

No. 671,910.

H. G. MILLER & J. L. GARD.

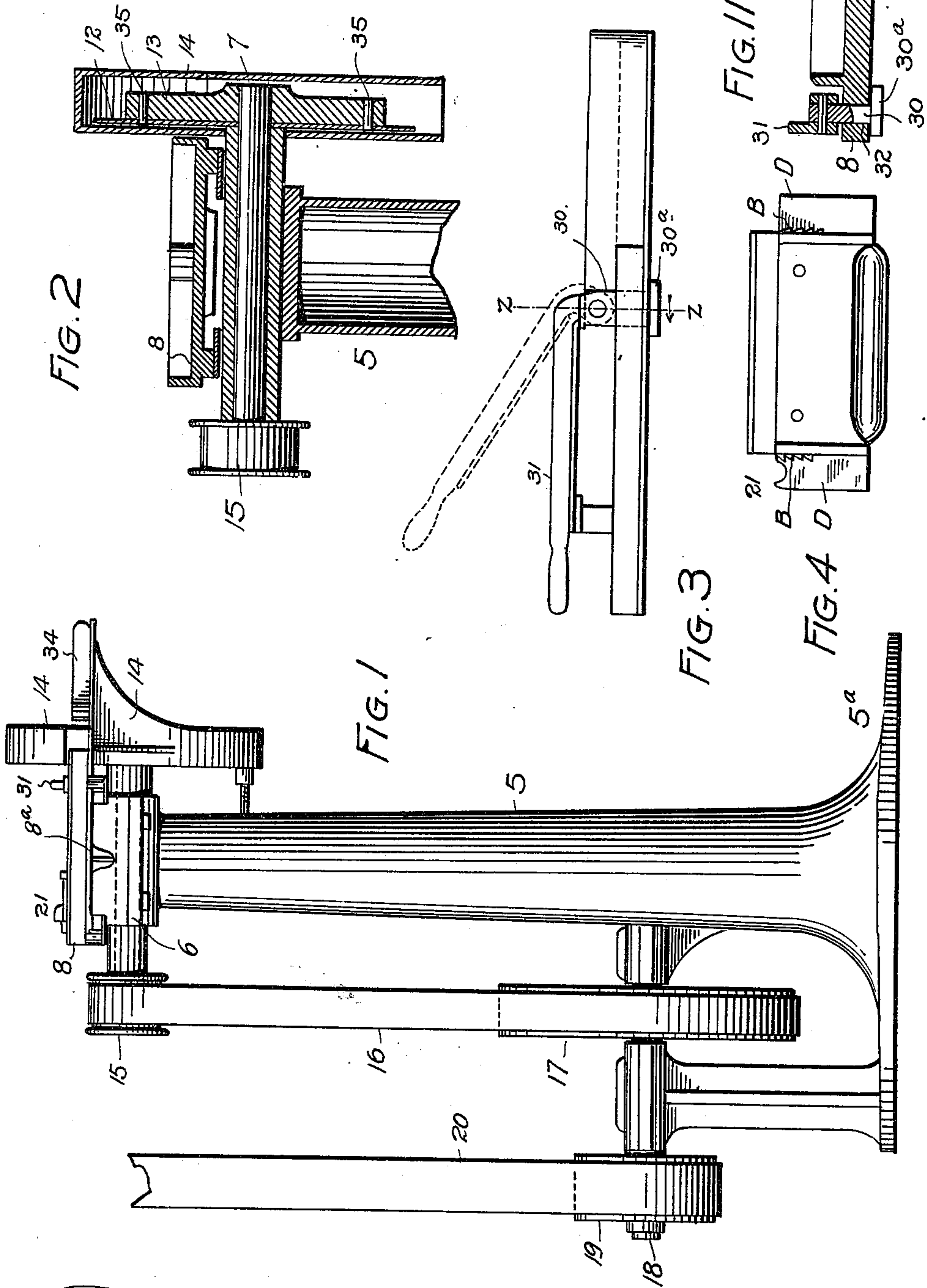
Patented Apr. 9, 1901.

METAL SAW.

(Application filed Apr. 22, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
*Nellie H. Daniels*

Inventors,  
H. G. Miller.  
J. L. Gard.  
By *Allen Attorney*

No. 671,910.

Patented Apr. 9, 1901.

H. G. MILLER & J. L. GARD.

METAL SAW.

(Application filed Apr. 22, 1899.)

(No Model.)

2 Sheets—Sheet 2.

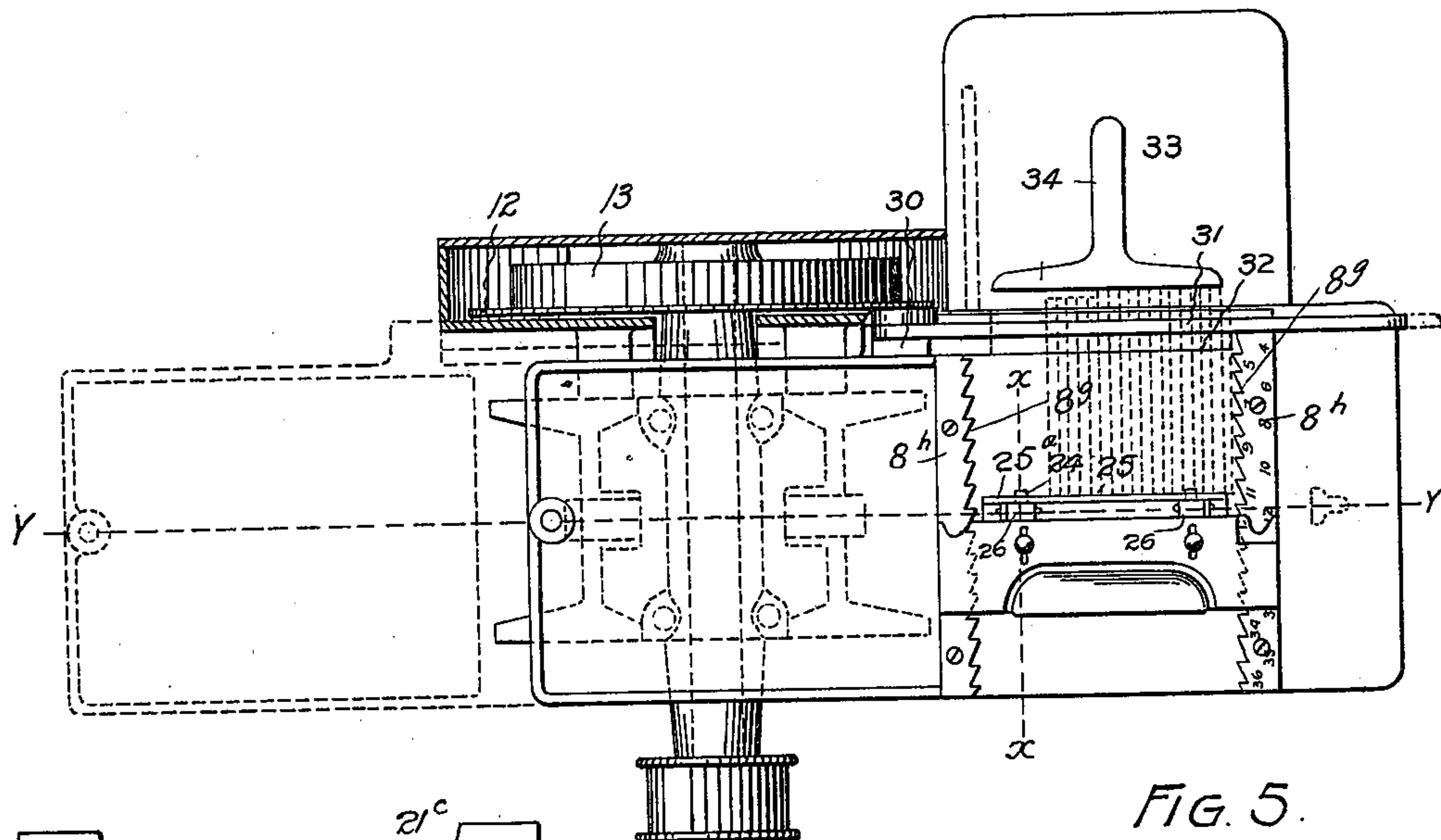


FIG. 5.

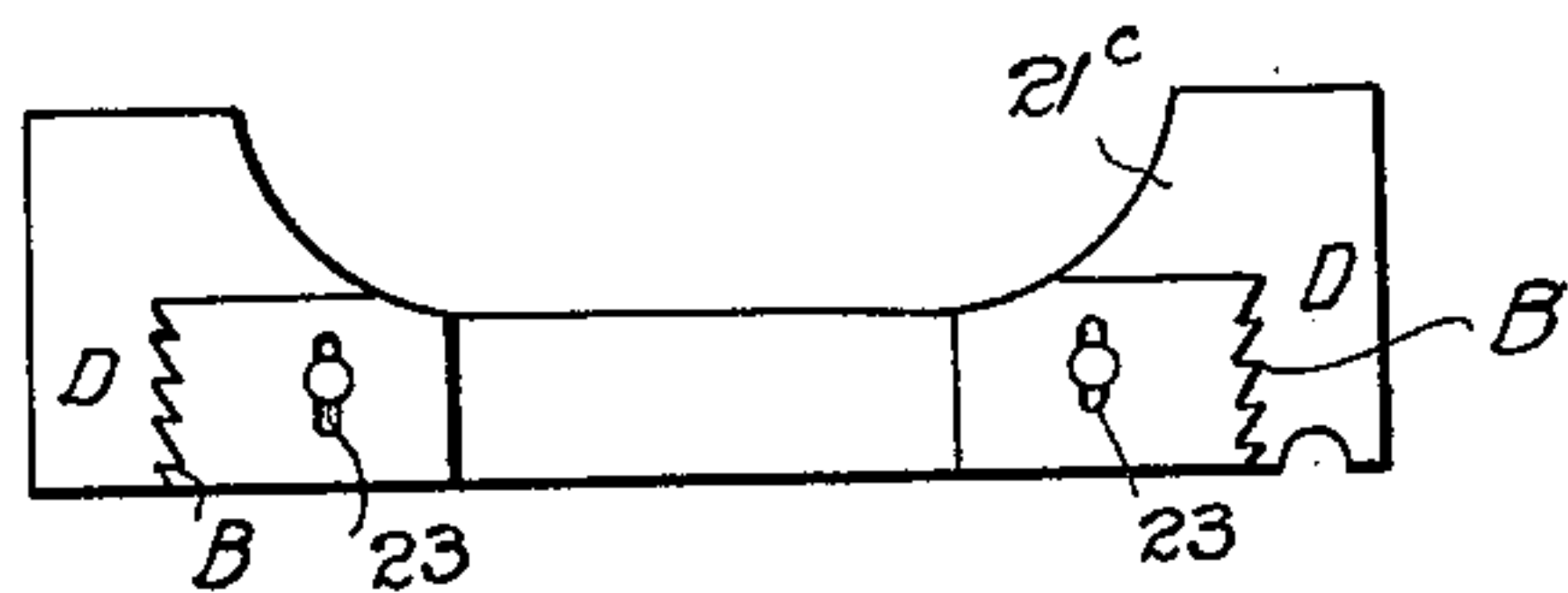


FIG. 9.

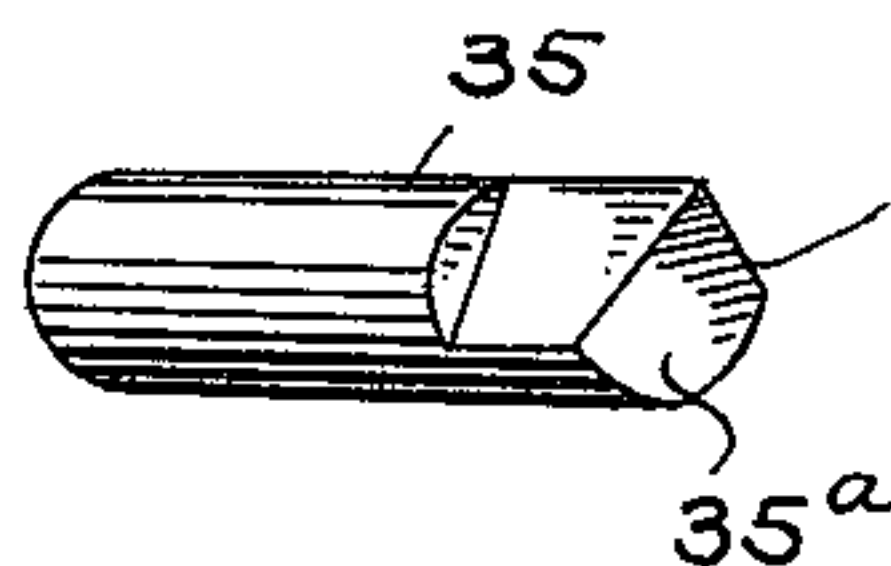


FIG. 12.

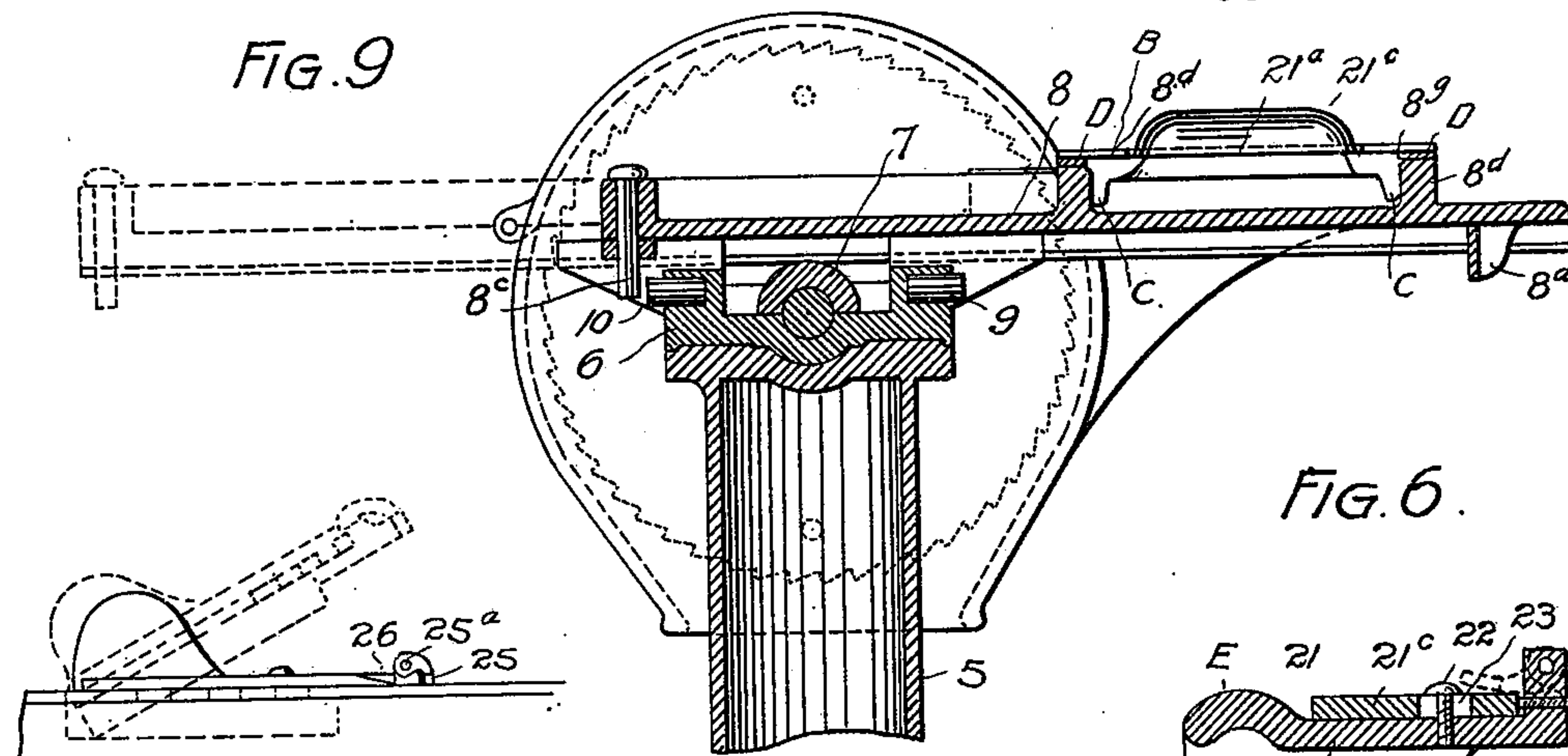


FIG. 6.

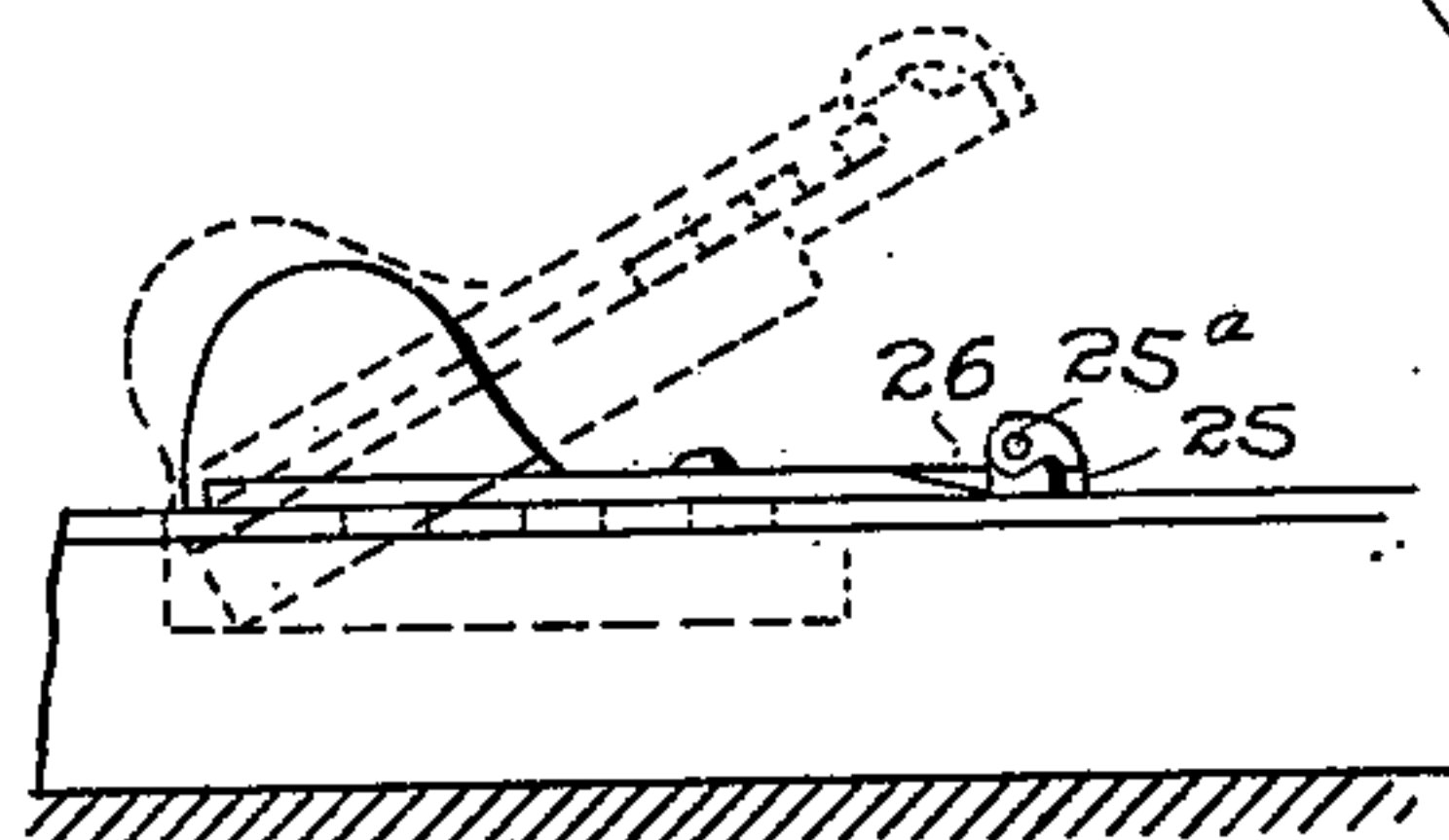


FIG. 8.

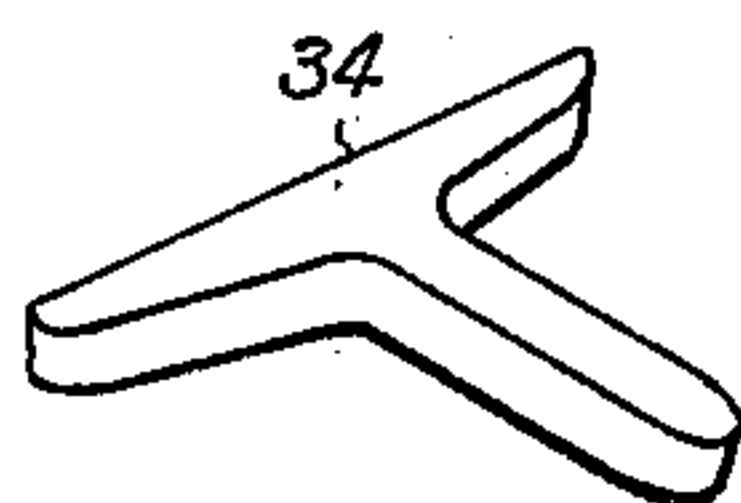


FIG. 10.

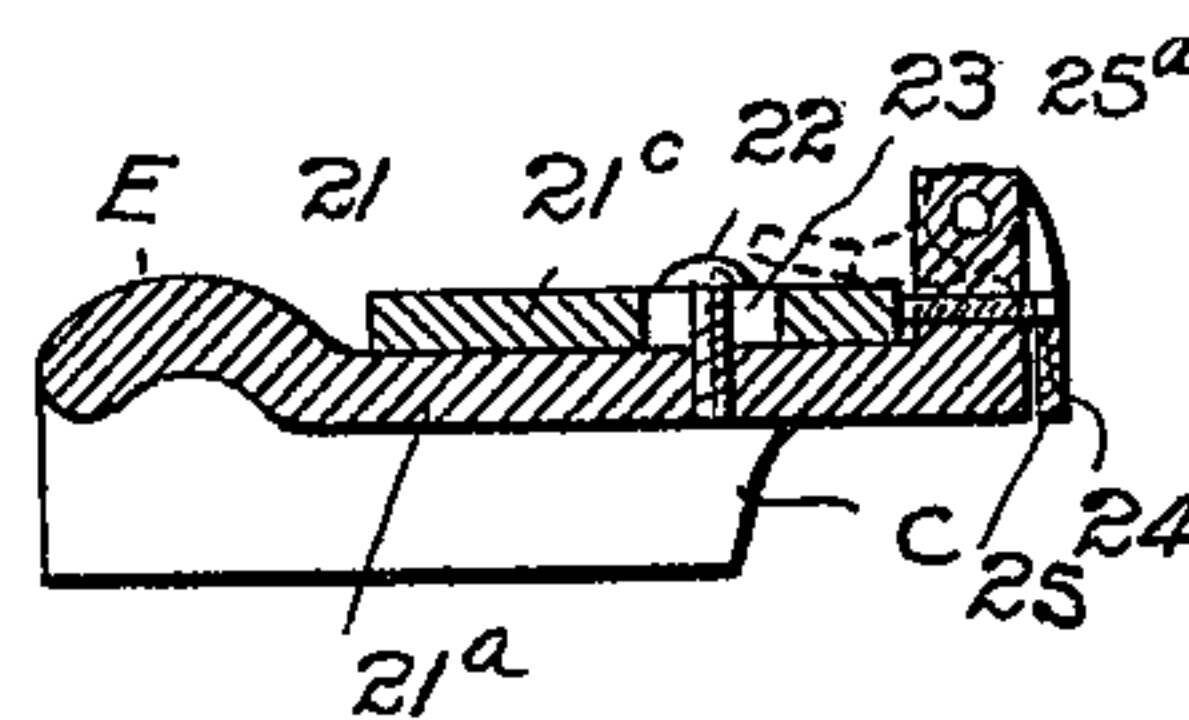


FIG. 7.

Witnesses  
G. J. Belland  
Nellie G. Daniels

By the Attorney

Inventors  
H. G. Miller  
J. L. Gard



# UNITED STATES PATENT OFFICE.

HARRY G. MILLER AND JOSEPH L. GARD, OF DENVER, COLORADO; SAID  
GARD ASSIGNOR TO SAID MILLER.

## METAL-SAW.

SPECIFICATION forming part of Letters Patent No. 671,910, dated April 9, 1901.

Application filed April 22, 1899. Serial No. 714,052. (No model.)

*To all whom it may concern:*

Be it known that we, HARRY G. MILLER and JOSEPH L. GARD, citizens of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Metal-Saws; and we 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.

Our invention relates to improvements in metal-saws specially intended for sawing off the blank extensions of linotype-slugs. When, for instance, the matter to be printed requires lines less than the width of the column in length, the matrices are assembled according to the length of the lines required and the lines of type molded on the slugs do not extend the entire length of the slugs, which I will assume are the width of the column in length. The blank extensions of these slugs must be cut off to make room for the plates, for instance, from which the adjoining matter is to be printed. Our object is to provide an apparatus whereby this cutting off of the blank slug extensions may be satisfactorily accomplished; and to this end the invention consists of the features hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a front elevation of our improved apparatus. Fig. 2 is a vertical section taken through the working parts, which are shown on a larger scale. Fig. 3 is a side elevation of the movable table or carriage, showing the sliding block and lever-arm for holding the bunch of slugs in place during the sawing operation. Fig. 4 is an underneath view of the gage employed in accurately adjusting the slugs lengthwise preparatory to sawing. Fig. 5 is a top view of the apparatus, the forward position of the table being indicated by dotted lines. Fig. 6 is a section taken on the line Y Y, Fig. 5, the gage being shown in elevation. Fig. 7 is

a section taken on the line X X, Fig. 5. Fig. 8 is a front view of the table, showing the gage mounted thereon, which is illustrated in two positions, one being indicated by dotted lines. Fig. 9 is an underneath view of the upper adjustable part of the gage. Fig. 10 is a perspective view of the batter or the device employed in adjusting the slug ends opposite the gage. Fig. 11 is a section taken on the line Z Z, Fig. 3, looking in the direction indicated by the arrow. Fig. 12 is a perspective detail view of one of the trimmer-pins.

Similar reference characters indicating corresponding parts in these views, let the numeral 5 designate an upright column, to the top of which is secured a cap-plate 6, in which is journaled a shaft 7. Slidingly mounted on the cap-plate 6, above the journal-box, is a table 8, provided with a forward depending lug 8<sup>a</sup> and a rearward depending projection 8<sup>c</sup>, which are respectively adapted to engage stops 9 and 10, mounted on the plate 6, whereby the travel of the table both forward and backward is limited.

On one extremity of the shaft 7 is mounted and made fast a toothed disk 12, forming a rotatable saw. The disk proper consists of a thin plate of steel. It is further reinforced by a heavy washer 13, also mounted on the shaft and covering the greater portion of the outer surface of the disk, whereby the latter is made perfectly rigid during the sawing operation. This reinforcing-washer is an important feature, since without this auxiliary feature the thin disk is not sufficiently rigid to insure the cutting of the slugs in a plane parallel with the face of the gage, since the resistance offered by the slugs will cause the thin saw-blade to bend, and therefore deviate from a right line. By reason of the fact that the slug ends drop as they are cut through we have found it practicable to employ a reinforcing-washer covering all but a narrow strip of the saw-blade adjacent the cutting-teeth. Hence our saw, while being as thin as required, is held to its work, which is performed with the greatest accuracy. The saw is inclosed by a housing 14, which is mounted on the frame in any suitable manner and eliminates every element of danger incident to working around the saw by making it impossible



for the operator to come in contact with the teeth and at the same time preventing the cuttings from flying about.

The extremity of the shaft 7 remote from the saw is provided with a pulley 15, which may be connected by a belt 16 with a pulley 17, mounted on a shaft 18, provided with another pulley 19, and connected, by means of a belt 20, with a line-shaft (not shown) for operating the saw.

The front part of the table 8 is provided with two transverse upwardly-projecting parallel flanges 8<sup>d</sup>, provided with top plates 8<sup>h</sup>, secured by screws. Upon each of these plates 8<sup>h</sup> is formed a row of ratchet-teeth 8<sup>g</sup>, arranged to cooperate with teeth formed on the gage 21, which is composed of two parts 21<sup>a</sup> and 21<sup>c</sup>.

The base part 21<sup>a</sup> of the gage has two depending flanges C, which project downward between the flanges 8<sup>d</sup> of the table. The upper part 21<sup>c</sup> of the gage is connected with the base by screws 22, passing through slots 23, whereby the part 21<sup>c</sup> becomes adjustable on the base by means of set-screws 24. Upon the part 21<sup>c</sup> of the gage are formed two rows B of ratchet-teeth, arranged to cooperate with the teeth 8<sup>g</sup> of the table. The ratchet-teeth B and 8<sup>g</sup> are formed with reference to an adjustment whereby the slugs are cut to a certain number of ems or picas in length. If a finer or closer measurement than this is required, we employ a thin metal strip 25, having upwardly-projecting arms 25<sup>a</sup>, hinged to lugs 26, formed on top of the gage-plate 21<sup>a</sup> and located in front of the plate 21<sup>c</sup>. When in use, this strip occupies a position in front of the base 21<sup>a</sup> and adjacent the slugs. When not in use, it is turned up out of the way or to the position shown by dotted lines in Fig. 7. The gage-plate 21<sup>c</sup> is provided with extensions D, which rest upon the ratchet-plates 8<sup>h</sup> of the table. The base of the gage is provided with a handhold E, whereby the front or toothed portion of the gage may be raised to the position shown by dotted lines in Fig. 8, whereby the teeth B of the gage are disconnected from the teeth 8<sup>g</sup> of the table, allowing the gage to be moved back and forth at will.

The tops of the plates 8<sup>h</sup> are provided with numerals, whereby the length of the slugs may be readily measured in picas or ems.

To facilitate the holding of the slugs in place during the sawing operation, a block 30, to which is pivotally connected an arm 31, is employed. This block is slidably mounted, being provided with a depending lug projecting through a slot 32, formed in the table. The lower extremity of the lug is provided with a horizontal flange 30<sup>a</sup>, which engages the table underneath and holds the block in place. This block is drawn forward against one side of a bunch of slugs lying on the table in the position indicated by dotted lines in Fig. 5. The opposite side of the slugs bears against the forward flange 8<sup>d</sup> of the table.

While one end of the slugs is engaged by the

gage 21, their opposite ends project over the stationary plate 33 and may be adjusted by the batter 34 in the hand of the operator. When the slugs are properly adjusted, the lever-arm 31 is lowered to engage them on top, whereby they are securely held preparatory to sawing. The slug ends to be cut off now lie in front of the saw, toward which the table is moved by the operator, bringing the slugs into contact therewith, whereby their ends are cut off to reduce them to the desired length.

The gage may be moved back and forth on the table by tilting it to the position shown by dotted lines in Fig. 8, whereby the teeth B of the gage are disengaged from the teeth 8<sup>g</sup> of the table.

Our improved apparatus is also equipped with means for trimming the sawed surface of the slugs, whereby they are made perfectly smooth. This feature consists of two trimmers, one of which is shown in detail in Fig. 12. These trimmers consist of pins 35, having a slightly-beveled end 35<sup>a</sup>, terminating in a sharp edge 35<sup>c</sup>. These pins are inserted in the washer 13 and pass through coinciding apertures formed in the washer and the saw-blade, projecting sufficiently from the surface of the saw to trim the slugs after the saw has performed its function.

Having thus described our invention, what we claim is—

1. The combination, with a suitable support and a shaft journaled therein, of a saw mounted on the shaft, a table mounted on the frame and adapted to move back and forth adjacent the saw, a gage mounted on the front part of the table and having a transverse movement thereon and adapted to engage the slugs to be sawed, and suitable means for holding the slugs in place on the table during the sawing operation, comprising a block, mounted on the table, and longitudinally movable thereon in a position immediately adjacent the saw, and an operating lever-arm connected with the block.

2. The combination with a saw, of a table movably mounted adjacent the saw and having two rows of ratchet-teeth extending at right angles to the direction of the table's movement, and a gage located between the rows of ratchet-teeth on the table and provided with cooperating ratchet-teeth.

3. The combination with a suitable supporting-frame, of a saw revolvably mounted thereon, a table adapted to move back and forth adjacent the saw, a block mounted on the table and longitudinally movable thereon in a position immediately adjacent the saw, and an operating lever-arm connected with the block.

4. The combination with a suitable supporting-frame, of a saw revolvably mounted thereon, a table adapted to move back and forth adjacent the saw, a gage transversely movable on the table, a cooperating block



longitudinally movable on the table, and an operating lever-arm connected with said block.

5 5. The combination with the saw, of a table having transverse flanges provided with ratchet-teeth, and a gage adapted to slide on the flanges of the table and having teeth co-operating with the teeth of the table.

10 6. A gage, comprising a base, and a top plate adjustably mounted thereon and provided with ratchet-teeth on two opposite edges, and having extensions projecting beyond said teeth.

15 7. A gage, comprising a base, a top plate secured to the base by screws passing through slots in the plate, and adjusting-screws passed through the base-piece in front of the plate and adapted to engage the forward edge of the latter, said screws extending at right angles to the fastening-screws.

20 8. The combination with the table having ratchet-teeth, of the gage mounted thereon and having coöperating teeth, and a strip hinged to the gage and adapted, when in use, to keep a position along the front edge of the gage, whereby a closer adjustment is obtainable than can be had by the ratchet-teeth.

25 9. The combination of a suitable supporting-frame, a shaft journaled thereon, a saw mounted on the shaft, a suitable housing inclosing the saw, a table mounted on the frame and adapted to move back and forth adjacent the saw, a gage transversely movable on the table and having ratchet-teeth coöperating with teeth formed on the latter, and a sliding block arranged to coöperate with the gage and movable at right angles thereto, said block being provided with a hinged lever-arm for operating the same.

10. The combination with a suitable metal-cutting device and a table or support provided with ratchet-teeth, of a gage provided with ratchet-teeth adapted to coöperate with the teeth on the table. 40

11. The combination with a suitable metal-cutting device and a suitable support or table provided with ratchet-teeth, of a gage provided with a base and a top plate adjustably mounted thereon and provided with ratchet-teeth. 45 50

12. The combination with a suitable cutting device, of a table or support provided with ratchet-teeth, and a gage also provided with ratchet-teeth adapted to coöperate with the teeth of the support or table, the said gage being adapted to move in a direction transverse to the plane in which the cutting device is located. 55

13. In a metal saw, the combination of a rotary blade, a washer engaging said blade, and one or more trimmer-pins inserted in coinciding apertures formed in the saw-blade and washer, the blade of the saw protruding from the washer to perform the cutting function before the trimmers are allowed to act. 60 65

14. The combination with a rotary saw, of trimmers attached to the saw-blade at such a distance from its edge as to allow the saw to perform its cutting function before the trimmers are allowed to act. 70

In testimony whereof we affix our signatures in presence of two witnesses.

HARRY G. MILLER.  
JOSEPH L. GARD.

Witnesses:

A. J. O'BRIEN,  
NELLIE G. DANIELS.

**DISCLAIMER.**

671,910.—*Harry G. Miller and Joseph L. Gard*, Denver, Colo. METAL-SAW. Patent dated April 9, 1901. Disclaimer filed April 23, 1913, by the assignee, *Miller Saw-Trimmer Company of Michigan*.

Enters its disclaimer—

“To so much of claims 13 and 14 as may describe a saw with trimmers which is not a metal-cutting saw provided with one or more trimmers projecting there-through, each having a beveled end terminating in a metal-cutting edge, the saw and trimmers being specially adapted for sawing and trimming linotype slugs.

“Thereby limiting said claims 13 and 14 to a metal-cutting saw provided with one or more trimmers projecting therethrough, each having a beveled end terminating in a metal-cutting edge, the saw and trimmers being specially adapted for sawing and trimming linotype slugs.” [*Official Gazette, April 29, 1913.*]