

No. 614,588.

Patented Nov. 22, 1898.

F. J. WICH & C. L. IRELAND.

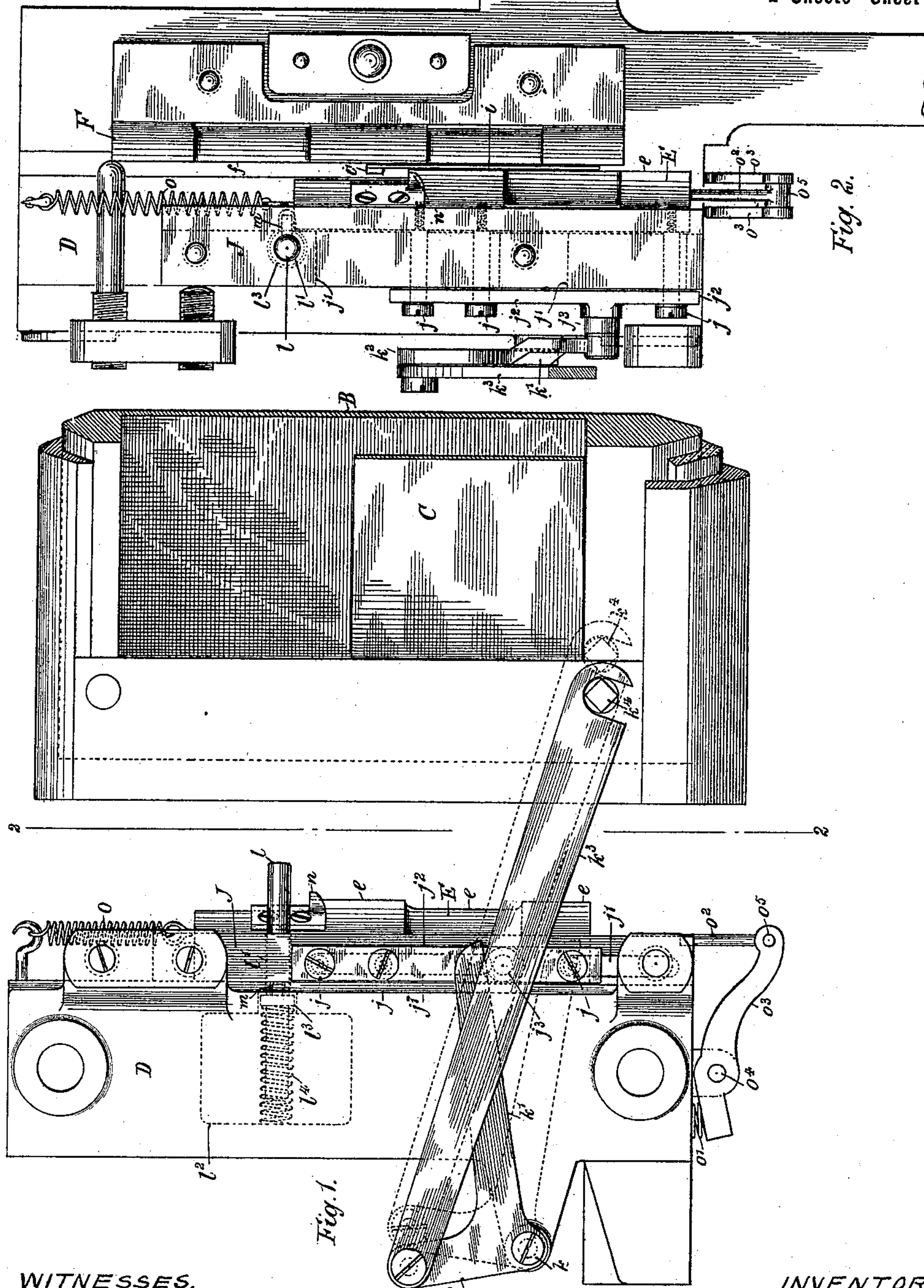
L. M. IRELAND, Administratrix of C. L. IRELAND, Dec'd.

TRIMMING MECHANISM FOR LINOTYPE MACHINES.

(Application filed Dec. 31, 1897.)

(No Model.)

2 Sheets—Sheet I.



WITNESSES.  
A. W. Kennedy.  
J. J. Elmore.

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By P. Y. Dodge Att'y.

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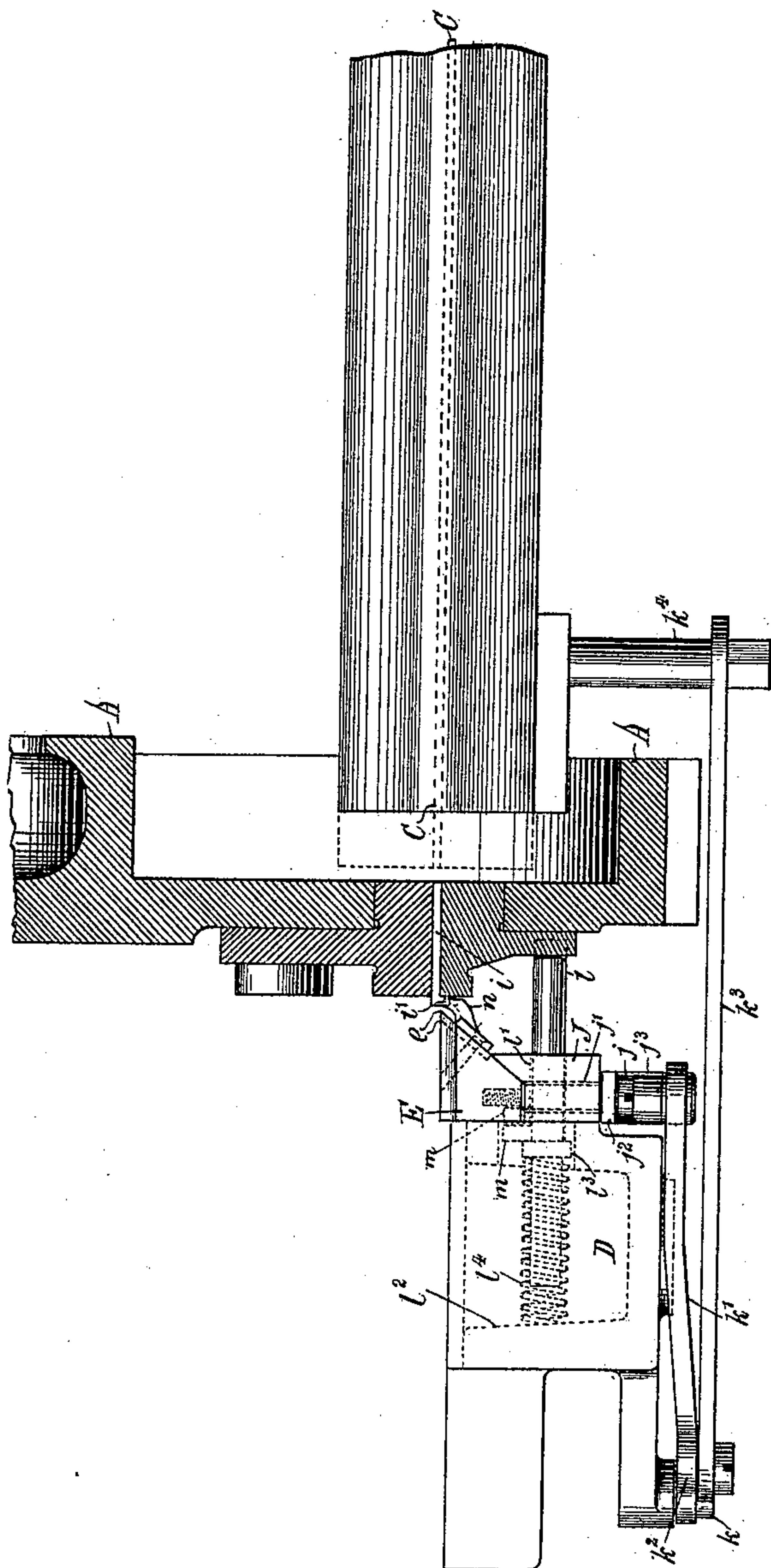


Fig. 3.

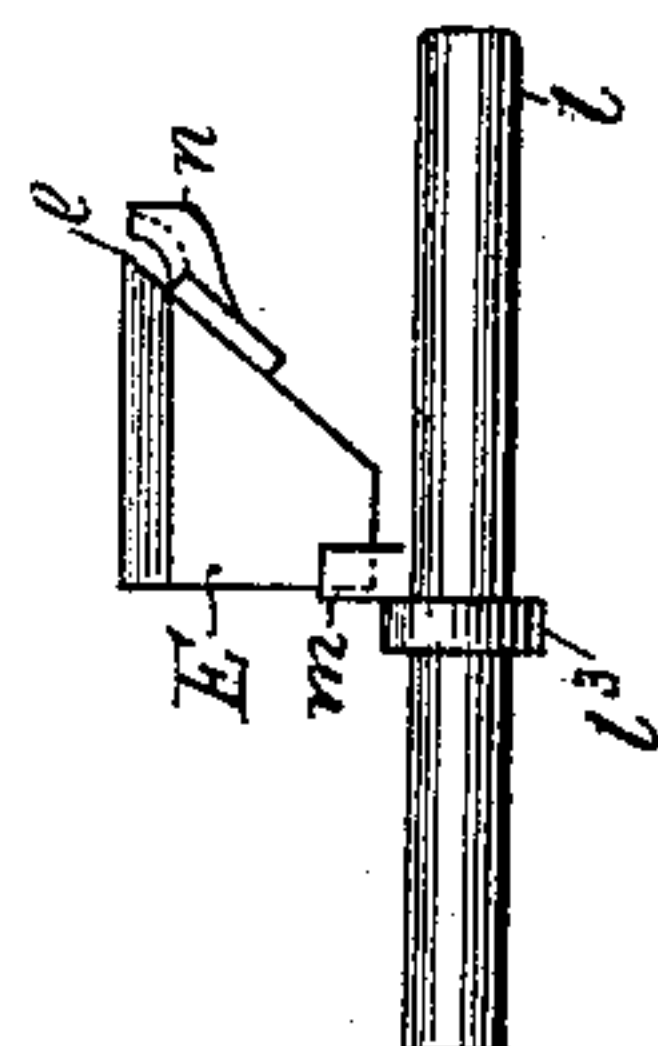


Fig. 4.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

FERDINAND JOHN WICH, OF MANCHESTER, ENGLAND, AND LOTTIE M. IRELAND, OF NEW YORK, N. Y., ADMINISTRATRIX OF CHARLES LEWIS IRELAND, DECEASED, ASSIGNORS TO THE MERGENTHALER LINOTYPE COMPANY, OF NEW YORK, N. Y.

## TRIMMING MECHANISM FOR LINOTYPE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 614,588, dated November 22, 1898.

Application filed December 31, 1897. Serial No. 665,101. (No model.)

*To all whom it may concern:*

Be it known that FERDINAND JOHN WICH, a subject of the Queen of Great Britain and Ireland, residing at Manchester, in the county of Lancaster, England, and CHARLES LEWIS IRELAND, late a subject of the Queen of Great Britain and Ireland, and a resident of Manchester, in the county of Lancaster, England, but now deceased, invented certain new and useful Improvements in the Trimming Mechanism of Linotype-Machines, (for which Letters Patent have been obtained in Great Britain and Ireland, No. 14,047, dated July 23, 1895,) of which invention the following is a full, clear, and exact specification, reference being made to the accompanying drawings, which are to be taken as part thereof and read therewith, and one which will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in the trimming mechanism of linotype-machines; and the object of it is to prevent loss and damage, to expedite work when the machine is engaged in producing linotypes, some of which begin with two-line capitals, and to effect such prevention and expedition by simpler mechanism and a more direct method than have hitherto been contemplated.

Those who are familiar with the machine production of linotypes or printing-bars are aware that there is a certain amount of trimming to be done to both their sides. The two-line capital at the head of a linotype has the lower half of it projecting beyond the adjacent side of the linotype, as shown in United States Letters Patent to Mergenthaler, dated December 24, 1895, No. 551,981. Such projection, therefore, renders the trimming of the sides of such linotype, by its being passed between a pair of parallel trimming-knives as long as itself, impracticable, for the reason that such passage would result in the said lower half of the capital being shorn off. To prevent such shearing off, it has been proposed to make the respective knife end capable of being moved out of the way before the advance of the two-line-capital linotype to the trimming mechanism and of being replaced in its normal posi-

tion before the advance of the next normal linotype. One provision at present in use for so moving the said knife end out of the way is essentially of a type for hand manipulation only, and for that reason demands alert attention on the part of the mind, the eye, and the hand of the operator, or loss of time and material, damage to linotypes, and delayed output are more or less inevitable.

The details of the provision above mentioned will be found in the specifications of British Letters Patent No. 8,258 of 1894 and are as follows: The respective knife end is in a separate piece from the rest of the knife, but it is pivoted thereto, so as to be capable of being turned by a winch-handle through a quarter of a circle, and that in the plane of the whole knife. The pivot is so positioned that the tail of the knife end—i. e., the piece of the latter on the side of the pivot opposite to the trimming edge—stands after the winch-handle has been turned through the distance stated at a distance from the rest of the knife greater than the width of the projection of the two-line capital, thereby establishing a clear way for the passage of such projection; but if the operator does not turn the winch-handle at the right moment the two-line-capital linotype will lose the said projection, and if he does not turn the winch-handle back in time the next normal linotype will be imperfectly trimmed.

Automatic means for preventing the above-mentioned shearing off of the lower half of the capital have also been proposed.

The present invention consists in improved means for effecting (a) the automatic withdrawal of the knife in the direction of its edge, (b) the automatic introduction into the space so vacated of the lower half of the two-line capital, (c) the automatic return of the knife along its line of withdrawal, (d) the automatic stop action of the lower half of the two-line capital in respect of the knife, (e) the automatic restoration of the knife to its normal position, and (f) the disconnection of the withdrawing mechanism when the following linotype is a normal one.

It is well known that in the linotype-ma-



chine the mold for the linotypes is a slot in a vertical mold-wheel; that the latter is carried on an axle which is part of the mold-slide; that the latter is capable of a horizontal motion up to and away from the casting position; that the mold is advanced to the casting position against the matrices and withdrawn therefrom for a short distance after the casting operation; that the mold-wheel then makes a partial revolution, thereby bringing the mold and linotype in it opposite the ejector-blade; that the latter is moved forward into the mold and ejects the linotype and is then withdrawn therefrom, and that the mold-wheel then rotates into its normal position. Such being the operations of the mechanism with which the present invention must needs cooperate, we interpose a lever mechanism between the mold-slide or equivalent member and the knife in question. The mechanism which we prefer to use is the one illustrated in the accompanying figures, which are to be taken as part of this specification and read therewith. At the same time it must be distinctly understood that they do not limit the invention to the precise form and arrangement of parts herein shown and described, inasmuch as the invention includes any construction having essentially the same action as the parts herein shown.

Figure 1 is a side elevation from the right hand of the machine of the right-hand knife-block, mold-wheel slide, and ejector-blade. Fig. 2 is a rear elevation taken along the line 2 2 of Fig. 1 after the knife has been pulled down. Fig. 3 is a plan of Fig. 1, corresponding with the dotted lines of the link and bell-crank lever and including the mold-block and part of the mold-wheel, both in section. Fig. 4 is a plan of the right-hand knife and the knife-locking block.

A is the mold-wheel; B, the mold-wheel slide, which gives support to the wheel as usual; C, the ejector-blade, and D the trimming-block to which the trimming-knives are made fast. These parts are substantially the same as are described in the specification of British Letters Patent No. 14,582 of 1890. The mechanisms for actuating the mold-wheel slide and the ejector-blade are both omitted from the figures, for the reason that they, as well as the members which they actuate, are outside the scope of the present invention.

E F are the two trimming-knives, and *e f* their cutting edges. They are made according to British Letters Patent No. 22,921 of 1894—*i. e.*, with portions of the edge in advance of the remainder. Both knives are held to the rear face of the trimming-block parallel with each other and at the proper distance apart, as heretofore, for the passage of the linotype *i* and the ejector-blade C. The right-hand knife E is movable in the direction of its length, as and for the reason explained in the specification of Letters Patent No. 1,389 of 1895. This motion is a reciprocating vertical one and takes place in a guide

J, which may be of any suitable construction. The one illustrated is a block made fast to the rear face of the trimming-block D.

*j j j* are headed pins or screws fast to the knife E and projecting horizontally to the right through vertical slots *j' j'* in the guide-block J, the length of the said slots being adjusted to the length of the above-mentioned motion of the knife E.

*j<sup>2</sup>* is a plate adapted to slide smoothly upon the right-hand face of the guide-block. It has all the pins *j* made fast to it, and, further, carries a stud *j<sup>3</sup>*, which is fast to it and projects laterally from it to the right hand.

*k* is a pin screwed into a forward extension of the trimming-block for the purpose of providing the fulcrum of a bell-crank lever. One arm *k'* of the latter extends to the rear and rests upon the stud *j<sup>3</sup>*. The other and shorter arm *k<sup>2</sup>* stands up above the arm *k'* and has its outer end connected by a link *k<sup>3</sup>* to a stud *k<sup>4</sup>*, projecting from the right side of the ejector-slide.

*l* is a push-pin for locking the movable knife, adapted to move to and fro in a horizontal bearing *l'* and cavity *l<sup>2</sup>* in the guide-block J and the trimming-block D, respectively. It has a shoulder *l<sup>3</sup>* fast on it and a spiral spring *l<sup>4</sup>* surrounding its front portion and adapted by bearing against the front of the cavity *l<sup>2</sup>* to keep the shoulder *l<sup>3</sup>* up to the back of the block J and the nose of the pin *l* protruded as far to the rear as the length of the pin to the rear of the said shoulder permits of.

*m* is a block fast upon the pin *l* in a certain position thereon—to wit, the one which will permit it to stand over the front right-hand corner of the knife E (supposing that were in its lower position) when the shoulder *l<sup>3</sup>* is up to the block J. (See Fig. 4.) This block is in fact a spring-actuated stop adapted to lock the knife E down in the said lower position.

*n* is a rearward projection from the knife E, so positioned and dimensioned as to stand over the lower half *i'* of the two-line capital at the head of the linotype *i* at or during the first portion of the travel to the front of the mold-wheel A, as well as a little to the rear of and also a little to the right of the cutting edge *e* of the knife E, as illustrated in Fig. 3.

*o* is a returning-spring adapted to pull the knife E up again after its depression by the bell-crank lever above mentioned, and *o'* a buffer-spring against the downward motion of the same knife, which motion reaches it through an upstanding thrust-pin *o<sup>2</sup>* and a lever *o<sup>3</sup>*, the latter having its fulcrum at *o<sup>4</sup>*, intermediate of the pivoted connection *o<sup>5</sup>*, between it and the pin *o<sup>2</sup>* on the one hand and the buffer-spring *o'* on the other.

The action of the invention is as follows: The link *k<sup>3</sup>* having been connected to the stud *k<sup>4</sup>* immediately before the rearward motion of the mold-wheel slide B, the said motion pulls the knife E down into its lowest position, whereupon the locking-block *m* is made



to stand immediately over its front right-hand corner, thereby locking it down. The rearward motion of the push-pin *l* projects its nose as far to the rear as is necessary for it to be engaged by the mold-wheel at the proper moment for unlocking the block *m* from the knife *E*. After the cast the mold-wheel *A* moves forward and engaging the nose of the push-pin *l* pushes it into its socket for a short distance, as indicated by the dotted lines in Fig. 3, but at the same time places the lower half *i'* (part of the two-line capital above mentioned) vertically over the projection *n*. The continued motion of the mold-wheel to the front pushes the block *m* from off the knife *E*, which is then free to be raised to its normal position under the pull of the spring *o* as soon as the said portion *i'* has cleared the knife-top under the ejecting motion of the ejector-blade *C*.

What is claimed is—

1. In a linotype-machine, the combination of movable knife, bell-crank lever, connection between it and the knife and a reciprocating part of the machine adapted to turn it on its fulcrum, and an automatic stop and knife-locking device as and for the purpose set forth.

2. In a linotype-machine, the combination of movable trimming-knife, bell-crank lever, mold-wheel slide, spring-protruded stop and knife-locking block, as and for the purpose set forth.

3. In a linotype-machine, the combination of a knife, movable endwise, a spring connection tending to move the same in one direction, means connected with a moving part of the machine to advance the knife against the motion of the spring, a locking device to hold the knife thus moved, and means for automatically unlocking the knife, substantially as described.

4. In a linotype-machine, a trimming-knife, movable endwise, in combination with automatic means for moving the knife to its alternate positions, as successive linotypes are delivered.

In witness whereof I, the said FERDINAND JOHN WICH, have hereunto affixed my signature, in presence of two witnesses, this 3d day of February, 1897.

FERDINAND JOHN WICH.

Witnesses:

CHAS. S. WOODROFFE,  
ROBT. A. BLAKE.

In witness whereof I, the said LOTTIE MARY IRELAND, have hereunto affixed my signature, in presence of two witnesses, this 23d day of December, 1897.

LOTTIE M. IRELAND,  
*Administratrix of the estate of Charles Lewis Ireland, deceased.*

Witnesses:

PHILIP T. DODGE,  
J. F. GEORGE.