Fig. 2; Fig. 4 is a sectional elevation on the line 4—4 of Fig. 3, and Fig. 5 is a detail section of the printing ink feed rollers.

The labeling machine selected for purposes of illustration and description includes a supply stack of labels 10 in a container 11 suitably mounted upon the frame 12 of the machine at the label pick-up station thereof, and a conventional support 13 for supporting the articles A to be labeled at the label applying station of the machine. The latter further includes adhesive applying means located between the label pick-up station and the label applying station and consisting for instance of an adhesive applying roll 14 carried by a shaft 15 suitably journalled in the frame 12. The adhesive applying roll 14 is in tangential receiving relation with an adhesive distributing roll 16 carried by a shaft 17 mounted in the frame 12 in any convenient manner, said distributing roll 16 dipping into a supply of adhesive in a container 18 suitably supported on the frame 12. Suitable provision is made for mechanically operating at least the adhesive applying roll 14 either continuously during an operative period or in intermittent steps, for instance, by means of a sprocket wheel 15a on the shaft 15 and a sprocket chain 15b connecting the same with a source of power.

In addition, the labeling machine is provided with carrying or transfer means whereby the labels 10 are carried or transferred in succession from the supply stack at the pick-up station to the label applying station of the machine, each label carried by the transfer means receiving an application of adhesive from the adhesive applying roll 14 during the aforesaid transfer. In the illustrated machine the transfer means consists of a suction head 19 including a mouthpiece plate 20 and movably mounted upon a carriage 21 arranged to be reciprocated upon a guide rail 22 conveniently supported on the frame 12. Operating mechanism exemplified by a connecting link 23, an arm 24 and a rock-shaft 25 serves to slidably operate the carriage 21 on the rail 22 in proper timing in the operative cycle of the machine. In practice the carriage 21 is reciprocated on the rail 22 between the pick-up and label applying stations and the suction head 19 is operated at the pick-up station to pick-up a terminal label 10 from the supply stack in the container 11, to carry the picked up label in adhesive receiving relation to the adhesive applying roll 14, and to deposit the adhesive coated label on an article A on the support 13 at the applying station. The application of the labels to the articles A may be completed by any conventional type of pressure means 26 or otherwise. As so far described, the labeling machine and its operations may be of any well-known character, it being understood that said labeling machine may include any and all features commonly found therein or especially embodied in specific forms of such machines.

The instant novel arrangement comprises a printing means whereby imprints such as code marks or the like are produced upon the reverse surfaces or backs of the labels 10 before said surfaces receive an application of adhesive from the adhesive applying means; the illustrated machine accordingly is provided with a novel printing means located and operating in advance of the adhesive applying means exemplified by the adhesive applying roll 14 and its associated elements.

The novel printing means includes a printing roll shaft 27 located in advance of the adhesive applying roll 14 and suitably journalled in bearings 28 on the frame 12. A printing roll 29 constructed in any convenient manner to removably accommodate customary type 30 is fixed upon the shaft 27 in predetermined imprinting relation to the path traversed by a label when carried by the suction head 19. The shaft 27 is actuated to rotatably operate the printing roll 29 in a manner to cause the type 30 to produce an imprint

upon the surface of a label 10 as the latter is carried by the suction head 19. The aforesaid operation of the shaft 27 and printing roll 29 is effected by suitable means whereby the desired imprint production is accurately predetermined; in the illustrated example, the production of the imprints on the labels 10 is controlled by cooperating means located respectively on the shaft 27 and the suction head 19. The co-operating means referred to comprises a gear 31 fixed on the shaft 27 in the path of a toothed rack 32 mounted upon the mouthpiece plate 20 in off-set relation to the suction head 19 so as not to interfere with the other functions of said suction head 19, as shown in Figs. 2 and 3. To definitely insure proper meshing of the rack 32 with the gear 31, the latter is provided with a pin 33 projecting outwardly from said gear 31 for engagement by a lug or starting dog 34 depending from the mouthpiece plate 20 in advance of the forward end of the rack 32 as illustrated in Figs. 1 and 3. Suitable means is provided for restoring the printing roll 29 and the type 30 to the normal position occupied thereby, co-operating stops being arranged to arrest the printing roll 29 in such position. As shown in the drawings, the means is exemplified by a drum 35 fixed on the shaft 27 and a weight 36 suspended by a band or its equivalent 37 connected with said drum 35 as shown in Fig. 3; the illustrated arresting means consists of a stop lug 38 carried by the drum 35 and a stop member 39 secured upon the frame 12 as illustrated in Figs. 2 and 3.

In order to ink the type 30 on the printing roll 29, an ink transfer roll 40 is mounted on a lever 41 carried by a pin or stub shaft 42 journalled in the bearing 43 of an arm 44 fixed upon a stationary rod 45 fastened in place on the frame 12 in any convenient manner. A roller 46 is rotatably supported on the lever 41 for co-operation with a transfer roll cam 47 fixed upon the shaft 27 whereby the manipulation of the ink transfer roll 40 is controlled as will appear more fully hereinafter. As shown in Fig. 2, the pin or stub shaft 42 extends through and beyond the bearing 43 and carries a control lever 48 to which one end of a spring 49 is connected, the other end of said spring 49 being attached to a pin 50 on the frame 12. An adjustable stop screw 51 is mounted on the control lever 48 for engagement with a stationary stop lug 52 on the frame 12, a lock-nut 53 being provided for fixing the stop screw 51 against unintentional movement. With this arrangement the spring 49 by acting on the control lever 48 serves to maintain the roller 46 in rolling engagement with the cam 47.

The ink transfer roll 40 receives ink from an ink feeding roll 54 secured upon a shaft 55 journalled in bearings 56 on the frame 12, said ink feeding roll 54 being in tangential rolling engagement with an associated ink feeding roll 57 provided with annular flanges 58 lying in overlapping engagement with the roll 54 as shown in Fig. 2. The ink feeding roll 57 is fastened upon a shaft 59 rotatably mounted in a forked bearing 60 projecting from and fixed upon the stationary rod 45 as illustrated in Fig. 3. The ink feeding rolls 54 and 57 are operatively geared together by pinions 61 and 62 located respectively on the shafts 55 and 59, power being applied to operate said pinions 61 and 62 in any suitable manner. For instance, as shown in the drawings, the shaft 55 may carry a gear 63 arranged in mesh with a gear 64 fastened on a sleeve 65 rotatably mounted on the stationary rod 45 and projecting exteriorly of the frame 12 as illustrated in Fig. 4. A sprocket wheel 66, or its equivalent, is secured upon the sleeve 65 and is connected by means of a sprocket chain 67 or its equivalent with a sprocket wheel 68 or its equivalent, fastened on the shaft 15 of the adhesive applying roll 14. In the operation of the machine a supply of ink *a* is located in the recess formed by the contiguous surfaces of the ink feeding rolls 54 and 57 as shown in Fig. 5, said supply of ink *a* being maintained in said recess by the annular flanges 58 of the roll 57. In order to distribute the ink evenly over the surface of the ink feeding roll 54, an ink distributing roll 69 is arranged in co-operative rolling relation therewith as illustrated in Fig. 3. The distributing roll 69 is rotatably mounted on a pin 70 projecting from a boss 71 located at one end of a lever 72 which is pivotally supported on the stationary rod 45. The lever 72 carries an adjustable stop screw 73 fixed against unintentional movement by a lock nut 74 and arranged to engage a stop lug 75 suitably fastened on the frame 12. A spring 76 having its one end connected with a stationary bracket 77 and its other end attached to the other end of said lever 72 serves to maintain the stop screw 73 in engagement with the stop lug 75 and thereby controls the relationship of the distributing roll 69 to the ink feeding roll 54; obviously by changing the setting of the stop screw 73, the position of the distributing roll 69 relatively to the ink feeding roll 54 may be varied.

In practice the shaft 25 is rocked on its axis by conventional mechanism to correspondingly actuate the arm 24 and thereby reciprocate the carriage 21 on the guide rail 22. When the carriage 21 is at the pick-up station, the suction head 19 is operated to pick-up and lift the terminal label 10 from the stack 11 to a level at which it will pass in tangential adhesive receiving relation to the adhesive applying roll 14. As the carriage 21 travels along the guide rail 22 to the left in Fig. 1, the label 11 carried by the suction head 19 will, as stated above, pass in tangential adhesive receiving relation to the adhesive applying roll 14 whereby a coating of adhesive is applied to the back or reverse surface of said label 10. When the label applying station is reached, the suction head 19 is operated to deposit the adhesive coated label 10 on the article A which is located on the support 13 at the time; the application of said label 10 to the article A may be completed by means of the conventional pressure means 26 or in any other well-known way. After a label 10 has been deposited by the suction head 19 on an article A, the suction head 19 is raised to a level above the adhesive applying roll 14 and returned to the pick-up station by the carriage 21 after which the described operations are repeated.

As the carriage 21 travels to the left on the rail 22 with the suction head 19 carrying a label 10 at a level to receive adhesive from the applying roll 14, the starting dog 34 depending from the mouthpiece plate 20 will engage the pin 33 on the gear 31 and thereby initiate the rotation thereof. As the described movement of the carriage 21 continues, the rotating gear 31 will roll into mesh with the rack 32 which thereafter serves to continue the rotation of said gear 31. The rotation of the latter correspondingly actuates the shaft 22 and thereby rotatively operates the printing roll 29 and with it the type 30 and the cam 47. As this takes place, the roller 46 will travel to the low section of the cam 47 and permit the lever 41 to swing to the left in Fig. 3 under the influence of the spring 49 and

shift the stop screw 51 into engagement with stop lug 52. This movement of the lever 41 brings the ink transfer roll 40 into position for rolling engagement with the type 30 as the latter partake of the rotation of the printing roll 29; as a result of this, ink is transferred from the roll 40 to the type 30 which finally come into imprinting engagement with the advancing label 10 carried by the suction head 19 at the time. An imprint from the inked type 30 is thereby produced on the surface of the label 10 at a predetermined point thereof before said point of said label 10 arrives in adhesive receiving relation with the adhesive applying roll 14. Subsequent to the production of the imprint it may become covered with adhesive from the roll 14 as the travel of the carriage 21 toward the label applying station continues.

During the aforesaid operations, at least the adhesive applying roll 14 is being rotated by the means of the sprocket wheel 15a, sprocket wheel 15b and the associated mechanism to thereby correspondingly actuate the sprocket wheel 48. This causes the sprocket chain 67 to transmit motion to the sprocket wheel 66 whereby the sleeve 65 and with it the gear 64 is rotated on the rod 45. As this occurs, the gear 64 operates the gear 63 and rotates the shaft 55 which results in a rotation of the ink feeding roll 54 and the pinion 61 and consequently the pinion 62 and the associated ink feeding roll 57. Ink from the supply a is thereby carried along on the rolls 54 and 57 and is distributed over the surface of the ink feeding roll 54 by the rolling action of the ink distributing roll 6 which is rotated by said roll 54.

During the rotation of the shaft 27 and the printing roll 29 to carry the type 30 into imprinting engagement with the advancing label 10, the drum 35 on said shaft 27 is rotated in a direction to wind up the band 37 thereon and to raise the weight 36. As the movement of the carriage 21 and its associated elements continues toward the label applying station, the rack 32 will finally pass beyond and out of mesh with the gear 31. When this takes place the weight 36 in co-operation with the band 37 will rotate the drum 35 in a reverse direction. This reverse movement is communicated to the shaft 27 and to the cam 47 and printing roll 29 carried by said shaft 27 and is continued until the stop lug 38 on the drum 35 engages the stop member 39 and arrests the same. This serves to restore the type 30 to the normal position of rest, and causes the roller 46 to ride up on the high section of the cam 47; as a result the lever 41 is pivotally swung to the right in Fig. 3 to shift the ink transfer roll 40 into rolling engagement with the ink feeding roll 54 to receive a fresh supply of ink therefrom.

As previously stated, the suction head 19 is raised after a label 10 carried thereby has been deposited in an article A, to a level above the adhesive applying roll 14. The starting dog 34 and rack 32 partake of this movement of the suction head 19 and are raised thereby to a level above the gear 31. Thus when the carriage 21 is shifted in a return movement back to the pick-up station, the suction head 19 will pass above the adhesive applying roll 14 in spaced relation thereto, and the rack 32 and starting roll 34 will similarly pass above and out of operative relation with the gear 31.

With the arrangement described, imprints of predetermined character are efficiently produced upon the dry surfaces of the labels 10 prior to the application of adhesive thereto, and said labels 10 accordingly may be provided with code marks for identification or other purposes. In addition to its other functions, the suction head 19 acts as a printing platen for the carried label 10 during the production of the imprint thereon by the type 30. Because of the location of the imprints on the gummed or reverse surfaces of the lavels 10, the presence of said imprints is not easily noted and generally is known only to the initiated; however, even if the presence of said imprints is discovered, it is impossible to alter or erase the same without damage to the labels. It is thus possible to prevent the receptacles to which the labels 10 are applied from being used for inferior or unauthorized contents, and discovery of such unauthorized use is easy and positive.

The novel printing means is simple in construction and requires no skilled supervision in its operation, and may be easily and readily installed in existing machines. While the aforesaid printing means is primarily designed for use in labeling machines, it obviously may be used in kindred and other machines with equal efficiency.

Various changes in the specific forms shown and described may be made within the scope of the claims without departing from the spirit of the invention.

I claim:

1. In a labeling machine including a label applying station and means for carrying a label to said label applying station, that improvement which comprises printing means for producing an imprint on said label at a predetermined point of its travel to said applying station, and means operatively connected with said carrying means for operating said printing means to produce said imprint.

2. In a labeling machine including a label applying station and means for carrying a label to said label applying station, that improvement which comprises printing means for producing an imprint on said label at a predetermined point of its travel to said applying station, and means mounted on said carrying means for operating said printing means to produce said imprint.

3. In a labeling machine including adhesive applying means, and means for carrying a label in adhesive receiving relation to said adhesive applying means, that improvement which comprises printing means for producing an imprint on said label prior to the application of adhesive thereto, and means associated with said carrying means for operating said printing means to produce said imprint.

4. In a labeling machine including a label applying station and means for carrying a label to said label applying station, that improvement which comprises a rotatable printing member carrying type for producing an imprint on said label at a predetermined point of its travel to said applying station, and means movable with said carrying means for rotatively actuating said printing member to shift said type to imprinting position to produce said imprint.

5. In a labeling machine including a label applying station, and means for carrying a label to said applying station, that improvement which comprises a rotatable printing member for producing an imprint on said label at a predetermined point of its travel to said applying station, a gear operatively connected with said rotatable printing member, and a rack on said carrying

means co-operating with said gear for rotatively actuating said printing member to produce said imprint.

6. In a labeling machine including adhesive applying means, and means for carrying a label in adhesive receiving relation to said adhesive applying means, that improvement which comprises a rotatable printing member located in advance of said adhesive applying means for producing an imprint on said label prior to the application of adhesive thereto, a shaft carrying said printing member, a gear on said shaft, and a rack on said carrying means co-operating with said gear for rotatively actuating said shaft and printing member to produce said imprint.

7. In a labeling machine including a label applying station and means for carrying a label to said label applying station, that improvement which comprises a rotatable printing member carrying type for producing an imprint on said label at a predetermined point of its travel to said applying station, means movable with said carrying means for rotatively actuating said printing member to shift said type to imprinting position to produce said imprint, ink transfer means normally out of transfer relation with said type, and means whereby said ink transfer means is shifted into ink transferring relation with said type during the shifting thereof to the imprinting position.

8. In a labeling machine including a label applying station and means for carrying a label to said label applying station, that improvement which comprises a rotatable printing member carrying type for producing an imprint on said label at a predetermined point of its travel to said applying station, means movable with said carrying means for rotatively actuating said printing member to shift said type to imprinting position to produce said imprint, ink transfer means normally out of transfer relation with said type, means whereby said ink transfer means is supplied with ink, and means whereby said ink transferring means is alternately shifted into ink transferring relation with said type and into ink receiving relation with said ink supplying means.

9. In a labeling machine including a label applying station and means for carrying a label to said label applying station for application to an article thereat, that improvement which comprises a movable printing member carrying type for producing an imprint on the label carried by said carrying means, and means associated with said carrying means movable thereby into operative connection with said printing member for temporarily actuating the latter to shift said type into imprinting relation with said label prior to its arrival at said label applying station.

10. In a labeling machine including a label applying station and a reciprocable carrying device for carrying a label to said label applying station for application to an article thereat, that improvement which comprises a rotatable printing roll carrying type for producing an imprint on the label carried by said carrying device, and normally disconnected means associated with said carrying device and said printing roll respectively and movable into operative connection during the travel of said carrying device toward said label applying station to shift said type into imprinting relation with said label prior to its arrival at said label applying station.

11. In a labeling machine including a label applying station and a reciprocable carrying device for carrying a label to said label applying station for application to an article thereat, that improvement which comprises a rotatable printing roll carrying type for producing an imprint on the label carried by said carrying device, a gear rotatable with said printing roll, and a rack normally out of engagement with said gear and movable with said carrying device into temporary operative engagement with said gear during the travel of said device toward said label applying station to shift said type into imprinting relation with said label prior to its arrival at said label applying station.

12. In a printing means of the kind described, the combination of a rotatable printing roll carrying type for producing an imprint, a reciprocable platen for carrying a sheet to be imprinted, a gear rotatable with said printing roll, a rack reciprocable with said platen and movable thereby into mesh with said gear for operating said printing roll to shift said type into imprinting relation with the sheet on said platen, and means for rotating said printing roll in a reverse direction when disengaged from said rack whereby said type are restored to normal position subsequent to the production of said imprint.

13. In a labeling machine including a label applying station and a travelling carrying device for carrying a label to said label applying station for application to an article thereat, that improvement which comprises a movable printing member carrying type for producing an imprint on the label carried by said carrying device, normally disconnected means associated with said carrying device and said printing member and movable during the travel of said carrying device into temporary operative connection to shift said type into imprinting relation with said label prior to its arrival at said label applying station, and means independent of said normally disconnected means for operating said printing member subsequent to the production of the imprint for restoring said type to normal position.

14. In a printing means of the kind described, the combination of a shaft, a printing roll fixed on said shaft carrying type for producing an imprint, a gear fixed on said shaft, a reciprocable printing platen for carrying a sheet to be imprinted, a rack reciprocable with said platen and movable thereby into mesh with said gear for operating said printing roll to shift said type into imprinting relation with the sheet on said platen, and means in which operating force is stored coincidentally with said operation of said printing roll to actuate the latter in a reverse direction subsequent to the production of the imprint whereby said type is restored to normal position.

15. In a printing means of the kind described, the combination of a shaft, a printing roll fixed on said shaft carrying type for producing an imprint, a gear fixed on said shaft, a cam carried by said shaft, a reciprocable printing platen for carrying a sheet to be imprinted, a rack reciprocable with said platen and movable thereby into mesh with said gear for actuating said shaft to operate said cam and printing roll to shift said type into imprinting relation with the sheet on said platen, ink feeding means, an ink transfer roll, a lever carrying said ink transfer roll controlled by said cam for shifting said ink transfer roll into ink transferring relation with said type as the latter is shifted into imprinting relation with said sheet and subsequently into ink receiving relation with said ink feeding means, and means for operating said shaft in a reverse direction subsequent to the production of said imprint to restore said type to normal position.

16. In a printing means of the kind described, the combination of a shaft, a printing roll fixed on said shaft carrying type for producing an imprint, a gear fixed on said shaft, a cam carried by said shaft, a reciprocable suction head for carrying a label to be imprinted, a rack carried by said suction head and movable thereby into mesh with said gear for actuating said shaft to operate said cam and printing roll to shift said type into imprinting relation with the label on said suction head, a first ink feeding roll, a second ink feeding roll in tangential rolling contact with said first ink feeding roll, annular flanges on said second ink feeding roll lying in overlapping engagement with said first ink feeding roll to form therewith a recess for a supply of ink, means for operating said ink feeding rolls to feed said ink from said supply, an ink distributing roll in rolling contact with said first ink feeding roll for distributing ink over the surface thereof, an ink transfer roll, a pivoted lever carrying said ink transfer roll, a roller rotatably mounted on said lever and co-operating with said cam to swing said lever whereby said ink transfer roll is shifted into ink transfer relation with said type as the latter is shifted into imprinting relation with said label and subsequently into ink receiving relation with said first ink feeding roll, a drum fixed on said shaft, a band connected with said drum and wound thereon as said type is shifted into imprinting position, and a weight attached to said band arranged to be raised as the latter is wound on said drum and adapted to rotate said rum, said shaft and the cam and printing roll carried thereby are rotated in reverse direction subsequent to the production of said imprint whereby said type is restored to normal position.

17. In a printing means of the kind described, the combination of printing means for producing an imprint, ink transfer means for inking said printing means, a pair of ink feeding rolls in tangential rolling engagement with each other to ink said ink transfer means, and annular flanges on one of said ink feeding rolls lying in overlapping engagement with the other ink feeding roll to form therewith a recess for a supply of ink.

18. In a labeling machine including a label applying station and means for carrying a label to said label applying station, that improvement which comprises a rotatable printing member carrying type for producing an imprint on the label carried by said carrying means, and means for rotatively actuating said printing member to shift said type to imprinting position to produce said imprint on said label prior to its arrival at said label applying station.

19. In a labeling machine including a label applying station and means for carrying a label to said label applying station, that improvement which comprises a movable printing member carrying type for producing an imprint on the label carried by said carrying means, and means for actuating said printing member to shift said type to imprinting position to produce said imprint on said label prior to its arrival at said label applying station.

GEORGE W. VON HOFE.