

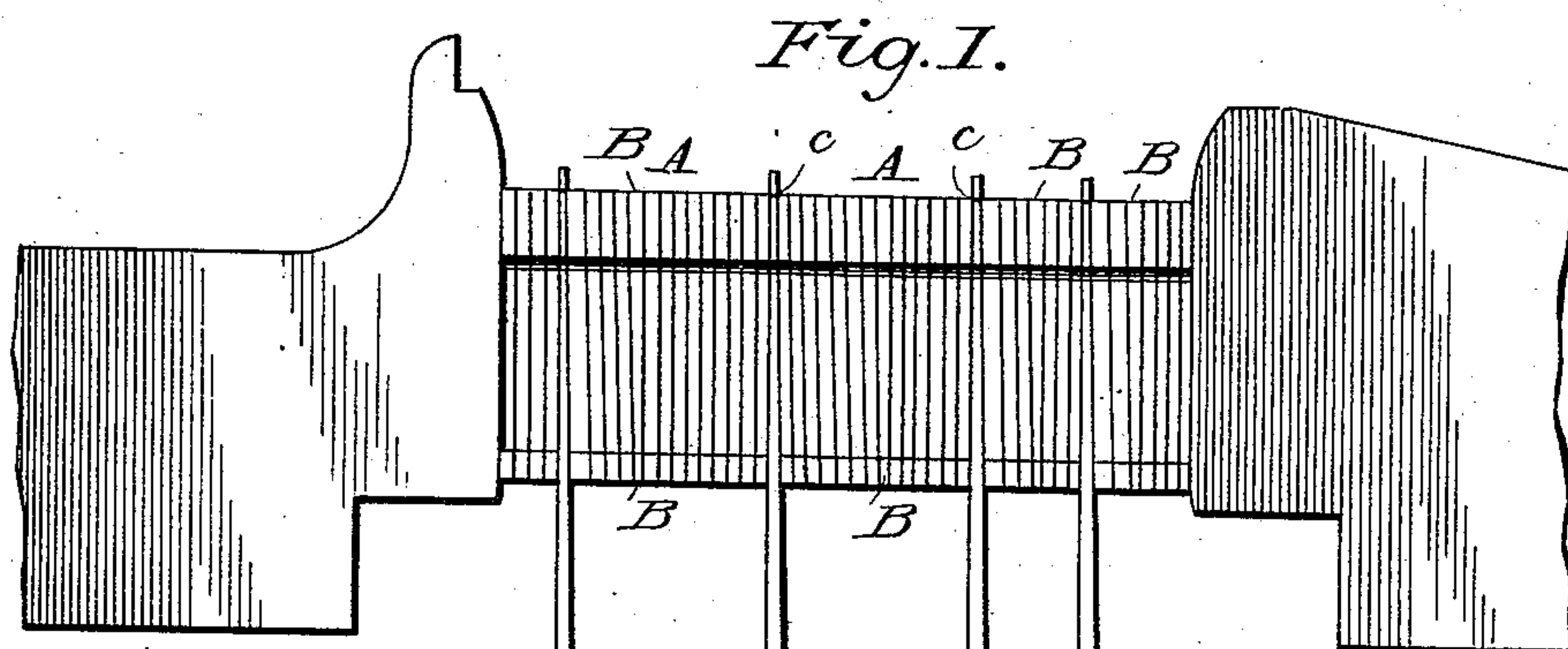
(No Model.)

C. MUEHLEISEN.

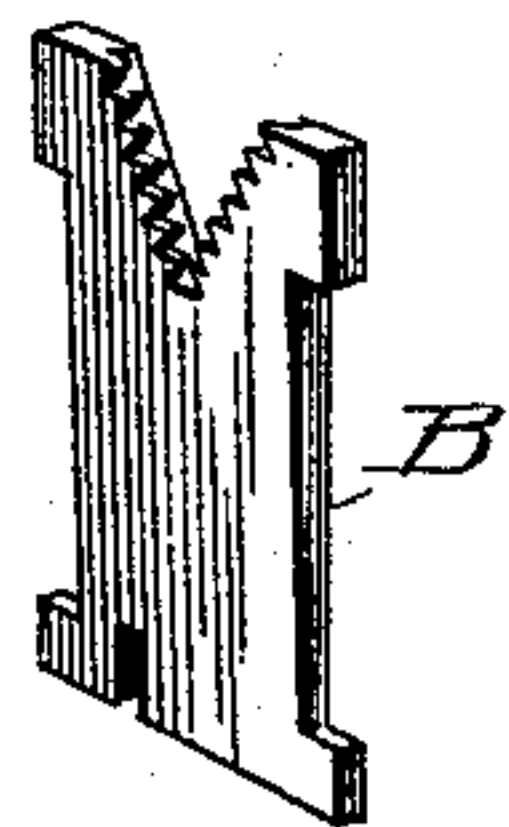
METHOD OF AND MEANS FOR JUSTIFYING TYPE.

No. 539,994.

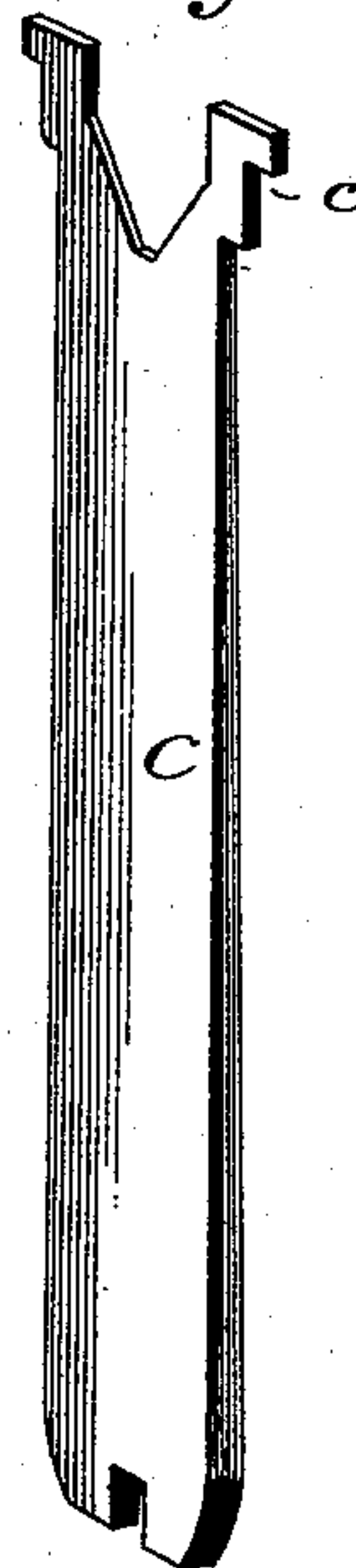
Patented May 28, 1895.



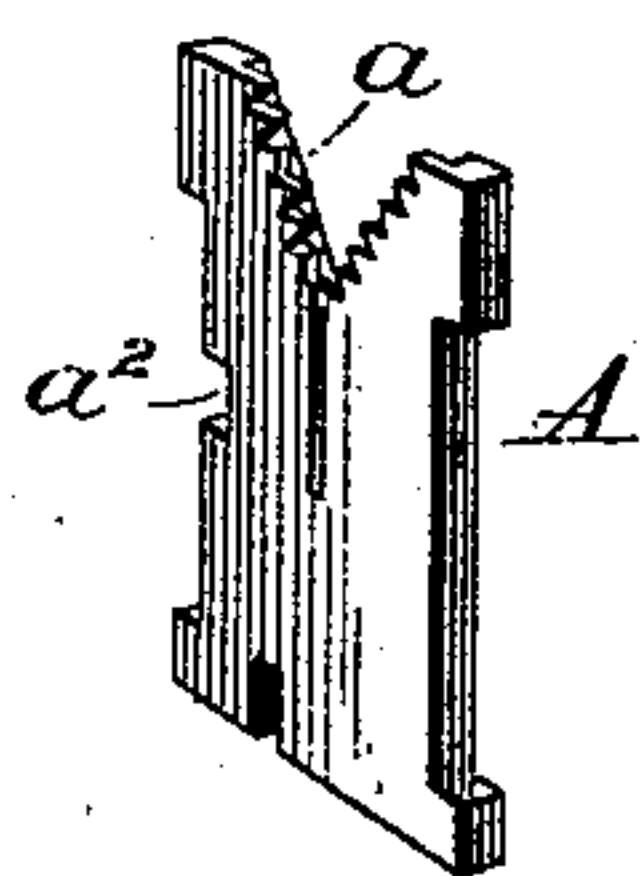
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Witnesses

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# UNITED STATES PATENT OFFICE.

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## METHOD OF AND MEANS FOR JUSTIFYING TYPE.

SPECIFICATION forming part of Letters Patent No. 539,994, dated May 28, 1895.

Application filed June 8, 1892. Serial No. 435,991. (No model.)

*To all whom it may concern:*

Be it known that I, CARL MUEHLEISEN, of Baltimore, State of Maryland, have invented a new and useful Improvement in Methods of and Means for Justifying Type, of which the following is a specification.

At the present day there are known in the art various machines in which type matrices or type dies are assembled temporarily in line and then justified or spaced out to a predetermined length for the purpose of producing type characters in relief or matrices from which to cast type lines.

My invention relates to improved means for effecting justification of the line, that is to say, for introducing into the line between the words suitable spaces to extend the same to the required length after all the letters or characters allowable in the line have been composed or assembled. Heretofore the devices used for this purpose in organized machines have been of two classes, the first consisting of elongated bars or spaces increasing in thickness step by step so that when thrust endwise through the line they would expand the latter definite distances, and the second consisting of two oppositely tapered wedges in some cases unconnected and in other cases united by a sliding joint so that after being introduced together into the line the movement of one member endwise along the other would increase the thickness of the space while maintaining a parallelism of the outer faces. The present device is intended to overcome the various difficulties which have attended the use of the contrivances above mentioned. Under the present invention I make use of two classes of spaces which are used alternately and independently in the line, spaces of the one form consisting of short wedges which are introduced into or set up in the line between the matrices or dies and preferably permitted to remain at rest—that is to say, without adjustment of any kind after they are in place. The other spaces consist of end wedges or tapered bars which are set into the line and then moved endwise therethrough to effect its expansion or elongation.

It will be observed that under my system the justification of the line is effected by a part of the spaces and that the other spaces

retain the width which they present in the line in the first instance. I taper the two classes of spaces in opposite directions. As each space presents opposite sides which converge or which, in other words, are not parallel it follows that the intervening matrices are tipped out of a vertical position so that their characters do not stand in true vertical lines; but I find that it is practicable to effect the justification in a satisfactory manner for the reason that the taper of the wedges is so slight that the inclination of the letters to the right or left is imperceptible.

The essence of my invention resides in making use of oppositely tapered wedges or spaces which are introduced into the line at different points and independently of each other. Any other details may be varied at will and they may be introduced into and adjusted through the line by a mechanism of any suitable character. In the form in which they are represented herein they are adapted for use in the well known Mergenthaler linotype machine such as shown in Letters Patent of the United States, dated September 16, 1890, No. 436,532, the longer wedges being adapted to be handled by the machine in the same manner as the compound spaces shown in said patent while the shorter spaces are adapted to pass to and through the magazine in the same manner as the matrices.

Figure 1 is an elevation showing a line of matrices and spaces on my plan confined between the jaws or clamps of the machine by which the length of the line is determined. Fig. 2 is a perspective view of one of the shorter spaces; Fig. 3, a similar view of the longer space. Fig. 4 is a perspective view of one of the matrices.

Referring to Figs. 1, 2 and 3 A A represent the series of ordinary matrices consisting of small metal plates or pieces having parallel side faces, distributing teeth  $a$  in the upper end, and a female character or matrix proper,  $a^2$  in one edge so that when assembled side by side in series they will constitute a line matrix, or in other words, a matrix adapted to produce a line of type characters.

B B represent shorter spaces having a marginal form similar to that of the matrices and with distributing teeth at the top but without



the character or matrix in the edge. In the present instance the shorter spaces are tapered or reduced in thickness from the upper to the lower ends.

5 C C represent the longer spaces which consist of a wedge-like bar having preferably flat side faces and tapered or reduced in width from the lower toward the upper ends, the upper ends being provided with shoulders c  
10 by which they may be sustained in the line during its composition and until justification is to be effected.

The spaces from one edge to the other should be of the same width as the matrices.

15 In making use of the spaces the matrices are assembled side by side in line in the ordinary manner. After the matrices representing the first word are assembled I introduce a space of either form which is then followed by the matrices representing the next  
20 word, after which a space of the other form is introduced and so on repeatedly until the line is completed, spaces of the two forms being introduced alternately. The result of this  
25 operation will be a line composed of matrices and intermediate oppositely tapered spaces such as shown in Fig. 1. If the line as composed is of less than the predetermined length the longer spaces are advanced either simultaneously or successively through the line until the latter reaches the required limit. It  
30 may be and frequently is the case, that the spaces in the line represented by the longer members are of greater width than the others but owing to the irregularity in the distribution of the spaces in the successive lines this is not found to be objectionable.

It is to be understood that my invention is limited to the employment of reversely tapered

spaces, when used separately or independently, at different places in the line one at each place; and that it does not include reversely tapered, unconnected spaces inserted in the line in pairs, in contact with each other.

Having thus described my invention, what I claim is—

1. In combination with a composed line of type matrices or dies, a series of tapered spaces seated at different points in said line, and a second series of oppositely tapered  
50 spaces seated at other points in said line, a part of the number being elongated and movable endwise through the stationary line of matrices.

2. In combination with the line of type matrices or dies, jaws or abutments to limit the elongation of the line, a series of spaces located in the line at different points and tapered in one direction, and a series of intermediate spaces located at different points in  
60 the line from those first named and tapered in a reverse direction and movable endwise through the line independently of the others.

3. The herein described method of justifying a type line consisting in introducing and  
65 holding at rest in the line a series of spaces tapered in one direction and introducing into and moving through the line at other points an independent series of spaces tapered in the reverse direction.

In testimony whereof I hereunto set my hand, this 28th day of May, 1892, in the presence of two attesting witnesses.

CARL MUEHLEISEN.

Witnesses:

ED. RAINE,  
C. FRANKE.