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L. YUTANG
PAGE CONTROL AND PAGE CONTROL
RELEASE FOR TYPEWRITERS
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2,577,062

FIG. I.

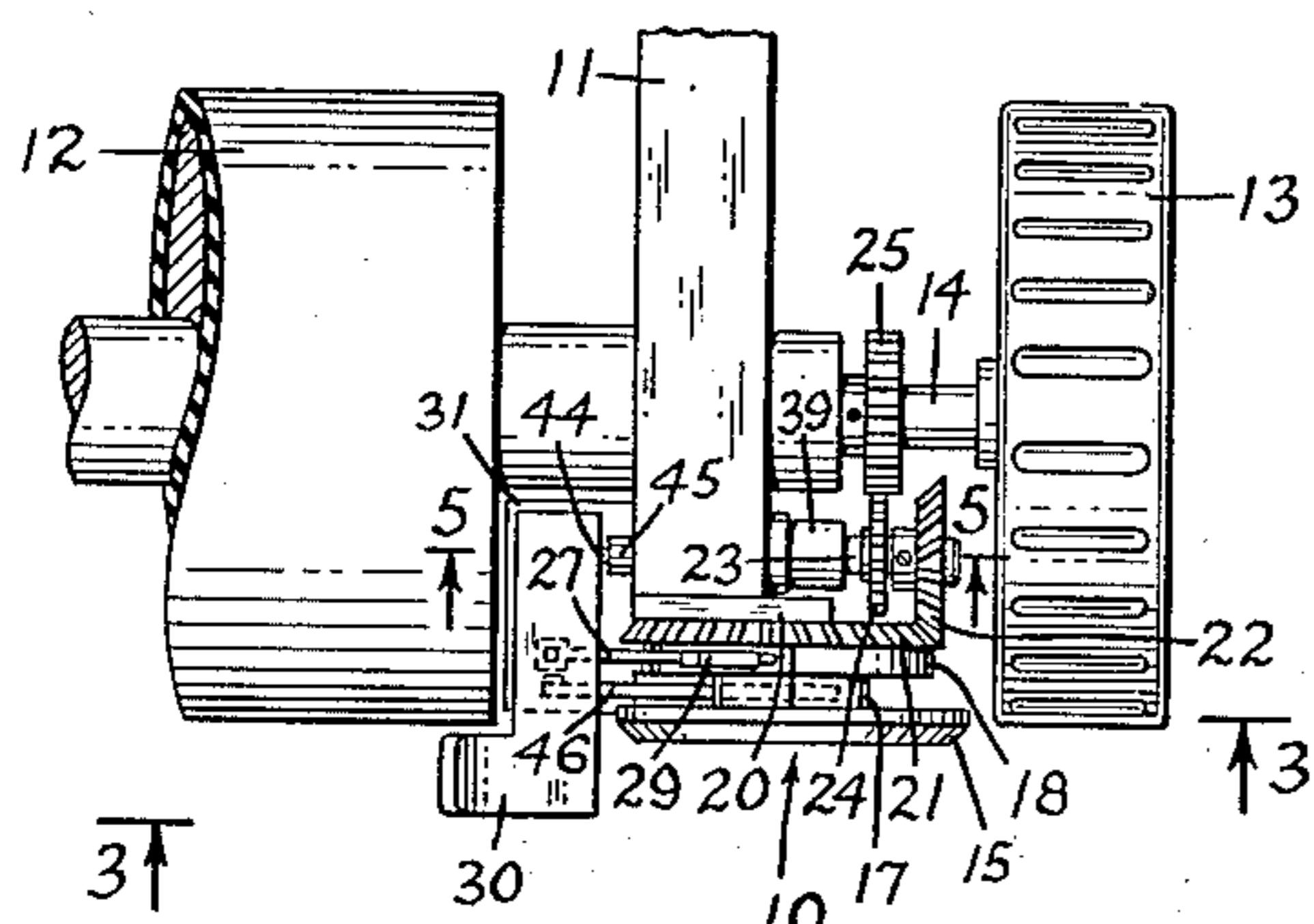


FIG.3.

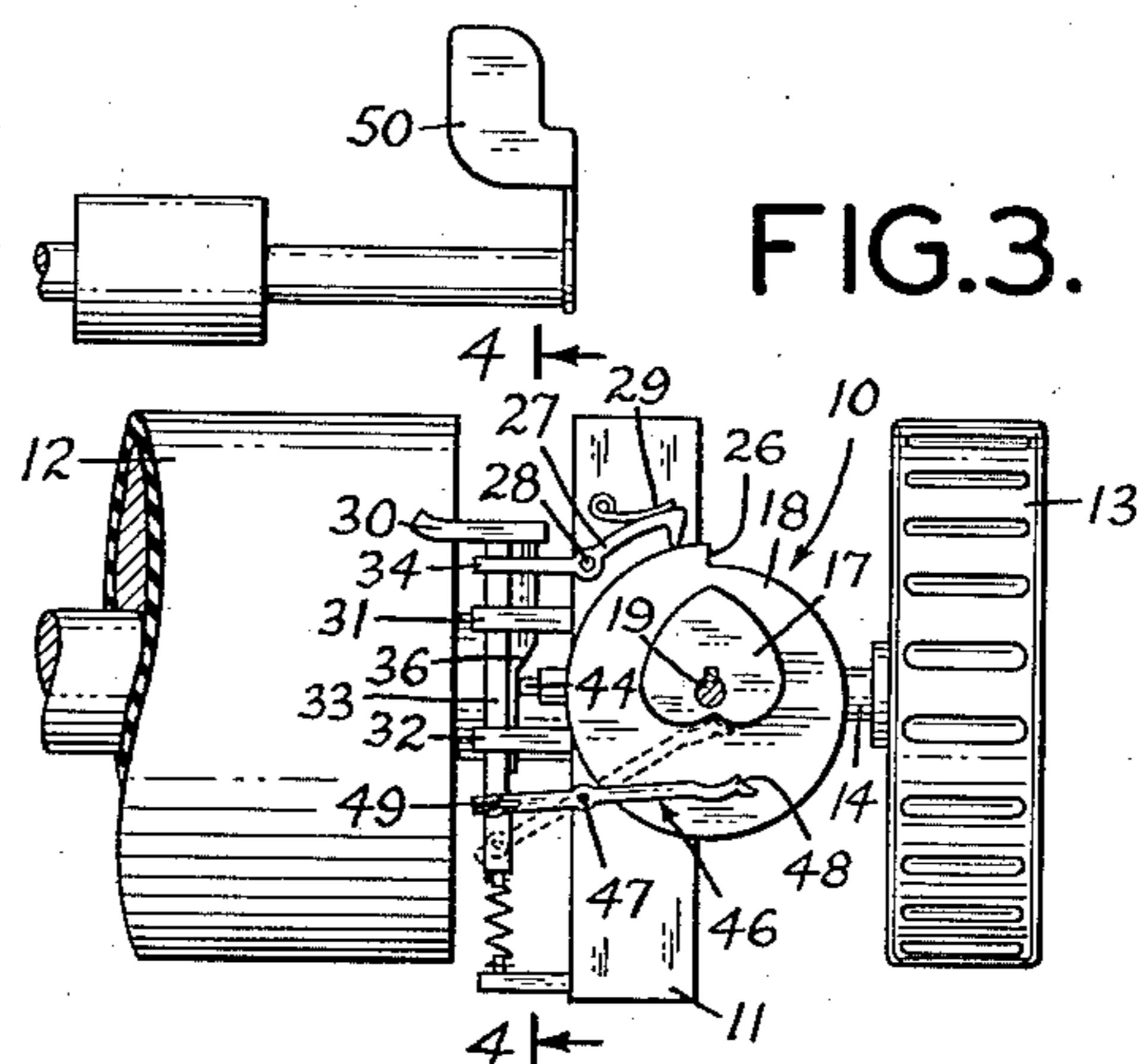


FIG.4.

FIG.5.

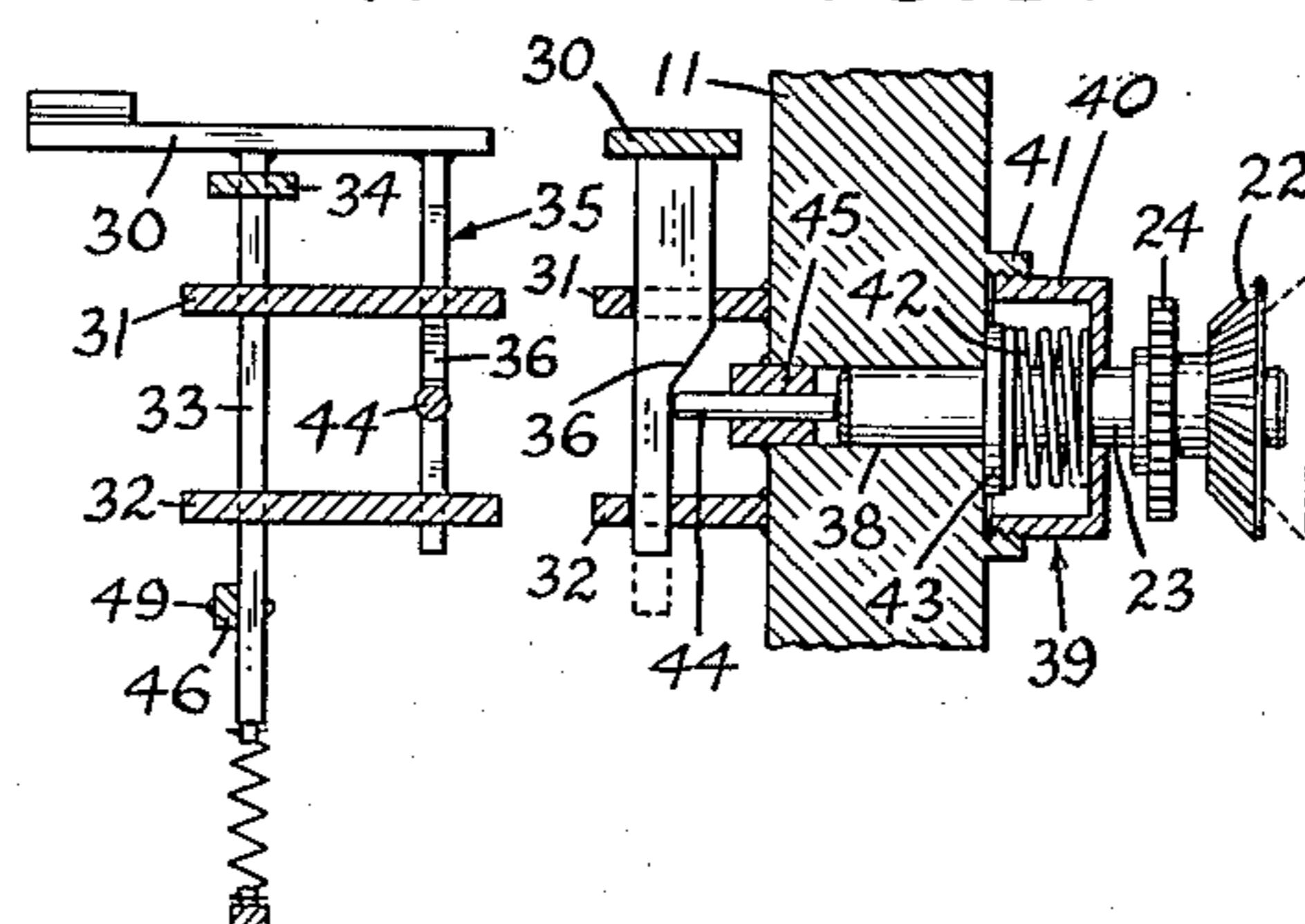


FIG.6.

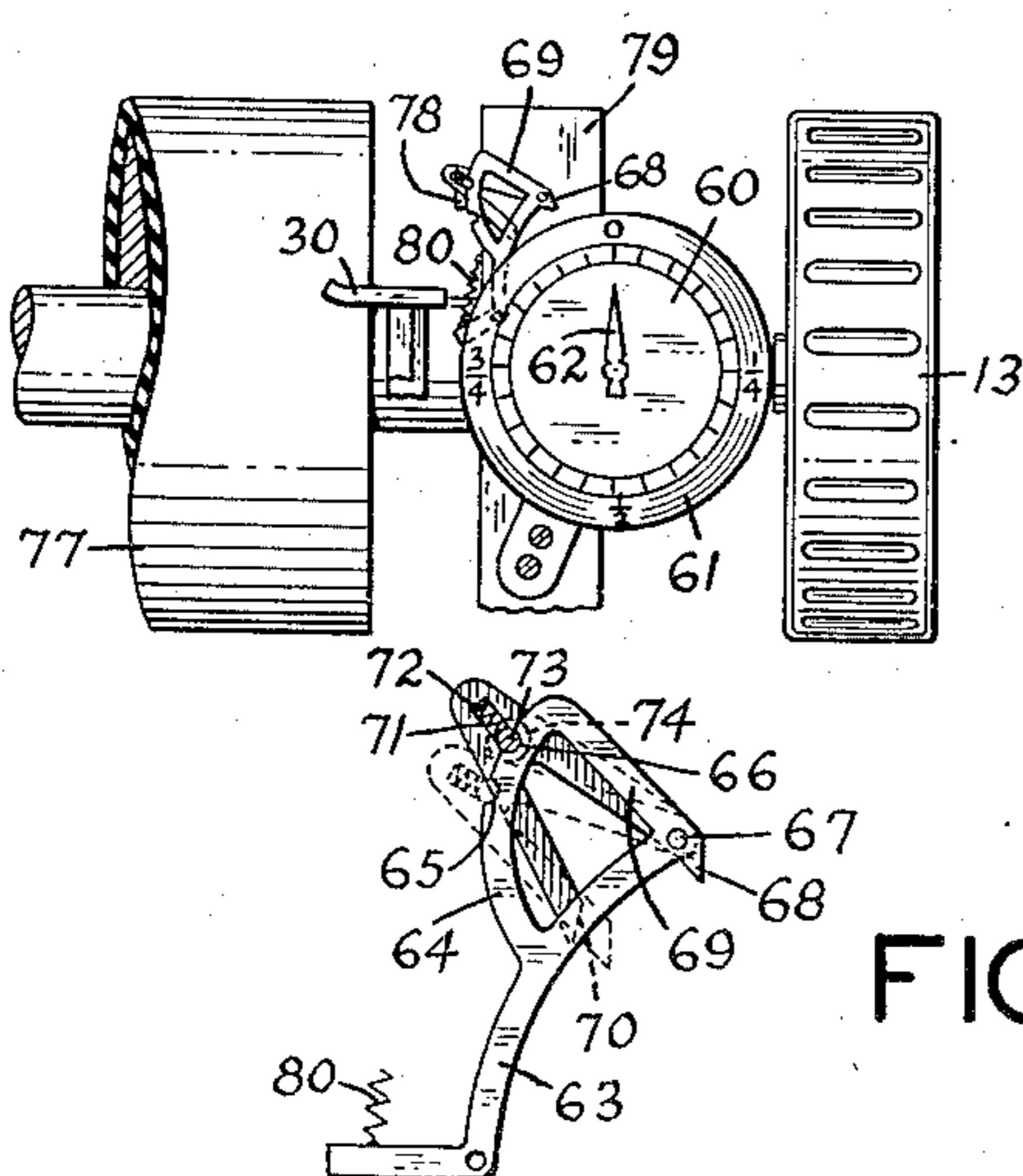


FIG.9.

FIG. 7.

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UNITED STATES PATENT OFFICE

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PAGE CONTROL AND PAGE CONTROL
RELEASE FOR TYPEWRITERS

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7 Claims. (Cl. 197—189)

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This invention relates to a page control and line indicating device for typewriters. It relates more particularly to a device constructed and arranged to guide the typist by showing how much of the page has been typed and further to indicate when the bottom of the usual typing area is reached by making it impossible for the paper platen to turn farther, unless manually released.

Devices of the type embodying the invention may include an indicator having a dial and a pointer which are moved relatively in response to the rotation of the platen of a typewriter as it advances a sheet. The indicator is suitably calibrated to indicate the number of lines of type in the typing area of a sheet, this calibration being related to the diameter of the platen so that advancing of the sheet by rotation of the platen also advances the indicator.

In the conventional typewriter, the diameter of the platen is such that each complete turn of the platen advances the sheet a distance equal to about 26 single spaced lines of typing. The average letter size sheet of paper is of sufficient size to receive 67 to 68 lines of single space type. The usual typed portion of a page occupies about 52 lines, single spaced, or 26 lines, double spaced, so that two complete revolutions of the paper platen will cover the usual typing portion of a page. In the preferred form of indicator and control device, the indicator is calibrated to make slightly less than one complete revolution for each two turns of the paper platen. At this time, further rotation of the indicator and of the paper platen is prevented by means of a suitable catch which may be, however, manually released to permit additional lines to be typed on the page or to permit release of the platen for removal of the page and resetting of the indicator to zero.

If desired, the indicator and control device may be provided with a two step catch or lock which is related to, for example, letter size or legal size sheets so that the indicator can be set at will to indicate the end of the typing area for either type or length of sheet or page.

The indicator, of course, indicates the number of lines that have been typed and also conversely the number of lines remaining to be typed on the sheet. It can, if desired, be provided with an audible warning device as well as the automatic stop and it can be connected with other elements of the typewriter such as the page release bar for automatic resetting as the paper is inserted or withdrawn from the typewriter.

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For a better understanding of the present invention, reference may be had to the accompanying drawings, in which:

Fig. 1 is a view in plan of a portion of the typewriter including a part of the platen supporting frame and the indicating and control device embodying the present invention attached thereto;

Fig. 2 is a front view of the indicating and control device and a portion of the paper platen and the paper release lever and bar;

Fig. 3 is a front view corresponding to Fig. 2 with the indicating dial removed from the indicating and control device;

Fig. 4 is a view in section taken on line 4—4 of Fig. 3;

Fig. 5 is a view in section taken on line 5—5 of Fig. 1;

Fig. 6 is a front view of a modified form of control and indicating device mounted on the frame of a typewriter, a portion of the platen and control knob also being shown;

Fig. 7 is a front view of the indicating device with the dial and pointer removed therefrom showing a modified type of stop pawl in one position;

Fig. 8 is a view of the device of Fig. 6 showing the stop pawl in another position; and

Fig. 9 is a fragmentary view partly in section of the two position stop pawl illustrating details of construction.

The invention will be described in connection with a conventional typewriter. Only a portion of the typewriter including a part of the frame and the paper platen is illustrated in the drawing for the other elements of the typewriter do not form a part of the present invention. The indicating device 10 embodying the invention may be mounted upon one side 11 of the frame of the typewriter, this frame also supporting rotatably the paper platen roll 12 which is provided with the usual control knob 13 connected by means of a shaft 14 to the roll.

The indicator 10 includes an annular or ring-like dial 15 which is secured to the frame member 11 by means of a tongue or lug 16 to prevent rotation of the dial. The center of the dial is open to display a heart-shaped cam 17 which is supported on the front of a generally disc-like member 18 which is keyed to a shaft 19 rotatably mounted in a plate 20 fixed to the front of the frame member 11.

The shaft 10 carries behind the member 18 a bevel gear 21 which meshes with a smaller bevel gear 22 rotatably mounted upon a shaft 23 car-

ried by the frame 11 in a manner to be described. Fixed to the back of the bevel gear 22 is a thin spur gear 24 which meshes with a thicker spur gear 25 fixed to the shaft 14. Because of the geared connection between the platen 12 through the shaft 14 and gears 21, 22, 24 and 25, the disc 18 is caused to rotate a little less than one complete revolution for each two revolutions of the paper platen. The two turns of the platen 12 ordinarily are sufficient to move the page or sheet of paper through a distance equivalent to about 52 lines of single space typing or 26 lines of double space typing.

The disc member 18 is provided with a tooth or shoulder 26 which cooperates with a pawl 27 pivotally supported by a pivot pin 28 on the front of the frame member 11. The pawl 27 is normally urged against the periphery of the disc 18 by means of a spring 29 so that the rotation of the disc member 18 is limited to slightly less than one complete clockwise revolution from starting or zero position. The tooth of the pawl is disposed on top of the tooth 26 when the point of the heart-shaped cam is at zero position on the dial 15, as shown in Fig. 2.

With the above-described relationship of parts, if a sheet of paper is inserted in the typewriter and adjustment made for the heading of the typed matter and the indicator set at zero position, typing may continue until the disc member 18 has rotated clockwise from the position shown in Fig. 2 and the tooth of the pawl 27 engages tooth or shoulder 26. At this time, the platen 12 as well as the disc 18 is locked against further rotation in a direction to advance the sheet or page.

The page or sheet is released from the typewriter, or additional lines can be typed on the page or sheet by means of a release for the pawl. The release mechanism includes a key 30 which is guided for up and down movement in a pair of guide plates 31 and 32 fixed to the frame 11. The key includes, as shown in Figs. 4 and 5, a guide bar 33 which is straddled by the bifurcated end 34 of the pawl so that downward movement of the key rocks the pawl counter-clockwise and lifts it out of engagement with the tooth or shoulder 26. The key also includes a second parallel guide bar 35 which is provided with an inclined cam portion 36 disposed behind and in alignment with the axes of the gears 22 and 24.

As shown in Fig. 5, the gears 22 and 24 are rotatably mounted upon a shaft 23 which is slideable in a bore 38 in the frame 11 and also in a housing 39 on the right-hand side of the frame. The housing 39 includes a cup-shaped member 40 threaded into a collar 41 on the side of the housing and encloses a coil spring 42 which bears against a collar 43 fixed to the shaft 23 so that the shaft 23 is normally urged to the left to engage the gear 22 with the gear 21.

The cam 36 is used to disengage the gear 22 from the gear 21 by engaging a push pin 44 which is slidably mounted in a bushing 45 in the left-hand end of the bore 38 and engages the left-hand end of the shaft 23. With this arrangement, when the key 30 is depressed, the pawl 27 is released from the shoulder or tooth 26 and the platen 12 is uncoupled from the disc 18 by disengagement of the gears 21 and 22. The width of the gear 25 is such that the gear 24 remains in mesh with it despite axial displacement of the latter.

Resetting of the indicator is also accomplished

by means of the key 30. The resetting mechanism includes a lever 46 supported on a pivot pin 47 projecting from the frame 11. The lever 46 has a sharp pointed tooth 48 thereon for engagement with the periphery of the heart-shaped cam 17. Inasmuch as this cam has both loops thereof formed as a spiral, engagement of the tooth 48 with the cam in any position will cause the cam to rotate to bring the point into the valley between the two loops of the cam, thereby returning it to zero. Pressure for the resetting of the cam 19 is provided by means of a pin and slot connection 49 between the left-hand end of the lever 46 and the guide bar 33, as shown in Figs. 3 and 4. Thus, the operation of the key first releases the disc and cam 17 for free rotation, and continued downward movement of the key 30 causes rotation of the disc 18 and the cam 17 back to zero position.

While in most instances the provision of a separate key 30 is most satisfactory for the operation of the indicator, it will be understood that the key may be connected to the page or sheet release lever 50 so that upon operation of this lever, the indicator is released and reset permitting the sheet to be inserted or withdrawn from the typewriter.

The device is susceptible to further modification in its details. For example, as shown in Fig. 6, the cam 59 may be concealed behind a disc-like plate 60 which is rotatable relative to the ring-like dial 61 and bears a pointer 62 thereon for cooperation with the dial 61. Also, the pawl mechanism may be modified to render it completely ineffective when the indicating and control device is not needed, or to cause stoppage of the platen when typing sheets of different length. A typical pawl mechanism for this purpose is illustrated in Figs. 6, 7 and 8. The pawl may consist of a pivotally mounted lever 63 like the pawl 27 described above, differing in that it is provided with an arcuate comb portion 64 provided with a pair of notches 65 and 66 in its outer edge. The outer end of the pawl member is provided with a pivot pin 67 behind the pawl tooth 68. The pin 67 supports an inverted V-shaped member 69 having a pawl tooth 70 on the end remote from the pivot. The V-shaped member is provided with a slot 71 near its apex to receive a flattened zigzag spring 72 which normally urges a pin 73 in the slot toward its lower position. The pin may be provided with a suitable head or knob 74 to permit it to be pushed up the slot when adjustment of the pawl 70 is to be made. Thus, when the pawl tooth 70 is to be retracted, the pin 73 is engaged in the notch 66 so that a substantially complete rotation of the pointer 62 may take place for long sheets. When using shorter pages or sheets in the typewriter, the pin may be engaged in the notch 65 which brings the pawl tooth 70 down into position to engage the tooth or shoulder 75 on the disc 76, thereby stopping rotation of the platen 77 before it has been turned through two complete revolutions.

The whole pawl assembly may be rendered ineffective by means of a lug 78 on the inside of the typewriter frame 79 over which the projecting pin 73 can be hooked to retain both of the teeth of the pawls out of contact with the periphery of the disc member 76 against the tension of the spring 80 so that the indicator can continue to rotate as long as the paper platen is turned to advance the sheet.

From the preceding description, it will be apparent that a device has been provided which is

capable of stopping the rotation of the paper platen before the sheet has been advanced from beneath the type bars and also which indicates the number of spaces for typing remaining on the sheet.

It will be understood, of course, that there may be some changes in the structure and relationship of the elements making up the control and indicating device, and, therefore, the forms of the device described above should be considered as illustrative and not as limiting the scope of the following claims.

I claim:

1. In a page control and line indicator for typewriters having a rotatable platen; the combination of an indicating dial, a pointer member adjacent to said dial, drive means interposed between and connecting said pointer member to said platen for rotating them simultaneously, a releasable stop member to limit rotation of said pointer member to less than one complete revolution, means for disconnecting said drive means to disconnect said pointer member from said platen, means for returning said pointer member to an initial position relative to said dial, a key for successively actuating said disconnecting means and said returning means and means connecting said stop member to said key to release said stop member upon actuation of said key.

2. In a page control and line indicator for typewriters having a rotatable platen mounted in a frame; the combination of a dial mounted on said frame, a pointer member adjacent and rotatable relative to said dial, gearing connecting said pointer member to said platen for simultaneous rotation, a releasable stop member to limit rotation of said pointer member to less than one complete revolution, a part of said gearing being displaceable to disconnect said pointer member from said platen, means for rotating said pointer member to an initial position relative to said dial, a key for displacing said part and thereafter actuating the means for rotating said pointer member to said initial position and means connecting said stop member to said key to release said stop member upon actuation of said key.

3. In a page control and line indicator for typewriters having a platen rotatably mounted in a frame; the combination of an indicating dial mounted on said frame, a pointer member rotatably mounted adjacent to said dial, releasable drive means connecting said pointer member to said platen for rotation therewith, a heart-shaped cam fixed to said pointer member, a lever movably mounted for engagement with said cam to rotate the latter to an initial position relative to said dial, and a key for releasing said drive means and moving said lever to engage and rotate said cam to said initial position.

4. In a page control and line indicator for typewriters having a platen rotatably mounted in a frame; the combination of an indicating dial

mounted on said frame, a pointer member rotatably mounted adjacent to said dial, releasable drive means connecting said pointer member to said platen for rotation therewith, a heart-shaped cam fixed to said pointer member, a lever movably mounted for engagement with said cam to rotate the latter to an initial position relative to said dial, a tooth on said pointer member, a pawl pivotally mounted adjacent to said pointer member to engage said tooth and limit rotation of said pointer member, and a key for releasing said drive means, moving said pawl pivotally out of position to engage said tooth and moving said lever to engage and rotate said cam to said initial position.

5. A page control and line indicator for typewriters having a platen rotatably mounted in a frame; the combination of a dial fixed to said frame, a pointer member rotatably mounted adjacent to said dial, a releasable drive means connecting said pointer member to said platen for rotation therewith, means for returning said pointer member to an initial position relative to said dial, a pawl member pivotally mounted adjacent to said pointer member, a shoulder on said pointer member movable into engagement with said pawl member to limit rotation of said pointer member, and a key for actuating said releasable drive means to disconnect said pointer member from said platen, and to rock said pawl member away from the path of said shoulder to release said pointer member for return to said initial position.

6. The device set forth in claim 5 in which said pawl member has a fixed projection to engage said shoulder, a movable projection spaced angularly from said fixed projection and means to move said movable projection into and out of the path of said shoulder.

7. The device set forth in claim 5 in which said releasable gearing comprising a first gear fixed to said platen, a second gear fixed to said pointer member, an idler gear movable relative to said first and second gears into and out of engagement with at least one of said first and second gears to connect and disconnect said platen and said pointer member and means normally urging said idler gear into engagement with both of said first and second gears, and said key comprising a cam member for moving said idler gear to disconnect said platen and said pointer member.

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55 The following references are of record in the file of this patent:

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