March 17, 1936. H. P. MIXER 2,034,112

INTERPRETING AND PRINTING DEVICE

Filed July 10, 1934 3 Sheets-Sheet 1

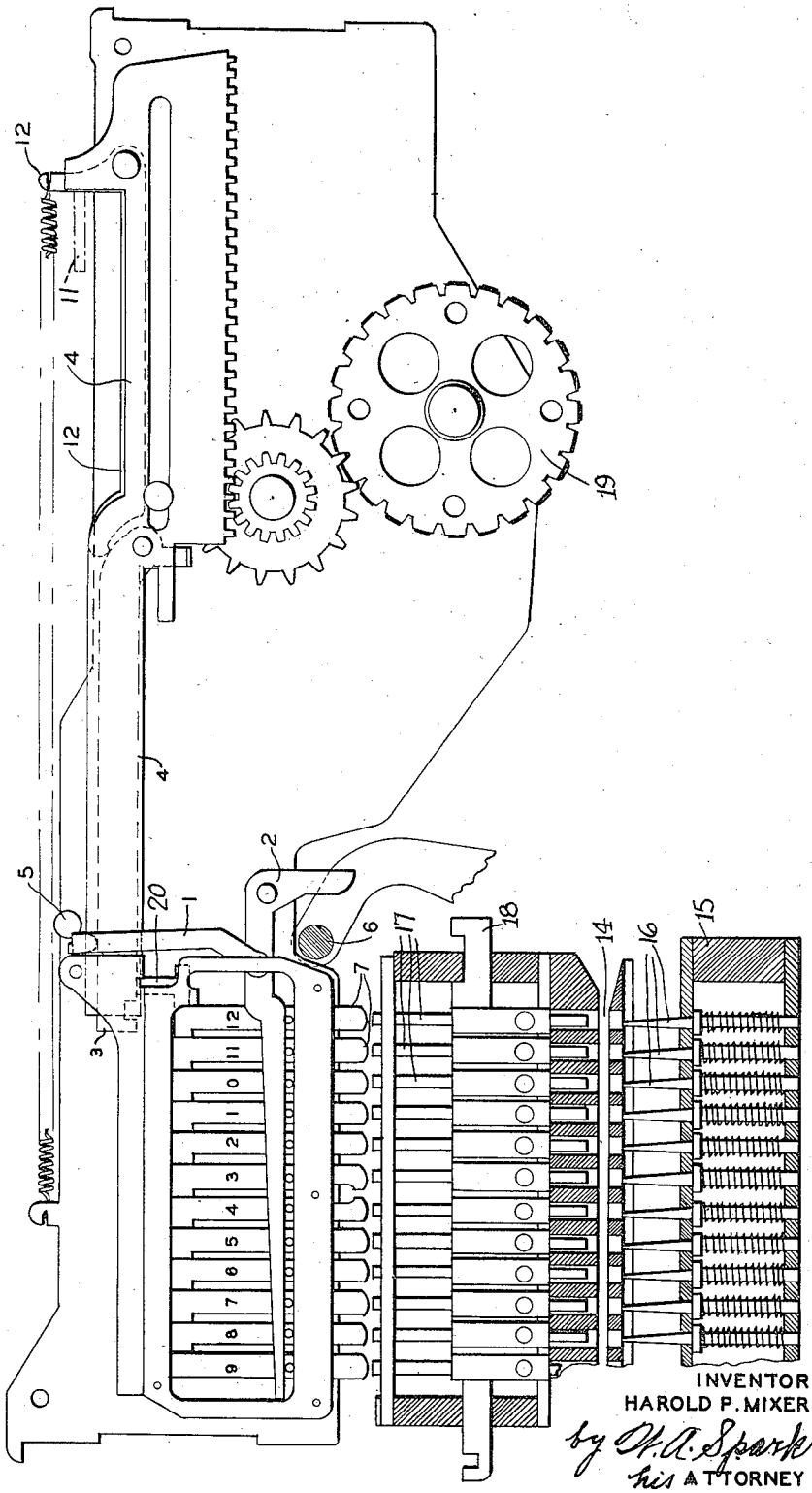



Fig. 1.

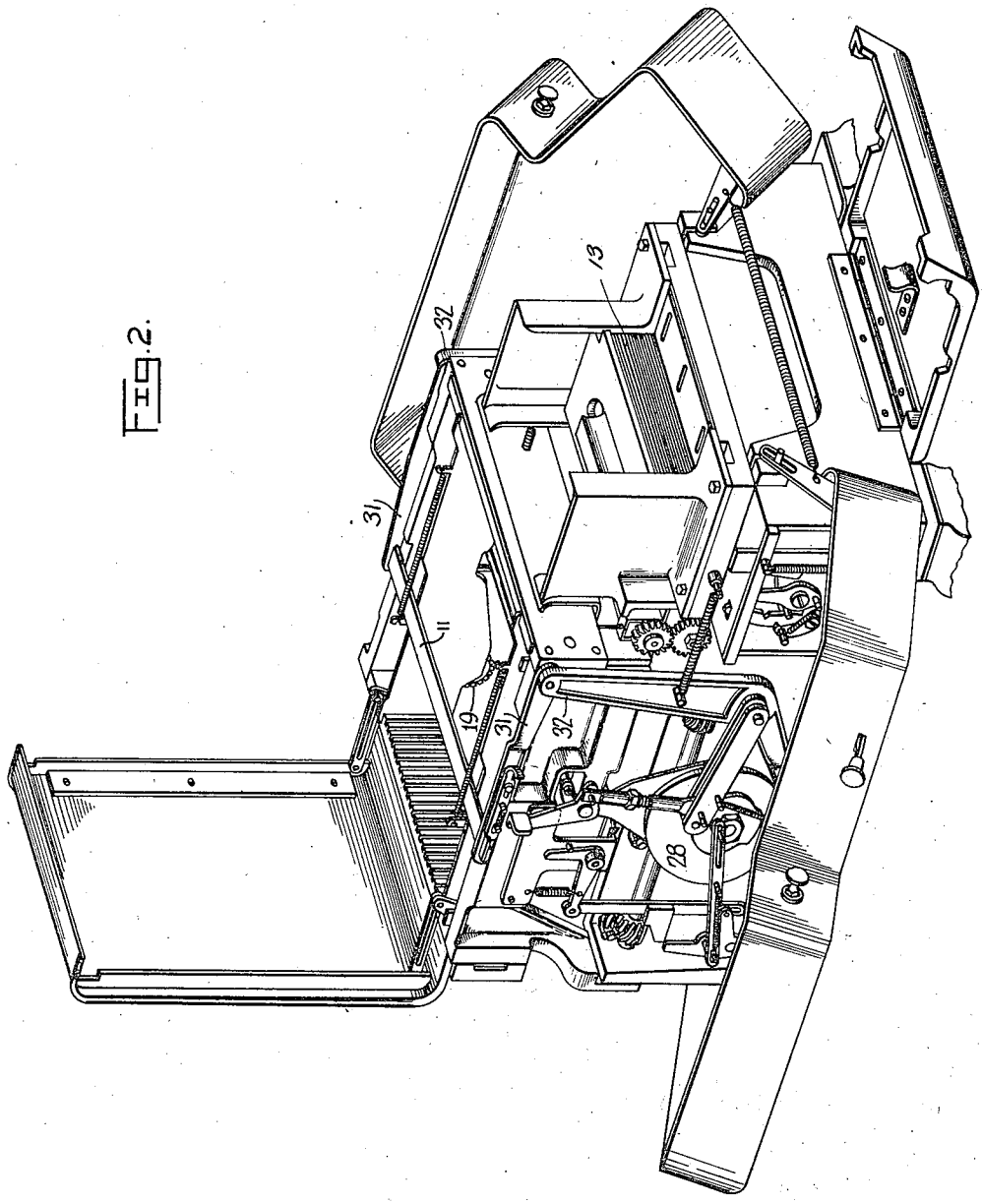
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FIG. 2.




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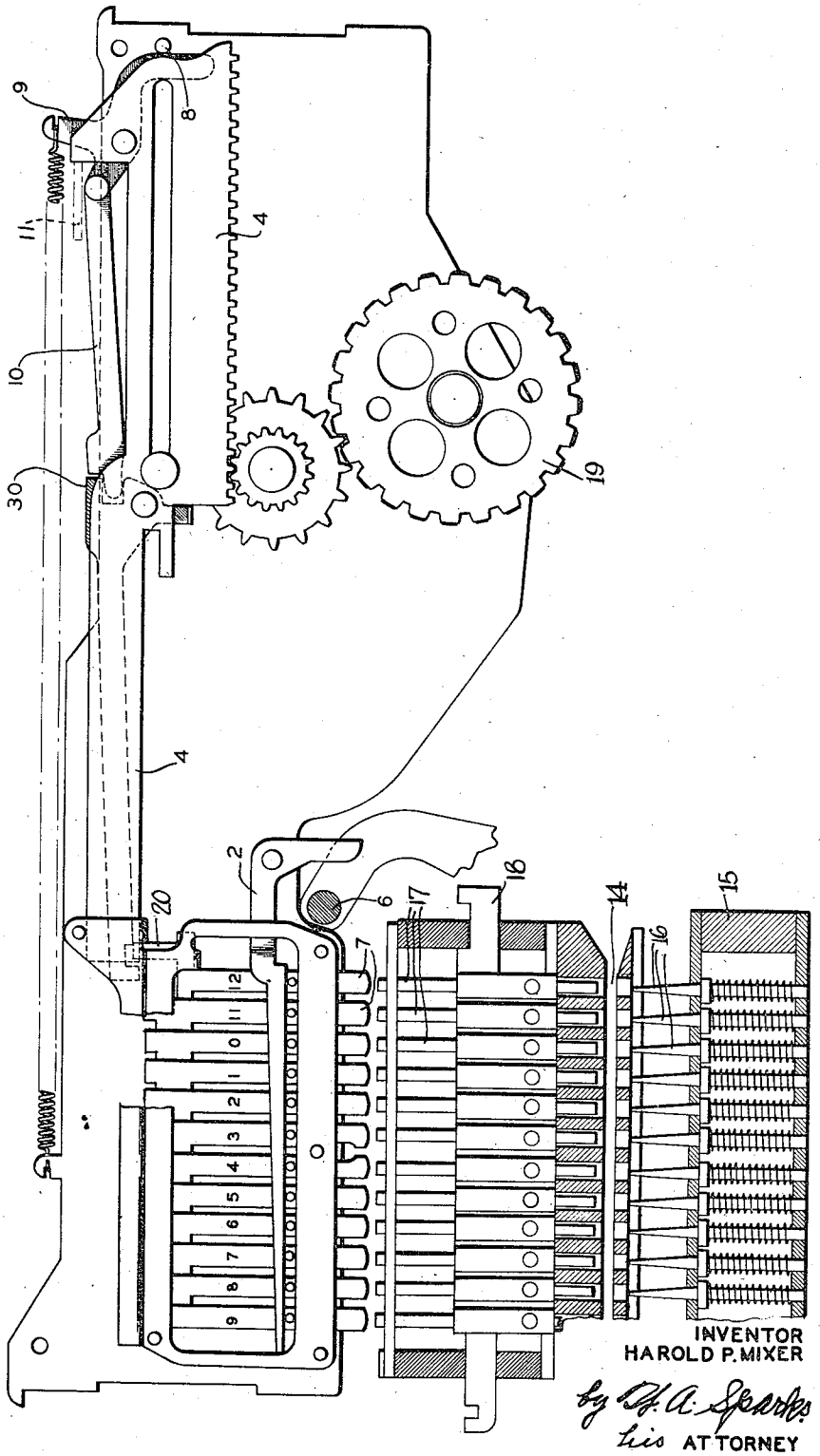



FIG. 3.

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Patented Mar. 17, 1936 2,034,112

# UNITED STATES PATENT OFFICE

2,034,112

## INTERPRETING AND PRINTING DEVICE

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Application July 10, 1934, Serial No. 734,487

7 Claims. (Cl. 101—93)

This invention relates to an improvement in interpreting and printing devices, which is particularly adapted to the alphabetic interpreter plates as used in the Printing interpreter, disclosed in the British Patent No. 420,403, granted November 30, 1934, and issued February 21, 1935, and in which are incorporated means for relieving the downward pressure from the rearmost measuring element stop, and means for insuring the return of a movable stop member to its lower position.

As described in the above cited British patent, an alphabetic printing interpreting plate, as used for a 45-column alphabetic code, has but twelve stops to control the interpreting and printing of the entire alphabet. The first half of the alphabet code is transformed into a mechanical code by elevating a single stop at a position corresponding to the location of a perforation in a record-card. To transform any of the characters in the last half of the alphabet it is necessary to raise the "12" stop together with some one of the other stops. Because of the fact that, in sensing a record-card, the stops are actuated by the sensing pin box springs only, without first locking said pins, and the fact that the "12" stop is being constantly pressed downwardly by a spring actuated stop arm, it becomes necessary that the tension of said pin box springs be carefully regulated. By incorporating the present invention (which includes means for returning the movable stop member and thereby obviates the necessity of heavy spring pressure for returning said movable stop member to its lower position), with a regular alphabetic interpreting printing plate, as used in the above cited Lasker application, there is practically no resistance to the upward movement of the "12" stop, while sensing occurs, and said movable stop member is returned to its proper position at the proper time. Consequently, the tension of the pin box springs may vary considerably.

One object of this invention is to provide means for returning the rockable measuring bar of a printing interpreter plate to its normal lower position.

Another object of this invention is to provide free movement of all of the stop members of a printing interpreter plate during a sensing operation.

Other objects and structural details of the invention will be apparent from the following description when read in connection with the accompanying drawings, wherein:

Fig. 1 is a side view of a printing plate with the measuring bar in its rearmost position and with the stop restoring actuating member and sensing mechanism in section, in their proper relationship with said plate.

Fig. 2 is an isometric view of a printing interpreting machine showing a printing plate in operative position,

Fig. 3 is an embodiment of the device shown in Fig. 1.

Like characters of reference refer to like parts in all views.

Referring particularly to the drawings: As stated herein above, this invention is particularly adapted to the printing interpreting machine disclosed in the British Patent No. 420,403.

Following is a brief description of said printing interpreting machine: A stack of cards 13 having data punched therein is fed one at a time by a usual card picking mechanism to a sensing chamber 14 (Fig. 3), where it is temporarily stopped by a card stop (not shown) attached to vertically reciprocatory sensing pin box 15. As each card is entering sensing chamber 14, cams 28 (one not shown) is forcing universal bar 11 rearwardly (to the right as viewed in Figs. 1 and 3), through the medium of bell cranks 32 and links 31. While traveling rearwardly, bail 11 draws the reciprocatory measuring member 4 rearwardly. When member 4 reaches its rearmost position sensing pin box 15 rises, and any spring-held pins 16 which find holes in the card being sensed pass through said holes and elevate corresponding lockable interponents 17 which in turn elevate a corresponding stop 7, into the path of members 30, 3 or 4 as the case may be. Any interponents 17 which are elevated by a pin 16, will be locked up by spring-held locking slides 18 for the period of time necessary for a cycle of the machine.

In the well known Powers punched card system, the letters of approximately the first half of the alphabet are represented by a single hole in a column whereas the latter half is represented by two holes in a column; one in the 12 position and one in any other of the remaining eleven positions.

When a letter of the first half of the alphabet is sensed, the proper stop 7 becomes locked up and on the forward stroke of bail 11 the forward end of spring-pulled measuring bar 11 will abut against the elevated stop 7 and thereby position the type wheel 19.

If a letter of the latter half of the alphabet is sensed, two stops 7 will be elevated, the "12" stop and one of the remaining stops. As viewed

in Fig. 3, the "12" stop has an upwardly extending projection 20, which underlies rockable measuring element 30. Consequently, when said "12" stop is elevated the forward end of element 30 will be raised to a position above the highest point of any of the remaining eleven stops 7 which might be raised and the forward end of measuring element 4 will then abut against the raised stop.

As may be seen in Fig. 3, the raising of the forward end of member 30 will allow the measuring unit 4 to move forwardly an extra distance, thereby positioning a different character on type-wheel 19. By interspersing the letters of the last half of the alphabet between the letters of the first half on type-wheel 19, the above described extra movement of measuring unit 4 will enable the printing of the entire alphabet from a 12 hole position card.

The reason for locking up interponents 17 is: the card must travel to a second or printing position where printing occurs. The invention includes the incorporation of a printing interpreter plate, as disclosed in the above cited British patent, with a bent hook member 1, one end of which is pivoted to a stop restoring bell crank 2 and the other end of which is bent over to be operable upon a rockable measuring element 3 pivoted to reciprocating measuring member 4. The bent over end of hook member 1 is slotted to engage a grooved stud 5, to maintain alignment of said member 1. The long arm of bell crank 12 (as shown in the above cited British patent) is shortened, in the present invention, to remove nearly all downward spring pressure from the rockable measuring element 3. The bell crank 2 is actuated once during each cycle of the printing interpreting machine by a cam operated universal bail 6, to restore any of the stops 7 which may have been elevated by the sensing mechanism. The rocking of bail 6 occurs at a time in the cycle just after the latching mechanism has been unlatched. As stated above, the hook member 1 is pivoted to bell crank 2, consequently, whenever said bell crank 2 is actuated, the rockable measuring element 3 will be positively drawn downwardly to its normal position.

A second embodiment of this invention is shown in Fig. 3. In this second embodiment the means for returning the rockable measuring element includes a spring actuated toggle-link mechanism which is disabled during sensing by the engagement of a stud, mounted on the interpreter plate, with a cam arm extension of said toggle-link mechanism. In this second embodiment the rockable stop member 30 is slightly different in shape, being more like a bell crank in action. By using the spring urged toggle-link mechanism as shown in Fig. 3 considerable downward pressure is exerted upon the rockable measuring element 30 thereby insuring the return of said measuring element 30 to its normal position during each cycle of the machine. The strong downward pressure upon member 30 would be too strong to be overcome by the sensing pin spring of the "12" stop in a condition where both the "12" stop and another stop were to be elevated. To overcome this difficulty a stud 8 is fixed in the interpreter plate in such a way as to engage and rock the toggle member 9 and thereby draw the toggle-link 10 out of engagement with the rockable measuring element 3. As may be seen in Fig. 3 the member 3 is now free to be actuated by the "12" stop. This ineffective condition of the toggle-link mechanism occurs only when the universal bar 11 (Fig. 2) has drawn all the reciprocating measuring elements 4 to their rearmost positions at which time a card is sensed and the sensings are transposed to the stops 7.

While there are above described but two embodiments of the invention, it is possible to produce still other embodiments without departure from the inventive concept above disclosed, and it is, therefore, desired that only such limitations shall be imposed on the appended claims as are stated therein, or required by the prior art.

What I claim as new and desire to secure by Letters Patent, is:

1. In a machine of the class described, in combination, a record-card controlled sensing means, including a special control stop, a reciprocatory measuring means under control of said sensing means, a spring urged rockable auxiliary measuring means controlled by said first mentioned measuring means and said special stop, and means for returning said auxiliary measuring means to normal position.

2. In a perforation interpreter, including a group of stops, one of which is of a special design adapted to be controlled by a record card sensing means and to control type for a printing means, spring urged reciprocatory measuring means, spring urged flexible measuring means pivoted to said reciprocatory measuring means and adapted to be rendered ineffective by said special stop, and means whereby said special stop is free to be actuated by said sensing means during a sensing operation.

3. In a perforation interpreter, including record-card sensing means, type for printing, a group of stops, one of which is of a special design, and which stops are adapted to be controlled by said sensing means and to control positioning of said type for printing, spring-urged reciprocatory measuring means, spring-urged flexible measuring means pivoted to said reciprocatory measuring means and adapted to be rendered ineffective by said special stop, means for restoring said stops to normal position, and means actuated by said stop restoring means for restoring said flexible measuring means to normal position.

4. In a perforation interpreter, including record-card sensing means, type for printing, a group of stops one of which is of a special design, and which stops are adapted to be controlled by said sensing means and to control positioning of said type for printing, spring-urged reciprocatory measuring means, spring-urged flexible measuring means pivoted to said reciprocatory measuring means and adapted to be rendered ineffective by said special stop, means for restoring said stops to normal position, and means pivoted to said restoring means for positively restoring said flexible measuring means to normal position.

5. In a perforation interpreter, including record-card sensing means, type for printing, a group of stops, one of which is of a special design, and which stops are adapted to be controlled by said sensing means and to control positioning of said type for printing, spring-urged reciprocatory measuring means, spring-urged rockable measuring means pivoted to said reciprocatory measuring means and adapted to be rendered ineffective by said special stop, spring urged means for returning said rockable measuring means to normal position, said spring-

urged means including a toggle-link member pivoted to said toggle member and operable upon said rockable measuring means, and means for rendering said spring-urged means ineffective during a sensing operation thereby enabling free movement of said special stop during said sensing operation.

6. In combination, a plate adapted to a printing interpreting machine, a group of stops one of which is of a special design, operatively mounted on said plate, a reciprocatory measuring bar mounted on said plate and controllable by said stops to position a type-wheel, a rockable measuring bar, also controllable by said stops to position said type-wheels and pivoted on said reciprocatory measuring bar, a spring held bell crank pivoted to said reciprocatory measuring bar, the long arm of said bell crank being adapted to exert a slight downward pressure upon said rockable measuring bar, a bell crank pivoted on said plate, a cam operated universal bail for actuating said bell crank to restore any of said stops which may have been actuated, and a link having one end bent over to render said link operable to restore said rockable measuring bar to normal position.

7. In combination, a plate adapted to a printing interpreting machine, a group of stops, one of which is of a special design operatively mounted on said plate, a reciprocating measuring bar mounted on said plate and controllable by said stops to position a type-wheel, a rockable measuring bar, also controllable by said stops to position said type-wheel and pivoted on said reciprocating measuring bar, a spring held three-armed lever also pivoted to said reciprocatory measuring bar, a link, one end of which is pivoted to one of the arms of said three-armed lever and the other end of which butts against a projection of said rockable measuring bar to press said bar downwardly, and a stud fixed to said plate, in such a position as to engage one of the arms of said three-armed lever to relieve the downward pressure of said rockable measuring bar when said reciprocatory measuring bar has been drawn against the tension of its spring for a sensing operation.

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