March 7, 1944. C. R. DOTY 2,343,404

TRANSLATING DEVICE

Filed March 31, 1943 2 Sheets-Sheet 1

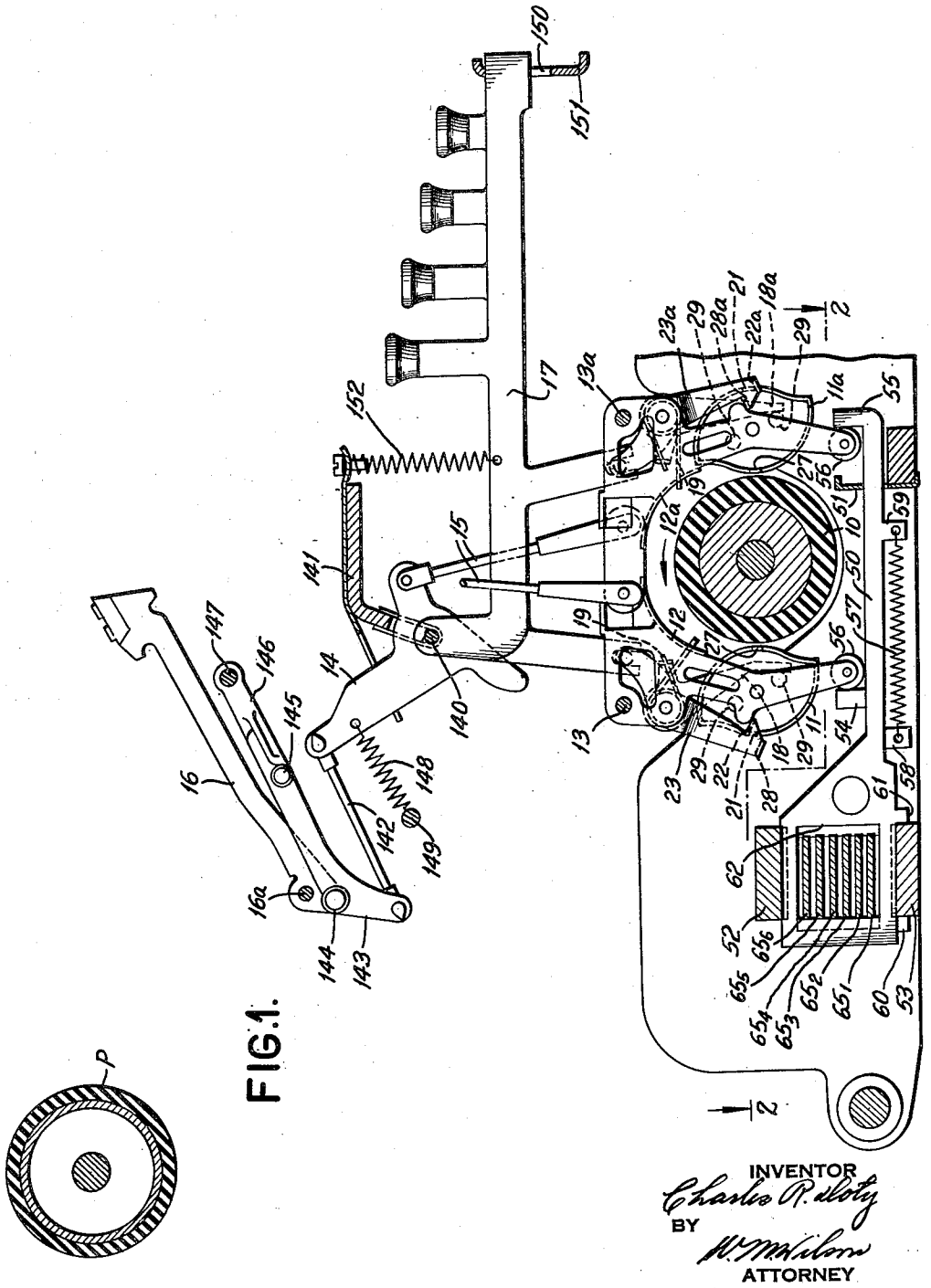


FIG. 1.

INVENTOR
Charles R. Doty
BY
W. M. Wilson
ATTORNEY

March 7, 1944. C. R. DOTY 2,343,404

TRANSLATING DEVICE

Filed March 31, 1943 2 Sheets-Sheet 2

FIG. 2.

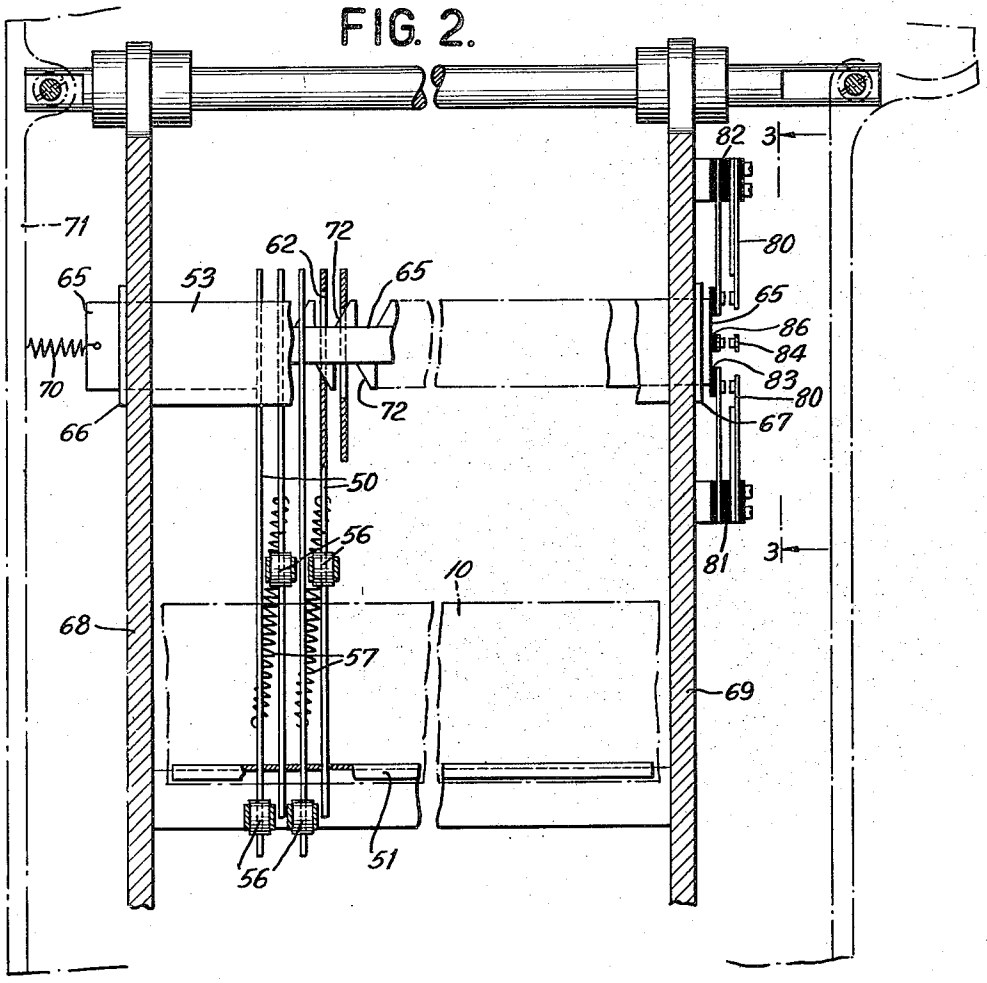
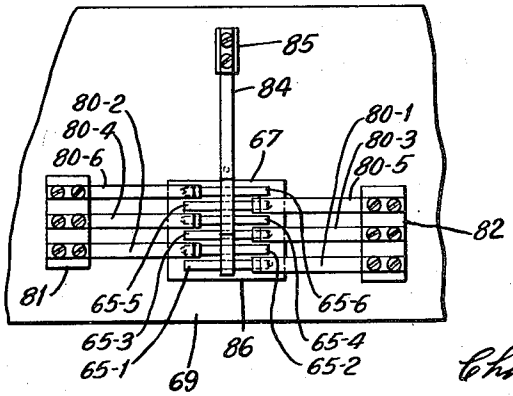


FIG. 3.



INVENTOR
Charles R. Doty
BY
W. M. Wilson
ATTORNEY

Patented Mar. 7, 1944 2,343,404

UNITED STATES PATENT OFFICE

2,343,404

TRANSLATING DEVICE

Charles R. Doty, Yonkers, N. Y., assignor to International Business Machines Corporation, New York, N. Y., a corporation of New York

Application March 31, 1943, Serial No. 481,259

1 Claim. (Cl. 178—81)

This invention relates to a translating mechanism for translating into code the characters printed by a typewriter.

It is the primary object of the invention to provide a simple and reliable mechanism of this type adapted to be operated by a power actuated typewriter.

Other objects of the invention will be pointed out in the following description and claim and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawings:

Fig. 1 is a vertical section through a power driven typewriting machine, in which a translating mechanism in accordance with my invention has been incorporated.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

Fig. 3 is a vertical section on the line 3—3 of Fig. 2.

A translating mechanism according to the present invention, which was disclosed in my Patent 2,278,978 granted April 7, 1942, may be embodied in a standard "International" electric writing machine, such as the one disclosed in Patent No. 1,936,466. Such a typewriter comprises a set of type bars, one of which is shown at 16, pivotally mounted at 16a so as to print upon a sheet of paper held by the platen P. For each type bar there is a cam lever 12 or 12a, provided with a rotatably mounted cam 11 or 11a, adapted to coact with a power roller 10 constantly driven in the direction of the arrow by a motor (not shown). The cam levers 12 and 12a are pivotally mounted on stationary rods 13 and 13a and their upper arms are connected by links 15 to individual bell crank levers 14 pivotally mounted on a rod 140 supported by a cross bar 141 of the frame. The upper end of each bell crank lever 14 is connected by a link 142 to an individual bell crank lever 143 pivoted at 144 to the related type bar 16. The opposite end of the bell crank lever 143 is articulated at 145 to an individual arm 146 pivotally mounted on a fixed part 147, forming a toggle type bar actuator. A spring 148 stretched between the bell crank lever 14 and a stationary rod 149 normally holds the type bar operating mechanism in the position shown. When the bell crank lever 14 is rocked clockwise by its related cam lever 12 or 12a, the type bar is thrown against the paper on the platen.

For each cam lever 12 or 12a there is a key lever 17, the key levers all being pivoted on the rod 140, with their forward ends guided in slots 150 of a comb 151 and normally held up by individual coil springs 152. Each cam lever 12 or 12a has pivoted to it an impeller arm 18 or 18a, which is urged by a coil spring 19 in clockwise direction. The lower end of the impeller arm bears upon the lower one of two pins 29 projecting rigidly from the cam and tends to rock the cam clockwise. The cam is normally latched by a latching lever 23 or 23a having a pair of lugs 22 and 28, or 22a and 28a, cooperating with lugs 21 and 27 on the cam, to control the movement of the latter in a well known manner. When a key is depressed the lower arm of the related cam lever 12 or 12a executes a movement outward from the roller 10, then returns to the normal position shown.

The translating mechanism according to my invention is, in the present embodiment, mounted beneath and behind the power cam lever mechanism just described. It comprises a set of actuators 50 slidably guided at their right or forward ends in individual slots of a comb 51 and at their rear ends in complemental grooves in upper and lower bars 52 and 53 of a bearing bracket. The alternate actuators have upstanding fingers 54 and 55 to cooperate with rollers 56 on downwardly extending arms of the cam levers 12 and 12a, which occur alternately along the power roller. A spring 57, stretched between two lugs 58 and 59 on each neighboring pair of actuators draws the two actuators forming a pair in opposite directions, until they are stopped, in normal position, by the engagement of their respective fingers 60 and 61 against the lower bar 53. In this position of the actuators the fingers 54 and 55 are close to the rollers 56.

The left ends of the actuators 50 have large square openings 62 forming a box within which are positioned six slides 65 individually identified by subscripts 1, 2, 3, 4, 5 and 6. The slides 65 are guided for limited movement parallel to the axis of the power roller 10, in slotted bearing plates 66 and 67 (see Fig. 3) on the side walls 68 and 69, the side walls being apertured to allow the slides to extend through them. The slides 65 are pulled to the left by individual springs 70 anchored to a side frame member indicated by dot and dash lines at 71. Within the zone of operation of each actuator 50 one or more of the slides 65 have inclined cam edges 72, these cam edges being arranged on the slides in accordance with a combinational code, so that when a particular actuator is moved by the related cam lever 12 or 12a, a particular combination of the slides

65_{1-6} will be cammed to the right. The combination is different for each actuator. The cam edges in the successive zones of action of the different actuators are located alternately on the front and rear sides of the slides, conforming to the operative movement of the respective actuators, which is either rearward or forward, according to whether the actuator is operated by a cam lever 12 or a cam lever 12*a*.

The combinational movement of the slides 65_{1-6} is utilized to operate a set of code elements. In the present case these code elements are pairs of contacts 80 individually identified by subscripts 1, 2, 3, 4, 5 and 6. The contacts are mounted upon insulating supports 81 and 82 on the side plate 69. One member of each pair of contacts has a piece of insulation 83 at its end bearing against the end of the related slide $65_{1,2}$ etc. There is also a pair of common contacts 84 mounted on an insulating post 85 on the side wall 69 and one element of this pair of contacts carries a strip of insulation 86 positioned so as to be moved by any one or more of the slides 65. Thus, the combinational movement of the slides 65_{1-6} results in the closure of a certain combination of the pairs of contacts 80_{1-6} and also of the common contacts 84, the timing being such that the contacts 84 close after all of the contacts 80.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention therefore to be limited only as indicated by the scope of the following claim.

What is claimed is:

In a transmitter, in combination with a keyboard mechanism, a driving mechanism comprising a power driven roller, cam levers having individual rotary cams to rock the respective levers by rotating against said roller, the levers being arranged alternately on opposite sides of the axis of the roller and those on one side of the roller being rocked oppositely to those on the other side, and key operated means for selectively releasing the cams for engagement with the roller; a set of code elements, a set of code element operating slides, one for each code element, said slides being mounted in a single group for individual longitudinal movement parallel to the axis of said power driven roller, to operate their respective code elements; a set of actuators, one for each of said cam levers, means to guide said actuators for reciprocating movement normal to the axis of said roller, said cam levers having means coacting with their respective actuators to cause the latter to execute operative movements guided by said guide means, the operative movements of the actuators operated by the cam levers on one side of the roller being opposite to that of the actuators operated by the cam levers on the other side of the roller; said slides having inclined cam edges thereon for coaction with said actuators to impart said longitudinal movements to said slides; there being a cam edge or group of cam edges for each actuator, arranged on the slides in accordance with a combinational code, the cam edges coacting with actuators which execute an operative movement in one direction being on the opposite side of the slides from the cam edges coacting with actuators which execute an operative movement in the opposite direction.

CHARLES R. DOTY.