No. 851,504. PATENTED APR. 23, 1907.

H. DREWELL.

MECHANISM FOR PERFORATING THE OPERATING BANDS OF AUTOMATIC TYPE SETTING MACHINES.

APPLICATION FILED AUG. 25, 1906.

3 SHEETS—SHEET 1.

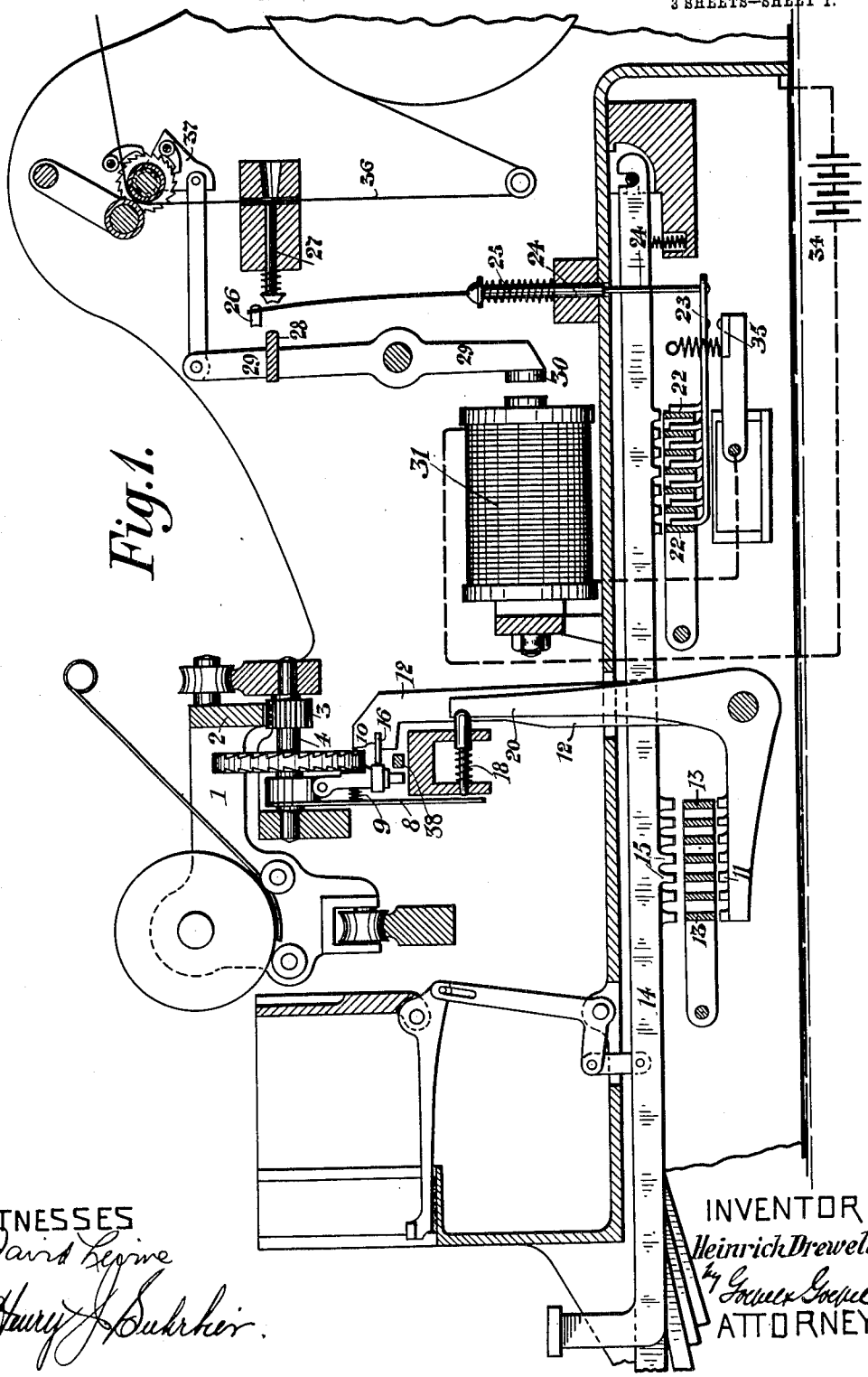


Fig. 1.

WITNESSES

David Levine

Henry J. Dubrucker.

INVENTOR

Heinrich Drewell

by Goepel & Goepel

ATTORNEYS

No. 851,504. PATENTED APR. 23, 1907.

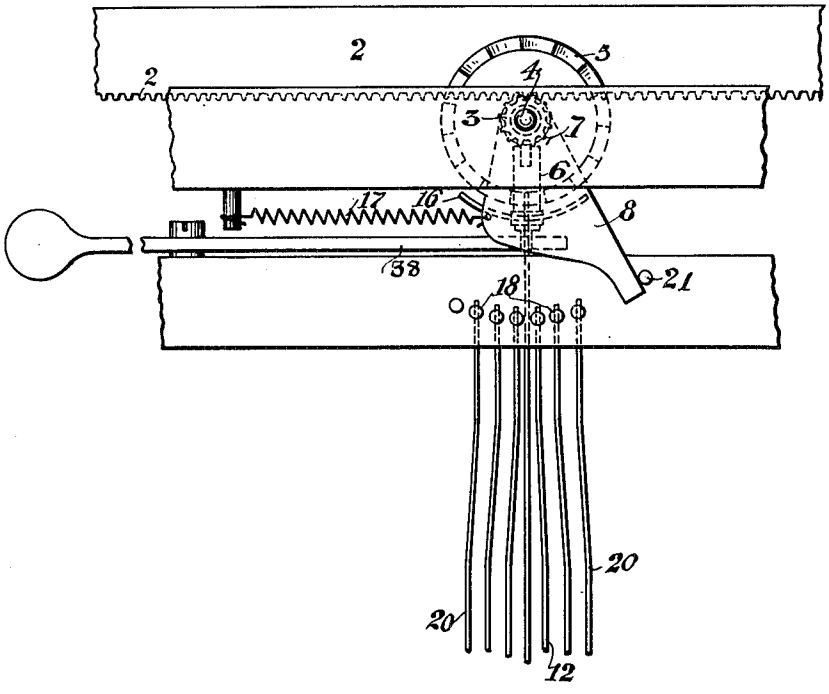
H. DREWELL.

MECHANISM FOR PERFORATING THE OPERATING BANDS OF AUTOMATIC TYPE SETTING MACHINES.

APPLICATION FILED AUG. 25, 1906.

3 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

INVENTOR

Heinrich Drewell

BY Fowler & Gosnell

ATTORNEYS

No. 851,504. PATENTED APR. 23, 1907.

H. DREWELL.

MECHANISM FOR PERFORATING THE OPERATING BANDS OF AUTOMATIC TYPE SETTING MACHINES.

APPLICATION FILED AUG. 25, 1906.

3 SHEETS—SHEET 3.

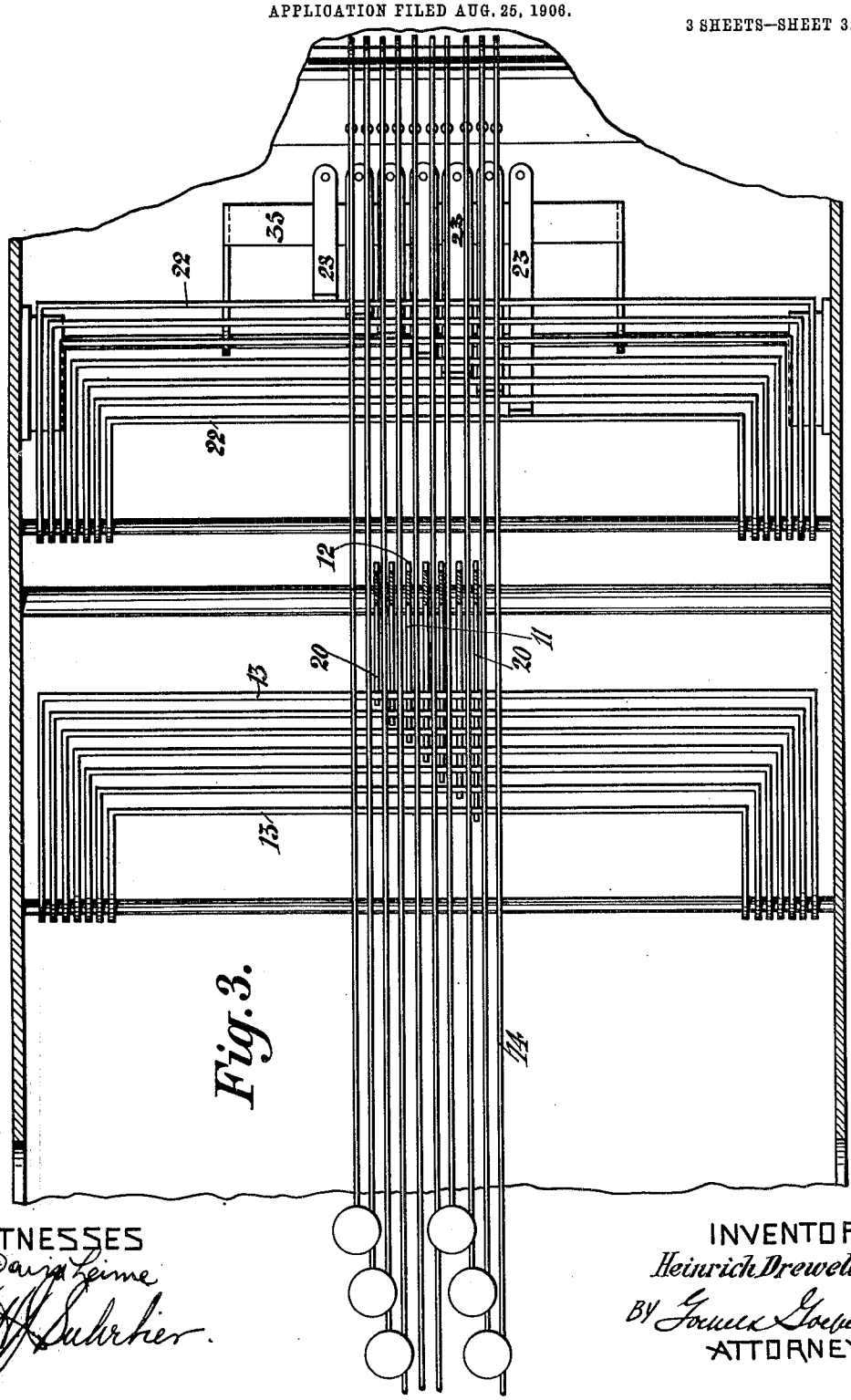


Fig. 3.

WITNESSES

Daisy Heine

A. J. Lubrecher.

INVENTOR

Heinrich Drewell

BY Fennick Goebel

ATTORNEYS

UNITED STATES PATENT OFFICE.

HEINRICH DREWELL, OF HANOVER, GERMANY.

MECHANISM FOR PERFORATING THE OPERATING-BANDS OF AUTOMATIC TYPE-SETTING MACHINES.

No. 851,504. Specification of Letters Patent. Patented April 23, 1907.

Application filed August 25, 1906. Serial No. 332,068.

To all whom it may concern:

Be it known that I, HEINRICH DREWELL, engineer, a subject of the German Emperor, residing at Hanover, 26 Dieterichsstrasse, Germany, have invented certain new and useful Improvements in Mechanism for Perforating the Operating-Bands of Automatic Type-Setting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In mechanism for perforating the operating bands of automatic type setting machines the perforating device has been combined with a typewriting machine so as to give the compositor a control over the matter set up. It is necessary to combine with such an arrangement a space indicator or letter counter which will record the widths of the letters set up by the machine taking due account of the difference in these widths. This indicator shows the compositor when a line is approximately completed and justifying has to be effected before commencing a new line. Such apparatus causes the attention of the compositor to be of necessity divided between the matter written by the typewriting machine and the index of the space indicator.

The object of the present invention is to avoid the disadvantages of thus dividing the attention of the compositor, and is attained by combining with the perforating device for the band a typewriting machine constructed to print characters of different widths, being provided with mechanism for imparting step by step motion to the carriage this motion corresponding to the width of any letter the key of which is struck. Such a typewriting machine takes the place of that wherein the letters are of uniform widths and the carriage motion is correspondingly uniform. In the form of typewriting machine it is proposed to use the widths of the letters and the carriage motion corresponding to the widths of the letters which are to be set up by the type setting machine and are reproduced symbolically on the band by the perforations resulting from the depression of the keys of the typewriting machine. It will thus be seen that the length of the line of characters written by the typewriting machine bears a definite relation to the length of the corresponding line which will be produced when the type are set up before justifying has taken place. As a result of this arrangement the compositor is enabled to separate the lines correctly and he can moreover bring parts of a line into any desired position with relation to its length. As for example when preparing a perforated band for setting up tabulated matter it is possible to so arrange the lines that the corresponding figures in different columns are exactly beneath each other, the disposition of the matter as written by the typewriting machine corresponding to the disposition that will result after the type is set up. This arrangement is possible in consequence of the lines as written by the typewriting machine and as formed by the set up type being both constituted of pieces, that is to say letters, whose widths correspond or are proportionate to each other so that not only does the whole of the typewritten line bear a definite proportion to the length of the line of set up type but also any portion of one line bears a definite proportion to the corresponding part of the other line. As a result of the possibility of bringing the matter produced by the typewriter into exact agreement as regards space division with the matter to be printed as symbolically reproduced on the band, leaving justifying out of the question, the compositor is able to obtain on the typewriting machine as correct a representation of the finished job as is possible. The attention of the compositor by this means has not to be divided and the present invention therefore offers a special advantage as compared with the known devices where a separate space indicator has to be employed.

The drawings show diagrammatically the connection of a typewriter provided with a paper-carriage shifting device and with a perforating apparatus for making register strips.

The essential point of the present invention is the systematic shifting of the paper-carriage in such a manner that the length of the shifting is in a constant proportion to the width of the written type which is simultaneously placed in symbolic characters on the register strip. In other respects the construction of the typewriter machine and of the perforating apparatus may be of various kinds.

In the accompanying drawings, in which the same parts are denoted by the same reference characters,

Figure 1 is a vertical longitudinal section of the entire arrangement, Fig. 2 shows the

mechanism for shifting the paper-carriage and the device for adjusting for the different steps which correspond to the different widths of type, and Fig. 3 is a plan view of the combination rails for the shifting of the paper-carriage and for the punching-disk of the perforating apparatus.

On the paper-carriage 1 is arranged a rack-bar 2, shown in Figs. 1 and 2. This bar meshes with a pinion 3 which is mounted on a shaft 4. On the shaft 4 is mounted a wheel 5 which is provided at both sides with ratchet-teeth, said wheel turning with the pinion 3 and moving the rack-bar 2. The shaft 4 is supported in suitable bearings of the machine-frame. The pawls 6 and 10 engage alternately with the teeth of the wheel 5 at opposite faces of said wheel. The pawl 6 is loosely pivoted to a sleeve 7 which is loosely placed on the shaft 4 so that it can be moved by a spring 9 clear of the teeth of the ratchet-wheel 5. The spring 9 rests against a plate 8 which is attached to the sleeve 7 and which turns with the same.

On depressing a key the corresponding key-lever 14 presses with its lugs 15 on two rails of the combination rails 13. One of the rails 13 acts on an elbow-lever 11 and the other on one of a series of angle-levers 20, shown in Figs. 1 and 3. On the arm 12 of the elbow-lever 11 is supported a transverse bar 16 which on depressing a key moves the pawl 6 out of engagement with the teeth of the ratchet-wheel 5. The sleeve 7 and plate 8 are thereby released by the wheel 5 and turned by the tension of a spring 17 (Fig. 2) in such a manner that the plate 8 abuts against one of the stop-pins 18.

Immediately before the pawl 6 is removed from the ratchet-wheel 5, the other pawl 10 acts on the opposite side of the wheel on the arm 12 of the elbow-lever 11 and enters into the teeth of the ratchet-wheel 5 and holds the same firmly in position during the depression of the key.

The stop-pins 18 serve for the purpose of limiting the movement of the plate 8, and thereby of the pawl 6. In their normal position the stop-pins do not project into the path of the plate 8. By depressing a key one of the elbow-levers 20, which act on the stop-pins 18, is actuated besides the elbow-lever 11, and thereby one of the pins 18 pushed forward so that the plate 8 is arrested. According as one or the other of the stop-pins 18 is pushed forward the length of motion of the plate 8 is controlled.

When the key is released the elbow-lever 11 is first returned and permits then the successive engagement of the pawl 6 with the teeth of the ratchet-wheel 5 and the release of the pawl 10 from the same. The paper-carriage is drawn under the influence of the well-known actuating spring (not shown) towards the left (see Fig. 2). It turns thereby the ratchet-wheel 5 and with it the pawl 6 which engages with the ratchet-wheel and the plate 8. As soon as the latter forms contact with the backwardly-extending stop 21, the motion of the paper-carriage is arrested.

The movement of the paper-carriage is therefore dependent on the oscillations of the plate 8, and these again are controlled by the stop-pins 18, one of which is pushed forward during the depression of the key. By the arrangement described the desired proportion between the length of the shifting motion of the paper-carriage and the width of the printed or set type is obtained.

For the purpose of obtaining simultaneously with the writing a symbolic setting of the type, the perforating apparatus is connected with the typewriter machine. For this purpose the key-levers 14 actuate a second row of combination rails 22, shown in Figs. 1 and 3, which actuate a perforating apparatus of any suitable construction.

With the combination rails 22 are connected draw-rods 24 by means of arms 23, said draw-rods being moved in downward direction against the tension of springs 25 during the depression of the key. The draw-rods 24 carry on spring-actuated extensions interposed pieces 26 which enter during the downward motion between the punching-dies 27 and the bar 28. The latter is connected with an arm of the lever 29, the other arm of which carries an armature 30 of the punching-electromagnet 31. Below the arms 23 is located a movable insulated rail 35. This rail is connected with one end of the coil of the electromagnet 31, while the other end is connected with a source of electricity 34. The opposite pole of the source of electricity is connected with the machine-frame and is thereby connected with the arms 23 of the combination rails 22. As soon as one of the arms 23 contacts with the rail 35 the electromagnet is excited and attracts its armature. The bar 28 is thereby moved towards the punching-die 27. At the points at which the interposed pieces 26 are brought between the bar 28 and the corresponding punching-die by the key depression, the latter is forced through the paper 36. During the return of the bar 28 and of the punching-die 27 the upper end of the lever 29 acts on a shifting device 37 which consists of a ratchet-wheel and pawls and which produces thereby in the well-known manner the forward motion of the paper strip 36. When the paper-carriage arrives at its end position, and the new line is to be commenced, then the pawl 6 is moved by means of a lever 38 out of engagement with the ratchet-wheel 5 without the simultaneous entry of the pawl 10 into the ratchet-wheel. The ratchet-wheel is then free and permits thereby the free re-

turn motion of the paper-carriage in the proper position for beginning a new line.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed I declare that what I claim is:

1. In mechanism for perforating the operating bands of automatic type-setting machines, the combination of a perforating device, a typewriting machine constructed to print characters of different widths, and operative connecting means between the perforating device and the keys of the typewriting machine.

2. In mechanism for perforating the operating bands of automatic type-setting machines, the combination of a perforating device, a typewriting machine having a plurality of type of different widths, mechanism for imparting step by step motion to the carriage of the typewriting machine, this motion corresponding to the width of any letter the key of which is struck, means for imparting corresponding intermittent motion to the band, and operative connecting means between the perforating device and the keys of the typewriting machine.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

HEINRICH DREWELL.

Witnesses:
HENRY J. MILLER,
ANNA DIPPEL.