(No Model.)

F. A. JOHNSON.

METHOD OF MAKING CONTROLLERS FOR COMPOSING MACHINES.

No. 584,360. Patented June 15, 1897.

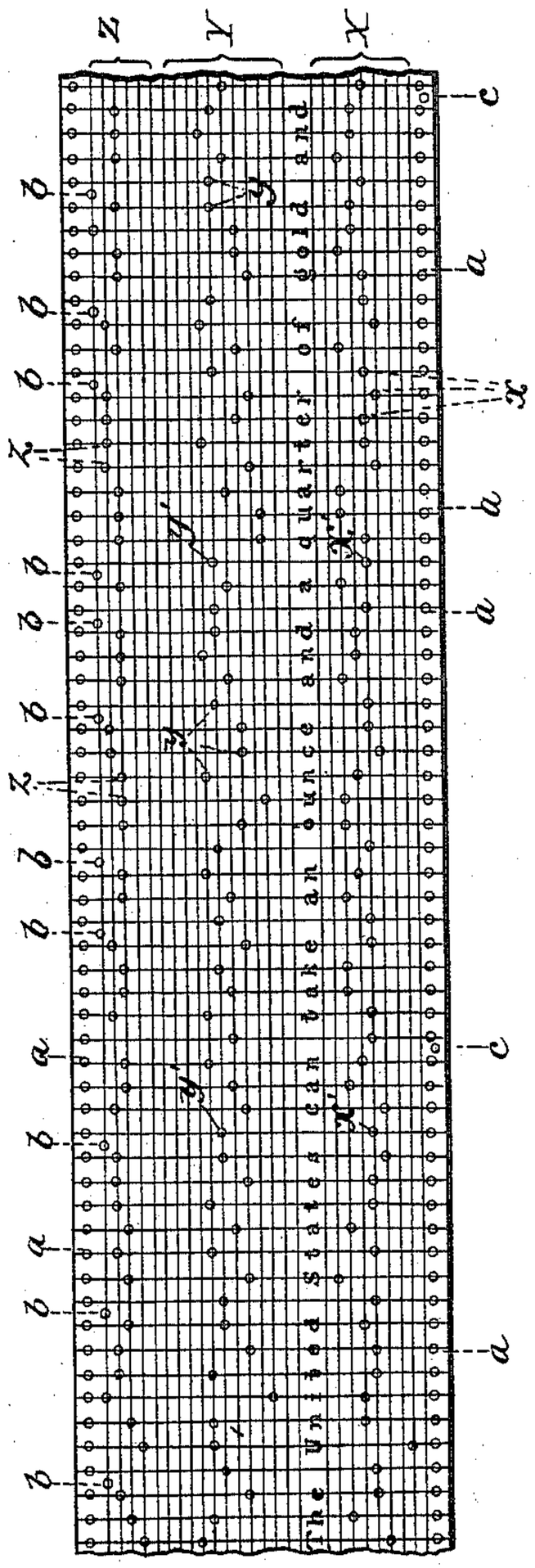

Fig. 1.

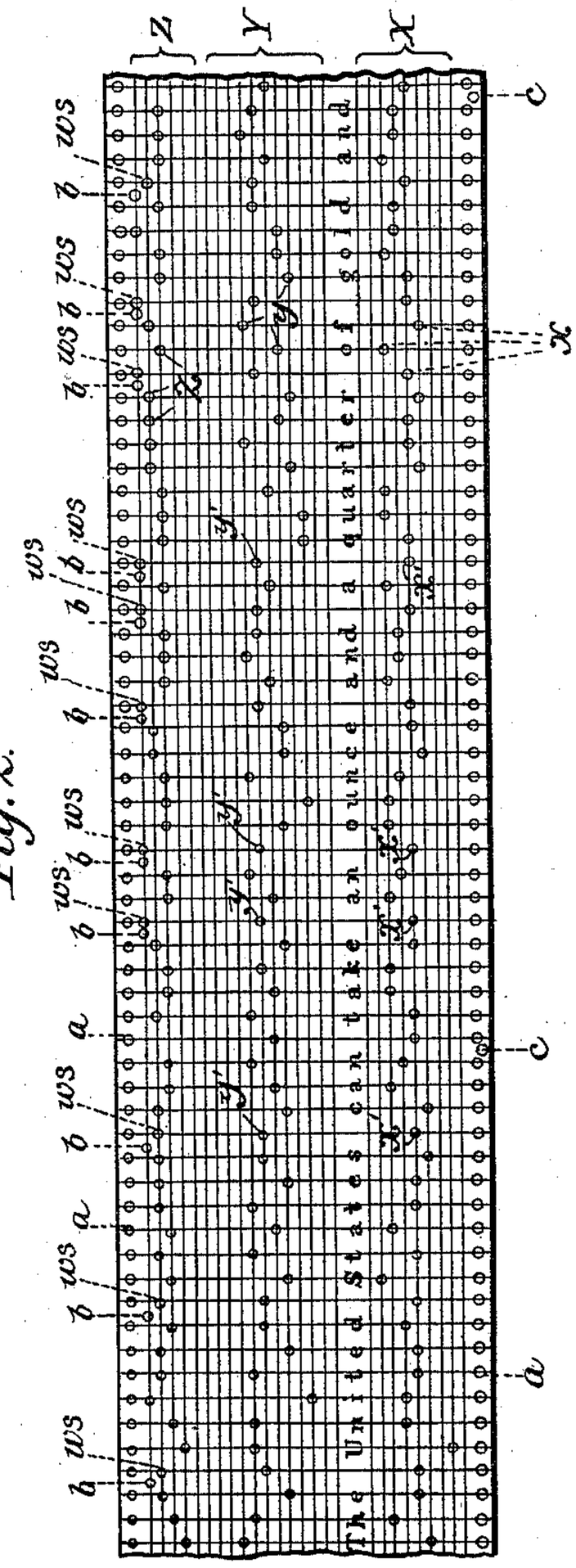

Fig. 2.

Witnesses.
Jno. G. Hinkel
Hill & Neff

Inventor
Frank Amos Johnson
By J. M. Watson
Attorney

UNITED STATES PATENT OFFICE.

FRANK AMOS JOHNSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE TACHYTYPE MANUFACTURING COMPANY, OF MINNEAPOLIS, MINNESOTA.

METHOD OF MAKING CONTROLLERS FOR COMPOSING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 584,360, dated June 15, 1897.

Application filed August 14, 1894. Serial No. 520,276. (No specimens.)

To all whom it may concern:

Be it known that I, FRANK AMOS JOHNSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Methods of Making Controllers for Composing-Machines, of which the following is a specification.

My invention relates to an improved method of preparing or manufacturing mechanical controllers for matrix-making, linotype, type-casting, and other composing machines.

The controller may consist of a strip of paper in which impressions are made by puncturing or perforating or embossing, or it may consist in a plate, roller, or cylinder in which movable pins or parts may be set to represent characters, spaces, and other features necessary to control the composing-machine.

In the following specification I shall illustrate and describe my improved method in connection with a controller consisting of a strip of paper in which perforations or groups of perforations represent the letters and other characters and the word-spaces. For each character there are two perforations which are adapted to select the character in the composing-machine and which I shall term "character-selecting" impressions. There are other perforations in the strip, which in a type-casting machine regulate the width of the mold and in a matrix-making machine regulate the feed of the matrix for the different characters. These perforations I shall term "character-space-selecting" impressions, and there are still other perforations which I shall term "word-space-selecting" impressions. In type-setting machines the character-space-selecting impressions may be omitted, as the space occupied by the characters is predetermined by the widths of the type.

In the accompanying drawings, Figure 1 illustrates a portion of a controller-strip partially prepared in which the word-space-selecting impressions are omitted, and Fig. 2 illustrates the complete controller-strip provided with proper word-space-selecting impressions adapted in the composing-machine to select spaces which will produce justified lines of print.

Referring to the drawings, X represents a longitudinal section of the strip embracing nine lines, in which character-selecting impressions *x* may be made, and Y indicates a longitudinal section embracing eleven lines, on which other character-selecting impressions *y* may be made. There are, therefore, ninety-nine possible combinations which may be formed by two perforations *x y*, arranged upon a transverse line of the strip, or, in other words, the strip, as shown, may be made to select any one of ninety-nine different characters. In a third longitudinal section of the strip Z are six lines, upon which space-selecting impressions are made. As illustrated, a single perforation *z* is placed in one of the transverse lines to select a space, the position of the perforation determining in the composing-machine the width of the space, which may be from one to six units.

In preparing a controller for type-casting machines I place a space-selecting impression in the transverse line with each pair of character-selecting impressions for the purpose of controlling the width of the mold to correspond with the character. In a controller for type-setting machines, however, these character-selecting impressions may be omitted, as above stated. In all cases I first make the character-selecting impressions consecutively for a given line, omitting the word-space-selecting impressions, as shown in Fig. 1 of the drawings. I then determine in any suitable manner, preferably by some justifying device, the proper widths of the word-spaces which will justify the line, and I finally insert between the words represented on the controller word-space-selecting impressions *w s*, as shown in Fig. 2.

In going over the strip for the first time to produce the character-selecting impressions I may also make the usual feed-holes *a* in the margin of the strip, or the strip may be previously prepared with feed-holes. I also make at the end of each word a "trip-hole" *b*, which, as shown, is placed between the transverse lines of holes representing characters and spaces. The function of this trip-hole

is to bring into action a second perforating mechanism, which inserts the word-space-selecting impressions *w s*. If the strip is to be used to control a type-casting and composing machine, I add impressions *x' y'* opposite the word-space impressions to select a blank-die to close the mold when casting the word-spaces. These impressions may, however, be omitted and means provided in the casting-machine which will hold the blank-die normally opposite the mold.

In preparing the strip the running space occupied by the characters is counted upon a dial as in an ordinary type-writer or matrix-machine, and when sufficient matter has been run off to form a line a line-hole *c* is made in the strip. This serves to indicate the lines upon the strip, and it also controls the line-shifting mechanism in matrix-making and similar machines and the mechanism for transferring completed lines to the galley in type-setting or type-casting machines and the line-casting mechanism in linotype-machines.

In or adjacent to the transverse lines I print the characters represented by the perforations in said lines, as shown in the views of the drawings. I find that a strip thus indexed is very much more convenient and valuable than a strip which is simply perforated, as the indexed strip may be more readily corrected and its printed record is intelligible to unskilled operatives who would have difficulty in translating the impressions alone.

Fig. 1 represents an unjustified strip, and Fig. 2 a justified controller. In using the latter strip justifying mechanism may be omitted from the composing-machine in which it is used and said machine greatly simplified. The strip will operate equally well if fed through the machine either backward or forward—that is, in either case it would produce justified lines.

As previously stated, the method above outlined may be applied to mechanical controllers in which movable pins are set, which controllers may be afterward used to effect the perforation of a strip similar to that illustrated or used directly to control composing-machines. A paper strip is preferable for the reason that it may be rolled up and kept for future use, while other forms of mechanical controllers would be too costly for permanent records.

In preparing my improved justified strip I prefer to arrange the word-spaces upon the "quotient-and-remainder" principle, illustrated and described in my pending application, Serial No. 442,820, filed August 11, 1892, in which the word-spaces never vary more than one unit. Thus the line "take an ounce and a quarter of gold and," which is included between the line-holes *c c*, is justified by inserting between the words seven two-unit spaces and one three-unit space, making seventeen units of word-spaces.

Novel features not herein claimed are reserved to be covered in my pending application, Serial No. 510,661, filed May 9, 1894.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The method herein described of preparing a justified controller for composing-machines which consists in consecutively forming therein character-selecting impressions for the characters constituting words, leaving blank intervals for the word-space-selecting impressions, and after the impressions for the words to be included in a line are completed, forming in said blank intervals such word-space-selecting impressions as shall select spaces of proper size to perfectly justify the line, substantially as described.

2. The method of making a justified controller for composing-machines which consists, first, in making character-selecting impressions therein in sequence to form the words of a line, "trip" impressions to indicate the word-spaces, and line impressions to indicate the ends of the line, then determining the widths of the word-spaces necessary to justify the line, and finally inserting word-space-selecting impressions adjacent to the trip impressions and adapted to select such spaces in the composing-machine as will perfectly justify the line of type, substantially as described.

3. The method herein described of making a justified controller for a type-casting and composing machine which consists, first, in making character-selecting impressions therein to form the words of a line and corresponding character-space impressions, leaving blank intervals between the words, and after the impressions for the words necessary for a line are completed, forming in said blank intervals such impressions as shall select spaces of a proper size to perfectly justify the line of type, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK AMOS JOHNSON.

Witnesses:
R. H. SANFORD,
W. E. BRAND.