

No. 673,721.

Patented May 7, 1901.

G. C. MORS.

AUTOMATIC HAND-OVER FOR SQUARING SHEARS.

(Application filed Feb. 23, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

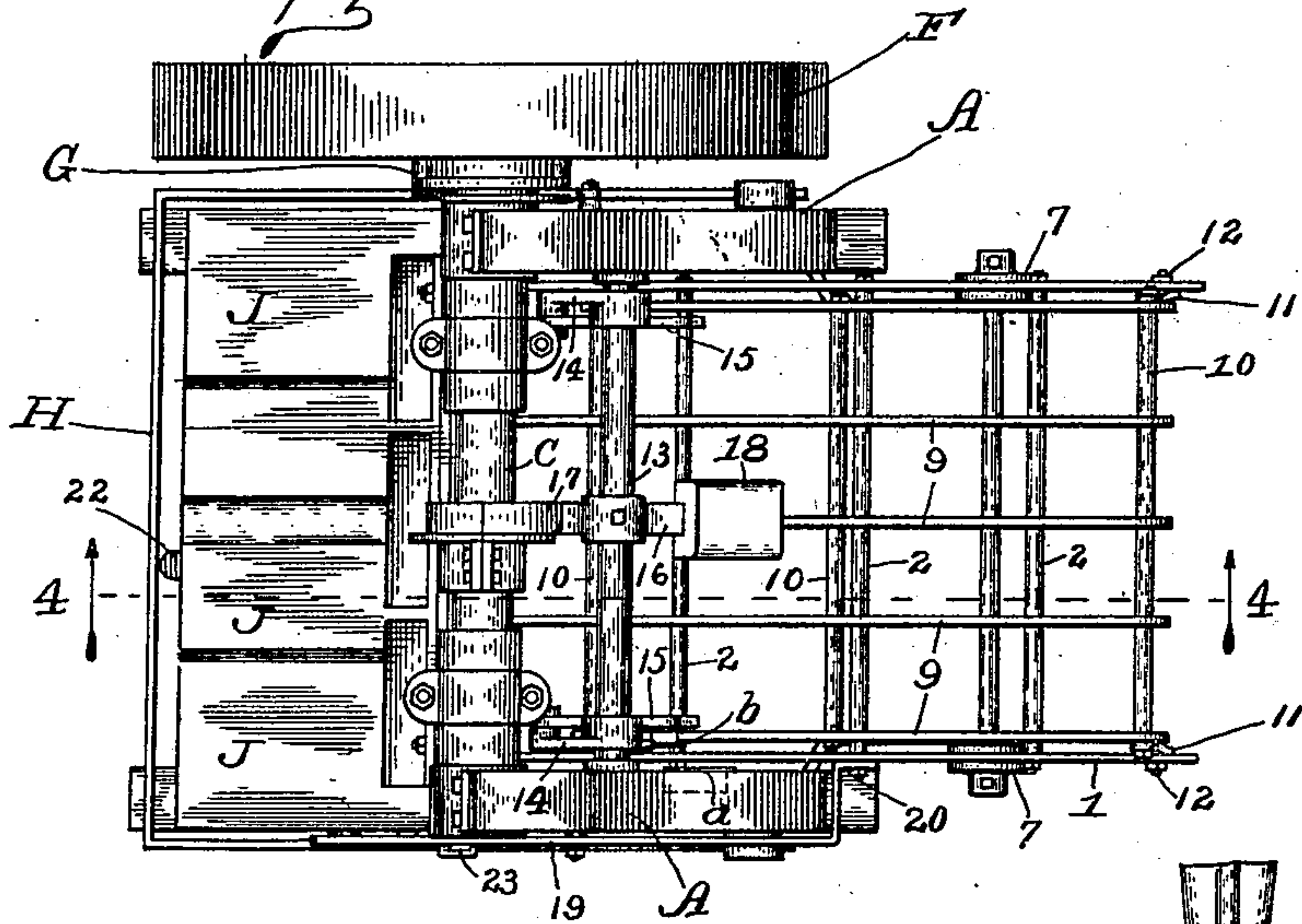


Fig. 2.

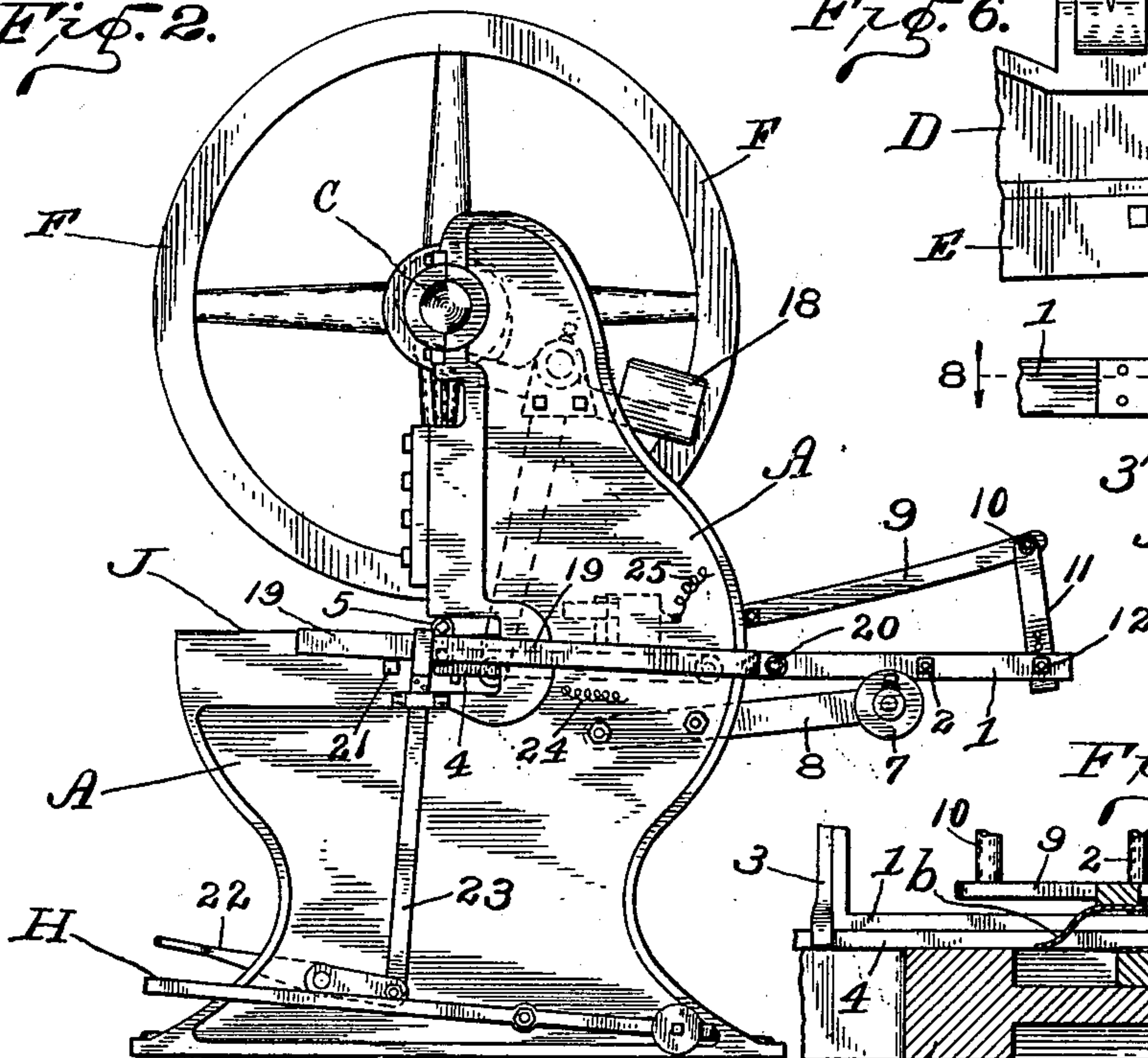


Fig. 6.

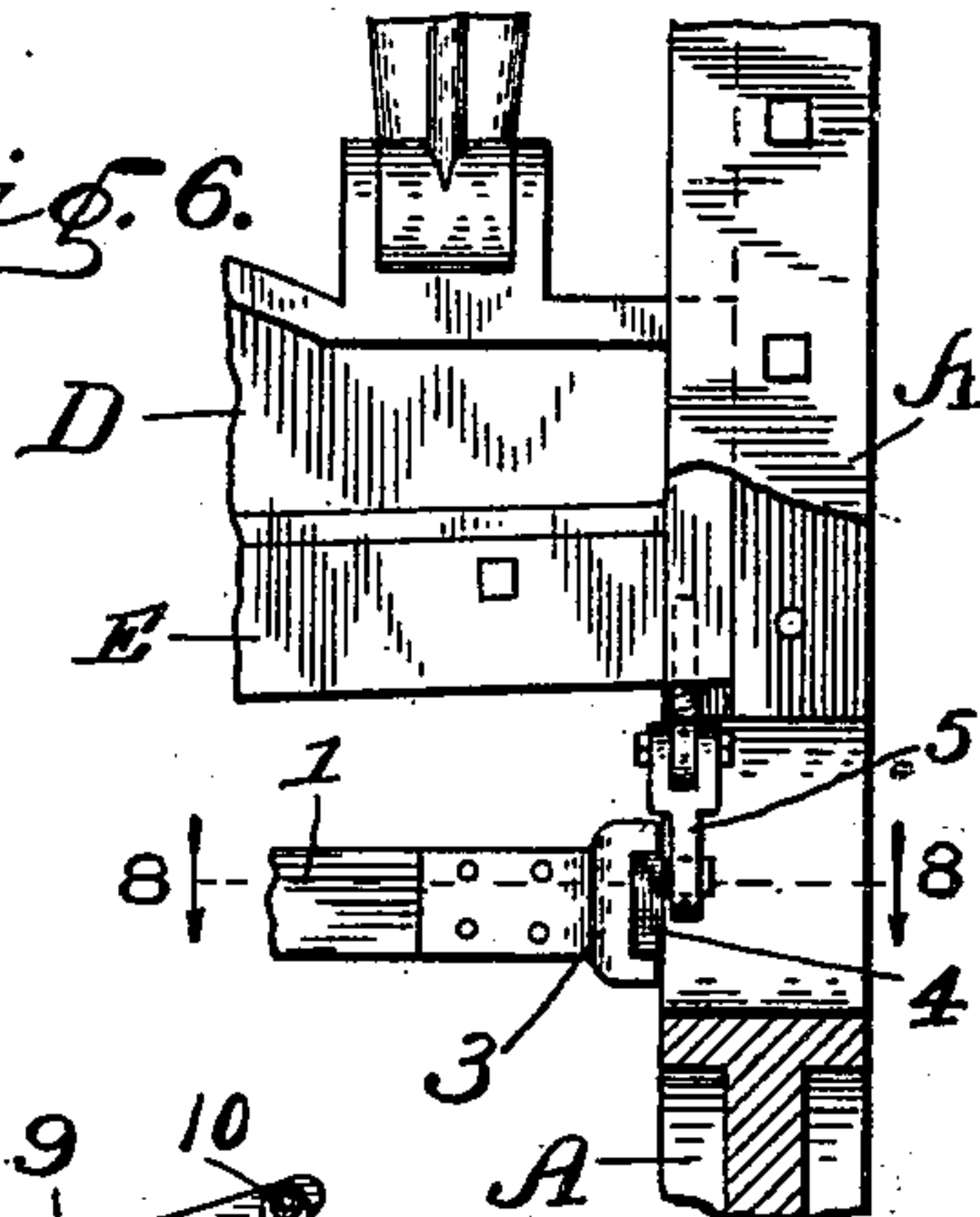
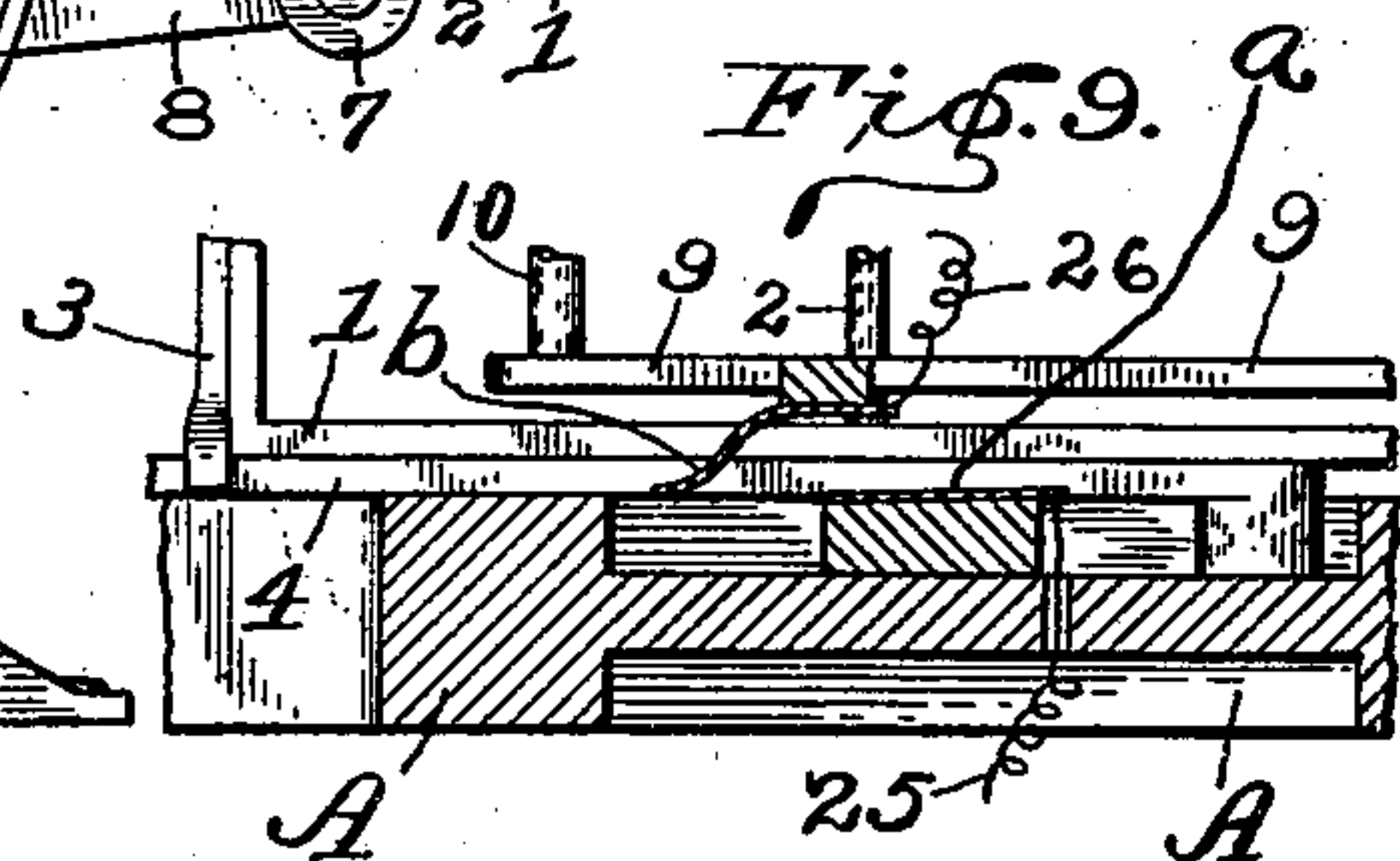


Fig. 9.



WITNESSES:

C. S. Frye.
J. A. Walsh.

INVENTOR

George C. Mors,
BY
Chester T. Radford,
ATTORNEY

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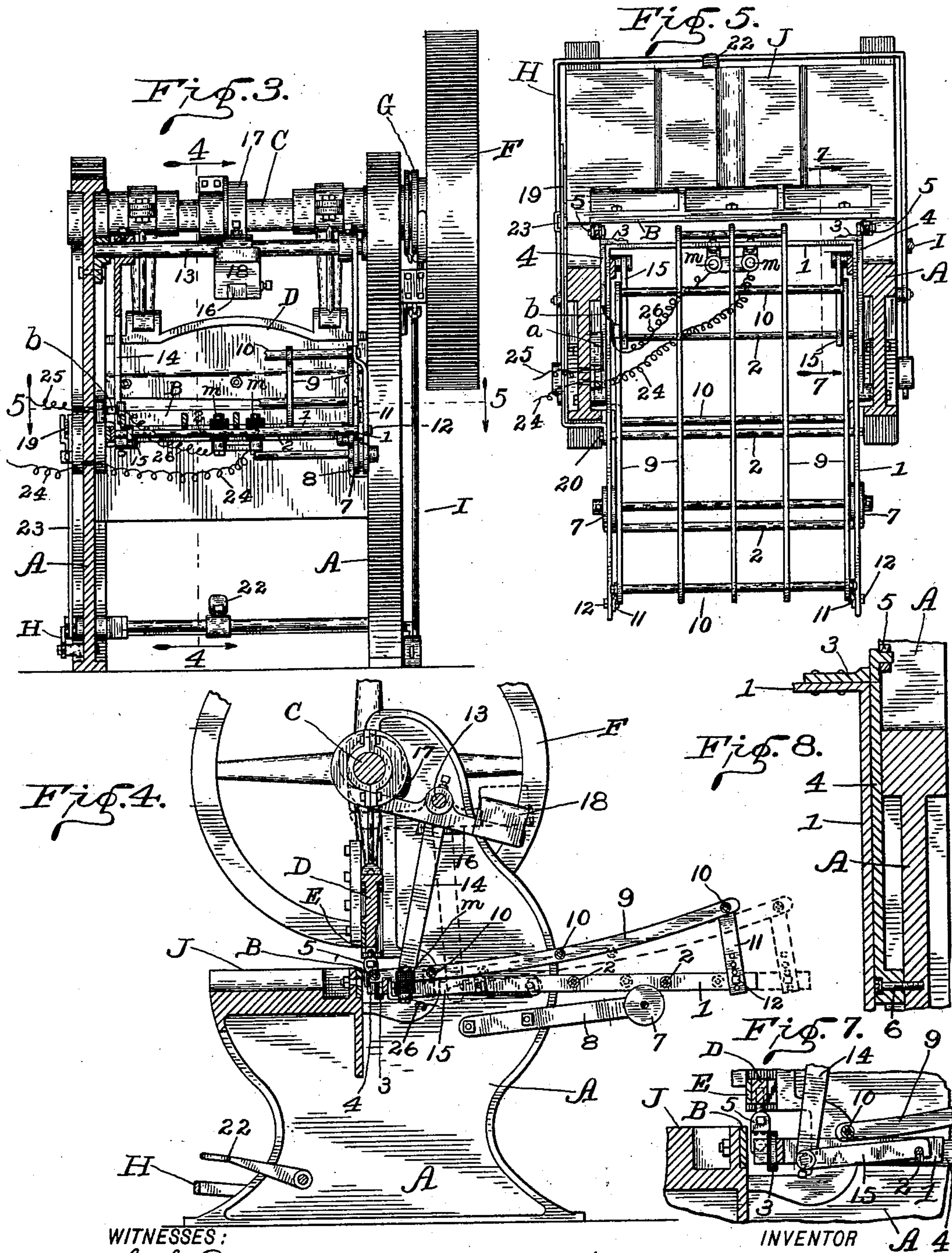
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AUTOMATIC HAND-OVER FOR SQUARING SHEARS.

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2 Sheets—Sheet 2.



WITNESSES:

C. S. Frye
J. A. Walsh

George C. Mors,

BY

Chester D. Bradford,
ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE C. MORS, OF ELWOOD, INDIANA, ASSIGNOR TO THE AMERICAN TIN PLATE COMPANY, OF SAME PLACE AND NEW YORK, N. Y.

AUTOMATIC HAND-OVER FOR SQUARING-SHEARS.

SPECIFICATION forming part of Letters Patent No. 673,721, dated May 7, 1901.

Application filed February 23, 1901. Serial No. 48,461. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. MORS, a citizen of the United States, residing at Elwood, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Automatic Hand-Overs for Squaring-Shears, of which the following is a specification.

My invention consists in certain improvements upon the machine forming the subject-matter of Letters Patent of the United States No. 647,189, issued April 10, 1900, to William Bateman Leeds. The nature of said improvements, as well as their purposes, will be hereinafter described. As stated in the specification of said Patent No. 647,189, the general object of the invention is to provide means whereby the portion of the sheets which is first cut off will be carried by a suitable table while the remainder is being squared up and then automatically returned to the operative without the interposition of manual labor or the employment of a helper.

Referring to the accompanying drawings, which are made a part hereof, and on which similar reference characters indicate similar parts, Figure 1 is a top or plan view of said squaring-shears embodying said invention, the table being in its forward position, as when it has delivered the parts of the sheets to the operative; Fig. 2, a side elevation of the same; Fig. 3, a view partly in rear elevation, a portion of the frame at one side being broken away to show certain of the parts more clearly; Fig. 4, a central vertical sectional view as seen when looking in the direction indicated by the arrows from the dotted line 4 4 in Fig. 3; Fig. 5, a horizontal sectional view looking downwardly from the dotted line 5 5 in Fig. 3; Fig. 6, a detail or fragmentary view, on a considerably-enlarged scale, showing the connection of the table-carrying slide to the knife-head more plainly; Fig. 7, a detail sectional view, on a somewhat-enlarged scale, showing much the same parts as a portion of Fig. 4, but as seen from the dotted line 7 7 in Fig. 5; Fig. 8, a detail horizontal sectional view, on an enlarged scale, on the dotted line 8 8 in Fig. 6; and Fig. 9, a detail view showing the electrical connections, being substantially a portion of Fig. 5 on an enlarged scale.

So far as the shear proper is concerned it is substantially of an ordinary and well-known construction, such as is commonly employed in tin-plate factories and in other places for squaring up sheets; and it consists, essentially, of a heavy frame A, carrying one stationary shear-knife B at a suitable point and having a main shaft C, which drives the movable knife-head D, upon which the movable cutting-shear or shear-knife E is mounted, all in a well-known manner, the shaft being intermittently driven from time to time, as may be desired, by a loosely-mounted pulley F thereon, there being a suitable clutch G for throwing the shaft and pulley into and out of engagement, which is ordinarily operated by a treadle H through a rod or link I. In front of the knife B the machine is provided with the ordinary (and generally solid) table J.

The movable table in my improved construction includes an upper and lower portion. The lower portion is composed of an outer frame 1 and cross-rods 2. At its forward end it engages by means of slides 3 with hinged slideways 4, which are connected by links 5 to the knife-head D. By this means the forward end of the movable table is caused to descend as the knife-head descends, so that it will not hold the sheets up above the main table J, which when permitted sometimes causes them to be crooked or crimped by the knife E as it descends. The hinged slideways 4 are pivoted to the frame A by suitable pivot-bolts 6 (see especially Fig. 8) at points considerably to the rear of travel of the slides 3. At the outer end the frame 1 of this table runs on trucks 7, carried by arms 8, secured to the frame A. The sheets as they come onto the table are generally slightly curved, and it is also desirable that there should be somewhat of an inclination to the table, so that the sheets will slip forward more easily. I therefore provide an upper section to the table, composed of longitudinal bars 9 and cross-rods 10. This upper table portion rests on the transverse portion 1 of the lower frame at the front end and is supported by links 11, carried by the lower table portion at the rear end. These links have a series of perforations and are connected to the rear

ends of the frame 1 by bolts 12, which may be inserted in any of said perforations and the elevation of this upper section at the rear end thus regulated. As will be readily understood, in operation the sheets are laid on this upper portion of the table and slide into the knives of the squaring-shear as wanted.

The table as a whole is operated from the rock-shaft 13 by means of the arms 14, which are connected to the lower table portion by links 15, and the rock-shaft is in turn operated by a cross-bar 16, one end of which extends beneath a cam 17 on the main shaft C and the other of which extends out on the other side of the rock-shaft and carries a weight 18, by which when the cam-pressure is removed the rock-shaft is swung back and the table returned to its forward position. As the arm 14 is connected to the moving table or frame by means of a link 15, said table is permitted a horizontal motion, so far as the effect of the swinging driving-arm 14 is concerned, instead of a rocking motion, which results where the driving swinging arm is connected directly to said table or frame, as in the Leeds patent, No. 647,189, above referred to. As best shown in Fig. 7, the link 15 is connected to one of the cross-bars 2 of the table by means of a hook or notch, so that it can be readily disengaged when desired.

A detent 19 is attached to the frame 1 of the movable table by a pivot 20, and its forward end is adapted, when the table is pushed back to the position indicated by dotted lines in Fig. 4, to drop behind the stop 21 on the frame A, which is best shown in Fig. 2. The detent and stop are arranged to thus engage at about the termination of the rearward motion of the movable table caused by the cam 17 through the bar, arm, and link, as just described. The parts are so arranged that this motion takes place at about the termination of the downward stroke of the shear, thus carrying the portions of the sheets cut off by said stroke back out of the way, so that those portions which remain immediately in front of the operative on the table J may be trimmed without the cut-off portions being in the way. After the trimming just referred to is completed the operative presses upon the treadle 22, and thus by means of the link 23, connected to said treadle, raises the detent 19 out of engagement with the stop 21, permitting the table structure to return to its forward position, (under the impetus of the weight 18,) which brings the portions of the sheets which had been previously cut off forward, where they can be conveniently reached by the operative, who proceeds to trim such portions in like manner as the first portions were trimmed.

As above stated, the bars 9, constituting the portion of the movable table on which the sheet portions immediately rest, are inclined forward somewhat, which causes said sheet portions to slide down them easily when required, and are also usually curved to con-

form to the usual shape of the sheets. This, however, gives the sheet portions lying on said movable table a tendency to move forward under the jar of the movement of the shear in cutting while the trimming of the sheet portions first cut off is going on. In order to counteract this tendency and to retain the sheets in proper position back out of the way, I have provided magnets *m*, which attract and hold the sheets firmly in place during the time the movable table is in its rearmost position. These magnets are controlled, as shown, by the incoming and outgoing line-wires connected thereto, in one of which a switch is operated by the movement of the table. As the table moves back the circuit is closed, while during the movement to its forward position the circuit is opened. A convenient construction of this part of the apparatus is illustrated in Fig. 5 and the details thereof more plainly in Fig. 9. In this arrangement, as shown, one wire 24 continues uninterruptedly to one side of one of the magnets, while the other wire is divided into two parts 25 and 26, one of which terminates in a suitable contact or switch member *a*, carried by the frame A, while the other terminates in a suitable contact or switch member *b*, carried by the movable table-frame 9, and these are arranged, as shown, to come together when the table is moved rearwardly and to separate when it moves forwardly. The sheets are thus held by the power of these magnets as long as the table is in its rearward position, while they are released at or before the time it reaches its forward position.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a squaring-shear, of a movable table positioned behind said shear, a rock-shaft, arms on said rock-shaft extending down near said movable table, and links connected to said arms and to said table, whereby as the shaft is rocked, the table is moved horizontally without changing its vertical position.

2. The combination, with a squaring-shear, of a movable table positioned behind said shear, a supplemental frame carried by said table curved to conform to the shape of the sheets to be received thereby, and means for reciprocating said structure, substantially as set forth.

3. The combination, with a squaring-shear, of a movable table positioned behind said shear, and a supplemental frame on said table for receiving the sheets to be squared, said supplemental frame being adjustable vertically at its rear end, whereby the position of the sheets may be adjustably determined, substantially as shown and described.

4. The combination, with a squaring-shear, of a movable table positioned behind said shear, slideways hinged to the shear-frame and connected to the shear-head, and bear-

ings on the table running upon said slide-ways, whereby the inner end of the table is caused to rise and descend with the motion of the shear, substantially as and for the purposes set forth.

5 5. The combination, with a squaring-shear, of a movable table positioned behind said shear and provided with front and rear supports, the forward support being vertically
10 movable and connected to and actuated by the shear-head.

6. The combination, with a squaring-shear, of a movable table positioned behind said shear, magnets mounted on said table, an
15 electrical circuit in which said magnets are included, and a switch in said circuit which is adapted to be opened or closed by the movement of the table, whereby the said magnets are caused to be energized when the table is in
20 one position and deenergized when the table is in the other position.

7. The combination, with a squaring-shear,

of a movable table positioned behind said shear, means for moving the same, magnets mounted on said table in proximity to the
25 carrying-surface thereof, an electrical circuit in which said magnets are included, one wire whereof is continuous and extends to one side of said magnet, and the other of which is divided one portion terminating in the switch
30 part on the frame of the machine, and the other terminating in a switch part on the movable table-frame, said switch parts being arranged to come in contact when the table moves in one direction, and to break contact
35 when it moves in the other direction, substantially as and for the purposes specified.

In witness whereof I have hereunto set my hand and seal, at Elwood, Indiana, this 19th day of February, A. D. 1901.

GEORGE C. MORS. [L. S.]

Witnesses:

C. A. PRICE,
H. K. BAKER.