Dec. 25, 1951 W. A. DOBSON 2,580,285

PLATEN KNOB WITH TELESCOPING CLUTCH KNOB

Filed May 28, 1949

Fig. 1

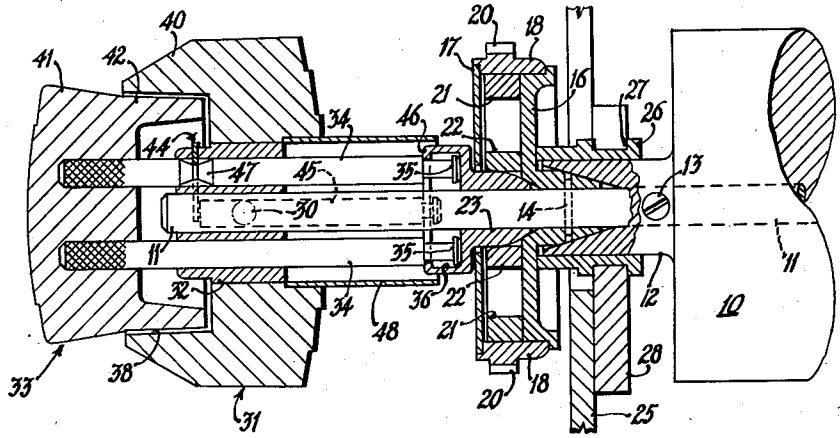
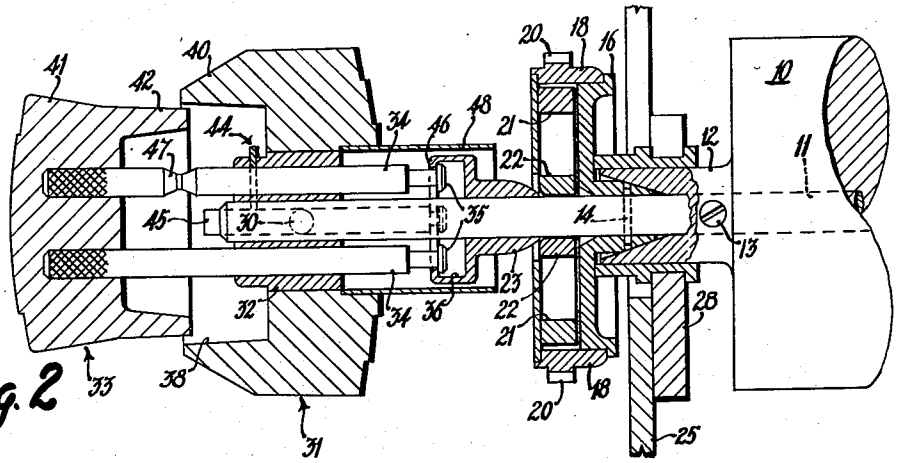


Fig. 2



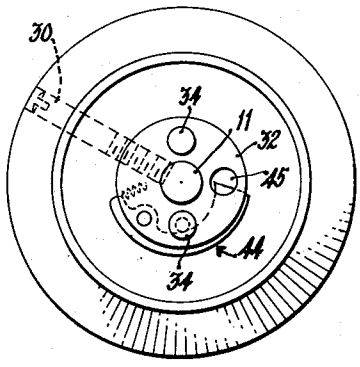


Fig. 3

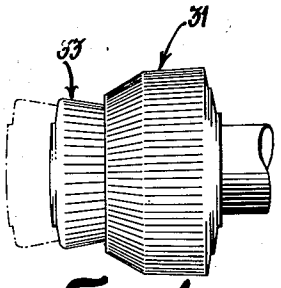


Fig. 4

INVENTOR.
WILLIAM A. DOBSON
BY Jesse A. Holton
ATTORNEY

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PLATEN KNOB WITH TELESCOPING CLUTCH KNOB

William A. Dobson, West Hartford, Conn., assignor to Underwood Corporation, New York, N. Y., a corporation of Delaware

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6 Claims. (Cl. 197—123)

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The invention relates to platen rotating knobs and platen clutch controlling means for typewriting and other office machines.

Typewriters of conventional design embody a platen roll and have a line-space mechanism to impart to a toothed line-space wheel on the platen incremental turning advances, thereby to line-feed the platen. A spring pressed element is usually associated with the toothed wheel to detent it in any line-space position to which it is turned. To permit turning adjustments of the platen independently of the line-space wheel, as for example when ruled lines on the paper must be matched with the printing point, a clutch is provided which is adapted to be opened and closed respectively to permit rotation of the platen either independently or connected with the toothed line-space wheel. The platen is usually conveniently turnable by a knob of appreciable size, and a relatively small control button projects usually endwise from said knob and is operable axially of the platen for control of said clutch.

In certain classes of work the knob and the button are used frequently and the operator's hand must constantly switch from one to the other, which movements have been found awkward and inefficient to perform.

In view of the above and other deficiencies of prior known platen rotating and platen clutch controls, it is an object of the invention to provide conveniently manipulative, efficient control means for turning the platen and for operating the line-space clutch.

Particularly, it is also an object to provide such improved control means to the end of making platen rotation and clutch controlling action easier when one is to succeed immediately the other.

Another object is to provide in novel and efficient telescopic association with a platen turning knob another knob which constitutes an extension of the turning knob and is movable axially of the platen to open and close a line-space clutch, said other knob being also conveniently turnable to rotate the platen.

A still further object is to give the two knobs of said telescopic association such form that all the desired manipulations thereof can be performed smoothly by convenient motions of the hand.

Other objects and features will be in part obvious and in part pointed out particularly as the following description of a preferred embodiment of the invention proceeds.

Referring now to the drawings:

Figure 1 is a sectional front elevation of a line-space clutch mechanism, including also a platen rotating knob in novel association with a dual-purpose platen turning and line-space clutch controlling knob, the clutch being shown in closed condition.

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Figure 2 is a view similar to Figure 1, but showing the line-space clutch open.

Figure 3 is an end view of the platen turning knob, the dual-purpose knob having been omitted.

Figure 4 shows the knobs of Figures 1 and 2 in full elevation.

Referring to Figures 1 and 2, a platen roll 10 is carried upon a platen shaft 11 by means of a hub 12 which has a set screw 13 therein rendering the platen unitarily assembled upon the said shaft. Also carried fast on said shaft, as by a pin 14, is a clutch unit comprising a flange 16. This clutch unit is of conventional Underwood manufacture and comprises also a disk 17, which by studs, not shown, is rigidly united with the flange 16. Upon said flange 16 and disk 17 is accommodated an annular member or ring 18 having line-space teeth 20, such ring being commonly known as the line-space wheel. Caged within the flange 16, the disk 17 and the line-space wheel 18 are a pair of clutch shoes 21 and a pair of clutch shoe operating arms 22. Said clutch shoes and arms are of conventional structure and substantially as shown in the patent to Helmond, No. 1,432,695, dated October 17, 1922. By means not shown, but disclosed in said patent, the brake shoes are constrained to turn always with the flange 16. In the closed position of the clutch seen in Figure 1, the clutch shoes 21 are shown pressed outwardly into firm frictional contact with the line-space wheel by an annular cam member 23 which spreads the clutch operating arms 22 and, by means not shown, spreads the brake shoes 21 at great leverage outwardly. The cam member 23 is slidably supported on the platen shaft. For turnably associating the platen upon a supporting frame 25, there is carried loosely on the platen hub 12 a bushing 26 which is annularly grooved as at 27 for seated accommodation upon a saddle plate 28. The latter is rigidly carried on the frame 25, and appropriate means, not shown, hold the bushing 26 down upon the saddle plate.

Upon the end of the platen shaft 11, axially spaced from the platen clutch unit there is secured, by means of a set screw 30, a large platen turning knob 31 which may be molded of a plastic material and which preferably includes a metal core 32 wherein the screw 30 is threadedly accommodated. In telescopic association with said knob

31 there is provided a dual-purpose knob 33. This dual-purpose knob 33 is carried upon pins 34 extending through perforations in the core 32 of the knob 31. The said knob 33 is preferably molded fast onto roughened ends of the pins 34, as shown. Said two pins 34 are in control over the clutch-controlling cam element 23 by means of lost motion connections provided by heads 35 on said pins situated in an internal annular cavity 36 of the cam element 23.

The clutch is shown in closed condition in Figure 1, and this condition is the result of having pressed the dual-purpose knob 33 axially in the direction of the platen turning knob 31. The latter knob has a large internal axial recess 38 forming a large diameter sleeve 40, and the dual-purpose knob 33 comprises adjacent said sleeve 40 a gripping portion 41 merging into a portion 42 which extends into said sleeve in a telescopic association therewith. The knob 31 is appreciably larger than the knob 33 and tapers down to the extremity of sleeve 40 which is thin-walled. On the other hand the gripping portion 41 of the dual-purpose knob is larger than the portion 42 and tapers down thereto. In Figure 2 the clutch is in an open condition, and it will be seen that the dual-purpose knob 33 has been pulled outwardly from the main platen turning knob 31, but the knob portion 42 is still partially contained within the sleeve 40. For this reason there is never a void between the two knobs wherein the operator's fingers are liable to become pinched or caught when the dual-purpose knob 33 is moved to close the clutch.

The novel telescopic interarrangement of the two knobs has many advantages. It makes possible a quick switch of the operator's hand from either one to the other knob in a smooth and fast procedure. The operator may roll a work sheet into the machine by turning the main knob 31, and in order to effect then a fine adjustment of the platen independently of the line-space wheel 18, the operator's fingers may then be slid conveniently onto the knob 33 to displace it outwardly in a combined movement for clutch opening action. In sliding the fingers outwardly they close in automatically on the taper of the gripping portion 41 of the knob 33. Moreover, the clutch opening movement of the dual-purpose knob 33 may be continued into a turning motion without transfer of the hand back onto the knob 31. It will be further noted that in sliding the knob 33 outwardly, portions of the operator's fingers may remain on, or may conveniently be moved back onto the larger knob 31 for a combined hold on both knobs to turn the platen. The taper of the knob 33 and the taper of the sleeve 40 present an annular depression which is pleasing for a firm finger hold as well as in appearance.

For effecting closure of the clutch, the operator may place the entire hand on the combined knob structure and may exert pressure against the end of the knob 33 by the palm of the hand. Despite the fact that the diameter of the dual-purpose knob 33 is nearly that of the main knob 31, no pinching of any part of the operator's hand is possible when the knob 33 is pushed in. This is in view of the telescopic association of the two knobs.

In the closed position of the clutch, the annular cam member 23 is prevented from slipping outwardly from the clutch, substantially in the manner as disclosed in the patent to Helmond, No. 1,150,366, dated August 17, 1915. Specifically, a spring pressed lock pawl 44, pivotally accommodated in a slot of the knob core 32, is associated with a lock pin 45 to move partly across an end thereof whenever the clutch assumes fully closed position, see Figures 1 and 3. In the open position of the clutch the pawl 44 bears against one of the pins 34 and is entirely free and clear of the pin 45, which pin similarly to the pins 34 is slidably accommodated in the knob core 32. The pin 45 moves axially in unison with the clutch controlling cam 23, and to this end forms an interlocking engagement with the cam member by means of an internal rim 46 formed on the latter by the cavity 36 and in view of an annular groove in the pin. In the closed position of the clutch seen in Figure 1, the pawl 44, under spring tension, comes to lie in a cam-forming reduction 47 of one of the pins 34 and swings behind the end of the pin 45.

Only upon deliberate movement of the latch 33 outwardly from the Figure 1 position, and at no other time, the cam 23 is allowed to move outwardly to open clutch position as seen in Figure 2. Initial outward movement of the knob 33 causes first an outward displacement of the pawl 44 by action of the pin reduction 47 on such pawl. The heads 35 of the two pins 34 during such movement will have no effect on the cam element 23 in that they move freely in the cavity 36 until they engage the rim 46. Further outward movement of the dual-purpose knob 33 is then transmitted to the cam 23 and results in the opening of the clutch.

The knob embodies unitarily thereon a tubular member 48 which covers the pins 34, 45 and part of the cam member 23.

Having specifically described the invention in a preferred form, what is claimed is:

1. The combination with a turnable platen, a line-space wheel, and a clutch to connect or disconnect the platen from the line-space wheel; of a turning knob for the platen coaxial therewith, a dual-purpose knob of large diameter also coaxial with the platen for turning the platen and for controlling action on said clutch, means associating said dual-purpose knob with said platen for rotation thereof as well as for opposite clutch-controlling movements axially of the platen, means to open and close said clutch by said opposite movements of said dual-purpose knob, one of said knobs being provided with a cylindrical recess of large diameter coaxial with the platen, forming on such knob a sleeve of large diameter, and the other knob comprising a portion in telescopic internal association with said sleeve and comprising further an axially neighboring gripping portion remaining always outside of said sleeve and having a diameter substantially at least as large as the said first portion of the knob, whereby the two knobs are telescopically associated and the platen is turnable always by either of the two knobs.

2. The invention set forth in claim 1, said sleeve being thin-walled at its open end, and of increasing diameter in the direction away from the gripping portion of said other knob.

3. The invention set forth in claim 1, said gripping portion and said sleeve being of diminishing diameter axially toward each other.

4. The combination with a turnable platen, a line-space wheel, and a clutch to connect or disconnect the platen from the line-space wheel; of a turning knob for the platen coaxial and fixedly associated therewith, a dual-purpose knob of large diameter also coaxial with the platen, for turning the platen and for controlling action on

said clutch, means associating said dual-purpose knob with said turning knob for turning it, and for opposite clutch-controlling movements axially of the platen, means to open and close said clutch by said opposite movements of said dual-purpose knob, said turning knob having coaxially therewith a cylindrical recess forming a large diameter sleeve, and the dual-purpose knob comprising axially adjacent to said sleeve a gripping portion remaining always outside of said sleeve, and comprising further a portion extending telescopically into said sleeve, said gripping portion having a diameter substantially at least as large as the portion which extends into said sleeve, whereby the dual-purpose knob is telescopically associated with the turning knob and whereby both knobs are manipulative for their respective purposes at all times.

5. The combination with a platen shaft, a platen turning knob carried fast on an end of said shaft, a line-space wheel concentric with said shaft and axially spaced from said knob, and a clutch carried on said shaft and operable to clutch the platen shaft for rotation with or independently of said line-space wheel; of a dual-purpose knob concentrically arranged with said turning knob, means to mount said dual-purpose knob for sliding movement in concentric relation axially on said turning knob and turnably therewith, said mounting means comprising a plurality of rods extending rigidly from the dual-purpose knob through the turning knob in parallel to the platen shaft for clutch operating action, said turning knob having an axial recess forming a large-diameter sleeve, and the dual-purpose knob comprising axially adjacent to said sleeve a gripping portion substantially of a diameter at least as large as the interior recess of said sleeve and comprising further a portion extending into said sleeve in a telescopic association

6. The combination with a turnable platen, a line-space wheel, and a clutch to connect or disconnect the platen from the line-space wheel; of a turning knob for the platen coaxial and fixedly associated therewith, a dual-purpose knob of large diameter also coaxial with the platen, for turning the platen and for controlling action on said clutch, means associating said dual-purpose knob with said turning knob for turning it, and for opposite clutch-controlling movements axially of the platen, means to open and close said clutch by said opposite movements of said dual-purpose knob, said turning knob having coaxially therewith a cylindrical recess forming a large diameter sleeve, and the dual-purpose knob comprising axially adjacent to said sleeve a gripping portion remaining always outside of said sleeve, and comprising further a portion extending telescopically into said sleeve, the said gripping portion closest to the other portion being substantially of the same diameter as the cylindrical recess in said sleeve, and being of increasing diameter in a direction axially away from said sleeve.

WILLIAM A. DOBSON.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,057,365	Ursbruck	Mar. 25, 1913
1,432,695	Helmond	Oct. 17, 1922

FOREIGN PATENTS

Number	Country	Date
96,159	Austria	of 1924