METHOD OF PRINTING TAGS

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Filed Dec. 28, 1960, Ser. No. 78,984
5 Claims. (Cl. 101—426)

The present invention generally relates to tag printing devices and more particularly an attachment for a tag printing device of the type fully disclosed in my prior patent No. 2,777,387, issued Jan. 15, 1957 and has for its primary object the provision of a structure and a method of between line printing on the tag whereby the printing on the tags in a continuous strip may be disposed as close together as are rows of numerals or other information when using a typewriter or hand set type.

As exemplified in Patent No. 2,777,387, the printing head is provided with a multiplicity of type bearing plates for printing a multiplicity of rows of information on tags. Due to the structure involved, the type bearing plate spacings in the printing head are spaced apart a predetermined minimum distance which renders the adjacent rows of indicia formed thereby spaced too far apart for use on tags which are employed for identification purposes, inventory control and many other uses in various wholesale and retail outlets. The attachment of the present invention provides means for blocking out certain of the type bearing plates when printing on the first tag and blocking out other type bearing plates when printing on the last tag of a row of tags or a group of tags.

By employing the method and attachment of the present invention, between-line printing may be accomplished which will enable the printing of tags containing any number of sections. This device will enable tags to be printed with the lines of printing as close together as hand set type or a typewriter. Inasmuch as it is sometimes only necessary to print a small number of tags, for example less than fifty, hand set type is impractical since it is not used a sufficient number of times to warrant the time expenditure and printing the tags with a typewriter is time consuming and tedious even if only a small number of tags are to be printed.

Still another object of the present invention is to provide an attachment for a tag printing device which is very simple in construction, easy to operate, foolproof, adapted for use with various size tags and printing heads, trouble-free and quite inexpensive to manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a side elevational view of a tag printing device with the attachment of the present invention incorporated therein and with portions broken away for clarity;

FIGURE 2 is a perspective view of the slide type attachment;

FIGURE 3 is a plan view oriented 180° in relation to FIGURES 1 and 2 and illustrating the lines of printing on the first tag of a group of tags in which two printing plates of a four plate printing head have been blocked off or held up;

FIGURE 4 is a plan view similar to FIGURE 3 but illustrating the second printing operation in which the between line printing feature has been employed;

FIGURE 5 is a side elevational view of a modified form of the invention with parts of the near side broken away for illustration and in which pivotal components are employed for blocking off certain of the printing plates;

FIGURE 6 is a perspective view of the attachment oriented 180° to that illustrated in FIGURE 5;

FIGURE 7 illustrates in plan the relationship of the tags to the attachment employed in FIGURE 5;

FIGURE 8 illustrates the relationship of the attachment when the first print is made in which certain of the printing plates have been blocked off;

FIGURE 9 is a plan view similar to FIGURE 8, but illustrating the second printing operation in a group of tags; and

FIGURE 10 illustrates the use of the attachment for blocking off certain of the plates during the final printing operation on a group of tags.

Referring now specifically to the drawings and particularly FIGURES 1-4, the numeral 10 generally designates the attachment of the present invention for use in combination with a tag printing device generally designated by the numeral 12 and which is specifically disclosed in prior Patent No. 2,777,387 issued Jan. 15, 1957.

Briefly, the tag printing device includes a hollow casing 14 and a plurality of printing plates 16 disposed therein and moveable therein. As disclosed in the previously mentioned patent, the upper end of the casing 14 is provided with a resilient insert which cushions the printing plate and enables limited vertical movement of the printing plate. The resilient insert is sufficient to enable selective printing plates to be blocked off so that they will not contact the printing surface. An ink pad 18 is disposed in the path of movement of the printing head and is reciprocated by a suitable mechanism when the printing head 14 is reciprocated on a vertical shaft 20. The printing head 14 is mounted on a tubular sleeve 22 for movement therewith and also, the printing head is pivotally mounted on a supporting plate 24 so that it can be pivoted about a transverse axis for enabling removal of the printing plates 16 and adjustment of the endless print carrying members therein. The details of this mechanism are old as exemplified in the above mentioned patent and are described briefly herein in order to provide a clear explanation for the attachment 10 of the present invention.

The vertical rod or shaft 20 is attached to an upstanding bracket 26 carried by an elongated hollow base 28 having a supporting surface 30 thereon for receiving a strip of tags 32. The tags 32 are connected to each other by a perforated line 34 and at least one slot 36 is provided therein. The tags are also conventional in construction and form but a part of the present invention except in their orientation in relation to the attachment and the printing head. When the printing head 14 is reciprocated, it also moves one end of a connecting rod 38 downwardly for rotating a crank arm 40 about a pivot axle 42. The crank arm 40 is rigid with a similar crank arm 44 disposed interiorly of the base for causing oscillation of the arm 44. The crank arm 44 is connected with a rod 46 engaged with one end of a slide mechanism 48 having an upwardly projecting pin 50 which engages the slot 36 in the juncture between the tags for causing the tags to move sequentially under the printing head when the printing head is reciprocated. A suitable spring 52 disposed interiorly of the sleeve 22 and engaging the upper end of the shaft 20 will cause the printing head 14 to return to a normal position, and cause the inking pad 18 to return to the position illustrated in FIGURE 1 and also move the strip of tags 32 forwardly one increment of movement. In this instance, the tags are adapted to have four lines of printing 52 and the printing head is provided with four printing plates 16. Thus, each time the printing head is depressed manually, the ink pad 18 is retracted to an out-of-the-way position by suitable mechanism not shown and the pin 50 is retracted for engagement with a notch on the set of tags spaced from the one which it was previously engaged with so that as the printing head recedes to its uppermost position, the strip of tags will be advanced.

The details of the feed mech-
anism and the structure of the printing mechanism may vary except that the printing plates 16 must be capable of at least limited vertical movement so that they may be blocked.

The attachment of the present invention is generally in the form of a U-shaped slide member including side rail 54 and side rail 56 interconnected at one end thereby of a transverse member or bight member 58. The side rails 54 and 56 is provided with a turned up outer edge 60 and is longer that the side rail 56. The side rails 54 and 56 may be considered legs of the U-shaped slide. Disposed on the upper surface of each of the side rails 54 and 56 is a block 62 of rectangular configuration and having a width generally equal to the width of the side rails and having a pad or cushion 64 on the top surface thereof. The length of the block 62 and pad 64 is sufficient to span two of the printing plates 16. As illustrated clearly in FIGURE 1, each of the printing plates 16 is provided with a laterally extending lug 66 on each side thereof adjacent the bottom edge thereof which will engage the cushion 64 whereby the cushion 64 and the block 62 will prevent the printing elements on the printing plates 16 which engage the cushion 64 and block 62 from printing on the tags 32 by virtue of the blocks and cushion preventing movement of the plates 16 to their final lower position which is accomplished for by the resilient cushion in the upper end of the printing head casing 14 and by the movable mounting of the printing plates 16 in the head 14.

One end of the transverse member 58 is provided with a lateral extension 68 terminating in a downwardly extending lug 70 and an inwardly inclined extension 72 on the lower end of the lug 70 with the extension 72 having a cut-out 74 on the end thereof for engagement with a stop member 76 rigidly affixed to the base 28 by virtue of a bracket 78. Attached to the depending tab or lug 70 is an elongated bearing member 80 of plastic made in the form of a disk and the bearing member 80 is of substantially L-shaped configuration and has an inwardly and upwardly extending edge 82 underlying a side rail or ledge member 84 attached to the upper edge of the base thereby providing an elongated bearing support for the U-shaped slide and preventing tiling of the slide about a transverse axis. The bearing member 80 is attached to the tab or lug 70 by fasteners 86 and the underside of the outwardly extending extension 68 slides against the top of the side rail 84 while the underside of the rail 54 and rail 56 also slides against a portion of the top of the base 28.

Extending rearwardly from the extension 68 is a lug 88 having an upstanding handle 90 thereon which is concavely arcuated on the outer surface thereof for forming a convenient handle for engagement by the fingers for moving the slide inwardly and outwardly in relation to the base and in relation to the printing head.

When the tags 32 are disposed in position for printing, they are received under guides 92 which retain the tags in position during the printing operation. Also, a plate 94 overlies the tags as they approach the printing area and of course, there is the surface 30 which forms a surface for supporting the tags during the printing operation.

Reference is now made specifically to FIGURES 3 and 4. When the first tag 32 of a group of tags is to be printed, the attachment 10 of the present invention is moved inwardly until the handle 90 is coincident with the end edge of the base or of the side rail 84. This is accomplished merely by setting the finger or thumb against the outer head of the handle 90 and having the end of the finger or thumb projecting therebelow so that the end edge of the rail 84 or base 28 will form a stop for the slide and orientate it properly so that the blocks 62 with the cushions thereon will be disposed under the two printing heads 16 which are disposed toward the discharge end of the base or toward the handle 90. Thus, the first printing operation on the first tag 32 will position two lines of indicia 52 thereon, one adjacent the top and the second one intermediate the center and bottom edge. These two lines of printing 52 as illustrated in FIGURE 3 represent the result of the first depression of the printing head with the blocks 62 blocking off the two printing plates adjacent the handle 90. After the first depression of the printing head, the printing head returns to its normal position and the feeding mechanism will advance the tags a distance equal to the width of the tags and at the same time, the attachment 10 of the present invention is moved back to its normal position, that is within the locks 62 disposed out of the path of movement of the lugs 66 on the printing plates 16. The tags are then ready for subsequent printing operation.

In the second depression of the printing head and after the tags have been advanced by the feeding mechanism, the condition illustrated in FIGURE 4 will be present in which the second and fourth lines of printing 52 have been placed on the leading or initial tag 32 and the first and third lines of printing have been placed on the second tag 32. This same procedure will continue for any number of tags desired, without requiring the use of the attachment at all. In other words, the printing head places four lines of printing normally including the fourth and the first and third lines of a trailing tag. The between-line printing enables the lines of printing to be disposed closely adjacent each other so that four lines of printing may be disposed on a particular size of tag with a printing head having the printing plates orientated in such a manner that they would not normally be able to print four lines of printing on a single tag unless the size of the tag was materially increased.

When the last tag in the group of tags 32 is to be printed, the next to the last tag is printed in the usual manner which will provide the first and third rows of indicia as illustrated in FIGURE 4. Then, the attachment 10 is moved all the way inwardly until the forward edge of the extension 68 engages a stop plate 95 attached to the base which will orientate the block 62 with the cushion 64 thereon under the two printing plates 16 nearest the bracket 26 or upstanding rod 20 thus blocking off the two plates 16 that would normally comprise the first and third lines of printing on a trailing tag. Since there is no trailing tag, these two printing plates are blocked off thus enabling the outer two printing plates to complete the last tag in the group of tags by printing the second and fourth lines of printing thereon.

Thus, each tag of the group of tags has four lines of printing thereon which are relatively closely spaced but still equally spaced and the underlying surfaces of the base do not receive any ink from the printing members which would occur were the printing members allowed to operate without blocking them off. Further, this enables the printing head to be changed thus changing the printing on adjacent tags without the necessity of tearing off one group of tags before printing on the next group of tags which would be necessary were the printing plates depressed in the usual manner.

The form of the invention illustrated in FIGURES 5-10 is for the same purpose and is designated generally by reference numeral 100, and is an attachment for accomplishing generally the same result and for use with the same type of tag printing device which is disclosed in prior Patent 2,736,416 issued Jan. 15, 1957. Briefly, the printing head is designated by numeral 106 includes three printing plates 104 having laterally extending lugs 106 adjacent the bottom edge thereof together with endless print carrying members 108 thereon for printing tags 110. The printing head is supported on a suitable bracket 112 for reciprocation and the bracket is carried by a base 114 and an upper feeding mechanism 116 is reciprocated due to vertical reciprocation of the printing head. In this construction, the bracket 112 is
provided with a plate 118 forming a bottom for a hollow area that has an enlarged opening 120 through which the plate 118 is pivotably attached to the core 122 and between the side walls of the bracket 112. A U-shaped spring member 123 attached by a screw 130 engages the top surface of the plate 124 for retaining the plate in position. The bottom 118 is provided with an upturned end wall 133 which engages the end of the plate 124 and the plate 124 is provided with an enlarged opening 134 for alignment with the opening 120 in the bottom plate 118. Thus, the plate 124 is inserted in against the bottom 118 under the springs 128 and the outer edge thereof is dropped down behind the end wall 133 thus detachably placing the attachment in position.

Disposed on the ledge 136 forming the edges of the opening 134 is a cushion 138 which extends substantially throughout the width of the opening 134. Extending transversely between the end edges of the upstanding edges 126 of the plate 124 is a shaft 140 that is journaled in the upstanding edges 126 and provided with an offset arm in the form of a tab or lug 142 adjacent to the end thereof. An axial coil spring 144 encircles the rod and has one end thereof attached to the arm 142 and the other end thereof attached to the end edge of the plate 124 for urging the lugs or arms 142 to a position generally in alignment with the plate 124. Attached to one of the arms 142 is a generally L-shaped rod 146 forming a handle for the lug 142 whereby the handle 146 depends downwardly when the lugs 142 are in alignment with the plate 124. The terminal end of the rod 146 extends laterally outwardly as indicated by numeral 148 for providing access to the handle when the plate is disposed interiorly of the bracket and particularly the side walls of the bracket 112 which are provided with curved free edges and which are designated by reference numeral 150. The orientation of the lugs 142 and the handle 146 when the attachment is disposed in the bracket 112 is clearly illustrated in FIGURE 5. One surface of the lugs 142 has a cushion or pad 152 disposed thereon which is on the opposite side to that side of the lugs 142 which will engage the pad 138 when the handle 146 is moved in such a manner that the lugs 142 overlie a part of the cushion 138.

At the other edge of the opening 134, there is provided a similar shaft or rod 154 journaled in the upstanding edges 126 and having a pair of arms or lugs 156 extending rigidly therefrom. An axial coil spring 158 encircles the rod 154 and has one end attached to the edge of the opening 134 and the other end attached to one of the lugs 156 for urging the lugs to a position against the top surface of the plate 124.

Attached to one of the lugs 156 is an operating rod in the form of a curved wire 160, the free end thereof being connected with an operating handle 162. The handle 162 is pivoted to the upstanding edge 126 by a pivot pin 164 and is provided with a laterally offset free end forming a handle 166 for manipulation thereof. The wire rod 160 is attached to the operating handle 162 in one of two holes whereby the lugs 156 may be pivoted forwardly into overlying relation to the cushion 138. Each of the lugs 156 is provided with a cushion or pad 168 on the surface thereof which will face upwardly when the lugs 156 are disposed in overlying relation to the pad 138. When the attachment is disposed in the bracket 112, the handle 166 will be disposed alongside of the bracket so that it will be immediately accessible for movement.

In the use of this form of the invention, the tags 110 receive three lines of printing 170 and the between-line printing concept is also employed here. When the initial tag is printed, the first two printing plates 104 are blocked off by pivoting the handle 146 and the lugs 142 rearwardly into overlying relation to the core 122 so that the dashed lines 142 will engage the lugs 106 thus holding up two of the printing plates 104 and preventing them from engagement with the preceding tag or the surface underlying the tag which is disposed forwardly of the initial tag. This will print one line of print centrally of the initial tag (see FIGURE 8). As the printing head is released and it moves back to its normal position, the feeders 116 will move the group of tags a proper distance and the printing operation is then repeated for as many tags as desired in which each printing operation will print the first and third line of print on the initial tag or on a leading tag and the second or middle line of print on a trailing tag. On the last tag of a group of tags, the tag will have the second line of print thereon from the preceding printing operation thus requiring only the first and third lines (see FIGURE 9). Since it is desirable not to have an intermediate line of print on the succeeding tag, the handle 162 is moved forwardly thus bringing the lug 156 under the lug 106 on the nearmost print head thus preventing printing on a succeeding tag or the surface rearwardly of the end tag (see FIGURE 10). Thus, the printing plates enable three lines of printing to be disposed on the tag with each printing operation normally providing the first and third lines of printing on one tag and the second line printing on a trailing tag. To provide for full printing on each tag, it is only necessary to block off the plates which print the first and third row of printing when printing the initial tag and block off the plate which prints the second row of printing on a trailing tag when printing the last tag. This between-line printing enables the lines of printing to be disposed as close together as hand set typing or typewriting both of which are quite tedious and time-consuming for this particular purpose.

In the two printing devices for between-line printing, each of the devices consists of slightly resilient padded flat members movable into and out of the path of lugs normally provided on the printing plates for blocking off selective of the printing plates. The same principle may be used for any multiple printing plate head for enabling between-line printing to be accomplished for printing the lines of printing quite close together for use on tags employed for many uses such as on garments. The particular details of the feed mechanism may be varied by particular details of the printing head and its mounting and connection with the feed mechanism may be varied with the principal features of the present invention residing in the specific concept of providing a simple and inexpensive manually operated device for blocking off certain of the printing plates at selected times for printing a group of tags with each tag of each group having a complete information printed thereon. This enables smaller tags to be printed with the rows of printing closer together and eliminates the time consuming operation of forming such tags by use of a typewriter or printing such tags by the use of hand set type.

In either type of arrangement, a feeding means is provided to advance the strip of tags beneath the printing head between impressions and only partial impression is made on each of two sections of a tag each time the printing head comes down. However, the blocking on the first and last strokes gives the effect of two tag sections completed each stroke. For any number of tags printed per type change, it requires just two more strokes than the number of tags printed. In a tag with perforated sections, the feeding is so arranged as to cause the perforations to fall between the last line of one section and the first line of the next section of the strip of tags in such a manner that the case that the printing head may be arranged as to bring these lines substantially far apart to avoid over printing too near the perforation line which would be undesirable. The strip tags can consist of duplicate sections in which a part may be removed at the time of sale of an article or
as jobs are done as a job tag goes away from a worker. Thus, wherever the term "tag" is used in describing and claiming the invention this term will encompass the tag on its individually printed sections.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all such modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. The method of printing a tag having multiple rows of indicia with a printing head having a multiple arrangement of rows of type thereon having an aggregate width greater than the width of the tag but with the type face thereof being sufficiently small to be received on the tag consisting of the steps of printing a center line of type on the tag with the rearmost row of print on the printing head, moving the tag the width of the tag and subsequently printing the upper and lower lines of type on the tag with the first and second rows of print on the same printing head.

2. A method of printing tags in strip form by using a printing head having three lines of type thereon with an overall width greater than the width of the single tag for enabling orientation of the lines of type as close together as handset typing or typewriting consisting of the steps of orientating a strip of tags under the printing head with two lines of type overlying one tag adjacent the top and bottom edges thereof and a single line of type overlying an adjacent tag adjacent the middle thereof, actuating the printing head to print two lines on the one tag adjacent the top and bottom edges thereof and a single line on the adjacent tag adjacent the middle thereof, advancing the strip of tags the width of one tag, and actuating the same printing head to print two lines adjacent the top and bottom edges of said adjacent tag and a line on a next adjacent tag adjacent the middle thereof, the previously printed single line printed on said adjacent tag being disposed between the two lines last printed thereon thereby forming a tag with three closely spaced printed lines with all the printed lines on all of the tags being readable from the same edge of the tags when joined.

3. The method as defined in claim 2 together with the steps of blocking the two lines of type overlying a tag adjacent the top and bottom edge thereof when printing the first tag on a strip with the center line of printing without printing the two lines on an underlying surface thereby enabling the initial tag of the strip to be completed upon advancement of the strip of tags and subsequent actuation of the printing head, and blocking off the center line of type, at the trailing edge of the printing head when the last tag in a strip is being printed thereby enabling completion of the last tag of the strip upon subsequent actuation of the printing head without printing the center line of printing on an underlying surface.

4. The method of printing a plurality of groups of rows of indicia in adjacent aligned areas on a printing surface with a single printing head having a plurality of rows of printing elements corresponding to the indicia to be printed, the aggregate width of the printing elements being greater than the width of one of said areas, said method consisting of the steps of orientating a first and second area under the printing head, initially actuating said printing head for printing rows of indicia some of which are on said first and second areas with the spatial relationship of the rows corresponding to the spatial relationship of the rows of printing elements, advancing the printing surface a distance equal to the width of one area thereby orientating the second area and a third area under the printing head, and subsequently actuating the same printing head for printing rows of indicia some of which are on the second and third areas with the rows of indicia printed on the second area during the actuation of the printing head being closer to each other than the rows of printing elements and occupying substantially the entire width of the area.

5. The method as defined in claim 4 wherein the first and second areas are orientated under the printing head so that at least one row of printing elements overlie a portion of one of said areas spaced from the top and bottom edges thereof.

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