Feb. 10, 1959 J. LYDFORS 2,872,862

SYMBOL PRINTING MECHANISMS IN LISTING CALCULATING MACHINES AND THE LIKE

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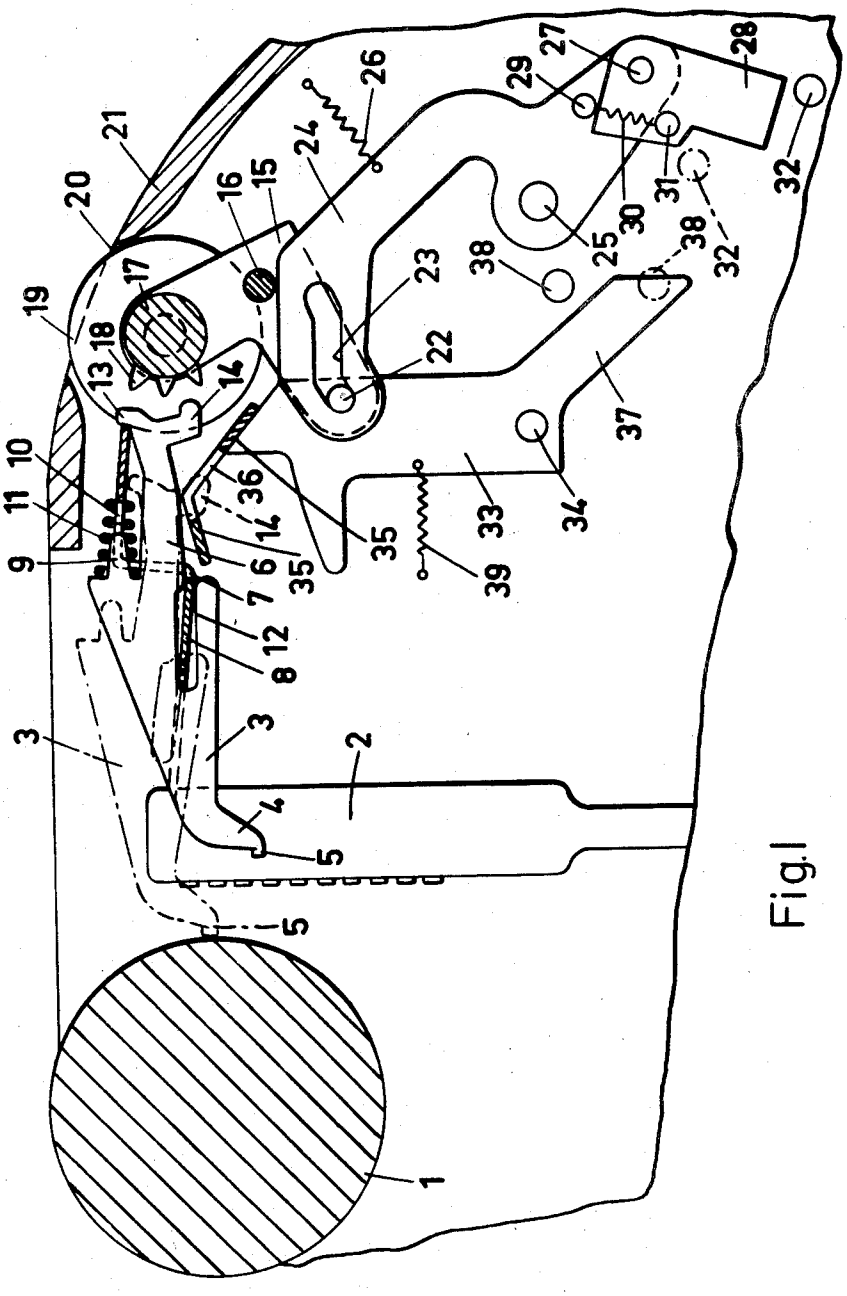


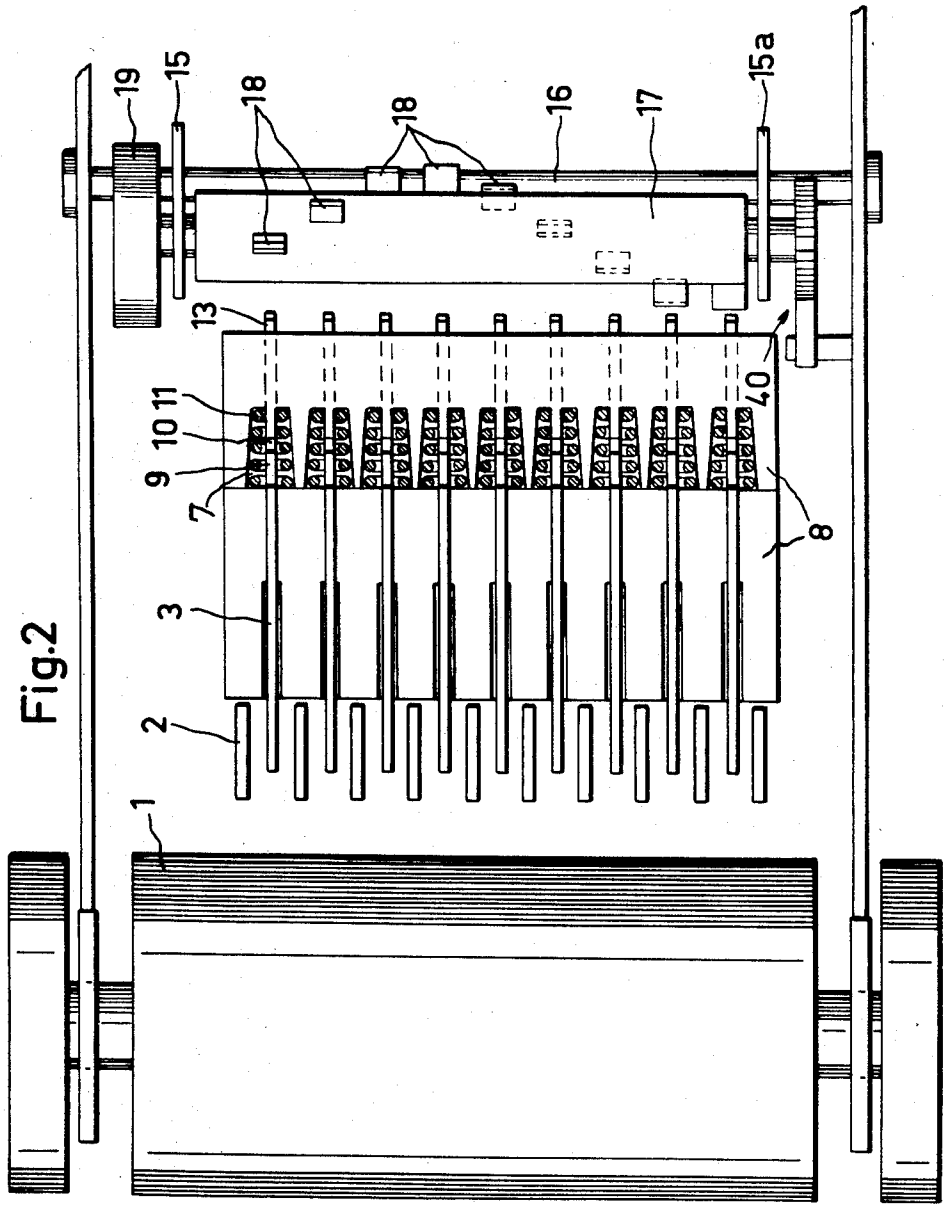
Fig.1

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Fig.2



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SYMBOL PRINTING MECHANISMS IN LISTING CALCULATING MACHINES AND THE LIKE

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4 Claims. (Cl. 101—93)

In listing calculating machines, accounting machines, and the like it is sometimes desired to insert symbols, e. g. a decimal point, in an optional position, between the digits of a printed amount. One object of the invention is to provide such a symbol printing mechanism in listing machines having a platen and a series of spaced digit type carriers movable into engagement with the platen. The symbol printing mechanism according to the invention comprises symbol type carriers arranged in the spaces between the digit type carriers, releasing means for moving said symbol type carriers from an inoperative position into engagement with the platen, and a mechanism for actuating said releasing means during a printing cycle of the machine, said releasing means being adjustable into different positions, in which different symbol type carriers are movable into engagement with the platen by the releasing means when it is actuated.

Further objects of and the advantages gained by the invention will become apparent from the following description, reference being had to the accompanying drawing illustrating an embodiment of the invention.

Fig. 1 shows a sectional side elevation of part of a listing adding machine.

Fig. 2 shows a plan view of the same, omitting certain parts for the sake of clarity.

The adding machine illustrated has a platen 1 and a series of digit type bars 2 which are of a quite ordinary type and which after adjustment in a known manner are caused to print an amount with the aid of a ribbon (not shown) and a prior art hammer mechanism (likewise not shown) on a paper sheet passed around the platen 1.

To permit printing of one or more symbols in a desired space or in desired spaces the illustrated machine presents the following symbol printing mechanism which hereinafter is assumed to be a mechanism for printing a decimal point at a desired location in the amount printed by the type bars 2.

A symbol type carrier 3 projects into each space between the type bars 2. Each such symbol type carrier 3 is plate-shaped and has its end facing the platen 1 provided with a projection 4 carrying a decimal point type 5 which in the inoperative position of the symbol type carrier shown by full lines in Fig. 1 is located in the space between two adjoining type bars 2. Each symbol type carrier 3 also has a tail 6 directed from the platen 1 and extending through a guiding slot 7 in a mounting and guiding means 8 common to all symbol type carriers. Said mounting and guiding means is a plate 8 of approximately Z-shaped cross sectional shape which is secured to the machine frame and extends parallel to the platen 1. Each type carrier 3 furthermore has a projection 9 which is directed towards a projection 10 from plate 8 in the upper end of the slot 7. A coil spring 11 is passed onto said projections and tends to urge the type carrier 3 from the inoperative position shown by full lines into abutment against the platen 1 as is indicated by broken lines in Fig. 1. The type carrier 3 has a recess 12 in which the lower limb of the plate 8 is located and the mouth portion of which guides the type carrier on the lower limb of the plate during said displacing movement. The tail 6 of the type carrier has an engaging means in the shape of an upwardly directed projection 13, and in the inoperative position of the type carrier shown by full lines said projection engages with the edge of the upper limb of the bar 8 to retain the type carrier in the inoperative position against the action of the spring 11. The tail 6 furthermore has a downwardly directed arm 14 which is adapted to cooperate with the releasing and returning member described hereinafter. A pair of bell crank levers 15, 15*a* are non-rotatably secured to a shaft 16 which is rotatably mounted in the machine frame. On their upper arms said bell crank levers 15, 15*a* rotatably carry a shaft 17 which extends parallel to the platen 1, i. e. transversely of the symbol type carriers 3. On its periphery the shaft 17 carries a number of releasing teeth 18 corresponding to the number of symbol type carriers 3 and offset in relation to each other in the direction of rotation around the shaft 17, preferably along a helical line, so that said teeth 18 each lie opposite one symbol type carrier. The shaft 17 is adjustable into different positions of rotation by means of a handwheel 19 secured to said shaft and projecting in the normal position shown through a window 20 in the machine casing 21 so that the operator can turn the handwheel with one finger and thus the shaft 17 into one of the adjusted positions of the shaft which is fixed by a snap device 40. In each of the adjusted positions of the shaft 17 one of the releasing teeth 18 individually is in position so as to actuate the arm 14 of the pertaining symbol type carrier 3 in a manner described in the following to release precisely that symbol type carrier for printing a decimal point at a desired location in the amount printed by the digit type bars 2. Some mark on the handwheel 19 can show what symbol type carrier 3 will be enabled in each special case, although it is also possible to arrange on the shaft 17 index marks making this apparent to the operator through windows in the machine casing 21.

The lower arm of one bell crank lever 15 has a pin 22, engaging in a cam groove 23 provided in the upper end of a lever 24 which is mounted on a pivot 25 on the machine frame. A spring 26 expanded between the lever 24 and the machine frame holds the lever 24 in the normal position shown, in which the pin 22 is engaged in the left end of the groove 23. The lower end of the lever 24 carries a pivot 27 on which a pawl 28 is mounted. In the position shown, a spring 30 expanded between a pin 29 on the lever 24 and a pin 31 on the pawl 28 holds said pawl applied against the pin 29. The pawl 28 is acted upon by means of a pin 32 which in a manner not shown but readily apparent to those skilled in the art is moved from the position shown by full lines to the position shown by broken lines and back again by means of a mechanism, e. g. a totalizing mechanism, operating during a printing cycle of the machine. When the pin 32 is moved from the position shown by full lines to the position shown by broken lines, it strikes the pawl 28 and moves it out of its path, whereby the pawl swings the lever 24 counter-clockwise because of the pawl being mounted on the lever 24 and held applied against the pin 29 on said lever so that the latter with its cam slot 23 moves the pin 22 counter-clockwise in an arcuate path. As a result, the bell crank lever 15 and thus shaft 17 are swung counter-clockwise, the releasing tooth 18 adjusted into operative position striking the arm 14 of the pertaining symbol type carrier and swinging the tail of the symbol type carrier downward until the projection 13 is disengaged from the edge of the upper limb or flange of

the bar 8 whereby the spring 11 is given the opportunity of throwing the symbol type carrier 3 towards the platen 1 so that the decimal point type 5 makes an impression on the paper sheet passed around the platen 1. During the movement of the symbol type carrier 3 the projection 13 slides against the underside of the upper flange of the bar 8 and thus contributes to a guiding of the symbol type carrier. The printing of the decimal point can take place before, simultaneously with, or after printing of the pertaining amount by means of the digit type bars 2. At the return of the pin 32 from the position shown by broken lines to the position shown by full lines the pin also moves the pawl 28 out of its path of movement, which does not, however, affect the lever 24 which has been returned to the normal position shown by spring 26 because the pawl 28 is hereby only swung aside counterclockwise from the pin 29 against the action of the spring 30.

After the decimal point has been printed, a U-shaped member 33 moves the released symbol type carrier 3 from the position shown by broken lines back to the inoperative position shown by full lines. Said U-shaped member is mounted on the machine frame by means of two pivots 34 (only one is visible in Fig. 1) which are secured to opposite side walls of the machine frame. The transverse portion 35 of the U-shaped member 33 has an opening 36 in which the arm 14 of the symbol type carrier engages when the respective symbol type carriers are in the printing position shown by broken lines. One limb of the U-shaped member 33 has an obliquely downwardly directed arm 37 lying in the path of a pin 38 which during a machine cycle moves from the position shown by full lines downwardly to the position shown by broken lines and back again. During the downward movement of the pin 38 it moves aside the arm 37 of the U-shaped member 33 so that said member is swung clockwise, the transverse portion of the member being applied against the arm 14 of the symbol type carrier 3 occupying printing position and urging said carrier against the action of the spring back to the inoperative position shown by full lines in which the symbol type carrier is locked by the projection 13 engaging with the rear edge of the upper flange of the bar 8. A spring 39 which is expanded between one limb of the U-shaped member 33 and the machine frame tends to hold said member in the inoperative position shown.

What I claim and desire to secure by Leters Patent is:

1. In a listing machine having a platen and a series of spaced digit type members movable into engagement with the platen, a symbol printing mechanism comprising a series of symbol type carriers arranged in the spaces between the digit type members and individually movable between an inoperative position spaced from the platen and an operative position in printing engagement with the platen, spring means tending to move said carriers towards the operative position, locking means for each said carrier normally holding said carrier in the inoperative position against the action of said spring means, a releasing member extending along said series of symbol type carriers so as to be adjacent to all of them, actuating means for actuating said releasing member during a printing cycle of the machine by shifting said releasing member from a normal inoperative position to an operative position, a plurality of spaced engagement members on said releasing member, one for each said carrier, and adjusting means for moving said releasing member into different positions of adjustment in each of which a different one of said engagement members is effective for releasing a corresponding one of said carriers from its locking means by the engagement of said one of said engaging members with the respective one of said carriers during the shifting of said releasing member from its inoperative position to its operative position upon the actuation of said actuating means.

2. A mechanism according to claim 1, comprising guides on which said symbol type carriers are displaceable substantially rectilinearly between the inoperative and operative positions.

3. In a listing machine having a platen and a series of spaced digit type members movable into engagement with the platen, a symbol printing mechanism comprising a series of symbol type carriers arranged in the spaces between the digit type members and individually movable between an inoperative position spaced from the platen and an operative position in printing engagement with the platen, spring means tending to move said carriers towards the operative position, locking means, one for each carrier, normally holding said carries in the inoperative position against the action of said spring means, a rotatable and swingable shaft extending transversely of the symbol type carriers, an actuating mechanism for swinging said shaft during a printing cycle of the machine between a normal inoperative position and an operative position, releasing teeth on said shaft, said teeth being offset in relation to each other in the circumferential direction of said shaft and being aligned longitudinally of said shaft with different ones of said carriers, and adjusting means for rotating said shaft into different angular positions of adjustment in each of which a different one of said teeth is effective for releasing a corresponding one of said carriers from its locking means by the engagement of the said one of said teeth with the respective one of said carriers during the swinging of said shaft from the inoperative to the operative position of said shaft upon the actuation of said actuating mechanism.

4. A mechanism according to claim 3 comprising a handwheel as said adjusting means for rotating said shaft into different angular positions of adjustment.

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