

M. H. JOHNSON.  
HACKSAW MACHINE.  
APPLICATION FILED MAR. 29, 1907.

967,640.

Patented Aug. 16, 1910.

3 SHEETS—SHEET 1.

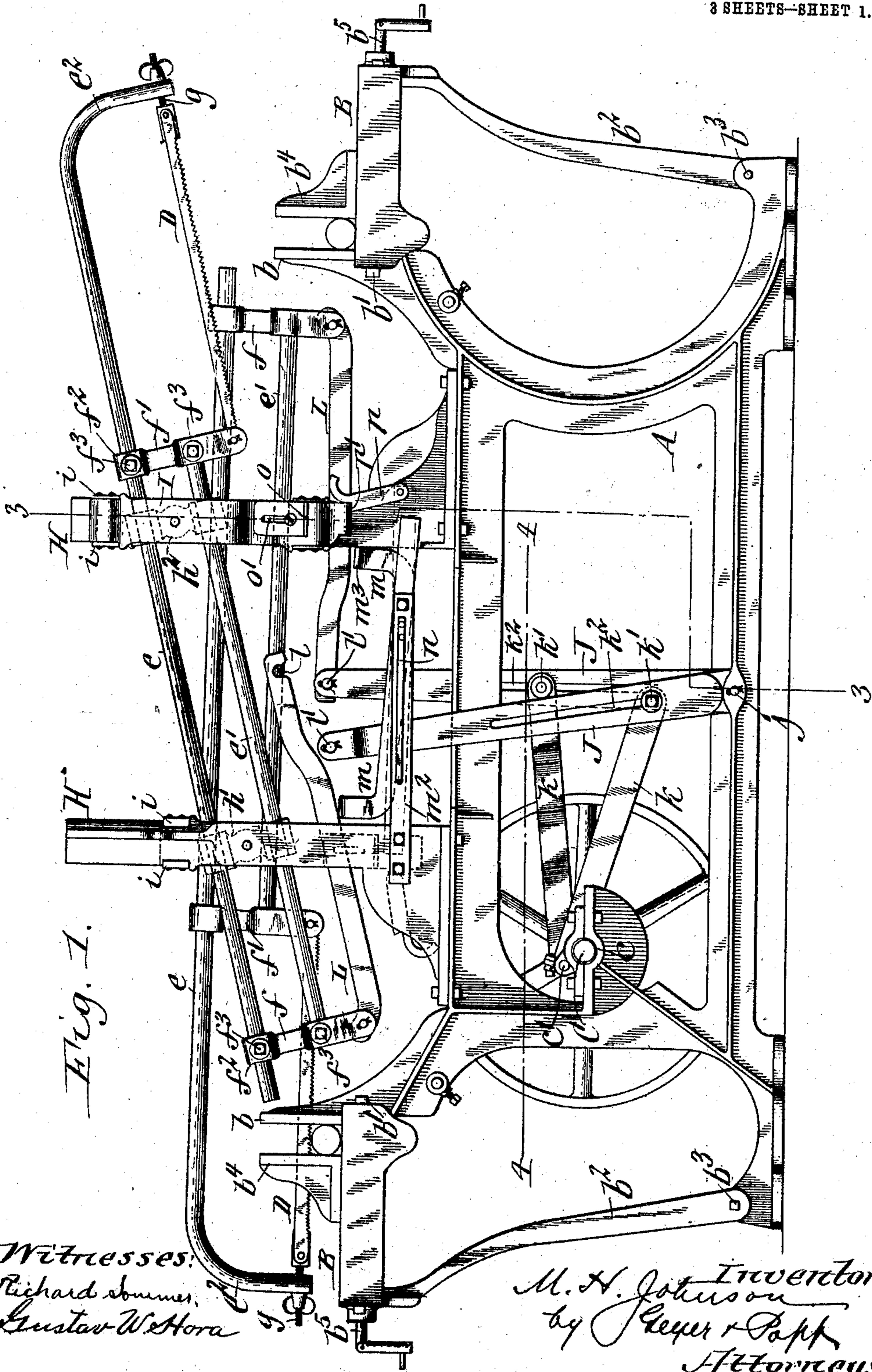


Fig. 1.

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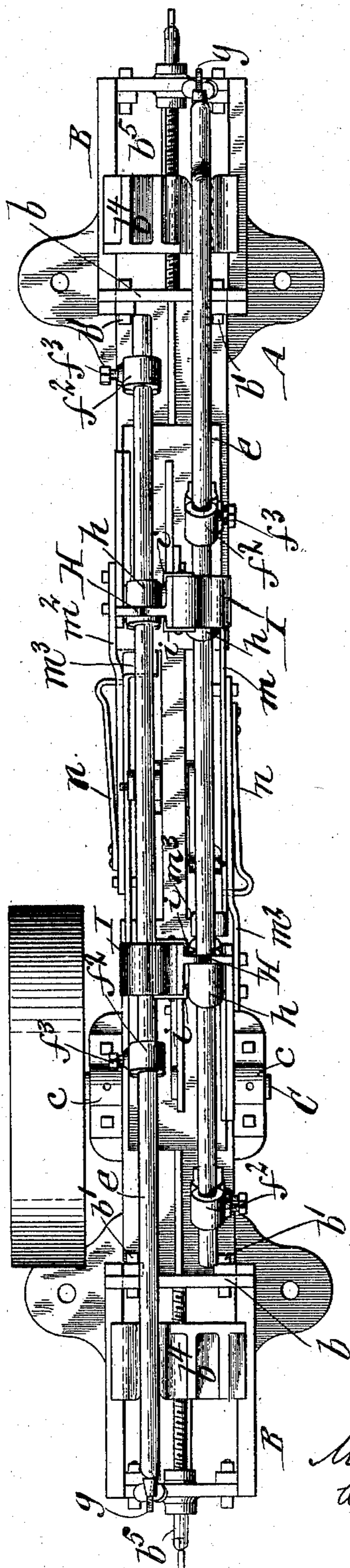
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3 SHEETS—SHEET 2.

Fig. 2.



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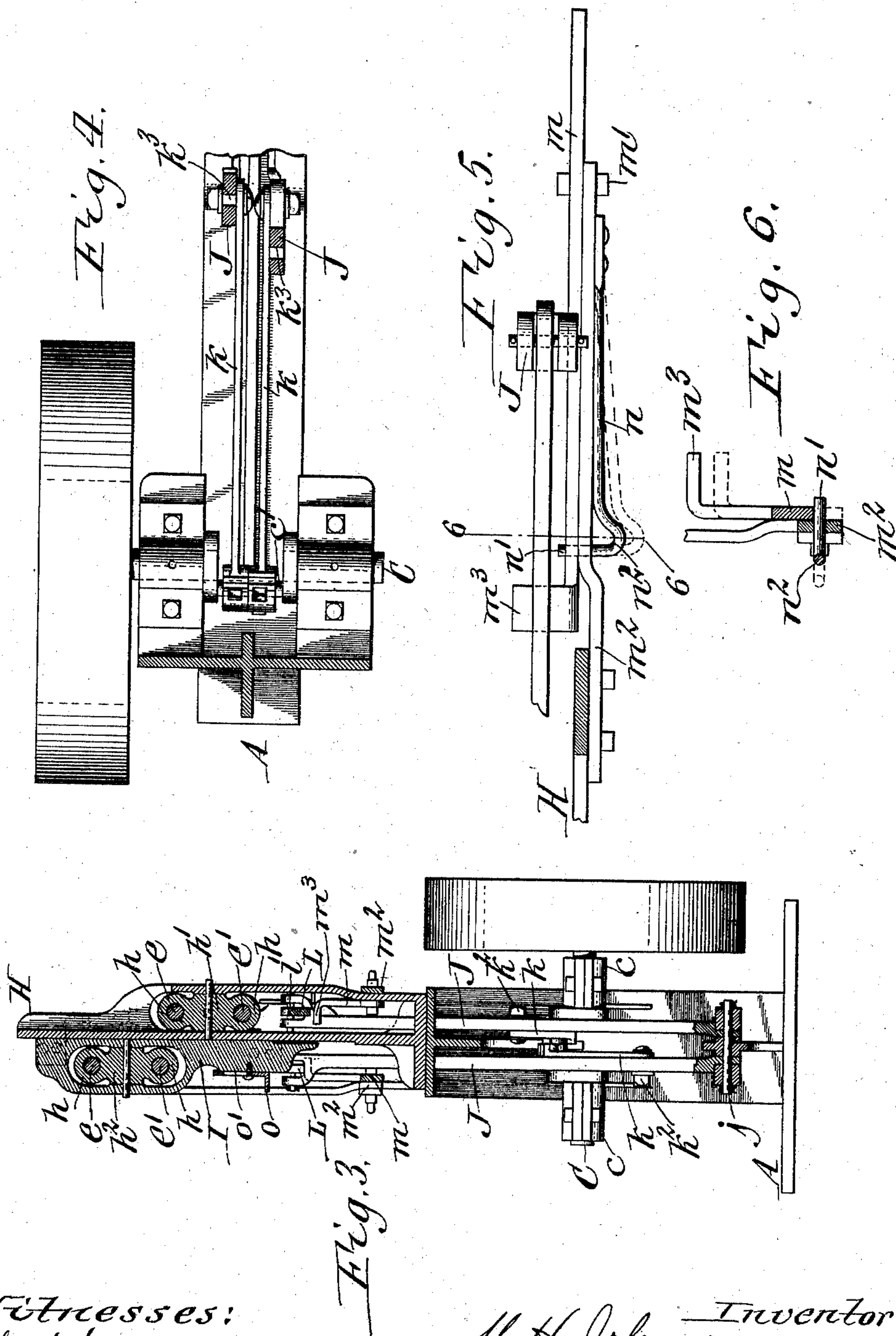
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

MARQUIS H. JOHNSON, OF BUFFALO, NEW YORK, ASSIGNOR TO BUFFALO SPECIALTY COMPANY, OF BUFFALO, NEW YORK, A CORPORATION OF NEW YORK.

## HACKSAW-MACHINE.

967,640.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed March 29, 1907. Serial No. 365,354.

*To all whom it may concern:*

Be it known that I, MARQUIS H. JOHNSON, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Hacksaw-Machines, of which the following is a specification.

This invention relates to that class of sawing machines employed principally for severing rods and other metal stock and commonly known as hack-saw machines.

One of the objects of the invention is the production of a simple and compact duplex sawing machine of this character by which stock of different kinds or sizes can be operated upon at the same time.

Further objects are to render the saw frames adjustable in a convenient manner to accommodate saws of different lengths; to provide the machine with a reliable trip mechanism of simple construction for automatically throwing the saws out of gear with the driving mechanism when the bars or other objects have been severed, and to improve the machine in other respects with a view of increasing its efficiency.

In the accompanying drawings consisting of 3 sheets: Figure 1 is a side elevation of the machine showing one of the saws lowered and the other raised. Fig. 2 is a top plan view thereof. Fig. 3 is a transverse section in line 3—3, Fig. 1. Fig. 4 is a horizontal section in line 4—4, Fig. 1. Fig. 5 is a fragmentary top plan view of one of the upright rock levers and the corresponding coupling link and trip lever. Fig. 6 is a transverse section in line 6—6, Fig. 5.

Similar letters of reference indicate corresponding parts throughout the several views.

A indicates the main frame of the machine which is upright and comparatively narrow.

At opposite ends of the frame are arranged vises or holders of any suitable construction for holding the rods, bars or other stock to be sawed. Each of the vises shown in the drawings consists of a fixed jaw or abutment  $b$  preferably cast integral with the main frame; a horizontal guide or table B removably secured at its inner end to the base of the fixed jaw by bolts  $b^1$  or other fastenings and supported at its outer end by a brace  $b^2$  removably secured at its lower end to the base of the frame by a bolt  $b^3$ ;

and an outer movable jaw  $b^4$  mounted on the table B and operated by a suitable adjusting screw  $b^5$ .

C indicates the driving shaft journaled in bearings  $c$  supported on the frame and having a crank  $c^1$ .

D, D indicate the saws arranged at opposite ends of the machine above the vises and mounted in reciprocating saw-frames arranged side by side lengthwise of the machine. Each of these frames consists of parallel upper and lower rods  $e, e^1$  and cross heads or pieces  $f, f^1$  connecting the same and having eyes or sockets  $f^2$  in which the rods are clamped by bolts  $f^3$ . The upper rod of each saw-frame extends forwardly beyond the lower rod and terminates in a depending arm  $e^2$ , which carries the clamping screw  $g$  connected with the front end of the corresponding saw D. The rear end of the saw is removably attached to the lower end of the front cross piece  $f^1$  by a transverse pin or other suitable means. As shown in Fig. 1, the cross pieces  $f, f^1$  extend below the lower rods  $e^1$  of the saw frame.

H, H indicate a pair of standards arranged one in front of the other on top of the frame A, the central portion of the latter which carries these standards being preferably depressed below the level of the vises B, as shown in Fig. 1. The lower rod  $e^1$  of each saw frame and the portion of its upper rod  $e$  between the cross pieces  $f, f^1$  slide in front and rear guides or boxes  $h, h$ , the two rear boxes being mounted at opposite ends of an upright rock lever  $h^1$  pivoted on the adjacent standard H and the two front boxes on a similar lever  $h^2$  pivoted in a vertically-movable slide I guided on the other standard, so that each saw frame while free to reciprocate in said boxes can also swing vertically at its front end to lower the saw to its operative position, as shown at the left of Fig. 1, or to raise it to an inoperative position, as shown at the right of said figure. As the saw frames face outwardly in opposite directions, each of the standards H carries on one side the swiveling rear bearing-boxes  $h$  of one saw-frame and the carrying-slide I of the front boxes  $h^2$  of the other saw frame, as best shown in Fig. 3. These slides are retained upon the standards by lips  $i$  secured to their opposite sides and embracing the edges of

the standards, as shown in Fig. 2, or by other suitable means.

J, J indicate a pair of upright rock arms or levers arranged on opposite sides of the frame and pivoted to the base member thereof at  $j$ . These levers are independently actuated from the crank of the main shaft C by pitmen  $k$ ,  $k$  which are preferably made adjustable toward and from the fulcra of the levers by bolts  $k^1$  passing through longitudinal slots  $k^2$  in the levers. The upper portions of these levers are arranged between the standards H and the saw frames are respectively connected with their upper ends by coupling rods or links L. Each of these links is pivoted at its rear end to the lower end of the rear cross piece  $f$  of the corresponding saw frame, while its front end is preferably detachably connected to the companion rock lever by providing the link with a downwardly-opening notch  $l$  adapted to engage a cross pin  $l^1$  carried by the bifurcated upper end of the lever.

$m$ ,  $m$  indicate vertically-swinging trip-levers coöperating respectively with the coupling links L and pivoted at  $m^1$  to the inner sides of horizontal supporting bars or brackets  $m^2$  carried by the standards H. In the construction shown in the drawings, the rear arms of these trip-levers are bent upwardly and terminate in lips  $m^3$  which engage under the coupling links, as shown in Figs. 1, 2 and 5, so that when their front arms are depressed they swing the links upwardly out of engagement with the rock levers J.

$n$ ,  $n$  are spring catches for locking the inner arms of the trip levers  $m$  in their elevated position. Each of these catches consists of an elastic arm or shank secured at its rear end to the bracket  $m^2$  and provided at its free front end with an inwardly-extending pin or projection  $n^1$  which passes through an opening in said bracket. In the normal position of each trip lever, its rear arm is depressed and the pin  $n^1$  of the corresponding spring catch bears against the side of the lever, straining the spring-arm of the catch, but when the rear arm of the lever is raised, the pin springs under the lever and locks it in that position. The spring catches are provided with finger-loops  $n^2$  to permit their easy withdrawal for releasing the trip levers.

Each of the slides I carries a suitable tappet  $o$  arranged to engage the front arm of the corresponding trip lever  $m$  immediately after the corresponding saw has severed the rod or other article placed in the vise. Each tappet is preferably made vertically adjustable by means of a clamping screw passing through a vertical slot  $o^1$  in its shank, as shown in Figs. 1 and 3, whereby the tappet can be adjusted to trip the lever J at a

higher or lower point in the descent of the saw, according to the diameter of the bars to be sawed.

Suitable means are provided for supporting the saws in their raised position while placing the articles in the vises. The devices preferred for this purpose consist of latches  $p$  pivoted at their lower ends to the standards H and having shoulders  $p^1$  adapted to engage under the lower ends of the slides, as shown in connection with the right-hand slide in Fig. 1. To lower the saws, the latches are swung down to the position shown at the left of Fig. 1.

As shown in the drawings, the saw frames are arranged closely together to render the machine narrow and compact, and each frame terminates short of the vise with which the saw of the other frame coöperates.

In the operation of the machine, the bars to be severed are clamped in the vises, the coupling rods L are connected with the rock levers J, and the saws are lowered upon the bars. Upon driving the machine, the two saw-frames are reciprocated as hereinbefore described. The saw frames gradually descend by gravity, and immediately after the saws have severed the bars, the tappets  $o$  trip the levers  $m$ , lifting the links L out of engagement with the rock levers J and stopping the saws, the links being held in their disconnected position by the automatic catches  $n$ . As both saws are driven by a single crank shaft, the construction is simplified accordingly.

By locating the actuating devices, such as the rock levers J, J, at or near the middle of the machine and connecting the saw frames therewith at a point between the ends of said frames, a very compact construction is obtained which renders the machine much shorter than it would be if the rear ends of the saw frames were connected directly to said levers. The bolt-and-slot connection between the pitmen  $k$  and the rock levers J, permits the stroke of the saws to be varied, according to the requirements of different kinds of work. Upon loosening the clamping bolts of the upper rods  $e$  of the saw frames, these rods may be adjusted lengthwise in the cross pieces  $f$ ,  $f^1$  to suit saws of different lengths.

By making the vise-tables B, braces  $b^2$  and movable vise-jaws  $b^4$  detachable, as hereinbefore described, these parts can be detached to enable pieces of work to be sawed which are too large to enter between the jaws. After removing said parts such large pieces are suitably clamped against the fixed jaw  $b$  or the end of the main frame.

I claim as my invention:

1. In a sawing machine, the combination of a main frame, work-holders arranged at

opposite ends of the frame, saw-frames arranged above said work-holders respectively, a driving shaft, and separate actuating connections between the saw frames and the driving shaft, substantially as set forth.

2. In a sawing machine, the combination of a main frame, work-holders arranged at opposite ends of the frame, saw-frames arranged above said work-holders, respectively, a driving shaft having a pair of cranks, and separate driving connections between said cranks and said saw-frames, substantially as set forth.

3. In a sawing machine, the combination of a main frame, a reciprocating vertically movable saw-frame guided thereon, a rock-lever pivoted to the main frame below the saw frame, means for actuating said lever, a coupling link attached at one end to the saw frame and having its opposite end detachably connected to said lever, and a trip device acting on said link and arranged to be engaged by means vertically-movable with the saw frame, substantially as set forth.

4. In a sawing machine, the combination of a main frame, a reciprocating, vertically-movable saw-frame guided thereon, a tappet connected with said saw-frame, an actuating member, a coupling link detachably connecting the saw-frame with said actuating member, and a trip lever arranged to engage said link and separate the same from the actuating member and located in the path of said tappet, substantially as set forth.

5. In a sawing machine, the combination of a main frame, a pair of standards mounted thereon one in front of the other, a vertically-movable slide guided on one of said standards and carrying a tappet, a reciprocating saw frame guided in said slide and pivotally supported on the other standard, an actuating member, a detachable connection between said actuating member and the saw-frame, and a trip lever disposed to act on said connection and arranged in the path of said tappet, substantially as set forth.

6. In a sawing machine, the combination of a main frame, a reciprocating, vertically-movable saw-frame guided thereon, a tappet connected with said saw-frame, an actuating member, a coupling link detachably connecting the saw-frame with said actuating member, a trip lever arranged to engage said link and separate the same from the actuating member and located in the path of said tappet, and automatic locking means for retaining said lever in its tripped position, substantially as set forth.

7. In a sawing machine, the combination of a main frame, a reciprocating, vertically-movable saw-frame guided thereon, a tappet connected with said saw-frame, an actuating member, a detachable connection between

said actuating member and the saw-frame, a vertically-swinging trip-lever disposed to act on said connection and arranged in the path of said tappet, and a spring catch consisting of an elastic arm having a projection adapted to engage under the trip-lever, substantially as set forth.

8. In a sawing-machine, the combination of a stationary frame, a pair of standards mounted thereon one in front of the other, a vertically-movable slide guided on one of said standards, a reciprocating saw-frame having its front portion supported on said slide and its rear portion pivotally mounted on the other standard, and means for actuating the saw-frame, substantially as set forth.

9. In a sawing-machine, the combination of a stationary frame, a pair of standards mounted thereon one in front of the other, a swiveling guide mounted on one of said standards, a vertically-movable slide mounted on the other standard and carrying a swiveling guide, a saw-frame arranged in said swiveling guides, and means for reciprocating the saw-frame, substantially as set forth.

10. In a sawing-machine, the combination of a stationary frame, a pair of standards mounted thereon one in front of the other, an upright rock-lever pivoted to one of said standards and provided on opposite sides of its fulcrum with guides, a vertically-movable slide mounted on the other standard and carrying a similar rock lever with guides, a saw-frame including a pair of longitudinal rods sliding in the upper and lower guides of said rock-levers, and means for reciprocating the saw-frame, substantially as set forth.

11. In a sawing machine, the combination of a main frame, work-holders arranged at opposite ends thereof, a pair of reciprocating saw-frames arranged side by side lengthwise of the machine, the outer or front portions of the saw-frames being located above the work-holders, respectively, and the rear end of each frame terminating short of the holder with which the other saw-frame coöperates, substantially as set forth.

12. In a sawing machine, the combination of a main frame, a pair of oppositely-facing saw-frames supported thereon and arranged side by side lengthwise of the machine, the outer or front portion of each saw-frame extending beyond the rear end of the other, and means for reciprocating the saw-frames, substantially as set forth.

13. In a sawing-machine, the combination of a stationary frame, a pair of standards mounted thereon one in front of the other, a pair of saw-frames supported side by side on said standards, the outer or front por-

tion of each saw-frame extending beyond the rear portion of the other, and means for reciprocating the saw frames, substantially as set forth.

5 14. In a sawing-machine, the combination of a stationary frame, a pair of standards mounted thereon one in front of the other, a pair of saw-frames supported side by side on said standard, the outer or front portion 10 of each saw-frame extending beyond the rear portion of the other, and actuating means for the saw-frames located between said standards, substantially as set forth.

15 15. In a sawing-machine, the combination of a stationary frame, a pair of standards mounted thereon one in front of the other, a pair of saw-frames supported side by side on said standard, the outer or front portion 20 of each saw-frame extending beyond the rear portion of the other, rock levers pivoted to the main frame and extending upwardly between said standards, connections extending from said rock levers to the rear portions of the respective saw-frames, and 25 means for actuating said rock levers, substantially as set forth.

30 16. In a sawing-machine, the combination of a main frame, a pair of standards mounted thereon one in front of the other, and each having on one side a swiveling guide and on its opposite side a vertically-movable slide carrying a similar guide, and

a pair of saw-frames arranged side by side and each mounted in a pair of said front and rear guides arranged on the same side 35 of the two standards, and means for reciprocating the saw-frames, substantially as set forth.

17. In a sawing-machine, the combination of a main frame and a saw-frame guided 40 thereon and comprising upper and lower longitudinal rods, cross pieces connecting said rods and having sockets which receive the same, the upper rod extending beyond the front cross piece and being provided at 45 its front end with a downwardly-extending arm, and means for adjustably clamping the upper rod in said sockets, substantially as set forth.

18. In a sawing-machine, the combination 50 of a main frame provided at its end with a fixed vise-jaw, a table removably secured to the base of said jaw, a movable jaw mounted on said table opposite the fixed jaw, a brace supporting the outer end of the table and 55 detachably secured to the main frame, and a saw arranged above said table, substantially as set forth.

Witness my hand this 20th day of March, 1907.

MARQUIS H. JOHNSON.

Witnesses:

O. F. GEYER,

E. M. GRAHAM.