

June 16, 1964

W. BEHR ETAL

3,137,381

TABULATOR FOR TYPEWRITERS AND THE LIKE

Filed March 29, 1962

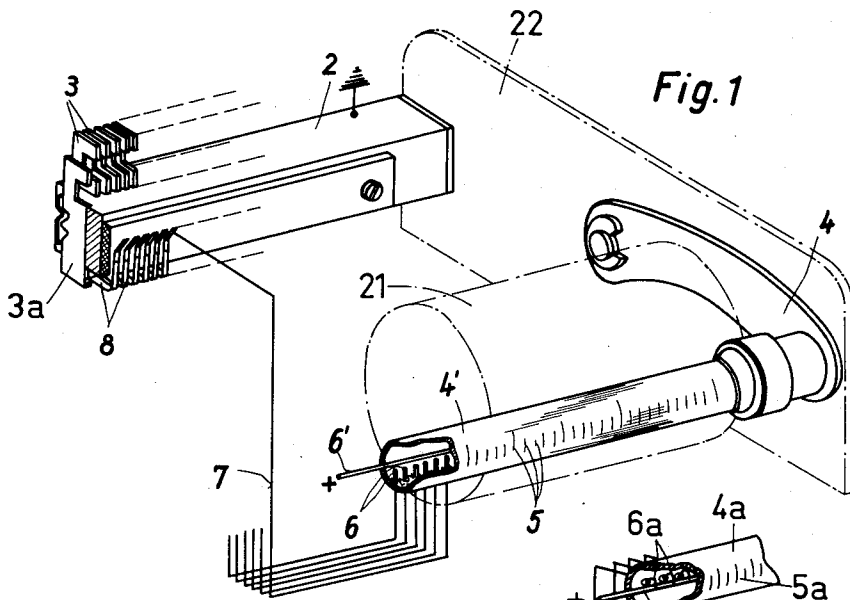


Fig. 1

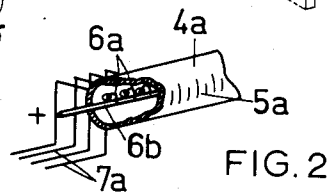


FIG. 2

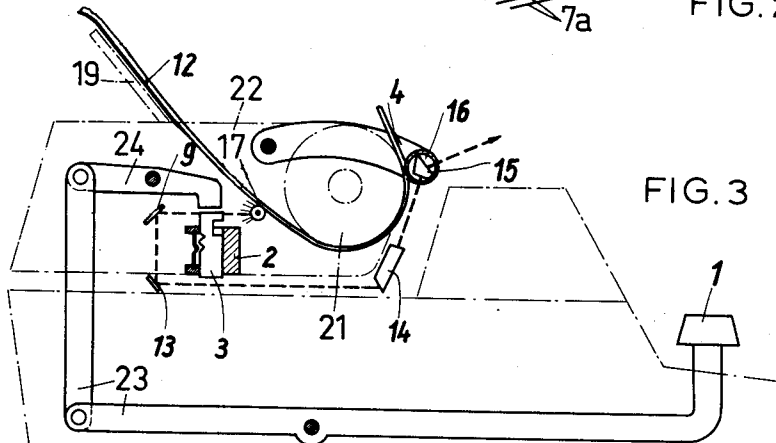


FIG. 3

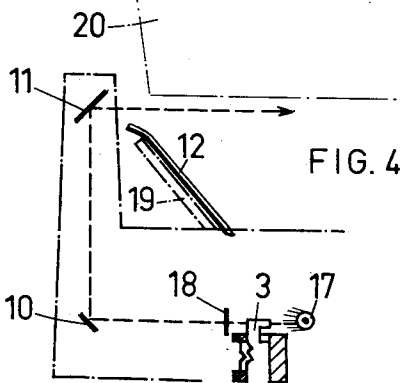


FIG. 4

Walther BEHR
Hans ELSNER
Inventors.

by

Karl F. Rasmussen
AGENT

1

3,137,381

TABULATOR FOR TYPEWRITERS AND THE LIKE
Walther Behr, Villingen, Schwarzwald, and Hans Elsner,
Wilhelmshaven, Germany, assignors to Olympia Werke
A.G., Wilhelmshaven, Germany, a company of
Germany

Filed Mar. 29, 1962, Ser. No. 183,577

Claims priority, application Germany Apr. 8, 1961
16 Claims. (Cl. 197—191)

Our present application relates to typewriters and other office machines provided with a tabulator for arresting a displaceable carriage in selected columnar positions.

Conventional tabulators include a series of stops which are individually settable in respective carriage positions and are generally mounted on a supporting rail at the rear of the machine frame. This mode of mounting prevents the operator from conveniently ascertaining the location of the set tabulator stops.

It is, therefore, an object of our present invention to provide means for indicating to the operator the positions of all set tabulator stops for the purpose of facilitating the alignment of their columnar positions with the paper or other recording sheet, e.g. upon insertion of a new sheet, and/or enabling detection of errors in the setting or clearing of these stops.

In accordance with our present invention we provide display means exposed to the view of the operator for visually indicating, preferably by a luminous spot, the position of any set tabulator stop at a location close to the inserted sheet whereby the correct alignment between these stops and the sheet columns (e.g. in the case of preprinted forms to be filled in) can be easily verified.

The display means may be constituted by primary or secondary radiant sources, e.g. small electric lamps in front of the machine or a reflecting surface illuminated by one or more lamps at its rear. In the first case, the lamps are individually energizable by a set tabulator stop and are advantageously positioned at or within the preferably tubular and transparent holder bar overlying the platen of the carriage; in the second case the rays of an elongated lamp penetrating the gaps left by set tabulator stops may be directed onto a reflector just above the upper sheet edge or on the aforementioned holder bar. In either instance it will be convenient to have the positions of the visible light sources marked by a suitable scale optically juxtaposed therewith.

The invention will be described in greater detail with reference to the accompanying drawing wherein conventional machine parts not essential to the described mechanism have been shown for clarity's sake in dot-dash outline.

In the drawing:

FIG. 1 is a perspective view of a typewriter equipped with a tabulator system embodying our invention;

FIG. 2 shows a partial modification of the system of FIG. 1;

FIG. 3 is a side view of a similar typewriter equipped with a tabulator system representing another embodiment of the invention; and

FIG. 4 shows a partial modification of the system of FIG. 3.

In FIGS. 1 and 3 we have shown at 20 the frame of a conventional typewriter having a cylindrical platen or roller 21 which is laterally displaceable on a carriage 22 in a manner well known per se. A setting key 1 (FIG. 3), acting through a linkage 23, controls an arm 24 which overlies a series of tabulator stops 3 indexed for vertical displacement in a supporting rail 2 which parallels the roller 21. This bar is mounted on the carriage 22 so as to be laterally displaceable together with roller 21 where-

2

by the several stops 3 can be selectively aligned with the setting arm 24. When the key 1 is depressed, the aligned stop is moved into its lower or operative position within rail 2 as illustrated for the stop 3a in FIG. 1. Another key, not shown, acts in known manner to clear the set tabulator stops by returning them to their elevated or inoperative positions.

In FIG. 1 we have shown a holder bar 4' which is swingably supported by arms 4 on the carriage 22 and serves to hold a sheet of paper 12 (FIG. 3) against the roller 21. Bar 4' is a gas-filled glass tube bearing a position scale 5, the tube being axially traversed by an elongated conductor 6' and being provided with a multiplicity of mutually insulated cathodes 6 aligned with respective markings of the scale 5. Each electrode 6 is connected via an individual lead 7 to a respective contact spring 8 which is insulatedly mounted on the grounded supporting rail 2 and conductively engageable by an associated tabulator stop 3 when the latter is depressed, thereby grounding the lead 7 and the electrode 6 connected therewith. Since the counter-electrode 6' is shown connected to positive potential, a luminous discharge will occur between it and any cathode 6 whose lead 7 is thus grounded. This discharge, clearly visible through the tubular envelope 4', will mark on the scale 5 the position of any actuated stop 3a.

The electrodes 6, 6' may be mounted in the tube 4' in known manner, as by being sealed in the glass wall thereof.

In FIG. 2 we have shown a tubular holder bar 4a similar to tube 4', bearing a scale 5a, which however is evacuated and internally provided with small incandescent filaments 6a taking the place of the cathodes 6. Each filament 6a is shown connected between an energized bus bar 6b, similar to counterelectrode 6' of FIG. 1, and its individual lead 7a extending toward the tabulator. The operation is the same as that of the preceding embodiment.

In FIG. 3, in which elements corresponding to those of FIG. 1 have been designated by the same reference numerals, an elongated lamp 17 is disposed behind the roller 21 on the carriage 22 to illuminate the upper extremities of tabulator stops 3 rising above the rail 2 in their normal positions. When a stop 3 is depressed, rays from the source 17 pass through the resulting gap and are reflected by mirrors 9 and 13 as well as a prism 14 onto a display surface in front of the roller. This display surface is here shown as formed by an elongated prism 15 disposed within the tubular and transparent holder bar 16; the latter may again be provided with engravings such as the scale 5 or 5a of the preceding figures, yet such scale could of course also be present on the surface of one of the reflecting elements 9 and 13-15.

According to FIG. 4 the light rays from source 17 passing through the array of tabulator stops 3 traverse a transparent or translucent scale carrier 18 (e.g. a ground-glass plate) and are deflected by mirrors 10 and 11, the latter constituting a display surface on which the luminous spots projected by the lamp 17 onto the plate 18 are visible together with the scale markings from that plate at a location just above the upper rear edge of a freshly inserted sheet 12 projecting above the paper rest 19 of the carriage.

It will be understood that a carriage-borne scale carrier as shown at 18 in FIG. 4 may also be interposed in the path of the light rays in FIG. 3, in lieu of the engraving of a scale on paper bar 16, and that other modifications of the disclosed arrangements will be readily apparent to persons skilled in the art and are intended to be embraced in the spirit and scope of the invention as defined in the appended claims.

We claim:

1. In an office machine having a carriage, a platen on said carriage and a tabulator on said carriage behind said platen, said tabulator including a support parallel to said platen, a row of transversely displaceable stops on said support and mechanism individually alignable with any of said stops for selectively displacing same from an inoperative to an operative position, said stops being so disposed as to be hidden from view of the machine operator by a record sheet mounted on said platen, the combination with said tabulator of luminous display means on said carriage visible from a location forwardly of said platen for visually indicating the position of any operatively displaced stop relative to said platen, said display means including means responsive to an operatively displaced stop for producing a light spot of a width substantially smaller than the sheet width at a corresponding location adjacent the record sheet mounted on said platen.

2. The combination according to claim 1 wherein said responsive means comprises a multiplicity of radiant sources individually energizable under the control of respective tabulator stops.

3. The combination according to claim 2 wherein said display means includes a light-transmissive envelope, said radiant sources comprising a series of individual discharge electrodes and a counterelectrode common to all said individual electrodes within said envelope.

4. The combination according to claim 2 wherein said display means includes a light-transmissive envelope, said radiant sources being a series of incandescent filaments within said envelope.

5. The combination according to claim 2 wherein said radiant sources are provided with a surrounding light-transmissive envelope bearing scale markings respectively assigned to said stops.

6. The combination according to claim 1 wherein said responsive means comprises a light source adjacent said support for transilluminating said row at a gap left by an operative displacement of any stop, and light-reflecting means including a reflecting element for directing light rays from said gap toward an observer.

7. The combination according to claim 6, further comprising a scale carrier in the path of said light rays having markings respectively assigned to said stops.

8. The combination according to claim 1 wherein said display means includes a holder bar movably mounted on said carriage for pressing said record sheet against said platen, said responsive means being adapted to produce said light spot on said holder bar.

9. The combination according to claim 8 wherein said holder bar comprises a light-transmissive tubular envelope extending along said platen and adapted to have said light spot produced in its interior.

10. The combination according to claim 9 wherein said responsive means comprises a multiplicity of radiant

sources within said envelope individually energizable under the control of respective tabulator stops.

11. The combination according to claim 10 wherein said radiant sources comprise a series of individual discharge electrodes and a counterelectrode common to all said individual electrodes.

12. The combination according to claim 10 wherein said radiant sources are a series of incandescent filaments.

13. The combination according to claim 9 wherein said responsive means comprises a light source adjacent said support for transilluminating said row at a gap left by an operative displacement of any stop, and light-reflecting means including a reflecting element in said envelope for directing light rays from said gap toward an observer.

14. The combination according to claim 9 wherein said envelope is provided with a scale having markings respectively assigned to said stops.

15. In an office machine having a carriage shiftable into different columnar positions, a platen on said carriage and a tabulator on said carriage behind said platen, said tabulator including a support parallel to said platen, a row of transversely displaceable stops on said support respectively assigned to said columnar positions, and mechanism individually alignable with any of said stops for selectively displacing same from an inoperative to an operative position, said stops being so disposed as to be hidden from view of the machine operator by a record sheet mounted on said platen, the combination with said tabulator of luminous display means on said carriage visible from a location forwardly of said platen for visually indicating the position of any operatively displaced stop relative to said platen, said display means including scale means visible adjacent the record sheet mounted on said platen, said scale means being subdivided in conformity with said columnar positions, and means responsive to an operatively displaced stop for producing a light spot of a width limited to a scale subdivision at a corresponding location on said scale means.

16. The combination according to claim 15 wherein said scale means comprises a holder bar movably mounted on said carriage for pressing said record sheet against said platen.

References Cited in the file of this patent

UNITED STATES PATENTS

528,092	Hartwell et al.	Oct. 23, 1894
1,017,301	Lockwood	Feb. 13, 1912
2,163,944	Helmond	June 27, 1939
2,480,504	Ott	Aug. 30, 1949
2,606,309	Townsend	Aug. 5, 1952
2,632,548	Ackerman	Mar. 24, 1953
2,675,111	Sargatz	Apr. 13, 1954
2,787,785	Hunter	Apr. 2, 1957

FOREIGN PATENTS

5,478	Great Britain	1910
-------	---------------	------