April 20, 1965 J. A. MAUL ETAL 3,179,046

PLATEN ROLLER MOUNTING MEANS IN MANUALLY OPERABLE PRINTING MACHINES

Filed Nov. 16, 1961 3 Sheets-Sheet 1

FIG. 1

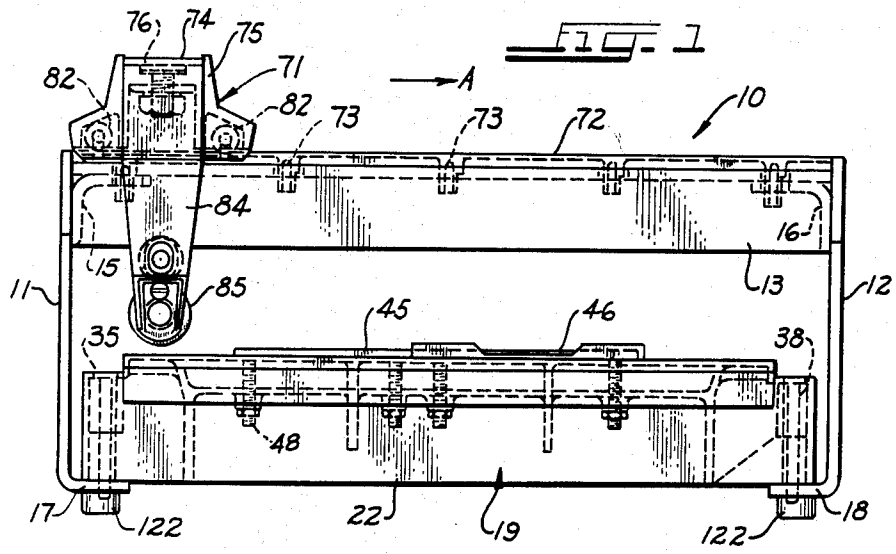

FIG. 2

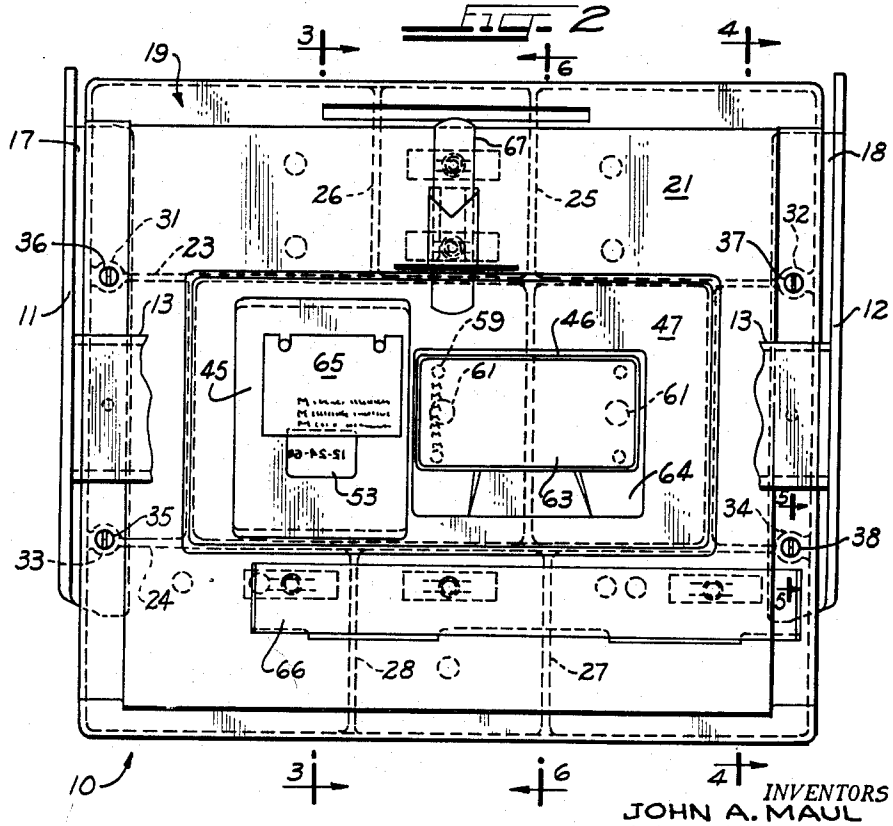

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FIG. 3

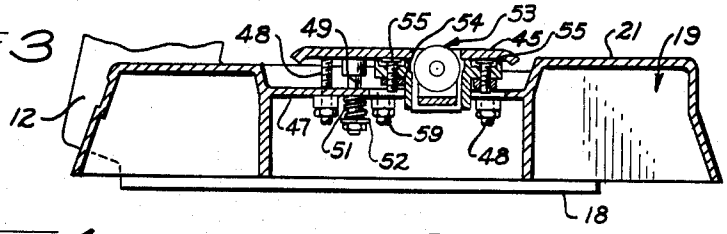

FIG. 4

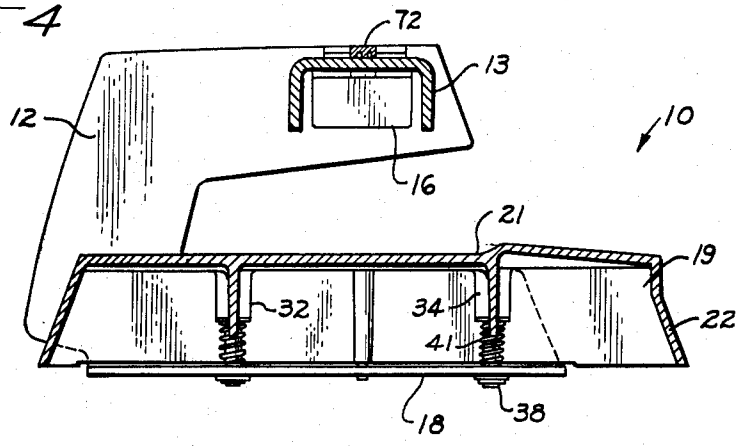

FIG. 5

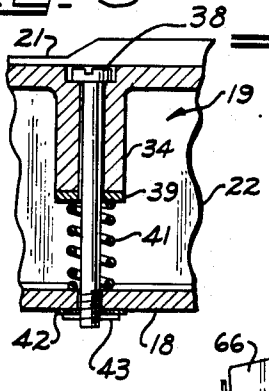

FIG. 6

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PLATEN ROLLER MOUNTING MEANS IN MANUALLY OPERABLE PRINTING MACHINES

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FIG. 7

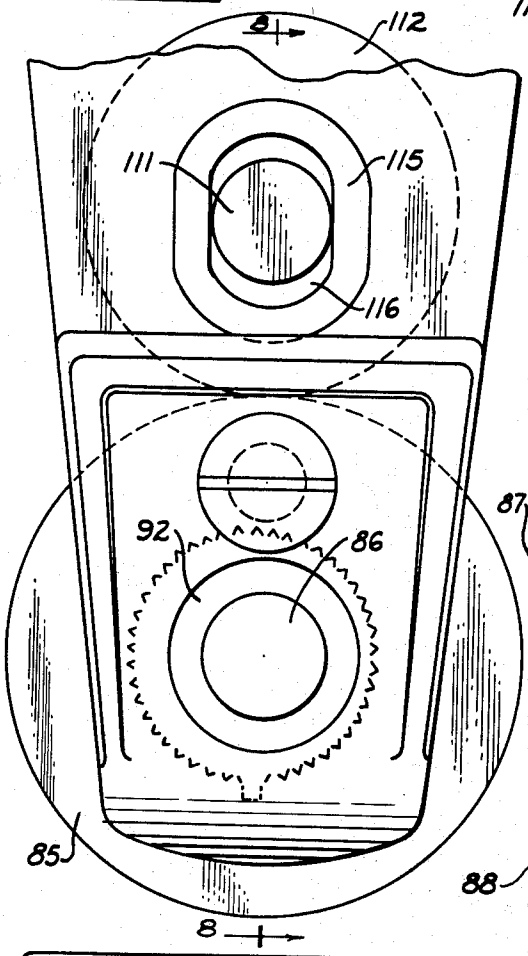


FIG. 8

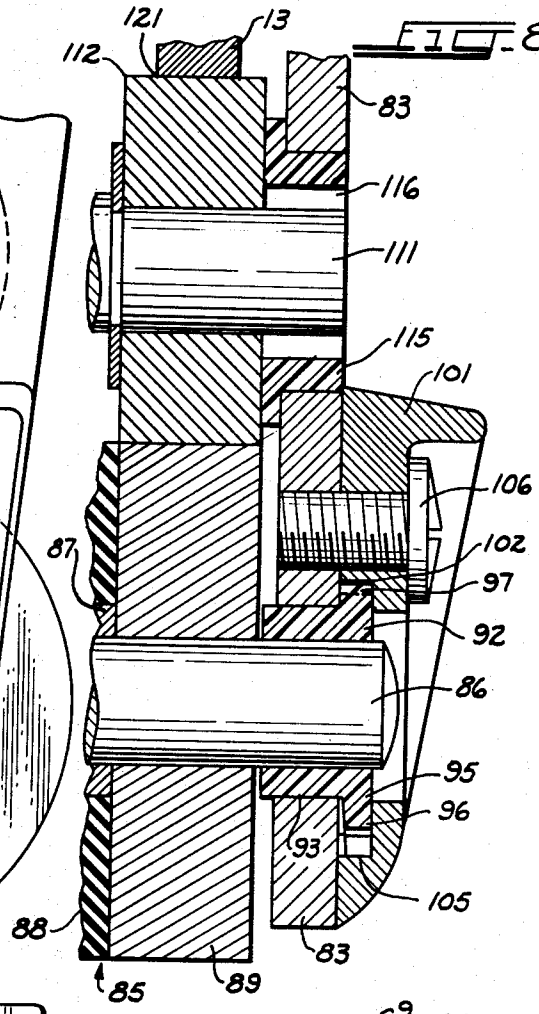


FIG. 10

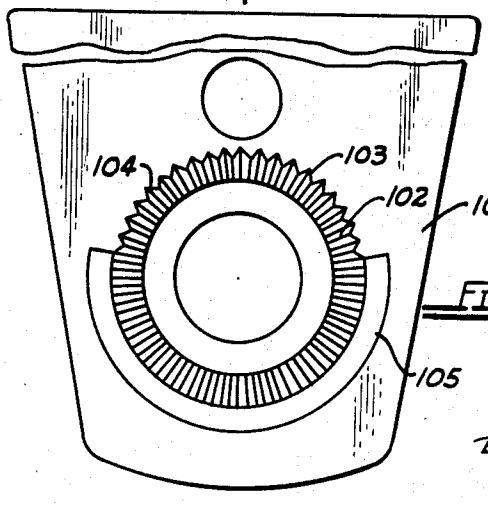
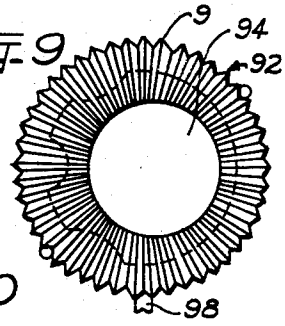


FIG. 9



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United States Patent Office 3,179,046 Patented Apr. 20, 1965

3,179,046

PLATEN ROLLER MOUNTING MEANS IN MANUALLY OPERABLE PRINTING MACHINES

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Filed Nov. 16, 1961, Ser. No. 152,846
6 Claims. (Cl. 101—269)

This invention relates to a new and improved manually operable printing machine.

Hand-operated printing machines are presently employed for a variety of purposes, including the recording of credit transactions, library and hospital operations, and the like. Machines of the general kind with which the present invention is concerned usually provide a base which carries a printing anvil and means for removably mounting a small printing device, such as an embossed credit card, on the anvil. The base of the machine is provided with suitable gauges for holding business instruments in printing position on the anvil. Typically, the base may also carry a dater and a fixed printing plate. The latter could be mounted on the same anvil as carries the replaceable printing plate but ordinarily is supported upon a separate anvil. Manually operable means are provided to move the ink-impregnated roller platen across the surface of a business form supported upon the base to imprint the form with data from the printing plate or plates and the dater.

In the use of hand-operated printing machines of this general kind, any tendency of the platen to drag or slide across the face of the business instrument being imprinted may result in smearing of the printed data. As a consequence, the printed data may be made illegible. The problem is even more acute if the printing machine is employed to imprint code data to be interpreted subsequently by mechanical or electronic means, since smearing of the imprint may distort the code data to a substantial extent. Consequently, it is important to restric movement of the platen to rolling contact with the business instrument. It is equally important to maintain relatively precise control over the platen pressure to assure clear and legible printing. Consequently, reduction of wear on the bearings or other members supporting and guiding the platen is of prime importance.

Another problem presented in connection with printing machines of this kind results from variations in the effective thickness of the printing plates employed in the use of the machines. Corresponding difficulties are presented where a given machine may be used to imprint business instruments that vary substantially in thickness. Thus, if an unusually thick business instrument is printed, or if a relatively thick printing plate is utilized, the resultant increase in pressure of the roller platen against the business instrument may smear the imprint, may buckle the business instrument, or may tear the business instrument. The problems attendant upon variations in thickness of the printing devices and in the thickness of the business instruments have been effectively solved, in some machines, by resilient mounting of the printing anvil upon the machine base. A particularly useful and advantageous arrangement of this kind is described and claimed in Patent No. 2,909,998 of John A. Maul. In many applications, however, it is desirable to mount the anvil rigidly on the base of the printing machine, particularly where the machine is intended for variety of different uses and installation of a given anvil structure may be required at a field location.

It is an object of the present invention, therefore, to provide a new and improved mounting structure for a

roller platen, in a manually operable printing machine, that permits positive engagement of the roller platen with a guide structure and with a business form supported upon the printing anvil of the machine, and at the same time to limit effective engagement of the platen with these members to rolling contact and thereby reduce wear on the bearings and other principal elements of the mounting arrangement.

It is a particular object of the invention to minimize transverse forces on the platen bearings of a manually operable printing machine of the kind utilizing a roller platen.

Another object of the invention is to provide for quick and convenient adjustment in alignment of the roller platen, in a manually operable printing machine, relative to a guide structure that guides movement of the platen across a printing anvil.

Another object of the invention is to compensate for variations in thickness of printing devices and business instruments, in a manually operable printing machine, without necessitating resilient mounting of the anvil utilized to support the printing device upon a base structure.

A further object of the invention is to compensate for variations in thickness of individual printing devices and business forms, in a manually operable printing machine of the kind utilizing replaceable printing devices supported upon an anvil that is rigidly mounted to a base structure, and at the same time allow the utilization of a strong and rigid guide frame for the platen of the machine.

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 is now considered to be the best mode contemplated for 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 front elevation view of a manually operable printing machine constructed in accordance with one embodiment of the present invention;

FIG. 2 is a plan view of the printing machine of FIG. 1 with the superstructure thereof broken away to show the upper surface of the base of the machine;

FIG. 3 is a sectional view taken approximately along line 3—3 in FIG. 2 and illustrating the mounting of the platen in the machine;

FIG. 4 is a sectional view of the printing machine taken approximately along line 4—4 in FIG. 2;

FIG. 5 is a detail sectional view taken approximately along line 5—5 in FIG. 2;

FIG. 6 is a further sectional view taken approximately as indicated by line 5—5 in FIG. 2 and also including a sectional illustration of the platen mount of the printing machine;

FIG. 7 is a detail elevation view of the platen mounting, drawn to an enlarged scale;

FIG. 8 is a sectional view taken approximately along line 8—8 in FIG. 7;

FIG. 9 is a detail view of a bushing employed in the platen mounting arrangement of FIGS. 7 and 8; and

FIG. 10 is a detail view of the rear or inner surface of a cap member employed to mount the bushing of FIG. 9 in position of use.

The manually operable printing machine 10 illustrated in the drawings, and particularly in FIGS. 1–6, comprises a preferred embodiment of the present invention.

The printing machine 10 includes a frame comprising two vertical frame members 11 and 12 that are bridged by a transverse frame member 13. The opposite ends of the frame member 13 are rigidly affixed to the frame members 11 and 12, respectively, by suitable means such as the mounting brackets 15 and 16 (see FIGS. 1, 4 and 6). The transverse frame member 13 is of channel-shaped construction, the open portion of the channel facing downwardly, as clearly shown in FIGS. 4 and 6, and affording two substantially coplanar guide surfaces. The fastening means used to secure the channel-shaped transverse frame member 13 to the mounting brackets 15 and 16 and to mount the brackets on the vertical frame members 11 and 12 may be conventional.

The vertical frame members 11 and 12 are provided with integral horizontally extending mounting flanges 17 and 18, respectively. The flanges 17 and 18 constitute a base support portion for the frame of the printing machine 10. A base 19 is mounted upon the flanges 17 and 18 in parallel spaced relation to the transverse frame member 13, the latter comprising a platen guide as described more fully hereinafter. The base 19 is preferably in the form of a casting affording an upper anvil mounting plate 21 encompassed by a depending skirt portion 22. To provide a relatively strong base without requiring excessive weight, the base 19 is preferably provided with a plurality of transverse stiffening ribs 23, 24, 25, 26, 27 and 28 as indicated in the several views of FIGS. 1–6. In addition, the base 19 is provided with four depending bosses 31, 32, 33 and 34 that are utilized in mounting the base 19 upon the flanges 17 and 18 of the machine frame.

The construction of the mounting means utilized to mount the base 19 on the frame of the printing machine 10, which comprises one of the important features of the present invention, is best shown in FIGS. 4 and 5. As illustrated therein, each of the bosses such as the boss 34 is provided with a central aperture for receiving a mounting bolt as, for example, the bolt 38. The bolt 38 extends downwardly through the boss 34 (FIG. 5) and through the central aperture in a retainer washer 39. The bolt further extends beyond the retainer 39 through an aperture in the mounting flange 18. A compresison spring 41 is interposed between the retainer 39 and the mounting flange 18 of the frame. The bottom end of the bolt 38, as seen in FIG. 5, is engaged by a washer 42 and a nut 43. A conventional machined nut may be utilized if desired, but the illustrated arrangement employs a spring-type speed fastener as the lock nut 43. In mounting the base 19 on the flange 18, the bolt 38 is threaded into fastener 43 far enough to place the spring 41 under substantial pressure to afford a relatively firm mounting for the base of the frame. On the other hand, the spring 41 must not be compressed to its complete limit, but must be capable of further compression for the reasons set forth hereinafter. The mounting arrangement at each of the remaining bosses 31, 32 and 33 is the same as at the boss 34, the individual mounting studs being generally indicated in FIG. 2 by the reference numerals 35, 36 and 37, respectively.

The base 19 is utilized to support one or more printing anvils that are employed to carry printing devices in operative position for use by the machine 10. One anvil arrangement that may be adopted is illustrated in FIG. 2 and comprises a first printing anvil 45 and a second printing anvil 46. The mounting for the first printing anvil 45 is shown in detail in FIG. 3. As illustrated therein, the anvil 45 is mounted upon a recessed central portion 47 of the upper plate 21 of the base 19. A plurality of mounting studs 48 project upwardly from the base portion 47 into engagement with the lower surface of the anvil 45. The anvil is held rigidly in place on the studs 48 by suitable means such as a depending pin 49 that is affixed to the anvil and extends downwardly through an

aperture in the central portion 47 of the base. A spring 51 is disposed in encompassing relation to the pin 49, one end of the spring engaging the under surface of the base member 47 and the other end of the spring engaging a retaining washer 52 mounted on the pin. With this mounting arrangement, the spring 51 holds the anvil 45 in firm engagement with all of the upwardly projecting studs 48 without interfering with adjustment of the vertical position of the anvil, which may be effected by adjusting the heights of the individual studs 48.

In the construction shown in FIGS. 2 and 3, a dater 53 is incorporated in the printing machine 10. The dater 53 is supported in a suitable mounting bracket 54 suspended from the anvil 45 by means of a plurality of threaded studs 55 that project downwardly from the bottom of the anvil. The type wheels of the dater project up through a suitable aperture in the anvil.

As shown in FIG. 6, the anvil 46 is mounted on the recessed portion 47 of the base in a manner essentially similar to the mounting for the anvil 45. Thus, a plurality of vertically adjustable studs of support posts 59 are mounted on the base portio 47 and project upwardly into engagement with the bottom surface of the anvil 46. The general location of the support posts 59 is indicated in FIG. 2. A pair of depending pins 61 are rigidly affixed to the anvil 46 and project downwardly through suitable apertures in the base. A corresponding pair of springs 62 (see FIG. 6) are mounted on the pins 61 and are utilized to hold the anvil 46 firmly in engagement with the supporting studs 59. Thus, the vertical position and alignment of the anvil 46 may be conveniently adjusted, with respect to the base 19, but the anvil is firmly and rigidly mounted on the base. Preferably, a printing device gauge 64 is mounted in encompassing relation to the anvil 46 to afford a means for removably mounting a printing device, such as an embossed credit plate, on the anvil 46 in the position indicated by the printing device 63 in FIG. 2. In the illustrated arrangement, the gauge 64 is a molded plastic member, but a metal gauge or other form of gauge construction may be employed if desired. A second printing device 65 is shown mounted upon the first anvil 45. In a typical credit system, the device 65 would be utilized to identify a retail store location or the like, whereas the device 63 would be a customer credit plate. A spring 60 maintains the gauge 64 in engagement with the anvil 46.

The base 19 may also be provided with suitable gauges for maintaining a credit transaction form or other business instrument 150 (FIG. 6) in printing position above the printing devices 63 and 65 and the dater 53 on the anvils of the machine. For example, an adjustable front gauge 66 and an adjustable rear gauge 67 may be mounted on the base 19. These gauges may vary substantially in configuration and in range of adjustment depending upon the business form to be imprinted in the machine 10.

As noted hereinabove, the frame member 13 comprises a guide frame member that extends across the base 19 transversely of the anvils 45 and 46 in spaced relation to the upper side of the base. This guide frame member 13 is utilized to support and guide movements of a platen carriage 71 across the machine. To this end, a guide rail 72 is mounted on the upper surface of the transverse guide member 13, being secured thereto by a series of suitable bolts or other fastening means 73.

The platen carriage 71 comprises a substantially C-shaped metal housing or frame 74 that is fitted into a complementary transverse central depression or slot in a molded plastic handle member 75. Preferably, the handle member 75 is a molded plastic element, although, if desired, a metal handle member may be employed. A mounting stud 76 is affixed to the central portion of the housing 74 by a suitable means, as by projection welding of the stud onto the housing. The stud 76 extends down through an aligned opening in the handle

member 75 and through a mounting plate 77, being held in place by a suitable nut 78 and, preferably, a lock washer 79 (see FIG. 6). This provides a firm and rigid mounting of the platen carriage frame or housing 71 on the handle member 75.

The handle member 75 includes two transverse walls 81, one of which appears in FIG. 6. These two transverse walls of the handle member are provided with suitable slots to receive the guide rail 72 and are thus effective to guide the movement of the carriage 71 along the transverse frame member 13. Two of small rollers 82 may be mounted in suitable recesses in the handle member 75 to support the carriage 71 upon the upper surface of the frame member 13 (FIG. 1).

The platen carriage frame 74 includes two elongated depending elements 83 and 84 that project well below the transverse frame member 13. A roller platen 85 is mounted between the carriage members 83 and 84 in position to be rolled across a business instrument disposed in printing position on the anvils 45 and 46. The mounting arrangement utilized for the roller platen 85, which comprises one of the important features of the present invention, is best shown in the detail views of FIGS. 7–10, considered in conjuction with the principal sectional view provided by FIG. 6.

Thus, with reference to these figures, it is seen that the roller platen 85 includes a central shaft 86, the medial portion of the shaft carrying a metal sleeve 87. On the metal sleeve 87 there is mounted a porous ink-impregnated platen element 88. The cylindrical platen element 88 may be of known construction, ink-impregnated platen structures of this kind being well known in the art. Near the opposite ends of the shaft 86, immediately adjacent the ends of the sleeve 87 and the cylindrical platen element 88, there are mounted two metal rollers 89 and 91. The shaft 86 projects outwardly beyond each of the two bearing rolls 89 and 91, as shown in FIG. 6. It should be noted that the two bearing rollers 89 and 91 are essentially equal in outside diameter to the outside diameter of the platen element 88; it is important that this relationship be maintained in order to obtain the full benefits of the present invention.

FIGS. 7–10 illustrate in detail, and on an enlarged scale, the mounting of the right-hand end of the platen shaft 86 in the depending portion 83 of the platen carriage frame. The mounting structure at the opposite end of the platen, adjacent the bearing roll 91, is the same, and hence has not been shown in detail.

Thus, and as shown in FIGS. 7 and 8, the end of the shaft 86 extending beyond the bearing roll 89 projects into an eccentric bearing member 92. The bearing member 92, which is preferably a molded nylon or other substantially self-lubricating bearing element, includes a substantially cylindrical mounting portion 93 that is engaged in a suitable aperture in the platen carriage member 83, being rotatable therein. The mounting portion 93 of the bearing member is provided with an eccentric aperture 94 (see FIGS. 7 and 9) for receiving the shaft 86. The bearing member 92 further includes a flange portion 95 that is molded or otherwise formed to afford a multiplicity of regularly spaced teeth 96 on the surface thereof. The teeth 96 project outwardly of the face of the flange 95, as shown in FIG. 8, and correspond to a similar series of peripheral teeth 97 on the bearing member 92. An indexing projection 98 is also formed as an integral part of the bushing or bearing member 92 to facilitate adjustment of the vertical bearing alignment as described hereinafter.

The bushing 92 is held in place in the platen carriage frame 83 by a bearing cap 101. As shown in FIGS. 8 and 10, the rear surface of the cap 101 is provided with a recess 102 for receiving the flange portion 95 of the bushing 92. This recess 102 is provided with a series of regularly spaced teeth 103 corresponding to the surface teeth 96 on the bushing. When the cap is in place, the teeth 103 are interfitted with the bushing teeth 96 to hold the bushing in fixed angular alignment relative to the cap. In addition, a portion of the recess 102 may be provided with a series of teeth 104 for receiving and interfitting with the peripheral teeth 97 of the bearing bushing. An additional angular recess 105 is provided in the rear surface of the cap 101 to receive the projecting index element 98 of the bushing 92. The cap 101 is mounted securely in place on the platen carriage frame member 83 by suitable means such as a mounting bolt 106.

A bearing roller shaft 111 is included in the structure of the platen carriage 71 and extends across the lower portion of the platen carriage in spaced relation to the roller platen 85. The shaft 111 has mounted thereon a pair of idler bearing rollers 112 and 113, these bearing rollers being disposed in spaced relation relative to each other and in alignment with the platen bearing rollers 89 and 91 respectively. The bearing roller 112 is thus interposed between the platen bearing roller 89 and a lower guide surface 121 on the transverse frame member 13. Similarly, the idler roll 113 is interposed between the platen bearing roll 91 and the under surface of the opposite leg of the channel-shaped frame member 13, this relationship being best illustrated in FIG. 6. As noted above, the downwardly facing guide surfaces of the frame member 13 are essentially coplanar and hence may be considered to represent portions of a single guide surface.

The opposite ends of the shaft 111 are suspended in a pair of bushings mounted in the depending platen carriage frame members 83 and 84. The construction and mounting of these bushings is best illustrated in FIGS. 7 and 8, showing the construction of one side of the machine, the opposite side being essentially identical. As shown in FIGS. 7 and 8, the bushing 115 is mounted in a suitable aperture in the carriage frame member 83, preferably being press-fit thereinto. The bushing is provided with a central aperture 116 for receiving the end of the shaft 111, but this is not a circular aperture. Instead, the aperture 116 is vertically elongated, permitting vertical movement of the shaft 111 within the bushing. A similar construction is utilized at the opposite side of the machine, as noted above. Consequently, the bearing shaft 111 is free to move vertically relative to the platen carriage housing 83 and relative to the transverse frame member 13, the bushings that engage the opposite ends of the shaft serving only to maintain it in vertical alignment with the shaft 86 of the roller platen 85 (see FIG. 7).

In assembling the platen roll 85 in the carriage 71 (FIGS. 6–10) the parts are assembled approximately as shown except that the two bearing caps exemplified by the bearing cap 101 are not mounted in place. The eccentric bushings for the platen shaft 86 are then rotated to elevate the shaft 86 relative to the carriage frame 83 and thereby engage the two bearing rolls 89 and 112 in firm contact with each other. This adjustment is also effective to bring the idler bearing roll 112 into firm engagement with the guide surface 121 of one leg of the channel-shaped frame member 13. A similar adjustment is effected at the opposite side of the platen roll. The two index members exemplified by the index element 98 (FIG. 9) of the eccentric platen bearing bushings are utilized as guides to assure substantially equal pressure in the bearing roll combinations at the two sides of the platen.

On the one side of the machine, as shown in FIGS. 7 and 8, the bearing cap 101 is then placed in position, the teeth on the rear surface of the bearing cap being engaged with the corresponding teeth on the bushing 92. The mounting bolt 106 is then used to secure the bearing cap to the carriage frame member 83, locking the bushing 92 in the desired angular orientation and preventing subsequent rotation thereof. The corresponding bearing cap on the opposite side of the roller platen is similarly mounted in position to lock the eccentric

platen roller bushing in place on this side of the printing machine. It is thus seen that this mounting arrangement affords a simple and convenient way of supporting the platen roller in position in the carriage 71 (FIG. 6) with the two sets of bearing rolls firmly engaged with each other and with the idler roll of each set firmly engaged with the guide surface afforded by the aligned legs of the channel-shaped frame member 13.

In the use of the printing machine 10, assuming that suitable printing devices are in position of use on the anvils as shown in FIG. 2, a business instrument to be imprinted is disposed on the base in the desired position determined by the gauges such as the gauges 66 and 67. If the platen carriage 71 is in the position illustrated in FIG. 1, the carriage is moved to the right as indicated by the arrow A. Movement of the carriage rolls the platen roller 85 across the business instrument, imprinting the instrument with the desired data from the printing plates 63 and 65 and the dater 53.

As the platen roller 85 engages the business form supported upon the anvil 45 and overlying the printing plate 65, the platen roller is rotated. Because the outside diameter of each of the bearing rollers 89 and 91 is approximately the same as the outside diameter of the platen element 88, these two bearing rollers are rotated with a peripheral velocity approximately equal to the surface velocity of the central imprinting portion 88 of the platen. That is, the angular velocities of the two bearing rollers 89 and 91 are the same as the angular velocity of the printing roll and the linear velocities at their peripheries are also equal. As a consequence, each of the idler rollers 112 and 113 is rotated with a surface velocity equal to the surface velocity of the platen element 88. The angular velocities of the two idler rolls may be different from the angular velocities of the platen bearing rolls by which they are engaged if the idler rollers are smaller or larger in diameter than the platen. The surface speeds, however, are the same. Consequently, at the points of engagement of the idler roller with the guide frame member 13, the idler rolls are limited to rolling contact. With particular reference to FIG. 8, the described arragement limits the engagement of the idler roll 112 with the guide surface 121 of the frame member 13 to rolling contact, there being no sliding contact because the peripheral speed of the roller 112 is accurately matched to the peripheral speed of the roller platen element 88 in its engagement with the business instrument on the base of the machine. A similar relationship, of course, obtains at the surface of the member 13 engaged by the other idler roll 113. Accordingly, it is seen that the mounting arrangement described hereinabove restricts the bearing rolls to rolling contact with each other and with the fixed surfaces that they engage, preventing sliding of these members which might result in smearing of the imprint or in variations in printing pressure due to excessive wear on the bearing rolls or on the guide surfaces of the frame member 13.

Minor differences in diameter between the end bearing rolls 89 and 91 and the roller platen 88 may prove necessary in some applications, but these can be tolerated without departing from the present invention. Thus, in some printing machines the bearing roll at one end of the platen may be aligned with the auxiliary plate retainers 45A (FIG. 2) for the printing plate 65. Where multiple-copy business instruments are employed, it may be desirable to make the end bearing rolls very slightly smaller than the platen rolls to avoid imprinting the business instrument with impressions of these auxiliary fasteners. As long as there is no substantial departure from the desired equal-diameter relationship, this does not appreciably increase the horizontal force necessary to move the platen across the business instrument in a printing operation.

In addition to limiting the bearing members to rolling contact as described, the mounting arrangement for the platen eliminates virtually all lateral or transverse forces on the platen bearing members. Furthermore, the described mounting arrangement provides for quick and convenient adjustment of the platen relative to the guide surface afforded by the transverse frame member 13.

In the unique mounting arrangement for the base 19 of the printing machine 10 (FIGS. 4 and 5), the base is resiliently supported upon the platen-carrying frame. Thus, the machine 10 may be supported on rubber feet 122 mounted on the frame flanges 17 and 18, or the frame may be otherwise secured to a suitable support surface. Use of this construction, instead of the usual expedient of mounting the machine base on a support surface with the frame affixed to and supported by the base, provides effective compensation for substantial variations in thickness of the printing devices or the business forms employed in the use of the machine. That is, the mounting arrangement for the base 19 makes it possible to use anvils that are rigidly mounted on the base, yet enables the machine to compensate automatically for variations of form or card thickness. Moreover, this is accomplished without requiring the use of a frame that is light enough to bend away from the anvil of the machine in the presence of an excessively thick business instrument or printing device; a rigid and rugged superstructure may be utilized and preferably is utilized in construction of the machine.

Thus, when manufacture of the machine is completed, the heights of the anvils 45 and 46 are adjusted to afford an optimum printing pressure with business instruments and printing devices of given thickness. If the thickness of either the business instrument or the printing plate exceeds this standard to any substantial extent, the pressure exerted on the base 19 by the platen 85 compresses the mounting springs for the base (e.g. spring 41) and relieves the pressure at the platen. As a result, smearing, buckling, or tearing of the printed form is avoided. Because the mounting springs are spaced well outside the printing area, there is little tendency to tip the base 19, relative to the frame. Rather, the entire base tends to move evenly away from the platen-carrying portion of the frame, avoiding variations in the printed data that might otherwise result.

Hence, while preferred embodiments of the invention have been described and illustrated, it is to be understood that they 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. A manually operable printing machine comprising: a base; a printing anvil mounted on said base; a frame extending across said base and affording a guide surface extending transversely of said anvil in parallel spaced relation thereto; a platen carriage mounted on said frame for movement longitudinally thereof across the anvil; a roller platen of given diameter; and mounting means for mounting said roller platen on said carriage for movement along said frame across said anvil and for limiting effective engagement therewith to rolling contact, said mounting means comprising a pair of coaxial end bearing rolls mounted on said platen for rotation therewith and equal in diameter to said platen, and a pair of spaced idler bearing rolls of equal diameter interposed between respective ones of said platen end bearing rolls and said guide surface in firm rolling contact with each.

2. A manually operable printing machine comprising: a base; a printing anvil mounted on said base; a frame extending across said base and affording a guide surface extending transversely of said anvil in parallel spaced relation thereto; a platen carriage mounted on said frame for movement longitudinally thereof across the anvil, said platen carriage including a handle portion supported on said frame and a pair of carriage frame members depending therefrom, in spaced relation relative to each other,

into the space between the guide surface and the anvil; an ink-impregnated roller platen of given diameter, mounted on a platen shaft for rotation therewith; mounting means for mounting said roller platen between said carriage frame members for movement along said guide frame across said anvil and for limiting effective engagement therewith to rolling contact, said mounting means comprising a pair of coaxial metal end bearing rolls mounted on said platen shaft for rotation therewith and equal in diameter to said platen, and a pair of spaced idler bearing rolls of equal diameter interposed between respective ones of said platen end bearing rolls and said guide surface; and means, included in said mounting means, for adjusting the vertical position of each end of the platen shaft, independently of the other end, to assure firm rolling contact of each idler roll with the associated platen end bearing roll and with the aforesaid guide surface.

3. A manually operable printing machine comprising: a base; a printing anvil mounted on said base; a guide frame extending across said base and affording a guide surface extending transversely of said anvil in parallel spaced relation thereto; a platen carriage mounted on said guide frame for movement longitudinally thereof across the anvil and including a carriage frame extending from said guide frame toward said base; a roller platen of given diameter; and mounting means for mounting said roller platen on said carriage frame for movement along said guide frame across said anvil and for limiting effective engagement therewith to rolling contact, said mounting means comprising a pair of coaxial end bearing rolls mounted on said platen for rotation therewith and equal in diameter to said platen, and a pair of spaced idler bearing rolls of equal diameter affixed to a bearing shaft for rotation therewith and interposed between respective ones of said platen end bearing rolls and said guide surface in firm rolling contact with each, said bearing shaft being engaged in bearings in said carriage frame permitting limited movement thereof toward and away from said guide surface but maintaining said shaft in parallel axial alignment with said roller platen.

4. A manually operable printing machine comprising: a base; a printing anvil mounted on said base; a main frame extending across said base and affording a guide surface extending transversely of said anvil in parallel spaced relation thereto; a platen carriage mounted on said frame for movement longitudinally thereof across the anvil, said carriage including a pair of spaced carriage frame members extending toward said base; a roller platen of given diameter mounted on a platen shaft; and platen mounting means, for mounting said platen shaft in adjustable spaced relation to said main frame, including a pair of bushing members rotatably mounted on respective ones of said carriage frame members and having corresponding eccentric shaft mounting apertures for receiving the ends of said shaft, each of said bushing members further having a flange affording a plurality of uniform outwardly facing serrations; a pair of bearing retainer members each having a plurality of uniform serrations adapted to interlock with the serrations on one of said bushing members, and means for releasably securing each of said retainer members on one of said carriage frame members in interlocking relation with one of said bushing members to hold the bushing member against rotational movement and thereby maintain each end of the shaft in predetermined spaced relation to said main frame.

5. A manually operable printing machine comprising: a base; a printing anvil mounted on said base; a main frame extending across said base and affording a guide surface extending transversely of said anvil in parallel spaced relation thereto; a platen carriage mounted on said frame for movement longitudinally thereof across the anvil, said carriage including a pair of spaced carriage frame members extending toward said base; a roller platen of given diameter mounted on a platen shaft; and mounting means for mounting said roller platen between said carriage frame members for movement along said frame across said anvil and for limiting effective engagement therewith to rolling contact, said mounting means comprising a pair of coaxial end bearing rolls mounted on said platen shaft and equal in diameter to said platen, and a pair of spaced idler bearing rolls of equal diameter interposed between respective ones of said platen end bearing rolls and said guide surface in rolling contact with each, said mounting means further including a pair of bushing members rotatably mounted on respective ones of said carriage frame members and having corresponding eccentric shaft mounting apertures for receiving the ends of said shaft, each of said bushing members further having a flange affording a plurality of uniform outwardly facing serrations; a pair of bearing retainer members each having a plurality of uniform serrations adapted to interlock with the serrations on one of said bushing members, and means for releasably securing each of said retainer members on one of said carriage frame members in interlocking relation with one of said bushing members to hold the bushing member against rotational movement and thereby maintain each end of the shaft in predetermined spaced relation to said main frame.

6. A manually operable printing machine comprising: a base; a printing anvil mounted on said base; a main frame extending across said base and affording a guide surface extending transversely of said anvil in parallel spaced relation thereto; a platen carriage mounted on said frame for movement longitudinally thereof across the anvil, said carriage including a pair of spaced carriage frame members extending toward said base; a roller platen of given diameter mounted on a platen shaft; and platen mounting means comprising a pair of bushing members rotatably mounted in respective ones of said carriage frame members and having eccentric shaft mounting apertures for receiving the ends of said shaft, each of said bushing members further having a peripheral flange affording a plurality of uniform outwardly facing axial and radial serrations, a pair of bearing retainer members each having a recess for receiving the flange of one of said bushing members, each said recess being formed with a plurality of axial and radial serrations for interlocking engagement with the corresponding serrations on the bushing member flange received therein; and means for releasably securing each of said retainer members on one of said carriage frame members in interlocking relation with one of said bushing members to hold the bushing member against rotational movement and thereby maintain each end of the shaft in predetermined spaced relation to said main frame.

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