

May 22, 1956

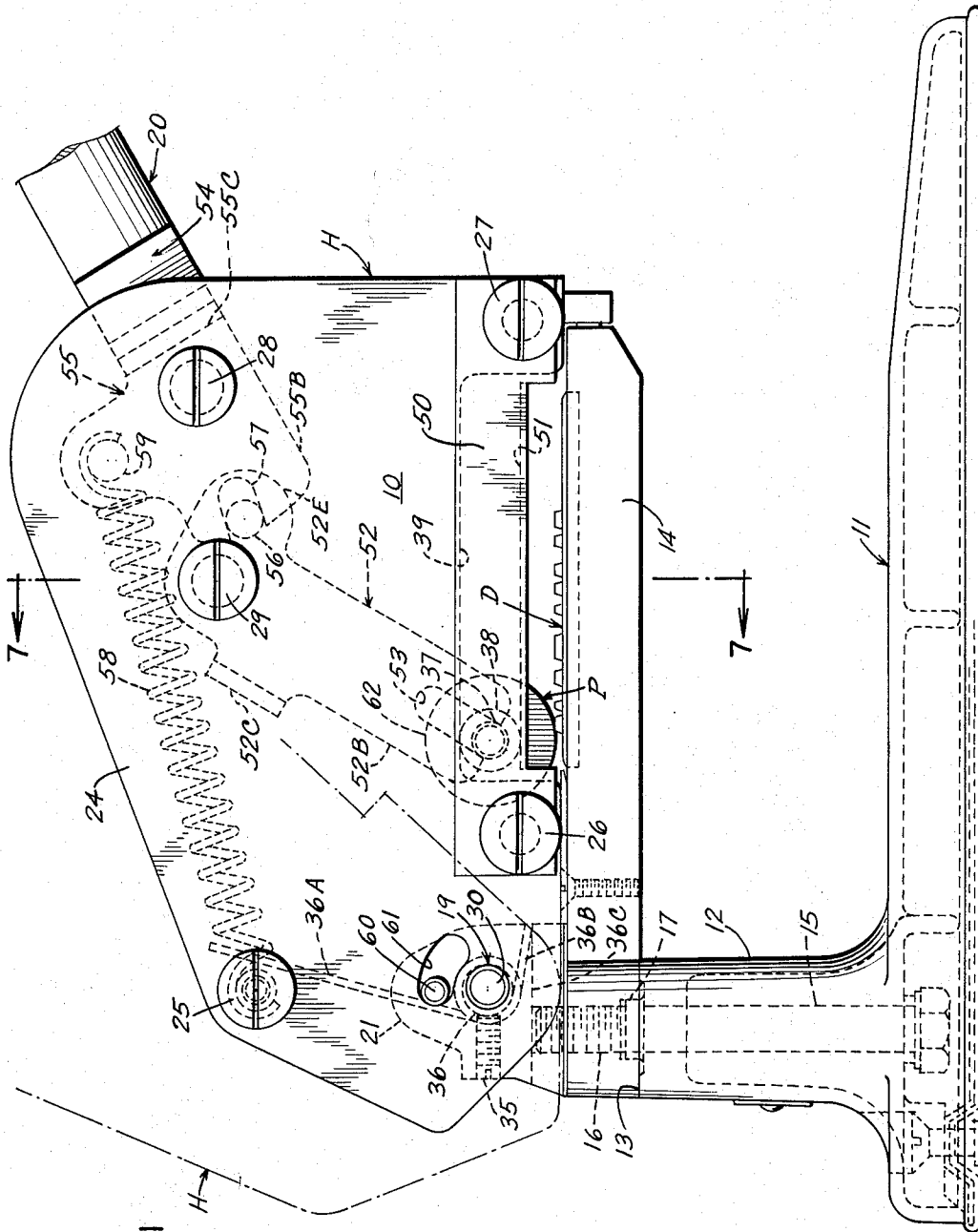
J. H. GRUVER ET AL

2,746,388

INKING ROLLER FOR AN IMPRINTING MEANS

Filed July 28, 1952

4 Sheets-Sheet 1



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4 Sheets-Sheet 3

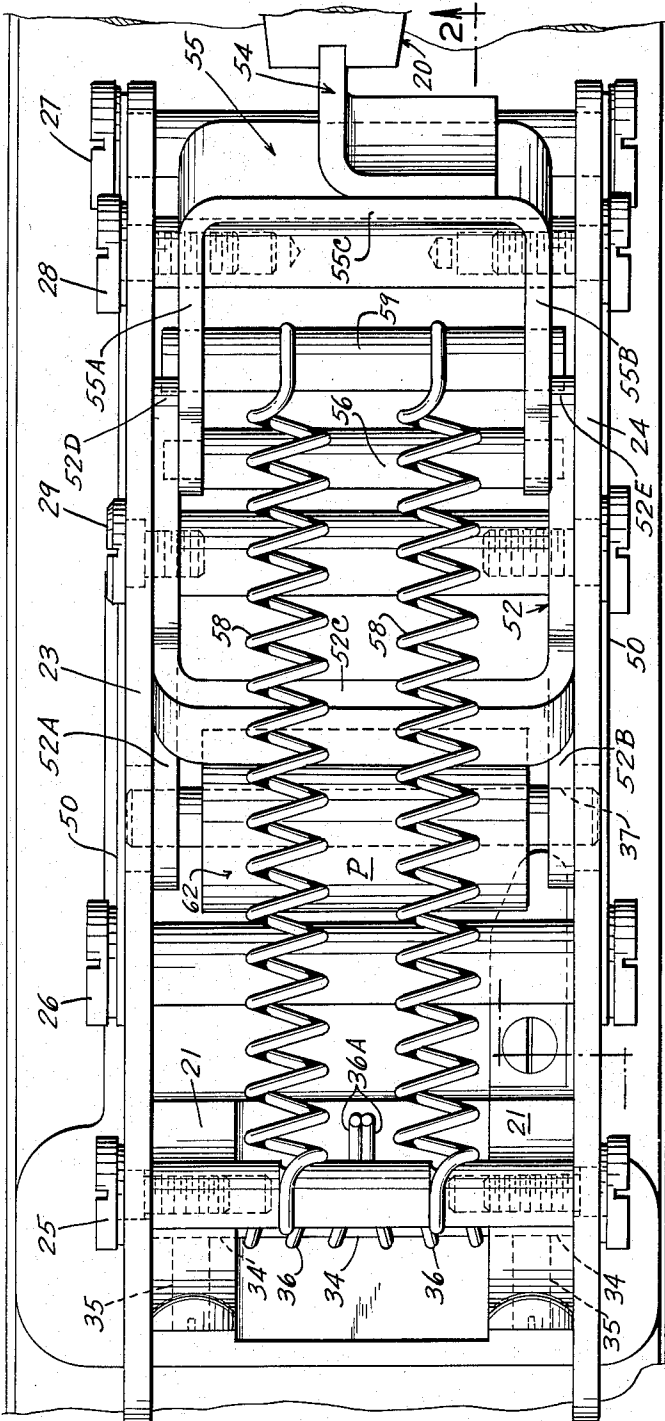


FIG. 4

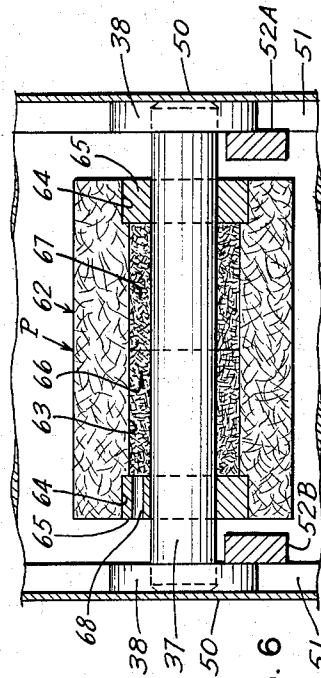


FIG. 5

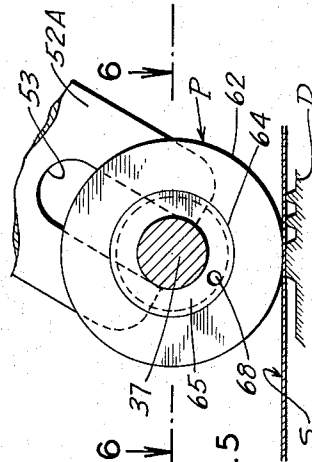


FIG. 6

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FIG. 7

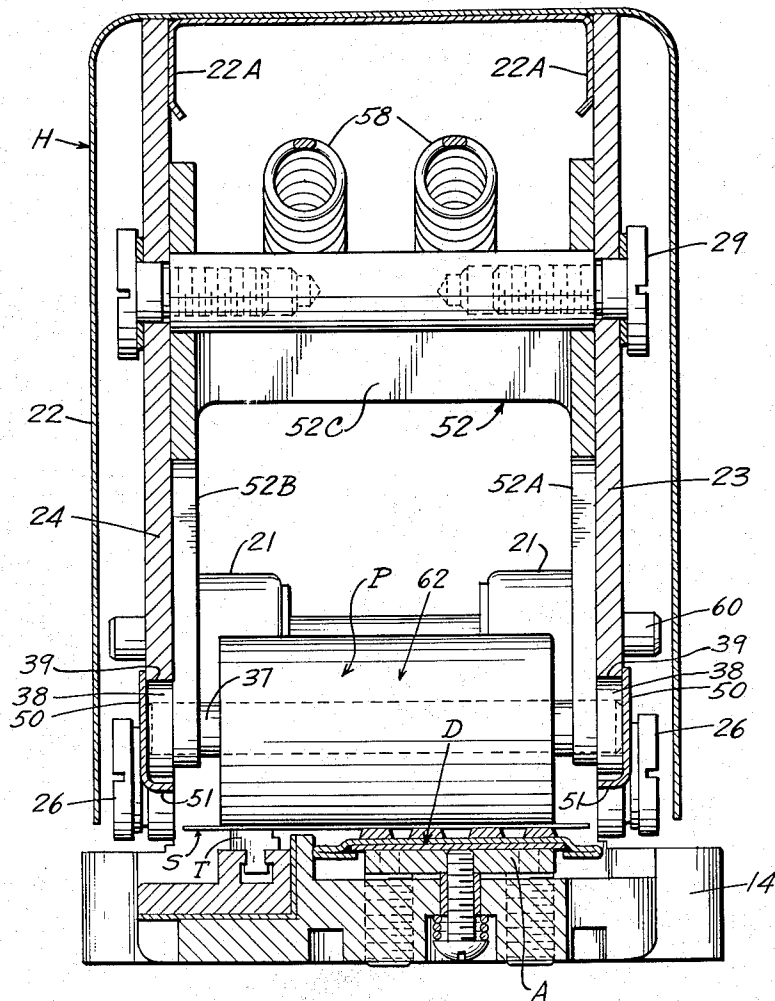


FIG. 8

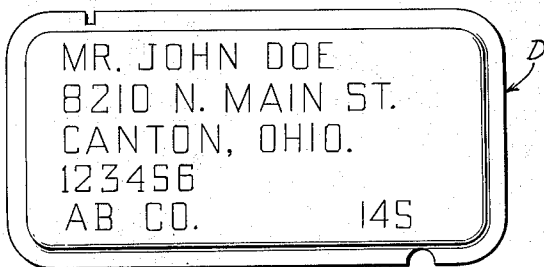
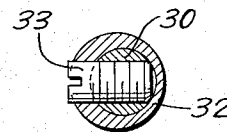


FIG. 9

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INKING ROLLER FOR AN IMPRINTING MEANS

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Application July 28, 1952, Serial No. 301,346

3 Claims. (Cl. 101-367)

This invention relates to imprinting means effective to make impressions from printing devices and the like in printing machines embodying our novel imprinting means.

A particular form of printing machine in which our novel imprinting means may be advantageously employed is one of the nature used in department stores, gasoline service stations and other places where customers are furnished with a printing device bearing the name and address and usually other identifying information pertaining to the particular customer. Such printing device is inserted into the printing machine to have an impression made therefrom onto a sales slip, charge ticket or the like. Printing devices of this character usually have the type characters formed thereon to be direct reading and impressions are made from the printing devices through the sales slip or slips by applying ink to the upwardly disposed surface of the sheet overlying the type characters, and heretofore this has been done by forcing an inked ribbon, carbon paper or the like toward the sheet to cooperate with the type characters on the printing device to produce an impression. While machines of this character have proven to be satisfactory, they have usually been relatively expensive, particularly by reason of the inclusion therein of means for advancing the inked ribbon, carbon paper or the like utilized therein. Hence, the primary object of the present invention is to provide a novel imprinting means useful in printing machines of the aforesaid character and in other printing machines and which includes a novel ink bearing roller which, when moved across a sheet or the like overlying type characters, will be effective to make an impression on the upwardly disposed face of the sheet.

Very frequently a relatively large number of impressions are made in a printing machine of the aforesaid character in the course of a day, and we have observed that a roller of porous material impregnated with ink may have the supply of ink exhausted therefrom in a relatively short time which makes it necessary to replace the roller. The frequency with which roller replacement will be necessary will, of course, depend upon the extent of use of the machine, but in many instances where printing machines of the aforesaid character have included a roller of porous material impregnated with ink it has been observed that roller replacement is often necessary more frequently than is convenient, and in view of this it is another important object of this invention to afford an imprinting means in the form of a roller or the like and having a reservoir associated therewith in which a quantity of ink may be stored and into which additional ink may be introduced so as to thereby maintain a supply of ink in the imprinting means and thereby avoid frequent changes of the imprinting means.

Further and more specific objects of the invention are

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to afford an imprinting means in the form of a roller made of porous material and having an axial opening therein through which a supporting shaft for the roller may be passed, such opening being of larger diameter than the shaft so that ink storing means may be disposed in the opening about the shaft; to maintain the ink storing means under compression and thereby insure the passage of ink therefrom into the roller; to afford an arrangement that is of such nature that additional ink may be introduced into the ink storing means from time to time; and to provide a novel arrangement of the aforesaid character that will be simple and economical in construction and efficient and positive in operation.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show a preferred embodiment of the present invention and the principles thereof and what we now consider to be the best mode in which we have contemplated applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

Fig. 1 is a side elevational view of a printing machine embodying our novel imprinting means and wherein the head of the printing machine is shown in full lines in its lowered operative position and in dot-dash lines in its upper and inactive position;

Fig. 2 is a view, partly in section, similar to Fig. 1 but showing certain of the operative mechanisms in an operative position other than that in which the parts are shown in Fig. 1;

Fig. 3 is a vertical sectional detail view taken substantially on the line 3-3 on Fig. 2;

Fig. 4 is a top plan view of the printing machine shown in Fig. 1 and wherein the cover for the head of the machine has been removed;

Fig. 5 is a fragmentary detail elevational view of our novel imprinting means;

Fig. 6 is a sectional detail view taken substantially on the line 6-6 on Fig. 5;

Fig. 7 is a vertical sectional view taken substantially on the line 7-7 on Fig. 1;

Fig. 8 is an elevational view of a typical printing device that may be used with our novel imprinting means; and

Fig. 9 is a fragmentary detail view of an adjustable pivotal mounting employed in the illustrated machine.

In the form of our invention shown in the accompanying drawings our novel imprinting means is embodied in a sales slip imprinting machine 10 in the nature of that disclosed in the copending application of Edward J. Janke, Serial No. 111,987, filed August 24, 1949, now Patent No. 2,664,819, patented January 5, 1954. In this machine, our novel imprinting means cooperates with printing devices, such as the printing device D, Fig. 8, to print sales slips such as are conventionally used by department stores and the like. The printing machine 10 includes a mounting base 11 that is adapted to be secured by screws or the like to a counter or other support located adjacent to the place where sales are actually made. The base 11 has an upstanding rigid column 12 formed at what may be termed the rear end thereof and this column terminates in a relatively flat upper surface

13 which affords a mounting surface against which the rear end of a projecting platform 14 may be secured. This platform 14 is held in a rigid and fixed relation on the column 12 by means including a fastening bolt 15 that extends upwardly through the base 11 and the column 12 and is threaded into a threaded opening 16 formed in the platform 14. The column 12 has upwardly projecting lugs as 17 that extend upwardly from and beyond the flat surface 13, and these lugs are disposed in relatively widely spaced relationship on opposite sides of the bolt 15, and are arranged to extend into complementary downwardly facing sockets 18, Fig. 3, that are formed in the lower face of the platform 14. Thus, the fastening bolt 15 and the cooperation of the lugs 17 with the sockets 18 affords a rigid interconnection between the platform 14 and the column 12.

The platform 14 has a printing head H mounted thereon by means of a supporting pivot structure 19 that is located in a transverse horizontal position near the rear end of the platform 14 and substantially over the forward edge of the column 12. The printing head H is arranged for movement about the pivot 19 between the retracted or ineffective position thereof shown in dot-dash lines in Fig. 1, and the lower or operating position shown in full lines in Fig. 1, and printing means including our novel imprinting means are mounted within the head H so that the printing means may be operated by means including a handle 20 to produce a printed impression from type characters that are mounted in a common horizontal printing plane upon the platform 14, as will hereinafter be described.

To afford a mounting for the printing head H, as shown in Figs. 1 and 3 of the drawings, the platform 14 is provided at its rear end with a pair of upstanding lugs 21 that are spaced laterally apart a considerable distance to afford clearance space within which certain elements of the mechanism are mounted, as will hereinafter be described. The printing head H includes an outer casing 22 that serves to enclose the structural and operating elements of the head H. The head H comprises two main side plates 23 and 24, which are held in parallel spaced relationship by spacer rods 25, 26, 27, 28 and 29, the structure of which will be described hereinafter in some instances where the specific structure is of importance. The casing 22 is releasably held in place over and about the plates 23 and 24 by suitably located spring clips 22A, Fig. 7, that are secured interiorly of the casing in such a position as to be insertable downwardly between and in frictional engagement with the inner or adjacent faces of the plates 23 and 24. The spacing apart of the plates 23 and 24 is such that the rear ends of the plates may extend downwardly along the opposite outer faces of the lugs 21, Fig. 3, and the pivot structure 19 is arranged to support these plates from these lugs. As herein shown, the pivot structure 19 comprises a central shaft 30 that extends snugly through openings 31 formed in the plates 23 and 24. This shaft 30, as shown in Figs. 3 and 9, extends through a sleeve 32 in an eccentric relationship with respect to the sleeve, and a lock screw 33, Fig. 9, serves to hold the shaft in a predetermined rotative position with respect to the sleeve. The sleeve 32 extends through the two lugs 21, enlarged openings 34 being afforded in the lugs to snugly receive the sleeve. With this arrangement, the vertical location of the pivot 19 as afforded by the shaft 30 may be adjusted by relative rotation of the shaft 30 and the eccentric sleeve 32. This adjustment may readily be accomplished by engagement of a kerf 34 that is afforded in one end of the shaft 30. When the vertical location of the shaft 30 has been properly adjusted, this adjustment may be maintained by a set screw 35 that is extended forwardly through one of the lugs 21 in position to engage the eccentric sleeve 32, as shown in Fig. 3.

The printing head H is normally urged to its retracted

or inactive position, shown in dot-dash lines in Fig. 1, through the action of spring means which, in the present case, includes a pair of torsion springs 36, Figs. 1, 2, 3 and 4, which have the coiled portions thereof surrounding the sleeve 30 between the lugs 21. Each such torsion spring 36 has an upstanding arm 36A that extends into a position forwardly of the spacer structure 25, while each torsion spring also has a second arm 36B that extends forwardly as shown in Figs. 1 and 2 so as to bear on the surface 36C that is afforded between the two lugs 21, as shown in Fig. 3. The action of the torsion springs 36 is to urge the printing head H to its retracted position shown in dot-dash lines in Fig. 1.

Within the space between the two side plates 23 and 24, means are afforded for mounting, guiding and actuating our novel imprinting means which in the present instance is guided along the desired horizontal path by guide means that are afforded along the lower edges of the side plates 23 and 24. Thus, in the present instance our novel imprinting means, indicated by P, is mounted on a supporting shaft 37 which has guide wheels 38 at its opposite ends and in the same spaced relationship as the side plates 23 and 24. These guide wheels 38 are arranged to be disposed beneath and run against elongated straight guide surfaces as 39 that are formed on the side plates 23 and 24, so as to face downwardly. The guide surface 39 terminates just to the right and just to the left, respectively, as viewed in Fig. 1, of the connecting structures 26 and 27, and means supported by these connecting structures 26 and 27 are effective to engage the lower sides of the guide wheels 38 to hold the roller P against downward displacement when the printing head H is elevated. Such retaining means under the present invention are afforded by a sheet metal member 50, Fig. 7, the main body of which is disposed in a vertical plane and which in each instance has an inwardly extending lower flange 51 that is arranged to underlie the adjacent guide wheel 38. The retaining members as 50 are arranged to extend beyond the two spacing structures 26 and 27, and cap screws that are a part of the spacing structures hold the retaining means as 50 in position on the respective side plates 23 and 24.

The imprinting roller P that is thus guided along a rectilinear path by the guide surfaces just described, is arranged for actuation by means that are operated by the handle 20. In providing for such actuation of the imprinting roller P along its path, a rocker structure 52 is mounted between two side plates 23 and 24 for pivotal movement on and about the spacer member 29. This rocker structure 52 is formed from sheet metal and includes a pair of bell crank arms 52A and 52B which are connected by an integral cross bar 52C. At their lower ends, the arms 52A and 52B have longitudinally extending slots 53 formed therein that are arranged respectively to embrace the mounting shaft 37 of the imprinting roller P between the ends of the roller P and the adjacent guide wheels 38. Thus, upon rocking movement of the rocker structure 52, the roller P is moved along its guideways as 39 that are afforded on the side plates 23 and 24. Such rocking movement is imparted to the rocker structure 52 by operation of the handle 20.

The handle 20 is mounted upon an angle bracket 54, which is secured to a rocker structure 55 that is mounted for rocking movement on the spacer structure 28, and the angle bracket 54 extends outwardly through an elongated slot formed in the forward wall of the casing 22. The rocker structure 55 is formed as a stamping from sheet metal to afford a pair of spaced arms 55A and 55B that are connected by an integral cross arm 55C to which the angle bracket 54 is secured, as by means of welding. The arms 55A and 55B are so spaced that they may extend into the space between the opposite side members of the rocker structure 52. The side members 52A and 52B of the rocker structure 52 have forward extensions 52D and 52E formed thereon which are connected by a cross pin 56. The arms 55A and 55B have slots as 57

formed therein which embrace the cross pin 56 so that upon rocking movement of the handle 20 from the position thereof shown in Fig. 1 to the position thereof shown in Fig. 2, a corresponding rocking movement will be imparted to the rocker structure 52. In the course of this rocking movement, the roller P moves from the position thereof shown in Fig. 1 to the position thereof shown in Fig. 2 and in the course of this movement a printing operation is performed as will be explained presently. The parts are normally urged to the relationship shown in Fig. 1 of the drawings by a pair of relatively strong tension springs 58 that are connected at their rear ends to the spacer structure 25 as shown in Figs. 2 and 4, and these springs are connected at their forward ends to a cross pin 59 that extends between the arms 52A and 52B above the pivotal axis that is afforded by the spacer structure 28.

In the structure that has thus far been described, the parts normally tend to assume the position illustrated in Fig. 1 with the housing H in the dot-dash line position thereof in this view. Then when the upwardly projecting handle 20 is actuated in a forward and downward direction, the torsion springs 36 are first overcome by such force and the printing head H is moved downwardly to the position shown in Fig. 1. In the course of this initial actuation of the handle 20, the springs 58 serve to maintain the handle and the associated roller-operating mechanisms in their normal positions shown in Fig. 1 so that when the printing head H reaches its lower or operating position, the imprinting roller P will be disposed in its rearward position as shown in Fig. 1. Then, upon continued downward actuation of the handle 20, the parts are moved from the positions shown in Fig. 1 to the positions shown in Fig. 2, and the imprinting roller P moves forwardly along its guideways and through a printing stroke which terminates when the guide wheels 38 reach the forward ends of their guideways. The handle 20 is then allowed to return toward its upper position, and as this movement progresses, the roller P moves through a rearward printing stroke until it reaches the position shown in Fig. 1 of the drawings, and thereafter, the torsion springs 36 cause the printing head H to return to its upper or retracted position shown in dot-dash lines in Fig. 1. Pivotal movement of the head H between the full line and dot-dash line positions thereof shown in Fig. 1 against and under the influence of torsion springs 36 is limited by extending the end portions of a pin 60 through arcuate slots as 61 formed in the side walls of the casing 22 and aligned arcuate slots 62 in the side plates 23 and 24, the pin 60 being mounted in the lugs as 21, as best shown in Fig. 3.

A printing device D, when inserted into the machine 10, seats upon an anvil A, Figs. 2 and 7, so that as the imprinting means P moves from the position thereof shown in Fig. 1 to the position thereof shown in Fig. 2 an impression will be made from the type characters on the device D onto a sheet S interposed between such type characters and the imprinting means. Removable type T, Fig. 7, may also be disposed to have an impression made therefrom in the course of the aforesaid movement of the imprinting means, such type and the mounting thereof being described in detail in aforesaid copending application Serial No. 111,987. The imprinting means P is effective to make impressions, as aforesaid, since a supply of ink is included therein.

Thus, the imprinting means P includes a roller 62 of porous or permeable ink impregnated material such as, for example, the graphitic material made and sold by United States Graphite Company under the designation "Graphitar No. 67" or other equivalent material. The roller 62 may also be formed of permeable hard rubber or from permeable metal such, for example, as that disclosed in the patent to Lohrey No. 2,199,265, patented April 30, 1940.

The roller 62 has an axial bore formed therein that

is of appreciably larger diameter than the diameter of the shaft 37 about which the roller 62 is disposed. The axial bore or opening 63 is enlarged at its ends as indicated at 64 to afford recesses adapted to receive bushings as 65 which, as best shown in Fig. 6, embrace the shaft 37 and thereby support the roller 62 therefrom. Thus an enclosed chamber 66 is afforded in the roller 62 between the bushings 65 and about the shaft 37. A highly saturated ink bearing material 67, such as felt, is mounted in the chamber 66 about the shaft 37. In the present instance the felt material 67 is in the form of two washers which abut at their inner ends and which at their outer ends respectively bear against the bushings 65. It is to be understood that any suitable saturatable material may be substituted for the felt washers 67. For example, porous rubber, such as that disclosed in Chollar Patent No. 2,353,877, patented July 18, 1944, may be stored in the chamber 66.

Desirably the washer 67 or other material to be disposed in the chamber 66 is of greater diameter than the diameter of the bore 63 so that when the material is introduced into the chamber it is placed in compression. We have found that so to do insures that ink stored in the saturatable material will flow therefrom into the permeable roller 62. Thus the material as 67 stored in the cavity 66 serves as a reservoir to replenish ink taken from the roller 62 in the course of imprinting operations thereof.

Desirably an opening as 68 is formed in one or both of the bushings 65 and when roller 62 is removed from the machine, in the manner described hereinafter, ink may be introduced into the saturatable material 67 through each opening as 68. In this way the supply of ink in the material 67 may be replenished from time to time so as to thereby insure that the roller 62 will have a comparatively long life before ink is exhausted therefrom.

When the supply of ink in the imprinting means P is exhausted it may be removed from the machine to be replaced by another or to have a new supply of ink furnished thereto through the openings as 68. The imprinting means including the roller 62 and its associated parts may be conveniently removed from the machine when the head H is in its upper inactive position as shown in dot-dash lines in Fig. 1. At this time the cap screws at the ends of the spacing structures 26 and 27 are removed and thereupon retaining members as 50 may be removed from the machine. When this is done, as can be best ascertained by referring to Fig. 7, the rollers 38 may be moved away from the guide surfaces 39, and in the course of this movement the shaft 37 is moved out of the slot 53 and thereupon the imprinting means is freed from the machine for replenishment or replacement, as has been explained.

It will be manifest from the foregoing description that we have provided an imprinting means which enable the hereinabove set forth and kindred objects of this invention to be realized. Hence, while we have illustrated and described the preferred embodiments of our invention, it is to be understood that these are capable of variation and modification, and we therefore do not wish to be limited to the precise details set forth, but desire to avail ourselves of such changes and alterations as fall within the purview of the following claims.

We claim:

1. An inking roller for printing indicia on a sales slip or the like, comprising a relatively rigid cylindrical body portion composed of porous ink-impregnable material, said body portion being formed with an axial bore, a shaft of appreciably smaller diameter than said bore and extended through said bore, means at opposite ends of said shaft sealing off said bore, and resilient ink-impregnable material packed under compression in the portion of said bore not occupied by said shaft to serve as a reservoir for ink to be relayed by capillarity to said body portion,

2. An inking roller according to claim 1 in which the body portion is composed of porous hard rubber.

3. An inking roller according to claim 1 in which the means sealing off said bore are in the form of bushings affording journals for journalling said roller on said shaft. 5

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