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F. H. PIERPONT.

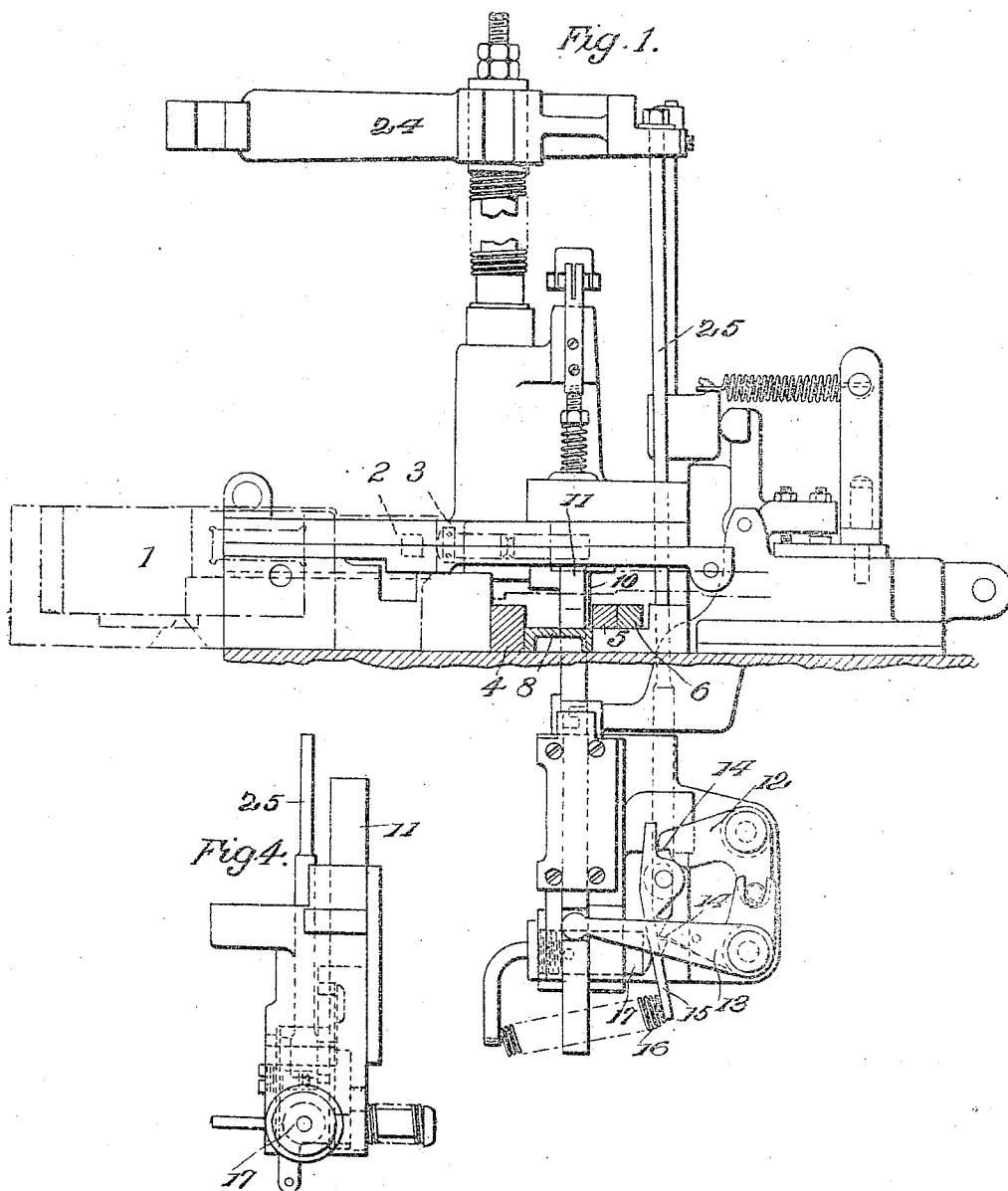
SPACING MECHANISM FOR TYPE CASTING AND COMPOSING MACHINES.

APPLICATION FILED APR. 14, 1911.

1,042,476.

Patented Oct. 29, 1912.

4 SHEETS-SHEET 1.



Witnesses

Thomas Durant
Thomas Durant

Inventor
F. H. Pierpont

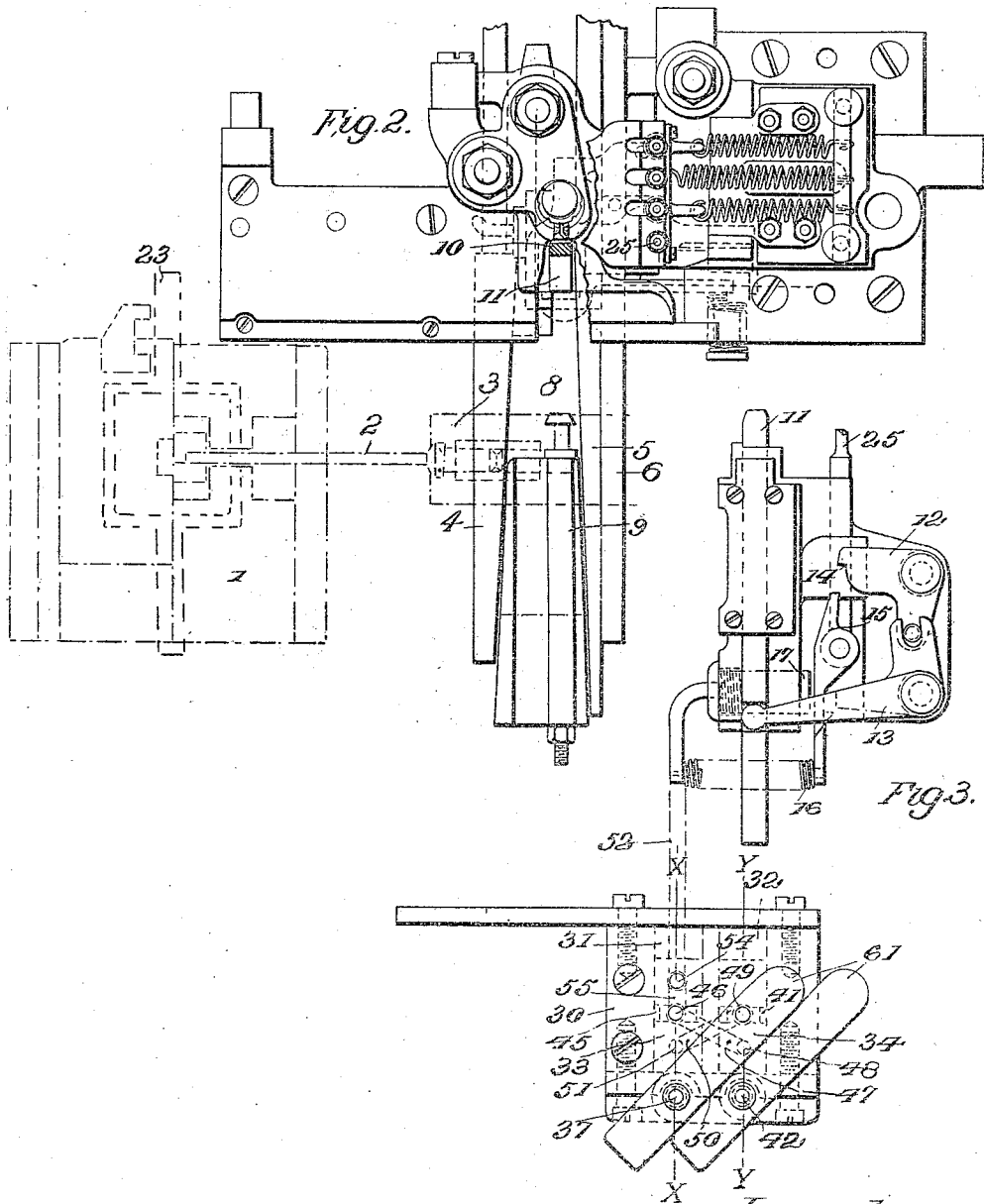
Church & Church
his Attys.

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Witnesses
James M. ...
Thomas ...

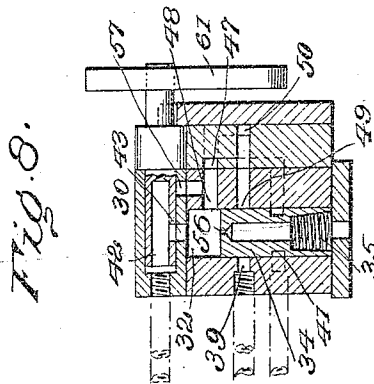
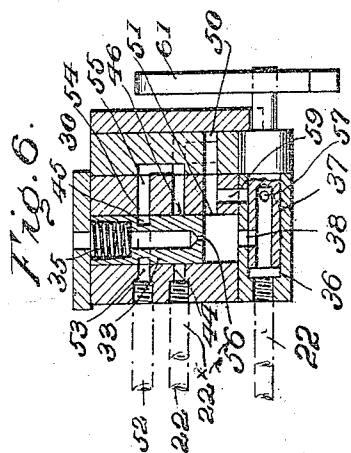
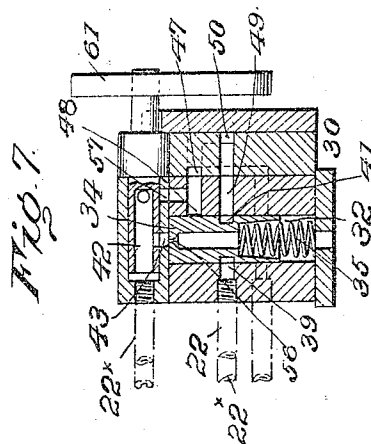
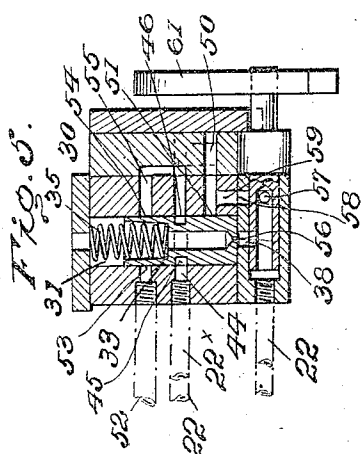
Inventor
 F. H. Pierpont
 by *Charles V. Church*
 his Atty.

F. H. PIERPONT.
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4 SHEETS—SHEET 3.



Witnesses
Jm. M. M. M.
Thomas Durant

Inventor
F. H. Pierpont
by Church & Church
his Attys.

F. H. PIERPONT.
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4 SHEETS—SHEET 4.

Fig. 9.

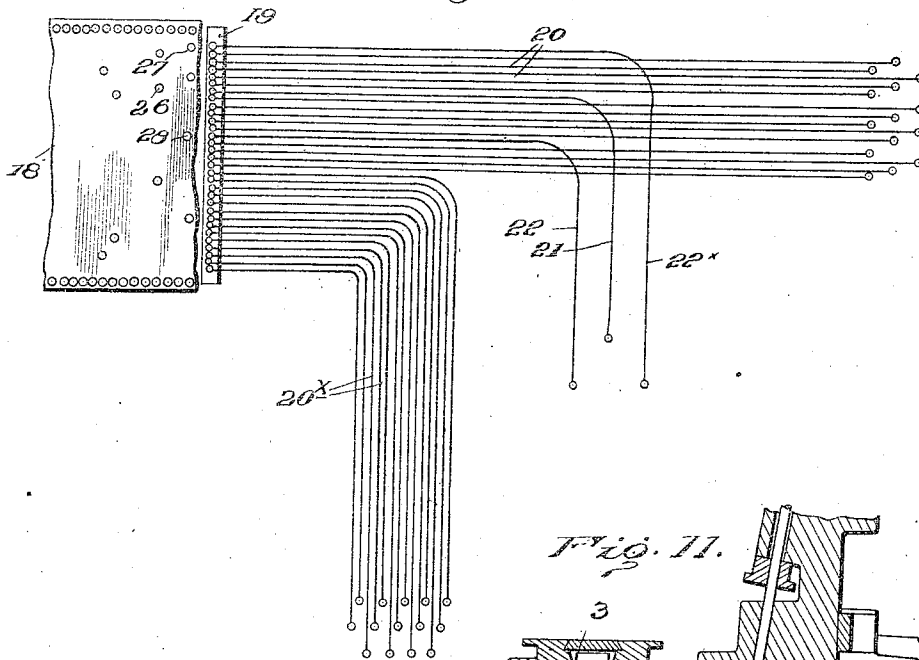


Fig. 11.

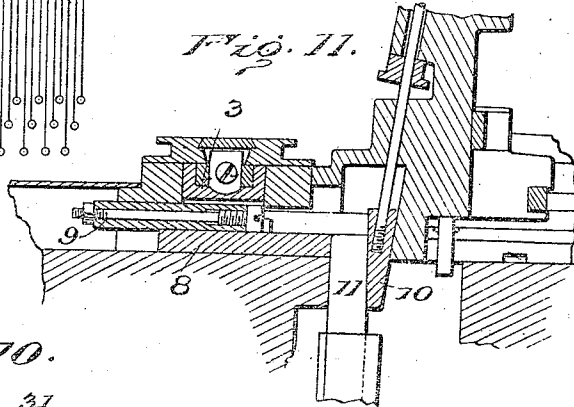
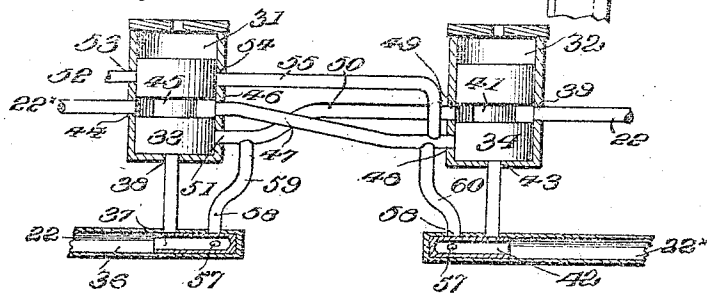


Fig. 10.



Inventor
F. H. Pierpont.

Witnesses

James M. ...
Thomas ...

By *Church & Church*
Attorneys

UNITED STATES PATENT OFFICE.

FRANK HINMAN PIERPONT, OF HORLEY, ENGLAND, ASSIGNOR TO LANSTON MONO-TYPE MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF VIRGINIA.

SPACING MECHANISM FOR TYPE CASTING AND COMPOSING MACHINES.

1,042,476.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed April 14, 1911. Serial No. 621,137.

To all whom it may concern:

Be it known that I, FRANK HINMAN PIERPONT, a citizen of the United States, residing at Salfords, Horley, in the county of Surrey, England, have invented a certain new and useful Improvement in Spacing Mechanism for Type Casting and Composing Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

The present invention relates to pattern or record strip controlled type casting and composing machines and has for its principal object the spacing out of individual type by the addition of a predetermined and uniform increment to the widths of their bodies. Heretofore means have been provided for producing such spaced out type in the individuals or groups occurring between justifiable spaces, as illustrated in Patent No. 952,633, of March 22, 1910, but such means are inadequate when, as not infrequently happens, it is desired to space out a letter or particular syllable in a word and where there are no immediately preceding and succeeding justifiable spaces.

In the accompanying drawings illustrating a preferred form of embodiment of the invention: Figure 1 is a side elevation and Fig. 2 a top plan view of a portion of the mold adjusting mechanism of the casting machine showing the auxiliary or supplemental mold adjusting and spacing signal interpreting devices applied thereto. Fig. 3 is an end elevation. Fig. 4 is a side elevation of a portion of the signal interpreting mechanism. Fig. 5 is a sectional view on the line $x-x$, of Fig. 3. Fig. 6 is a similar view with the contained valve at the opposite end of its chamber. Fig. 7 is a sectional view on the line $y-y$, Fig. 3. Fig. 8 is a similar view with the valve in opposite extreme position. Fig. 9 is a diagrammatic view showing a section of the record strip, the tracker board and the air passages leading to the control devices. Fig. 10 is a diagrammatic view of the control attachment. Fig. 11 is a detail view showing the movable limiting

abutment in its relation to the transfer wedges and their limiting abutment.

Like numerals designate the same parts in the several views.

The invention is illustrated as applied to the machine of Patent No. 952,633, to which reference is had for a more extended description. It will suffice for present purposes to designate some of the principal elements such as the mold 1, with its movable mold blade 2; the abutment slide 3; the normal wedge 4; the justification wedges 5, 6; the transfer blocks or wedges 8, 9; the adjustable limiting abutment 10 for the transfer wedges; the distance block 11; the actuating devices for the distance block, including articulated bell crank levers 12, 13, each provided with an engaging shoulder 14 and the reciprocating double pawl 15 operated upon by a spring 16 for effecting engagement with lever 12, and by a piston 17 for effecting engagement with lever 13; the record strip 18; the tracker bar 19; the pressure conduits 20 communicating with the stop pins of the primary gaging devices (not shown) for positioning the die-case, and adjusting the normal and justification wedges; the pressure conduit 21 for shifting the transfer wedges to temporarily couple the mold blade with the justification and normal wedges and with the normal wedge alone, for adjustment; the pressure conduits 22, 22*, for separately coupling each justification wedge with its adjusting devices; the two-way movable die-case 23; and the centering lever 24 through which the selected matrix is clamped upon the mold. In the present instance pawl 15 is coupled by a rod 25 with centering lever 24 and thus caused to reciprocate in unison with the latter, and said pawl is held normally in the path of the engaging shoulder 14 of bell crank lever 12, to withdraw distance block 11 from between transfer wedges 8, 9, and abutment 10, so that said wedges will make their full stroke. When, however, pressure is applied to piston 17 during the up stroke of lever 24, pawl 15 is deflected to engage lever 13 and disengage lever 12, so that distance block will be advanced to intercept the transfer wedges in their movement toward abutment 10, and,

by diminishing the throw of said wedges, will operate to proportionally increase the adjustment of the mold blade as affected by the normal wedge. The removal of pressure upon piston 17 will permit the spring to return pawl 15 so that the next succeeding upstroke of said pawl will effect a retraction of the distance piece thereby subjecting the mold to the direct control of the normal adjusting mechanism.

In the machine of the prior patent mentioned the pressure on piston 17 was controlled through the interword or justifiable space signal containing perforation 26, with the result that while the plus dimension represented by the distance piece could be applied to all it could not be applied to a less number of the type produced intermediate succeeding justifiable space type. But, as before indicated, it is not infrequently required that one or more letters of a word shall be spaced out, and this could only be done by hand, for once set for spaced type, the distance piece could not be withdrawn automatically until the presentation of the next succeeding space signal.

It is the purpose of the present invention to obviate this defect and correspondingly enlarge the capacity of the machine by associating with the type designating signal a component operative to effect the advance of the distance piece or bring it into action before the adjustment of the mold for the designated type is completed. Such result might be attained by the use of a special perforation in conjunction with each type designating signal, and the addition of a corresponding port in the tracker bar communicating with piston 17; but as this would require a redesigning of the paper feed and control mechanisms it is preferred to supply a control attachment whereby certain of the existing signal perforations may be utilized for the purpose without in any degree interfering with the normal action of the machine.

The justification designating perforations 27 and 28 have been selected for the purpose inasmuch as their use is confined to the justification signals, and the control attachment is so organized that when both of said perforations are associated with a type signal air pressure will be applied to piston 17, to the exclusion of the justification mechanism, but when either of said perforations is presented separately, as in the usual justification signals, the reverse action will occur, that is to say, pressure will be applied to the corresponding wedge shifting devices and excluded from piston 17.

As an aid to a clear understanding of the invention it should be stated that with certain exceptions, relating to the marginal row and column of matrices in the die case, the character signals are compounded of two

perforations, each registering with one of the pressure conduits 20 or 20* and operating through the stop pins of the primary positioning mechanism to adjust the die case by a two way movement, to bring the designated matrix opposite the mold and at the same time adjust the normal wedge 4 to correspond with the set size dimensions of the selected character.

The justification wedges 5, 6, are positioned for each line of composition prior to the production of the type therefor, and this is accomplished through the medium of the justification signals, each of the latter embracing two components, the one for designating the wedge to be acted upon, and the other for determining the location or position to which it is to be adjusted. Thus, in the example illustrated a perforation 27 controlling conduit 22* designates and brings into action wedge 6, and a perforation 28 controlling conduit 22 brings into action wedge 5, while the position of adjustment for either wedge is determined by a perforation, registering with one of the series of conduits 20*; in other words, the signal for wedge 6 comprises the designating perforation 27 in association with a perforation registering with one of the series of ducts 20* and the signal for wedge 5 includes designating perforation 28 in association with a perforation for one of the ducts or conduits 20*.

The justification adjustments of wedges 5, 6 are in operation upon the casing mechanism until called into action by the space signal perforation 26, controlling conduit 21, and when this is presented it operates to withdraw transfer wedge 8 (the latter normally occupying an operative position between a fixed abutment and normal wedge 4), and to advance transfer wedge 9 into operative position between justification wedges 5, 6, and normal wedge 4, so that in the one case the measurement for the mold blade will be effected by normal wedge 4 and transfer wedge 8 acting in conjunction, and in the other by normal wedge 4, transfer wedge 9 and justification wedges 5, 6, acting together.

In the preferred form illustrated the control attachment comprises a detachable block or casing 30, provided with two chambers 31, 32, each containing a piston valve 33 or 34, equipped with a return or seating spring 35. The conduits 22, 22*, respectively, controlled by designating perforations 27, 28, are each interrupted and the proximate ends connected as follows: The tracker-bar section of conduit 22 is connected to a chamber 36 containing a ported valve 37 adapted to register with a port 38 in the valve seating end of chamber 31, and the justification mechanism section of said conduit is connected to a port 39 in chamber 32 opposite

or in register with a port or passage 41 in the seated valve 34. Similarly the tracker bar section of conduit 22^x communicates with a ported valve 42 controlling a port 43 in the valve seating end of chamber 32, while the justification mechanism section of said conduit communicates with a port 44 in chamber 31 opposite or in register with a port or passage 45 in seated valve 33. Chamber 31 is also provided with a port 46 opposite port 44 and registering with valve port or passage 45 when valve 33 is seated and said port 46 communicates through a passage 47 with valve chamber 32 through a port 48 located intermediate valve port or passage 41 and the end of seated valve 34. In like manner chamber 32 is provided with a port 49 registering with port or passage 41 in seated valve 34, said port 49 being connected by passage 50 with a port 51 in chamber 31 at a point intermediate valve port or passage 45 and the end of valve 33 when seated. A conduit 52 communicating with the cylinder of piston 17 has its end connected to a port 53 in chamber 31, opposite a port 54, the latter connected by a conduit 55, with port 48 in chamber 32. Each valve 33, 34, is provided with a restricted escape opening 56, to facilitate seating when the air pressure in conduits 22, 22^x, is cut-off. Until pressure is admitted to conduits 22, 22^x, or either of them, by the presentation of justification designating perforations 27 or 28, valves 33, 34, will be held by their springs in the seated or closed positions indicated in Figs. 5 and 7.

When pressure is admitted through either perforation 27, 28, as for justification, the piston valve 33 or 34, controlled thereby will be displaced, thereby opening the passage to port 41 or 45 of the other valve whose position has not been altered. At such times no pressure will be admitted to conduit 52 of the distance piece inasmuch as the line of communication will remain closed at one or the other of the valves. When, however, pressure is admitted to conduits 22, 22^x, as by the presentation of a signal containing the two perforations 27, 28, valves 33, 34, will be simultaneously displaced thereby closing ports 44 and 39, to cut out the justification mechanism, and at the same time opening communication with conduit 52 through the uncovering of port 48 and the connecting of ports 53 and 54 through valve passage 45.

The signals for normal or unspaced type and for setting the justification wedges are composed and operate as heretofore, that is to say, each character signal embodies one or two perforations registering with and controlling corresponding conduits 20, 20^x, for positioning the die case by a two way movement and at the same time setting the normal wedges; each justifying space

signal includes a perforation 26 registering with duct 21 for interchanging the transfer wedges; and each justification signal contains one or the other of the designating perforations 27, 28, associated with the appropriate admeasuring perforations pertaining to the series of ducts 20^x for adjusting the wedge so designated. When, however, it is desired that the extra width shall be added to any character type, there is added to its signal (composed of one or more perforations registering with ducts 20, 20^x) the two perforations 27, 28, thereby bringing into action the distance block 11, as hereinbefore explained.

In the operation of the casting machine there is one condition under which both justification designating perforations 27, 28, are employed in conjunction and that is in the final signal for sectional line justification. When the machine is adjusted for such work the spaced type signal can not be used, hence provision is made for cutting out the spaced type mechanism as follows: Valves 37 and 42 are each provided with a port 57 adapted to register with a port 58 when said valves are turned to close ports 38 and 43. One of the ports 58 communicates through passage 59 with conduit 50 leading to normally open ports 49 and 39 in valve chamber 32, and the other communicates through passage 60 with conduit 47 leading to normally open ports 44 and 46 in valve chamber 31, so that when said valves are turned by their handles 61 to open ports 57, 58, air entering therein will be conducted directly to the corresponding justification wedge designating devices.

In an accompanying application Serial No. 620,605 filed April 12, 1911 is disclosed a record strip composing machine competent to produce the spaced type signals for use in the hereindescribed improved casting machine.

Having thus described my invention, what I claim is:

1. In a pattern controlled type casting and composing machine furnished with normal and justification mold adjusting mechanism, the combination with a supplemental mold adjusting mechanism, of a member reciprocating once for each type cast, and a member controlled by signals immediately associated with and forming part of the character signals for coupling the supplementary mold adjusting mechanism with the reciprocating member substantially as described.

2. In a pattern controlled type casting and composing machine the combination with normal and transfer wedges and a stop or distance piece arranged and adapted to be transposed into the path of the transfer wedge of a member reciprocating for each cast made and a member controlled by the

pattern and which effect the coupling and uncoupling of the distance piece and the reciprocating member.

3. In a pattern controlled type casting and composing machine adapted for the production of spaced out type the combination with mold adjusting mechanism a transfer wedge and a limiting abutment therefor of a distance piece which is automatically interposed between the transfer wedge and the abutment each time a spaced type is called for and is withdrawn after each cast, substantially as described.

4. In a pattern controlled type casting and composing machine adapted for the production of spaced-out type provided with normal mold adjusting mechanism including a transfer wedge, the combination with a distance piece and a slide or carrier attached to a member reciprocating once for each type cast, of pattern controlled mechanism operating to couple the distance piece with the slide when a spaced type is called for and to uncouple them after casting, substantially as described.

5. In a pattern controlled type casting and composing machine adapted for the production of spaced-out type provided with normal and justification mold adjusting mechanism including a transfer wedge for the normal adjusting devices, the combination with a distance piece of a carrier reciprocating or moving each time a type is cast, a pawl on the carrier and a motor controlled by signals accompanying each spaced type signal in the pattern to couple and then uncouple the distance piece and the carrier, substantially as described.

6. In a pattern controlled type casting and composing machine provided with normal and justification mold adjusting mechanism, the combination with a distance piece adapted to be interposed in the path of the normal mold adjusting mechanism and levers, each provided with a shoulder and coupled one with the distance piece and the other with the first lever, of a member reciprocating once for each cast, and carrying a double acting pawl and a piston controlled by supplemental signals accompanying each

character signal and operating to tilt the pawl to engage a shoulder on one or other of said levers.

7. In a pattern controlled type casting and composing machine furnished with normal and justification mold adjusting mechanism, the combination with the normal mold adjusting mechanism, of a supplemental mold adjusting mechanism controlled from signals immediately associated with and accompanying the character designating signals in the record strip to dimension the mold for each character which is accompanied by said signals.

8. In a pattern controlled type casting and composing machine furnished with normal and justification mold adjusting mechanisms and supplemental mechanism for varying the resulting mold measurements derived from said normal and justification adjusting mechanisms, and in combination therewith, means controlled by signals immediately associated with the type designating signals and acting upon said supplemental mechanism to alternately couple and uncouple the latter with the normal mold adjusting devices in response to type signals containing said associated signal component.

9. In a pattern controlled type casting and composing machine provided with normal mold dimensioning mechanism responsive to individual type signals, and controllable means for varying the action of said normal mold dimensioning mechanism, and in combination therewith, means responsive to an added component of any type signal and operating upon said variable dimensioning means to bring the latter into action upon the presentation of a type signal accompanied by such added component but otherwise not, whereby type signals lacking the added component will produce type of normal dimensions and those with the added component will produce type varied from the normal in a uniform degree.

FRANK HINMAN PIERPONT.

Witnesses:

H. D. JAMESON;
C. P. LIDDON.