APPARATUS FOR PRINTING STRIP MATERIAL

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Application April 20, 1954; Serial No. 424,469

Claims priority, application Germany April 21, 1953

5 Claims. (Cl. 101—227)

The present invention relates to an apparatus for printing on tape or strip material.

More particularly, the invention relates to an apparatus for printing on a strip of tape which is rolled on a dispensing roller and from which the tape strip may be unrolled, and which is printed and cut off before use for wrapping purposes. The tape may be of various types of material, such as paper, synthetic substances or packaging strips, e.g., adhesive strips or the like, which may be printed with advertising matter directly before its use.

Devices suitable for the above purposes are already known. Thus, transparent wrapping paper has been printed on the rear side with reversed lettering in order to use it after printing for wrapping purposes. There have also been developed devices for printing opaque wrapping paper for wrapping directly after printing thereon, where in the printing apparatus is assembled on a single frame together with the inking device, the cutter and other auxiliary devices. Small printing devices of similar type are also known which operate directly on the adhesive strip rolls immediately before use of the adhesive tape.

The known devices designed for use with opaque paper can print on the paper rolls or adhesive tape only on the outer side of the wound roll, although commercial types of adhesive tape are provided with adhesive material on the outer side thereof. In order to be able to print on commercial opaque adhesive tape, it is necessary therefore, to first rewind the tape. The present invention avoids this disadvantage, and provides for such an arrangement that even such commercial adhesive tape which is adhesively coated on its outer side can be directly printed on immediately before use.

It is an object, therefore, of the present invention to overcome the above mentioned disadvantages in a tape printing device.

It is another object of the invention to provide a device of the above type wherein clear, unblurred printing impressions may be made on the tape material.

It is still another object of the present invention to provide a device of the above type wherein the tape material to be printed is securely supported and guided for preventing it from being displaced relative to the printing means.

It is still a further object of the present invention to provide in a device of the above type means for preventing too rapid a feed from the tape dispensing means so as to avoid spotting or smearing of the slack tape by the inking device.

Other objects and advantages will become apparent from the following description and appended claims.

In accordance with the invention, the printing of the band or tape is not carried out in the known manner on the supply roll itself or on an end portion thereof which has been raised for this purpose, but rather is carried out on the free portion of the already unwound tape portion.

It has been found that in printing on such tape the imprint comes out non-uniformly if the free end of the band is simply conveyed over a printing roller. The imprint is not only tilted due to the fact that the band is usually not drawn off exactly in a one-to-one relation and is pulled in a plane at right angles to the axis of the roller, but also the spacing of the band from the axis of the type roller varies due to the elastic impression of the type, whereby the type letters become distorted and the imprint becomes unsightly. The present invention has been designed to overcome such faults.

With the above objects in view, the present invention relates to a tape printing apparatus of the above type which comprises in combination, supply means for delivering strip material, rotatable printing means associated with the supply means and adapted for printing on strip material received from the supply means, detaching means associated with the printing means for detaching portions of printed strip material, and support and guiding means associated with the rotatable printing means for supporting the strip material during printing and for guiding it during printing against lateral displacement, whereby at least during detaching of portions of the printed strip material by the detaching means, the strip material to be printed is supported by the support and guiding means so as to be held against transverse displacement relative to the printing means.

The non-adhesive sides of rather thick adhesive tapes are usually comparatively rough, and in this connection a particular embodiment of the present invention relates to the possibility of providing on this surface a clear and unblurred print. This result is achieved in accordance with the invention by means of a pair of spacer rings which are provided on the roller having the printing type thereon and which have a height during the printing operation somewhat less than the height of the printing type, and in fact, is of such height that the printing type, which may be made of resilient material such as rubber, can still reach the depressed portions of the surface of the adhesive tape, without being appreciably deformed by the raised portions. This is made possible by the fact that the difference in height is of the order of a few hundred thousandths of a millimeter. While in the known devices of this type, the type roller pressing directly on the adhesive tape produces a smudgy print, the present device by the provision of the above mentioned spacer rings produces an accurate and clear imprint.

A further advantage of the invention relates to the suspension and support of the ink roller as well as of the type roller, which makes possible a multi-colored imprint on the tape and thereby to achieve by a uniform pressure a uniform distribution of the ink.

In accordance with a further embodiment of the invention, a device is provided for easily grasping the new end of the tape after the tape has been torn off, without wiping off the freshly applied ink through pulling on the tape.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a view in elevation, partly in section, of a device constructed in accordance with the invention;

Fig. 2 is a view of the device shown in Fig. 1 taken along the line 2—2;

Fig. 3 is a plan view, partly in section, of the inking roller and the support therefor;

Fig. 4 is a fragmentary view in elevation of the structure shown in Fig. 3 as viewed in the direction of arrow C;

Fig. 5 is a plan view of a portion of the device includ-
Fig. 6 is a view of an embodiment of the device showing from the side the arrangement of the inking and typing rollers and the lateral guide; and

Fig. 7 is a plan view of the inking and type roller arrangement shown in Fig. 6.

Fig. 8 is a view, partly in section, of a modified form of tape holder constructed in accordance with the invention; and

Fig. 9 is a view partly in section of another modified form of a tape holder in accordance with the invention.

Referring now to the drawings, and particularly to Fig. 1, there is shown a type roller 1 which is mounted in a particular manner to provide as fine an adjustment as possible of the pressure of roller 1 on adhesive tape 2. For this purpose, the spindle 3 of type roller 1 is arranged extending through slots 5 arranged in tension plates 4 located at all positive sides of roller 1, the ends of spindle 3, and thereby type roller 1, being drawn downwardly by plates 4. Tension plates 4 are mounted slidably on side walls 7 which are provided with slots 6 through which spindle 3 passes. Plates 4 are bent at their upper ends to form gripping projections 10.

Spindles 4 are also provided at their lower ends with bent portions 9 which pass through slots 10 in the side walls 7, and which have attached thereto tension springs 11 suspended therefrom. A horizontal beam 12 is arranged below end portions 9 and connected to the bottom 14 of the device by means of a screw 13 and is made swingable about a bolt 15 in a plane passing through both spiral springs 11, beam 12 being connected to the lower ends of springs 11, as shown in Fig. 2. In this way there is provided a constantly uniform tension on both ends of spindle 3, so that type roller 1 presses uniformly on the adhesive tape 2.

Type roller 1 has at each end thereof a projecting rim 16 of resilient material, e.g. rubber or synthetic plastic. The tension of springs 11 can be so adjusted by means of screw 13 that resilient rings 16 are sufficiently compressed to bring the type letters 37 of type roller 1 in pressure contact with all places on the strip 2, so that the type imprint is not spread out and so that the image of the imprint is not essentially distorted with respect to the type formation. A roller 18 is provided as a counter support for the resilient spacer rings 16, roller 18 having a spindle 19 which is rotatably mounted in fixed bearings 20 in side plates 7 and extends into slots 6 of tension plates 4. Roller 18 is at the same time a counter support for tape 2 so that the latter may be imprinted by type 17. By pulling on tape 2, type roller 1 is rotated under the action of friction, since the spacer rings 16 drive type roller 1.

Instead of providing spacer rings 16 on type roller 1, such resilient spacer rings may, if desired, be arranged on counter roller 18. By virtue of the simple supporting arrangement of the type roller 1 as described above, it is easy to discontinue the operation of the typing roller in case it is desired not to print on a portion of the tape.

In order to make the transfer of the ink from inking roller 21 to the type roller 1 independent of the pressure of type roller 1 on the tape 2, the direction of pressure of ink roller 21 on type roller 1 is made substantially at right angles to the direction of pressure of type roller 1 on tape 2. Thus, spindle 3 of type roller 1 constitutes an apex relative to which spindle 22 of ink roller 21 and spindle 19 of counter roller 18 are so arranged that the latter two spindles are arranged at least approximately at a right angle to each other.

The pressure on ink roller 21 against type roller 1 is also produced by a horizontal beam arrangement, in order to make the distribution of ink on all parts of type roller 1 as uniform as possible. For this purpose, spindle 22 of ink roller 21 is suspended in a yoke 23, which is preferably provided with hook portions 24 so arranged that spindle 22 can be easily inserted and removed therefrom. Yoke 23 is fastened to an arm 25 which extends at both ends through slots 26 and side plates 7 so as to be guided thereby. Arm 25 is formed with a downwardly extending flange 27 in which holes 28 are formed. The bent ends 29 of a bracket 30 pass through holes 28, and tension springs 31 are connected at ends 29 and at their other ends directly or indirectly to side plates 7. An adjusting screw 32 is provided in the central portion of bracket 30 and extends into contact with arm 25, so that the desired adjustment of the spacing between bracket 30 and flange 27 may be obtained. By the adjustment of the adjusting screw 32, springs 31 are thereby tightened to a greater or lesser degree so as to provide for regulation of the pressure of ink roller 21 on type roller 1.

It is of advantage to use adjusting screw 32 only for fine adjustment of the pressure, and to obtain the coarse adjustment by means of a crank lever arrangement pivotally mounted about a bolt 33 provided on each side of side plates 7. The crank lever is composed of an arm 34 to which spring 35 is attached, arm 34 for this purpose being provided with a bent portion 36 which passes through a slot 36 in each side plate 7 and to which spring 35 is secured. The other lever arm 37 of the crank lever is provided with a bolt or screw 38 which may be inserted selectively in any of the corresponding holes 39 in side plate 7 so that lever arm 37 and thereby the crank lever arrangement can be set in different desired positions, and in this way springs 31 may be given a desired tension. The adjusting screw 32, in this way, assures a constantly uniform pressure on the entire contact surface between ink roller 21 and type roller 1.

Ink roller 21 is provided with a resilient ring such as a felt ring serving as an ink carrier which, if desired, may be continuously soaked with ink material drawing from an ink reservoir arranged in the interior of the ring. A two-color or multi color impression can be produced if a plurality of ink rings are arranged adjacent to one another. In Fig. 3 there are shown two different ink rings which are arranged spaced from each other by a spacer disc 40. Spacer disc 40, as well as end discs 41, projects slightly beyond the ink rings, so that the full pressure produced by springs 31 is not exerted on type 17 of printing roller 1. By means of the rings of discs 40 and 41 which roll on the background portion of type roller 1 lying between type 17, a portion of the pressure exerted by springs 31 is produced with a definite contact force only that amount of pressure on the type which is necessary for transfer thereto of the ink material.

In order to make the device suitable for use with bands of differing widths so as to provide for reliable and correct guiding of the bands therefrom, so that even bands of narrow width may be guided in a straight line, an arrangement is provided by means of which the still unprinted tape runs between two adjustable guide plates. For this purpose, there is provided in front of and behind printing roller 1, guide plates 42 and 43 mounted on side plates 7. To provide for a simple mounting of these guide plates, they may be arranged only with projections 44 and 45 passing through side plates 7 which are mounted on bottom 14 of the apparatus. Two slides 46 and 47 are arranged symmetrical ly slideable on the opposite sides of arm 25 which is mounted in side plate 7, and thereby at its end 52 may be turned for adjusting the distance of slides 46 and 47 relative to each other.

It will be noted from Fig. 1 that slides 46 and 47 are
provided with depending portions between which tape 2 is effectively guided upon proper adjustment of the spacing between slides 46 and 47. The uniform position of the printing on the tape is thereby assured by the correct lateral guiding of the tape, especially since the slides 46 and 47 are arranged in the immediate vicinity of the printing position. In the places where the tape enters and leaves the slides from front and back of the type roller 17, the upper guide portions of the slides can be somewhat bent upwardly, in order to facilitate the entrance and exit of the band in introducing a new tape.

On the rear side of slides 46 and 47, there are attached tail plates 54 having spacing rollers 53, and between tail plates 54 the unprinted adhesive roll 55 lies freely in a trough like depression and in this way the adhesive roll may be unwound freely from its lower side 56. In this way, the commercial type of adhesive roll which has an adhesive coating on its outer side will lie with its non-adhesive side against printing roller 1.

If necessary, it is of course possible to use this printing apparatus also for printing on the outer surfaces of the adhesive roll simply by turning the roll around so that the unwinding point 56 is on top. While, accordingly, the present invention permits printing of both sides of the roll, the known devices can be used only for printing on one side of the roll, and, in fact, only on the side in which commercial rolls is coated with adhesive material.

Adhesive rolls are known which, since they are not printed immediately before use, are conducted over rollers which are immersed in water in order to moisten the adhesive material thereon. In accordance with the invention, the above described printing apparatus, as shown in Fig. 1, is arranged between the dispensing roll 55 and the moistening roll 57 of known type, and after passing over the moistening roll 57, the tape 58 can be torn off by means of the cutting blade 59 which is fastened to side plates 7.

In the case where a strip of tape which is not printed immediately before tearing off is grasped between the fingers in order to pull it beneath the cutting blade for tearing off the tape, no disadvantages would result. However, such an operation is objectionable where the tape has just been printed, since the freshly applied printing impression would be wiped off by such grasping of the tape between the fingers. In a particular embodiment of the invention, accordingly, there is provided a feed device which moves the adhesive tape forwardly a few centimeters after tearing off of the tape, without subjecting the printed side to a pull friction.

On both of side plates 7, e.g., on their inner sides, there is mounted a swingable lever 61 pivotable about a bolt 60, lever 61 being urged by means of spring 62 in the direction toward the dispensing roll 55. Between levers 61 which are arranged on the opposite side plates 7, there is arranged a bar 63 which has a covering providing a high friction, e.g., a rubber tube 64. On levers 61 a pair of second levers 61' are swingably mounted by means of bolts 65 and extend somewhat inclined relative to lever 61. The front ends of levers 61' are also preferably provided with a bar 67 also having a covering 66 of rubber or the like, the levers 61' thus forming a yoke-like structure. In the vicinity of their pivot axis 65, both levers 61' are connected together by a bar 68, which also is covered with a rubber tube 69 or the like. Both ends of bar 68 project beyond both sides of levers 61 into slots 70 formed therein, and in which these ends are movable when levers 61' are turned about their axis 65. Bars 63 and 68 are so arranged that their coverings 64 and 69 come into contact with each other by turning levers 61' about their axis 65, while in their rest position they are apart by spring 71. The tape strip 58 lies between the coverings 64 and 69.

When the yoke 67 is now turned downwardly, levers 61' swing about axis 65 until both coverings 64 and 69 firmly grasp adhesive tape 58. On the exertion of further pressure on yoke 67, lever 61 turns about its axis 60 and in this way moves tape 58 along for some distance while the tape unrolls from delivery spool 55, until one of the coverings 64 and 69 abuts against guide rollers 72 or 73. In this way tape 58 is given a forward motion which is sufficient to enable the tape to be grasped conveniently behind the cutting blade. When yoke 67 is again released, then springs 62 and 71 move it back into its rest position.

In the embodiment heretofore described, only the elevation of the band to be printed is fixed relative to the printing type by means of resilient rings 16 which are arranged on the periphery of the type roller 1. In accordance with the invention, these resilient rings can be used also for the elevational guiding of the ink roller 21 in track rings which are provided thereon which run on the resilient rings of type roller 1. It is of advantage to provide the track rings with a profile which is complementary at least in part to the profile of the resilient rings of the type roller 1. In accordance with the invention, the resilient rings and the ink roller track rings have a secure guiding contact with one another.

In order to adapt the same type roller for printing on tape of varying widths, the resilient rings 16 are made wider, or are shifted closer to the middle of the roller, the narrower the tape to be printed. The track rings of the ink roller 21 are correspondingly formed as counter rings.

The difficulty may then arise that the lateral guide plates between which the tape to be printed runs are already in contact with each other at the central portion without having their slide portions which lie over counter roller 18 arranged close enough to one another to afford the proper guiding of a narrow adhesive roll. Therefore, in this form of the device, the slideable guides are arranged under the counter roller, whereby no further lateral hindrance thence is met.

Referring now to Fig. 6, the type roller 1 is shown rotatably mounted in two lateral supports, e.g., both side plates 7, type roller 1 having two or more resilient rings 16a. The rotatably mounted ink roller 21, carried in a mounting bracket 74 and urged under spring pressure toward the ink fountain toward type roller 1, is provided with rings 75 which may be resilient or non-resilient and which are so arranged that they run in contact with resilient rings 16a. In this way, ink surface 76 of ink roller 21 always has the same spacing from background surface 77 on which the printing type 17 are mounted. The mechanical pressure which is exerted on the type 17 is therefore independent of whether strips inked by the ink roller have many, a few or even no printing type. The mechanical pressure of the ink roller 21 is uniformly great on all of the type letters, whereby the letters always undergo the same amount of deformation. A further result is that there is uniformity of imprint on the tape to be printed in a manner which has hitherto not been possible.

When the tape to be printed is rather narrow, the resilient rings 16 or 16a can be made broader or moved further toward the middle of the roller, or there may be provided within the outer pair of rings 16 to the side pairs of inner rings, or even only a single ring, in order to provide the strip to be printed with two rings between which it has secure lateral guiding. Resilient rings 16—16a may be made integral with the type roller 1 or with the printing matrix.

In the case where the band to be printed is very narrow the lateral guiding of the band before and after the printing position may present difficulties, since the guide slides 46 and 47 cannot be brought sufficiently close together above the counter roller 18. The guide plates therefore are replaced on both sides by guide brackets 78, which are laterally shiftable on two rods 79 and 80 which lie in front of and behind the printing position 81, at which
The pressure on the tape to be printed is exerted by the pressure of counter roller 1 against type roller 1. Guide brackets 78 extend beneath the counter roller 18 between both of these rods 79 and 80. The tape 2 which is to be printed runs along the inner sides 82 and 83 of brackets 78 which extend over rods 79 and 80, and thereby there is afforded a proper lateral guiding of the tape 2. By means of the screw 84 which is provided with right and left hand threads, in the manner as described above with respect to the supporting arrangement shown in Fig. 5, both sides of the guide brackets 78 can be brought close enough together for guiding bands of the narrowest width, and even until they contact one another.

A further feature of the invention resides in the structure of the support means of the tape supply roller on which the tape to be printed is mounted. When the band is unwound rapidly, a length of the band may be unrolled which is longer than necessary, so as to form a slack portion which may come into contact with the ink roller and thereby become smeared by the ink. The supporting means of the delivery roll is therefore advantageously equipped with a brake device.

In order, therefore, to provide for the tape 2 to be maintained taut to avoid the possibility of the imprint thereon being smudged or to avoid contact of the tape with the ink roller, a supporting arrangement for the delivery roller 155 which supports the tape roll, may be equipped with a braking device, such as shown in Figs. 8 and 9. It will be understood that the supporting arrangement shown in Figs. 8 and 9 may be arranged on the left of Fig. 1 and supported in extensions of side walls 7 with the axis of roll 155 parallel to spindle 3. Thereby, the trough support of the type roll 85, as shown in Fig. 5, would be replaced. Such a breaking device may consist, for example, of a pressure spring 79 on each side of the roller 155, each spring 79 engaging at one side a conical member 81 projecting into the central opening 55' of the roller 155, and engaging at the other side a bearing 82, which is freely turnable and axially movable on the spindle 83. Bearing 82 lies pressed against a resilient intermediate bearing 84 that is also freely movable on spindle 83 and thrusts against wall 185 or a bearing member 186, in which spindle 83 is rotatable. By virtue of the resulting pressure on both sides thereof by bearings 81 and 82 of conical members 81, the supply roller 155 is centered and its turning movement is thereby retarded by the friction of bearing 82 against the intermediate bearing 84 that it turns only during the time that the pull is exerted on the tape 2 which is to be printed.

In the supporting arrangement of the supply roller as shown in Fig. 8 a continuous spindle 83 is provided, the arrangement shown in Fig. 9 for supporting the supply roller is equipped with a separable supporting arrangement. As shown in Fig. 9, one portion 85 of the spindle is arranged slidably with respect to the other tubular spindle portion 86, and a weak spring 87 is arranged between the two parts to urge them apart. Both spindle portions 85 and 86 are attached respectively to step bearings 85 and 89, the bottoms of which are each provided with indented portions 90 and 91, which lie over and grasp the fixed bearing bolts 92 and 93. Bearing sleeves 94 and 95 are fastened in the step bearings 85 and 89 into which the sleeve members 96 and 97 slide, the latter sleeve members having fastened to their inner ends conical members 98 and 99. Within sleeves 94, 95, 96 and 97 there are arranged pressure springs 100 and 101, by means of which conical members 98 and 99 are pressed toward each other toward the middle, where their movement is limited by means of stop members fastened to the spindle portions 85 and 86, the stop members comprising, for example, small spring rings 102 and 103. To mount the tape roll, the depressed portions 90 and 91 are lifted out of bearing bolts 92 and 93 and both spindle portions 85 and 86 are separated from each other simply by pulling them apart, so that the tape roll can be inserted between conical members 98 and 99. Then the parts are allowed to come together under the action of the spring members, and the depressed portions 90 and 91 are again engaged in bearing bolts 92 and 93, whereby the springs 100 and 101 assure a reliable mounting of the parts.

The springs simultaneously hold the tape roll firmly between conical members 98 and 99 and also produce a strong friction between the bearing bolts 92 and 93 on the one hand, and the depressed portions 90 and 91 on the other hand, to thereby effect a braking action for retarding the turning of the tape roll. The wider and the heavier the tape roll is, the more are the springs 100 and 101 pressed together and thereby the stronger is the braking effect, so that the available braking force is automatically adjusted to the amount necessary. The supporting structure for the supply roll may be mounted in the housing of the apparatus or in the cover thereof.

It will be understood that either of the elements described above, or two or more together, may also find a useful application in other types of tape dispensing and printing devices differing from the types described above.

While the invention has been illustrated and described as embodied in adhesive tape printing device, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A combined apparatus of the type described comprising, in combination, supply means for delivering strip material; supporting means having spaced upright walls thereof, the supporting means forming with opposite slots therein; rotatable printing means including printing members and associated with said supply means and adapted for printing on the strip material received from said supply means, said rotatable printing means having an axially extending spindle slidably mounted at opposite ends in said slots of said wall members; counter support means adjacent said rotatable printing means for supporting the strip material during printing; resilient ring means on one of said rotatable printing means and said counter support means extending around the periphery thereof and having a radial thickness substantially equal to the radial thickness of said printing members on said printing means; a pair of tension means each connected at one end to opposite ends of said spindle; a pair of spring means respectively connected to the other ends of said tension means for urging said rotatable printing means against the strip of material to be printed and against said counter support means supporting the same; and transverse beam means connected to the other ends of said spring means and being pivotally mounted in said supporting means.

2. A combined apparatus of the type described comprising, in combination, supply means for delivering strip material; supporting means forming with opposite slots therein; rotatable printing means including printing members and associated with said supply means and adapted for printing on the strip material received from said supply means, said rotatable printing means having an axially extending spindle slidably mounted at opposite ends in said slots of said wall members; counter support means associated with said printing means for detaching portions of printed strip material;
counter support means adjacent said rotatable printing means for supporting the strip material during printing; resilient ring means on one of said rotatable printing means and said counter support means extending around the periphery thereof and having a radial thickness substantially equal to the radial thickness of said printing means on said printing means; yoke means mounted on said upright wall members of said supporting means for movement towards and away from said rotatable printing means and having free end portions arranged adjacent said rotatable printing means; a bracket member mounted on said yoke means for movement relative thereto; adjusting screw means adjusting the spacing said bracket member from said yoke means, threadably engaging said bracket member centrally thereof and engaging at its end said yoke means centrally thereof; resilient means connected at one end to said bracket member constantly urging said bracket member and thereby said yoke means toward said rotatable printing means; lever means, swingably mounted on said upright wall members of said supporting means, said lever means being composed of angularly arranged arms one of which is connected to the other end of said resilient means and the other being securable at different angular positions to said upright wall members for adjusting the pressure exerted by said resilient means on said yoke means in the direction toward said rotatable printing means; and ink roller means having axial spindle portions projecting at opposite ends thereof and mounted with said spindle portions in said free end portions of said yoke means, and arranged adjacent said rotatable printing means pressuring against the same in a direction approximately at right angles to the direction of pressure of said rotatable printing means against said counter support means, said ink roller means being constantly urged with said yoke means against said resilient ring means.

3. A combined apparatus of the type described comprising, in combination, supply means for delivering strip material; supporting means having spaced upright wall members; rotatable printing means including printing members and associated with said supply means and adapted for printing on strip material received from said supply means; detaching means associated with said printing means for detaching portions of printed strip material; counter support means adjacent said rotatable printing means for supporting the strip material during printing; resilient ring means on said rotatable printing means extending around the periphery thereof and having a radial thickness substantially equal to the radial thickness of said printing means on said printing means; yoke means mounted on said upright wall members of said supporting means for movement towards and away from said rotatable printing means and having free end portions arranged adjacent said rotatable printing means; a bracket member mounted on said yoke means for movement relative thereto; adjusting screw means adjusting the spacing said bracket member from said yoke means, threadably engaging said bracket member centrally thereof and engaging at its end said yoke means centrally thereof; resilient means connected to said bracket member and said upright wall members constantly urging said bracket member and thereby said yoke means toward said rotatable printing means; and ink roller means having axial spindle portions projecting at opposite ends thereof and mounted with said spindle portions in said free end portions of said yoke means, and arranged adjacent said rotatable printing means pressuring against the same in a direction approximately at right angles to the direction of pressure of said rotatable printing means against said counter support means, said ink roller means being constantly urged with said yoke means against said resilient ring means.

4. A combined apparatus of the type described comprising, in combination, supply means for delivering strip material; supporting means having spaced upright wall members of said supporting means adjacent said rotatable printing means for supporting the strip material during printing; resilient ring means on said rotatable printing means extending around the periphery thereof and having a radial thickness substantially equal to the radial thickness of said printing means on said printing means; yoke means mounted on said upright wall members of said supporting means for movement towards and away from said rotatable printing means and having free end portions arranged adjacent said rotatable printing means; a bracket member mounted on said yoke means for movement relative thereto; adjusting screw means adjusting the spacing said bracket member from said yoke means, threadably engaging said bracket member centrally thereof and engaging at its end said yoke means centrally thereof; resilient means connected to said bracket member and said upright wall members constantly urging said bracket member and thereby said yoke means toward said rotatable printing means; and ink roller means having axial spindle portions projecting at opposite ends thereof and mounted with said spindle portions in said free end portions of said yoke means, and arranged adjacent said rotatable printing means pressuring against the same in a direction approximately at right angles to the direction of pressure of said rotatable printing means against said counter support means, said ink roller means being constantly urged with said yoke means against said resilient ring means.

5. An apparatus of the type described comprising, in combination, supply means for delivering strip material; supporting means having upright wall members formed with opposite slots therein; rotatable printing means including printing members and associated with said supply means and adapted for printing on the strip material received from said supply means; detaching means associated with said printing means for detaching portions of printed strip material; counter support means adjacent said rotatable printing means for supporting the strip material during printing; resilient ring means on said rotatable printing means extending around the periphery thereof and having a radial thickness substantially equal to the radial thickness of said printing means on said printing means; yoke means mounted on said upright wall members of said supporting means for movement towards and away from said rotatable printing means and having free end portions arranged adjacent said rotatable printing means; a bracket member mounted on said yoke means for movement relative thereto; adjusting screw means adjusting the spacing said bracket member from said yoke means, threadably engaging said bracket member centrally thereof and engaging at its end said yoke means centrally thereof; resilient means connected to said bracket member and said upright wall members constantly urging said bracket member and thereby said yoke means toward said rotatable printing means; and ink roller means having axial spindle portions projecting at opposite ends thereof and mounted with said spindle portions in said free end portions of said yoke means, and arranged adjacent said rotatable printing means pressuring against the same in a direction approximately at right angles to the direction of pressure of said rotatable printing means against said counter support means, said ink roller means being constantly urged with said yoke means against said resilient ring means.

6. A combined apparatus of the type described comprising, in combination, supply means for delivering strip material; supporting means having spaced upright wall members of said supporting means adjacent said rotatable printing means for supporting the strip material during printing; resilient ring means on said rotatable printing means extending around the periphery thereof and having a radial thickness substantially equal to the radial thickness of said printing means on said printing means; yoke means mounted on said upright wall members of said supporting means for movement towards and away from said rotatable printing means and having free end portions arranged adjacent said rotatable printing means; a bracket member mounted on said yoke means for movement relative thereto; adjusting screw means adjusting the spacing said bracket member from said yoke means, threadably engaging said bracket member centrally thereof and engaging at its end said yoke means centrally thereof; resilient means connected to said bracket member and said upright wall members constantly urging said bracket member and thereby said yoke means toward said rotatable printing means; and ink roller means having axial spindle portions projecting at opposite ends thereof and mounted with said spindle portions in said free end portions of said yoke means, and arranged adjacent said rotatable printing means pressuring against the same in a direction approximately at right angles to the direction of pressure of said rotatable printing means against said counter support means, said ink roller means being constantly urged with said yoke means against said resilient ring means.

References Cited in the file of this patent

UNITED STATES PATENTS

287,383 Kendall Oct. 23, 1883
407,631 Barradale July 23, 1889
410,594 Kennedy Sept. 10, 1889
654,268 Millison July 24, 1900

(Other references on following page)
<table>
<thead>
<tr>
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<th></th>
<th></th>
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<tr>
<td>741,706</td>
<td>Palmer</td>
<td>Oct. 20, 1903</td>
<td>2,123,448</td>
</tr>
<tr>
<td>771,900</td>
<td>Finch</td>
<td>Oct. 11, 1904</td>
<td>2,251,985</td>
</tr>
<tr>
<td>835,903</td>
<td>Grant</td>
<td>Nov. 13, 1906</td>
<td></td>
</tr>
<tr>
<td>991,660</td>
<td>Springsteen</td>
<td>May 9, 1911</td>
<td></td>
</tr>
<tr>
<td>1,576,853</td>
<td>Seiders</td>
<td>Mar. 16, 1926</td>
<td>508,898</td>
</tr>
</tbody>
</table>

**FOREIGN PATENTS**

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<tr>
<th>Country</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Britain</td>
<td>July 7, 1939</td>
</tr>
<tr>
<td>Austria</td>
<td>Sept. 5, 1939</td>
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