April 7, 1953 R. T. ADKINS ET AL 2,633,828

COPYHOLDER

Filed April 14, 1951 2 SHEETS—SHEET 1

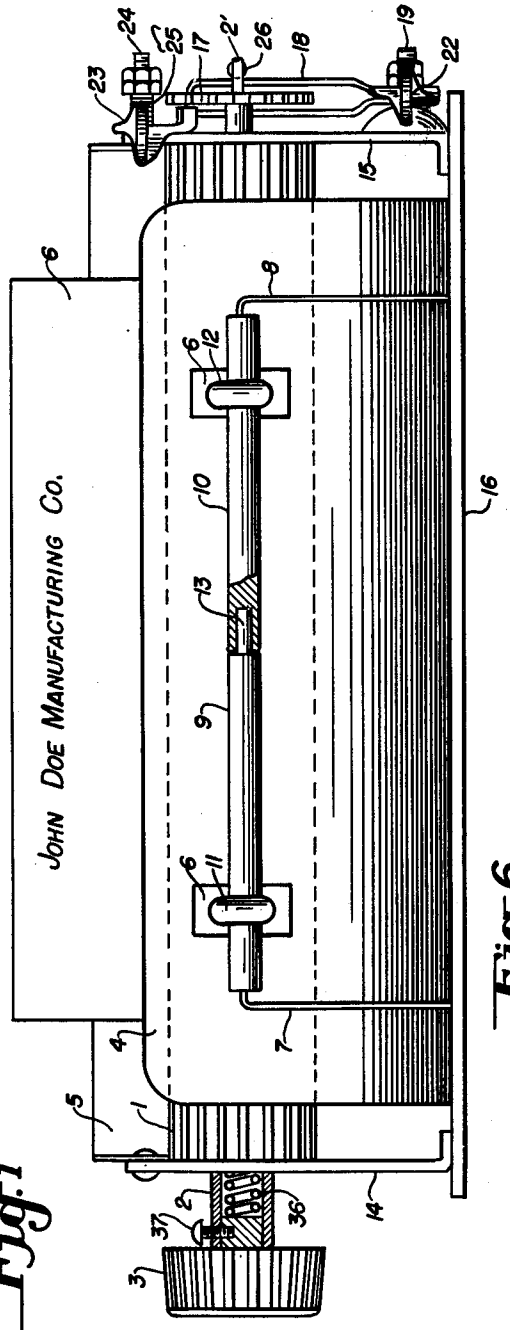

Fig. 1

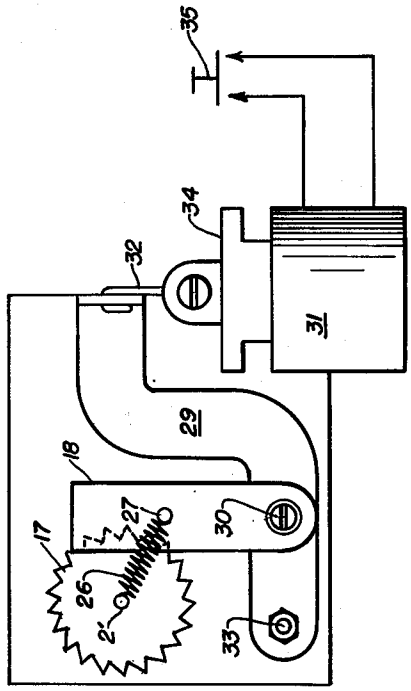

Fig. 6

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Fig. 2

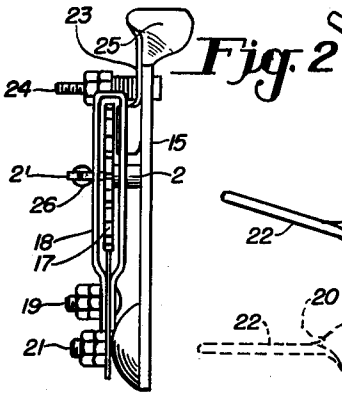


Fig. 3

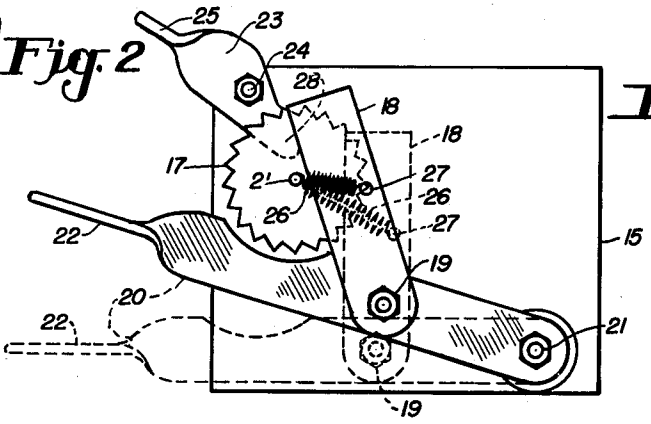


Fig. 4

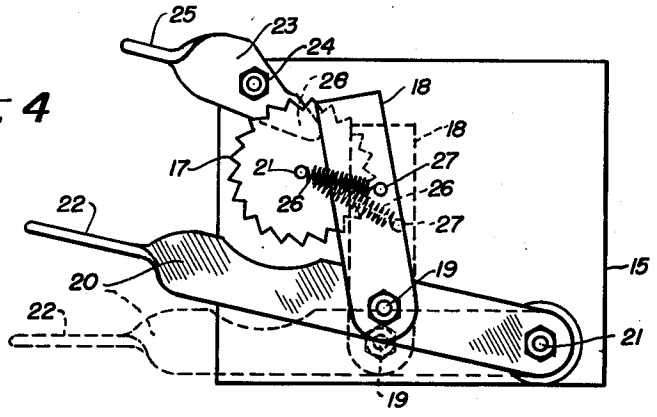
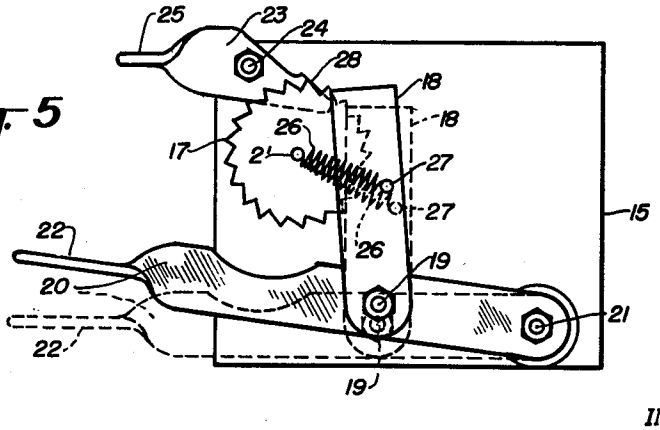


Fig. 5



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Patented Apr. 7, 1953 2,633,828

UNITED STATES PATENT OFFICE

2,633,828

COPYHOLDER

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Application April 14, 1951, Serial No. 221,104

4 Claims. (Cl. 120—32)

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This invention relates to improvements in copyholders, whether of the type disclosed in United States patent to Hohein, 1,582,401, April 27, 1926, in which the copyholder is attached to a typewriter or of the type shown in United States patent to Dodds 2,273,841, February 24, 1942, in which the copyholder is a separate entity.

One of the primary objects of the invention is to provide a copyholder that will enable the operator to most easily read the copy in that it will expose an adjustably predetermined amount of copy, whether this exposure amounts to one or more line spaces between the actual lines of the copy.

Another object is to provide in such a copyholder an improved copy feeding mechanism including a novel pawl and ratchet and manual control whereby the copy sheet may be predeterminedly advanced at will by such mechanism and yet at all times permit independent rotation by the usual knob on the copy feed roller in either direction, after release of the feed mechanism, to independently move the copy sheet in either direction.

Another object is to provide an improved press roller assembly, including a plurality of rollers resiliently urging the copy sheet into frictional feeding engagement with the feed roller, and wherein the press rollers are independently manually adjustable for insuring straight alignment of the copy sheet in the copyholder.

Another object is to provide an adjustment means for adjusting the amount of copysheet advance upon manually operated means, whether the advancing mechanism is mechanical or electrical.

A further object is to provide in such a mechanical advancing mechanism a simple lever actuated lever to adjust the number of lines of copy advance upon the manual operation of another manual lever for such set amount of advance, independently of actual manual operation of the usual manual knob on the copy feed roller.

A further object is to provide a spring drag brake on the shaft of the copy feed roller shaft that will prevent inadvertent dislocation of the set position of the copy feed roller and as the result of ratcheting of the ratchet and pawl mechanism on the return stroke, and yet permit manual adjustment of the usual feed roller knob in either direction independently at any time.

With the foregoing and other objects in view, the invention resides in the combination of parts and in the details of construction hereinafter set forth in the following specification and appended

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claims, certain embodiments thereof being illustrated in the accompanying drawings, in which:

Figure 1 is a view in front elevation of the copyholder, the feed roller, front and rear copy sheet guards, a copy sheet, press rollers, adjustable feed mechanism and manual roller knob, the independent shafts of the press rollers and the spring drag brake on the feed roller shaft being shown partly in section;

Figure 2 is a view in front elevation of the manual feed lever and feed pawl adjustment lever;

Figure 3 is an end view of that shown in Figure 2, with the adjustment lever and feed pawl shown for a three line copy sheet advance upon each operation of the copy sheet advance lever, which latter and the ratchet engaging pawl are shown at rest in full lines and in full advanced operated position in dotted lines;

Figure 4 is a view similar to Figure 3 for a predetermined two line advance of the copy sheet;

Figure 5 is a view similar to Figures 3 and 4 for a one line advance of the copy sheet; and

Figure 6 is an end view of a modified form of an adjustable manually operated feed in which a manually operated switch operates a solenoid to operate the ratchet engaging pawl.

Referring more particularly to the drawings, Figure 1 shows in front elevation a copyholder assembly including a corrugated copy sheet feed roller 1 having a hollow shaft 2 and a knurled manual knob 3 for rotating the shaft and roller in either direction. The copyholder also includes a front guard 4 and a rear guard 5. The copy sheet 6 is moved between the feed roller 1 and the front guard 4 and between the front guard 4 and rear guard 5. Guard 5 is for the purpose of preventing the folding over of the copy sheet immediately above the top level of the feed roller. The front guard 4 is provided with a plurality of openings 6 and is pivoted to the base 16. Also secured to base 16 are a pair of wire springs 7 and 8 that respectively support rotatable shafts 9 and 10, that, in turn, carry rubber rollers 11 and 12 of appreciably larger diameter than their respective shafts 9 and 10. The attachment of springs 7 and 8 to base 16 is such that will maintain the pivoted front guard 4 in the position shown in Figure 1 and the rollers 11 and 12 extending through openings 6 to frictionally engage the copy sheet and resiliently force the copy sheet into frictional engagement with the feed roller 1. Shaft 9 has a male extension 13 to fit within a corresponding socket

in the adjacent end of shaft 10. In normal feed operation either by knob 3, or by other adjustable means yet to be described, the two press rollers roll together. However, they may be separately and independently manually adjusted to insure straight alignment of the copy sheet in the copyholder.

The copy holder includes two end walls 14 and 15, secured to base 16, for supporting the copy feed roll shaft and also the rear guard 5. As in conventional practice, a rotation of knob 3 rotates feed roll 1 and, through the resilient pressure of rollers 11 and 12 against the copy sheet against the feed roll, there is insured movement of the copy sheet between the front and rear guards 4 and 5 in either chosen direction and to any degree, depending upon the extent of manual rotation of knob 3 or rollers 11 and 12.

Such a copy holder employing only the knob 3 for copy sheet feed would be a workable device but not a practical one because it would entail too much trouble for the operator, whose primary objective is combined speed and accuracy. It is, therefore, expedient to provide a separate manual feed mechanism for operating the feed roll and copy sheet for a line-by-line, step-by-step advance. Now, it may be that the actual lines of the copy sheet are single-spaced, in which case a single line feed will suffice. However, it is equally possible that the lines of the copy sheet are double, or even, triple spaced, in which cases, the feed mechanism may be adjusted accordingly.

Accordingly, we have provided a reduced extension 2' on the end of the feed roll shaft opposite the end on which knob 3 is secured. On shaft 2' is rigidly mounted a toothed ratchet 17. There is also provided an inverted generally U-shaped channel pawl 18 pivotally secured at its lower end at 19 to end wall 15 with the upper channeled portion of pawl 18 straddling the ratchet wheel 17. Also pivotally connected at 19 to pawl 18 is a manual feed lever 20. Lever 20 has its one end pivotally connected at 21 to end wall 15 and its other end provided with a flat finger tip 22. There is also provided a lever 23, pivotally connected at 24 to end wall 15, the lever 23 having a finger tip 25 and an opposite operating end 26. Pawl 18 also has a lug 27. A tension coil spring 28 has its opposite ends connected to shaft 2' and lug 27 on pawl 18. The operative effect of spring 26 is to urge the pawl 18 counterclockwise about its pivot 19, as viewed in Figures 3, 4 and 5.

Now, with specific reference to Figure 3, the assembly is shown adjusted by lever 23 to provide for a three-line copy sheet advance upon manual depression of lever 20 from its position shown in full lines to its position shown in dotted lines. Spring 26 is urging the pawl 18 counterclockwise about its pivot 19. In the position of adjustment of lever 23, its forward end 26 is abutting the left face of the channeled pawl 18 against the action of tension spring 26. In this predetermined adjustment of lever 23, a manual depression of feed lever 20 from its full line position to the dotted line position advances the copy sheet three lines.

Figure 4 shows the same assembly for a two line advance upon operation of feed lever 20. It will be noted that, in comparison to Figure 3, lever 23 has been adjusted counterclockwise about its pivot 24 to bring its operating end 26 to adjust channel pawl 18 clockwise about its pivot 19 against the action of spring 26. This adjustment is such that upon manual depression of feed lever 20 the channel pawl 18 engages a ratchet tooth clockwise advanced from the one it would engage in Figure 1 and thus will advance the feed roll and copy sheet two lines as lever 20 is moved from its full line position to its dotted line position.

Likewise, Figure 5 shows a one-line feed advance adjustment position, wherein adjustment lever 23 is further adjusted counterclockwise to further adjust pawl 18 clockwise against the action of spring 26, by abutment of lever end 26 with the pawl. In this adjusted position, a manual depression of feed lever 20 from its full line position to its dotted line position advances the feed roll and the copy sheet one line.

In each of the three adjusted positions of Figures 3, 4 and 5, when the channel pawl is at rest, as shown in full lines, the channel pawl is clearly out of engagement with any of the teeth of the ratchet 17. It is due to the compound linkage and spring 26 that downward manual pressure on feed lever 20 engages the channel pawl with the ratchet teeth. Unlike usual pawl and ratchet assemblies, this leaves the knob 3 free to be rotated in either direction and the same is true of independent operation of press rollers 11 and 12.

The return stroke spring actuated by spring 26 upon manual release of feed lever 20 occurs with virtually no engagement of the pawl with the ratchet teeth. However, as a safeguard against slight ratcheting and reverse feed resulting from this or inadvertent causes, we provide a simple spring drag brake on the feed roll shaft 2 which is easily overpowered by manual rotation of manual knob 3 in either direction for any degree of feed advance or reversal. This may take the form of a compression coil spring 36 abutting against a plug insert of knob 3 held in hollow shaft 2 by a set screw 37.

Should it be desired to replace the manual feed lever 20 with a switch button control, we may employ a switch button solenoid actuated feeding mechanism. Such an arrangement is shown in Figure 6, wherein ratchet 17, channel pawl 18 and spring 26 remain the same as in Figures 1 to 5, inclusive. However, the feed lever 29 differs somewhat in shape from feed lever 20 and is connected at 33 to end wall 15 and to pawl 18 at 30. The solenoid 31 has an armature 34 connected by link 32 to the free end of feed lever 29. Suitable lead lines may extend from the solenoid with contact ends shown spaced from the plate of manual switch 35. Manual depression of switch button 35 energizes solenoid 31 to draw armature 34 downwardly. This rotates feed lever 29 clockwise about its pivot 33 to draw channel pawl 18 downwardly and advance ratchet 17 and the feed roll and copy sheet. A simple adjustment of the armature stroke may regulate the degree of advance of the copy sheet upon each single manual operation of the switch button.

Thus, it will be seen that we have provided an improved copyholder in which an improved pawl and ratchet feed mechanism has been incorporated whereby a manual control may be operated to advance the copy sheet step-by-step, and, upon the mere release of the manual control, the feed roller knob and independent press rollers may be operated in either direction for movement of the copy sheet, whether the feed mechanism is operated electrically or mechanically.

We claim:

1. In a device of the character described for

advancing sheets of material, a sheet feed roller mounted on a rotatable shaft, a manual knob on said shaft for rotating said feed roller in either direction, a toothed ratchet wheel rigid with said feed roller shaft, a pivotally mounted manually operable feed lever, an inverted channeled pawl having one end pivotally secured to said feed lever and its other end straddling said ratchet wheel, a tension coil spring secured at its ends to said pawl and to said feed roller shaft to urge said feed lever into retracted position and said pawl out of engagement with said ratchet wheel, said feed lever, upon manual operation, against the action of said spring, being adapted to urge said pawl into rotative engagement with said ratchet wheel to advance said feed roller, a pair of press rollers mounted on shafts and spring pressed to resiliently urge said sheet into frictional rotative engagement with said feed roller, said press rollers being independently rotatable in either direction to insure straight alignment of said sheet in said device.

2. In a device of the character described for advancing sheets of material, a sheet feed roller mounted on a shaft for rotation in either direction, a toothed ratchet wheel rigid with said feed roller shaft, a pivotally mounted manually operable feed lever, an inverted channeled pawl having one end pivotally secured to said feed lever and its other end straddling said ratchet wheel, a tension coil spring secured at its ends to said pawl and to said feed roller shaft to urge said feed lever into retracted position and said pawl out of engagement with said ratchet wheel, said feed lever, upon manual operation, against the action of said spring, being adapted to urge said pawl into rotative engagement with said ratchet wheel to advance said feed roller, a spring drag brake on said feed roll shaft for preventing inadvertent rotation of said feed roller shaft and reverse rotation thereof by ratcheting between said pawl upon the back stroke of said feed pawl, but permitting manual rotation of said feed roller shaft by said manual knob in either direction.

3. In a device of the character described for advancing sheets of material, a sheet feed roller mounted on a rotatable shaft, a manual knob on said shaft for rotating said feed roller in either direction, a toothed ratchet wheel rigid with said feed roller shaft, a pivotally mounted manually operable feed lever, an inverted channeled pawl having one end pivotally secured to said feed lever and its other end straddling said ratchet wheel, a tension coil spring secured at its ends to said pawl and to said feed roller shaft to urge said feed lever into retracted position and said pawl out of engagement with said ratchet wheel, said feed lever, upon manual operation, against the action of said spring, being adapted to urge said pawl into rotative engagement with said ratchet wheel to advance said feed roller, a manual adjustment lever for said feed lever pivoted to an end wall with one end in abutment with said pawl in opposition to the action of said

tension spring for pivotally adjusting said pawl circumferentially tangentially with respect to the teeth of said ratchet wheel to predeterminedly adjust the extent of rotation of the feed roller upon a manual stroke of said feed lever in step-by-step feed by a series of manual operations of said feed lever.

4. In a device of the character described for advancing sheets of material, a sheet feed roller mounted on a rotatable shaft, a manual knob on said shaft for rotating said feed roller in either direction, a toothed ratchet wheel rigid with said feed roller shaft, a pivotally mounted manually operable feed lever, an inverted channeled pawl having one end pivotally secured to said feed lever and its other end straddling said ratchet wheel, a tension coil spring secured at its ends to said pawl and to said feed roller shaft to urge said feed lever into retracted position and said pawl out of engagement with said ratchet wheel, said feed lever, upon manual operation, against the action of said spring, being adapted to urge said pawl into rotative engagement with said ratchet wheel to advance said feed roller, a manual adjustment lever for said feed lever pivoted to an end wall with one end in abutment with said pawl in opposition to the action of said tension spring for pivotally adjusting said pawl circumferentially tangentially with respect to the teeth of said ratchet wheel to predeterminedly adjust the extent of rotation of the feed roller upon a manual stroke of said feed lever in step-by-step feed by a series of manual operations of said feed lever, a pair of press rollers mounted on shafts and spring pressed to resiliency urge said copy sheet into frictional rotative engagement with said feed roller, said press rollers being independently rotatable in either direction to insure straight alignment of said sheet in said device.

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