

Aug. 25, 1959

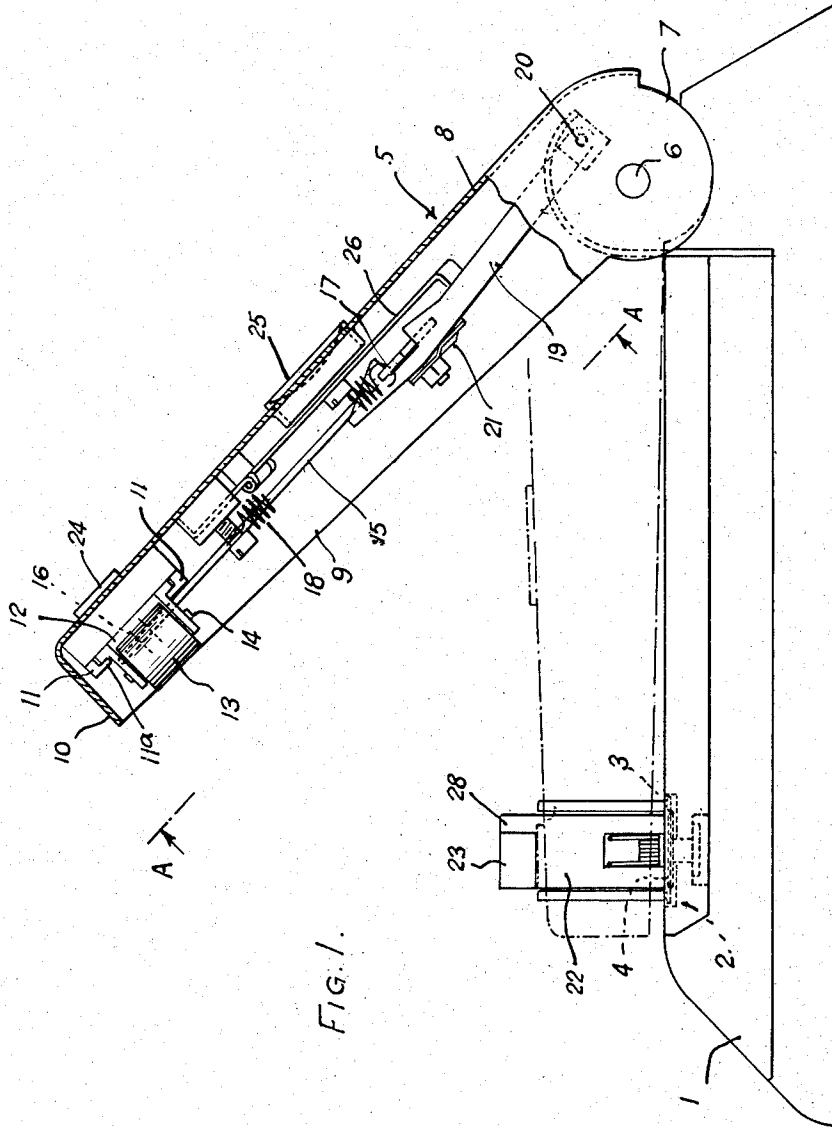
JEAN-PAUL R. M. EVANS

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IMPRINTING APPARATUS

Filed Feb. 18, 1955

4 Sheets-Sheet 1



Aug. 25, 1959

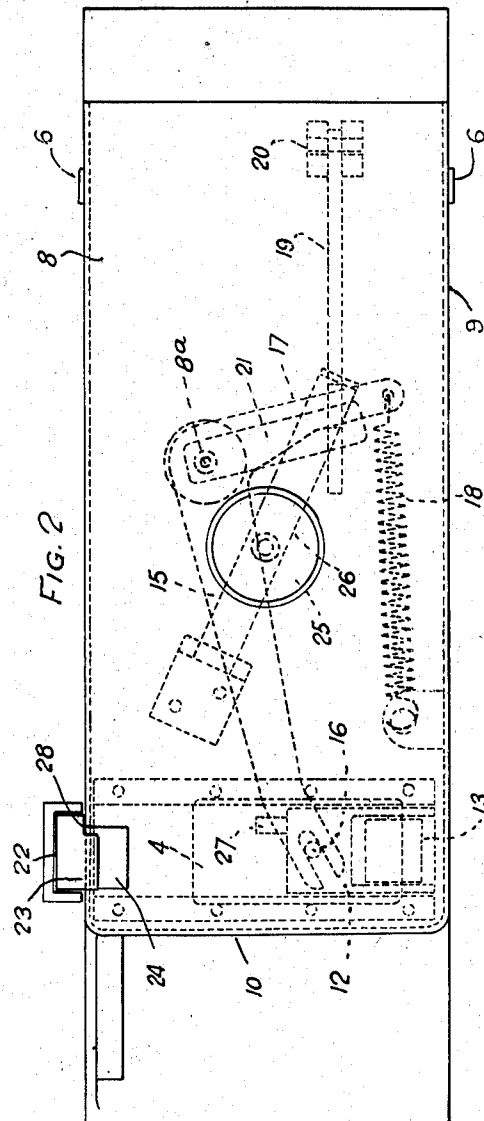
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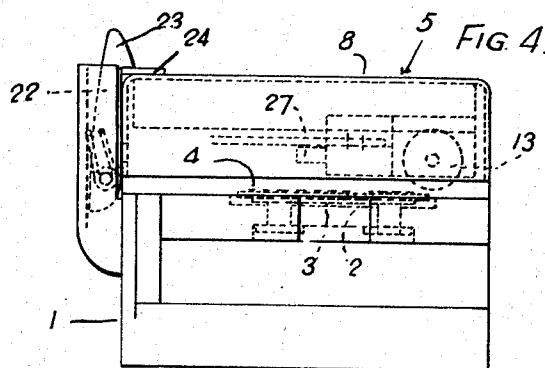
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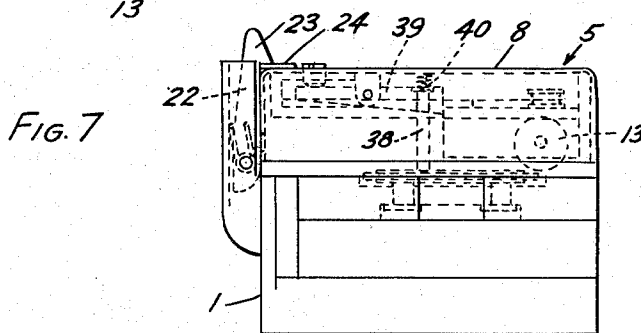
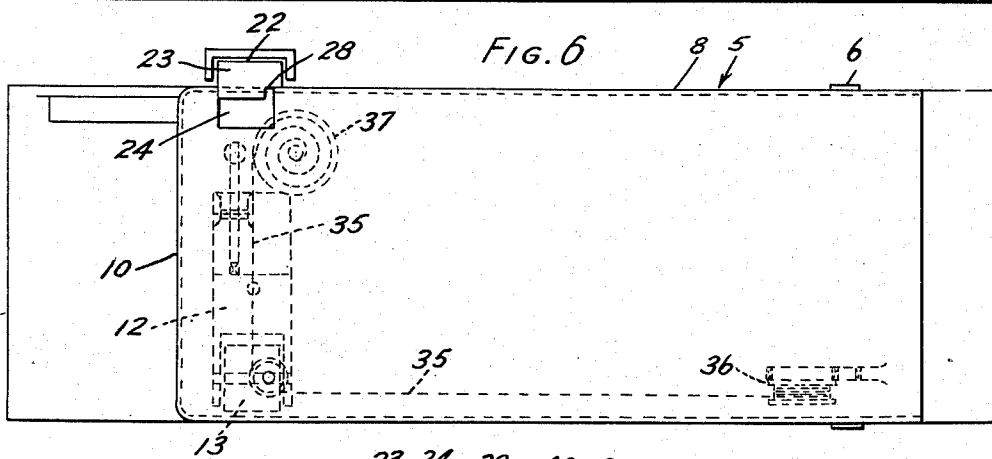
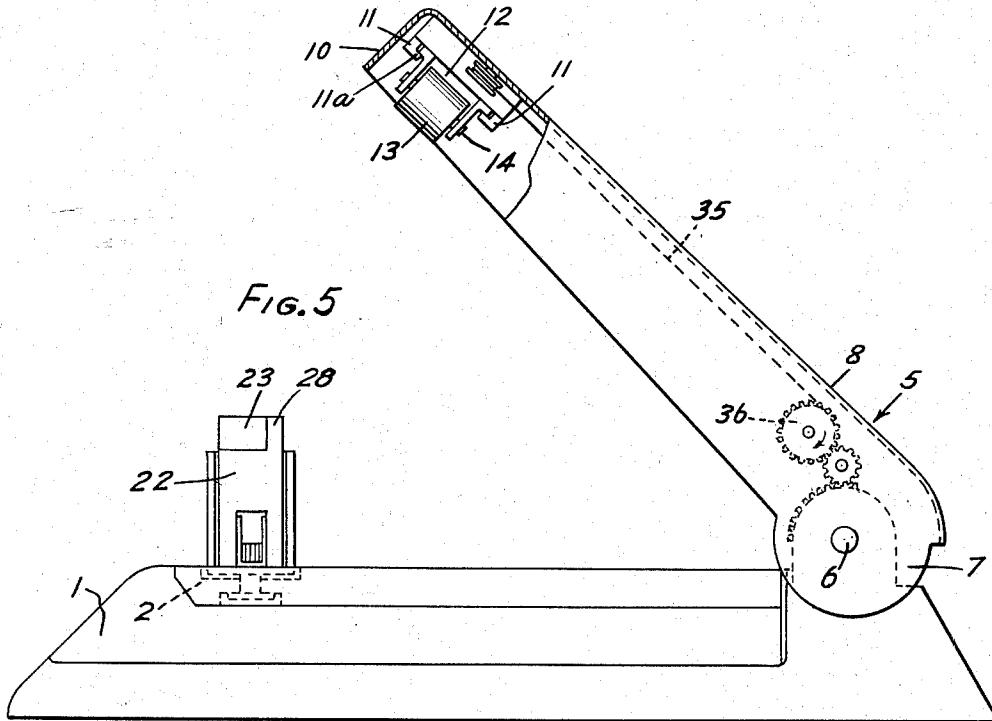
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IMPRINTING APPARATUS

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9 Claims. (Cl. 101—269)

This invention relates to imprinting apparatus of the kind comprising a base adapted to support a printing plate, and a printing head mounted for pivotal movement towards and away from the base and carrying an impression roller adapted to co-operate with the printing plate to effect an imprinting operation when the head is moved into imprinting relation with respect to the base.

The imprinting apparatus is particularly adapted for use as a hand operated device for imprinting data, such as a name and address or account number on bills, vouchers, pages of sales books or the like.

According to the present invention an imprinting device of the kind referred to is provided with an impression roller pivotally mounted on a carriage adapted to be moved transversely of the printing head by a spring to effect an imprinting operation, means being provided whereby the spring is automatically loaded as the printing head is moved into imprinting position, and means for releasing the energy stored in the spring to effect the transverse movement of the carriage, when the printing head is in imprinting position.

To enable the invention to be fully understood it will now be described with reference to the accompanying drawings, in which:

Fig. 1 is a side view partly in section of a hand operated imprinting device according to one embodiment of the invention;

Fig. 2 is a plan view of the device illustrated in Fig. 1 but showing the printing head lowered into imprinting position;

Fig. 3 is a view looking in the direction of the arrows A—A of Fig. 1;

Fig. 4 is an end view of the device as shown in Fig. 2;

Fig. 5 is a side view partly in section of another embodiment of the present invention;

Fig. 6 is a plan view of the device shown in Fig. 5 but showing the printing head lowered into imprinting position; and

Fig. 7 is an end view thereof.

As shown in the accompanying drawings a hand operated imprinting device comprises a base 1 formed with a recess or depression 2 adjacent one end in which is mounted a spring supported platform 3 on which a substantially flat embossed printing plate 4 is adapted to be detachably positioned.

A printing head 5 is provided having a hinge pin 6 journaled in upstanding lugs 7 formed on the base 1. Accordingly the printing head is mounted for pivoting movement towards and away from the upper surface of the base carrying the printing plate 4. As shown, the printing head is in the form of a hollow casing having a top 8, side walls 9 and an end wall 10.

On the underface of the top 8 of the printing head adjacent to the front wall 10, there is provided a pair of parallel members 11 having inwardly directed flanges 11a forming guide means for a carriage 12 which supports an ink impregnated roller 13 which functions as an impression roller, the ends of the spindle 14 of the roller 13

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being journaled in adjacent parts of the carriage. The carriage is adapted to be moved transversely of the printing head when an imprinting operation is to be effected.

A bell crank is pivoted to the under side of the top 8 at 8a and includes an arm 15 having a bifurcated end engaging a stud 16 on the carriage 12 and an arm 17 extending transversely of the top 8. A spring 18 is provided having one end anchored to the top 8 and the other end secured to the arm 17 so as to urge the bell crank into the position indicated in Fig. 3 to position the carriage 12 at one side of the printing head.

A latch arm 19 is pivoted at 20 to part of the base 1, the free end of the arm 19 being formed with a hook or like shaped part for engaging over the arm 17. It will be noted that the pivot 20 of the latch arm 19 is not coaxial with that of the printing head but is spaced some distance rearwardly and above the axis of the hinge pin 6. A leaf spring 21 extends transversely of the arm 19 and urges it towards the top 8 of the printing head into sliding engagement with the arm 17.

The imprinting device is shown in Fig. 1 in its inoperative position, the printing head having been pivoted into the raised position indicated in the figure, by spring means not shown.

In operation a printing plate for a particular customer is positioned in the recess on the base 1 of the device and a bill, voucher or the like on which particulars of purchases, etc., made by the customer have been entered, is positioned on the printing plate 4 and the printing head is then moved downwardly about its pivot 6 towards the base 1. During this movement the latch arm 19 is also pivoted about its axis 20, but as the latter is spaced rearwardly of the axis of the printing head, the arc of movement of the latch arm 19 will not coincide with that of the head and accordingly as the bell crank lever is mounted on the printing head its arm 17, would, if free, tend to move past the latch arm 19. As, however, the hooked end of the latch arm 19 is in engagement with the arm 17 the latter is rotated about its pivot 8a and the other arm 15 of the bell crank is rotated in a clockwise direction to move the carriage 12 to the right-hand side of the printing head; this movement is carried out against the action of the spring 18 which is accordingly loaded to actuate the bell crank lever and effect the transverse movement of the carriage 12 in due course.

When the printing head is lowered into engagement with the base 1, that is to say into operative printing position, the carriage 12 will have moved to the opposite side of the printing head, to the position indicated in Fig. 2. The head is held in this lowered position by an automatically operable spring latch 22 having a nose 23 adapted to engage an abutment plate 24 on the upper side of the top 8.

To effect the imprinting operation, a button 25 is depressed to cause the leaf spring 26 which is connected therewith, to abut the arm 19 and displace it downwardly away from the top 8 so as to release the hooked end of the latch arm 19 from engagement with the arm 17. The spring 18 is thereby rendered effective to rotate the bell crank lever in an anti-clockwise direction to move the carriage 12 rapidly across the printing head and the ink impregnated roller 13 is thereby caused to roll over the bill, voucher or the like positioned on the printing plate and effect an imprint of the data thereon.

The latch 22 is then released and the printing head is automatically raised to the inoperative position shown in Fig. 1 to permit the imprinted bill, voucher or the like to be removed. It will be noted that the length of the arm 19 is such that part of the cam surface at its free end is positioned over the arm 17 even after the bell crank has been rotated to effect the imprinting operation and accordingly when the printing head is raised into its up-

per or inoperative position, the end of the latch arm 19 will ride over the arm 17 until its hook end once again engages over the said arm.

Means may be provided for automatically releasing the latch 22 when the imprinting operation has been completed, and as shown the carriage 12 is provided with a stud 27 adapted to strike the latch 22 and pivot it outwardly into disengaged position when the carriage 12 arrives at the end of its imprinting movement. The nose of the latch 22 is recessed at 28 to permit the passage of the stud 27 when the printing head is raised or lowered.

It will be noted that when the printing head is in raised position the actuating spring is in unloaded condition and accordingly there is no danger of the mechanism being suddenly actuated by inadvertent release of the spring, and the danger of injury to the hand of the operator is accordingly obviated.

To permit the imprinting device to be readily used for imprinting on the pages of a sales book or the like a space or compartment may be provided beneath the base on which the printing plate is supported to allow the body of the book to be positioned therein with the top sheet or sheets which are to be imprinted extending over the upper surface of the base.

Instead of an ink impregnated roller an imprint may be obtained by providing a transfer ribbon adapted to be pressed on to the surface of the sheet to be imprinted by an impression roller or the like which is not impregnated.

The mechanism for actuating the carriage 12 may take other forms to that specifically described, for example, the bell crank lever may be adapted to be moved relatively to the carriage by a latch arm such as 19 as the printing head is moved towards imprinting position and during this movement load an actuating spring connected with the bell crank. In this case when the printing head is in imprinting position the latch arm will be tripped to permit the bell crank to engage the carriage and move it transversely of the printing head to cause the roller 13 to roll across the plate 4. In this modified arrangement means will be provided for returning the carriage to its inoperative position after each imprinting operation.

In a further modification, Figs. 5, 6 and 7, the bell crank lever mechanism is replaced by a cable 35 or the like having one end connected to the carriage 12 and the other attached to a spring actuated drum 36. In this arrangement as the printing head is moved into printing position the drum is rotated to wind up the cable and thereby move the carriage transversely of the head against the action of biasing spring 37 connected thereto, and when the final imprinting position is reached release means will be actuated, either manually by operation of a press button or automatically to release the drum and permit the movement of the carriage in a reverse direction.

Instead of or in addition to providing a manually operable press button for releasing the latch arm 19 or carriage for actuation by its spring, means may be provided whereby the release is obtained automatically when the printing head reaches its final printing position. For example as shown in Fig. 7, the printing head may be provided with a downwardly projecting stud 38, finger or the like adapted to contact part of the base or a member carried thereby so that the stud or finger will be actuated to effect the release of carriage 12 by displacing latching lever 39 from its position in the bottom of the carriage. In the present instance latching lever 39 is pivotally carried by top 8 of the printing head and is biased by a spring 40 into position to retain carriage 12 when spring 37 is loaded. The said stud or finger may be slidably mounted and urged by a spring into its outward or projecting position and is preferably designed to permit a degree of over travel to ensure that the release is effected when the head is actually in imprinting position.

I claim:

1. A printing apparatus for use with a printing plate, comprising a base for receiving said plate, a printing head mounted on and movable toward and away from said base, an impression roller movably mounted on said printing head, means including a spring for traversing said roller relative to said plate under the influence of said spring and upon release of energy stored in said spring when the printing head is adjacent to and in printing relationship with the base, means for loading said spring in response to movement of said printing head toward said base, means for latching said printing head when it arrives in printing relationship with the base, and means for releasing said spring when said printing head is in printing position to traverse said roller across said plate, said printing head being automatically released when said roller completes its traverse.

2. A printing apparatus for use with a printing plate, comprising a base for receiving said plate, a printing head pivotally mounted on and movable toward and away from said base into and out of a printing position adjacent to said base, an impression roller movably mounted on said printing head and traversable relative to said plate along a path in registration with said plate when said printing head is in its printing position, means including a spring connected to said printing head and linked with said roller for traversing the latter relative to said plate from one end to the other end of said path for effecting an imprinting operation under the influence of said spring and upon release of energy stored in said spring when the printing head is adjacent to and in printing relationship with said base, means for automatically loading said spring responsive to movement of said printing head toward said base and shifting said roller to said one end of said path, a latch member positioned to releasably retain said roller at said one end of said path, latching means on said base for releasably retaining said printing head in its printing position, means for automatically releasing said roller when said printing head is fully seated and latched in its printing position, and means for automatically releasing said printing head upon arrival of said roller at said other end of its path.

3. A printing apparatus for use with a printing plate, comprising an elongated base for receiving said plate, an elongated printing head pivotally connected adjacent to one end thereof to one end portion of said base, said printing head being movable about an axis toward and away from said base into and out of a printing position adjacent to said base, an impression roller, means on said printing head supporting said roller for movement along a path located for registration with said plate when said printing head is in printing position, a first lever pivotally carried by said printing head for displacement between two extreme positions, one end portion of said first lever being connected to said impression roller, resilient means connected to said printing head and to the other end portion of said first lever normally maintaining said first lever in one of its said positions and said roller at one end of its path, a latch arm releasably engaging said first lever and pivotally connected to said base for movement with said printing head about an axis spaced from said first mentioned axis, movement of said printing head toward said base causing displacement of said latch arm relative to said printing head and to shift said first lever to its other position and thereby traverse said roller to the other end of its path and simultaneously to load said resilient means, and means for releasing said first lever from engagement with said latch arm when said printing head is in printing position.

4. A printing apparatus for use with a printing plate, comprising an elongated base for receiving said plate, an elongated printing head pivotally connected adjacent to one end thereof to one end portion of said base, said printing head being movable about an axis toward and away from said base into and out of a printing position,

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an impression roller, means on said printing head supporting said roller for movement along a path located for registration with said plate when said printing head is in printing position, a first lever pivotally carried by said printing head for displacement between two extreme positions, one end portion of said first lever being connected to said impression roller, resilient means connected to said printing head and to the other end portion of said first lever normally maintaining said first lever in one of its said positions and said roller at one end of its path, a latch arm releasably engaging said first lever and pivotally connected to said base for movement with said printing head about an axis spaced from said first mentioned axis, movement of said printing head toward said base causing displacement of said latch arm relative to said printing head and to shift said first lever to its other position and thereby traverse said roller to the other end of its path and simultaneously to load said resilient means, means for releasing said first lever from engagement with said latch arm when said printing head is in printing position, latching means on said base for releasably retaining said printing head in its printing position, and means for automatically releasing said printing head upon arrival of said roller at said one end of its path.

5. A printing apparatus for use with a printing plate, comprising an elongated base for receiving said plate, an elongated printing head pivotally connected adjacent to one end thereof to one end portion of said base, said printing head being movable about an axis toward and away from said base into and out of a printing position, a carriage mounted on the other end portion of said printing head and transversely movable relative thereto and said base, an impression roller rotatably mounted on and movable with said carriage along a path located for registration with said plate when said printing head is in printing position, a first lever pivotally carried by said printing head for displacement between two extreme positions, one end portion of said first lever engaging said carriage, resilient means connected to said printing head and to the other end portion of said first lever normally maintaining said first lever in one of its said positions and said carriage and roller at one end of their path, a latch arm releasably engaging said first lever and pivotally connected to said base for movement with said printing head about an axis spaced from said first mentioned axis, movement of said printing head toward said base causing displacement of said latch arm relative to said printing head and to shift said first lever to its other position and thereby traverse said carriage and roller to the other end of their path and simultaneously to load said resilient means, means for releasing said first lever from engagement with said latch arm when said printing head is in printing position, latching means on said base for releasably retaining said printing head in its printing position, and means on said carriage for automatically releasing said printing head upon arrival of said carriage and roller at said one end of their path.

6. A printing apparatus for use with a printing plate, comprising a base for receiving said plate, a printing head pivotally mounted on and movable toward and away from said base into and out of a printing position adjacent to said base, an impression roller movably mounted on said printing head and traversable relative to said plate, means including a spring connected to said printing head and linked with said roller for traversing the latter relative to said plate to its normal position on one side of said plate and thereby effecting an imprinting operation when the printing head is in printing relationship with said base, means including a drum and a cable connected thereto and to said roller for automatically rotating said drum to take-up said cable and thereby load said spring and traverse said roller to the other side of said plate in response to movement of said printing head toward said base, latching means for releasably retaining said roller on said other side of said plate and

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means for releasing said latching means whereby said spring is free to traverse said roller relative to said plate and simultaneously unwind said cable from said drum.

7. A printing apparatus for use with a printing plate, comprising a base for receiving said plate, a printing head pivotally mounted on and movable toward and away from said base into and out of a printing position adjacent to said base, an impression roller movably mounted on said printing head and traversable relative to said plate along a path in registration with said plate when said printing head is in its printing position, means including a spring connected to said printing head and linked with said roller for traversing the latter relative to said plate from one end to the other end of said path for effecting an imprinting operation when the printing head is in its printing position adjacent to said base, means including a drum and cable connected thereto and to said roller for automatically rotating said drum to take-up said cable actuated by movement of said printing head toward said base and thereby load said spring and shift said roller to said one end of said path, a latch member positioned to releasably retain said roller at said one end of said path, latching means on said base for releasably retaining said printing head in its printing position, means for automatically releasing said roller when said printing head is fully seated and latched in its printing position, and means for automatically releasing said printing head upon arrival of said roller at said other end of its path.

8. A printing apparatus for use with a printing plate, comprising an elongated base for receiving said plate, an elongated printing head pivotally connected adjacent to one end thereof to one end portion of said base, said printing head being movable toward and away from said base into and out of a printing position adjacent to said base, a carriage means on said printing head supporting said carriage for movement along a path located for registration with said plate when said printing head is in printing position, an impression roller rotatably mounted on said carriage and movable therewith along said path, a cable drum rotatably mounted on said printing head, a cable connected to said carriage and said drum, resilient means connected to said carriage and urging the same toward one end of its path, means responsive to movement of said printing head toward said base for rotating said drum to take-up said cable and thereby shift said carriage to the other end of its path and load said resilient means, means for releasably securing said carriage at said other end of said path, and means for releasing said carriage when said printing head is in its printing position.

9. A printing apparatus for use with a printing plate, comprising an elongated base for receiving said plate, an elongated printing head pivotally connected adjacent to one end thereof to one end portion of said base, said printing head being movable toward and away from said base into and out of a printing position, a carriage, means on said printing head supporting said carriage for movement along a path located for registration with said plate when said printing head is in printing position, an impression roller rotatably mounted on and movable with said carriage, a cable drum rotatably mounted on said printing head, a cable connected to said carriage and said drum, resilient means connected to said carriage and urging the same toward one end of its path, means responsive to movement of said printing head toward said base for rotating said drum to take-up said cable and thereby shift said carriage to the other end of its path and load said resilient means, a latch member positioned on said head for releasably securing said carriage at said other end of said path, latching means on said base for releasably retaining said printing head in its printing position, means for automatically releasing said carriage when said printing head is fully seated and latched in its printing position, and means on said carriage for automatical-

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ly releasing said printing head upon arrival of said carriage at said one end of said path.

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