

(No Model.)

C. HOLLIWELL.

KNIFE FOR TRIMMING TYPE, PRINTING BARS, &c.

No. 560,000.

Patented May 12, 1896.

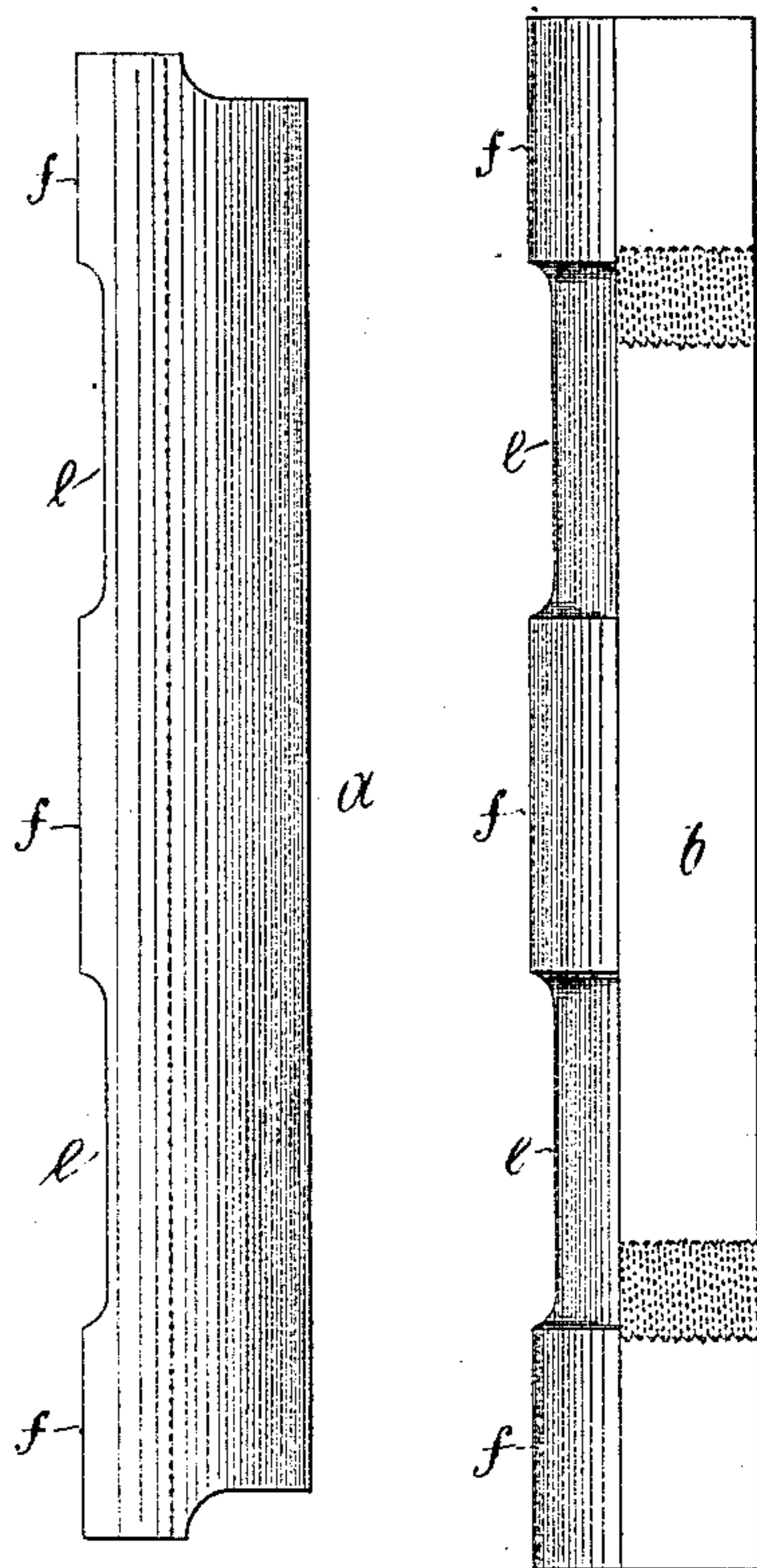


Fig. 1.

Fig. 2.

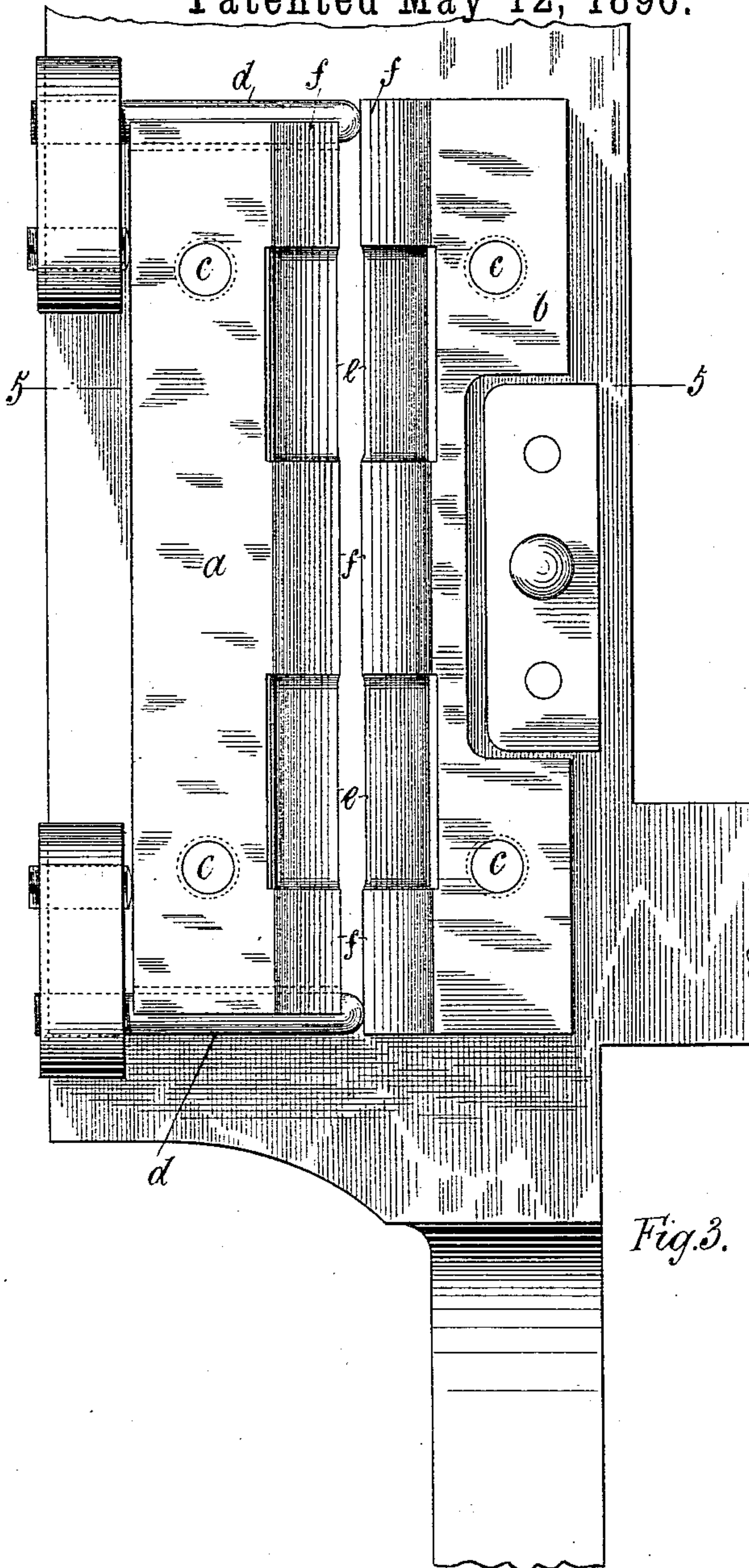


Fig. 3.

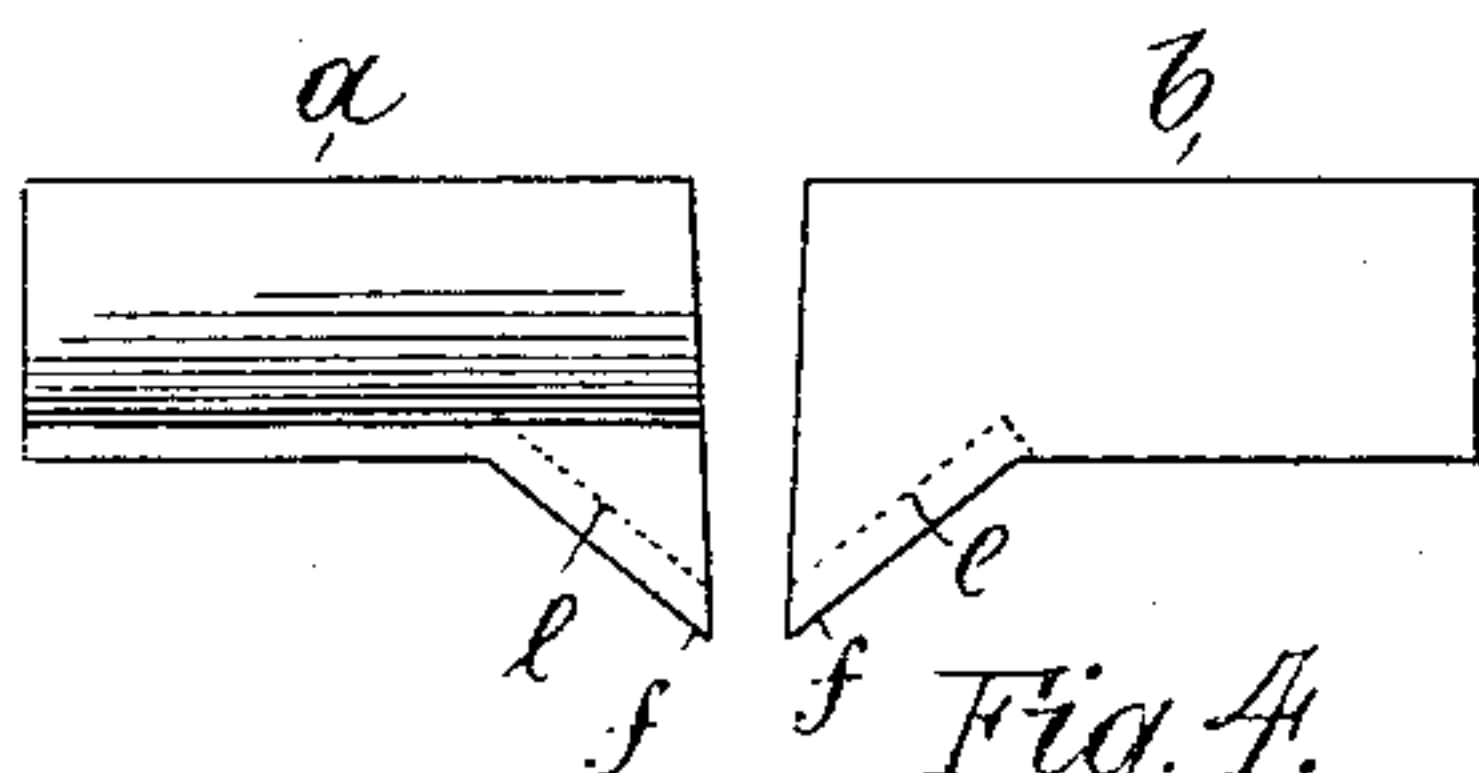


Fig. 4.

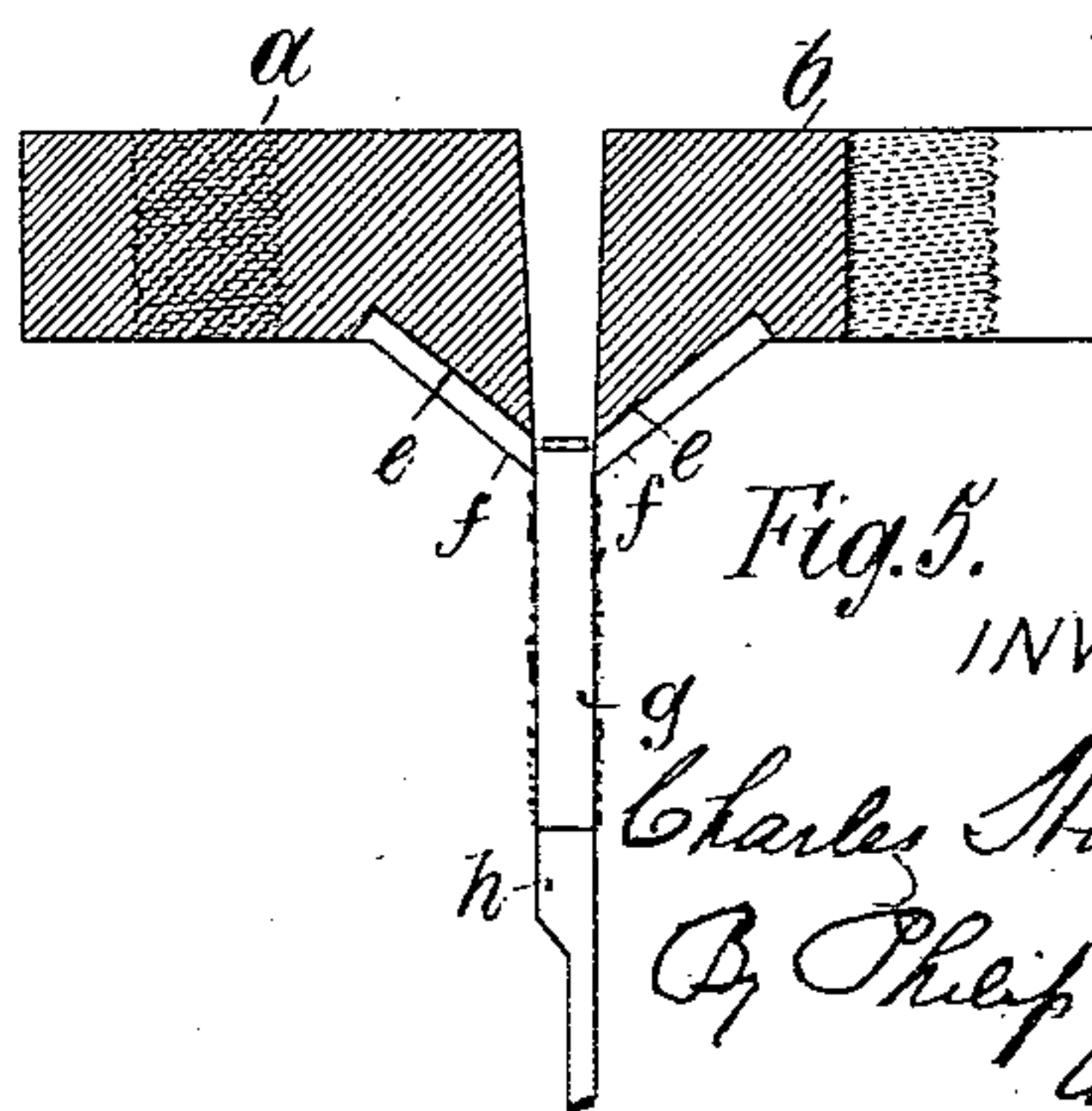


Fig. 5.

WITNESSES.

W. R. Kennedy
J. D. Elmore

INVENTOR

Charles Hollivell
By Philip T. Dodge
Att.

UNITED STATES PATENT OFFICE.

CHARLES HOLLIWELL, OF MANCHESTER, ENGLAND, ASSIGNOR TO THE
MERGENTHALER LINOTYPE COMPANY, OF NEW YORK, N. Y.

KNIFE FOR TRIMMING TYPE, PRINTING-BARS, &c.

SPECIFICATION forming part of Letters Patent No. 560,000, dated May 12, 1896.

Application filed December 12, 1895. Serial No. 571,897. (No model.) Patented in England November 26, 1894, No. 22,921.

To all whom it may concern:

Be it known that I, CHARLES HOLLIWELL, a subject of the Queen of the United Kingdom of Great Britain and Ireland, residing at No. 166 Ashton New Road, Manchester, in the county of Lancaster, England, have invented certain new and useful Improvements in Knives for Trimming Type, Printing-Bars, and Linotypes, (for which I have obtained a patent in Great Britain and Ireland, No. 22,921, dated November 26, 1894;) 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 knives for trimming type, printing-bars, and linotypes; and the object of it is to prevent the piece operated on being delivered cut (*i. e.*, trimmed) on the taper. It is applicable to all machines for casting type, printing-bars, and linotypes; but it has been worked out with more particular reference to the machine known as the "linotype-machine" for the following reasons: (*a*) the product of this machine being a printing-bar as distinguished from a printing-type the risks of strain or stress transverse to the length of the bar are greater than in the case of a printing-type, because of the considerable difference between the lengths of the two, and (*b*) because the linotype-machine is the only machine for making printing-bars which is practically known to the printing trade of this country.

For the purpose of this specification I take the present construction of the linotype-trimming knives as indicative of the state of the art which the present invention is intended to improve. After the linotype is cast it is pushed in a horizontal direction, edge on and end up, up to and between the two parallel vertical knives. When the linotype has been pushed past these knives, it is found to be cut or trimmed on the taper, its back or base being thinner than its front or top. It is not pretended that the amount of taper is linearly considerable in a single linotype; but it is ob-

vious that as all the linotypes trimmed are equally affected the total taper amounts to enough to prevent a column of linotypes presenting that parallelism between their opposite planes which is an assumed condition precedent to the locking up of the form.

The production of the taper above described is due, primarily, to the fact that the two knife-edges in question being rectilinear each knife-edge gets into cut along its entire length at the same moment and simultaneously with its fellow.

According to the present invention some portions of the edge of each knife are set back, so that the entire edge gets into cut gradually. The direct results of this getting into cut gradually are that the linotype is put under stress gradually, that the knives are put under strain gradually, that those portions of the linotype and of the knives which are the first to get under and into cut serve, by their mutual and combined engagement, to prevent other portions springing, and, finally, the linotype is delivered from the knives having its two sides cut parallel with each other.

Referring to the accompanying drawings, Figure 1 is a side elevation of the shorter of the two trimming-knives of a linotype-machine, looking at it from the left hand of the machine. Fig. 2 is a side elevation of the longer of the two trimming-knives of a linotype-machine, looking at it from the left hand of the machine. Fig. 3 is a rear elevation of the same two trimming-knives, including the set-screws, looking at them from behind the machine. Fig. 4 is a plan of the same knives, excluding the ends of the set-screws. Fig. 5 is a horizontal section on the line 5 5 of Fig. 3, and includes in plan a linotype undercut and the nose of the ejector-blade, which is pushing it through between the knives.

a is the shorter and *b* the longer of the two knives.

c c are the screw-threaded holes for the set-screws, by which they are held to the machine. The difference in the lengths of them is caused by the presence of the two set-screws *d d*, which are used to set the cutting edge of the knife *b* exactly parallel with that of the shorter one *a*.

5 *e e* are those portions of the cutting edges
 of each knife which are set back behind the
 remaining portions *f f*. When the linotype
 10 *g* is pushed up to the knives by the ejector-
 blade *h*, it is the front portions *f f* that get
 into cut first, and after they have got fairly
 in cut then the set-back portions *e e* get into
 cut, but not before. The amount of set back
 15 may be varied, as may be desired, but that
 illustrated is a satisfactory one under aver-
 age circumstances. It will be evident from
 what has been said about the way in which
 the present invention achieves the prevention
 20 of springing that the relative positions of the
 leading and the set-back portions *f* and *e*, re-
 spectively, may, under favorable circum-
 stances, exert a marked influence upon the
 amount of prevention achieved. As a rule,
 much depends upon this relative position. I
 25 consider that the one illustrated in the figures
 is the best that can be adopted. The two
 ends and the middle portions of the cutting
 edges get into cut first because they are the
 leading portions. This means that both
 30 knives are in cut along their extremities and
 over their middle portions before the inter-
 mediate portions are called upon, but it means
 something of more importance still—viz., that
 there are intermediate portions of both cut-
 35 ting edge and linotype which have time to
 adjust themselves under the general strain
 before they are under actual and maximum
 strain. Further, it means that the strains
 along the two lines where the portions *f f* are
 40 in cut are not continuous, but separated by
 the interposition of the set-back portions *e e*.
 So, likewise, with the lines where the last-
 mentioned portions are in cut. It is obvious
 that it is better that there should be a re-
 45 spectively odd and even number of leading
 and set-back portions, for then there will be a
 leading portion at each end. In fact, to have
 both in even numbers would go far to defeat
 the object of the invention.
 50 Another relation in respect of dimension is
 that between the length of a set-back and
 that of a leading portion. A set-back portion
e is shown as longer than an end leading por-
 tion *f* and of the same length as the central
 leading portion. The relation in question is
 of secondary importance only and may be de-
 cided according to the circumstances of each
 particular case. At the same time I have to

point out that the relation illustrated is a very
 satisfactory one.

The figures show the cutting edge of one
 knife as the counterpart of that of the other
 one, (excepting as to the trivial shortening
 caused by the presence of the set-screws *d d*.)
 I prefer this correspondence and recommend
 60 that it be always provided for.

It is to be understood that my invention is
 constructed and arranged to produce a flat
 surface on the linotype. Although the front
 edge of my knife is broken—that is to say,
 65 has certain portions in rear of other portions—
 the entire cutting portion acts in the same or
 substantially the same plane, as clearly shown
 in Fig. 5. In other words, the forward cutting
 edges are acting to dress to a common plane
 70 portions of the surface of the slug or linotype,
 while the rear cutting edges following after
 finish the remaining or intervening portions
 of the surface of the slug flush with the por-
 tions finished by the forward edge.

I am aware that ribbed or toothed knives
 have been constructed in arts entirely foreign
 to type-casting for the purpose of cutting par-
 allel grooves or channels, and this I do not
 80 claim.

What I claim as my invention is—

1. In a linotype-machine, a knife con-
 structed and arranged to dress the surface of
 a linotype to a common plane, said knife hav-
 ing portions of its cutting edges set in ad-
 85 vance of the remaining portions as described
 and shown.

2. In a linotype-machine, the combination
 of two opposing trimming-knives between
 which the slug is delivered, each of said knives
 90 having at the front leading cutting portions
f and following cutting portions *e*, the lead-
 ing and following portions of each knife ar-
 ranged to dress the surface to a common plane.

3. In a linotype-machine, a trimming-knife
 95 having its cutting edge composed of leading
 portions and following portions *e* and *f*, both
 arranged to act in the same plane.

In witness whereof I have hereunto affixed
 my signature, in presence of two witnesses,
 100 this 12th day of November, 1895.

CHARLES HOLLIWELL.

Witnesses:

FRANCIS I. JACKSON,
 JOHN ALLAN STREET.