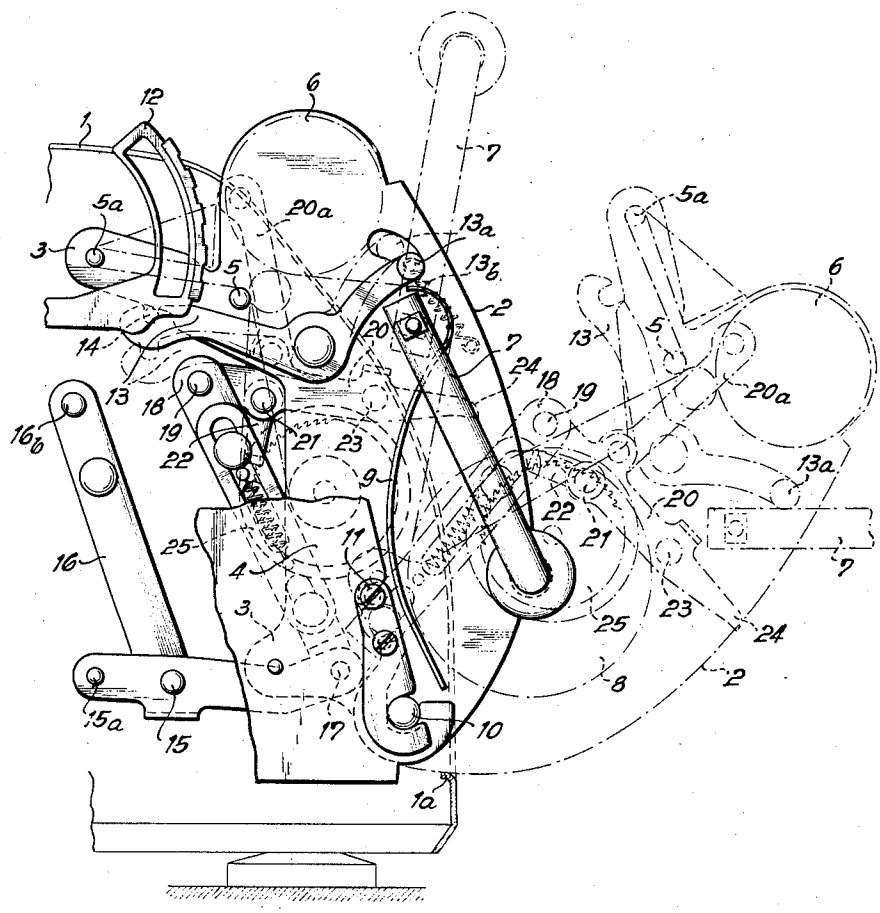
Feb. 5, 1957 E. KUHN 2,780,165

TYPING APPARATUS FOR BUSINESS MACHINES AND THE LIKE

Filed Oct. 6, 1953 3 Sheets-Sheet 1

FIG. 1



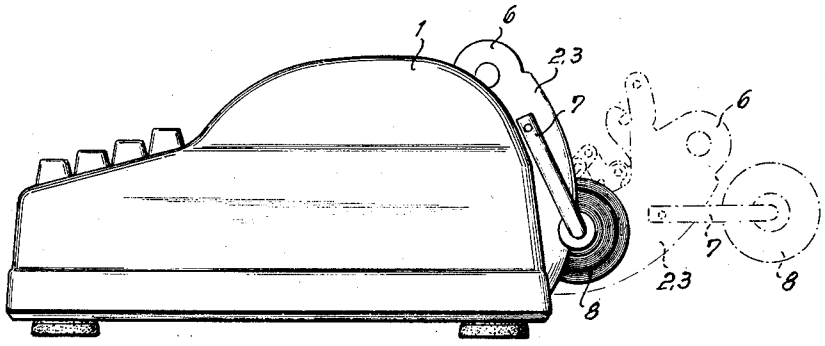
INVENTOR:
EUGEN KUHN
BY:
Michael S. Striker
Agt.

Feb. 5, 1957 E. KUHN 2,780,165

TYPING APPARATUS FOR BUSINESS MACHINES AND THE LIKE

Filed Oct. 6, 1953 3 Sheets-Sheet 2

FIG. 2



INVENTOR:
EUGEN KUHN
BY:
Michael S. Striker
Agt.

Feb. 5, 1957 E. KUHN 2,780,165

TYPING APPARATUS FOR BUSINESS MACHINES AND THE LIKE

Filed Oct. 6, 1953 3 Sheets-Sheet 3

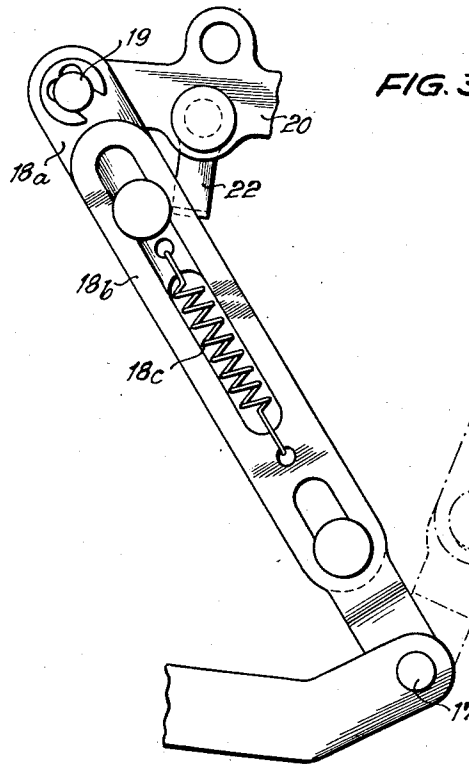


FIG. 3

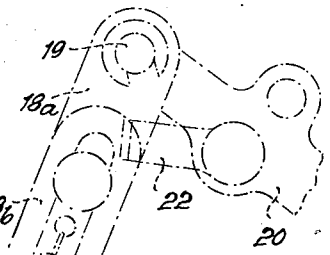


FIG. 4

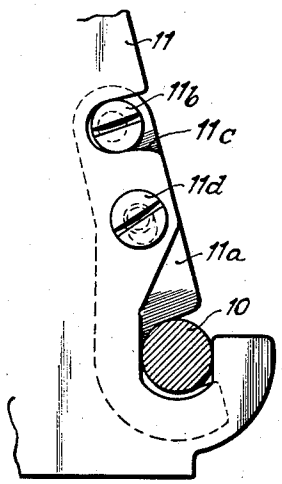
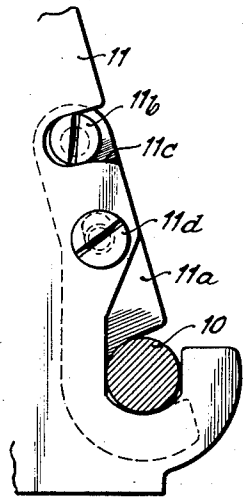


FIG. 5



INVENTOR:
EUGEN KUHN
BY:
Michael S. Striker
Agt.

United States Patent Office 2,780,165
Patented Feb. 5, 1957

2,780,165

TYPING APPARATUS FOR BUSINESS MACHINES AND THE LIKE

Eugen Kuhn, Altoberndorf (Neckar), Germany, assignor to Olympia Werke Aktiengesellschaft, a joint-stock company

Application October 6, 1953, Serial No. 384,369

Claims priority, application Germany October 10, 1952

5 Claims. (Cl. 101—96)

The present invention relates to business machines.

More particularly, the present invention relates to that portion of a business machine which types numbers and the like on a strip of paper.

Known business machines have several disadvantages at the portion thereof which types characters on a strip of paper. For example, such business machines usually have a hood which is removable or turnable to an inoperative position in order to uncover the ink ribbon and the guides therefor, but even then it is very difficult to work easily with the ribbon in order to change the same, for example, because the ribbon is in a very confined space. It is usually necessary to use some sort of tools in order to thread the ribbon through its guides because of the inaccessibility of the latter, and very often foreign bodies become located in the machine when such bodies, in the form of pencils or the like, are used by the operator to avoid getting ink on his fingers. Also, it is very difficult to gain access to the type members for cleaning the latter, or the type members must be raised through actuation of the type operating mechanism in order to place the type members in a suitable position for cleaning. Usually, the platen is located too close to the type members to permit proper cleaning of the latter.

One of the objects of the present invention is to overcome the above drawbacks by providing a simple arrangement which permits the platen, ribbon, and paper, to be moved to an inoperative position located at a sufficient distance from the type members to afford easy access to the type members as well as to the platen, ink ribbon, and paper.

Another object of the present invention is to provide a means for releasably locking the platen, ribbon, and paper in an operative position adjacent to the type members.

A further object of the present invention is to provide a means for actuating the platen, to move the paper, and for moving the ink ribbon even when these parts are in their inoperative position distant from the type members.

An additional object of the present invention is to provide a means for adjusting the elevation of the platen and the other parts which are movable toward and away from the type members.

A still further object of the present invention is to provide a paper carrying means which is capable of releasing the platen ribbon and paper supporting structure from the structure which carries the type members.

Still another object of the present invention is to provide relatively simple and ruggedly constructed parts capable of accomplishing all of the above objects and capable of giving reliable service for a long period of time.

With the above objects in view, the present invention mainly consists of a business machine which includes a stationary support means carrying the type members of the machine. A movable support means is connected

to the stationary support means for movement between an operative position located adjacent to the type members and an inoperative position distant from the type members. A platen is turnably mounted on the movable support means and is located opposite the type members when the movable support means is in its operative position. An ink ribbon carrying and guiding means is mounted on the movable support means for locating a ribbon between the type members and platen. Also a paper carrying and guiding means is mounted on the movable support means for guiding a strip of paper to an outer surface portion of the platen which faces the type members when the movable support means is in its operative position. Thus, when the movable support means is moved to its inoperative position, the platen, ink ribbon carrying and guiding means, and paper carrying and guiding means move with the movable support means away from the type members to give free access to the type members as well as to the structure carried by the movable support means.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a fragmentary, side elevational view of that part of a business machine which includes the structure of the present invention, part of this structure being shown in solid lines in the operative position thereof and in dot-dash lines in the inoperative position thereof;

Fig. 2 is a side elevational view of the entire business machine and shows in dot-dash lines parts of the machine in their inoperative position;

Fig. 3 is a fragmentary, side elevational view, on an enlarged scale, of a linkage means constructed in accordance with the present invention and shown in two positions in solid and dot-dash lines, respectively;

Fig. 4 is a fragmentary, elevational view, on an enlarged scale, of an adjusting means for adjusting the elevation of parts of the structure of the invention; and

Fig. 5 shows the structure of Fig. 4 in a different position thereof.

Referring now to the drawings, it will be seen that the business machine of the invention includes a cover **1** fastened over the machine frame and forming with the latter a stationary support means. A movable support means **2**, **3** is movably connected to this stationary support means and includes the frame members **3** which are either enclosed by the rear member **2** and connected to the latter or are simply connected to this rear member **2**, this movable support means **2**, **3** filling a space at the rear end of cover **1** of the stationary support means and conforming generally to the shape of the machine, as is evident from Fig. 2. The frame members **3** may be in the form of side plates forming opposite side walls of the movable support means and being pivotally mounted adjacent their bottom ends on the pivot bar **10** carried by the stationary support pins in a manner described below, these side plates **3** being fixedly connected at their rear edges, for example, to the curved plate **2** which extends laterally across the rear of the machine in the manner illustrated.

The side plates **3** support between themselves a carrier **4** for an ink ribbon, this carrier **4** being turnably mounted on a shaft supported by the plates **3**, for example. A guide means in the form of transverse rods **5** and **5***a* carried by plates **3** is provided to guide an ink ribbon carried by the turnable ink ribbon carrying means **4** to a position located between the type members **12**, carried by

the stationary support means 1 and actuated in any suitable known manner not forming part of the present invention, and the platen 6 which is turnably carried by the side plates 3 and located opposite the type members 12 so that the latter may cooperate with the ink ribbon to type characters on a strip of paper located in part against an outer surface portion of the platen 6 which faces the type members 12 when the movable support means 2, 3 is in its operative position located adjacent to the type members 12, as shown in solid lines in Fig. 1. The platen 6 is supported in roller bearings in the side walls 3 of the movable support means and has a length corresponding to the entire width of the movable support means, suitable protective caps being provided at opposite sides of the movable support means over the bearings of platen 6 to cover and thereby protect these bearings.

A paper carrying means also is mounted on the movable support means 2, 3, this paper carrying means being in the form of a pair of levers 7 respectively mounted for turning movement on the side plates 3, at the outer side faces thereof, and carrying at their free ends a support for a roll of paper 8, the rear wall 2 of the movable support means being formed with a cutout into which the roll of paper partially extends and the side plates 3 of the movable support means carrying a guide means 9 for guiding a strip of paper from the roll 8 to the platen 6, suitable pressure rollers or the like engaging the platen to hold the strip of paper against the same in a conventional manner.

An adjusting means 11 is provided to adjust the elevation of the movable support means and the parts carried thereby with respect to the stationary support means so that the platen 6 as well as the ink ribbon and paper may be located in a position to properly receive impressions from the type members 12. The details of this adjusting means are shown most clearly on an enlarged scale in Figs. 4 and 5 which show one of the stationary side walls of the stationary support means of the machine. Two such stationary side walls are provided on opposite sides of the machine and are respectively formed with elongated cutouts extending upwardly toward the top of the machine and through which the pivot bar 10 extends, as is shown in Figs. 4 and 5. Thus, this pivot bar 10 is movable in the cutouts, through which it extends, upwardly and downwardly toward and away from the top of the machine, respectively. Each of these side walls of the stationary support means is also formed with a second cutout located over the pivot bar 10 and having a bottom edge 11*c*. A pair of hangar members 11*a* respectively extend along the inner faces of the stationary side walls and these hangar members extend beneath and engage the pivot bar 10 so as to carry the latter, except when the pivot bar 10 engages the bottom ends of the side wall cutouts through which this bar extends, the parts being shown in this latter position in Fig. 5 while Fig. 4 shows the bar 10 elevated above the bottom ends of the side wall cutouts through which the bar 10 extends.

The adjusting means includes a pin extending turnably through each hangar 11*a* and having an eccentric head 11*b* located in the upper cutout of each stationary side wall and engaging the bottom edge 11*c* of this cutout. Thus, when the eccentric head 11*b* is turned, from the position of Fig. 5 to that of Fig. 4, for example, the bar 10 and the movable support means carried thereby as well as the structure carried by the movable support means will all be moved upwardly, while when the eccentric head 11*b* is turned from the position of Fig. 4 to that of Fig. 5, for example, the bar 10 is lowered together with all the parts carried thereby. As is evident from Figs. 4 and 5, the outer face of the eccentric head 11*b* is formed with a diametrical groove so that the heads 11*b* at opposite sides of the machine may be turned with a screw driver.

The adjusting means further includes a screw member 11*d* extending through a slot in each stationary side wall and threadedly engaging each hangar member 11*a* so that the cooperation of these screws and slots guides the upward and downward movement of the hangar members, and at the same time the screws 11*b* may be tightened to fix the hangar members 11*a* in their adjusted position and may be loosened to permit the above-described adjusting structure to be operated.

A releasable lock means is provided to releasably lock the movable support means in the operative position shown in solid lines in Fig. 1. This releasable lock means takes the form of a pair of pins 14 fixed, for example, to the above-mentioned stationary side walls of the stationary support means and a pair of levers 13 pivotally mounted between their ends on the side walls 3 of the movable support means, respectively, and having their left free end portions, as viewed in Fig. 1, formed with cutouts in which the pins 14 are respectively located to releasably lock the movable support means 2, 3 to the stationary support means 1.

A spring means in the form of a spring 13*b* is connected to each lever 13 to urge the left free end portion thereof, as viewed in Fig. 1, toward the pins 14 so that the spring or springs 13*b* maintain the levers 13 in releasable engagement with the pins 14. As is apparent from Fig. 1, the side walls 3 of the movable support means are provided with arcuate slots through which a pin fixed to the end 13*a* of lever 13 extends, and a pair of springs 13*b* may be connected to each of these pins and to pins fixed to the inner faces of the side walls 3, or, if desired, a single rod may extend through these arcuate slots and be fixed to the ends 13*a* of the levers 13 and a second rod may extend between and be fixed to the side walls 3 so that a single spring 13*b* may be connected to these two rods to act on both of the levers 13.

As is shown in Fig. 1, the paper carrying means 7 is turnable upwardly from the solid line position thereof to the dotted line position where the levers 7 extend almost vertically upward, and it will be seen that these levers 7 turn through a predetermined path where the actuating end portions 13*a* of levers 13 are located, so that the turning of levers 7 upwardly causes these levers to engage ends 13*a* of levers 13 and turn the latter against the action of the spring means 13*b* to release the releasable lock means. After such release, the movable support means with all of the parts carried thereby may be easily turned about the pivot bar 10 to the dot-dash line position shown in Fig. 1, the movable support means engaging a stop 1*a* of the stationary support means which limits the movement of the movable support means away from the type members 12 to an inoperative position.

As is evident from Fig. 1, when the movable support means and the structure carried thereby are in their inoperative position, the type members 12 are freely exposed so that they may be easily cleaned, and at the same time the ink ribbon carrying means 4 and guide means 5, 5*a* are also exposed and easily accessible, and the same is true of the paper guide means 9 and platen 6 as well as the parts associated therewith. When the movable support means is turned back to its operative position, the curved left end portions of levers 13, as viewed in Fig. 1, ride along pins 14 to automatically engage the latter.

A moving means is provided to periodically advance both the ink ribbon and the platen, so that the paper will advance with periodic turning of the platen. This moving means takes the form, for example, of a ratchet wheel 25 fixed to the ink ribbon carrying means 4 for turning movement therewith and a pawl 22 pivotally mounted at 21 on a link 20 for periodically engaging and turning the ratchet wheel 25 and the ink ribbon carrying means 4 to advance the ink ribbon periodically in this way. The link 20 is pivotally mounted between its ends on a rod 23 fixedly carried by the stationary side walls and is pivotally linked to a member 20*a* forming a moving means which is connected in a known way to the platen for

periodically turning the latter so that different lines of type will be provided on the paper strip. Thus, turning of the link **20** about its pivot **23** simultaneously actuates both the ribbon and the platen. This link **20** has an outer free end **24** which, in a known way, effects reversal of a direction of movement of the ribbon as soon as the ribbon has moved off from a ribbon carrying roll sufficiently to pull an actuating member which sets the parts in a position to be actuated by end **24** of link **20** to reverse the direction of movement of the ribbon when the link **20** turns about the pivot **23**.

This turning of link **20** is effected by a linkage means which includes a bell crank lever **16** turnable about a stationary pivot shaft **15** and connected in an unillustrated manner to the main operating shaft of the machine, this lever **16** corresponding, for example, to the lever **84** shown in Fig. 4 of U. S. Patent 1,876,065 and being linked at **17** to an elongated member **18***b*, shown most clearly in Fig. 3. A spring may be connected to the opening **15***a* of lever **16** for urging the latter to its rest position, and the opening **16***b* of lever **16** is connected in a known way to a lever which actuates the structure for controlling the elevation of the ribbon.

As is shown most clearly in Fig. 3, a second elongated member **18***a* overlaps a considerable portion of the length of elongated member **18***b* and is linked at its free end to the link **20** through the medium of a pivot pin **19**. The elongated member **18***b* is formed with a pair of slots through which a pair of pins respectively extend, these pins being fixed to the elongated member **18***a* and having heads wider than the slots and slidably engaging the side face of member **18***b* distant from member **18***a* so that these pins cooperate with the slots to form a guide means to permit the free ends of members **18***a* and **18***b* to move toward and away from each other so that these members **18***a* and **18***b* form a link interconnecting the links **16** and **20** and being of an automatically adjustable length. A spring **18***c* is fixed to the members **18***a* and **18***b* to urge the free end portions thereof toward each other.

As is apparent from Figs. 1 and 3, the movable support means turns about the pivot **10**, while the linkage means is turnable about the stationary pivot **15** and includes a link **20** connected to the pivot **23** which turns with the movable support means about the pivot **10**. The linkage means of the invention can adapt itself to both positions of the movable support means, this adapting being provided by the members **18***a* and **18***b* which automatically change their length, as shown in the solid and dot-dash lines of Fig. 3, as the movable support means moves between its operative and inoperative positions. Thus, with the structure of the invention it is possible to actuate the linkage means **16**, **18**, **20** both when the movable support means is in its operative position, shown in solid lines in Fig. 1, and when the movable support means is in its inoperative position, shown in dot-dash lines in Fig. 1, so that with the structure of the invention the operator may advance the platen and ribbon when the movable support means is in its operative position and when the movable support means is in its inoperative position.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of business machines differing from the types described above.

While the invention has been illustrated and described as embodied in typing arrangement for business machines, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a business machine, in combination, stationary support means; type members carried by said stationary support means; movable support means connected to said stationary support means for movement between an operative position located adjacent to said type members and an inoperative position distant from said type members; a platen turnably mounted on said movable support means and being located opposite said type members when said movable support means is in said operative position thereof; ink ribbon carrying and guiding means mounted on said movable support means for locating a ribbon between said type members and platen; paper carrying means for carrying paper to be guided to said platen, said paper carrying means being mounted on said movable support means for movement along a predetermined path with respect to said movable support means; paper guiding means mounted on said movable support means for guiding a strip of paper to an outer surface portion of said platen facing said type members when said movable support means is in said operative position thereof; and releasable lock means mounted on said stationary and movable support means for releasably locking the same to each other when said movable support means is in said operative position thereof, said releasable lock means having an actuating portion adapted to be actuated for releasing said lock means and located in said predetermined path so that when said paper carrying means is moved along said path said lock means will be actuated to release said movable support means from said stationary support means, whereby said movable support means may then be moved to said inoperative position thereof to locate said platen, ink ribbon carrying and guiding means, paper carrying means, and paper guiding means together with said movable support means distant from said type members to give free access to said type members as well as to the structure carried by said movable support means.

2. In a business machine as defined in claim 1, said paper carrying means including a first lever turnably mounted on said movable support means for turning movement along said predetermined path, and said releasable lock means including a pin fixed to said stationary support means, a second lever pivotally mounted intermediate its ends on said movable support means, having one end portion formed with a cutout in which said pin is located when said stationary and movable support means are releasably locked to each other, and having an opposite end portion forming said actuating portion of said releasable lock means and being located in said path, and spring means operatively connected to said lever for urging said one end portion thereof toward said pin and said opposite end portion thereof in a predetermined direction, so that when said first lever is turned in a direction opposite to said predetermined direction, said first lever engages said second lever and moves the latter against the action of said spring means to separate said one end portion of said second lever from said pin to thereby release said movable support means from said stationary support means.

3. In a business machine, in combination, stationary support means; type members carried by said stationary support means; movable support means connected to said stationary support means for movement between an operative position located adjacent to said type members and an inoperative position distant from said type members; a platen turnably mounted on said movable support means and being located opposite said type members when said movable support means is in said operative position thereof; ink ribbon carrying and guiding means mounted on

said movable support means for locating a ribbon between said type members and platen; paper carrying and guiding means mounted on said movable support means for guiding a strip of paper to an outer surface portion of said platen facing said type members when said movable support means is in said operative position thereof, whereby when said movable support means is moved to said inoperative position thereof said platen, ink ribbon carrying and guiding means, and paper carrying and guiding means will move with said movable support means away from said type members to give free access to said type members as well as to the structure carried by said movable support means; moving means mounted on said movable support means and being operatively connected to said ink ribbon carrying and guiding means and said platen for periodically moving said ink ribbon carrying and guiding means and said platen to periodically advance a ribbon carried by said ribbon carrying and guiding means and a paper engaging said platen; and linkage means operatively connected to said moving means in both positions of said movable support means for actuating said moving means in both positions of said movable support means, said linkage means including at least two links which are spaced from each other, a pair of elongated members overlapping each other along their lengths and respectively having free non-overlapping end portions respectively connected pivotally to said two links, spring means connected to said elongated members for urging said free end portions thereof toward each other, and guide means engaging said elongated members to guide the same for movement along their lengths with respect to each other, whereby said free end portions of said elongated members may be located at different distances from each other to permit said linkage to operate in both positions of said movable support means.

4. In a business machine as defined in claim 3, one of said elongated members being formed with a pair of spaced elongated slots extending along the length of said one elongated member, said guide means including a pair of pins respectively extending through said slots, being fixed to the other of said elongated members, and each having a head larger than the width of said slots and located opposite that face of said one elongated member which is distant from said other elongated member.

5. In a business machine, in combination, stationary support means; type members carried by said stationary support means; movable support means connected to said stationary support means for movement between an operative position located adjacent to said type members and an inoperative position distant from said type members; a platen turnably mounted on said movable support means and being located opposite said type members when said movable support means is in said operative position thereof; ink ribbon carrying and guiding means mounted on said movable support means for locating a ribbon between said type members and platen; paper carrying and guiding means mounted on said movable support means for guiding a strip of paper to an outer surface portion of said platen facing said type members when said movable support means is in said operative position thereof, whereby when said movable support means is moved to said inoperative position thereof said platen, ink ribbon carrying and guiding means, and paper carrying and guiding means will move with said movable support means away from said type members to give free access to said type members as well as to the structure carried by said movable support means; and adjusting means operatively connected to said movable support means for adjusting the elevation thereof and the structure carried thereby with respect to said type members when said movable support means is in said operative position thereof, said stationary support means having a pair of side walls each of which is formed with a first cutout extending toward the top of the machine and at least one of said side walls being formed with a second cutout located above the first cutout thereof, said side walls forming part of said adjusting means, and the latter also including an elongated bar extending between said side walls and through said first cutouts thereof so as to be movable up and down along said first cutouts, said movable support means being turnably carried by said bar for movement between said operative and inoperative positions, at least one hangar member located alongside said one side wall and extending beneath and engaging said bar to carry the latter when said bar is located above the bottom ends of said first cutouts; a pin extending through said hangar member and having an eccentric head located in said second cutout of said one side wall and engaging an edge of the latter at said second cutout so that turning of said pin raises or lowers said hangar member and said bar and movable support means carried thereby; and releasable fixing means engaging said hangar member and said one side wall to releasably fix said hangar member to said one side wall after adjustment of said hangar member.

References Cited in the file of this patent

UNITED STATES PATENTS

1,182,999	Fuller	May 16, 1916
1,289,762	Hoggson	Dec. 31, 1918
1,849,921	Green	Mar. 15, 1932
2,230,682	Fuller	Feb. 4, 1941
2,264,855	Pasinski	Dec. 2, 1941
2,361,662	Spurlino	Oct. 31, 1944