

(No Model.)

5 Sheets—Sheet 1.

J. L. McMILLAN.
TYPE DISTRIBUTER.

No. 464,163.

Patented Dec. 1, 1891.

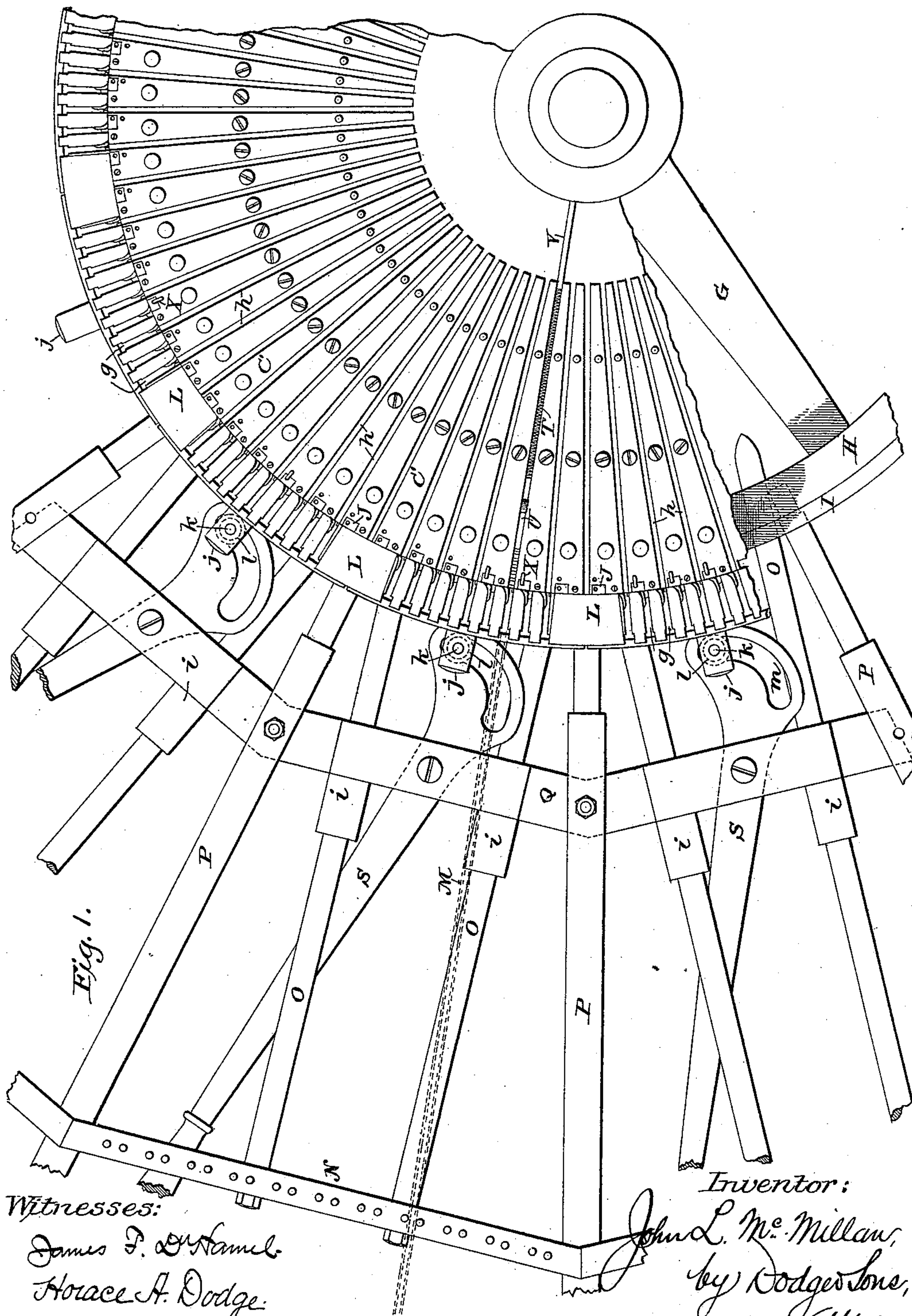


Fig. 1.

Witnesses:

James F. O'Hamel.
Horace A. Dodge.

Inventor:

John L. McMillan,
by Rodger Bone,
Attys.

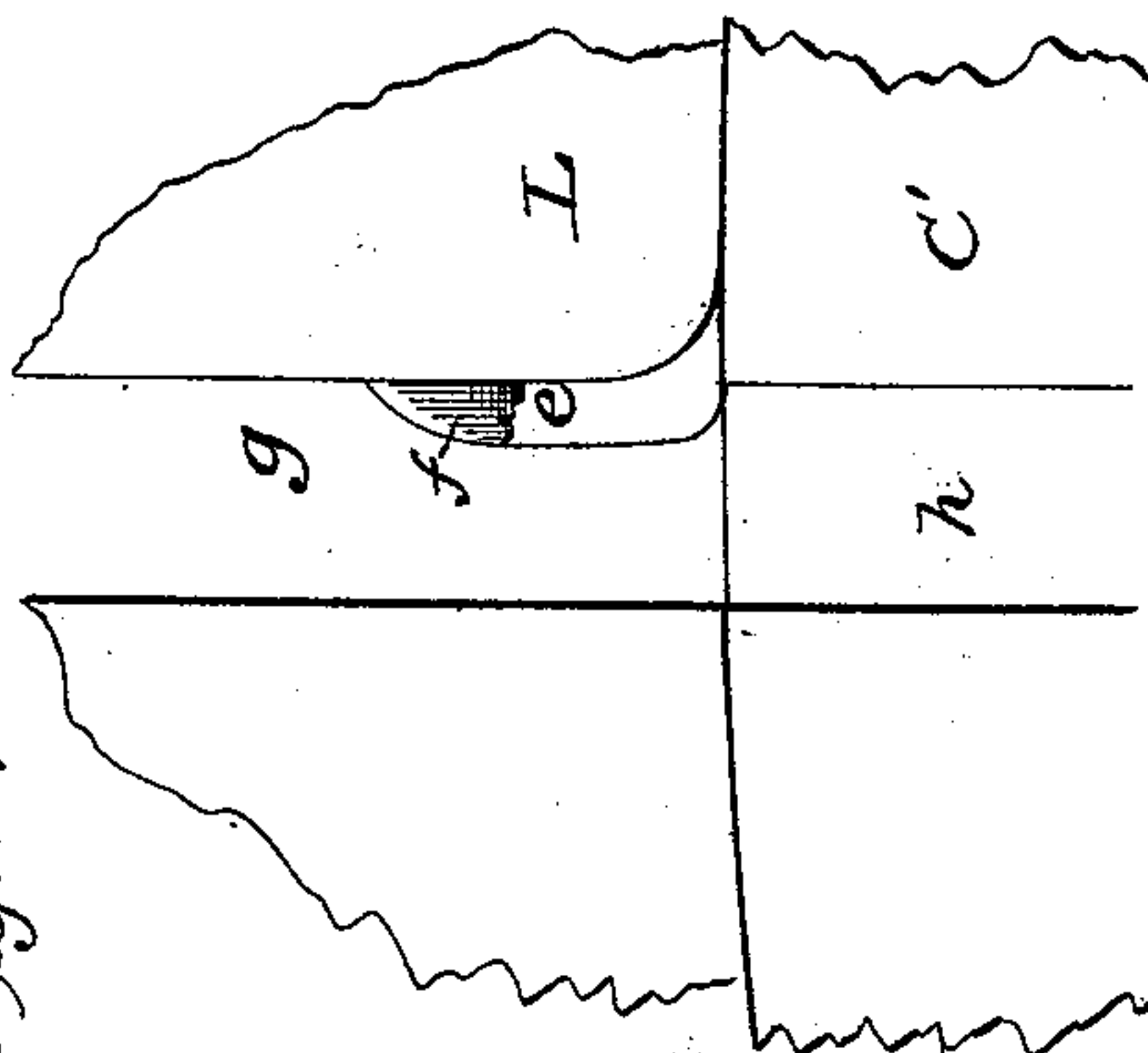
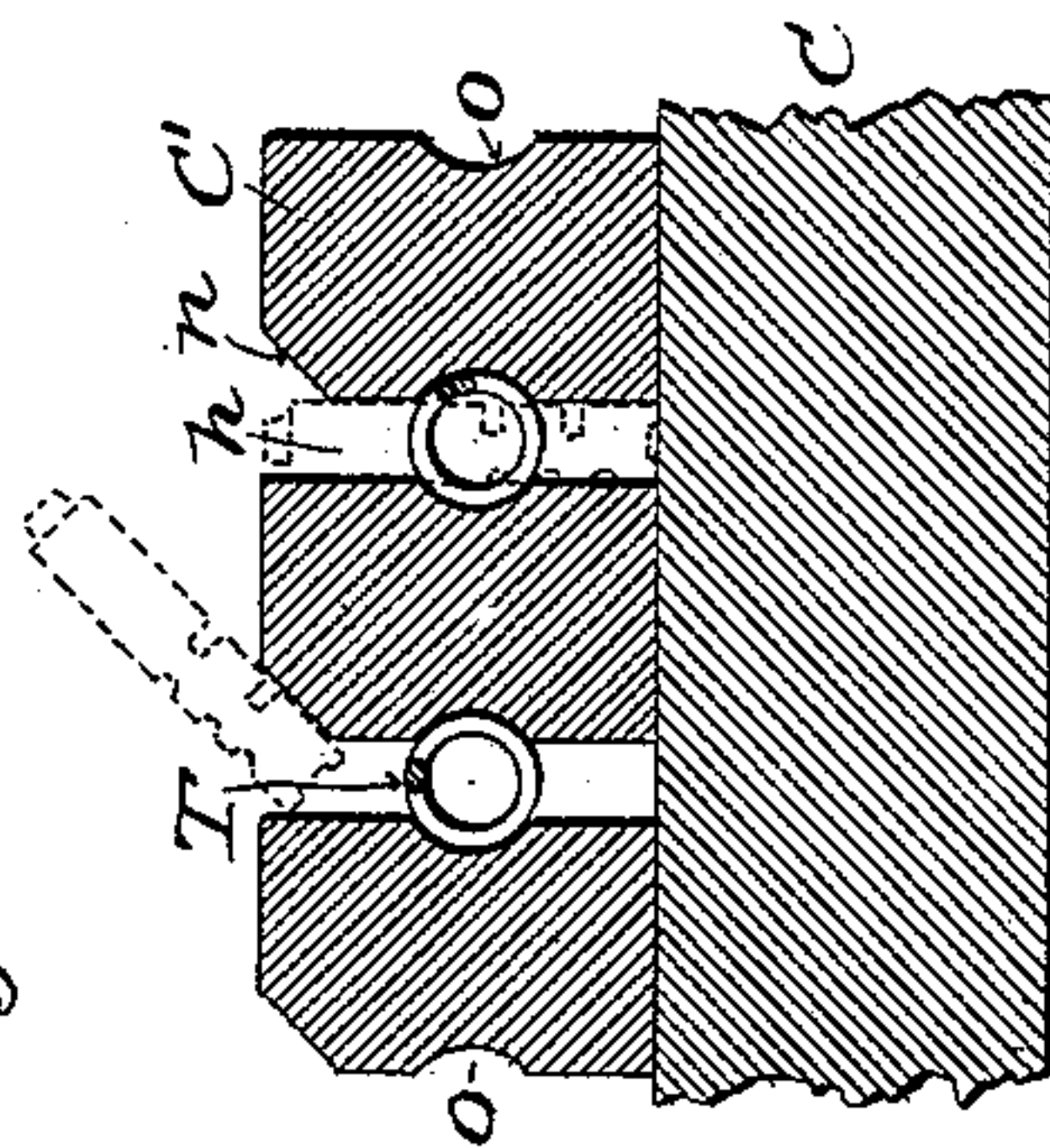
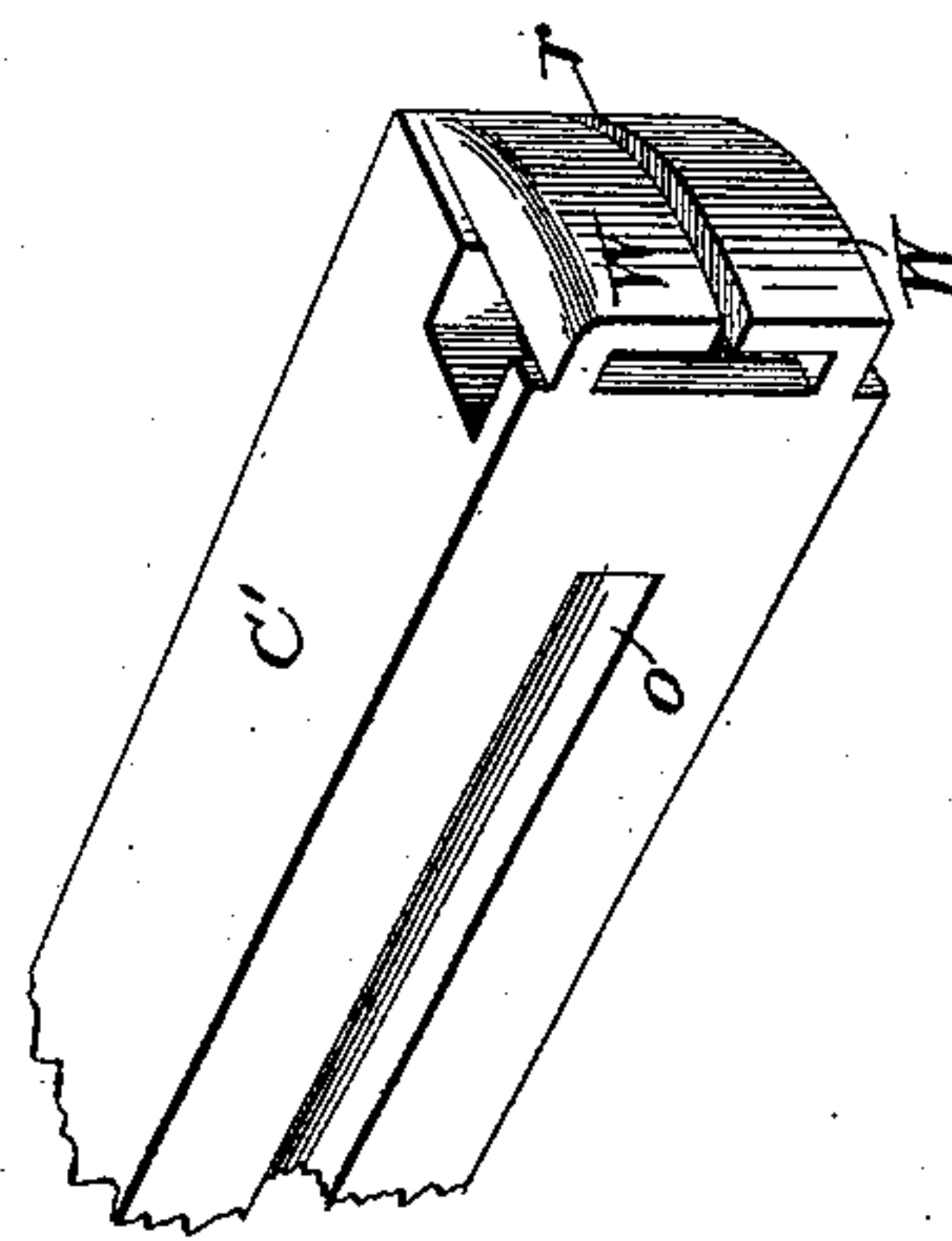
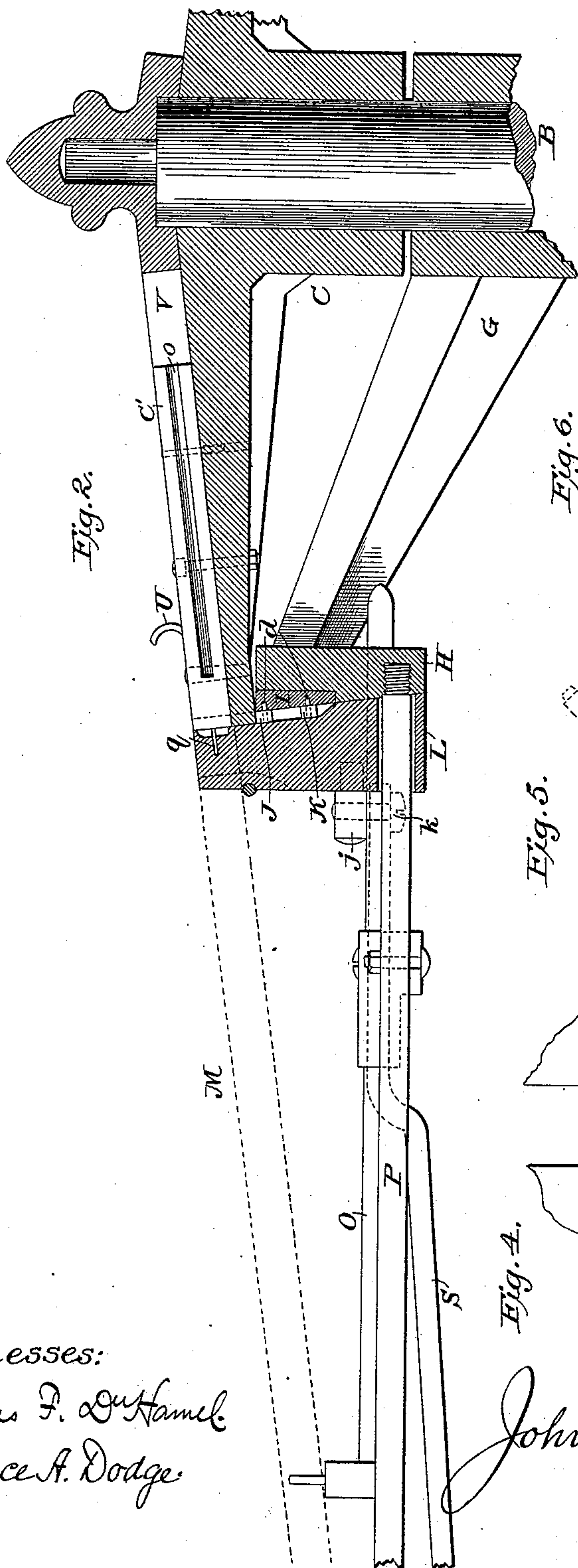
(No Model.)

5 Sheets—Sheet 2.

J. L. McMILLAN.
TYPE DISTRIBUTER.

No. 464,163.

Patented Dec. 1, 1891.



Witnesses:

James F. Duhamel
Horace A. Dodge.

Inventor:

Inventor:
John L. Mc Millan,
by Rodger Sone,
Attys.

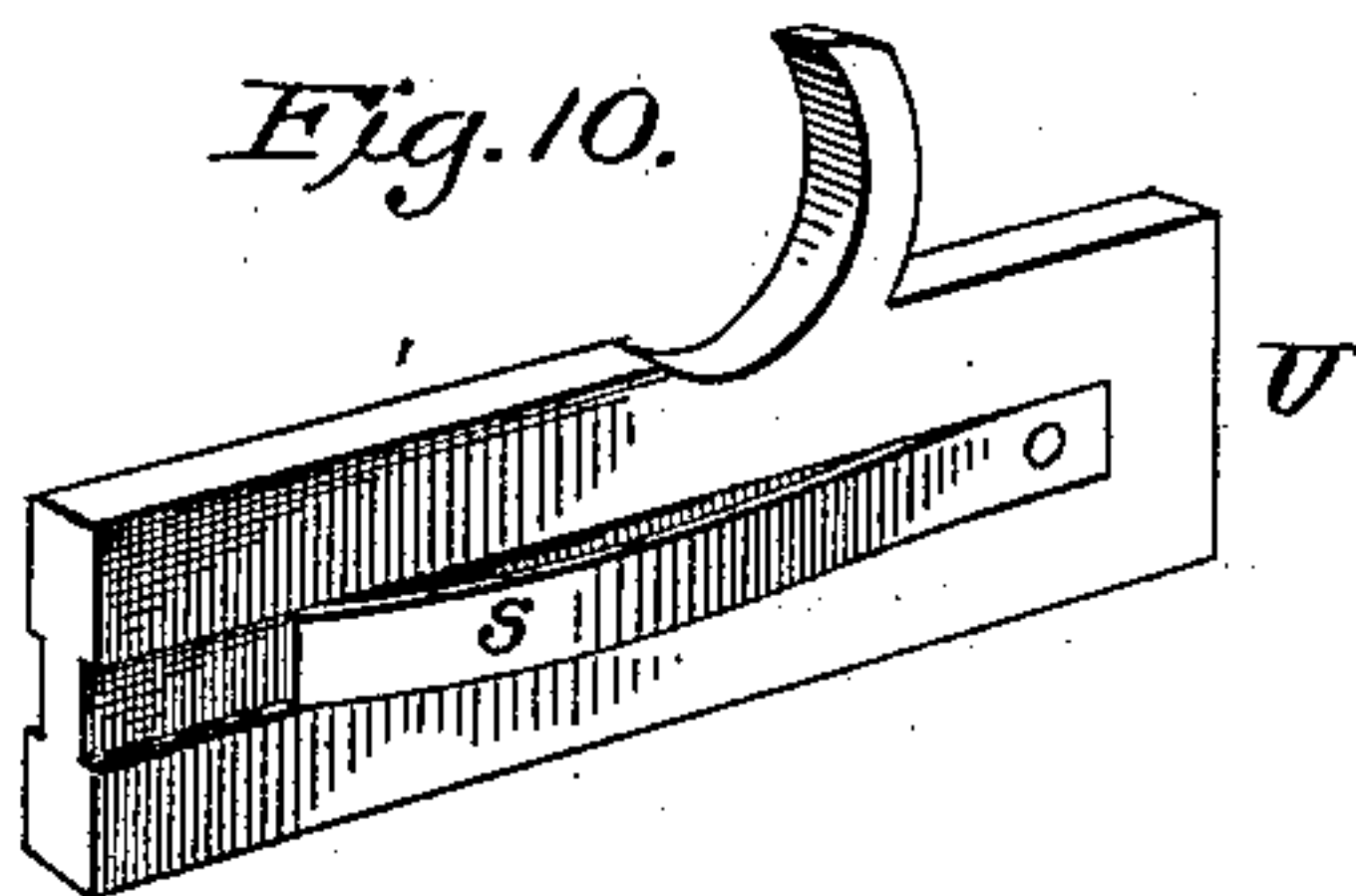
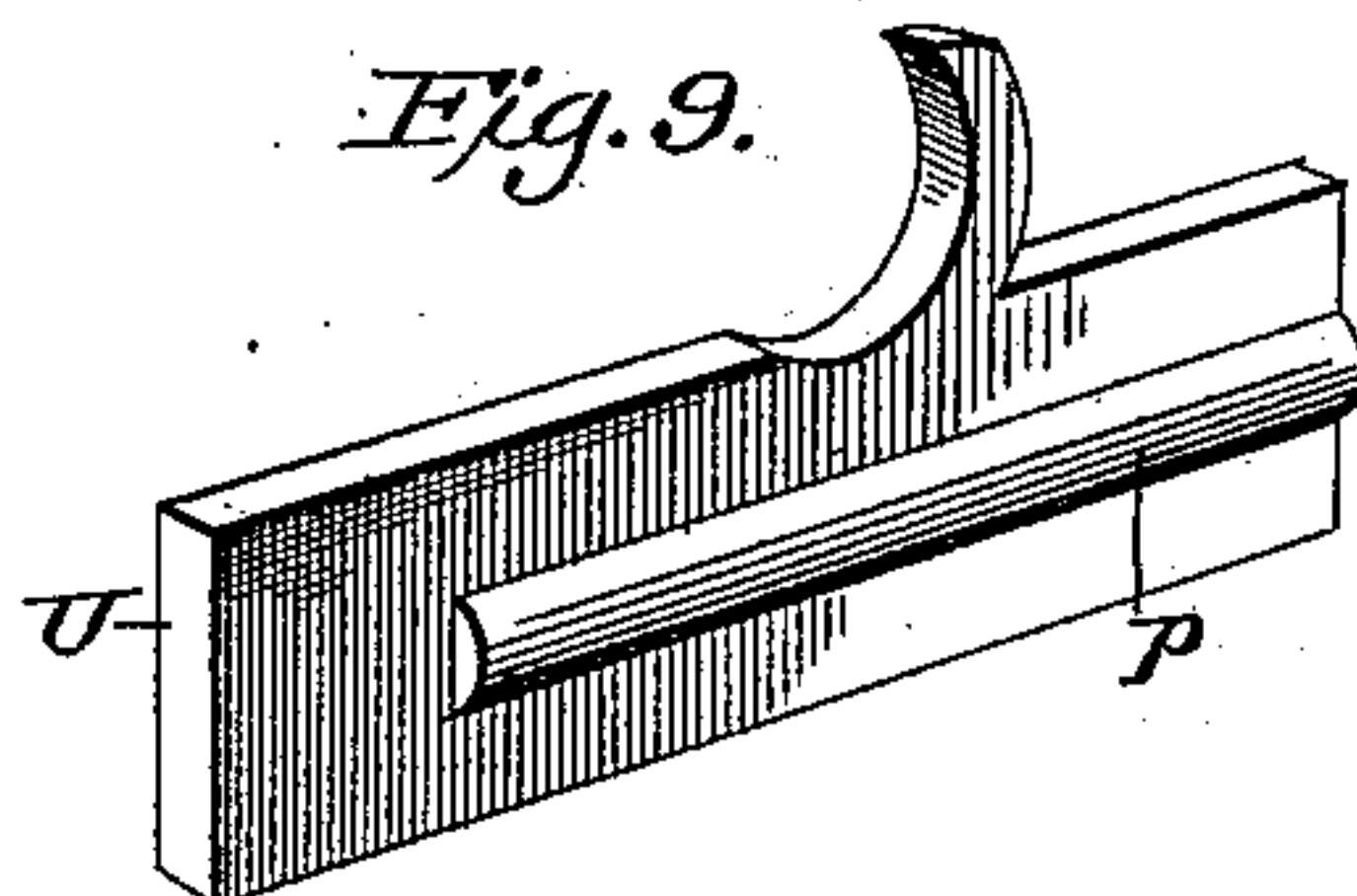
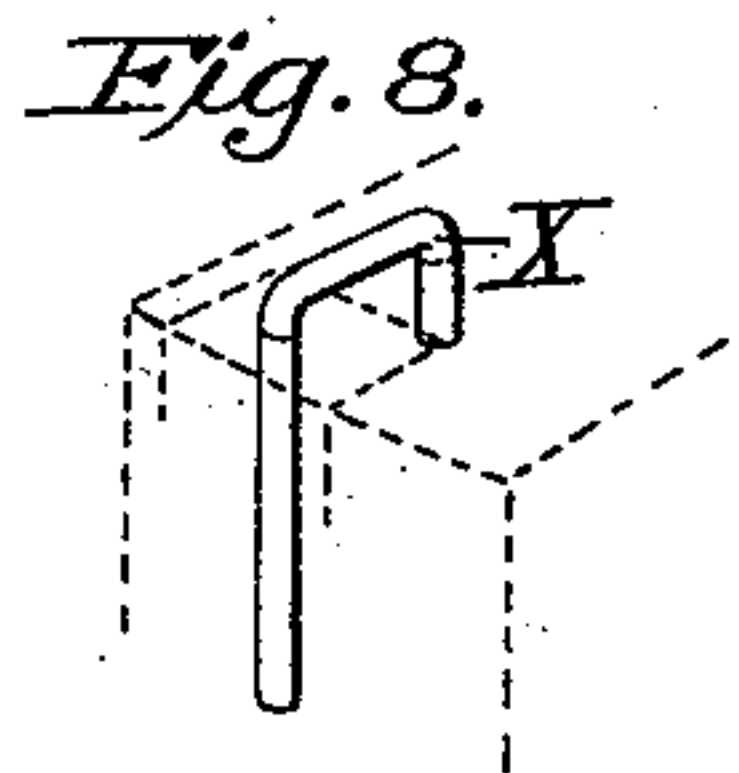
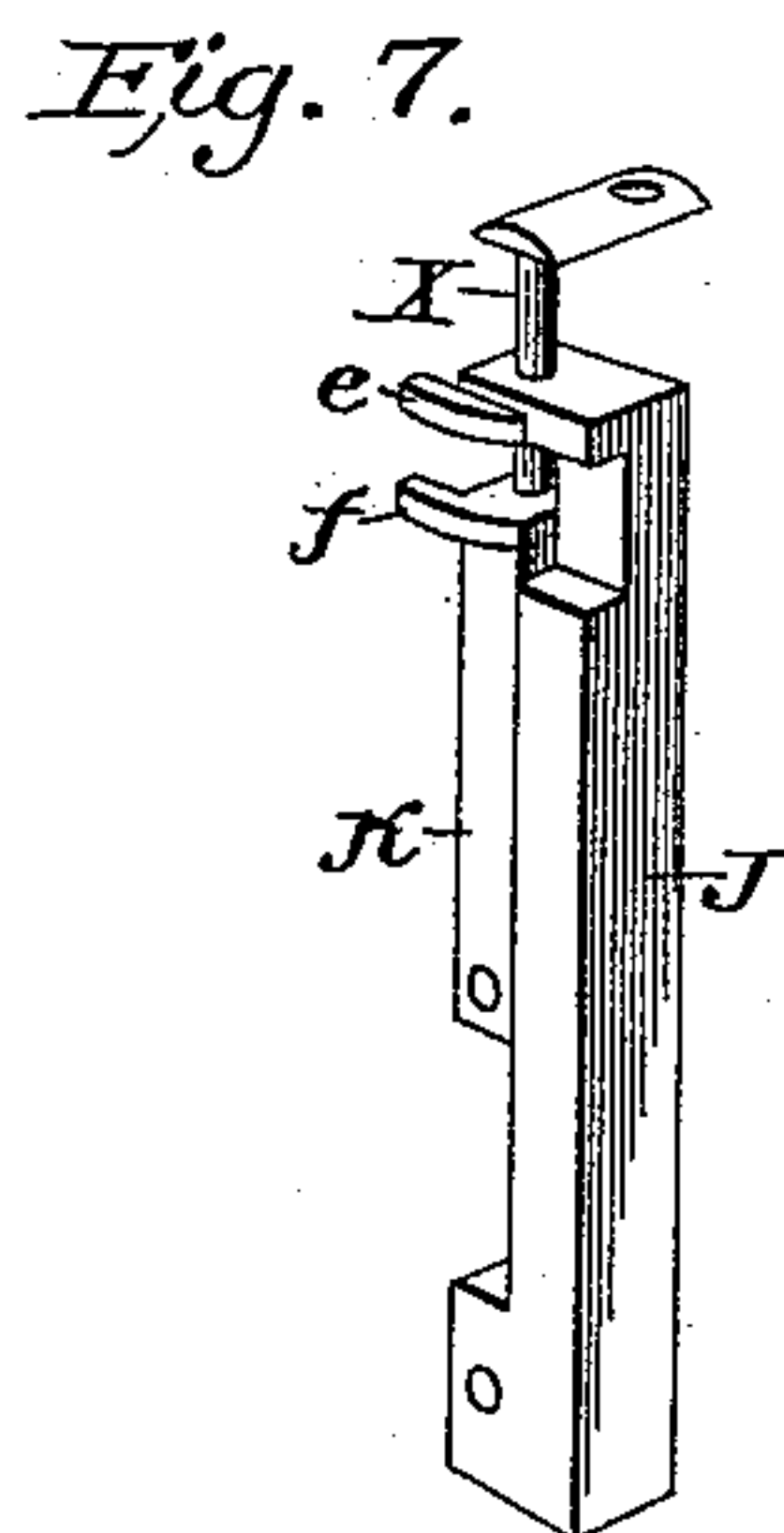
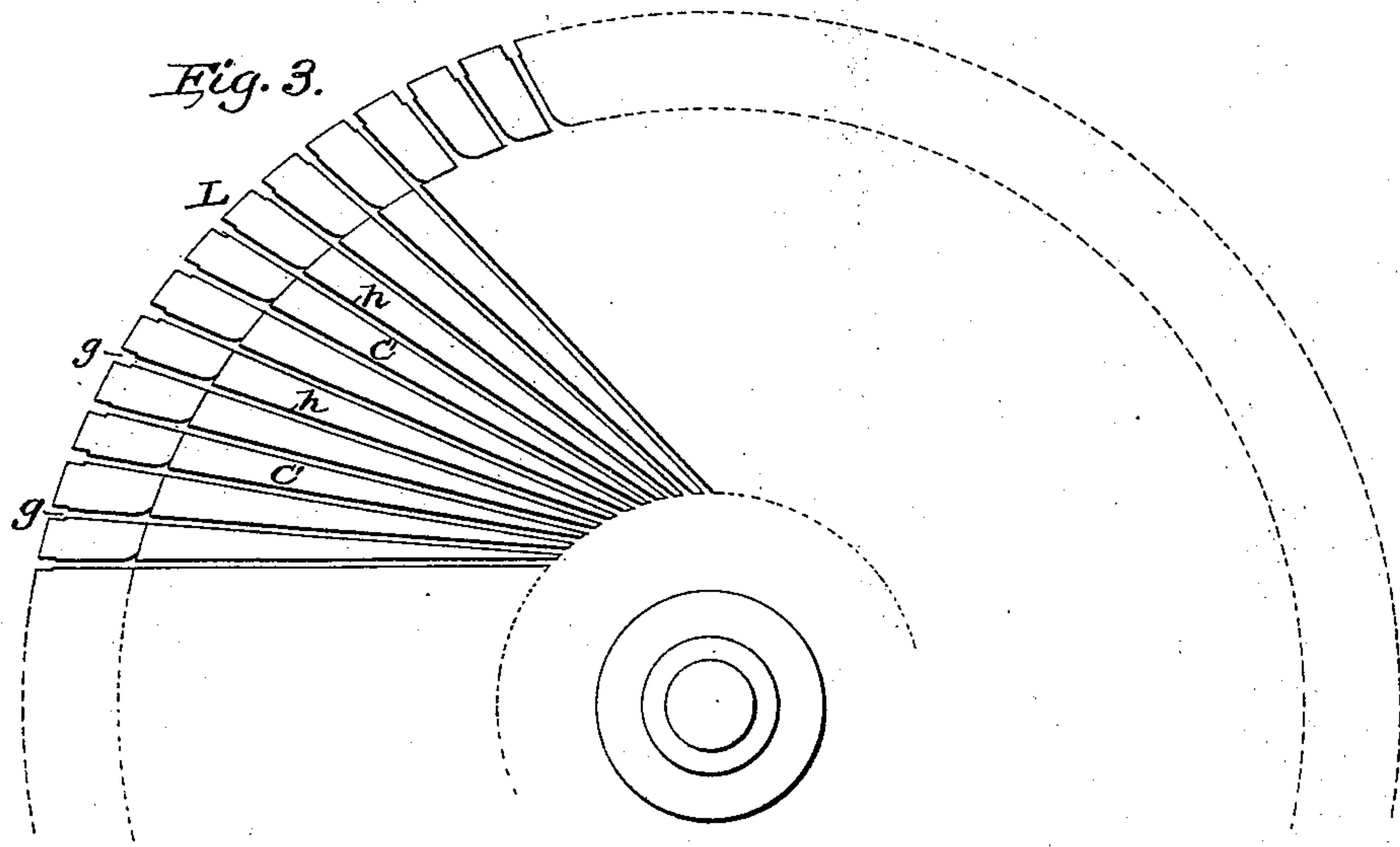
(No Model.)

5 Sheets—Sheet 3.

J. L. McMILLAN.
TYPE DISTRIBUTER.

No. 464,163.

Patented Dec. 1, 1891.



Witnesses

James F. Duhamel
Horace A. Dodge.

Inventor:

John L. McMillan
by Rodger Sone
Attys.

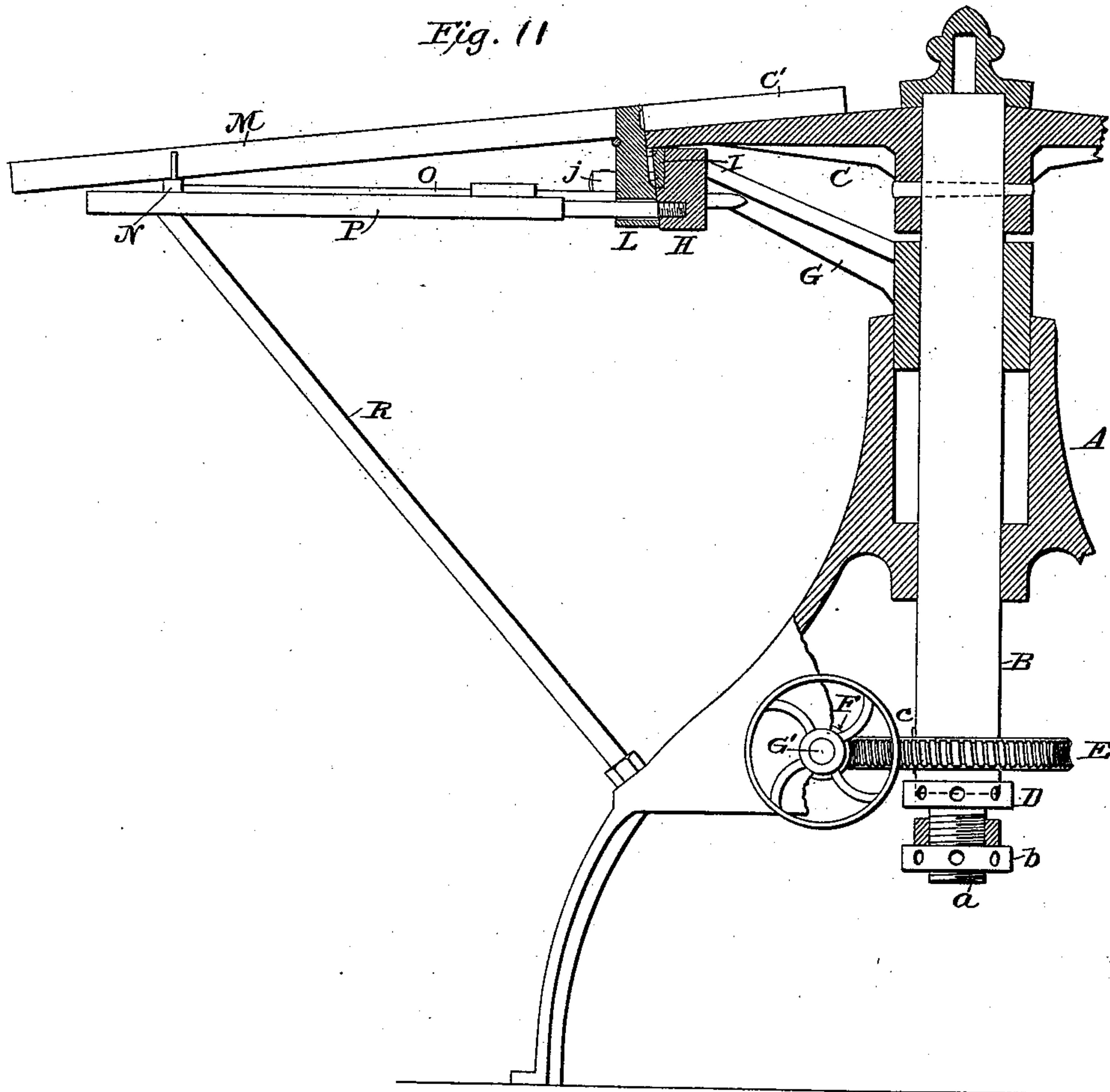
(No Model.)

5 Sheets—Sheet 4.

J. L. McMILLAN.
TYPE DISTRIBUTER.

No. 464,163.

Patented Dec. 1, 1891.



Witnesses:

James F. S. Hamel
Horace A. Dodge.

Inventor:

John L. McMillan,
by Rodger Sone
Attys.

(No Model.)

5 Sheets—Sheet 5.

J. L. McMILLAN.
TYPE DISTRIBUTER.

No. 464,163.

Patented Dec. 1, 1891.

Fig. 12.

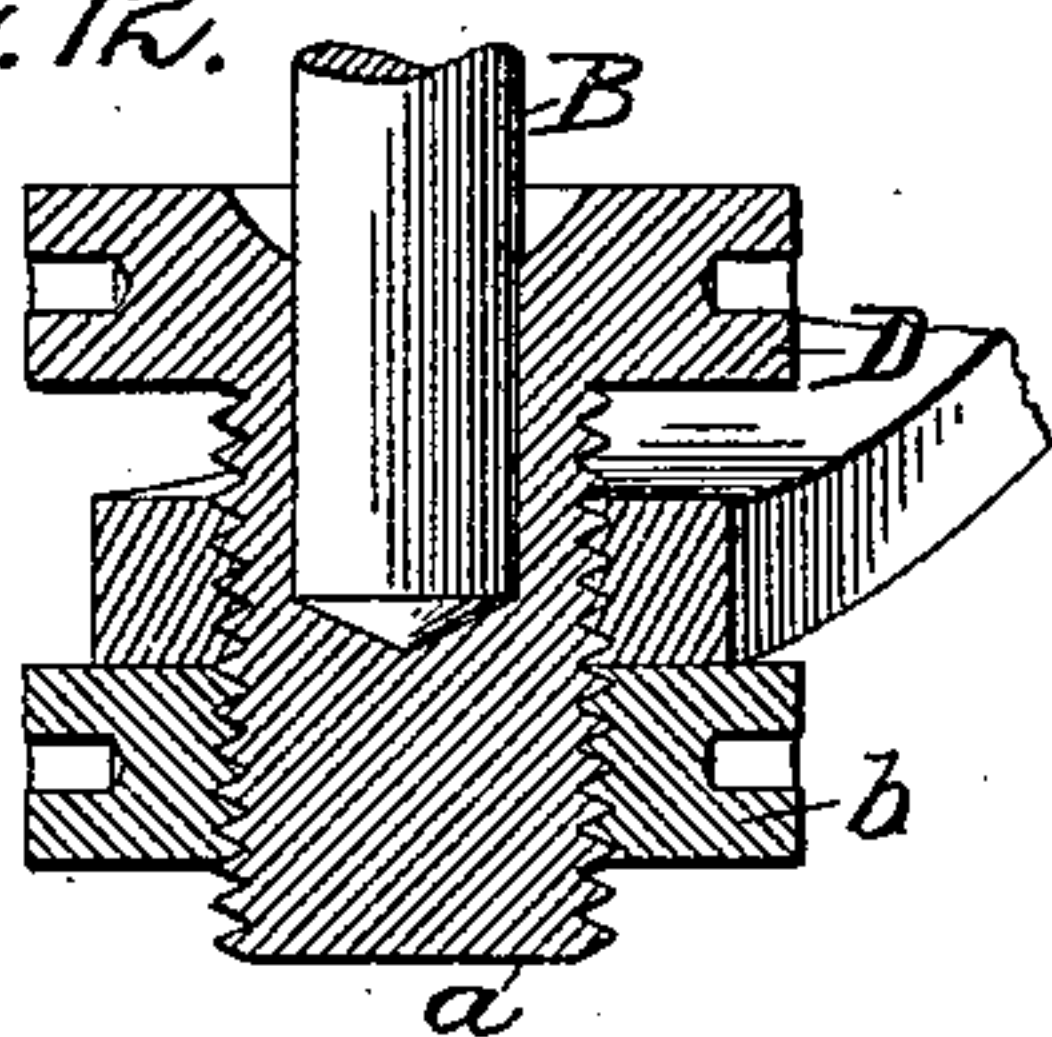


Fig. 13.

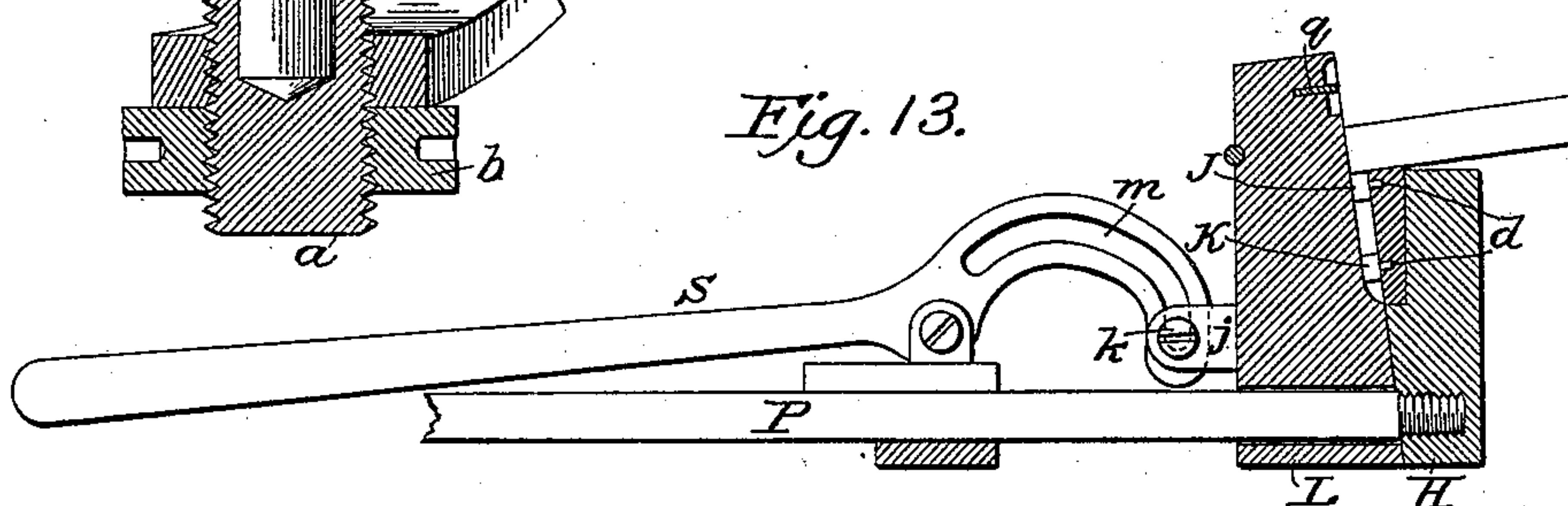


Fig. 14.

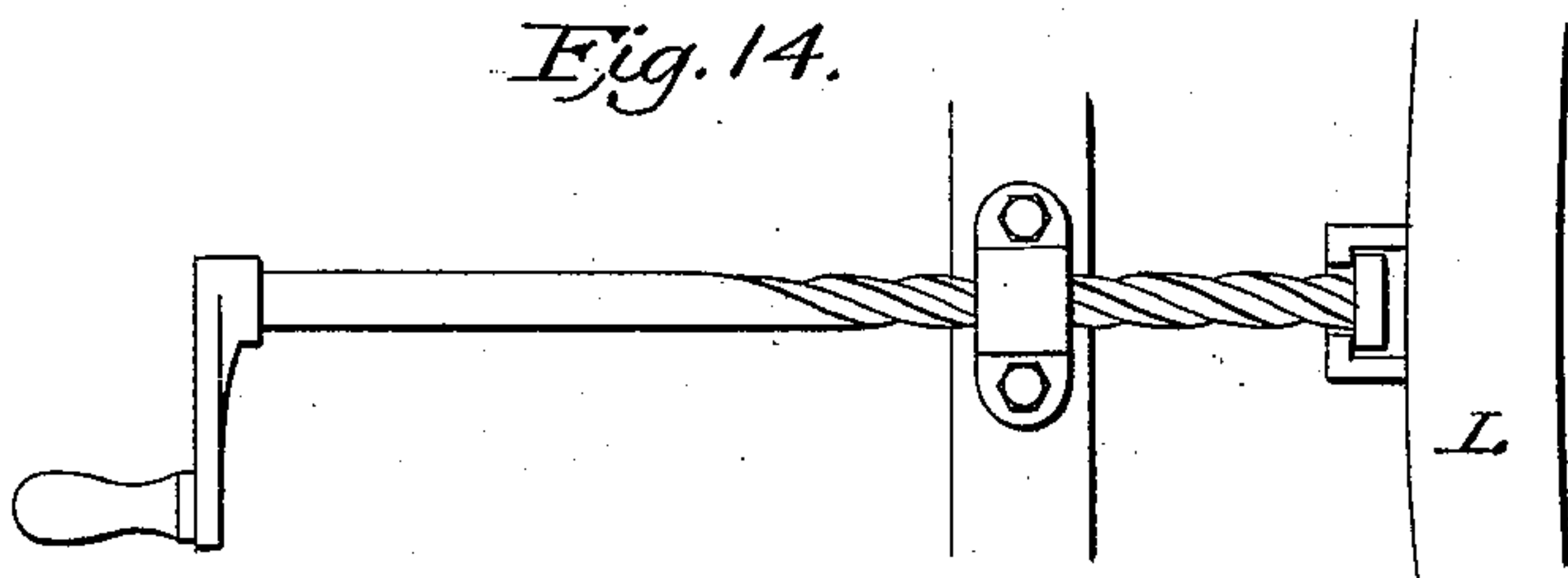
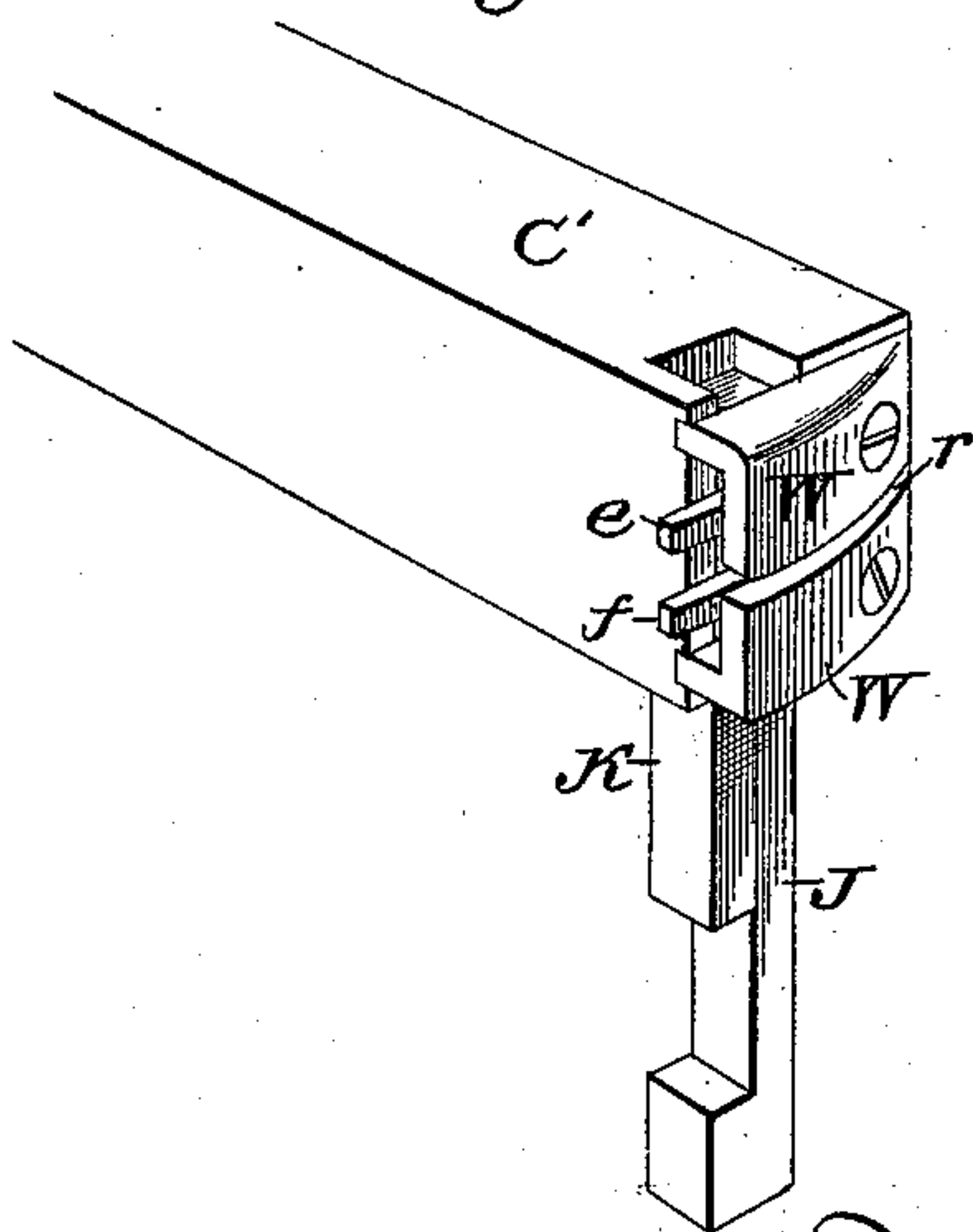


Fig. 15.



Witnesses:

James F. Duhamel
Horace A. Dodge.

Inventor:

John L. McMILLAN,
by Rodgers & Sons,
Attys.

UNITED STATES PATENT OFFICE.

JOHN LOUDON McMILLAN, OF ILION, NEW YORK.

TYPE-DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 464,163, dated December 1, 1891.

Application filed March 31, 1888. Serial No. 269,154. (No model.)

To all whom it may concern:

Be it known that I, JOHN LOUDON McMILLAN, of Ilion, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Type-Distributers, of which the following is a specification.

My invention relates to type-distributing machines of the character set forth in Letters Patent No. 347,627, granted to me August 17, 1886, to which reference may be had for any matters not herein set forth.

Some of the features hereinafter set forth and claimed are in the nature of improvements upon the construction set forth in my aforesaid patent, and others are alternative constructions devised by me prior to the application for said patent and demonstrated by practical tests to be of advantage.

Referring to the accompanying drawings, Figure 1 is a top plan view of a portion of my machine; Fig. 2, a sectional elevation of the same. Figs. 3, 4, 5, 6, 7, 8, 9, and 10 are views illustrating various features and details hereinafter explained; Fig. 11, a vertical sectional view of a part of the machine; Fig. 12, a sectional view of the spindle, step, or bearing; Figs. 13 and 14, views illustrating different but equivalent forms of mechanism for retracting and returning to place the sections of the encircling hoop or band through which the type are ejected; Fig. 15, a perspective view of one of the sector-blocks provided with removable cam-plates W.

The distributor comprises a wheel rotating in a horizontal plane, a hoop or ring encircling said wheel, and guards, fingers, or wards, either fixed or movable, to control the passage of individual types from channels in one of said parts to channels, passages, or spaces in the other, as will be better understood upon reference to said parts in the drawings, in which—

A indicates a strong frame, the legs of which are sufficiently spread to afford due stability, and in which is mounted a vertical shaft or spindle B, which carries at or near its upper end the wheel or disk C. The spindle B has a long bearing in the frame A, which insures its running perfectly true, and its lower end is stepped in a vertically-adjustable cup D, the threaded stem *a* of which is screwed through a cross-bar of frame A,

and is held against accidental turning by means of a jam-nut *b*. The cup D serves to hold a quantity of oil or lubricant sufficient to last for a considerable length of time, thereby insuring the free turning of the spindle therein, and it further serves to collect any oil which may flow down the spindle from its bearing in the upper part of frame A.

E indicates a worm gear-wheel encircling spindle B, and caused to turn therewith through the interposition of a spline or feather *c*, which permits a vertical adjustment of the worm gear-wheel if at any time required. Said wheel may be secured at its proper adjustment either by tightening the key or feather or by means of a set-screw, though such adjustment will rarely be necessary after the parts of the machine are first assembled and adjusted for use. Meshing with the worm-gear E is a worm-wheel or screw F, carried by a shaft G', supported in suitable bearings in frame A and furnished with driving-pulleys, as illustrated, for the purpose of imparting a slow but steady rotation to shaft or spindle B and wheel or disk C.

G indicates a spider or frame, the hub of which is or may be socketed in the upper end of frame A, as illustrated in Fig. 2, or otherwise supported thereon, and which is formed with an annular outer band or hoop H, upon which or upon a band I, secured thereto, rests the outer edge of wheel or disk C. The band I is to be used only in case the machine be made with movable selecting pins, wards, or fingers, and when used is furnished with cam-grooves to receive pins or studs *d*, projecting from blocks J and K, upon which such selecting pins, wards, or fingers *e* and *f* are formed or by which they are carried. The construction and operation of such movable wards or fingers having been explained in detail in my former patent, it is unnecessary to repeat the description here; but it is to be observed that in the present instance the actuating studs or pins *d* of the blocks J and K project inward therefrom instead of outward, as before, the cam ring or band I being in the present case inside instead of outside of the blocks. This change facilitates the removal and replacement of the blocks J and K, and is quite important for that reason. The blocks J and K play in seats cut for them in the pe-

riphery of the disk or wheel, their position being either vertical or approximately so, according to the formation of the disk or wheel C, which may be either horizontal or inclined on its upper face, the drawings representing it inclined, as in practice is preferred, for reasons set forth in my prior patent.

Encircling the hoop or band H and wheel or disk C is a hoop or ring L, formed with passages *g*, registering with channels *h*, formed in the wheel or disk C, the passages and channels being either radial to the axis of the wheel or tangential to a circle concentric with said axis, and which circle may vary considerably in size, though advisably not exceeding a radius of three or four inches. The number of passages *g* in the outer hoop or ring L may be the same as or greater or less than that of the channels *h*, preferably greater, the capacity of the machine being increased proportionately with every increase in the number of such passages.

The wheel C is designed to carry in its channels the lines of type to be distributed, though, as explained in my former patent, the arrangement may be reversed, and instead of the type being ejected from said channels *h* into the passages *g* they may be delivered from the passages *g* into the channels *h*, but not to so great advantage.

The mouths of the passages and channels are guarded by selecting pins, wards, or fingers *e* and *f*, which may be carried by the movable blocks J K, or may be fixed in position at the mouths of the receiving passage or channels, and the form of which may vary considerably. In practice I prefer to employ fixed guards of the form illustrated in Fig. 4—that is to say, consisting of thin projecting lips or wards *e f*, projecting from one of the side walls of the passage or the channel, those for each channel designed for type of a given letter or character being arranged in a different position or different relation from those designed for a type of any other letter or character, as is well understood and usual in this class of machines.

To facilitate the entrance of the type into the passages, channels, or spaces thus guarded and to prolong the period of time during which the passage from the containing to the receiving channel may take place, I cut away the wall of the receiving-channel at the forward or receiving end at that side from which the type approaches it under the travel of the wheel or disk; or, in other words, I round off or bevel that corner of the side wall, as clearly indicated in Fig. 4, and I similarly cut away, round off, or bevel the lips or wards *e* and *f*, as shown in the same figure. The consequence of this construction is that the type begins to leave the containing-channel before said channel comes into alignment with the receiving passage or channel, and is entirely ejected by the time such alignment occurs, if not before, and the danger of cutting, shearing, or marring the type is greatly less-

ened. The outer hoop or band L is formed in separate sections, each of which is independently supported and movable from and toward wheel or disk C, the purpose of such adjustment being to give ready access to the opposing mouths of the channels and passages and to the guards or wards thereof. It is desirable to provide for such movement of the sections of band or hoop L without disturbance or removal of the type-receiving cases M, when such are used, and hence I connect the rear or outer supports N, upon which the cases M rest, by rods O with the sections of hoop or band L, and move them together, thereby preserving the relation of the sections, the supports, and the cases.

The construction and arrangement of these parts will be readily understood upon referring to Figs. 1 and 2, in which is shown a series of bars P, each extending from the hoop or ring H of the spider and having its inner end screwed or otherwise secured in a socket in said hoop or band. These bars are connected by one or more bridge pieces or plates Q and are supported at their outer ends by braces R, seated at their lower ends in sockets in frame A. The plates or pieces Q are formed with tubular guides *i*, through which pass the rods O, which connect the sections of hoop or ring L and the outer case-supports N, these guides serving to direct the movement of said parts and insure their return exactly to position. The outer case-supports N rest and move upon the bars P, which will be of such width as to allow due movement of the outer supporting-bars N upon them without danger of dropping therefrom. Screwed into or otherwise made fast to each section of the hoop or ring L is a stud *j*, into which is screwed the threaded end of an axle pin or bolt *k*, upon which is mounted an anti-friction roller *l*. Pivoted to each of the plates or bridge-pieces Q is a hand-lever S, having its inner end enlarged and formed with a slot *m* eccentric to the pivot about which the lever moves, as shown in Fig. 1, said slot being designed to receive the anti-friction roller *l* of the section of the hoop to which the lever belongs. The outer end of the slot is made concentric with the pivot of the lever for a short distance, in order that there may be no tendency or possibility of the hoop-section moving outward when the lever is thrown to bring that end of the slot opposite the roller, in which position the parts usually remain. Whenever for any reason it becomes desirable to have access to the space between the wheel or disk and the encircling hoop or ring at any point, the section of the hoop within which such point is embraced is drawn back or outward by its lever, the necessary inspection, adjustment, or repair is made, and the section is returned to place. This is a feature of very considerable importance, because it enables the attendant to rearrange the wards or guards or to substitute others, if desired, to remove particles of foreign mat-

ter, or in the event of a type becoming turned or falling out of position it permits the attendant to straighten it with ease and expedition.

5 It is apparent that any equivalent device or means may be substituted for the lever for withdrawing and returning the hoop or ring sections, and that the lever may be arranged to work vertically, as shown in Fig. 13, instead
10 of horizontally, or in any other plane desired. A screw of quick pitch, such as indicated in Fig. 14, may be mentioned as a well-known equivalent of the lever for this purpose.

Having now explained the general construction and arrangement of the parts, a detailed description of the type-wheel or distributing-disk will be given, many of the features of novelty residing therein. As explained in
15 my former patent, the channels or grooves *h* may be cut in the solid body of a disk or wheel, or may be formed by securing to the face of the disk a series of blocks or bars *C'*, of metal or other suitable material, of such
20 form and of such distances apart as to produce a series of intermediate channels *h* of the required width. In practice I prefer to adopt this latter plan because of the greater ease and simplicity of manufacture, the facility it affords of access to the walls of the
30 grooves, and for like practical reasons. In whatever manner formed, the upper edge or angle of one wall of each groove is cut away, forming an inclined face or bevel *n*, as shown in Fig. 5, the purpose of which is to facilitate
35 the introduction of a line of type into the groove or channel. The line of type to be thus introduced has its side face laid upon the bevel face *n*, while its lower edge, formed by the heels of the type, comes against the
40 upright opposite wall of the channel or groove, thereby preventing the individual types from falling out of line. The line of type previously inclined from a vertical position is then straightened up to a vertical plane and
45 dropped into the groove. The bevel *n* of the face thus insures the straightening of the line of type and greatly facilitates its entrance into the groove, enabling the attendant to do with ease, expedition, and certainty what would
50 otherwise require considerable time and be attended with difficulty.

In my former patent I illustrated and described springs working through slots in the bottoms of the grooves to advance the type
55 and their followers; but instead thereof I now employ coiled or helical wire springs *T*, which are seated in grooves *o*, formed in the upright side faces of the channels *h*, as shown in Figs. 5 and 6. The springs *T* bear at one
60 end against a follower *U*, which in turn bears against the rear end of the line of type in the channel and at the other end against a fixed stop *V*, which may be a slug or block extending from the central boss or hub of wheel *C*
65 to and slightly into the rear end of the channel, as shown in Figs. 1 and 2, or any equivalent filling-piece at the rear end of the chan-

nel. By merely lifting the slug or block *V* from its place the spring *T* and the follower *U* are made free to be withdrawn from their
70 channel, which is sometimes desirable or necessary. The follower is represented in Fig. 9, and is formed with a longitudinal rib *p* on one or both sides of a form to fit and freely travel in the grooves *o*, in which the spring *T*
75 is seated. One of the ribs *p* is cut away a short distance from the forward end of the follower, as shown in Fig. 9, and the groove *o*, in which it travels, terminates a short distance from the outer end of the channel-wall,
80 as shown in Fig. 6, thus forming a shoulder or stop, against which the forward end of rib *p* abuts when the follower has advanced the prescribed distance. Inwardly-projecting strips *q* serve to hold or to force back the type
85 while the channels are passing from one point to another at certain parts of their travel, as in my former machine.

In my former patent I showed and described inclined block or cams between the outer ends
90 of the channels to force outward the type liberated from said channels; but, as there represented, these blocks were narrow and bore only at one point upon the type—at or about their mid-length. Such arrangement,
95 though giving good results on the whole, was liable to objection, because admitting of the possibility of a type being thrown forward at one end more than at the other, in which case it would be liable to become cut or broken.
100 I therefore prefer to employ a wide-faced block, or, more properly, a double block or cam *W*, since its face is divided into an upper and a lower part by a slot *r*, formed for the passage of the strips *q*. These blocks bear
105 upon the type above and below their mid-length, and not only prevent tipping thereof, but effectually exclude broken type or other foreign matters from between the feeling points or wards *e f* when these are made
110 movable, as set forth in my former patent. These blocks *W* may be made separate and secured in any convenient manner to the wheel, as illustrated in Fig. 15, or to the sectors *C'* thereof, or they may be integral with
115 the wheel or the sectors, as found convenient, this latter construction being illustrated in Fig. 6.

Under the construction above set forth, the cam ring or hoop *I* being inside instead of
120 outside of the blocks *J K*, it is necessary, or at least advisable, to make provision for holding said blocks in place even when the hoop-sections *L* are drawn away, and for this purpose I employ a guide-pin *X*, the shank or
125 stem of which passes through a hole in the overhanging end of the block *J* and enters a socket in the block *K*, as shown in Fig. 7. The upper end of the guide-pin is either provided with a horizontal plate or arm, perforated to receive a fastening-screw, as in Fig.
130 7, or is bent over and downward, as in Fig. 8, the downwardly-bent end being slightly tapered and driven tightly into a hole or

socket in the wheel or sector-block, and thus retained in place.

It will be seen that in numerous respects the details of construction may be varied more or less. Thus, for instance, instead of the blocks or filling-pieces behind the springs in the channels *h* a vertically-sliding plate seated in grooves may be employed, and instead of making the follower with a continuous rib or ribs, studs or short sectional ribs may be formed thereon. It will also be noted that the beveling or cutting away of the upper edge or angle of one wall of the containing-type channel is a feature applicable to all such channels, whether in a rotary, reciprocating, oscillating, or stationary containing-body. The same is true as to the wards or guards herein described. In some cases I provide one or both sides of the follower with a spring or springs *s* to produce slight friction.

Having thus described my invention, what I claim is—

1. In combination with a main frame A, spindle B, mounted therein, and wheel or disk C, carried by said spindle, and spider G, mounted upon frame A and having a band or hoop H extending beneath the wheel or disk near its outer edge and serving to sustain the same.

2. In combination with a channeled wheel or disk, an encircling hoop or band made in sections, said sections being independently movable from and toward the wheel.

3. In a type-distributing machine, the combination of a channeled rotary disk or wheel, an encircling channeled hoop or band composed of independent sections, and levers or their described equivalents connected with the respective sections and serving to move them from and toward the disk or wheel.

4. In combination with wheel or disk C, hoop or band L, composed of independent sections having studs *k*, bars P, bridge-pieces Q, connecting said bars and provided with tubular guides *i*, rods O, connected with the sections of hoop L, and levers S, pivoted to the bridge-pieces Q and having eccentric slots *m* to receive the studs *k*, all substantially as described and shown.

5. In combination with a distributing wheel or disk and with a sectional receiving hoop or band encircling said wheel, guides for the several sections adapted to sustain them during their movements toward and from the disk and to insure their return to the precise position required.

6. In combination with a distributing-wheel and a sectional receiving hoop or band, guides adapted to support and direct the sections while being moved, and levers, one for each section, serving to recede and advance the sections independently.

7. In combination with a distributing-wheel and with a segmental receiving-section having a stud or roller, a lever provided with an eccentric-slot to receive said stud or roller

and effect the recession and advance of the section.

8. In combination with a distributing-wheel and with a segmental receiving-section having a stud or roller, a lever provided with a slot eccentric to the pivot of the lever through most of its length, but concentric therewith at its outer end, whereby it is adapted to move the segment back and forth and to lock it in place.

9. In combination with a distributing-wheel and an encircling receiving-hoop composed of segmental sections, rods connected with said sections, rests or supports carried by said rods, and receiving type-cases extending from said rests or supports to the segmental sections, substantially as described and shown.

10. In combination with frame A, spindle B, and wheel or disk C, spider G, provided with ring or hoop H, bars P, secured at their inner ends to said ring or hoop, bridge pieces or plates Q, connecting said bars and provided with guides *i*, hoop or ring L, composed of independent sections, each having a stud or roller, rods O, extending from the hoop-sections through the guides *i*, case-supports N, carried by said rods, cases M, extending from supports N to ring-sections L, and levers S, pivoted to bridge-pieces Q and connected with the hoop-sections, all substantially as described and shown.

11. In a type-distributing machine, a wheel provided with a series of blocks or bars arranged at short distances apart and with their proximate faces parallel, each block having one of its upper edges beveled, substantially as shown.

12. In a type-distributing machine, a type-containing wheel consisting of a disk and a series of sector-blocks secured upon said disk with their proximate faces parallel and at proper distance apart to admit a line of type between them, said blocks having their opposing faces grooved, substantially as and for the purpose set forth.

13. In combination with wheel or disk C, having a central hub or boss and channels *h*, springs T, seated in said channels, and filling blocks or slugs V, extending from the hub or boss of the wheel into said channels.

14. The wheel or disk C, provided with a central hub or boss and a channeled body, the channeled portion and the hub being separated by an open space, through which the followers and springs may be introduced or withdrawn.

15. In combination with wheel C, having channels *h*, provided with longitudinal grooves in their side walls, and with a stop-shoulder near the forward end of the channel, a follower seated in said channel and provided with a stop-shoulder to engage with that of the groove.

16. In combination with wheel or body C, having channels *h*, provided with longitudinal grooves *o* in their side walls, followers U,

provided with ribs or projections *p*, the groove of one wall being terminated a short distance from the outer end of the channel, and the rib *p*, which works in said groove, being cut away at the forward end of the follower, substantially as shown and described.

17. In combination with a containing-body and a receiving-body, both provided with type-channels and adapted to be moved one past the other, inclined blocks or cams projecting outward between the ends of the containing-channels and adapted to bear against the type expelled therefrom, both above and below the mid-length of said type.

18. In combination with wheel or disk *C*, having channels *h*, and with encircling hoop *L*, having passages *g*, inclined blocks or cams *W*, having a broad bearing-face to prevent the tipping of a type while pressed by said block.

19. In combination with wheel or disk *C*, having channels *h*, and with hoop or ring *L*,

having passages *g*, detachable cam or block *W*, located between the channels, substantially as shown.

20. The combination of a containing-body and a receiving-body, both provided with type channels or passages, each receiving-passage having the corner of its mouth cut away on the side from which the type approach it, and fixed guards at said mouth also rounded or cut away, substantially as described and shown.

21. In a type-distributing machine, a receiving-body having channels or passages to receive the type, said channels or passages being provided with fixed guards rounded or beveled at their outer corners.

In witness whereof I hereunto set my hand in the presence of two witnesses.

JOHN LOUDON McMILLAN.

Witnesses:

E. MCCLELLAN,

JOHN A. GIBLIN.