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G. SIM

2,353,597

PLATEN HAND WHEEL

Filed Aug. 17, 1942

FIG. 1

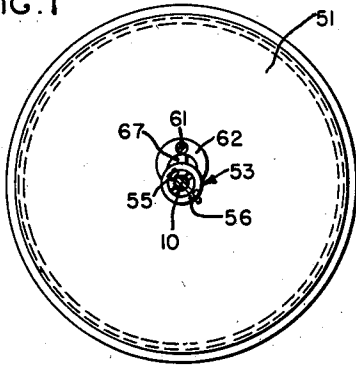


FIG. 2

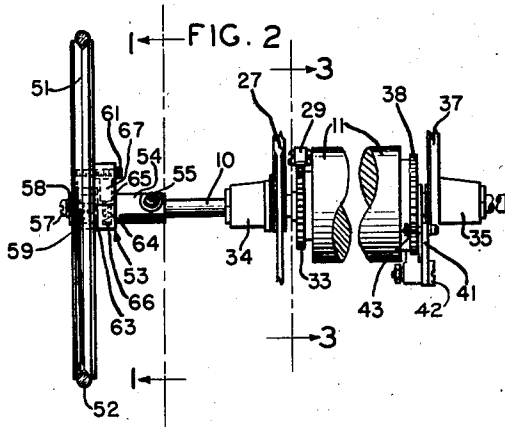


FIG. 3

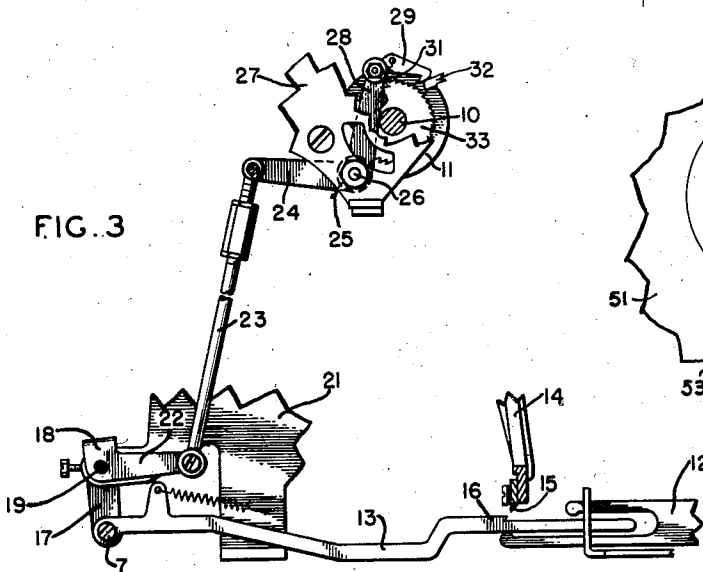


FIG. 4.

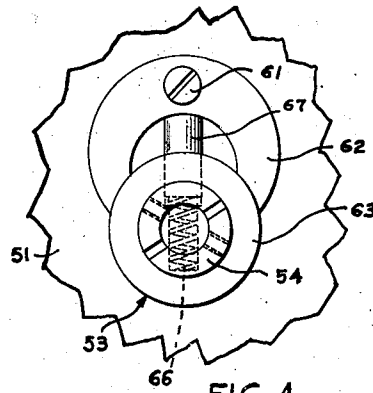


FIG. 5

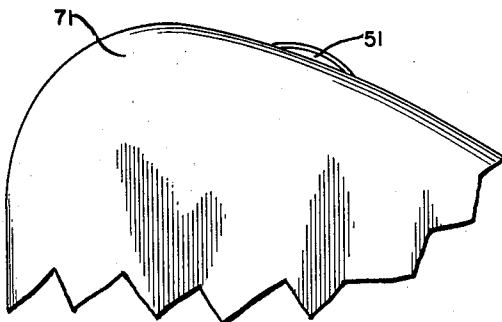
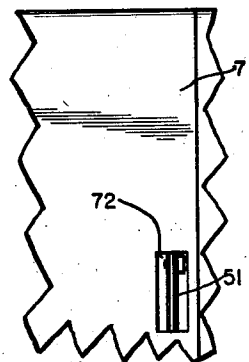


FIG. 6



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PLATEN HANDWHEEL

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This invention in general pertains to printing telegraph apparatus and in particular, to a platen hand wheel for enabling manual operation of a platen roll constituting a part of a signal controlled printing unit.

In the printing telegraph art, wherein apparatus is particularly designed for page or web printing, it is usual practice to provide in the apparatus a platen roll similar to the platen roll used in ordinary typewriters, and also to provide means such as a crank for enabling manual operation of the platen roll. For certain requirements, it is necessary to house the printing telegraph apparatus within an apparatus cabinet. Such an arrangement makes it desirable that convenient manual operation of the platen roll from without the cabinet be possible. However, it is necessary that the mass of the platen mechanism not be increased to cause overtravel of the platen roll during signal controlled line feeding operations.

It is accordingly a prime object of the present invention to provide a platen hand wheel and shaft connection in which the mass of the wheel is added to the mass of the shaft during platen feeding operations without causing overtravel of the shaft.

Other objects, features, and advantages of the present invention will become evident as the invention is further described in detail.

In carrying out the present invention, it is proposed to attach to the platen shaft of a telegraph printing unit by means of a resilient connection, a disc shaped hand wheel. A portion of the wheel protrudes through a slot in the apparatus cabinet housing the unit to enable its convenient manipulation. The resilient connection is such that during the initial portion of a particular signal controlled line feeding operation, the rotative movement of the hand wheel lags that of the platen so that the mass of the hand wheel is not immediately added to the mass of the platen mechanism. This prevents a high inertia from developing in the platen shaft and its attached parts which might otherwise cause overtravel of the platen. However, the mass of the hand wheel is gradually added to the platen shaft and its attached parts which places a load thereon and produces a desirable retarding effect to limit the speed of the platen so that a detent lever included in the platen mechanism may more readily bring the platen to rest.

This invention will be more fully compre-

hended from the following detailed description and drawing wherein:

Fig. 1 is an end elevational view taken on the line 1—1 of Fig. 2 hereafter referred to and discloses the platen hand wheel;

Fig. 2 is a front elevational view of the present invention partially broken away showing the platen hand wheel and platen feeding mechanism;

Fig. 3 is an end elevational view taken on the line 3—3 of Fig. 2 and discloses the line feeding mechanism of the present invention;

Fig. 4 is an enlarged detail view of the resilient connection embodied in the invention;

Fig. 5 is a side view of a portion of an apparatus cabinet designed for use with the present invention; and

Fig. 6 is a plan view of the structure shown in Fig. 5.

With reference to the drawing, the invention will now be further described in detail. 10 indicates a platen shaft of a printing telegraph unit such as is disclosed in the S. Morton et al. Patent No. 1,904,164, April 18, 1933, and has fixedly secured thereto a platen roll 11 which acts as a backing member for the printing operation. For the purpose of performing line feeding operations under the control of a particular signal code combination, there is provided in the printer a line feeding function lever 12, the operation of which is described in detail in the aforementioned Morton patent. As described in this patent, the receipt of a line feeding signal by the printing unit, enables the line feed function lever 12 to pivot in a clockwise direction as viewed in Fig. 3. As shown in the drawing, the function lever 12 terminates in a bifurcation in which rests the end of a push lever 13 which is pivoted at 7. It is thus apparent that when the function lever 12 rotates in a clockwise direction, the push lever 13 will be raised. At this time, during the line feeding operation, the function bail 14 moves in a clockwise direction and its projecting portion 15 engages a shoulder 16 of the push lever 13 and moves it to the left as viewed in Fig. 3. To the opposite end of the push lever 13, there is pivotally attached one arm 17 of a substantially U-shaped bell crank 18 which is pivoted at 19 to a portion 21 of the apparatus frame. To the other arm 22 of the U-shaped bell crank 18 is attached, for pivotable movement, a turnbuckle rod 23 to which, in turn, is attached at its upper end one arm 24 of a bell crank 25 pivoted at 26 to a side frame 27 of the

apparatus unit. The other arm 28 of bell crank 25 has pivotally attached thereto a line feed pawl 29 which is urged in a clockwise direction (as viewed in Fig. 3) by a spring 31. An adjustable member 32 normally retains the pawl 29 out of engagement with the teeth of a line feed ratchet 33 when the line feeding mechanism is unoperated. By means of the adjustable member 32, the line feed pawl is enabled to feed one or two teeth as desired for particular line feeding requirements.

It is thus obvious that upon the receipt of the line feed signal, the push lever 13 will be pushed to the left to cause a clockwise rotation of the bell crank 18 which will cause the turnbuckle rod 23 to be pulled down to thus cause a counter-clockwise rotation of bell crank 25. This enables the feed pawl 29 to be pulled to the left as shown in Fig. 3 and by means of the spring 31 to engage the teeth of the ratchet 33 to thereby cause the advancement of the platen roll.

Fixedly attached to the platen shaft 10 which is mounted in the journal members 34, 35, respectively connected to frame portions 27 and 37 of the apparatus unit, is a detent ratchet 38. Pivoted adjacent the detent ratchet 38 and urged inwardly, as viewed in Fig. 2, by a spring (not shown) is a detent lever 41 which is pivoted at 42 and carries a jockey roller 43 for engagement with the teeth of ratchet 38. This construction is designed to prevent overthrow of the platen and to hold the ratchet wheel in its advanced position in a manner well known in the art. All of the mechanisms so far described are fully disclosed in the already referred to Morton et al. patent and form no part of the present invention.

To enable the convenient manipulation of the platen shaft there is provided at one end thereof a hand wheel 51 which is constructed of Bakelite material but, of course, a similar substitute therefor may be employed. In the outer periphery of the hand wheel 51 is carried a circular rubber ring 52 attached to the hand wheel 51 in tire and wheel fashion. The rubber ring is employed in order that a suitable friction surface may be provided for manual operation by the operator. The hand wheel 51 is attached to the shaft 10 by means of a hub 53 upon which the hand wheel is journaled for a limited movement in either direction as will hereafter appear. The hub 53 includes a bifurcated portion 54 through which extends a screw 55 which rigidly secures the hub 53 to the shaft 10 through its connection with a nut 56. A screw 57 and washer 58 enable the hand wheel 51 to be secured on the portion 59 of the hub member 53 which provides a bearing surface for the hand wheel. The hand wheel may therefore move slightly in either direction in a manner subsequently described in greater detail. To the side of the hand wheel 51 there is secured by means of screw 61 a crescent-shaped member 62. The hub member 53 includes an enlarged collar portion 63 which is provided with a lower recess 64 and an adjacent upper recess 65. In the lower recess 64 there is positioned a compression spring 66 which urges a pin 67 positioned in the upper recess 65 into engagement with the inner curved surface of the crescent-shaped member 62.

When a line feed signal is received, the line feed pawl 29 actuates the line feed ratchet 33 to advance the platen roll 11 one step as previously explained. In the initial portion of this operation, in view of the resilient coupling provided

between the platen hand wheel 51 and the platen shaft 10, the pin 67 carried by the hub member 53 moves over the inner curved surface of the crescent shaped member 62 and at this time the rotative movement of the hand wheel lags behind so that the full mass of the hand wheel is not immediately added to the mass of the remainder of the platen mechanism. The inner curved surface of the crescent-shaped member 62 is not concentric with respect to the axis of the pin 67 so that in the continued advancement of the pin 67 during a line feeding operation the friction existing between the pin and the crescent shaped member is increased due to this eccentric construction and the consequent progressively increasing compression of the spring 66.

At a predetermined portion in its travel, sufficient friction will exist between the pin 67 and the crescent member 62 to allow a gripping action to take place so that the hand wheel is also set in motion. The platen shaft, however, due to the positive drive, travels faster than the platen hand wheel so that the pin continues to move with respect to the crescent-shaped member even though the hand wheel is at this time also moving in the same direction but at a slower rate of travel. The platen shaft 10 is eventually brought to rest by the combined action of the detent lever 41 and the platen hand wheel which automatically centers itself after shaft 10 is stopped due to the force exerted by spring 66 so that the pin 67 again occupies a central position with respect to the crescent-shaped member. The symmetrical arrangement of the crescent-shaped member 62, the hub member 53, and the pin 67, provides means for rotating the platen in either direction in response to the manual operation of the hand wheel in a corresponding direction.

The underlying theory of operation is, with the disclosed arrangement, that the energy to move the hand wheel is derived from the platen shaft and its attached parts rather than from the platen operating mechanism directly. The platen thus loses energy to the hand wheel at a time when it has a tendency to overspeed and it is therefore more readily brought to rest.

The particular printing unit herein disclosed is designed to be housed in an apparatus cabinet 71 shown in Figs. 5 and 6. The cabinet is provided with a slot 72 through which projects a portion of the hand wheel 51 in order that the platen may be conveniently operated from without the cabinet by an attendant.

Various changes and modifications may be made in the above-described invention without departing from the spirit and scope of the inventive concept.

What is claimed is:

1. In a platen feeding apparatus, a shaft, a platen roll carried by said shaft, means for rotating said shaft step by step, a wheel carried by said shaft, and means associated with said shaft and said wheel for delaying the addition of the mass of said wheel to the mass of said shaft and roll during a stepping operation to prevent overtravel of said platen roll.

2. In a platen feeding apparatus, a shaft, means for rotating said shaft step by step, a platen roll carried by said shaft, a wheel carried by said shaft, and a resilient connection between said wheel and said shaft for enabling the progressive addition of the mass of said wheel to the mass of said shaft and said platen roll during a step-

ping operation to prevent overtravel of said platen roll.

3. In a feeding apparatus, a rotatable means, means for rotating said rotatable means step by step, a wheel carried by said rotatable means, an eccentric carried by said wheel, a spring-urged pin associated with said rotatable means, said pin cooperating with said eccentric to delay the addition of the mass of said wheel to the mass of said rotatable means during a stepping operation to prevent overtravel of rotatable means.

4. In a feeding apparatus, a rotatable means, means for rotating said rotatable means step by step, a wheel carried by said rotatable means, a crescent-shaped member supported by said wheel, a pin carried by said rotatable means, a spring for urging said pin into engagement with said crescent-shaped member, said pin cooperating with said crescent-shaped member to initially enable the movement of said rotatable means with respect to said wheel during a feeding operation and to thereafter effect concurrent movement of said element and said wheel to thereby enable said wheel to exert a braking effect upon said element.

5. In combination, an apparatus cabinet, a printing telegraph receiver including a feeding means comprising a rotatable means, means for rotating said rotatable means step by step, a member carried by said rotatable means, means associated with said rotatable means and said member for enabling the delayed addition of the mass of said member to the mass of said rotatable means during a stepping operation to prevent overtravel of said rotatable means, and a slot in said apparatus cabinet through which a portion of said member projects to enable the manual manipulation of said rotatable means.

6. In a feeding apparatus, a rotatable means, means for rotating said rotatable means step by step, a member carried by said rotatable means, resilient means for initially preventing the addition of the mass of said member to the mass of said rotatable means during a stepping operation, and a detent for stopping said rotatable means, said resilient means being effective in the latter portion of a stepping operation to enable the mass of said member to assist said detent in stopping rotation of said rotatable means.

7. In a drive connection, a driven shaft, means to impart step-by-step rotation to said shaft, a mass carried by said shaft, a body carried by said mass having an inner surface eccentric to said shaft, and a resilient coupling connecting said shaft and said mass including a spring loaded pin in operative engagement with the inner surface of said body whereby said spring loaded pin is displaced against the compression of its spring during angular displacements of said mass throughout a limited angle from a zero position with respect to said shaft.

8. In a drive connection, a driven shaft, means to impart step-by-step rotation to said shaft, a wheel carried by said shaft, a member carried

by said wheel having an inner surface eccentric to said shaft, and a resilient coupling connecting said shaft and said wheel including a spring loaded pin in operative engagement with the inner surface of said member, whereby said spring loaded pin is displaced against the compression of its spring during angular displacements of said wheel throughout a limited angle from a zero position with respect to said shaft.

9. In a drive connection, a driven shaft, means to impart step-by-step rotation to said shaft, a wheel carried by said shaft, a member carried by said wheel having an inner surface eccentric to said shaft, and a resilient coupling connecting said shaft and said wheel including a spring loaded pin normal to the rotary axis of said shaft in operative engagement with the inner surface of said member, whereby said spring loaded pin is displaced against the compression of its spring during angular displacements of said wheel throughout a limited angle from a zero position with respect to said shaft, the force necessary to compress said pin increasing as the limit of angular displacement is approached.

10. In a drive connection, a driven shaft, means to impart step-by-step rotation to said shaft, a wheel carried by said shaft, a member carried by said wheel having an inner surface eccentric to said shaft, and a resilient coupling connecting said shaft and said wheel including a spring loaded pin in operative engagement with the inner surface of said member, whereby said spring loaded pin is compressed against the compression of its spring during angular displacements of said wheel throughout a limited angle in either direction from a zero position, said resilient coupling acting as a means to delay the addition of the mass of said wheel to the mass of said shaft during compression of said pin by the inner surface of said member to one side of the zero position and acting as a brake during compression of said pin by the inner surface of said member on the opposite side of said zero position.

11. In a platen feeding apparatus, a shaft, a platen roll carried by said shaft, means to impart step-by-step rotation to said shaft, a wheel carried by said shaft, a member secured to said wheel having an inner surface eccentric to said shaft, and a resilient coupling connecting said shaft and said wheel including a spring loaded pin in operative engagement with the inner surface of said member, whereby said spring loaded pin is displaced against the compression of its spring during angular displacements of said wheel throughout a limited angle in either direction from a zero position, said resilient coupling acting during a stepping operation as a means to delay the addition of the mass of said wheel to the mass of said shaft during compression of said pin by the inner surface of said member to one side of the zero position and as a brake during compression of said pin by the inner surface of said member on the opposite side of the zero position to prevent overtravel of said platen roll.

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