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PLATEN ASSEMBLY

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INVENTOR
TOM G. TURNER
BY Tom Walker
ATTORNEY

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PLATEN ASSEMBLY

Tom G. Turner, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio, a corporation of Ohio

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This invention relates to adjustable platen assemblies, and more particularly to a latch mechanism for holding the platen supporting members in adjusted position on the platen shaft.

Although not so limited, the instant invention has particular application to platen assemblies as used in tabulating machines wherein the impact of gang printing, and the effects of acceleration and centrifugal force tend to loosen or disable the conventional latch mechanism allowing the platen member, which is made adjustable and interchangeable on the platen shaft, to shift on the shaft.

The object of present invention is to improve the construction as well as the means and mode of operation of platen assemblies, whereby such platens may not only be economically manufactured, but will be more efficient and satisfactory in use, uniform in action, comprising a relatively few parts, and be unlikely to get out of repair.

A further object of the instant invention is to retain the platen more securely in position on the platen shaft.

Another object of the invention is to provide a positively acting lock for the latch mechanism of the platen assembly.

A further object of the invention is to reduce to simple and effective terms the structure and mode of operation of the latch mechanism, effecting in response to a single manually initiated movement release of the lock for the latch mechanism and release of the latch mechanism.

Still another object of the invention is to resolve the effective centrifugal forces and effects of acceleration into an enabling impulse of the latch mechanism.

A further object of the invention is to provide a platen assembly having the advantageous structural features, the inherent meritorious characteristics and the mode of operation hereinafter described.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation, as hereinafter described or illustrated in the accompanying drawings, or their equivalents.

In the drawing, wherein is shown the preferred but obviously not necessarily the only form of embodiment of the invention,

Fig. 1 is a perspective view of one end of a platen assembly constructed in accordance with the instant invention;

Fig. 2 is a view in side elevation of the assembly, with the platen member removed;

Fig. 3 is an end view of the platen assembly, the shaft being shown in cross section;

Figs. 4 and 5 are views partly broken away, similar to Fig. 3, showing adjustment positions of a pin wheel feed cam;

Fig. 6 is a view in longitudinal section through one end of the platen assembly, taken on line 6—6 of Fig. 3;

Fig. 7 is a view like Fig. 3, showing the latching lever partly depressed;

Fig. 8 is a view like Fig. 7, showing the latching lever fully depressed; and

Fig. 9 is a detail view in perspective of the body member forming the principal mounting and supporting element of the platen assembly.

Like parts are indicated by similar characters of reference throughout the several views.

Referring to the drawings, a platen assembly in accordance with the illustrated embodiment of the invention includes a shaft 10 presenting terminal hand knobs 11 and a longitudinal series of spaced apart notches 12 in its periphery. Only one end of the platen assembly is here disclosed, it being understood that the opposite end is or may be similarly constructed. Slidably mounted on the shaft 10 is a body member 13 (see Figs. 2 and 9). The body member has an intermediate flange portion 14 formed with a rightwardly or inwardly projecting annular rib 15 which receives and supports one end of a platen 16.

The right hand or inner end of the body member 13 is formed with a radial slot 17 in which is mounted a key 18. The opposite ends of the key 18 project above and below the slot 17 and are respectively received in longitudinal grooves 19 and 21 in the platen 16 and in the shaft 10. Accordingly, the key member 18 establishes a keyed connection between the shaft 10, body 13 and platen 16, the several elements being rotatable as a unit but capable of relative axial sliding motion. Thus, the body member 13 may be moved toward and away from the platen 16 for removal and replacement of the platen, and may be adjusted to selected longituidnal positions along the length of the shaft 10.

Adjacent to its left hand or outer end the body 13 has a peripheral groove 22 defining at the extremities of the body a flange 23. A portion of the groove 22 is cut out, as by a slot 24 (Fig. 8) to provide access through the body to the shaft 10 and the notches 12 therein. Also, portions of the flange 23 are cut out to allow substantially diametrically opposed pivot studs 25 and 26 to be installed in the outer face of the body member. Pivotally mounted on the stud 25 is a locking lever 27 while pivotally mounted on the stud 26 is a latching lever 28, the lever 28 effecting and controlling the movements of the lever 27 in a manner which will hereinafter more clearly appear. The lever 27 is located between the flange 23 and the outer face of the body 13, and may be considered as being comprised of two arms 29 and 31 extending in embracing relation to the body and shaft 10 from the intermediately located pivot point represented by the stud 25. The arm 29 is aligned with the slot 24 and is formed with a blade-like portion 32 arranged to pass through the opening 24 and engage in an aligned notch 12 in the series of notches in shaft 10. The arm 31 extends in overlying relation to a torsion spring 33 (Fig. 5) which is mounted on a screw stud 34 set in the flange 23 and arranged to urge the lever 27 in a counterclockwise direction (Fig. 5) or in a direction to urge the blade portion 32 into contact with the notched area of the shaft 10.

By reason of the engagement of the locking lever 27 with a notch 12, therefore, the body member 13 and platen 16 are locked against axial motion relative to the shaft 10. A readjustment of the body member upon the shaft can be made by releasing the locking lever 27 from its notch engaging position whereupon the body is free to slide along the shaft to any other selected position, the body being re-locked in such selected position by allowing the lever 27 to return under the urging of spring 33 to engagement with another aligned notch 12.

The control or latch lever 28 lies in the same transverse plane as the locking lever 27 and is an arcuate element pivoted at about its mid-point upon the stud 26. Considering the latch lever as being formed with first and second oppositely extending arms 35 and 36, the

former extends into cooperative relation with the arm 29 of lever 27 and the latter projects into similar relation with arm 31 of lever 27. The end portions of arm 31 of lever 27 and of arm 36 of lever 28 have complementary tooth and notch formations resulting in the formation of mating inclined surfaces 37 and 38. With the tooth of arm 31 received in the notch of arm 36, the surface 37 overlies the surface 38 (see Fig. 5), the parts being so constructed and arranged that when so positioned the lever 27 is precluded from moving in a clockwise direction or in a direction to disengage the blade 32 from the notch 12 in which it is received. The arm 36 is free to withdraw from latching position, however, and when it does so releases the locking lever for movement out of notch engaging position. Such withdrawal of the arm 36 is effected by manually rocking the lever 28 in a clockwise direction about the pivot 26, as by pressing with the thumb or finger upon a knurled portion 39 on the lever. The latching lever 28 normally is held in the latching position of Fig. 5 by a torsion spring 41 mounted on a screw stud 42 set in the flange 23, the spring being arranged to urge the latching lever in a counterclockwise direction as viewed in Fig. 5.

The motion of the latch lever 28 to ineffective or releasing position is also utilized to move the lever 27 out of notch engaging position against the urging of spring 33. Thus, arm 35 of the latching lever which extends into cooperative relation with arm 29 of the locking lever is rounded at its extremity for engagement with a cam surface 43 on the end of arm 41. Arm 35 normally is spaced slightly from cam surface 43 to provide a lost motion period in the latch releasing operation which may be considered as having two phases.

In the first such phase, illustrated in Fig. 7, the arm 36 has been disengaged from the locking lever arm 31 and the arm 35 has reached the cam surface 43 but has not begun to ride upward thereon. Continued rocking motion of the lever 28, from the position of Fig. 7 to the position of Fig. 8 effects, through the interengagement of arm 35 and cam surface 43, a rocking of lever 27 to the displaced ineffective position illustrated. The lever 28 is held depressed while the body member 13 is shifted to a new position of adjustment, and, when the manual pressure on the lever 28 is removed, all the parts return to the position of Fig. 5 with the lever 27 springing to locking engagement with a newly aligned notch 12.

The body member 13 may further serve, as is here illustrated, as a mounting means for pin wheel devices for the feeding of marginally perforated strip material 44 (Figs. 3 and 5). According to this construction and arrangement of parts the body member 13 and flange 14 thereon have a circumferential series of radial holes 45 mounting pins 46. The pins 46 are continuously engaged with an eccentric 47 on a ring member 48 rotatably mounted on the body 13. An adjustment lever 49 is pivotally mounted on the side of the ring member and presents an upstanding finger piece 51 and a lateral stud 52. The stud 52 is positioned alternatively in notches 53 and 54 (Fig. 4) in a yoke 55 rotatably mounted on the body 13 and having a detenting engagement with a fixed part of the machine, as for example a rod 56. By reason of its engagement with the yoke 55, therefore, the ring member 48 normally is stationary relative to the remainder of the platen assembly. Accordingly as the pins 46 are carried about the eccentric 47 they are progressively advanced and retracted relatively to the periphery of the flange 14. By locating the stud 52 on lever 49 selectively in the notches 53 and 54, through manipulation of the finger piece 51, the circumferential area of projection of the pins may be varied and the pins so rendered alternatively effective and ineffective to engage and advance the strip 44.

With further regard to the locking lever 27, this element is made relatively heavy, particularly the arm 31 thereof, and is so arranged with respect to the direction of rotation of the platen assembly as to utilize accelerative and centrifugal forces generated in the operation of the assembly to urge the locking lever toward locking or notch engaging position. Although lever 27 is relatively heavy and mounted in an unbalanced relation upon its supporting stud 25, latch lever 28 is relatively light and mounted in substantially balanced relation with its mounting 6. Thus motion of the platen has very little, if any, effect upon latch lever 28.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise but one of several modes of putting the invention into effect.

Having thus described my invention, I claim:

1. A platen assembly, including a shaft having a circumferential notch, a body member loosely mounted on said shaft, a key connection between said body member and said shaft providing for relative axial motion therebetween while precluding relative rotary motion, a platen one end of which is supported by said body member, a locking member pivotally mounted on said body member and having one arm movable into and out of said notch in said shaft, and a latch on said body member releasably engageable with the other arm of said locking member to preclude movement of said one arm out of said notch.

2. A platen assembly, including a shaft having a longitudinal series of spaced apart notches, a body member loosely mounted on and surrounding said shaft, a platen, one end of which is supported by the inner end of said body member, a key connection between said body member and said shaft providing for relative axial motion therebetween while precluding relative rotary motion, a locking member mounted on the outer end of said body member and having one arm arranged for motion into and out of engagement with an aligned notch on said shaft, and a latch on said body member releasably engageable with another arm of said locking member to preclude movement of said one arm out of engagement with said notch.

3. A platen assembly, including a shaft having a longitudinal series of spaced apart notches, a body member loosely mounted on and surrounding said shaft, said member being adjustable axially of said shaft relative to said notches, a platen one end of which is supported by the inner end of said body member, a locking lever pivotally mounted on the face of said body member on the outer end thereof, one end of said lever extending into cooperative relation with said shaft and arranged to engage in an aligned one of said series of notches, and a latch on said body member releasably engageable with the other end of said lever for holding said lever in notch engaging position.

4. A platen assembly, including a shaft having a longitudinal series of spaced apart notches, a body member connected to said shaft for rotation therewith and slidable axially along said shaft, a platen one end of which is supported by the inner end of said body member, a locking lever pivotally mounted in unbalanced relation on the face of the outer end of said body member and presenting end portions extending in embracing relation to said shaft, rocking motion of said lever about its pivot

serving to engage and disengage one end portion with an aligned notch in said series of notches, and a latch releasably engageable with the opposite end portion of said lever to hold said lever in a position engaging said one end portion in the aligned notch.

5. A platen assembly according to claim 4, characterized in that said lever is weighted and so arranged with respect to the direction of rotation of the platen assembly as to utilize accelerative and centrifugal forces generated by rotation of the platen assembly to urge said lever in a direction to engage said one end portion with the aligned notch.

6. A platen assembly, including a shaft presenting a longitudinal series of spaced apart notches, a body member slidably axially along said shaft, a platen one end of which is supported by the inner end of said body member, a locking lever pivotally mounted in unbalanced relation on the face of the outer end of said body member and presenting end portions extending in embracing relation to said shaft, pivotal motion of said lever serving to engage and disengage one end portion of said lever with an aligned notch in said series of notches, a latch lever pivotally mounted on the face of the outer end of said body member in substantially opposed relation to said locking lever, said latch lever being pivoted at about its mid-point and presenting end portions extending in embracing relation with said shaft, cooperating formations on corresponding end portions of said locking lever and latch lever for holding said locking lever in notch engaging position, said cooperating formations being disengaged by motion of said latch lever in one direction about its pivot, and cooperating formations on the other corresponding end portions of said locking lever and said latch lever responsive to motion of said latch lever in said one direction to move said locking lever out of notch engaging position.

7. A platen assembly, including a shaft presenting a longitudinal series of spaced apart notches, a body member slidable axially along said shaft, a platen one end of which is supported by the inner end of said body member, a locking lever pivotally mounted on the face of the outer end of said body member and presenting end portions extending in embracing relation to said shaft, pivotal motion of said lever serving to engage and disengage one end portion thereof with respect to an aligned notch in said series of notches, a latch lever on said body member releasably engageable with the opposite end portion of said locking lever for holding said locking lever in notch engaging position, and a portion on said latch lever engageable with the said one end portion of said locking lever in response to a releasing movement of said latch lever for moving said locking lever from notch engaging position.

8. A platen assembly according to claim 7, characterized by spring means acting respectively on said locking lever and said latch lever to urge said locking lever to notch engaging position and to urge said latch lever to latching position.

9. A shaft assembly, including a shaft presenting a longitudinal series of spaced apart notches, a body member slidable on said shaft, a locking lever pivotally mounted on said body member about an axis parallel to the axis of said shaft and having divergently extending arms substantially embracing said shaft, and a spring urging said lever in a direction to engage one of said arms with a selected notch in said shaft, said lever being weighted and so arranged with respect to the direction of rotation of the shaft assembly as to utilize accelerative and centrifugal forces to urge said lever in a direction to engage said arm with the shaft.

10. A shaft assembly according to claim 9, characterized by another lever pivotally mounted on said body member about an axis parallel to the axis of said shaft and on the opposite side of said shaft, said other lever having a first arm extending into cooperative relation with the corresponding arm of said locking lever to preclude motion of said locking lever out of notch engaging position and a second arm extending into cooperative relation with the corresponding arm of said locking lever to move said locking lever out of notch engaging position in response to and during motion of said other lever to release said locking lever.

11. A platen assembly, including a shaft, a body member loosely mounted on and surrounding the shaft, means for releasably securing said body member to said shaft, a platen one end of which is supported by said body member, a ring member rotatably mounted on said body member, a series of feeding pins carried by said body member for radial motion relative thereto, an eccentric connection between said ring member and said feeding pins providing for the extension and retraction of said feeding pins in a portion of the circumferential area of said body member in response to relative motion between said body member and said ring member, and means for holding said ring member from motion with said body member, including an adjustable mounting for said ring member providing for a varying of the circumferential area of projection of said feeding pins, a fixed member, and an adjustable detent for said mounting engageable with said fixed member in various positions of adjustment.

12. A platen assembly, including a shaft, a body member loosely mounted on and surrounding said shaft, means for releasably securing said body member to said shaft, a platen one end of which is supported by said body member, a ring member rotatably mounted on said body member, a series of feeding pins carried by said body member for radial motion relative thereto, an eccentric connection between said ring member and said feeding pins providing for the extension and retraction of said feeding pins in a portion of the circumfeerntial area of said body member in response to relative motion between said body member and said ring member, rotary adjustment of said ring member relatively to said body member serving to vary the area of projection and retraction of said feeding pins, a yoke arranged alongside said ring member and fixed relatively thereto, and means defining a plurality of circumferentially offset detenting positions between said ring member and said yoke to which said member may be selectively adjusted.

13. A platen assembly, including a shaft having a circumferential notch, a platen supporting body member mounted on said shaft with freedom of relative axial motion, a locking member pivotally mounted on said body member for movement into and out of engagement with said notch, and a latch member in opposed relation to said locking member independently pivotally mounted on said body member and engageable with said locking member to preclude movement thereof out of said notch, said latch member being movable in one sense to release said locking member and acting in response to continued motion in said one sense to move said locking member out of said notch, said latch member returning in an opposed sense for reengagement with said locking member.

14. A platen assembly, including a shaft having a circumferential notch, a platen supporting body member mounted on said shaft with freedom of relative axial motion, a locking lever pivotally mounted on said body member and movable into and out of said notch, and a latch lever independently pivotally mounted on said body member, said latch lever having a first portion engageable with said locking lever to preclude movement thereof out of said notch, said latch lever being movable to release said locking lever and further having a second portion engageable with said locking lever to disengage said locking lever from said notch in conjunction with the movement of said first portion to release said locking lever.

15. A shaft assembly, including a shaft having a longitudinal series of spaced apart notches, a body member loosely mounted on and surrounding said shaft, a locking member mounted on one end of said body member

and having one arm arranged for motion into and out of engagement with an aligned notch on said shaft, and a latch on said body member releasably engageable with another arm of said locking member to preclude movement of said one arm out of engagement with said notch.

16. A shaft assembly, including a shaft having a circumferential notch, a body member mounted on said shaft with freedom of relative axial motion, a locking lever pivotally mounted on said body member and movable into and out of said notch, and a latch lever pivotally mounted on said body member, said latch lever having a first portion engageable with said locking lever to prevent accidental movement thereof out of said notch,

said latch lever being movable to release said locking lever for intentional movement, and a second portion on said latch lever engageable with said locking lever to positively disengage said locking lever from said notch in conjunction with the movement of said first portion to release said locking lever.

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