

(No Model.)

5 Sheets—Sheet 1.

L. K. JOHNSON & A. A. LOW.  
TYPE SETTING APPARATUS.

No. 522,715.

Patented July 10, 1894.

Fig. 2.

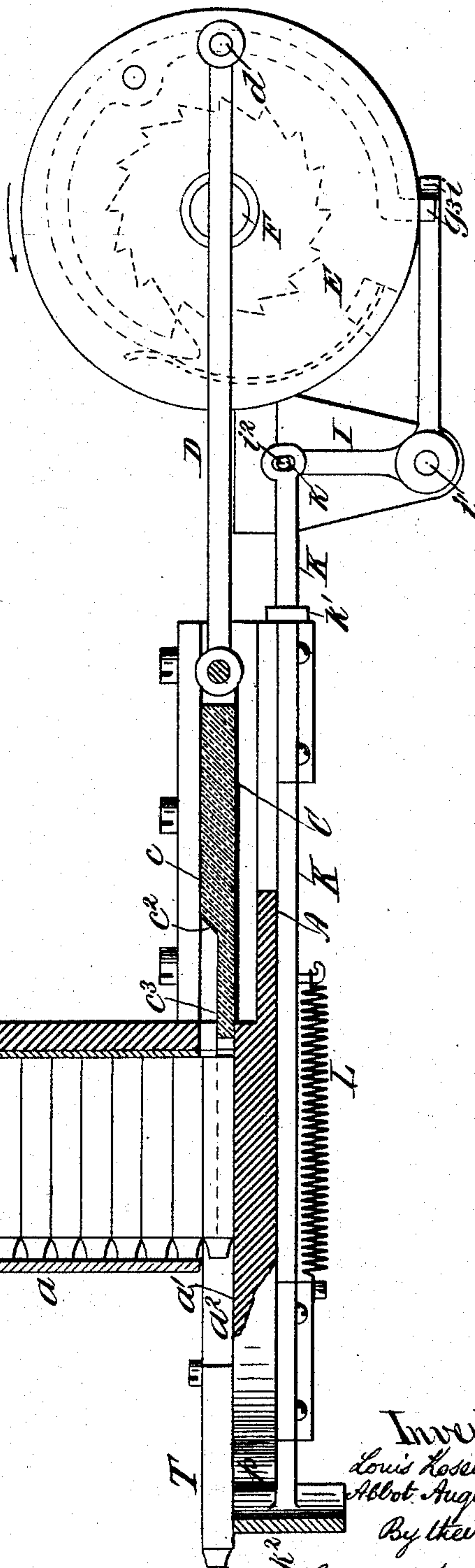
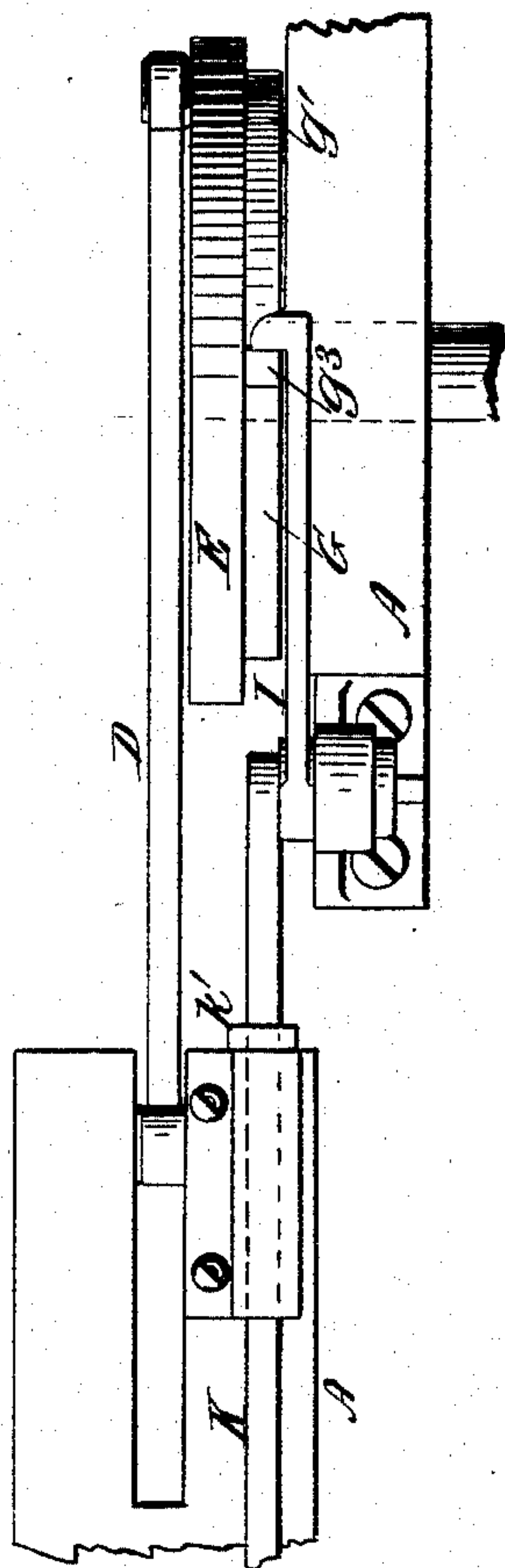


Fig. 1.

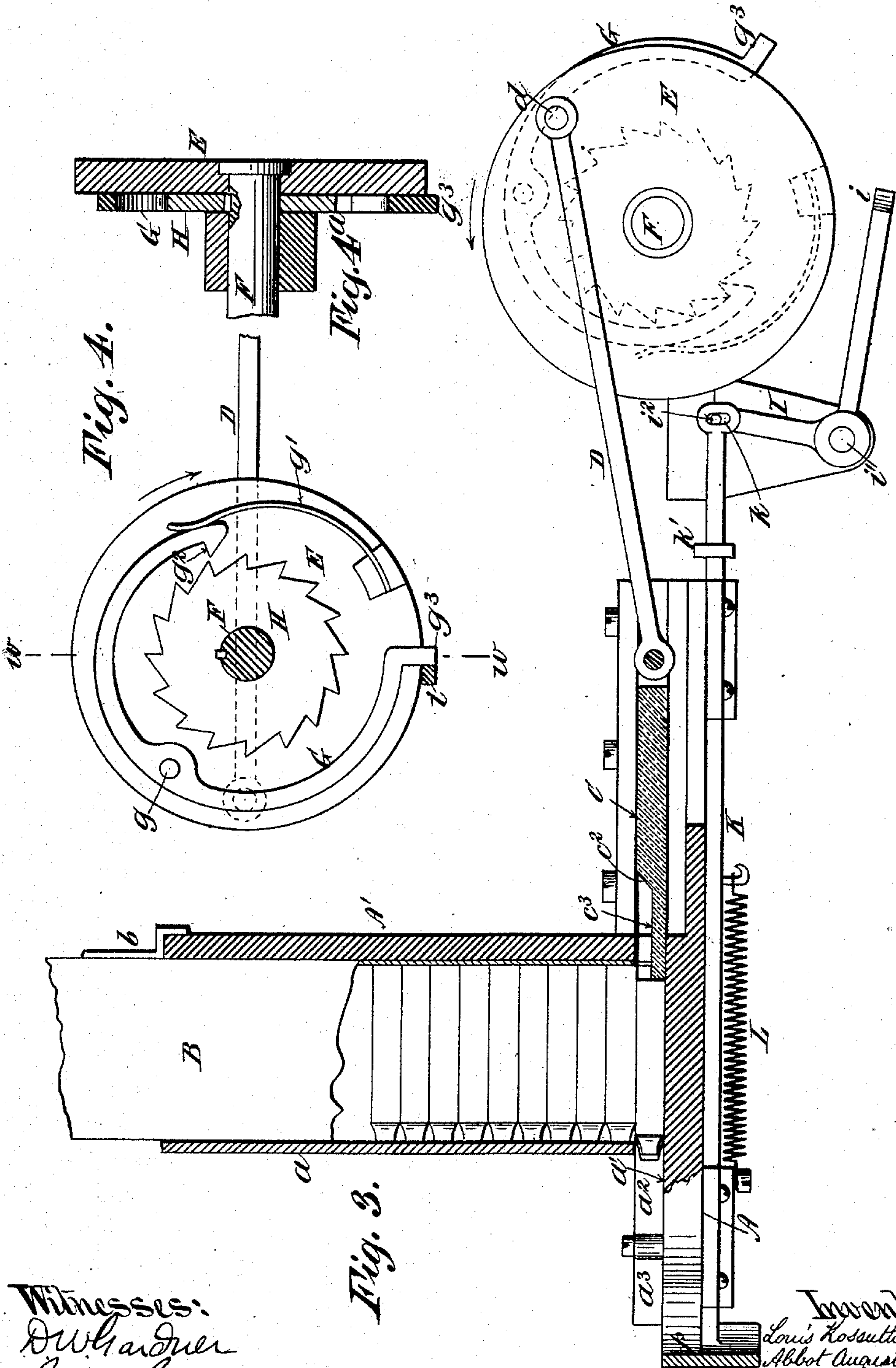
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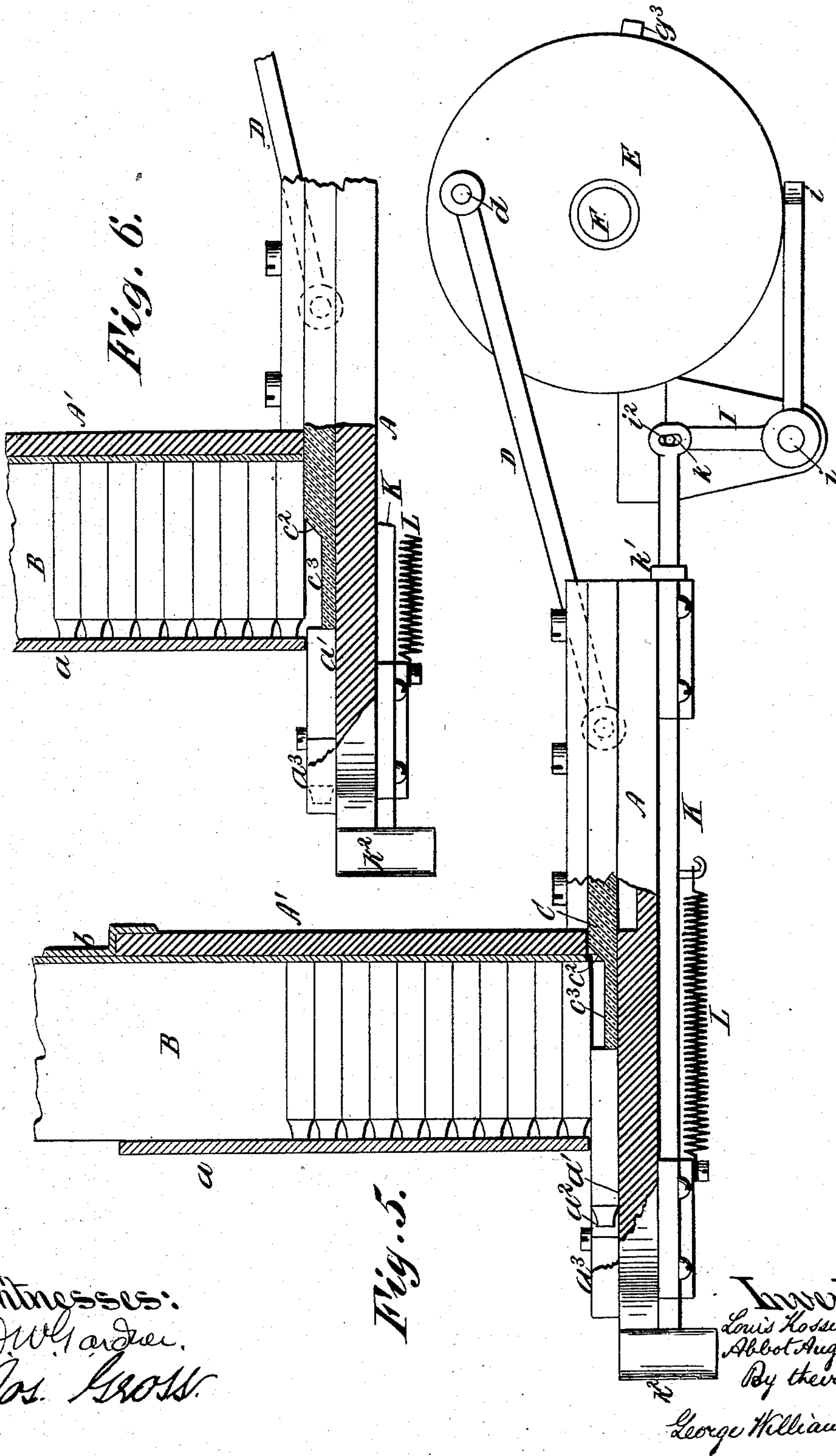
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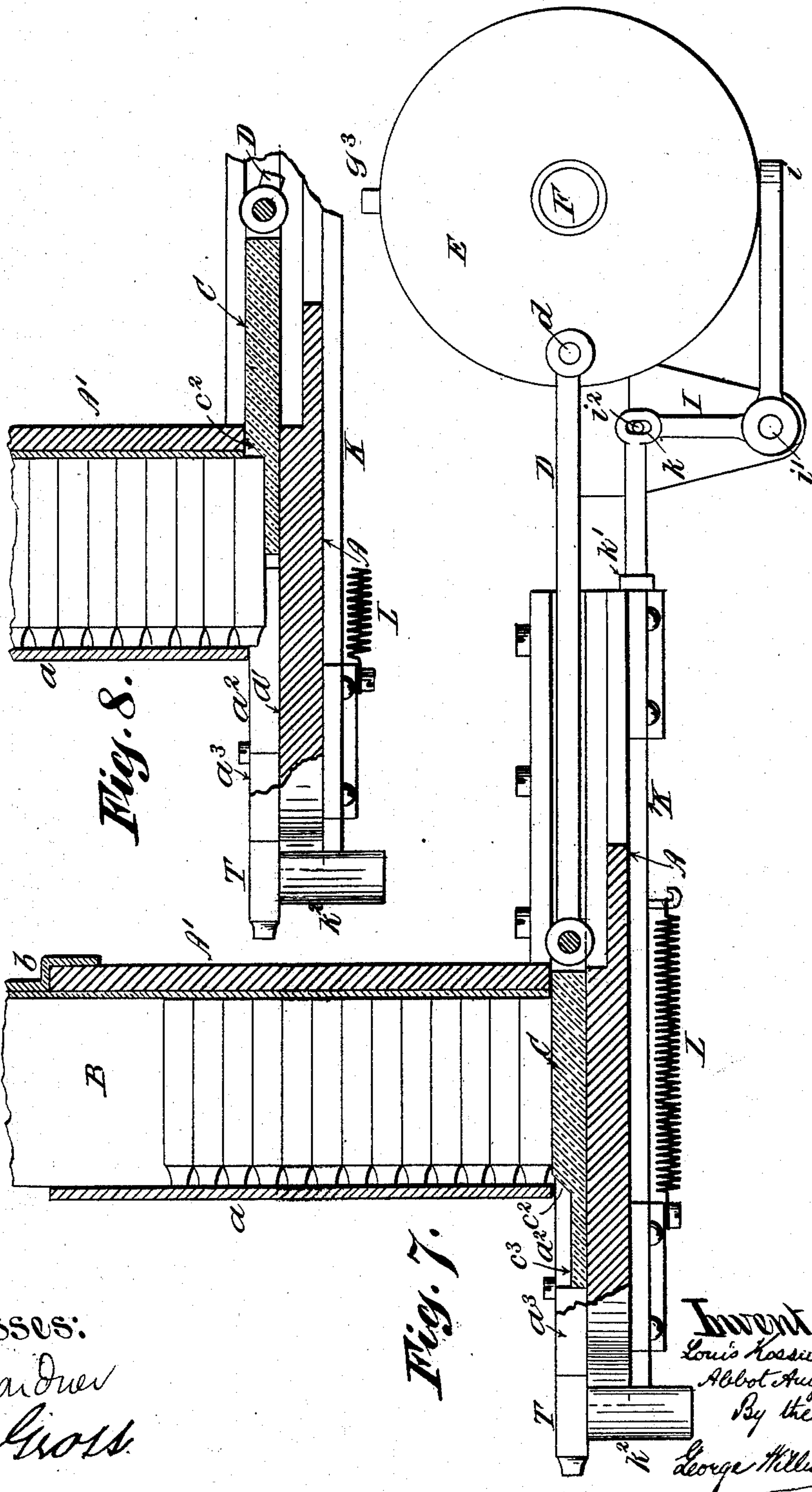
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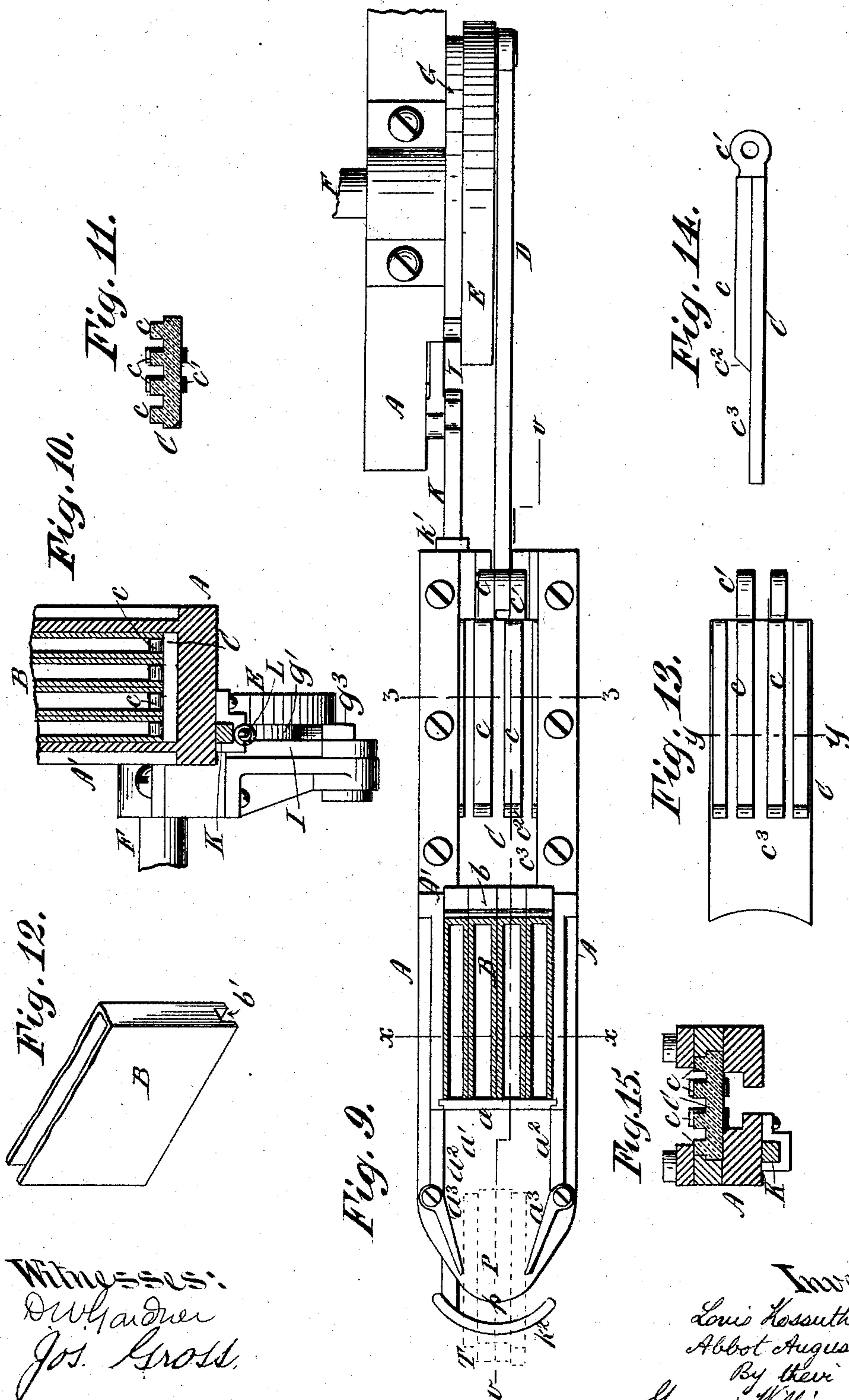
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# UNITED STATES PATENT OFFICE.

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## TYPE-SETTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 522,715, dated July 10, 1894.

Application filed February 17, 1894. Serial No. 500,548. (No model.)

*To all whom it may concern:*

Be it known that we, LOUIS KOSSUTH JOHNSON and ABBOT AUGUSTUS LOW, citizens of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Setting Apparatus, of which the following is a description, sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

Our improvements relate to the apparatus set forth in our application, Serial No. 492,664, filed December 4, 1893, in which a plurality of type containing channels, and a type forwarder common to all, are combined and arranged with a type platform in front of the channels, said platform being formed with converging side walls by which the types, as they advance, are positively assembled together and sustained laterally with their front edges extending over the front edge of the platform, in position to be grasped by the fingers of the compositor.

The objects of our present invention are to simplify the construction of the apparatus; to combine it with a continuously moving device by means which throw the type forwarder into action only during the removal of the types last forwarded into position; to afford a type forwarder which raises the columns of types above the lowest type in the column before the latter leaves the channel, and which, also during its retractile movement, allows the column of type to descend gradually to rest upon the type supporting platform; and to effect a gradual contact and raising of the next lowest types by an inclined or wedge surface.

Our invention also includes certain minor features of construction hereinafter set forth.

In our prior application hereinbefore referred to, the forwarding of the types is accomplished by hand. As the resistance of the weight of the columns of types has to be overcome in detaching and forwarding the lowest types upon the type platform, it is desirable that the hand of the operator be relieved of this labor, and that the types be forwarded by mechanical power. Our improvement in this respect consists in utilizing

a rotary motion, which is continuous, for the purpose of reciprocating the pusher intermittently,—that is to say, whenever the mechanism is released by a finger push which is actuated by the hand of the compositor while grasping the types last forwarded into position for removal.

By lifting the columns of types away from the lowest types during the forwarding of the latter, and before the heels of the latter have passed beyond the type containing channels, we avoid injury to the faces of the types which would otherwise result from the contact of the heels of the receding types with the faces of those next immediately above.

Since the types are on their edges, and have to descend a distance slightly greater than their width, as the type forwarder recedes, their sudden descent for the whole distance is objectionable, and to obviate this, we so form the forward portion of the pusher that the types fall first upon a step formed by reducing the thickness of the forward end of the pusher. By this means we divide the descent of the types into two steps of about equal height, and thereby prevent displacement and preserve the horizontal alignment of the type.

In the accompanying drawings we show practical means for carrying out our invention, although we do not wish to confine ourselves strictly to the identical form and construction of parts, since it is obvious that various modifications may be resorted to without deviating from the essential features of our invention.

Figure 1, is a central vertical section upon plane of line *v, v*, Fig. 9, showing certain of the parts in elevation. Fig. 2, is a view of the under side of the mechanism for reciprocating the type pusher. Fig. 3, is a sectional elevation similar to Fig. 1, showing the parts in the position which they assume just after the release of the pusher actuating mechanism, the forward end of the pusher having just encountered and started forward the types. Fig. 4, is a view of the left hand side of the clutch mechanism, by which the rotary shaft is brought into play; Fig. 4<sup>a</sup>, a transverse section upon plane of line *w, w*, Fig. 4. Fig. 5, is a sectional elevation showing the position



of the parts during the forward stroke of the pusher when the latter has forwarded the lowest types a distance about equal to one half the width of the type containing channels.

- 5 Fig. 6, is a sectional elevation showing the heels of the types as they leave the type containing channels, the columns of type above being supported upon the type forwarder. Fig. 7, is a sectional elevation showing the position of the parts at the completion of the stroke of the type forwarder. Fig. 8, is a sectional elevation showing the descent of the types to the step of reduced thickness which constitutes the forward portion of the pusher.
- 10 Fig. 9, is a plan of the mechanism, when in the position shown in Fig. 1, the upper ends of the type containing channels being shown in cross section, and the position of the types last forwarded being indicated in dotted lines.
- 20 Fig. 10, is a transverse section upon plane of line  $x, x$ , Fig. 9; Fig. 11, a transverse section upon plane of line  $y, y$ , Fig. 13; Fig. 12, an isometrical perspective of the lower end of a type containing channel; Fig. 13, a plan of the pusher; Fig. 14, an edge view of the pusher; Fig. 15, a transverse section upon plane of line  $z, z$ , Fig. 9.

In the drawings A, represents stationary frame-work or supports of suitable construction. The type channel support A', consists of a socket piece or holder of rectangular form, adapted to hold a plurality of channels, that shown in the drawings accommodating four type containing channels B, resting snugly against each other, and held or suspended in position by shoulders  $b$ , upon their spines, which shoulders  $b$ , rest upon the upper edge of the socket A'. The front of the socket piece A', and consequently the lower portions of the channels, is closed by a flat guard  $a$ .

$a'$ , is a type supporting shoulder, upon which the lowest types in the several columns rest.

- 45  $a^2, a^2$ , are the parallel walls, and  $a^3, a^3$ , the converging side walls described in our prior application hereinbefore referred to; and the whole operation of forwarding, converging, centralizing and presenting the types is substantially the same as that disclosed in said application.

By reference to Figs. 13 and 14, it will be seen that the pusher C, consists of a flat plate formed with ribs  $c, c$ , upon its upper surface.

- 55 The side walls of the channels extend down nearly to the level of the upper surface of the plate C, the lower ends of their spines being notched as shown at  $b'$ , Fig. 12, to admit of the passage of the ribs  $c$ , upon the pusher C.
- 60 The reciprocation of the pusher C, is effected through the medium of a pitman D, pivotally connected to the rear end of the pusher at  $c'$ , and to the disk E, at  $d$ . This disk E, is mounted loosely upon the shaft F, which is rotated continuously, in the direction of the arrow, by any suitable power. A spring ratchet G, is pivoted at  $g$ , to the side

of the disk E, opposite to that to which the pitman D, is connected. A ratchet wheel H, is rigidly secured to the shaft F, and rotates constantly therewith. The spring  $g'$ , mounted upon the disk E, tends constantly to throw the point  $g^2$ , of the ratchet G, into engagement with the teeth of the ratchet H, and thereby to rotate the disk E, with the shaft F. This tendency of the spring  $g'$ , to maintain an engagement and rotation of the disk E, with the shaft F, is counteracted normally by a stop  $i$ , upon one end of the rock lever I, fulcrumed at  $i'$ , to a stationary part of the frame. The other end of this rock lever I, is formed with a pin  $i^2$ , which engages a slot  $k$ , in the rear end of the push rod K.

A spring L, attached at one end to the push rod K, and at the other to a stationary part of the apparatus, tends constantly to draw the push rod forward until the stop  $k'$ , on the push rod rests against a stationary part of the apparatus and so holds the rock lever I, in the position shown in Figs. 1, 5 and 7, in which position the shoulder  $i$ , engages with the projecting end  $g^3$ , of the pawl G, whenever the said end  $g^3$ , comes in contact therewith as shown in Figs. 1 and 4. The forward end of the pusher bar is formed with the finger bearing  $k^2$ , by which the rod K, is pushed back by the fingers of the compositor, while grasping the types, against the resistance of the spring L.

The thickness of the pusher C, when taken through the ribs  $c$ , is slightly greater than the width of the types; and the forward ends of the ribs  $c$ , are inclined forward as at  $c^2$ , at an angle of forty-five degrees, or any other that may be found desirable; or if preferred the front ends of the ribs may be merged into the front platform or step  $c^3$ , of the pusher C, by a gentle curve,—the object of curving or inclining the front end  $c^2$ , of the ribs  $c$ , being to afford a gentle contact thereof with the heels of the types next above the types being forwarded.

The operation is as follows: The compositor, desiring to withdraw the types indicated at T, grasps them between his thumb and finger, previous to withdrawing them from the port P, at the front end of the type platform  $a'$ . In doing this he necessarily presses back the finger bearing  $k^2$ , against the resistance of the spring L, until the rear of the finger bearing  $k^2$ , brings up against the front edge  $p$ , of the type platform  $a'$ , or against any other suitable stop or stationary part of the apparatus. The result of this is that the rear end of the push bar K, rocks the rock lever I, backward so that its shoulder  $i$ , is immediately dis-engaged from the end  $g^3$ , of the pawl G, upon the disk E, when the spring  $g'$ , throws the point  $g^2$ , of the pawl G, into engagement with the ratchet H, and the disk E, starts to rotate with the shaft F.

As the compositor removes his fingers from the bearing  $k^2$ , in the act of withdrawing the types T, which he does almost immediately



and long before the disk E, can make a single revolution, the spring L, returns the rod K, to its normal position with its stop  $k'$ , resting against a stationary bearing, thereby limiting the forward motion of the push rod K, and the upward motion of the shoulder  $k$ , upon the rock lever I.

As the disk E, rotates from the position shown in Fig. 1, it forwards the pusher C, through the medium of the pitman D. When the pusher C, has advanced sufficiently to forward the lowest types about half-way out of their channels the inclined surfaces  $c^2$ , encounter the heels of the next lowest types in the columns, and lift the columns very slightly but sufficiently to raise and support the types from contact with the heels of the receding types as the latter leave the fronts of the type containing channels, as will be seen by reference to Fig. 6. At the completion of one-half of the revolution of the disk E, the forward stroke of the pusher C, is attained, the types being forwarded into the position T, Figs. 7 and 9, and the columns of types resting entirely upon the ribs  $c$ .

During the retractile movement of the pusher effected by the rotation of the disk E, the type columns first descend from the ribs  $c$ , to the platform or step  $c^3$ , and then from the latter to the type platform  $a'$ . In doing this they maintain substantially horizontal positions, the drop or fall being divided up, and all objectionable inclination of the types that would otherwise occur, owing to a drop equal to the greatest thickness of the pusher, is avoided. During the completion of a revolution of the disk E, the shoulder  $i'$ , encounters the end  $g^3$ , of the pawl G, rocks the said pawl G, over against the resistance of its spring  $g'$ , thereby dis-engaging the point  $g^2$ , and locking the disk E, against further revolution until again tripped by the action of the compositor in removing the types just forwarded.

It is obvious that the pawl and ratchet herein described may be dispensed with and a like result accomplished by the use of any other well known releasing or clutching mechanism, the essential feature in this respect being the employment of a device, actuated by a finger push bar, which shall couple the

constantly rotating power shaft F, with means for reciprocating the type pusher.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In apparatus for facilitating the setting of types by hand, the combination of a plurality of type containing channels supported in a common holder; a type platform below said channels common to all the types; and a reciprocating type forwarder consisting of a plate of less thickness than the width of the types, said plate being formed with ribs which increase the thickness of the plate beyond the width of a type, the front ends of the ribs being inclined substantially in the manner and for the purpose described.

2. In apparatus for facilitating the setting of types by hand, the combination of a plurality of type containing channels supported in a common holder; a type platform below said channels common to all the types; and a reciprocating type forwarder consisting of a plate of less thickness than the width of the types, formed with ribs which increase the thickness of the plate beyond the width of a type, said ribs having their front edges inclined, and ending a suitable distance back of the front edge of the pusher plate for the purpose and substantially in the manner described.

3. In apparatus for facilitating the setting of types by hand, the combination of a plurality of type containing channels supported in a common holder; a type platform below said channels common to all the types; a type forwarder, common to all the types, connected by a pitman to a loose disk-crank on a constantly rotating power shaft; a spring pawl and ratchet for connecting and disconnecting the said disk-crank and power shaft; and a finger push bar arranged to release the spring pawl under the action of the compositor's fingers while grasping the previously advanced types for removal, and to again automatically engage the spring pawl, substantially in the manner and for the purpose described.

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