No. 697,968. Patented Apr. 22, 1902.

W. BERRI.

DEVICE FOR JUSTIFYING LINES OF TYPE OR MATRICES.

(Application filed Aug. 26, 1901.)

(No Model.) 2 Sheets—Sheet I.

Fig. 1.

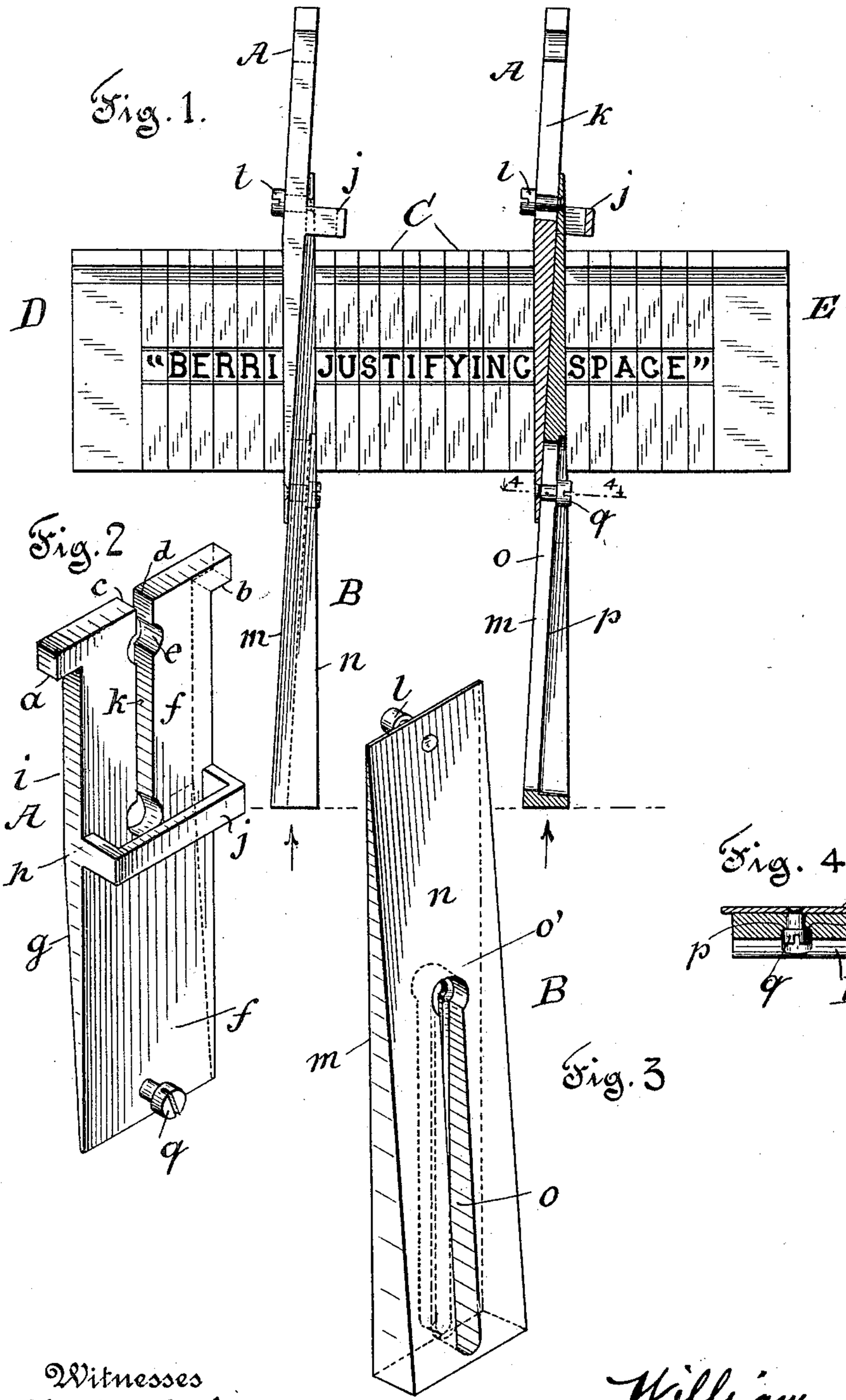


Fig. 2

Fig. 3

Fig. 4.

Witnesses
Charles Hanimann
Henry V. Brown.

Inventor
William Berri
By his Attorney
Walter Brown

No. 697,968. Patented Apr. 22, 1902.

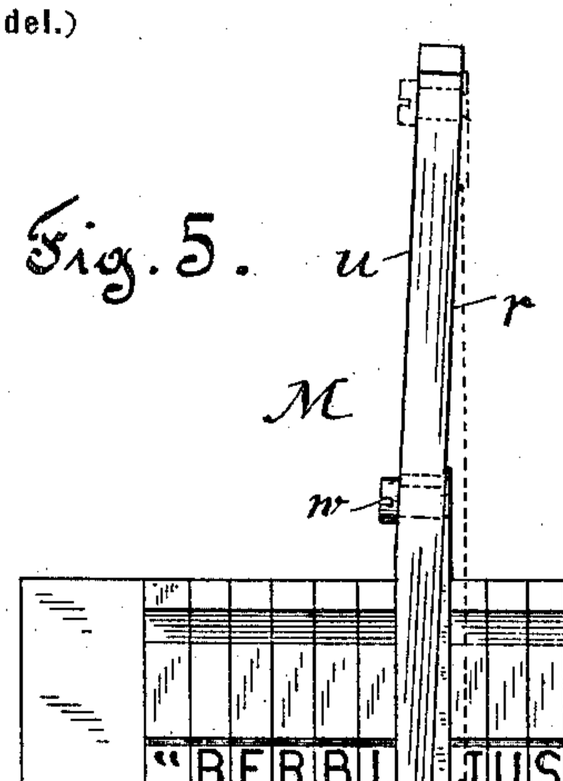
W. BERRI.

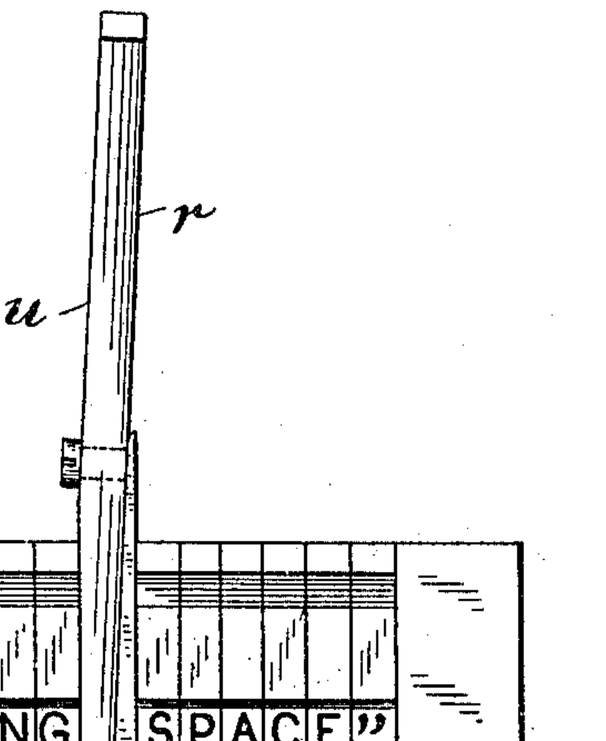
DEVICE FOR JUSTIFYING LINES OF TYPE OR MATRICES.

(Application filed Aug. 26, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 5.





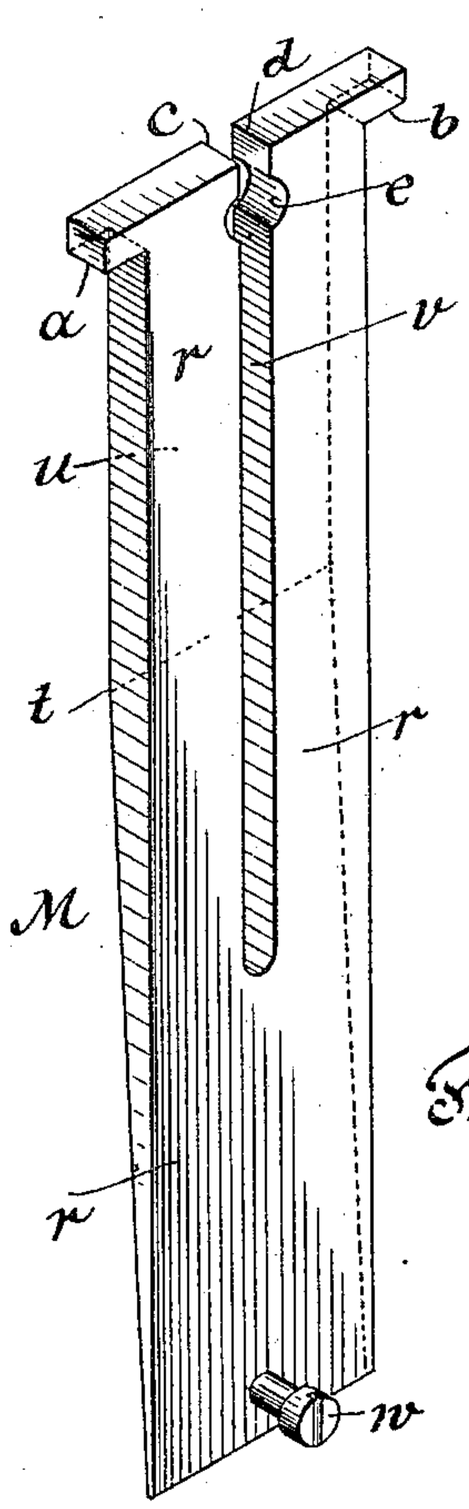


Fig. 6.

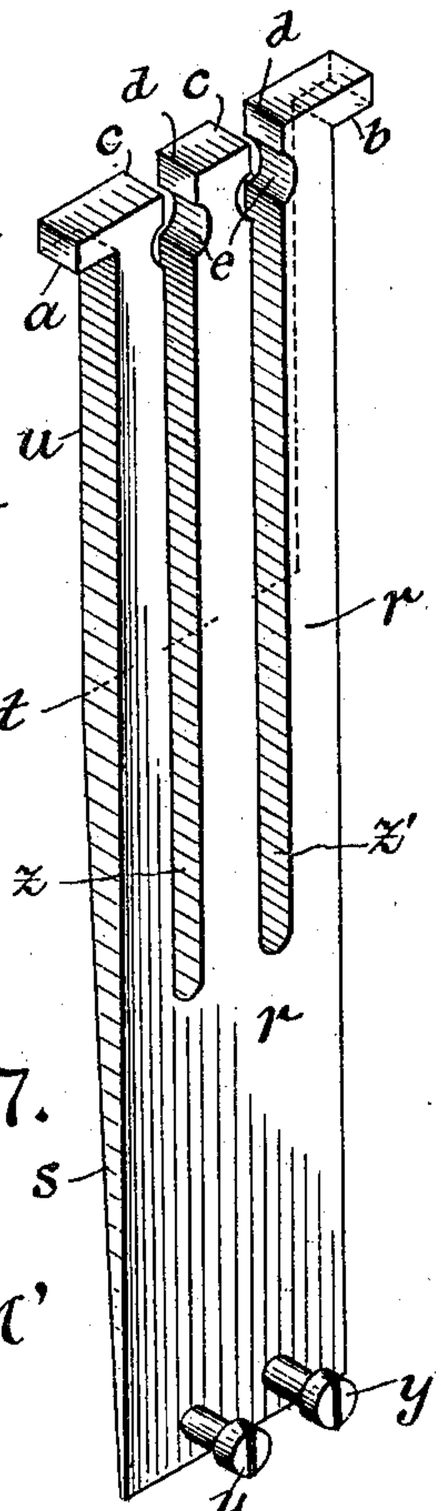


Fig. 7.

Witnesses
Charles Hanimann.
Henry V. Brown

Inventor
William Berri.
By his Attorney
Walter Brown

UNITED STATES PATENT OFFICE.

WILLIAM BERRI, OF BROOKLYN, NEW YORK.

DEVICE FOR JUSTIFYING LINES OF TYPE OR MATRICES.

SPECIFICATION forming part of Letters Patent No. 697,968, dated April 22, 1902.

Application filed August 26, 1901. Serial No. 73,223. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BERRI, a citizen of the United States of America, and a resident of the borough of Brooklyn, in the city of New York and State of New York, have invented certain new and useful Improvements in Devices for Justifying Lines of Type-Matrices, of which the following is a specification.

This invention relates to improvements in devices for justifying lines of type-matrices.

In particular it relates to improvements in spaces, which are made in two parts or wedges with reversed taper, the parts being movable on each other lengthwise, whereby the thickness of the space is varied at will. The parts are pushed up and down by the operator, as required, to fill out or "justify" the line of matrices to exactly the proper length, the spaces being fed one by one into the line at proper positions, according to the judgment of the operator, from magazines into which the spaces have been previously distributed by suitable escapement mechanisms. When the line is assembled and justified, it is firmly clamped between jaws of the holder at the end of the line and brought to the nozzle of the casting-pot, where a cast is made in the manner well known in the art. Thereafter the matrices and the spaces are removed from the holder and distributed to their respective magazines by suitable distributing devices. It is evident that the justifying-spaces must have their outer faces accurately parallel to each other where the nozzle of the casting-pot comes against the assembled justified line, so that the matrices may fit tightly and truly against each side of the justifying-space and not have any cracks into which molten lead can flow from the casting-pot, and this accurate fit of the matrices against the justifying-space must be attained in all positions of the two parts of the said space.

In my invention the space is made in two parts, and so much of these parts as can in any circumstances come into contact with the side of a type-matrix has a true bevel, the bevel of one part of the space being the reverse of the bevel of the other part thereof, so that under all circumstances those parts of the opposite faces of the space with which the matrices can come into contact are true parallel and vertical planes at all positions of the two parts of said space. The said parts are removably connected together by suitable devices, which are positioned to be above the top and below the bottom of the assembled line of matrices and spaces, so that said devices do not interfere with the proper contact of the matrices against the spaces. The two parts of the spaces are removably connected, so as to be readily taken apart for cleaning and again readily put together, this capacity to be readily taken apart for cleaning being an important feature in justifying-spaces, and the absence of it in spaces now in common use being a serious disadvantage.

Referring to the drawings which accompany the specification to aid the description, Figure 1 is a longitudinal sectional elevation of a line of matrices containing my improved spaces. Fig. 2 is a perspective view of the short wedge provided with a band to aid in holding the short and long wedges together. Fig. 3 is a perspective view of the long wedge provided with a pin to engage in the lower end of the short wedge. Fig. 4 is a cross-section on the line 4 4 of Fig. 1. Fig. 5 is a longitudinal elevation of a modification of the invention, the space now being made of two long reversible and similar wedges. Fig. 6 is a perspective view of one of the wedges. Fig. 7 is a perspective view of another modification of the wedges.

Referring to Figs. 1 to 4, inclusive, the justifying-spaces are made of two parts A B, of which A is the relatively short and B the long wedge, which are loosely connected together and are fed into the holder D E by suitable escapement mechanism from their magazine at proper intervals, as at the ending of words. After the matrix-line is completed it is firmly clamped at the ends by the jaws of the said holder D E, and the nozzle of the casting-pot is brought against the line at the characters and a cast taken. The casting-pot and the magazines and assembling and distributing devices are not shown in the drawings, since various forms of the same are well known in the art and are not *per se* part of the present invention; but the several short wedges will be provided with suitable assembling and distributing devices, as the shoulders *a b c d* and orifices *e* or other devices, to adapt them to

the particular machines with which they are to be used.

Referring now particularly to the construction of the spaces, the inner faces *f m*, respectively, of the short wedge A and long wedge B, which are in contact, are true planes reversely inclined at the same angle from the vertical. So much of the outer face of the short wedge (indicated by *g*) as can in any circumstances be in contact with the face of a matrix in the assembled line is a true vertical plane, and from the upper limit *h* of said vertical plane surface *g* the outer surface *i* of wedge A is a plane surface parallel to the said inner face *f* for a purpose to be hereinafter explained. Just above the junction of the surfaces *g* and *i* I prefer to provide the band *j* in the case when the upper wedge is shorter than the lower wedge, the clear opening through which band is wide enough to permit the wedge B to be shoved up to its extreme limit. Said band *j* is intended to encompass somewhat loosely the long wedge B and to hold it to the wedge A, said wedge B being a little narrower than wedge A. For the band I may substitute the slot *k*, putting a pin *l* in wedge B, the head of which engages on the said surface *i*, or I may use both the band *j* and the slot *k*, as shown in the drawings. The inner face *m* of the long wedge B is, as said, a true continuously-beveled plane surface, and the outer face *n* of said wedge B is a continuous plane vertical surface. Consequently when the two wedges A B are put together, as shown, their respective outer surfaces *g n* are parallel and vertical in all positions of the wedge B. A long vertical slot *o* is cut through wedge B, widened at its outer part and formed with shoulders *p*, which are parallel with the said inner surface *m*, and a pin *q* is fixed in the lower end of wedge A, the head of which engages said shoulder *p*. The said shoulders *p* are formed parallel with the surface *m* of wedge B in order that the said shoulders *p* may move truly under the head of the pin *q* and truly bear against said head in all positions of the wedge B as the same is moved up to increase the thickness of the space, and the aforesaid part *i* of the wedge A is made parallel with the face *f* of said wedge A in order that the head of the pin *l* may move truly up and bear on said surface *i* in all positions of the said wedge B, and it will be evident upon inspection of Fig. 3 that said wedge B is a reversible and interchangeable wedge, so that a space can be made by putting two such wedges B together in reverse positions and with their faces *m* in contact, the head of the pin *q* of each wedge then bearing on the shoulders *p* of the slot in the other similar wedge.

To facilitate the ready separation of the wedges A B from each other, I enlarge the lower end of slot *k* and the upper end of slot *o* to permit the heads of the pins *l q* to respectively pass through, the band *j* allowing of sufficient play of wedge B when at its lowest position to permit of withdrawing said pins from their respective slots.

It will be understood that the spaces having been distributed after casting into their several magazines are fed into the holder D E at appropriate intervals, and then the long wedges B are pushed up and the short wedges A are pushed down by suitable and well-known devices until they separate the matrices and increase the length of the line to fill the holder D E, the end jaws of the said holder being finally tightly clamped at the end of the line.

Referring to Figs. 5 and 6, the parts M N, which constitute the space, are duplicates of each other, but reversed. The inner face *r* of each is a true continuous beveled plane surface. So much of the outer surface *s* of each wedge toward the thin end thereof as can in any circumstances be in contact with the face of a matrix C is a true vertical plane surface and of sufficient length to provide for the necessary movement of the wedge N in justifying the line of matrices. From a line *t*, which in all cases will be above the upper edge or below the lower edge of the assembled matrices, the outer faces *u* of said wedges M N are parallel to the said inner faces *r*. A long slot *v* is provided in each wedge, in which works a pin *w*, the head of which bears on said surface *u*, as shown, the parallelism of said surface *u* with the surface *r* insuring that the head of the pin *w* of whichever wedge is moved shall bear truly on the said surface *u* at all relative positions of the two wedges, the parallelism of said surface *u* with said surface *r* being for the same purpose as and the equivalent of the aforesaid parallelism of the shoulders *p* with the surface *m* of the wedge B, Figs. 1 and 3. Said slot *v* is of such length that when the wedge N is at its position for narrowest space, which is about that shown in Fig. 5, its pin will be above the upper end of the assembled matrices C, the corresponding pin *w* of the wedge M, which is the fixed wedge, being of course below the lower end of said matrices. Each wedge will be provided with the shoulders *a b c d* and orifice *e* or other suitable devices to provide for the distribution and assembling of the spaces in that machine with which they are used.

Fig. 7 shows a wedge M′, which is similar to the wedge M, except that it has two pins *y y′* and two slots *z z′*, respectively. Two of said wedges M′ are put together in reversed position to form a space.

Now, having described my improvements, I claim as my invention—

1. A space for justifying lines of matrices consisting of two reversible and interchangeable oppositely-beveled wedges removably connected together, substantially as described.

2. In a space for justifying lines of matrices, the combination with two oppositely-beveled wedges of a device removably connect-

ing said wedges and positioned above or below the line of matrices, substantially as described.

3. In a space for justifying lines of matrices, the combination with two oppositely-beveled wedges, of devices removably connecting said wedges and positioned above and below the line of matrices, substantially as described.

4. In a space for justifying lines of matrices, the combination of a wedge having a beveled inner face and an outer face which is in one part perpendicular to the matrix-line and in one part parallel to said beveled face, another wedge having a beveled inner face and an outer face perpendicular to the line of matrices, and devices movably connecting said wedges and positioned above and below the line of matrices substantially as described.

5. The combination with a matrix-line holder having end pieces which define the length of the justified line, and matrices, of a justifying-space consisting of two reversible and interchangeable oppositely-beveled and removably-connected wedges, substantially as described.

6. The combination with means for distributing and assembling matrices and spaces, of a holder for the line of matrices provided with jaws which determine the length of the line, matrices, and a justifying-space consisting of two reversible and interchangeable oppositely-beveled wedges, and devices removably connecting said wedges and positioned above and below the said holder, substantially as described.

7. A reversible interchangeable wedge constituting a member of a space for justifying lines of matrices and provided with a device for connecting said wedge with a similar reversed wedge above or below the line of matrices, substantially as described.

8. A reversible interchangeable wedge constituting a member of a space for justifying lines of matrices and provided with means for connecting said wedge with another similar wedge above or below the matrix-line and with a surface adapted to be engaged by connecting means on the other wedge, substantially as described.

9. The combination in a justifying-space, of two similar reversible and interchangeable wedges, each wedge having means for connecting with the other wedge above or below the matrix-line and a surface parallel with the meeting faces of said wedges and adapted to be engaged by the connecting means on the other wedge, substantially as described.

Signed at Loon Lake, New York, this 21st day of August, 1901.

WILLIAM BERRI.

Witnesses:
J. HENRY DICK,
J. SEAVER PAGE.