

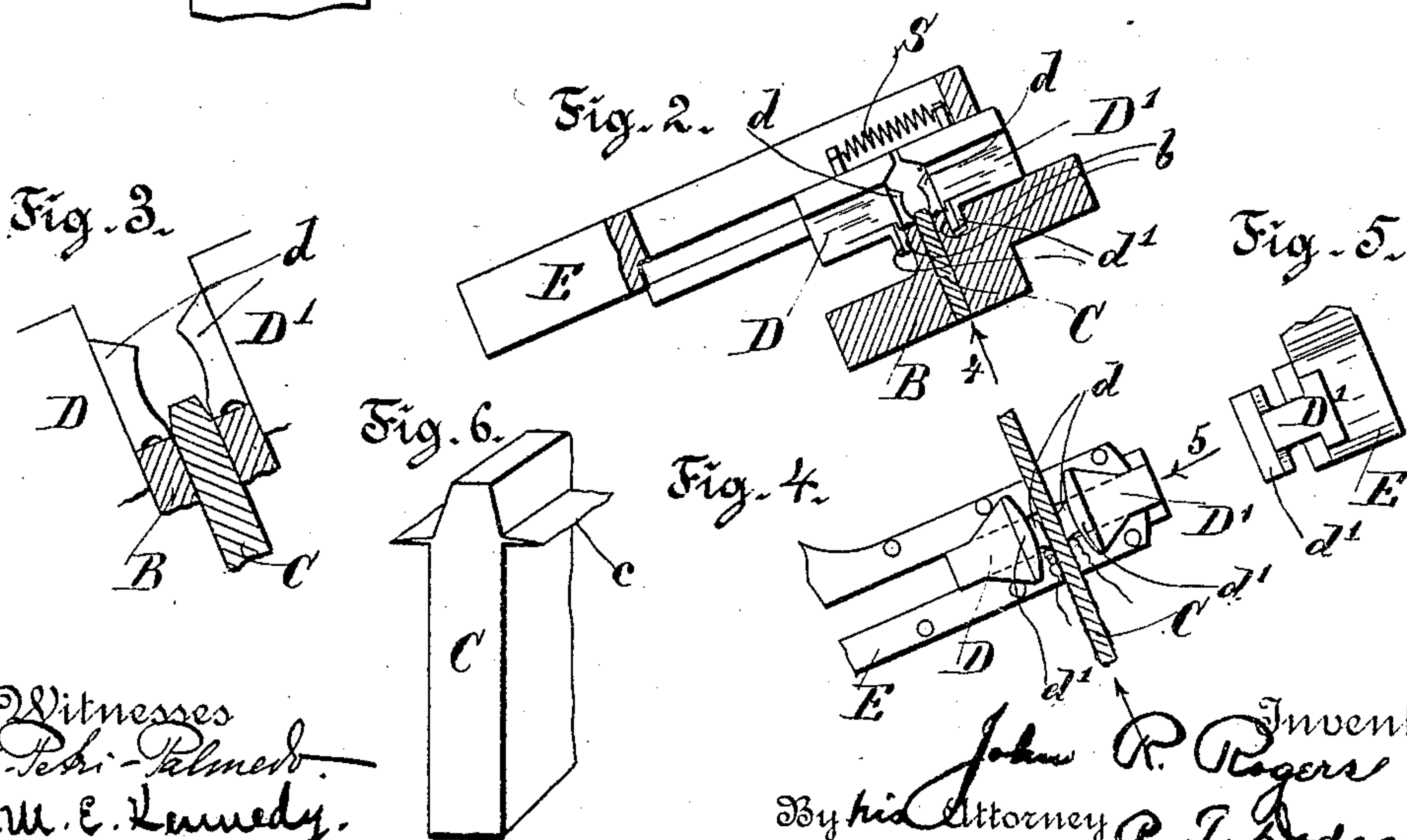
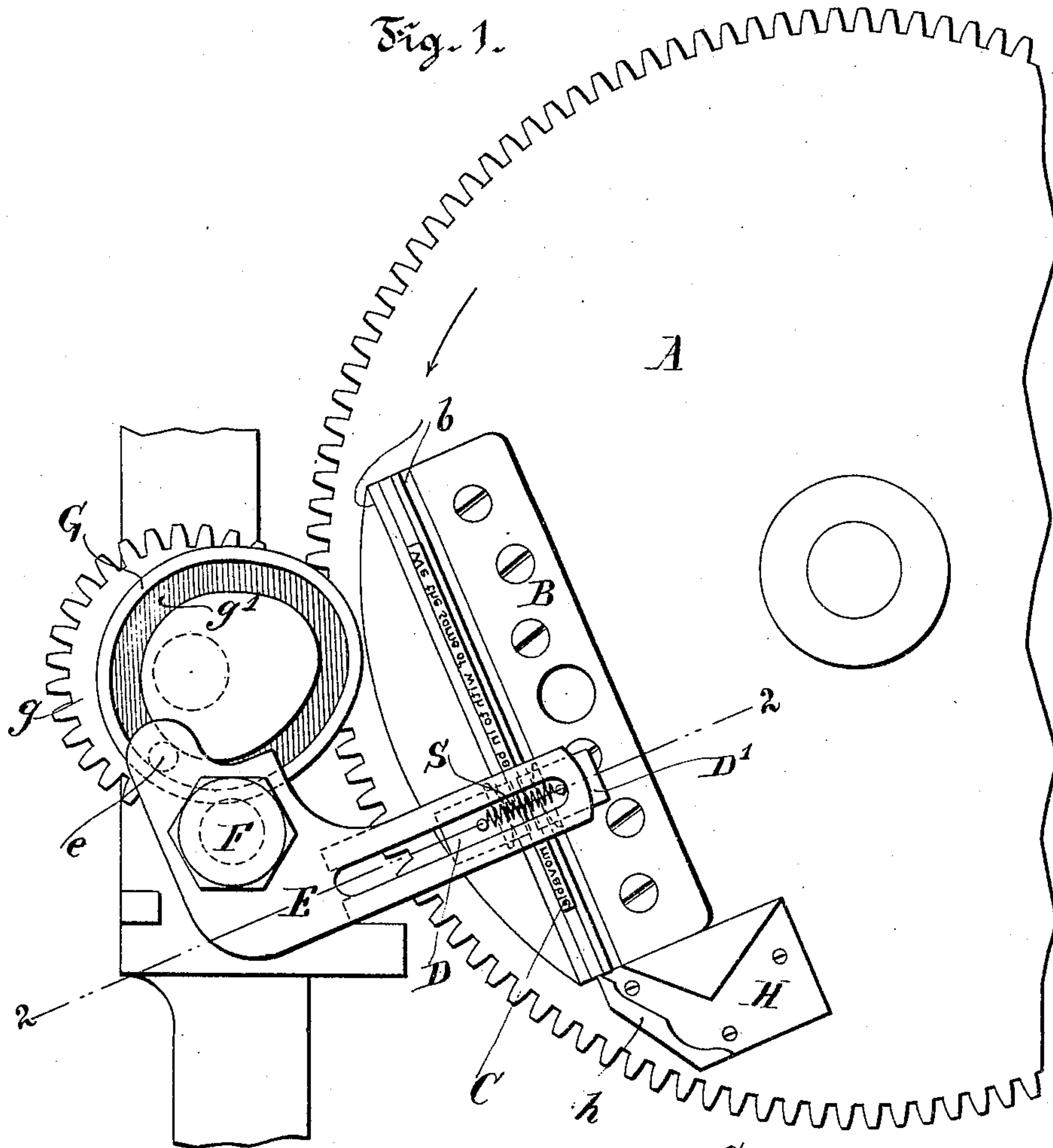
No. 773,341.

PATENTED OCT. 25, 1904.

J. R. ROGERS.  
LINOTYPE MACHINE.  
APPLICATION FILED AUG. 3, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
S. J. Palmer.  
A. M. E. Kennedy.

Inventor  
John R. Rogers  
By his Attorney P. T. Dodge

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Fig. 7.

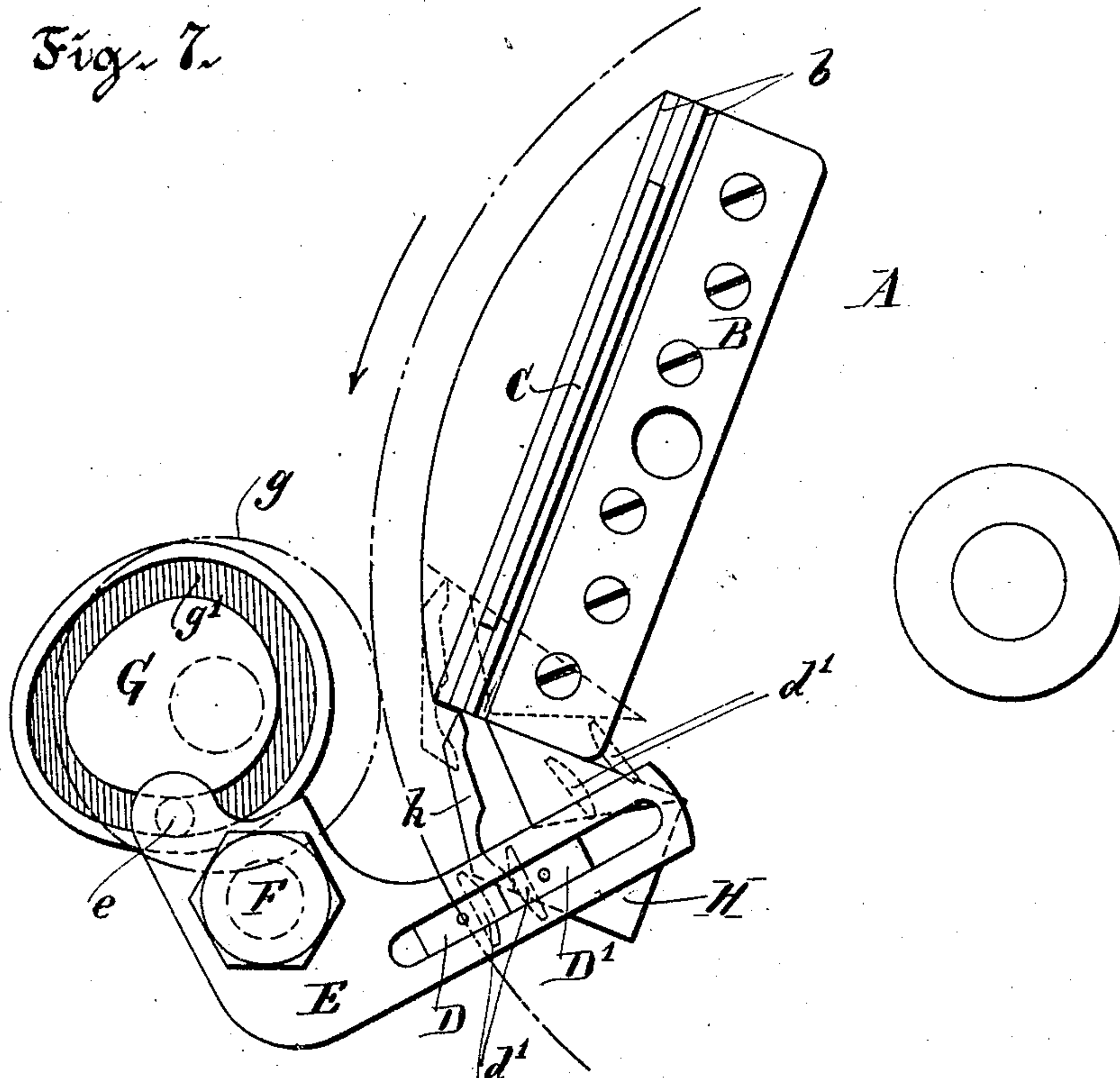
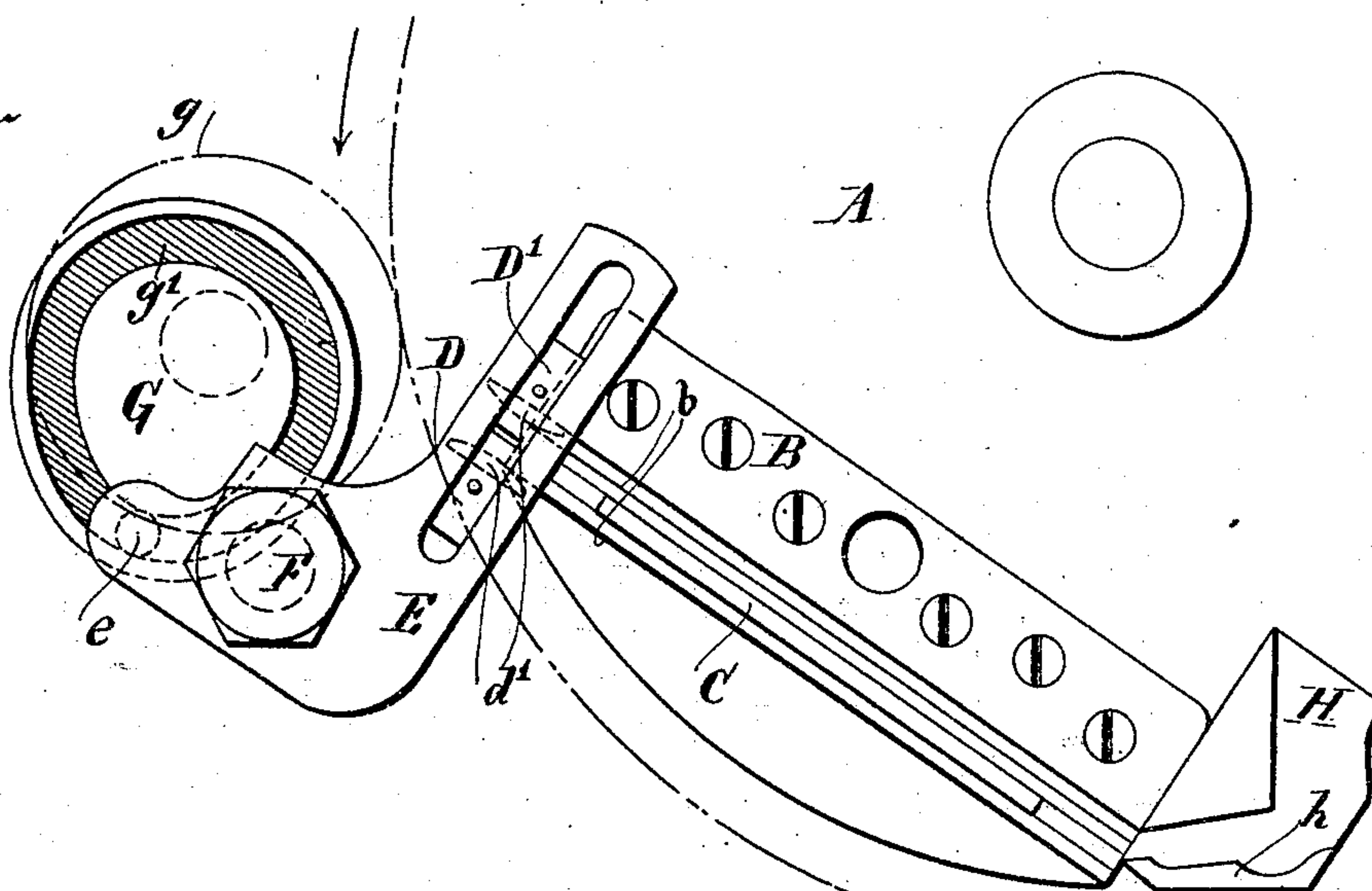


Fig. 8.



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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.

## LINOTYPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 773,341, dated October 25, 1904.

Application filed August 3, 1904. Serial No. 219,305. (No model.)

*To all whom it may concern:*

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

My invention relates to machines wherein linotypes or printing-bars are cast in a slotted mold against a line of matrices assembled temporarily against the front of the mold, containing in proper order the matrices to appear in a line of print—such, for example, as the Mergenthaler machine represented in United States Letters Patent No. 436,532. In all machines of this general character there is a tendency of the metal to overflow between the face of the mold and the adjacent matrices in such manner as to produce along the sides of the slug or linotype, at the front edge, thin protruding fins, which must be removed before the slugs are assembled in the “form.” Heretofore these fins have been removed either by ejecting the slug edgewise from the mold between parallel trimming-knives or by partially ejecting the slug edgewise from the mold and then subjecting it to the action of one or more knives acting lengthwise of the slug while the latter is still supported in the mold.

In practice it is found that there are certain objections to any plan which involves the movement of the slug in or from the mold prior to the trimming action.

The aim of my invention is to provide a trimming mechanism whereby the laterally-projecting fin or fins may be removed from the slug while the latter is seated in its original position in the mold.

To this end the invention consists, broadly, in combining with the mold one or more knives arranged to act lengthwise of the mold and against or in close proximity to its front face in such manner as to remove the fin or fins from the slug or linotype.

In the drawings I have shown my improvement applied in connection with a mold seated in a vertically-revolving disk, as in the commercial Mergenthaler machine; but it is to be understood that it may be applied to other analogous machines and that the details may

be varied in form at will, provided only that the knife or knives are arranged to act along the face of the mold in such manner as to remove the lateral fins or projections from the slug.

In the drawings I have shown in connection with my devices only such parts of the linotype-machine as are necessary to an understanding of my invention. The other parts may be of the usual or of any suitable construction.

Figure 1 represents a face view of the mold, its supporting-disk, and the trimming devices coöperating therewith. Fig. 2 is a section from front to rear on the line 2 2 of Fig. 1. Fig. 3 is a similar view, on a larger scale, showing the slug, the mold, and the ends of the trimming-knives. Fig. 4 is a rear view of the trimming-knives, their supporting-arm, and the intermediate slug looking in the direction of the arrow 4, Fig. 2. Fig. 5 is an end view of the knife-supporting arm and knives looking in the direction of the arrow 5, Fig. 4. Fig. 6 is a view, on a large scale, illustrating a linotype and the fins or projections thereon. Figs. 7 and 8 are front views similar to Fig. 1, showing the parts in the different positions which they assume in the course of their operation.

Referring to the drawings, A represents an intermittingly-rotating wheel or disk, and B a slotted mold secured rigidly therein, as usual. The mold is constructed with a slot therethrough from front to rear of suitable size to form the slug or linotype C. The metal to form the slug is delivered from the usual melting-pot into the rear side of the mold, which will be closed for the time being at the front by the composed line of matrices in the usual manner familiar to all persons skilled in this art.

When the molten metal to form the slug is delivered into the mold, it will frequently overflow slightly at the face or front of the mold in such manner as to produce along the sides of the slug projecting fins or ribs, such as shown at c, Fig. 6. For the purpose of removing these fins from the two sides of the slug simultaneously before the slug is moved



from its original position in the mold I provide the two knives D and D', seated in a longitudinal slot in the supporting-arm E, mounted on a stud F, fixed on the main frame, the arrangement being such that the arm vibrates vertically in a plane parallel with the face of the mold, subject to the controlling influence of the cam G, the purpose of which will presently appear. The two knives are free to slide endwise in the arm E, but are connected by a spring S, tending to draw them together. Each knife is formed at the inner end with a cutting edge or lip *d*, adapted to travel against or in close proximity to the face of the mold and along one side of the contained slug, at the front edge, in such manner as to cut or trim away the protruding bur or lip *c*. In order to hold the cutting edges of the two knives at the proper distance apart and to guide them properly along the sides of the slug, so that they may not enter or mutilate the same, each knife is provided on the rear side with a lip or shoulder *d'*. These shoulders are arranged to travel against the usual longitudinal shoulders *b* of the mold, and in this manner the cutting edges of the knives are kept in proper relation to each other, the mold, and the slug. The trimming action is progressive from one end of the mold and slug to the other while the mold is pursuing its rotary course with the supporting disk or wheel. In order, therefore, to secure the proper action of the knives, they should retain their position at right angles to the length of the mold during the change in position of the latter. It is for this reason that the knife-supporting arm E is mounted on the pivot F and controlled by the cam G. The cam is fixed to a pinion *g*, engaging the mold-wheel, and is provided in its front face with a cam-groove *g'*, engaging a stud *e* on the knife-arm E. The cam-groove is of such form and the parts are so timed that the arm and the knives gradually change their position during the advance of the mold, the movement being such that they stand at all times during the passage of the mold at right angles to its length.

Fig. 7 shows the position of the arm and knives as the forward end of the mold approaches them, and Fig. 1 shows their position when the mold has advanced nearly half its length past the knives and Fig. 8 the relation of the parts as the rear end of the mold leaves the knives.

It will be understood that the only essential requirement is that the two knives shall retain their proper working relations to the mold during the entire trimming action and that the arm E and its operating devices are simply a means for thus supporting or guiding the knives. The details of construction may be varied at will, provided only the knives and the mold are arranged to move one in relation to the other, so that the knives will

traverse the face of the mold and trim the edges of the contained slug.

In order to insure the proper action of the knives as the end of the mold approaches them and to prevent the possibility of the parts interlocking, I recommend the employment of a guide-plate H or equivalent guide. In the form shown this consists simply of a plate fixed to the wheel adjacent to the front end of the mold, its outer end being cut away in such manner as to leave a raised portion *h*, which advances between the two knives and serves to guide their shoulders or lips into proper engagement with the longitudinal shoulders of the mold.

The operation of the parts is as follows: The slug or linotype C having been cast in the mold B, the wheel A begins its rotation, carrying the mold forward, as indicated by the arrows in Figs. 1, 7, and 8. As the forward end of the mold approaches the knives, as shown in Fig. 7, the guide *h* enters between the knives and determines their position, so that when the mold reaches them the shoulders *d'* of the knives will be guided against and controlled by the longitudinal shoulders or bearing-faces of the mold, which not only maintain the proper separation of the opposing ends of the knives, but also guide them in the proper relation to the sides of the slug, so that they will remove therefrom the overhanging lips or burs without impairing the body of the slug. As the mold advances, the knives trim the slug from one end to the other, the changing position of the knife-supporting arm keeping the knives at all times at right angles to the slug in proper cutting position. The connecting-spring draws the two knives inward toward each other, while the lips or shoulders limit their approach and prevent them from cutting into the body of the slug. During the advance of the mold the two knives slide lengthwise of the supporting-arm E. After the completion of the trimming operation the mold continues its rotation, and the cam restores the knife-arm and knives to their first position, that they may again cooperate with the forward end of the mold.

The linotype-molds B are commonly constructed with removable liners or spacing-pieces *b'* between the cap and body portions to determine the width of the slot or mold proper and the consequent thickness of the slug or linotype. It will be observed that when the mold is thus adjusted to change the thickness of the slug the distance between the knife-guiding shoulders *b* is changed accordingly, and thus the knives are automatically adjusted as to the distance between them to correspond with the thickness of the slug produced. In other words, the knives are automatically adjusted to suit the thickness of the slugs produced.

I believe myself to be the first to combine with a linotype-mold in any manner or form



a knife or cutter arranged to trim the front edge of the slug before the latter has been wholly or partly ejected from the mold, and the first to combine with a mold a slug-trimming knife arranged to act lengthwise of the mold and to be guided by the latter, and also the first to combine with a linotype-mold having a rotary movement slug-trimming knives and means for maintaining the latter in proper relation to the mold in the changing position of the latter, and it is manifest that the details may be modified at will, provided the general mode of action herein described is retained.

While I have shown my improvement in connection with a rotating mold, it is to be understood that the trimming-knives, such as herein shown, may be used in those machines in which the mold has a rectilinear reciprocating movement.

Having described my invention, what I claim is—

1. In a linotype-machine, the combination of a mold wherein a slug is cast, and a knife arranged to trim the front edge of the slug while the latter is seated in its original position in the mold.

2. In a linotype-machine, a mold wherein a slug is cast, in combination with two opposing knives, arranged to act lengthwise of the mold and trim the front edge of the slug, seated in its original position therein.

3. In a linotype-machine, a slug-mold in combination with a slug-trimming knife, guided by and arranged to traverse the front face of the mold and to act upon the edge of the slug seated in its original position therein.

4. In a linotype-machine, a slug-mold having longitudinal shoulders, in combination with trimming-knives guided by said shoulders and arranged to traverse the face of the mold and trim the edges of the contained slug.

5. In a linotype-machine, the combination of a mold, two slug-trimming knives arranged to traverse the face of the mold longitudinally, and a spring connecting said knives.

6. In a linotype-machine, the combination of a slug-mold and two spring-actuated knives, arranged to traverse the face of the mold longitudinally and trim the front edges of the contained slug.

7. In a linotype-machine, the combination of a slug-mold, two spring-actuated knives, arranged to traverse the face of the mold longitudinally and trim the front edges of the contained slug, and means for limiting the advance of the knives toward the slug.

8. In a linotype-machine, the combination of the rotating mold, the opposing knives arranged to act at the face of the mold upon the contained slug, a connecting-spring, a pivoted supporting-arm, and means for controlling the arm and maintaining the proper relationship between the knives and the mold as the latter changes its position.

9. In a linotype-machine, the slug-mold arranged to move about a center, the pivoted arm E, its controlling-cam G, the knives mounted to slide in the arm, and a spring tending to draw the knives against opposite edges of the slug.

10. In a linotype-machine, the rotary mold, the trimming-knives, their supporting and operating devices, in combination with a guide H, to insure the proper connection between the knives and the advancing mold.

11. In a linotype-machine, a rotating slug-mold in combination with a knife adapted to trim the front edge of the slug seated in its original position in the mold, and means for automatically adjusting the knife in proper relation to the passing mold.

12. In a linotype-machine, the combination of a slug-mold, having longitudinal shoulders or guides, and two opposing knives controlled by said shoulders and adapted to trim the opposite edges of the contained slug.

13. In a linotype-machine, a slug-mold having its cap and body portions provided with longitudinal shoulders and adjustable to and from each other to vary the thickness of the slug, in combination with slug-trimming knives guided by said shoulders, whereby the knives are automatically adjusted to correspond with the thickness of the slugs produced.

In testimony whereof I hereunto set my hand, this 29th day of July, 1904, in the presence of two attesting witnesses.

JOHN R. ROGERS.

Witnesses:

JOHN S. PAULSEN,  
JACOB B. BUCKLEY.