

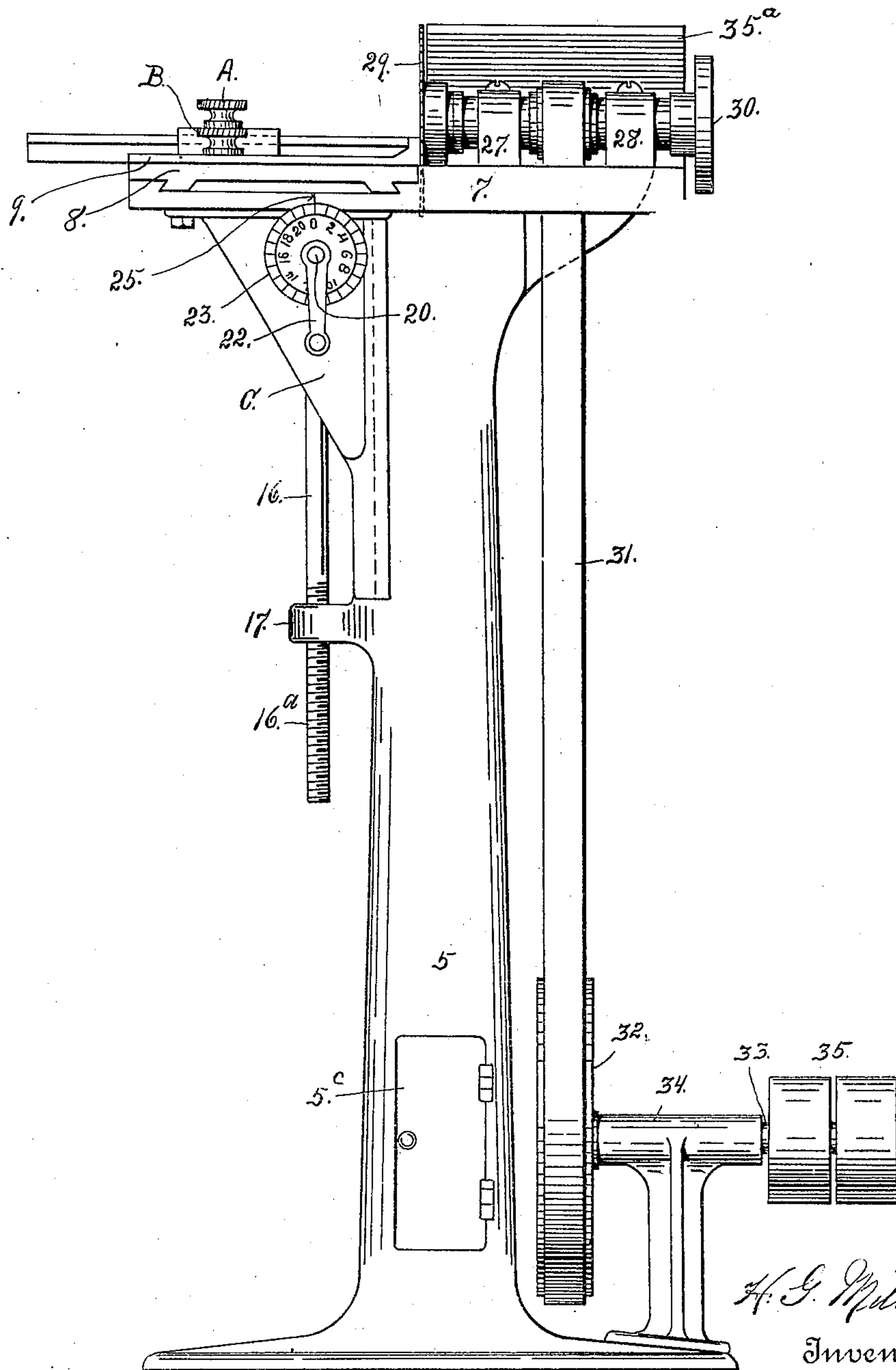
H. G. MILLER.  
METAL SAW.

APPLICATION FILED FEB. 8, 1904. RENEWED OCT. 5, 1908.

921,723.

Patented May 18, 1909.

3 SHEETS—SHEET 1.



Witnesses  
Otto E. Haddock.  
Dena Nelson.

Fig. 1. By *A. G. Miller*  
Attorney

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Inventor

H. G. MILLER.

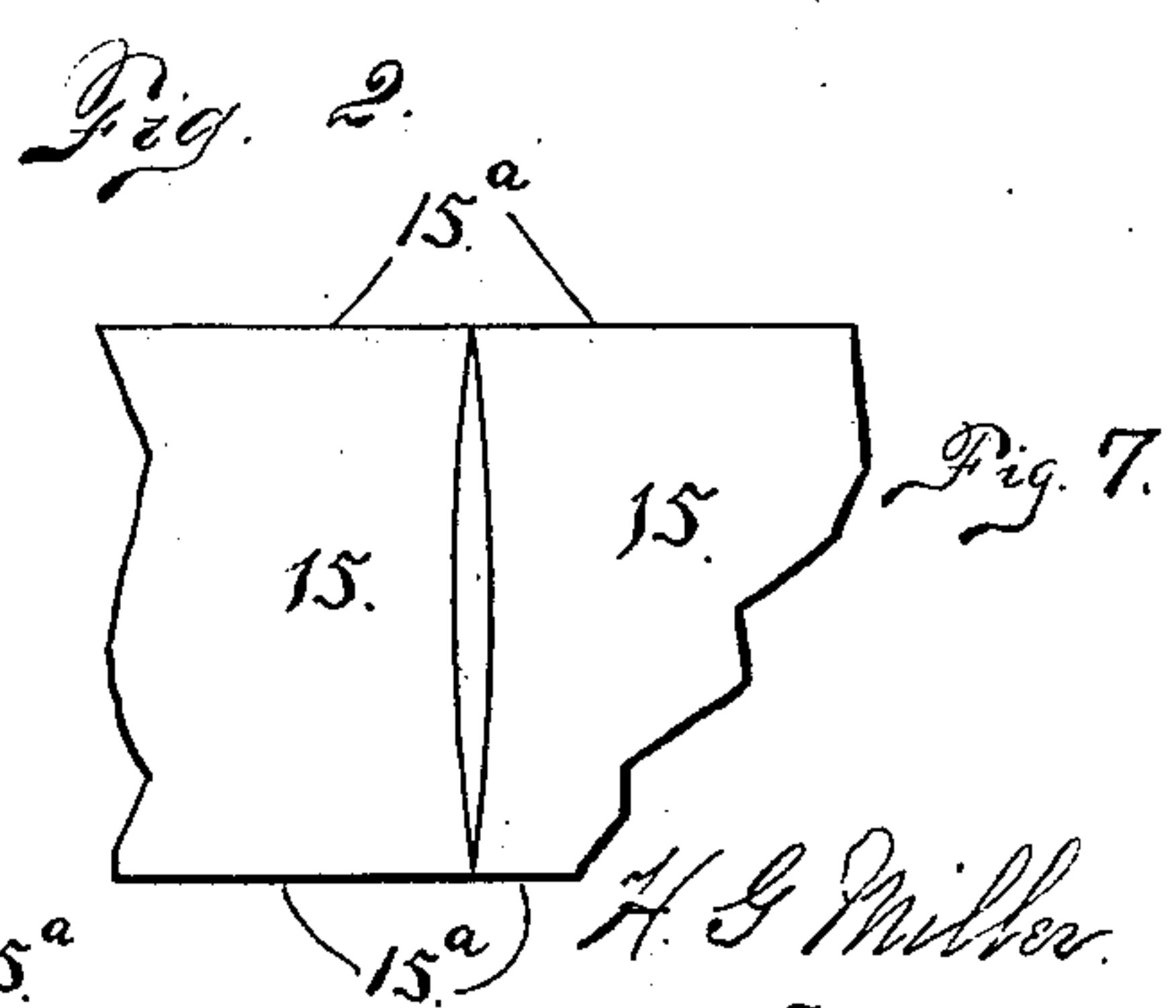
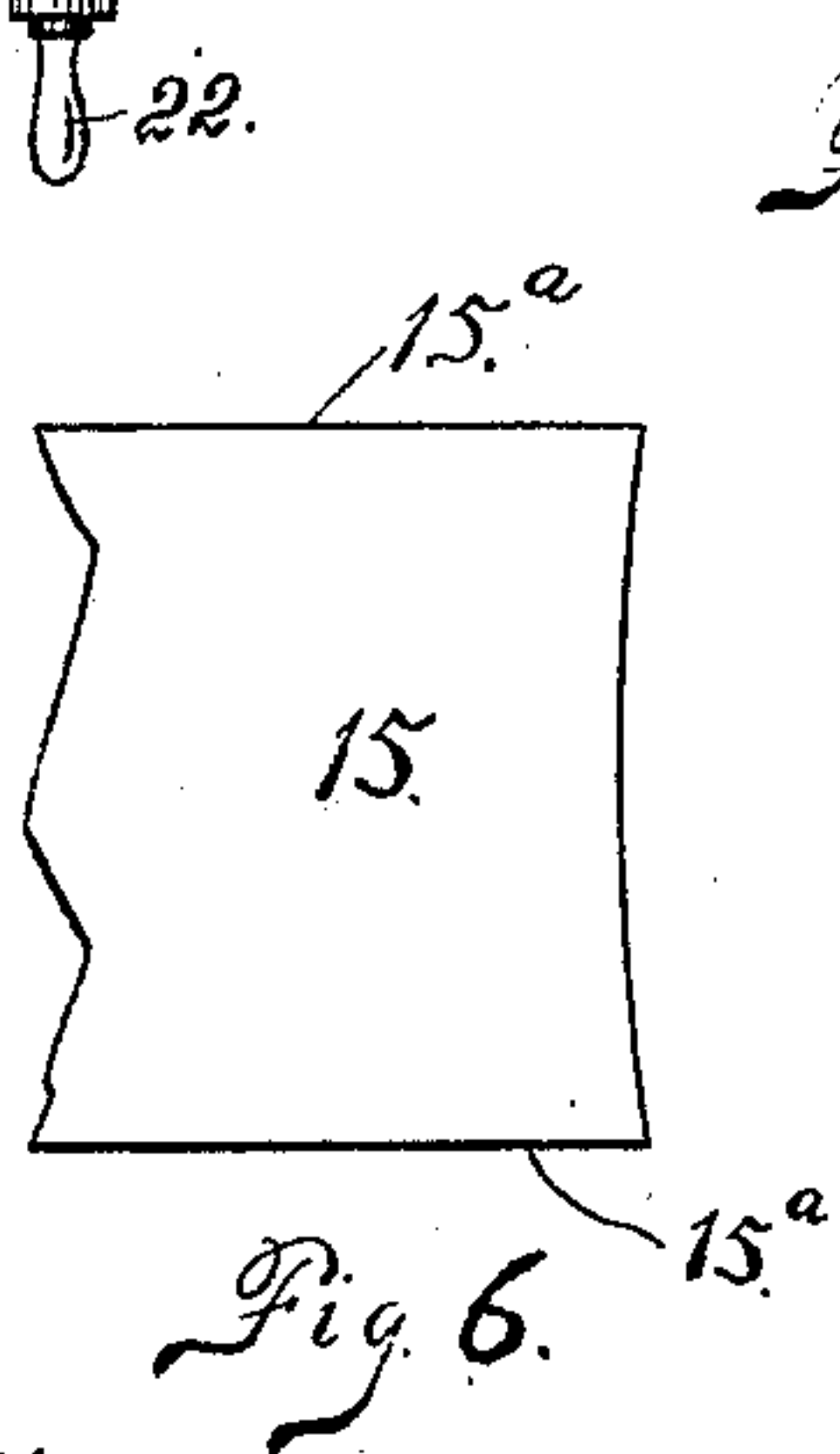
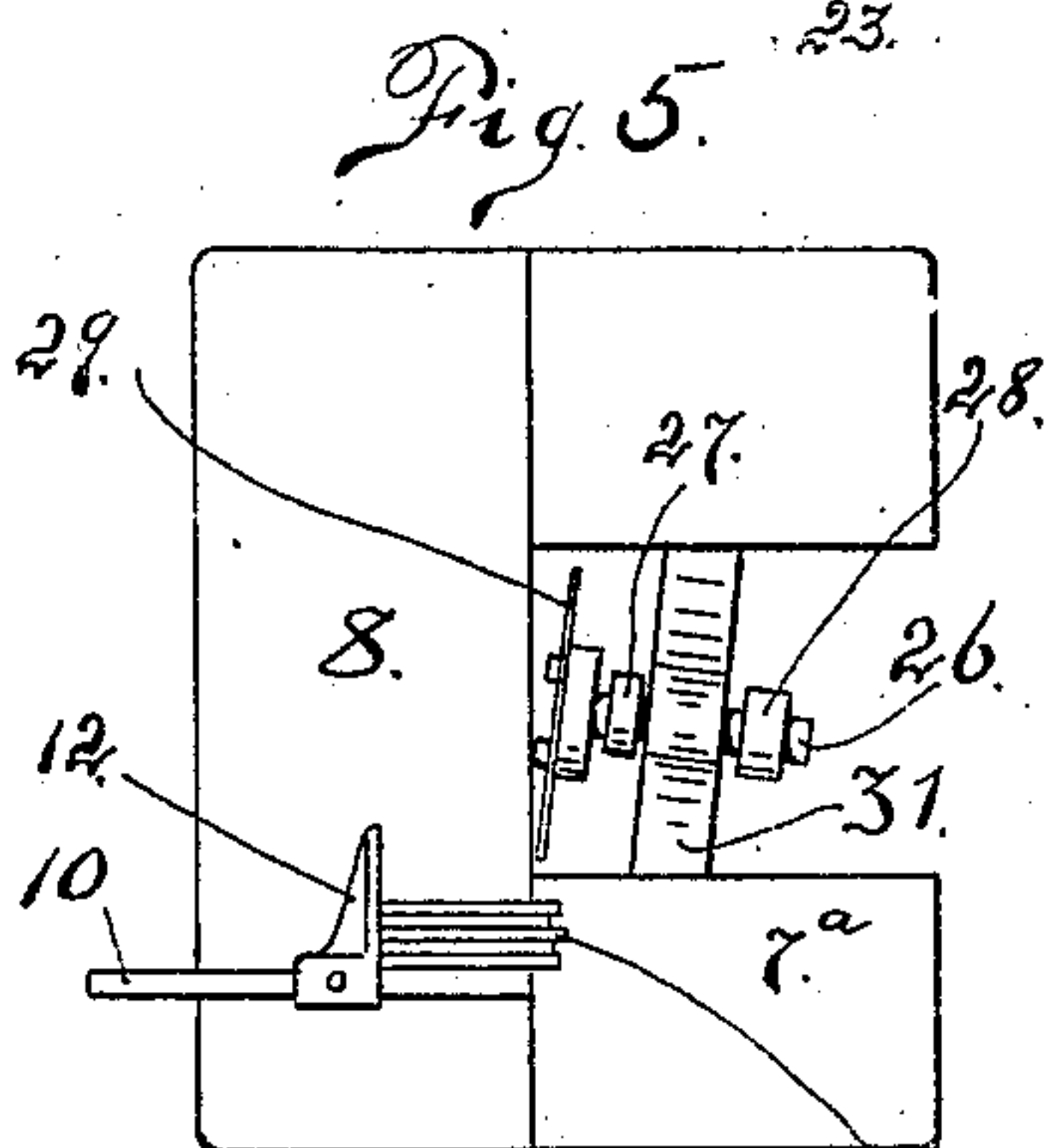
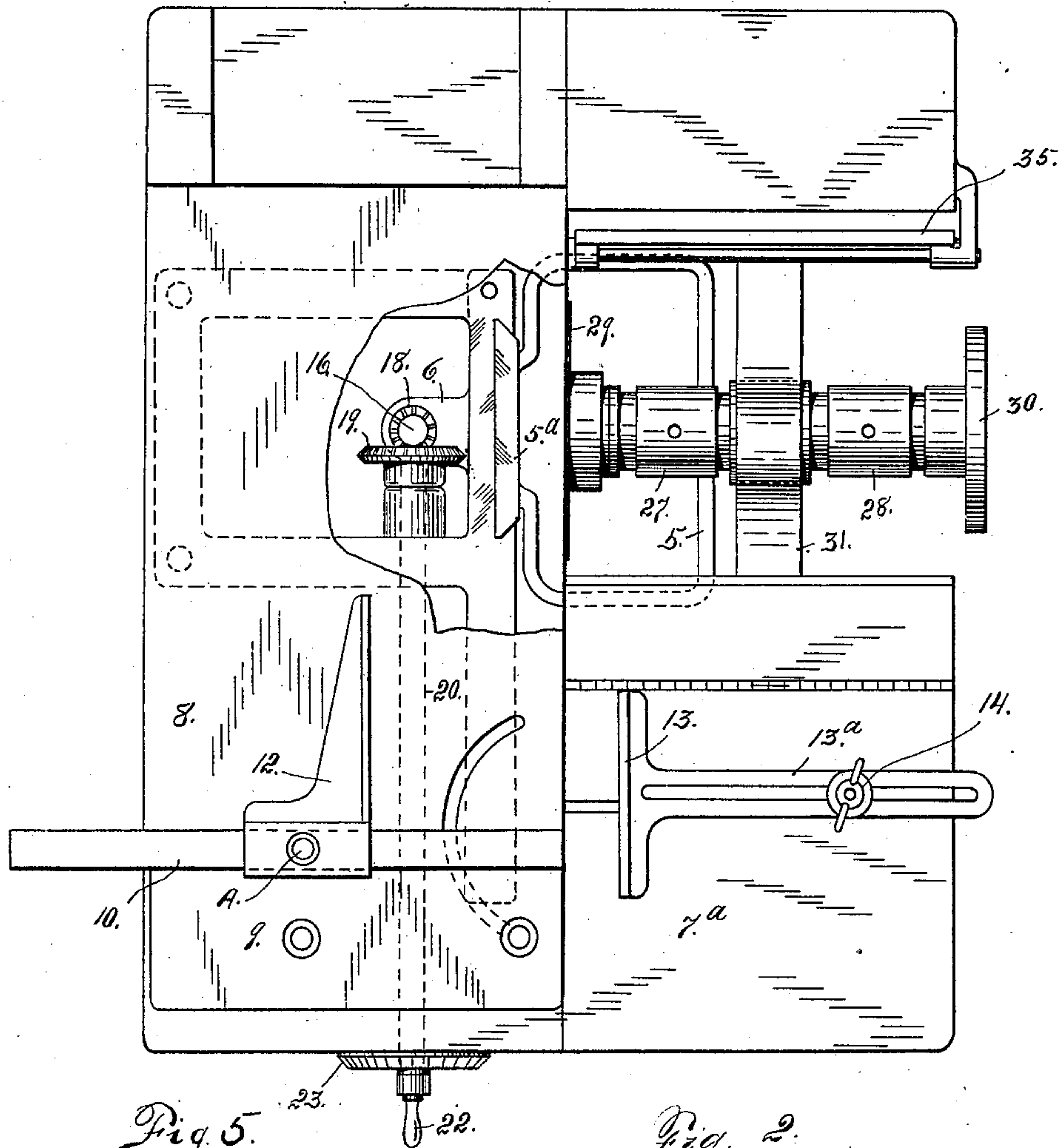
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3 SHEETS—SHEET 2.



Witnesses  
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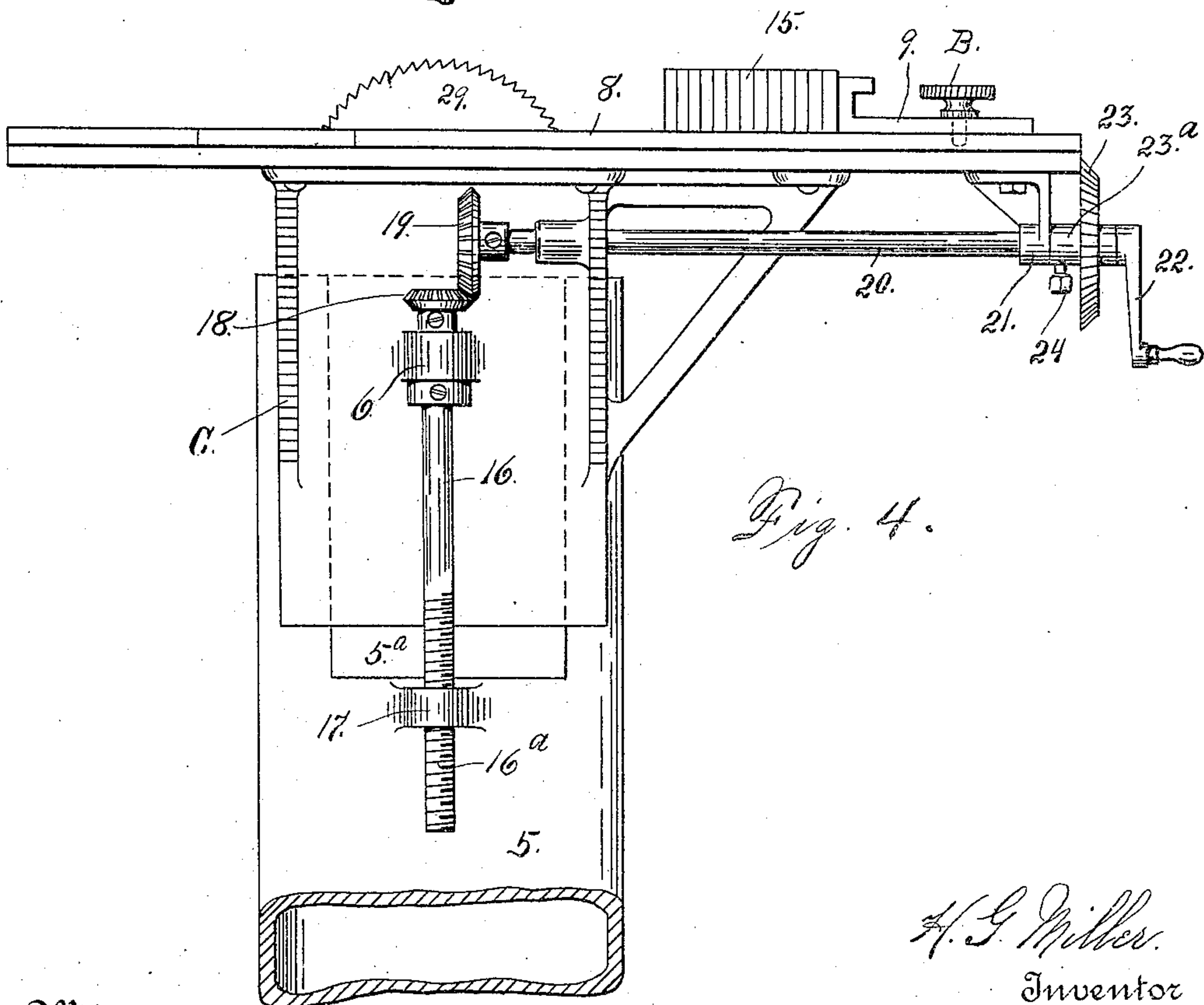
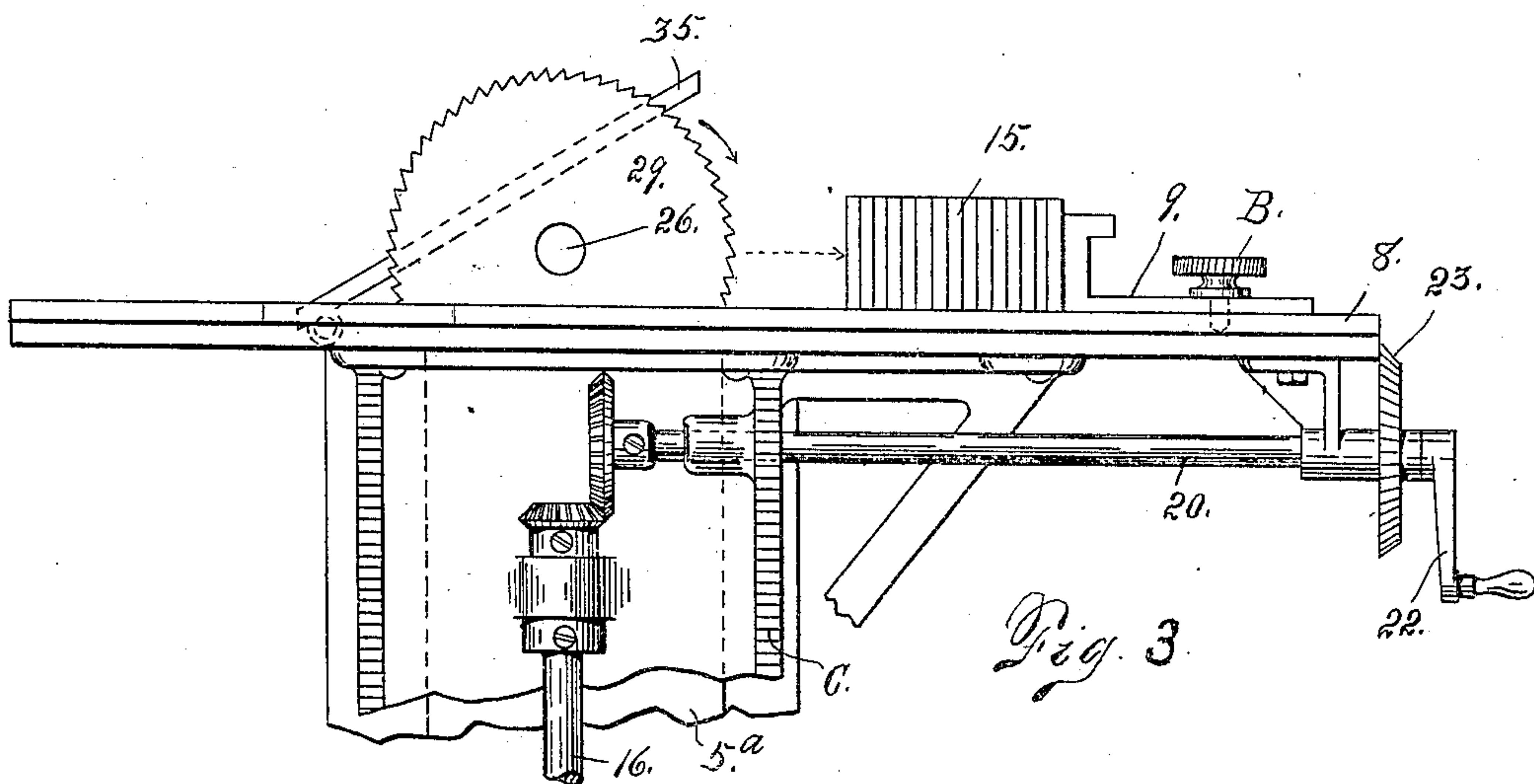
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3 SHEETS—SHEET 3.



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By *Attorney*  
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# UNITED STATES PATENT OFFICE

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## METAL-SAW.

No. 921,723.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed February 8, 1904, Serial No. 192,709. Renewed October 5, 1903. Serial No. 456,222.

To all whom it may concern:

Be it known that I, HARRY G. MILLER, a citizen of the United States of America, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Metal-Saws; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in a novel construction of saw more especially intended for use for sawing metal as linotype slugs, but which may be employed for use in sawing all kinds of metal or other material. This invention relates more especially or specifically to the means for manipulating the table upon which the material to be acted on by the saw is mounted.

An improved feature of the invention consists in the vertical adjustment of this table, whereby the material to be sawed, may be brought in proper relation to the saw, or in the best possible position. It is found in practice that the saw acts most advantageously, upon the material, when a horizontal plane passed through the axis of the saw, cuts the material in its vertical center.

An important object of this invention, is to provide mechanism for the adjustment of the table, whereby this relative position of the saw and the material to be acted on, may be quickly and easily brought about, regardless of the variation in the height of the material to be acted on.

Having briefly outlined my improved construction as well as the function it is intended to perform, I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a side elevation of the complete apparatus. Fig. 2 is a top or plan view of the same with the table partly broken away to disclose the mechanism underneath. Figs. 3 and 4 are front views of the apparatus, showing the table in two different vertical positions with reference to the saw. Fig. 5 is a top view illustrating a peculiar arrangement of the saw for use in connection with certain work. Fig. 6 illustrates the

slightly curved surface of a part cut by the saw when in the position shown in Fig. 5. Fig. 7 shows two abutting pieces of the construction shown in Fig. 6.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a hollow pedestal upon which is slidably mounted, a bracket C supporting a relatively stationary table 7 upon which is slidably mounted an auxiliary table 8, to which is secured a feed plate 9 provided with a rib 10 which is angular in cross section and upon which is movably mounted a guide finger 12, extending lengthwise of the table and adapted to engage the material to be acted on on one side. Upon the opposite side of the table which I will designate as 7<sup>a</sup>, is slidably mounted a straight edge 13, having a slotted arm 13<sup>a</sup> through which a thumb screw 14 passes, whereby the part 13 which is adapted to engage the edge of the material opposite the finger 12, may be adjusted to force the material tightly against the straight edge previously to the beginning of the sawing operation. The distance of the straight edge 13, from the adjacent edge of the movable or auxiliary table part 8, determines the depth or amount of material to be cut from the slugs or other material 15 to be acted on by the saw.

The bracket C is provided with a dovetailed groove which engages a tongue 5<sup>a</sup> of counterpart shape (see Fig. 2) formed on the upper part of the pedestal 5. In a lug 6 formed on the bracket C, is journaled a shaft 16 having a threaded portion 16<sup>a</sup>, which engages a threaded opening formed in a lug 17 integral with the pedestal 5. The upper extremity of the shaft 16 is provided with a beveled gear 18 which meshes with a gear 19 fast on a horizontal shaft 20 journaled at one extremity in the bracket 6, and at the other extremity in a bracket 21 made fast to the relatively stationary part of the table 7. The outer extremity of the shaft 20, is provided with a crank 22, whereby the shafts 16 and 20, may be manipulated for the purpose of raising and lowering the table upon the pedestal. To the outer extremity of the shaft 20 adjacent the crank, is secured a gage wheel 23, provided with a hub 23<sup>a</sup> which is fast to the shaft by a set screw or bolt 24. This gage wheel is graduated or subdivided into points or portions of a pica



the latter being the unit of measurement in typographical matters. Upon this gage wheel are placed numerals designating points, and when the gage wheel is properly set, the zero mark is directly in line with a mark 25 on the adjacent end of the table (see Fig. 1).

Whenever it is desired to adjust the vertical position of the table, the set screw should be loosened, and the gage wheel adjusted to bring the zero mark directly in line with the pointer mark 25 of the table. The gage wheel should then be secured to the shaft 20. Then as the shaft 20 is turned, the gage wheel will indicate the exact elevation imparted to the table, in points or subdivisions of the pica or typographical unit. As shown in the drawing the gears 18 and 19 have such relation to each other, that for every rotation of the shaft 20, the screw shaft 16 will be given two revolutions; and the pitch of the threads 16<sup>a</sup> of the shafts 16, are so regulated with reference to the subdivisions or points indicated on the gage wheel, that the user of the machine is able to determine by the movement of the gage wheel, the exact vertical movement imparted to the table and through the instrumentality of the mechanism already described. In this way an accurate adjustment of the table may be obtained without difficulty and without the exercise of any particular skill or ingenuity. The shaft 26 on which the saw 29 is mounted and made fast, is journaled in two bearings 27 and 28 formed integral with the pedestal 5. Upon the extremity of this shaft remote from the saw 29, is made fast an emery wheel 30; while intermediate the bearings 27 and 28, the shaft is provided with a pulley engaged by a belt 31 passing around a larger pulley 32 mounted on a shaft 33 journaled on a bracket 34 made fast to the base of the pedestal 5. Upon this shaft 33, are mounted fast and loose pulleys 35 of ordinary construction, and by means of which power may be communicated or transmitted from any suitable form of motor, to the shaft 33 and thence to the saw shaft.

In the use and operation of my improved construction, the material to be acted on by the saw the same being designated 15 in Figs. 3 and 4, is placed upon the movable or auxiliary table part 8 and is forced against the finger 12 by the adjustable straight edge 13, the finger 12 being adjusted by means of a set screw A to any extent required. The rib 10 engages the material in the rear, while the finger 12 engages it on one side. The table part 9 is then moved forwardly or toward the saw, and as the latter cuts the slugs 15, the severed parts drop downwardly in the hollow of the pedestal, and may be removed by opening a door 5<sup>c</sup> in the base of the pedestal. Of course previously to moving the material to engagement with the saw, the table is adjusted by turning the crank 22,

so that the material as the slugs 15 is elevated to bring its vertical center, in the same plane with the axis of the saw for reasons heretofore explained. The movable table part 9 may be secured to the stationary table part by a set screw B and by loosening this set screw the table part 9 may be moved back and forth on the main table part as will be readily understood. To the main table part is hinged a part 35<sup>a</sup>, which may be raised, as the table 7 is lowered, to cause the saw shaft to project above or through the opening in the table. However, as the table is raised to a sufficient height, the hinged table part 35, may be lowered to occupy a position above the saw shaft and its bearings, thus closing the opening in the table if desired and concealing the saw shaft mechanism beneath.

In the sawing of some kinds of material, it is desirable that the sawed edges be formed slightly concave as shown in Fig. 6 so that when two of these abutting surfaces are brought together as shown in Fig. 7 there will be a slight space between the outer contact points. This is for the purpose of allowing the two parts to come together so that a perfectly tight joint may be formed on either of the surfaces corresponding with the contact points of the pieces. Where these pieces are sawed on a perfectly straight line, it is difficult to bring these straight edges together without leaving a mark to indicate the division, because of slight particles of dust or dirt which usually adhere to the said contact edges. When the parts have their edges slightly curved as shown in Figs. 6 and 7, these particles of dirt or dust will be either shoved or crowded into the central opening between the contact points, or crowded beyond or outside of one of the surfaces adjacent the contact points. In any event a perfectly tight joint or perfect contact will be formed by the two abutting parts, whereby it becomes possible as in printing to make an impression which does not indicate the joint. This is an important feature in this class of work. In Figs. 5, 6 and 7, the views are all exaggerated for the purpose of explaining the principle. The saw would never be set, forming an angle with the line of travel of the work, as great as that indicated in Fig. 5, nor would the curve of the sawed edge of the piece cut probably be ever as great as shown in Figs. 6 and 7. Indeed in views shown on the scale of the other figures of the drawing, this angular position of the saw would not be visible and is therefore not indicated in the other views.

Assuming that the parts shown in Figs. 6 and 7 are the same as the parts designated 15 in Figs. 3, 4 and 5, and further assuming that the said parts stand edgewise when acted on by the saw, and that the center of the saw is in line with the center of the



pieces 15 when standing edgewise, it is evident that the surface cut by the saw will be curved as indicated in Figs. 6 and 7. In these last named views the edges designated 15<sup>a</sup> correspond with the top and bottom edges of the parts 15 in Figs. 3, 4 and 5. The foregoing result is accomplished by arranging the boxes 28 and the shaft 26 so that the axis of the shaft forms oblique angles with the travel of the table part 8 carrying the material to be acted on by the saw. Furthermore, in trimming linotype slugs, or the like, the rear end of the saw has a tendency to kick the work out of position. Also, where trimmer knives or projections, as illustrated at 29<sup>a</sup>, Fig. 5, are used, the rotating knives, as they move upwardly with the saw, will throw the slugs out of place. By placing the saw obliquely with the travel of the work table, the rear trimmer knives are thrown so far out of the line of travel of the slug that they do not hit the slug, and therefore do not tend to kick or throw the work out of the work holder.

Having thus described my invention, what I claim is:

1. In a rotary saw mechanism, the combination with a support, of a table carried thereby and movable longitudinally, and a rotary saw set at an oblique angle to the direction of travel of said table.

2. In a rotary saw mechanism, the combination with a support, of a table carried thereby and movable longitudinally, and a rotary saw mounted obliquely to the direction of travel of said table and having its axis parallel with the top of said table.

3. In a rotary saw mechanism, the combination with a support adjustable vertically, of a table carried thereby and movable longitudinally, and a fixed rotary saw arranged to

diverge from said table in a direction from front to rear and having its axis parallel with the top of said table.

4. The combination with a support provided with bearings, of a shaft journaled in said bearings and carrying a rotary saw, a table vertically movable on said support and provided with an opening large enough to permit the shaft bearing to pass therethrough when the table is sufficiently lowered, and a plate hinged to said table and adapted to close the opening therein above the shaft bearings when the table is raised sufficiently to allow the hinged plate to clear the bearings.

5. In a rotary saw mechanism, the combination with a support, of a table carried thereby and movable longitudinally, a rotary saw having trimmers projecting beyond the face thereof set at an oblique angle to the direction of travel of said table.

6. The combination with a support, of a saw-carrying shaft carried by the support, a table mounted on the support, said shaft and table having a relative vertical movement, the table being provided with an opening large enough to permit the shaft bearings to pass therethrough when the relative movement between the shaft and the table causes the shaft to project beyond the top of the table, and a plate adapted to close said opening above the shaft when the relative movement between the shaft and the plate causes the shaft to be below the table.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY G. MILLER.

Witnesses:

DENA NELSON,  
A. J. O'BRIEN.