

No. 613,831.

Patented Nov. 8, 1898.

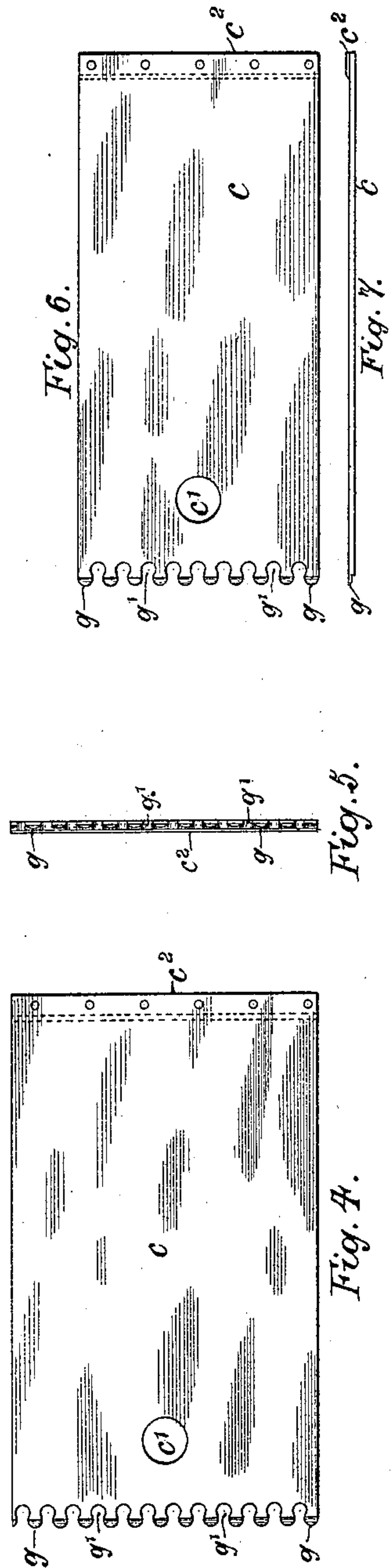
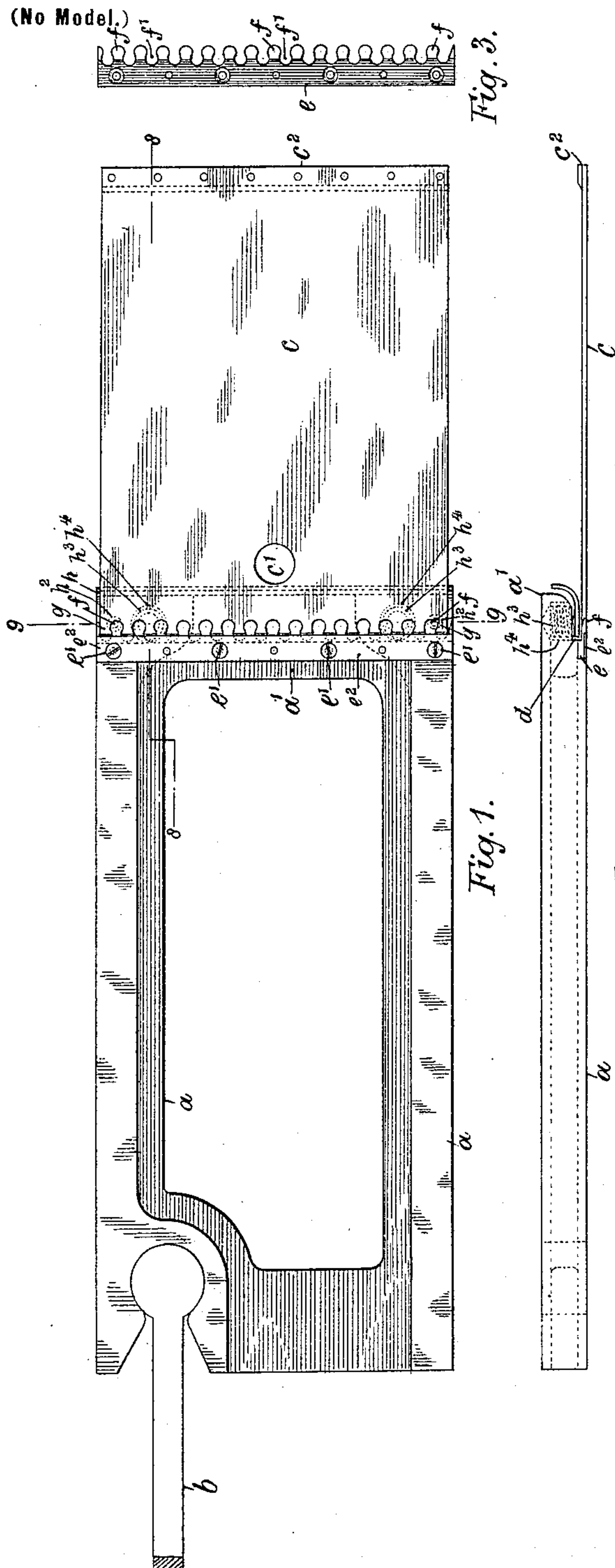
F. J. WICH.

INTERCHANGEABLE EJECTOR BLADE FOR LINOTYPE AND ANALOGOUS MACHINES.

(Application filed Dec. 31, 1897.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

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2 Sheets—Sheet 2.

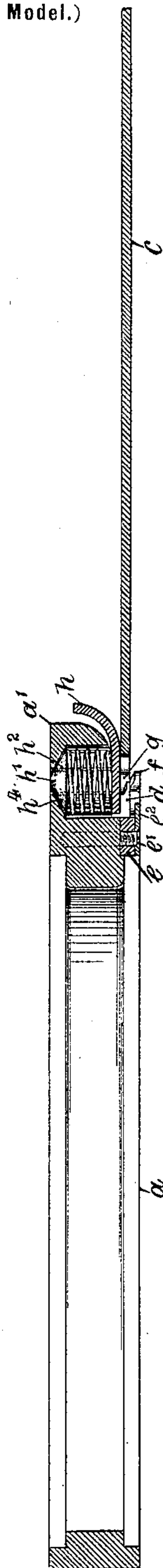


Fig. 8.

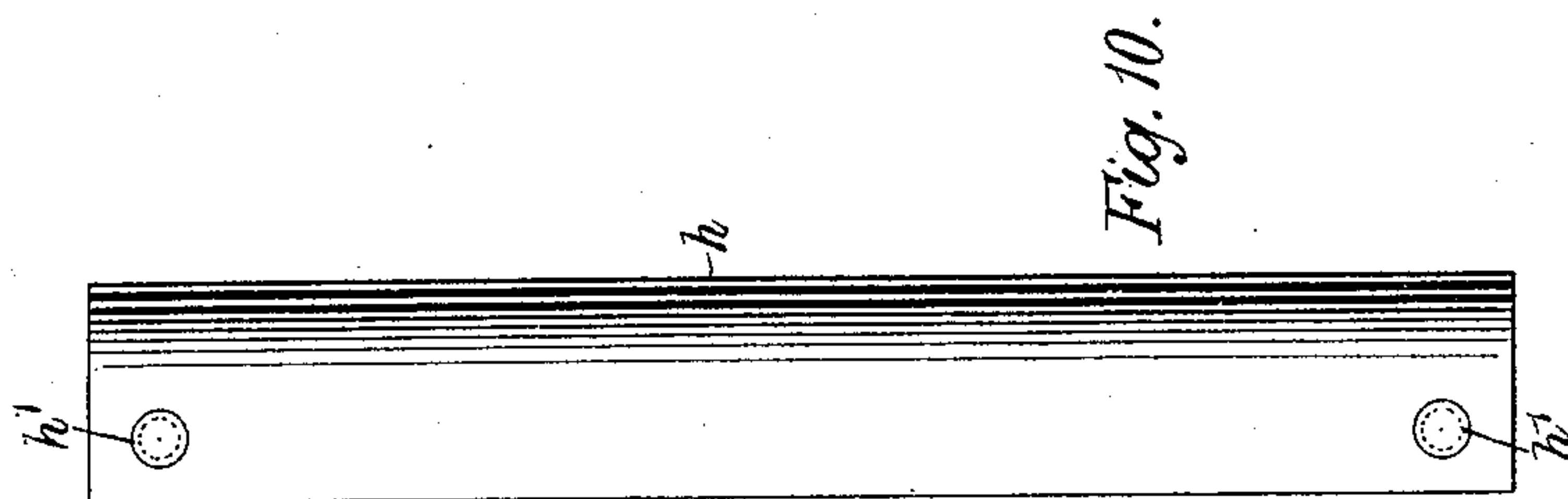


Fig. 10.

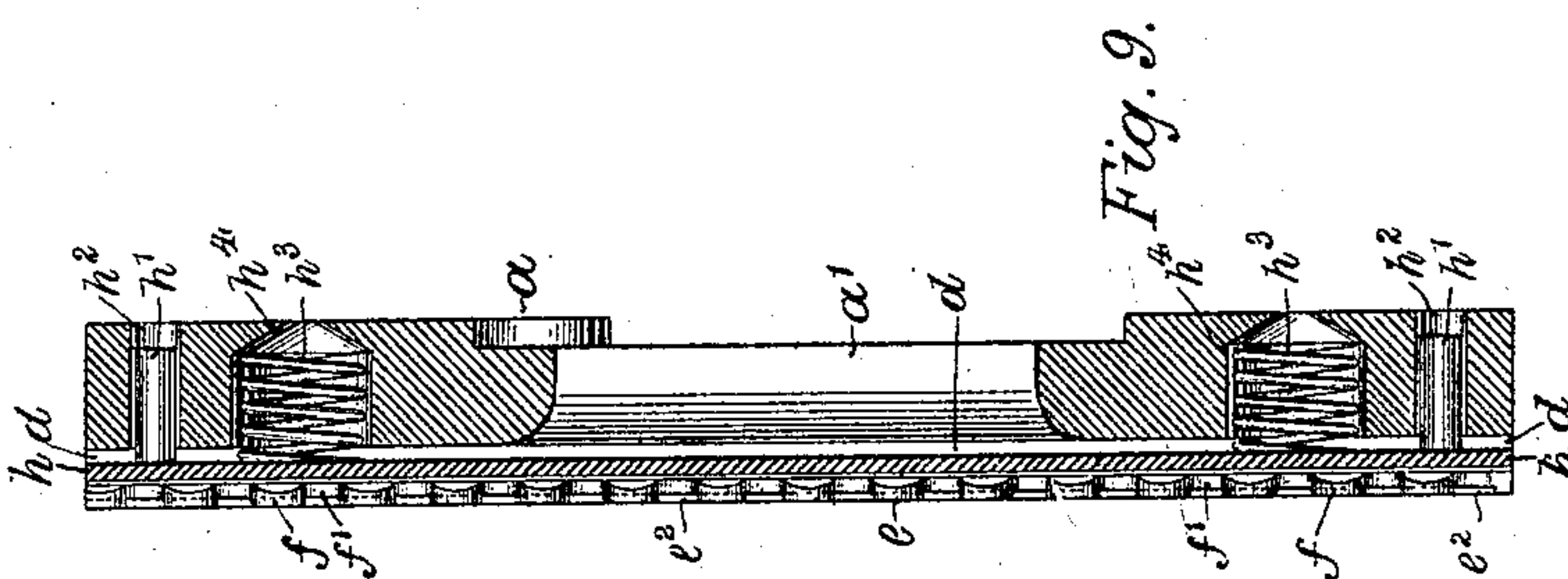


Fig. 9.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

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MERGENTHALER LINOTYPE COMPANY, OF NEW YORK, N. Y.

INTERCHANGEABLE EJECTOR-BLADE FOR LINOTYPE AND ANALOGOUS MACHINES.

SPECIFICATION forming part of Letters Patent No. 613,831, dated November 8, 1898.

Application filed December 31, 1897. Serial No. 664,981. (No model.)

*To all whom it may concern:*

Be it known that I, FERDINAND JOHN WICH, a subject of the Queen of the United Kingdom of Great Britain and Ireland, residing at No. 11 Hulme street, Oxford road, Manchester, England, have invented certain new and useful Improvements in the Interchangeable Ejector-Blades of Linotype and Analogous Machines, (for which I have obtained the following patent: in Great Britain and Ireland, No. 13,714, dated July 17, 1895;) and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being made to the accompanying

drawings, which are to be taken as part of this specification and read therewith, and one which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in the interchangeable ejector-blades of linotype and analogous machines.

It is particularly applicable to the Mergenthaler linotype-machine, and for that reason, as well as because the said machine is better known in this country than any other linotype-machine, the application of it to the machine in question has been chosen for the purpose of this specification.

The function of the ejector-blade is to eject the linotype from the mold-cavity. In the Mergenthaler linotype-machine the width and thickness of the blade correspond with the length and thickness of the mold-cavity. These are the dimensions which correspond, respectively, with the length of the linotype and with the thickness of it. Consequently when the size of the mold-cavity is changed for one larger or smaller in respect of either of the two dimensions in question it is obvious that such a change involves a corresponding change in the ejector-blade. This latter part of the machine is a flat plate fixed fast by its rear end to the front of the ejector-slide, which in its turn is moved to and fro by a connecting-rod actuated by a suitably-shaped and constantly-turning cam-groove or its equivalent. Each machine is equipped with a series of ejector-blades, there being as many blades in a series as there are different

sizes of mold, each blade corresponding with a particular size of mold.

The objection to the ejector-blade being held to the ejector-slide by a fastening, such as a series of screws, is the considerable loss of time necessary to the substitution of one blade for another so fastened to the slide, for the task of substitution involves removing as much of the machine as stands between the slide and the operator, taking one blade off the slide, fixing another to it, and refixing as much of the machine as has been removed.

It has already been proposed to make the ejector-blades detachable from the slide in such a way that the substitution could be effected without taking down any part of the machine, and the object of the present invention is to provide a better means for such substitution than any hitherto proposed.

The invention consists in the combination of dovetailed or mortise-and-tenon devices divided between the front end or head of the ejector-slide and the rear end of each blade of the series and includes a slope adapted to guide the rear end of the substitute blade into the interlocking position between it and the slide, a spring device adapted to effect such interlocking as soon as the respective ends of the blade and head of the slide are in fair juxtaposition for that purpose, and a series of tabs or tapers behind the dovetails or the tenons on the blade. The tabs or tapers are thereby adapted to enter a recess in the head of the slide, in which they are held by the pressure of the spring device above mentioned.

The minor details of the devices described in the previous paragraph may be varied to any extent, provided that the characteristic function of each one is preserved.

Referring to the accompanying drawings, Figure 1 is a side elevation from the left of the ejector-slide of a Mergenthaler linotype-machine, one of the series of interchangeable blades, the front end of the connecting-rod, and my improved combination of devices. Fig. 2 is a plan corresponding with Fig. 1. Fig. 3 is a side elevation from the left of the dovetailed bar detached from the ejector-slide



and without its stopping-strip. Fig. 4 is a side elevation from the left of a detached interchangeable blade narrower than the one illustrated in Fig. 1. Fig. 5 is a rear elevation of Fig. 4. Fig. 6 is a side elevation from the left of a detached interchangeable blade narrower than the one illustrated in Figs. 4 and 5. Fig. 7 is a plan corresponding with Figs. 4 and 6. Fig. 8 is a detail sectional plan, on an enlarged scale, taken along the line 8 8 of Fig. 1. Fig. 9 is a sectional front elevation, on the same enlarged scale, taken along the line 9 9 of Fig. 1. Fig. 10 is an elevation from the left of the locking-plate detached.

$a$  is the ejector-slide,  $a'$  the front or head of it, and  $b$  a part of the connecting-rod.

$c c c$  are three of the series of ejector-blades,  $c' c' c'$  a hole in each blade, and  $c^2 c^2 c^2$  their respective noses or operative ends, each such end dimensioned to fill its respective mold, as heretofore.

Hitherto the ejector-slide  $a$  has been rectangular in plan; but according to the present invention a rectangular rabbet or recess  $d$  is formed in one side of it. This recess extends vertically from top to bottom of the head and rearwardly about half-way through it or as far as may be necessary to provide room for the action of the said invention. The figures illustrate the recess in question as being in the left side of the head  $a'$ ; but whether it is in the right or the left side is a point to be decided by considerations of convenience, according to the circumstances of the case. However, the positions of the other parts of the invention are always relative to it.

$e$  is a bar as long as the slide-head  $a'$  is deep and of the same thickness as a blade  $c$ . It is held to the said head by any suitable device—such as screws  $e'$ , passed through a rearward extension of it, which extension stands on the outside of the recess, with its own outside flush with the respective side of the head  $a'$  and its front edge at a short distance behind the front of the latter.

$f f$  are a series of equal dovetails or tenons formed on the forward vertical edge of the bar  $e$ , and  $f' f'$  the series of intervening mortises, both series in the plane of the bar.  $g g$  are a series of equal dovetails or tenons down the rear edge of each blade  $c$ , and  $g' g'$  the series of intervening mortises, both series in the plane of the bar. The members of both series  $g$  and  $g'$  throughout the series of blades  $c$  correspond with the respective series  $f$  and  $f'$  on the bar  $e$ , with which they are therefore adapted to interlock, and as both blade  $c$  and bar  $e$  are of the same thickness they will when interlocked stand in the same plane, or, to speak more correctly, within a pair of parallel planes separated by a distance no greater than the common thickness of the said blade and bar. The invention does not impose any limit upon the contour of the dovetails or of the mortises and tenons. This may

be varied to any extent, provided that the interlocking is thorough enough to prevent a blade sagging. The round noses of the tenons  $f$  are beveled away from the inner faces of the latter.

$e^2$  is a plain band the plate of about half the thickness of the bar  $e$ . It is incorporated in and with the outer face of the latter, so as to be flush with it. It stands behind the maximum widths of the tenons  $f$  and over the rear portions or bottoms of the mortises  $f'$  for the purpose of acting as a stopping-strip. The noses or rear portions of the tenons  $g$  are thinned down on that side of them next the bar  $e$  to about one-half their original thickness and the edges beveled away from the bar  $e$  to permit of their entering the rear portions or bottoms of the mortises  $f'$ , restricted in width as the latter are by the presence of the stopping-strip  $e^2$ . The function of the series of noses of the tenons  $g$  is to steady the blade  $c$  in its locked position, and this they accomplish by being held close up to the inner face of the stopping-strip  $e^2$  by the locking-plate next described.

$h$  is the locking-plate. It stands in the recess  $d$  opposite to the inner face of the bar  $e$ . It is held opposite to it throughout its length by studs  $h'$ , engaging freely in holes  $h^2$  in the head  $a'$ . This free engagement is necessary to provide for the motion of the plate  $h$  to and from the bar  $e$  when a blade  $c$  is taken off of the slide-head  $a'$  and another one fixed to it.

$h^3 h^3$  are resilient springs standing in blind sockets  $h^4 h^4$  bored transversely in the head  $a'$  and adapted to keep the locking-plate  $h$  pushed up toward the bar  $e$ . The locking-plate is continued to the front past the front end of the slide-head  $a'$ . This continuation instead of remaining alined with the portion already described is bent or sloped away from the bar  $e$ , the adjacent nose of the slide-head  $a'$  being cut away to make room for such bending or sloping.

The action of the invention is as follows: The ejector-slide is moved to the front as far as it will come. To detach the blade then in the slide-head, the operator inserts a hook in the hole  $c'$  in the said blade and pulls the latter away from the bar  $e$ . The pull has the effect of unlocking the blade  $c$  from the bar  $e$  by pulling the tenons of the former out of the mortises in the latter, the locking-plate  $h$  yielding before the lateral motion of the blade  $c$ . The above-mentioned forward position of the ejector-slide  $a$  holds the nose of the blade projecting beyond the mold-cavity in the mold-wheel, so that the blade can be drawn through the said cavity, whereupon the locking-plate  $h$  is pushed by the springs  $h^3$  up to the bar  $e$ .

The mold-wheel and mold-cavity of the Mergenthaler linotype-machine are well known. They are fully described and illustrated in the specification of Letters Patent No. 14,582 of 1890.

To fix a substitute blade  $c$  to the slide-head



5  $a'$ , the former is pushed rearward through the mold-cavity. The latter is always vertical during the act of blade substitution, so that the then bottom edge of the said cavity is a guide, as heretofore, for the bottom edge of the substitute blade, care being taken that the said bottom edge of the latter is kept in touch with the said bottom edge of the mold-cavity throughout the push of the former through the latter. Further, it is necessary that the substitute blade  $c$  be presented to the head  $a'$  with the reduced sides and beveled edges of the noses of the tenons  $g$  next to the bar  $e$ . The said noses are guided by the convex or sloped portion of the locking-plate  $h$  directly toward a position between the latter and the bar  $e$ , and their easy entrance between the said locking-plate  $h$  and the series of tenons  $f$  provided by the beveling of the edges of two series of tenons  $f$  and  $g$ , the locking-plate  $h$  being then pushed back accordingly against the springs  $h^3$ . As soon as the series of tenons and mortises stand vis-à-vis, respectively—the tenons  $g$  with the mortises  $f'$  and the mortises  $g'$  with the tenons  $f$ —the locking-plate  $h$ , under the action of the springs  $h^3$ , interlocks the tenons and mortises and holds the noses of the tenons  $g$  up to the stopping-strip  $e^2$ .

30 I believe myself to be the first to provide a detachable ejector-blade with a series of end tenons or projections adapted to interlock by

a lateral motion with corresponding fixed surfaces on the ejector-slide and the first to combine a laterally-interlocking ejector blade and slide with means to cause their engagement.

Having thus described my invention, what I claim is—

1. In a linotype-machine, an ejector blade and slide, provided with fixed laterally-interlocking surfaces, substantially as described.

2. In a linotype-machine, the combination of the ejector-blade having end tenons, the ejector-slide having corresponding cavities to receive the tenons laterally, and means for locking said tenons in place.

3. In a linotype-machine, an ejector-blade provided with tenons or projections, an ejector-slide with corresponding cavities to receive the tenons laterally, and a spring-actuated device to hold the tenons in engagement.

4. In a linotype-machine, the combination of the ejector-blade with tenons or projections, the slide with cavities to receive said tenons laterally, the rounded pressure-plate to maintain the engagement, and springs supporting said plate, substantially as described.

In witness whereof I have hereunto affixed my signature, in presence of two witnesses, this 11th day of August, 1896.

FERDINAND JOHN WICH.

Witnesses:

FRANCIS I. JACKSON,  
 W. H. BURLING.