

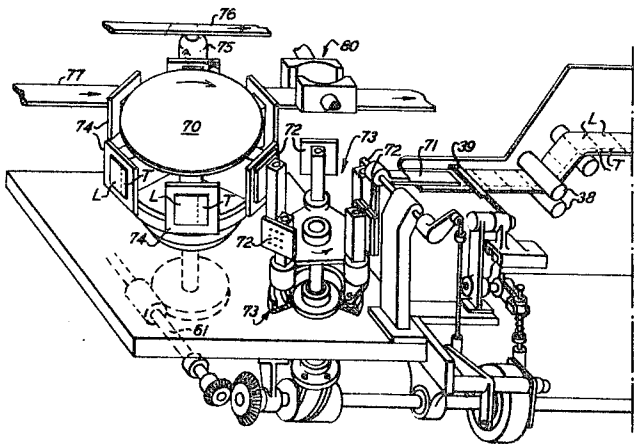
[72]	Inventors	George W. Von Hofe Millington; Edwin K. Wolff, Stockholm, both of N.J.	3,068,140 12/1962 Biddle	156/277 X
			3,135,641 6/1964 Brody	156/277 X
			3,250,384 5/1966 Perino	156/259 X
			3,451,874 6/1969 Solomon et al.	156/521 X
[21]	Appl. No.	704,916		
[22]	Filed	Feb. 12, 1968		
[45]	Patented	Sept. 21, 1971		
[73]	Assignee	New Jersey Machine Corporation Hoboken, N.J.		
			Primary Examiner—Samuel Engle	
			Assistant Examiner—James M. Hanley	
			Attorneys—Sylvester J. Liddy, John J. Hart, Joe E. Daniels and Charles E. Baxley	

[54] **SYSTEM OF LABEL VERIFICATION CONTROL
AND PRODUCT ACCOUNTABILITY**
6 Claims, 6 Drawing Figs.

[52]	U.S. Cl.	156/277, 156/252, 156/521
[51]	Int. Cl.	B65c 9/46, B65c 3/14
[50]	Field of Search	156/230, 240, 259, 267, 277, 521, 252; 283/55

[56]	References Cited	
	UNITED STATES PATENTS	
	2,655,863 10/1953 Hofer	156/277 X

ABSTRACT: A system for preparing a continuous web with a longitudinally extending series of labels, a longitudinally extending series of slit tags which are removed by the manufacture for his records, and a longitudinally extending series of tabs which are removed by the distributor on delivery of a labeled package to a consumer. Control information is simultaneously applied to the associated labels, tabs and slit tags when the labels are printed on the web and in the labeling machine to effect verification of the labels and the accountability of the products labeled thereby.



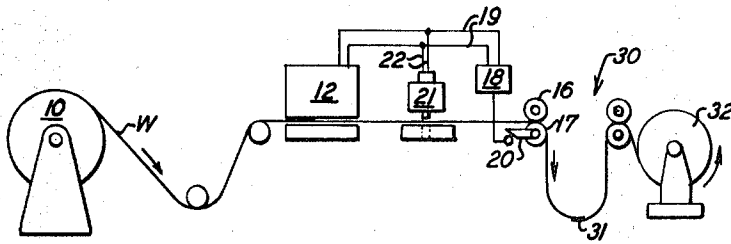


FIG. 1

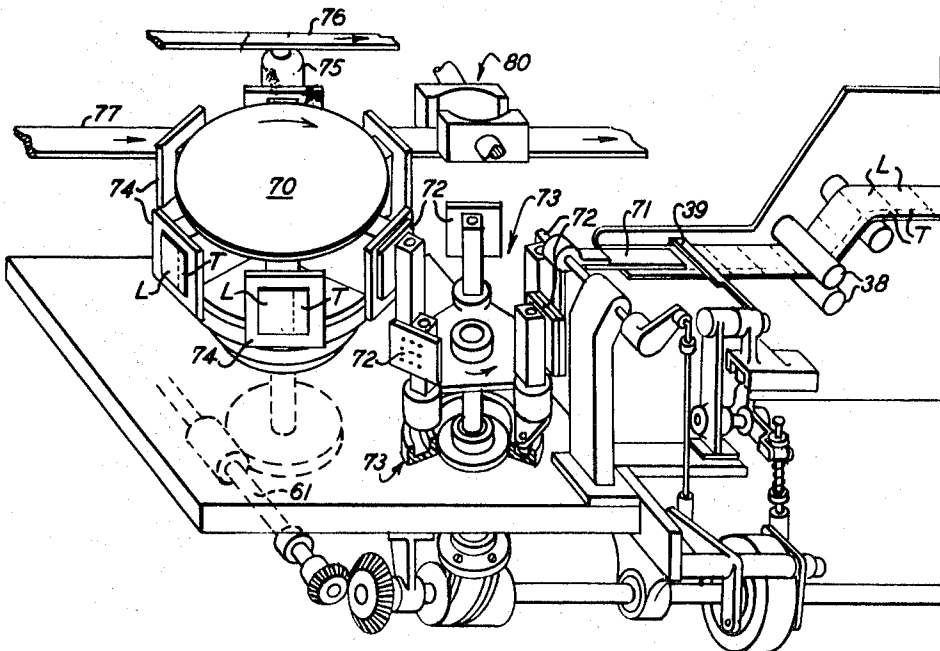


FIG. 2A

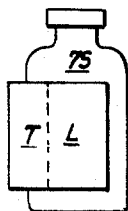


FIG. 6

INVENTORS

GEORGE W. VON HOFE
EDWIN K. WOLFF

BY

John F. Hart

ATTORNEY

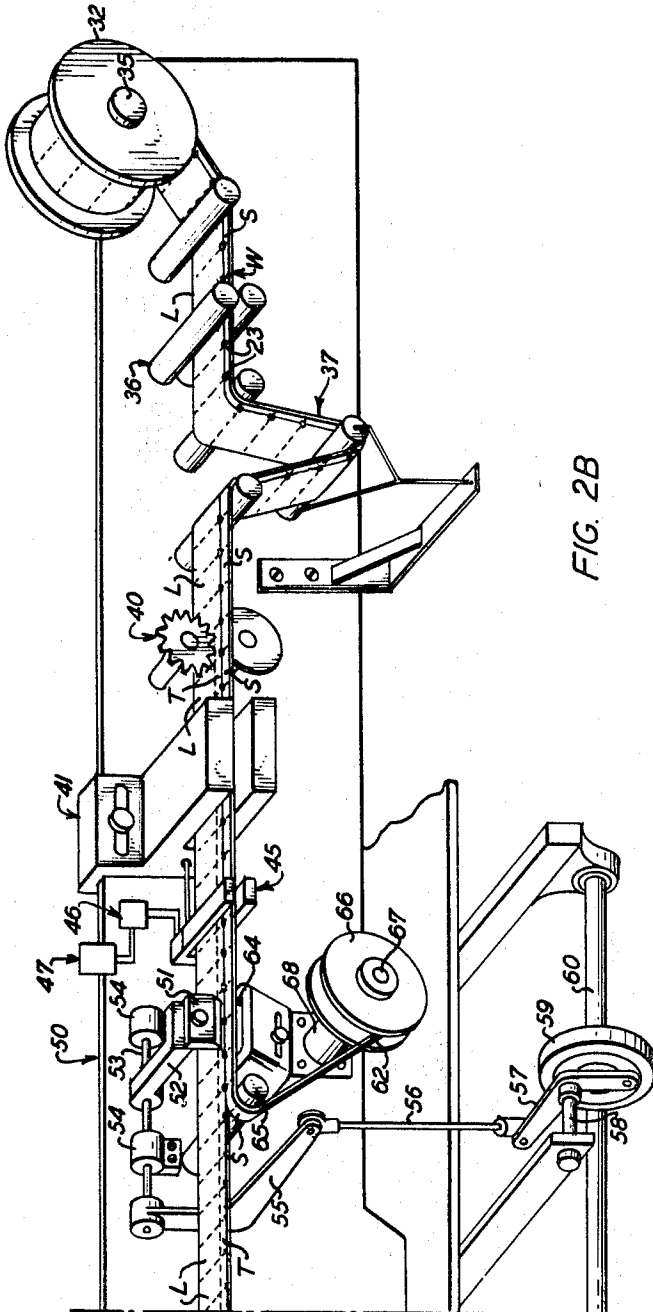


FIG. 2B

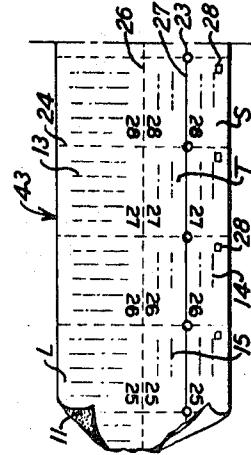


FIG. 5

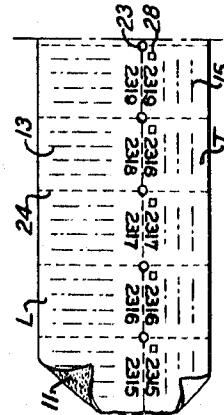


FIG. 4

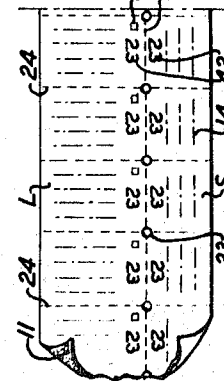


FIG. 3

INVENTORS
 GEORGE W. VON HOFE
 EDWIN K. WOLFF
 BY

John F. Hart
 ATTORNEY

SYSTEM OF LABEL VERIFICATION CONTROL AND PRODUCT ACCOUNTABILITY

This invention relates to the preparation and use of labels in systems based on the employment of labels in a continuous web, often referred to as roll labels, and is more particularly concerned with a system employing such roll labels for purposes of label-verification control and product accountability.

It has become increasingly important, especially in the sale of containers for pharmaceutical products, to provide on the labels therefore control elements such as batch numbers or code numbers for making sure that the correct label is applied to a container for a particular product, for controlling the distribution of the packaged product; and for providing a record of its distribution. Thus, it has become vitally important that a manufacturer of a pharmaceutical prove out in his plant as the product is being labeled that the label that was applied to the container for such product is the right label for such product so that there can be no mistake as to the product in such container by the ultimate consumer. Such control information is now being applied to labels in the form of printed material such as code bars or other indicia, punched holes, etc. However, no satisfactory system has been devised by the art for keeping track of a particular labeled product after it has been labeled. This is important because the appearance of the product usually changes materially over an extended period of time. Thus, the label itself may change in color, the printing thereon will likewise change, and the adhesive material by which the label is attached to the product will lessen in its adhesive qualities. There is also the likelihood that the product itself will become less effective or toxic when subjected to certain conditions of storage or time. Accordingly, it is important that an up-to-date record of each specimen of a product be maintained until after it has reached the ultimate consumer and been used by him.

It is the primary purpose of this invention to provide an effective system of identifying a particular specimen of a product and for keeping account of it throughout the various steps of its manufacture and distribution until it reaches the ultimate consumer.

In accordance with such purpose, one of the objects of the invention is to provide a system which will enable the movements of any specimen of a product to be traced from the time such specimen is packaged at the plant until it reaches the ultimate consumer.

Another object of the invention, is to provide a novel type of label in a continuous web of the same, that may be divided to afford records of a product for future reference.

Another object of the invention is to provide a novel type of labeling machine capable of handling the novel type of label used in this system.

Other objects, as well as the advantages and features of novelty of the invention, will become apparent in the perusal of the following description when read in connection with the accompanying drawings, in which

FIG. 1 is a diagrammatic view showing a method of preparing the continuous web for the label machine;

FIG. 2 is a diagrammatic view showing a method of completing the web and applying the labels thereon to the product for which such labels were designed;

FIG. 3 is a plan view of a portion of label web showing one manner in which the same may be prepared;

FIG. 4 is a plan view of a portion of label web showing another manner in which the same may be prepared;

FIG. 5 is a plan view of a portion of label web showing still another form in which the same may be prepared; and

FIG. 6 is a front elevational view of a bottle provided with a label and tab in accordance with the invention.

FIG. 1 of the drawings shows diagrammatically the initial preparation in forming the labels of this invention, and while the steps illustrated in this figure are performed separately from the steps performed in the labeling machine depicted in FIG. 2, it will be understood that one or more of the steps shown in FIG. 1 may also be performed in the labeling

machine. As is shown in FIG. 1 the web W on which the labels are printed is supplied in the form of a roll 10. The web W is wider than that needed for the labels, being in fact wide enough to accommodate a longitudinally extending series of labels L and a longitudinally extending series of slit tags S in accordance with one embodiment of the invention, as shown in FIG. 3 of the drawings, or a series of labels L and a longitudinally extending series of tabs T, in accordance with another embodiment of the invention as shown in FIG. 4 of the drawings, or a series of labels L, slit tags S and T in accordance with still another embodiment of the invention, as shown in FIG. 5 of the drawings. The web has provided on the back side thereof a layer 11 in FIG. 3 of suitable adhesive material such as a heat-activatable thermoplastic. The adhesive layer 11 in each of the forms of the invention shown in FIGS. 3, 4 and 5 is provided or activated on that longitudinal portion or section of the web on which the labels L are provided and adhesive is not provided or activated on the longitudinal section or sections of the web on which are provided the slit tags S and/or the tabs T.

In the arrangement shown in FIG. 1 of the drawings, the web W is fed from the roll 10 through a printing mechanism 12 of any suitable known construction capable of printing on the web a series of label indicia 13, in FIG. 4, a series of record indicia 14, in FIGS. 3 and 5, for the slit tags S, and a series of record indicia 15, in FIGS. 4 and 5, for the tabs T. The printed areas bearing the indicia 13, 14 and/or 15 may be contiguous or spaced as desired. The printing mechanism is operated in the customary fashion to apply the desired printing material to the web W in each period of dwell of the latter as it is advanced in a step-by-step manner by a pair of feed rolls 16, 17 either designed to advance the web in such fashion or actuated by suitable reciprocating mechanism, as is known in the art. Preferably the operation of the printer is controlled by a microswitch 18 electrically connected to the printer 12 by wires 19 and operable by a cam 20 carried by the shaft of the driven feed roll 17. The cam 20 is adjustably mounted on such roll shaft to actuate the microswitch 18 and thereby to operate the printer 12 every time the cam comes to the position in its rotary movements at which the web W will be in a dwell condition. Located at a given distance in advance of the printer 12 is a solenoid type of punch 21 connected by wiring 22 and 19 to the microswitch and adapted to be actuated with the printer 12 in the dwell positions of the web to punch holes 23 in such web (note FIGS. 3-5). The punch device 21 is spaced a given number of label lengths in advance of the printing mechanisms of the printer 12 and so located in a transverse direction with respect to such mechanisms that on each operation thereof it will punch a hole 23 at the intersection of the transverse junctures of the labels L which are indicated by the lines 24 in FIGS. 3-5, and the longitudinal junctures of such labels with the slit tags S in the embodiment of FIG. 3 and indicated in the latter by the lines 25, or the longitudinal junctures of such labels with the tabs T in the embodiment of FIG. 4 and indicated in the latter by the dotted lines 26, and at the intersection of such label junctures 24 and the longitudinal junctures of the slit tags S and tabs T in the embodiment of FIG. 5 and indicated in the latter by the lines 27. There is thus provided in the web a means for verifying the labels as will be hereinafter explained, and with respect to those webs on which slit tags S are provided as in the embodiments of FIGS. 3 and 5, such holes 23 also facilitate a clean separation of such slit tags S at the connected corners thereof. As has been previously indicated, instead of such holes 23, the printing mechanism of the printer 12 may be arranged to print code indicia on either the labels L, the slit tags S or the tabs T for verification of the labels prior to their application to the containers for the products, as indicated by the numeral 28 in FIGS. 3-5, and in such case the punch device 21 would be dispensed with.

After the labels L, slit tags S and tabs T have been printed on the web, and the verifying indicia such as the holes 23 or printed matter 28 have been so applied the web is examined for imperfections at a station 30 which may be in line with the

printer as indicated in FIG. 1 or conveniently located at some other place. Any imperfections found in either the material of the web, or in the printed matter on the web are cut out of the web and its continuity restored by splicing in the usual manner as indicated at 31 in FIG. 1. The completed web is then wound into a roll 32 for use in the labeling machine.

The web W forming the roll 32 depicted in FIG. 2 of the drawings, has by way of example and for purposes of disclosure, been prepared in the manner shown in FIG. 5 of the drawings to include longitudinally extending series of labels L, tabs T and slit tags S. In the labeling machine shown in FIG. 2 which is constructed in accordance with the invention, the roll 32 is rotatably supported by any suitable means, such as a pin 35 secured at one end to a bracket provided in the machine. The labels, tabs and tags are fed from the roll 32 by draw rolls 36 into a supply loop 37 from which they are drawn in a step-by-step fashion by intermittently operating draw or register rolls 38 located adjacently to a cutoff knife 39. The portion of the web of labels drawn from the supply loop 37 moves past a cutting device 40 of known construction and capable of perforating the web along the longitudinal line of juncture of the tabs T and the labels L as indicated in FIG. 5 by the dotted line 26. There is thus left only narrow connecting portions of the web material joining the longitudinal series of labels L with the longitudinal series of tabs T, thus making it possible to readily separate a tab associated with a label applied to a product container.

After the web W has been perforated, it passes through the jaws of an imprinter 41 movably mounted on the machine frame so that it may be adjusted to print on particular portions of the labels L, tabs T and slit tags S as such labels are successively stopped between such jaws in the intermittent feed of the web W. The imprinter 41 is of known construction in this art and is provided on its upper jaw with suitable type against which the type ribbon and the label web are struck by the movable lower jaw thereof; such lower jaw, as is known, being electrically actuated upwardly to strike the web of labels against the web W which in turn hits the type to cause the desired imprints to be made of the upper side of the web. In accordance with the invention the operation of the imprinter 41 is controlled by a scanning device 45 as will hereinafter become more clear. The type carried by the imprinter 41 is constructed to print on each label L, each tab T and each slit tag S, a given number. As is indicated in FIG. 3 of the drawings by the reference numeral 42, the imprinter 41 may be constructed to print fixed numbers such as the indicated number "23" so that each label, tab and slit tag on the web will be provided with the same number. It is also contemplated that the imprinter may be constructed to print sequential numbers, in which case as is indicated in FIG. 5, each transversely associated label, tab and slit tag will be provided with the same number of a sequence thereof and different from the numbers in the sequence given adjacent transversely associate label, tab and slit tags. Thus, the transversely associated label, tab and slit tag designated generally by the reference numeral 43 in FIG. 5 may each be given the number "26" in a sequence, and the transversely associated labels, tabs and slit tags adjacent thereto given the numbers "25" and "27" in such sequence, as indicated. The numbers selected may be such as to indicate particular batches, and/or date or dates on which the product is labeled, and/or the particular labels in the series thereof, etc. It will be understood also, that while numbers have been given for purposes of illustration other printed indicia may be employed in any form or combination. It will also be understood that it is within the contemplation of the invention to use instead of the imprinter 41, other devices capable of providing the desired accountability indicia on the labels, tabs and slit tags, such as for example a device constructed basically similar to the imprinter but designed to provide punched-hole combinations capable of accomplishing the purposes of the invention.

After passing through the imprinter 41, the web is scanned by a scanning means 45 of known construction and embody-

ing any suitable known sensing means for detecting the register markings 23, such as for example, known optical-electrical and magnetic-electrical detecting means. In the embodiment illustrated, the register markings 23 are in the form of holes and accordingly a known type of photoelectric-registering-control device may be employed to scan the same. Whatever the type of markings 23 and scanning means 45 employed, such scanning means is arranged to scan the particular portions of the web on which the register markings 23 are provided and to send a signal when it detects each of such markings. As has been previously indicated the markings 23 illustrated are holes that have been particularly placed on the web to serve a dual purpose. However, it will be understood that the register markings 23 may be provided on other selected portions of the web for accomplishing the registering operation. The signals created in the scanning means are sent to suitable means for controlling the register rolls 38 to stop the feed of the web each time the terminal label comes into registry with the cutoff knife 39 for the cutting operation. Suitable means for effecting this operation is known to the art and one form of which is disclosed for example in U.S. Pat. No. 3,536,550 issued to George W. von Hofe on Oct. 27, 1970. The electric-eye-scanning means 45 is also electrically connected to and controls the imprinter 41 which is constructed in a manner known to the art so that every time the beam of said scanning means comes into registry with a hole 23 the signal created thereby will cause the imprinter 41 to print. The markings 23 and scanning means 45 may be utilized to perform an additional function, namely the verification of the labels that are being applied to the product. When used for such purpose the markings 23 may be provided on a particular portion of either the label L, the tab T or the slit tag S in each transverse associated set thereof which is so located on such set as to provide a combination which is unique with such label for particular product and different from such a combination provided on another web bearing labels for a different product. The scanning means in such arrangement may have associated with it a microswitch 46 and be so constructed with timing means of known construction that if it does not read a marking 23 within the interval it would normally take to feed a label length therethrough, it will at a short interval thereafter send a signal to stop the feed of the register rolls 38 as above described and simultaneously send a signal to the microswitch 46 to cause it to control the motor circuit of the machine, or a light or sound signal, such as the signal device indicated generally in FIG. 2 of the drawings by the reference numeral 47.

The web W is advanced from the scanning means 45 by the feed rolls 38 into registration with the cutting blade 51 of an edge trimmer 50. The blade 51 is dependent from the outer end of an arm 52 adjustably secured by a key to a shaft 53 rotatably supported by bearings 54, 54 mounted on a bracket plate in the machine. Also mounted on shaft 53 is an arm 55 connected by a rod 56 to a cam lever 57 mounted on a stub shaft 58 and carrying a cam roller engageable with a cam track in one face of a cam 59 secured to driven shaft 60. The shaft 60 is continuously driven by the main shaft of the machine through a transverse shaft 61. It will thus be seen that in the cycling operations of the machine the cam 59, through lever 57, connecting rod 56, arm 55, shaft 53 and arm 52, will impart a reciprocating movement to the blade 51 and cause it to make a cutting stroke in each period of dwell of the web W. Associated with the blade 51 is a fixed knife 64 adjustably secured to the bracket plate. It will be noted that the blade 51 has a cutting edge of a length approximating the distance between centers of the two aligned holes 23 associated with each slit tag S so the ends thereof will enter such holes in the cutting stroke of the blade. The blade 51 will therefore make a clean cut without tearing the web material at its ends to sever one slit tag S from its associated tab T and label L. The intermittently separated web strip section 62 of slit tags pass around a guide roller 65 in advance of the edge trimmer 50 and then downwardly to a rewind reel 66 mounted on a shaft

67 of a small windup motor 68 provided with a constant torque. Motors of this type which always want to turn but which may be prevented from turning without overheating by the strip 62 during the dwell periods of the web, are available to the art. Thus, as the label web passes through the label machine the slit tags S which have all the desired information thereon are progressively collected on the reel 66 and in such condition may be filed away by the manufacturer until needed.

The terminal labels L and their associated tabs T are severed from the strip and transferred to a label applying drum 70 by mechanism which is similar to and described more in detail in U.S. Pat. No. 3,522,134 issued July 28, 1970 to George W. von Hofe, et al., for High Speed Labeling Machine. It is believed only necessary for the purposes of this disclosure to state that the terminal labels and tabs severed by the cutoff knife 39 are successively fed by a vacuum-transfer device 71 to vertically disposed label-carrying plates 72 which are mounted on a drum 73 and which successively deposit the labels and tabs on the label applicators 74 forming part of the label-applying station, the labels L are adhesively activated by means of heat in any suitable manner known to the art (note for example said U.S. Pat. No. 3,522,134), the layer 11 of adhesive material already provided on the labels, or if such layer 11 is not initially provided thereon, by applying glue to such labels without applying the same to their associated tabs, in any suitable manner known to the art. At the label-applying station, the label applicators 74 of drum 70, successively press the central portions of the adhesively activated labels L to successive articles 75 being fed past such station by a conveyor 77 and a belt 76 in the manner disclosed in said U.S. Pat. No. 3,522,134. The labeled articles pass from the label-applying station to suitable pressure means generally designated 80 of any suitable type, such as is disclosed for example in said application Ser. No. 562,229, to press the label into complete adhering relation on the article. The article 75 with its attached label and tab will then have the form shown in FIG. 6 of the drawings.

It will be understood from the foregoing, that in the practice of the system of this invention, the label web may be prepared in the manner illustrated in either FIG. 3, or FIG. 4 or FIG. 5 of the drawings. Assume for the purposes of explanation that it is prepared in the manner of FIG. 5 wherein it will be provided with both the tabs T and the slit tags S of FIGS. 4 and 3, respectively. As before described, in such preparation of the web, the labels L will be provided with the proper label indicia 13, the tabs T and slit tags S will be provided with the information 15 and 14, respectively, needed for recording purposes in regard to the labels L, and code markings such as the holes 23 will be provided on the web for registration control by control of the operation of the feed rolls 38, for control of the operation of the imprinter 41, and for verification control through the microswitch 46 and signal device 47. The holes 23 have the added advantage that they enable the blade 51 of the edge trimmer 50 to provide clean cuts in separating the slit tags S from the web.

In its travel through the label machine, the thus prepared web is perforated by the cutting device 40 to facilitate the separation of the tab T from the label L while they are attached to the article, and to enable this to be accomplished with a minimum of damage to the applied label. Each transverse set of labels L, tab T and slit tag S, at least, are then provided with similar code indicia, such as the fixed numbers 4 in FIG. 3 or the sequential numbers shown in FIG. 5, to designate the batch from which the article is filled, the date of filling, or any other factors desired to be made of record, as the labels are on their way to be attached to the articles. The slit tags are then progressively separated from their labels and stored on reels 66 for the manufacturer's records, such reels being suitably labeled to indicate the code numbers, or range thereof on the slit tags stored thereby. After the slit tags have been separated from the labels, such labels and their attached tabs are progressively adhered to the articles. Since the adhe-

sive is only active on the label the tab T will be free of the article so that the completed article will have the appearance shown in FIG. 6 of the drawings. In this condition, the article is sent to inventory and then sent to the distributor on order. The code indicia on the label and tab will enable both the manufacturer and the distributor to control the flow of their stock so that the articles first in will be first out and no article will be lost or retained too long a time by either. When the article is sold by the distributor to a consumer he removes the tab T and retains it for his records so that there is also a record of the particular consumer to which a particular container of a particular batch of a particular product has been delivered. Thus, in this system there will have been proved out that there is the right label on the right product that is desired by the ultimate consumer, and that in the event this particular product needs to be traced for any reason, the distributor's and manufacturer's records will readily show who is the ultimate consumer thereof and the history of such product from the time the label had been applied thereto.

While we have hereinabove described and illustrated in the drawings, a preferred embodiment of our invention, it will be apparent to those skilled in the art that changes may be made therein without departing from the spirit of the invention or the scope of the appended claims.

1. The system of controlling the use of labels on packages which comprises taking a continuous strip of labeling material having a width greater than the width of a given label for a package for a particular product so that such strip provides two longitudinally extending sections integrally connected together in side-by-side relation and including a first longitudinally extending label section, and a second longitudinally extending section of sufficient width to have control information provided thereon, printing on said first section a longitudinally extending series of said given label, and then in a labeling machine feeding such continuous strip from a source of supply thereof along a given path to a place of label application, and during such feed of the continuous strip a) simultaneously and successively providing on each given label and on the portion of said second strip section associated therewith, like control information unique to at least one particular label, b) successively separating automatically associated first and second strip sections on which the control information has been provided and moving the successively separated second strip section along a path different from such given path and storing the same while the separated portion of said first strip section continues along said given path, c) successively separating the labels on the separated first strip section, and d) successively applying the separated labels to successive ones of the particular product packages at said place of application.

2. The system defined in claim 1, in which each of said labels is constructed of a label proper to be adhered to the particular product package and a tab hinged to one edge of the label and to be free of the package, so that said first section has a width equal to the combined width of said label proper and its associated tab, in which the label indicia and tab indicia is simultaneously provided on each label proper and its associated tab during said printing step; in which said unique control information is simultaneously provided on each label proper, its associated tab and on the portion of said second strip associated therewith, and in which the label proper only of the separated labels are applied to the packages leaving the tabs associated therewith free of such packages.

3. The system defined in claim 2, including the step of precutting the strip of labeling material along a longitudinal line to partially separate the series of labels from the series of tabs associated therewith so that the connection between the applied label proper and the tab is hinged and so weakened that the tab may be readily separated from the label proper on the package without damage to either.

4. The system of controlling the distribution of packages of a given product which comprises feeding a continuous strip of given labels for the product having a second continuous strip of web material integrally connected to one longitudinal side

of the strip of labels, from a source of supply of such combined strips along a given path in a labeling machine to a place of label application, and during such feed of the combined strips a) simultaneously and successively printing on each label and a portion of the second strip connected thereto control information unique to such label, b) successively severing second strip portions from successive labels on which the control information has been printed as the strip of labels are fed along said given path to the place for application to the packages, c) automatically moving the severed-strip portions of the second strip in connected relation along a path different from the given path and accumulating the severed-strip portions for storage, and then d) successively severing the terminal labels from the label strip and applying them to the packages at the place of label application.

5. The system defined in claim 4, in which the labels are each made in two parts, a label proper to be adhered to the

package and a record tab integrally connected to one side of the label proper, said control information being simultaneously applied to such label proper, its associated record tab and to said second strip portion, and each label proper being applied to the article with its associated tab free therefrom, and thereafter detaching each tab from its associated applied label proper as the package is delivered to a consumer and storing such tab.

6. The system defined in claim 4, including providing along the line of juncture of said strip of labels and said second strip a longitudinally extending series of holes spaced apart so that the distances between their centers equals the longitudinal dimension of the labels, and then severing said strip portions by successive longitudinally extending cuts extending between adjacent holes.

20

25

30

35

40

45

50

55

60

65

70

75

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,607,537 Dated September 21, 1971

Inventor(s) George W. von Hofe and Edwin K. Wolff

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Line 4 of Abstract, "ture" should read --turer--.

Col. 1, line 13, after "container" "co" should be deleted.

Col. 2, line 10, after "and" --tabs--should be inserted.

Col. 5, line 21, after "label applying" should be inserted --drum 70. As the labels are fed by the drum 70 to the label applying--;

Col. 5, lines 34-35 "application Ser. No. 562,229" should read --U.S. Pat. No. 3,522,134--(see amendment dated October 8, 1970).

Signed and sealed this 28th day of March 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents