

J. R. ROGERS.
LINE CASTING MACHINE.
APPLICATION FILED FEB. 1, 1909.

924,000.

Patented June 8, 1909.

2 SHEETS—SHEET 1.

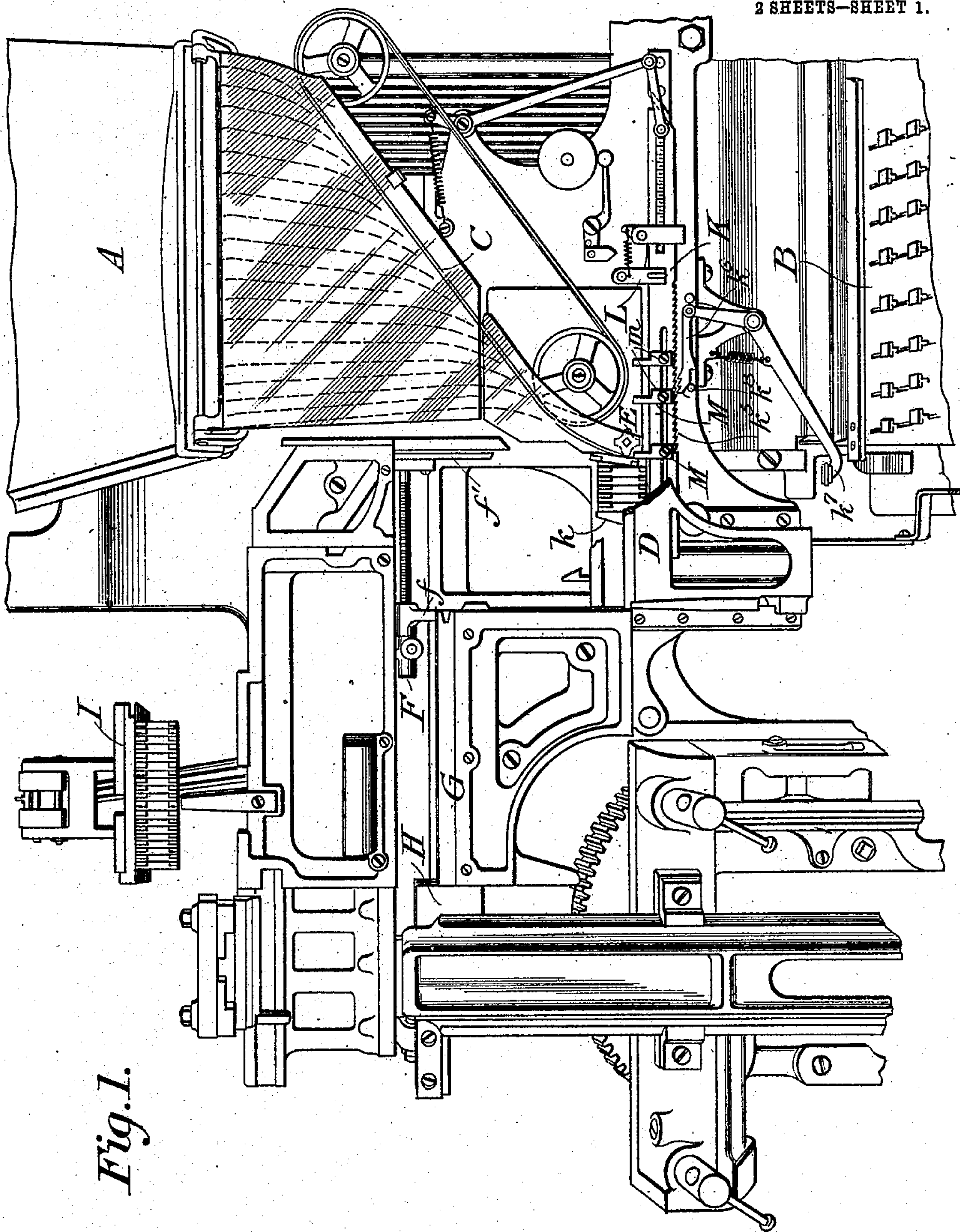


Fig. 1.

Witnesses:
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L. E. Harrison

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By his Attorney P. F. Dodge

924,000.

Fig. 2.

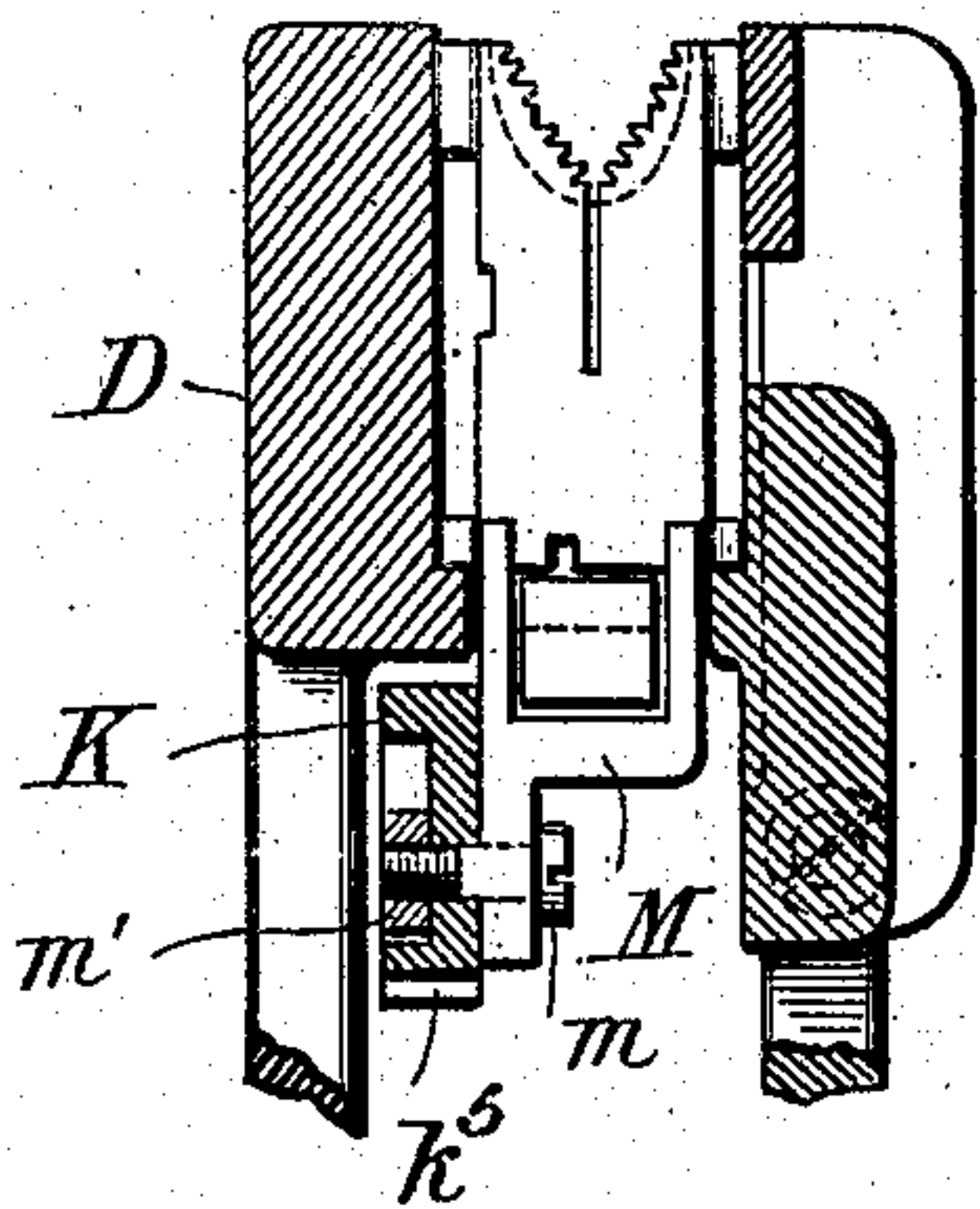


Fig. 4.

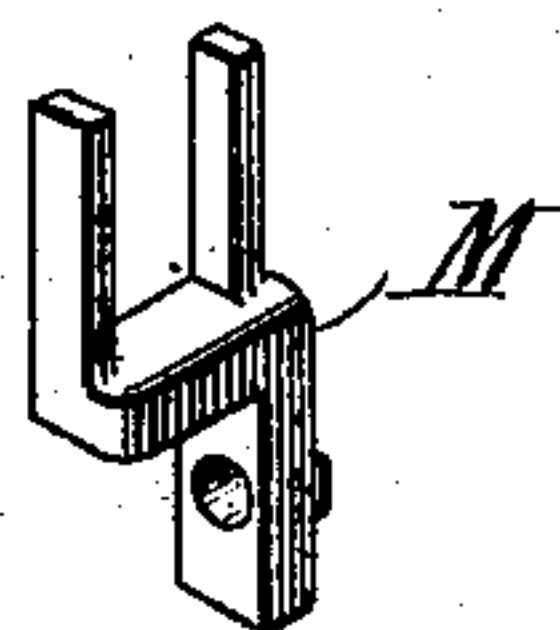
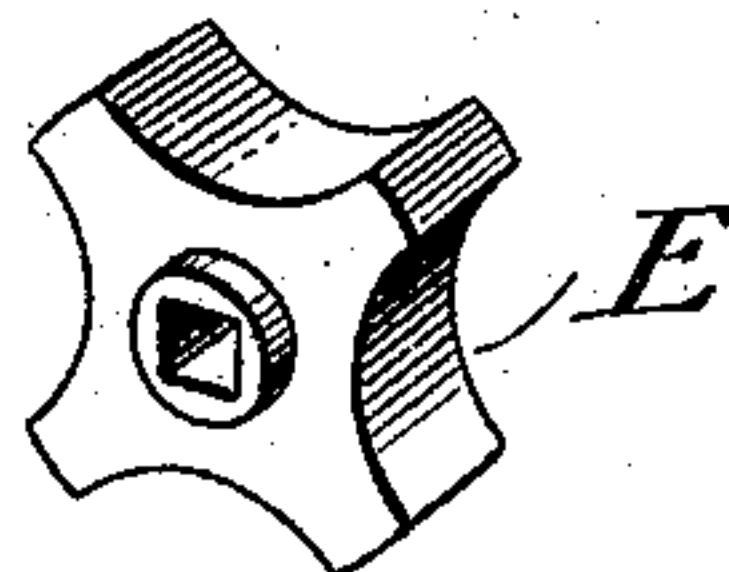


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN R. ROGERS, OF BROOKLYN, NEW YORK, ASSIGNOR TO MERGENTHALER LINOTYPE COMPANY, A CORPORATION OF NEW YORK.

LINE-CASTING MACHINE.

No. 924,000.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed February 1, 1909. Serial No. 475,347.

To all whom it may concern:

Be it known that I, JOHN R. ROGERS, of the borough of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Line-Casting Machines, &c., of which the following is a specification.

My invention has reference to line-casting machines adapted to produce printing slugs or bars, each having a justified line of type thereon, and particularly to that class of machines in which type metal slugs are cast in a slotted mold against a line of circulating matrices which are temporarily assembled and presented to the face of the mold as shown, for example, in Letters Patent of the United States to Mergenthaler No. 436,532.

The invention has in view the production of forms for printing table matter, that is to say, matter in which figures or characters are arranged in vertical columns; and to this end it consists in means whereby the matrices in each line may be set in definite positions and the line divided into distinct measures or groups of matrices, of a definite or predetermined width, so that the characters produced on the face of one slug will stand directly over those produced on the next slug.

In carrying my invention into effect I provide as part of the assembling mechanism means whereby the line as it is mechanically composed is divided into distinct sections or groups of matrices, the arrangement being such that each group will be made the exact length or measure required, either by mechanical composition alone or by the addition of hand spaces, or "hair spacing", as required, to effect justification. After the composition of the line is completed the constituent groups may be closed compactly together for presentation to the mold.

The details of the parts as regards construction and arrangement may be widely modified within the range of mechanical skill without passing beyond the scope of my invention.

I believe it to be broadly new to provide a matrix composing mechanism in which the matrices may be mechanically assembled in a succession of groups of predetermined width. I believe it also to be wholly new in the art to assemble mechanically a succession of groups of matrices of predetermined width or measure, and to mechanically close

these groups together in a solid line for presentation to the mold.

In the drawings; Figure 1 is a front elevation of a Mergenthaler machine having my improvement incorporated therein. Fig. 2 is a front elevation on an enlarged scale of the assembler slide and the adjustable abutments thereon for determining the length of the matrix groups, together with the adjacent parts. Fig. 3 is a vertical cross section on the line 3—3 of Fig. 2. Fig. 4 is a perspective view of one of the abutments. Fig. 5 is a perspective view of the star wheel for delivering the matrices to the line.

Referring to the drawings, A represents the magazine in which the matrices are stored, and from which they are delivered one at a time, by means of escapements controlled by a finger key mechanism B.

C is the inclined traveling belt upon which the selected matrices fall from the magazine, and by which they are delivered downward into the upper end of the assembling elevator D, which is provided with a horizontal channel to receive and sustain them.

E is a rotary star wheel over which the descending matrices pass in their course to the assembler, and by which the successive matrices are carried downward into the assembler and directed against the end of the line in course of composition, this wheel serving also to push the line forward in order to leave room at the rear for the incoming matrices.

F is the horizontal delivery carriage provided with depending fingers *f* and *f'*.

After the completion of the line the elevator D is raised to present the line between these fingers *f* and *f'*, which close together to grasp the line and thereafter move to the left in order to transfer the line from the assembler D, through the fixed intermediate channel G, into the first elevator H. This elevator first lowers the line to the casting position in front of the mold, and thereafter raises it above the original level so that it may be transferred to the second elevator, I, which raises the line to the top of the machine and delivers it to the distributing mechanism, by which the matrices are returned to the original channels in the magazine.

So far as described the parts may be of the ordinary construction well known in the art.

Referring now to my improved devices;

K represents the horizontal delivery slide urged constantly to the right by a spring and provided at the left end with an upright resistance finger, k , to bear against the forward end of the line in the course of composition as usual—the customary friction brake, L, being provided to hold the assembler slide as it is moved step by step toward the left as the line increases in length. I provide this assembler slide with one, two or more uprights or abutments, M, secured thereto by screws or otherwise, in such manner that they may be spaced apart, distances exactly equal to the measure or column widths demanded in the table to be printed, their height and form being such that the matrices may be mechanically and automatically delivered between them in the course of composition as they travel to the left with the assembler slide. These abutments may be variously formed and attached. I prefer to slot the slide longitudinally, to provide the abutments with lateral ribs to enter the slot, and to secure each by means of a screw, m , passed through the slot and into the slide m' at the back, as shown in Fig. 3. Their upper ends are forked, as shown in Figs. 3 and 4, in order that they may straddle and pass the star wheel E, which is slightly reduced on the sides to give the necessary clearance.

When composition begins, as shown in Fig. 1, the resistance finger k will stand near the star wheel, and the incoming matrices will be delivered between this finger and the first abutment, M. Composition is continued until the space is filled or practically so, or in other words, until the first group of matrices assembled corresponds with the first measure or column of the required table. The assembler slide is then slightly advanced and a second group of matrices delivered in like manner between the first and second abutments. A third group is then assembled in like manner between the second and third abutments; and so on until the completion of the line.

It is to be noted that the abutments used in my mechanism are fixed at the required distance apart; that they retain these relations during composition; that they travel forward with the assembler slide as the composition of the line progresses; and that they are so formed and arranged that the matrices pass automatically between them, the different groups of matrices being automatically assembled between the respective fingers.

In most cases the matrices, which for table purposes are commonly made on the unit or point system as to thickness, will fill the spaces and justify exactly. If, however, in any one or more of the groups it is necessary, hair spaces or thin spaces may be inserted to fill out the group. Thin spaces having the same form as the matrices, suitable for use herein, are commonly known in the art.

After composition of the line is completed the assembling elevator is raised and the line delivered to the transfer carriage as usual. The fingers of this carriage, moving one toward the other as usual, will close the line together in compact order, and it will be transferred to the mold in the usual manner; and the slugs produced will have the various groups of characters exactly spaced or justified.

My invention is applicable for assembling ordinary linotype matrices, using ordinary blank quads or spaces, or ordinary column rules or spaces, between the groups in the line, the position of each column rule or space being exactly determined by the adjacent abutment on the assembler slide during composition. The invention is also applicable to the composition of the matrices of the Rogers table system, set forth in the Patent 791,165. When so used the abutments will serve to determine the width of the group in the line and to exactly locate the spaces D of the patent, which form in the slugs slots to receive shallow column rules.

When the composition of one group of matrices is completed it may sometimes be desirable to slightly advance the assembler slide K in order to carry the forward abutment clear of the star wheel—to freely admit the incoming matrices to the line. For this purpose I propose to use any suitable means, such, for instance, as a series of teeth k^5 in the lower edge of the assembler slide, and a pawl k^6 attached to the upper end of the key lever k^7 , to be actuated by hand or otherwise. By means of these parts this slide may be moved forward a definite distance at will, the pawl overriding the fixed pin k^8 , by which its forward movement is limited.

While I prefer to employ the inclined belt and star wheel for delivering matrices to the line it will, of course, be understood that any equivalent device may be employed—many such devices being known in the art.

Having described my invention, what I claim is:

1. In a line casting machine the combination of means for mechanically assembling matrices in line, and automatic means for dividing the line into groups of predetermined length during the composition.

2. In a line casting mechanism, means for delivering matrices to and assembling them in a common line, and a sliding member provided with fixed arms constructed and arranged to automatically divide the line into groups of predetermined length during composition.

3. In combination with the star wheel, the assembler to sustain the matrices and means for delivering matrices, the assembler slide provided in addition to its end finger with two or more fixed fingers or abutments adapted to pass the star wheel; whereby the line

may be automatically subdivided into groups during composition.

4. The assembler slide for a line casting machine provided with longitudinally adjustable fingers or abutments adapted to pass to the front and rear of the star wheel.

5. In combination with means for delivering and assembling matrices in line, a slide having members to confine the two ends of the line, and one or more intermediate fingers adapted to divide the line into groups, said intermediate fingers being adjustable to different positions, and means for securing the fingers in said positions; whereby the total length of the line and the length of its various sections may be positively determined.

6. In a matrix composing mechanism the

assembler slide provided with abutments and teeth, in combination with a feed device engaging the teeth to advance the slide.

7. In combination with means for delivering matrices and assembling them in line, a slide provided with two rigid abutments or fingers in position to admit between them the matrices from the delivering devices, and adapted to limit the length of the line.

In testimony whereof I hereunto set my hand this twenty second day of January, 1909, in the presence of two attesting witnesses.

JOHN R. ROGERS.

Witnesses:

DAVID S. KENNEDY,
LUCY E. SMITH.