

No. 705,659.

Patented July 29, 1902.

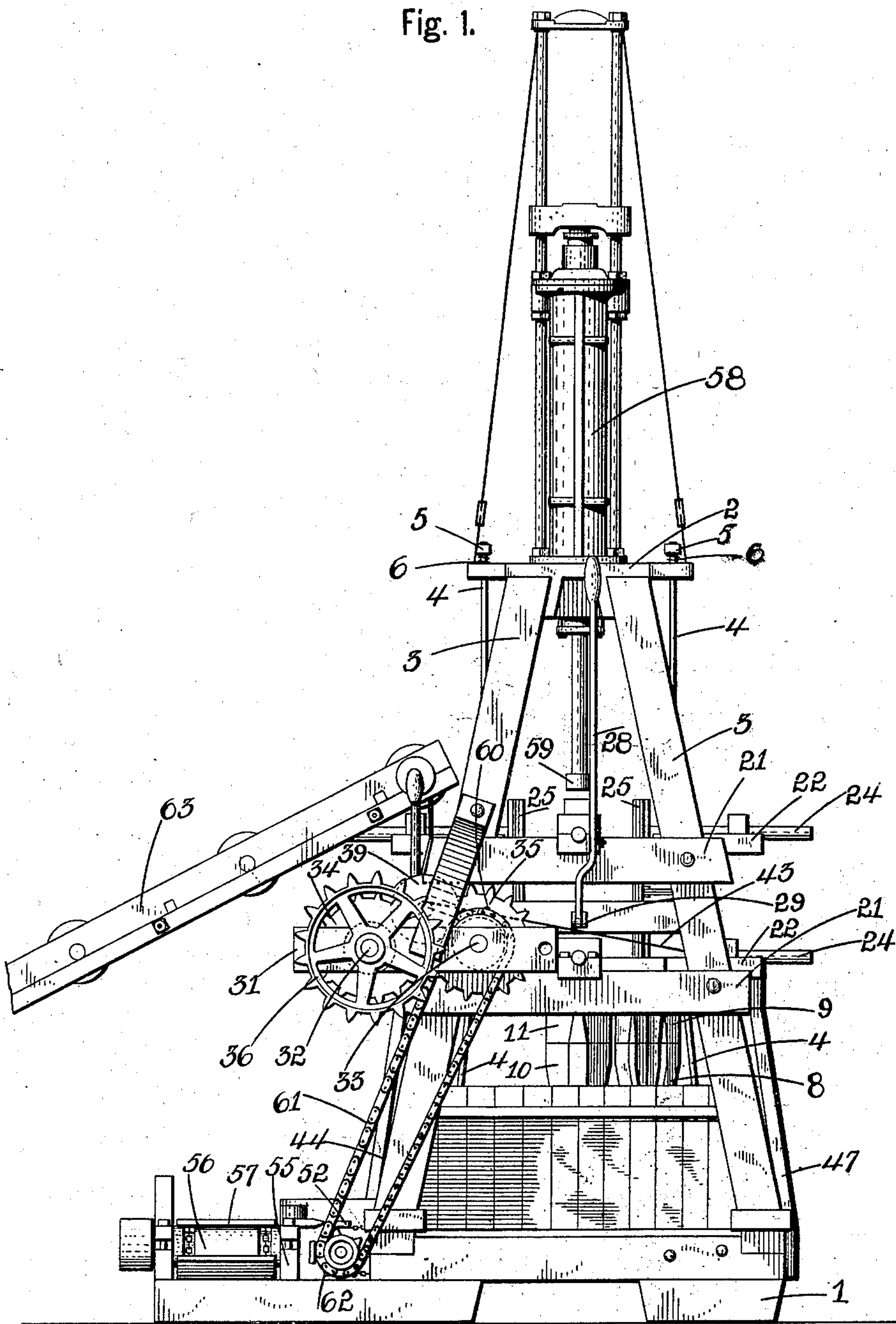
O. E. ELLISON.
WOOD SPLITTING MACHINE.

(Application filed Aug. 5, 1901.)

(No Model.)

5 Sheets—Sheet 1.

Fig. 1.



Witnesses.

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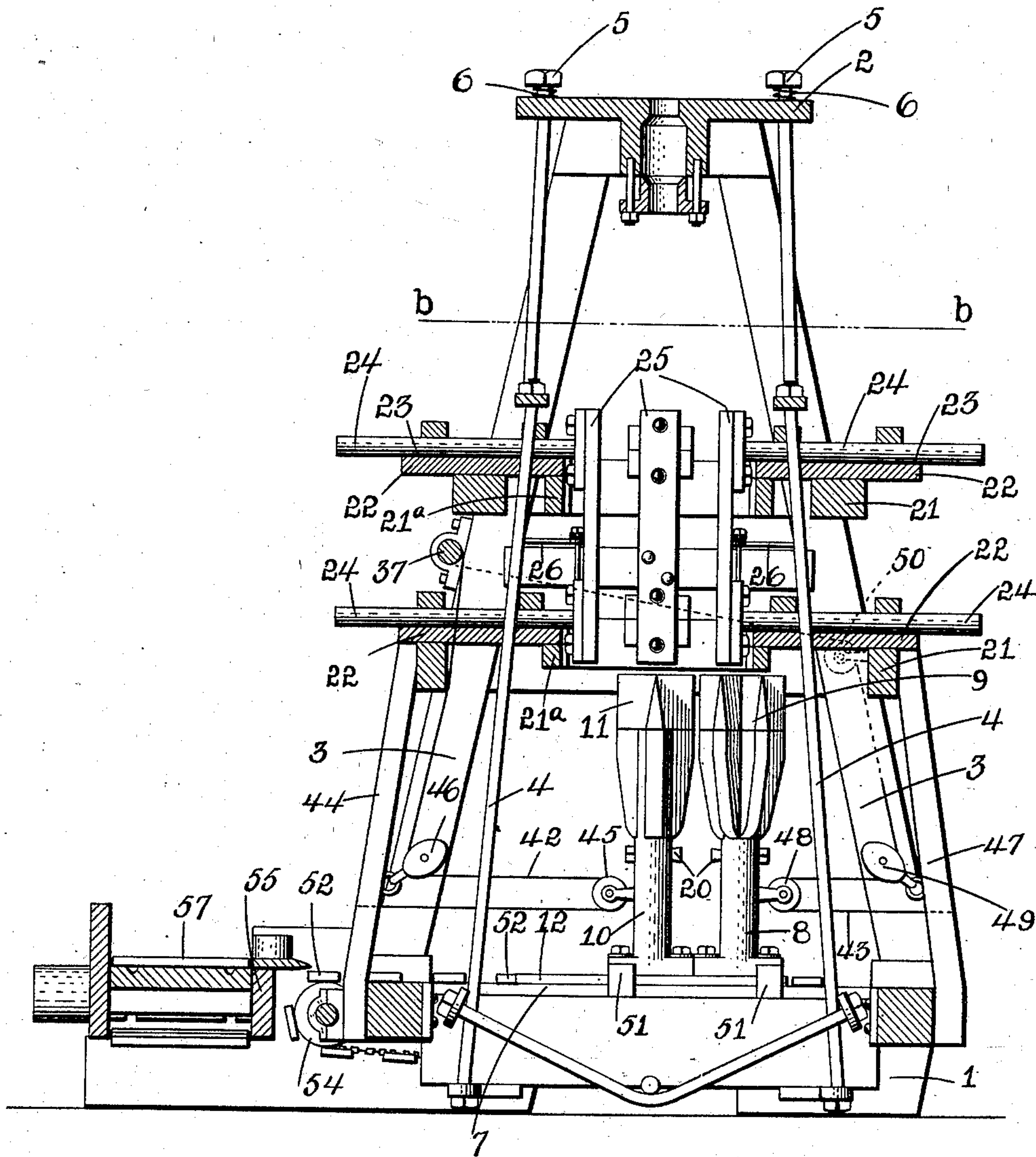
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Fig. 2.



Witnesses.

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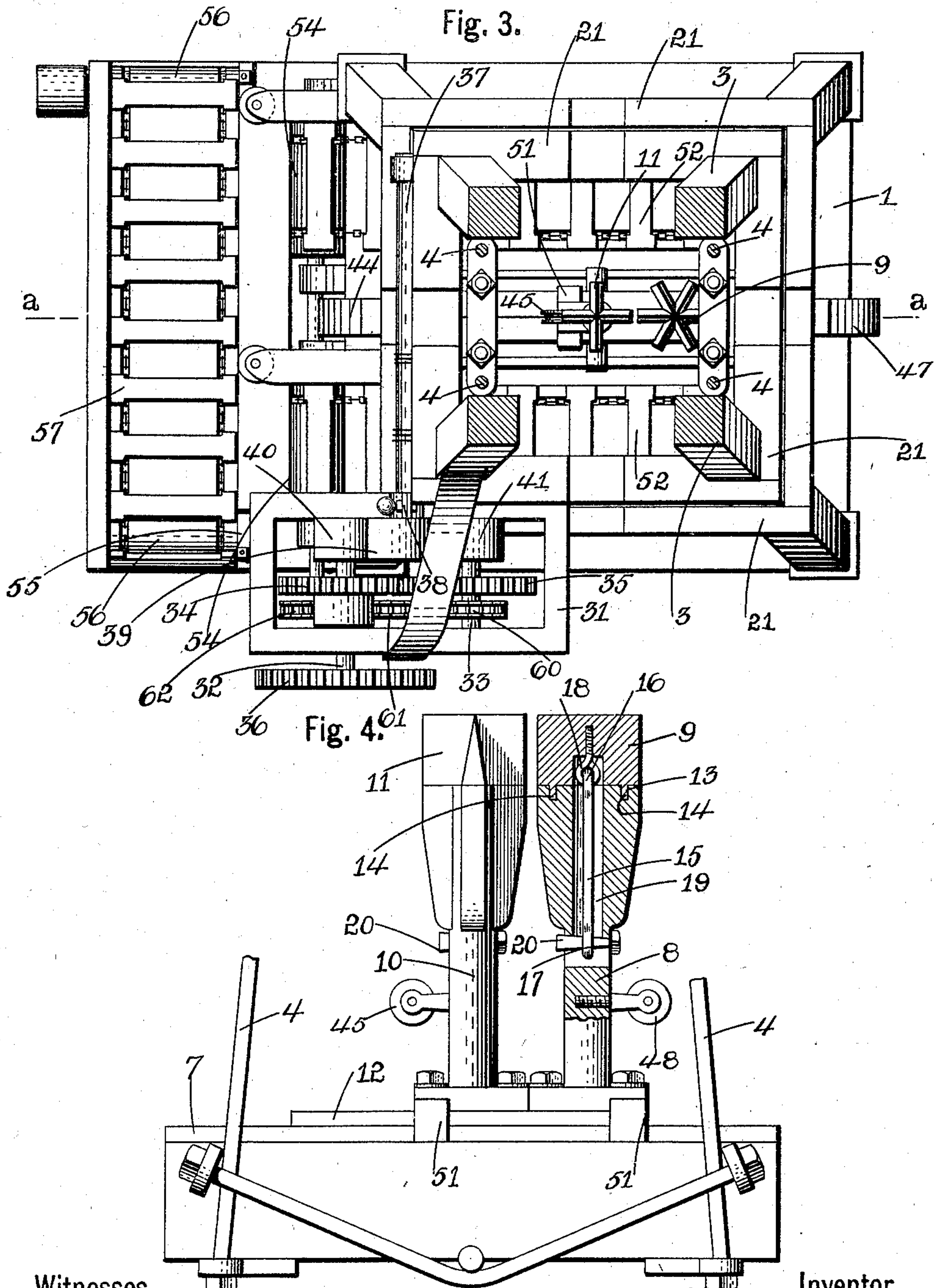
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Witnesses.

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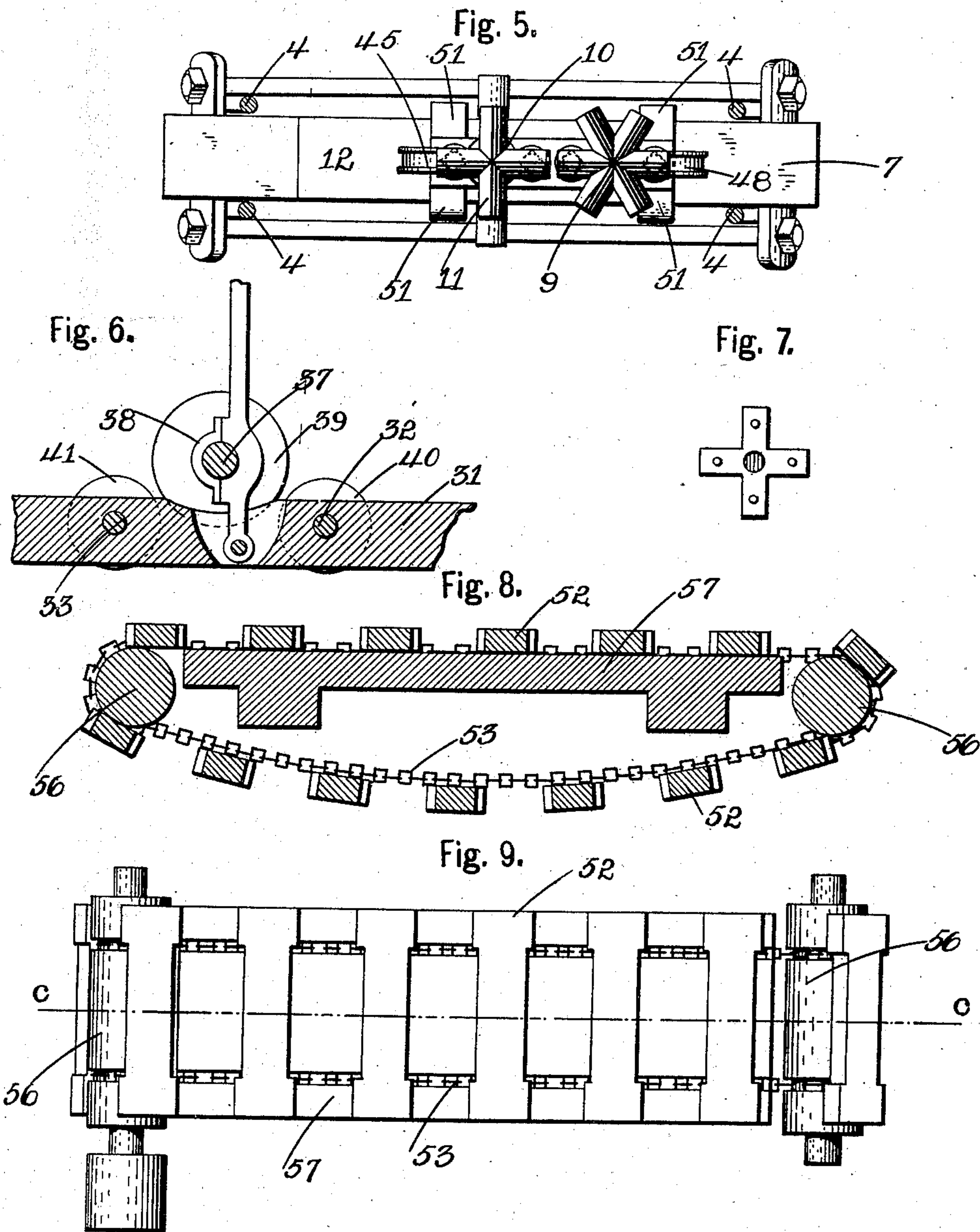
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Witnesses.

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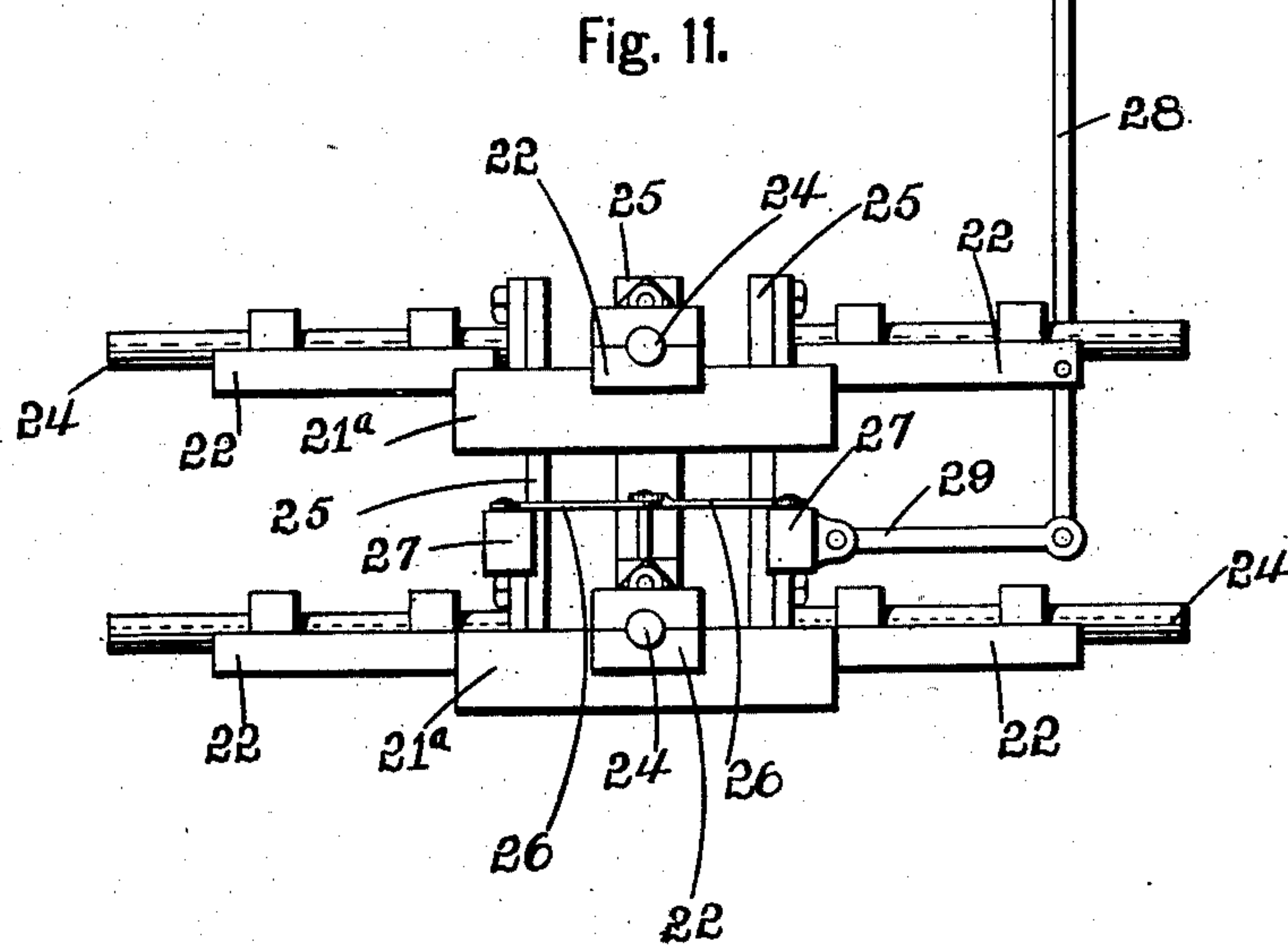
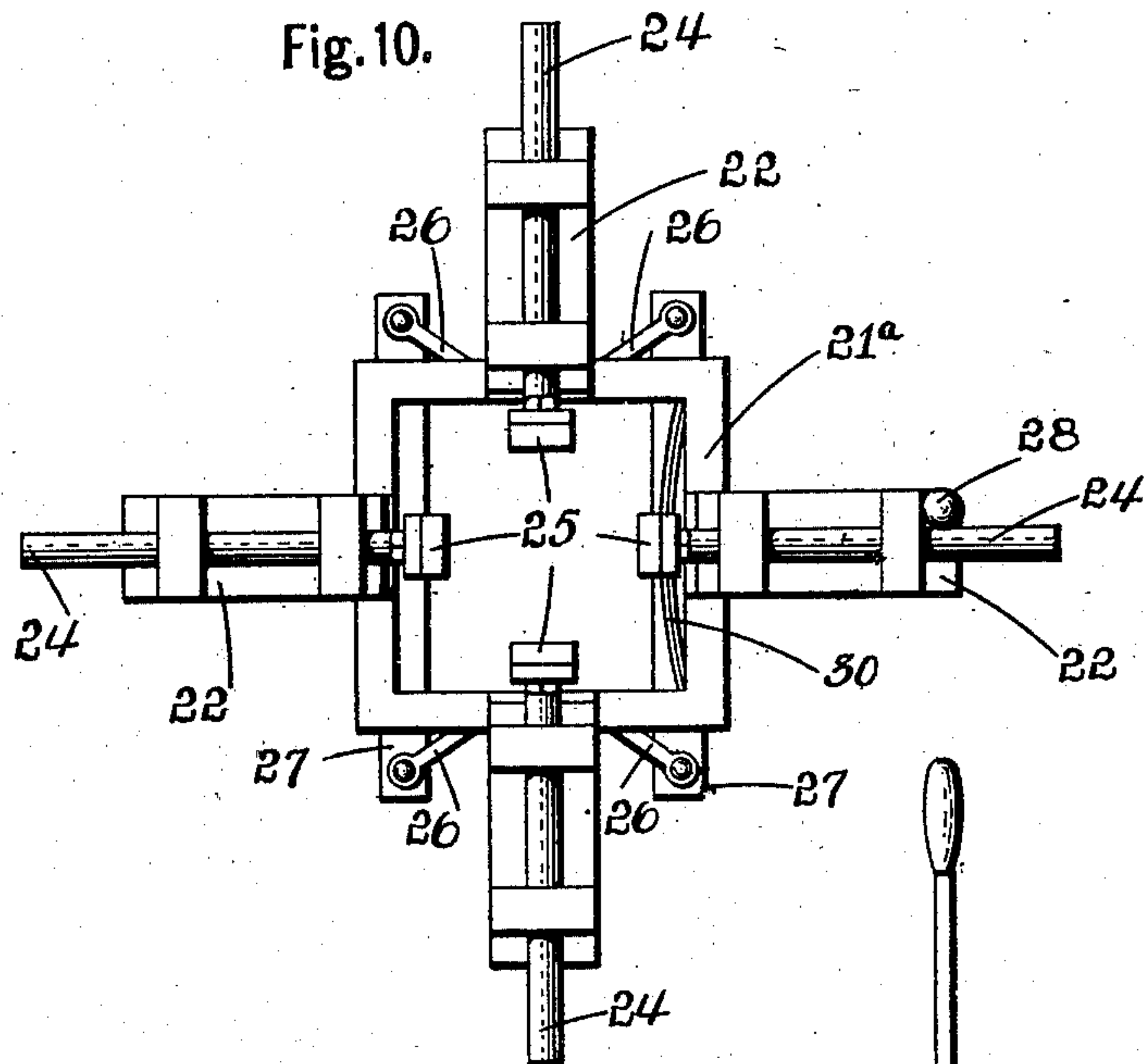
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5 Sheets—Sheet 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

OSCAR E. ELLISON, OF AUSTIN, PENNSYLVANIA.

WOOD-SPLITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 705,659, dated July 29, 1902.

Application filed August 5, 1901. Serial No. 70,865. (No model.)

To all whom it may concern:

Be it known that I, OSCAR E. ELLISON, a citizen of the United States, residing at Austin, in the county of Potter and State of Pennsylvania, have invented certain new and useful Improvements in Wood-Splitting Machines, of which the following is a specification.

My invention relates to an improved automatic machine for splitting wood or other material; and the object of the invention is to provide a rapid and economical means for splitting material of this character.

In this machine the splitting mechanism remains stationary, and the wood or other material to be split is driven against it by suitable mechanism, such as a power-hammer.

The invention also relates to certain details of construction, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which a preferred adaptation of the invention is shown.

Figure 1 is a side elevation of the complete machine. Fig. 2 is a vertical section on line *a a*, Fig. 3. Fig. 3 is a horizontal section on line *b b*, Fig. 2. Fig. 4 is an enlarged side view of the splitting device and a fragment of its support, one of the wedges being shown in section. Fig. 5 is a top plan view of the device shown in Fig. 4. Fig. 6 is an enlarged side view of the friction-wheel device for adjusting the splitting mechanism. Fig. 7 is a bottom plan view of one of the splitting-wedges. Fig. 8 is a section on line *c c*, Fig. 9, through one of the conveying devices. Fig. 9 is a top plan view of one of the conveying devices. Fig. 10 is a top plan view of the gripping mechanism. Fig. 11 is a side elevation of the gripping mechanism shown in Fig. 10.

In referring to the drawings for the details of construction like numerals designate like parts.

The frame of the machine comprises a base 1, a top platform 2, and a series of side beams 3, which gradually converge or slant toward each other from the base to the top platform. The splitting mechanism is hung from the top platform by means of a plurality of rods 4, the upper ends of which extend through the platform and are adjustably held in place

by the nuts 5. A cushioning device is provided for the splitting mechanism and preferably is formed by placing a spring 6 upon the projecting end of each rod 4 between the nuts 5 and the surface of the top platform. The rods 4 are preferably four in number and are attached at their lower ends to a plate 7, upon which the splitting devices are supported.

In the adaptation of the machine shown in the drawings two splitting devices are illustrated, each of which extends vertically upward, one (numbered 8) having an upper portion 9, provided with six wings or blades radiating from the common center, which is adapted to split a log into six pieces, and the other (numbered 10) having an upper portion 11, provided with four wings or blades. These splitting devices are rigidly secured to a bottom support 12, which is slidably mounted on the plate 7. The upper portions 9 and 11 of the splitting devices are made detachable, so that the breaking of a blade will not require the substitution of an entire device. To firmly secure the two parts of each splitting device together, one part is provided with a series of depressions 13, in which a series of extensions or pins 14, projecting from the other part, are seated, and the parts are locked together by a center rod 15, having looped ends 16 and 17, one of which is secured to an eye 18, extending from one portion, the rod extending into an opening 19 in the other part and having a locking device or pin 20, passed through the loop 17. The frame at or near the middle is provided with a series of horizontal side beams 21, which extend around the said frame and are firmly secured to the side beams 3, and a series of blocks 22 are supported on said beams 21 and have openings 23, which radiate from a common center. A bar 24 is slidably mounted in each of these openings and has a gripping-block 25 at its inwardly-extending end. Two sets of these beams are employed, forming two horizontal supports, one above the other, and two series of blocks 22 are mounted on said beams with each block of the upper series vertically above a block of the lower series, and bars are placed in the openings in each of the blocks, each gripping-block being

secured to a bar in the upper series and the bar vertically below said bar in the lower series. An inner substantially square frame 21^a is arranged within each set of beams 21, which additionally support the radial blocks 22. (See Figs. 10 and 11.) These gripping-blocks are connected together, so that they will move in unison, and preferably by means of pivotally-jointed rods 26, which are pivoted at their ends to one oppositely-disposed pair of blocks and at their pivotal joint to the oppositely-disposed pair, which are at substantially a right angle to the first-mentioned pair. Two sets of pivotally-jointed rods are used, each member or rod of each set being pivoted at its outer end to a horizontal portion 27, extending from one block and at its inner end to one of the blocks arranged on the side of the first-mentioned block and the inner end of the other member or rod of the same set. By this means all of the gripping-blocks are connected, so that they will operate in unison.

An operating-lever 28 is pivoted to one of the blocks 22 and has its lower end connected to one of the horizontal portions 27 by a connecting-rod 29.

All of the gripping-blocks are held in their closed or gripping position with resilient pressure by means of the spring 30.

A supplementary frame 31 is mounted on one side of the main frame, in which a main shaft 32 and a counter-shaft 33 are journaled. These shafts are connected by meshing gear-wheels 34 and 35, and the main shaft 32 has means for connection to a power device, such as the sprocket-wheel 36.

A shaft 37 is journaled in a shifting-frame 38 and has a friction-pulley 39, which is adapted to contact with either of the pulleys 40 and 41, mounted on the main shaft 32 and counter-shaft 33. The shifting-shaft forms a windlass for the cords or ropes 42 and 43, which move the splitting mechanism, the cord or rope 42 being fastened to an upright beam 44, attached to one side of the main frame and passing under a pulley 45, fastened to one end of the splitting mechanism, then under a pulley 46, fastened to the beam 44, and finally around the shaft 37 and the cord 43, being fastened at one end to an upright beam 47, attached to the opposite side of the main frame, passing under a pulley 48, fastened to the opposite end of the splitting mechanism, over lower and upper pulleys 49 and 50, fastened to the beam 47, and then around the shaft 37.

The shaft 37 can be shifted to bring the pulley 39 into frictional contact with either of the pulleys 40 or 41 and thereby move the splitting mechanism in either direction.

The support 12 for the splitting mechanism has vertical lugs 51, which project on each side of the plate 7, and thus prevent lateral movement of the support.

A conveying mechanism consisting of a plu-

ality of transverse bars 52, of wood, metal, or other suitable material, united in an endless band by flexible connections 53, such as chains, is provided on each side of the splitting mechanism on pulleys or drums 54, journaled in the base. This mechanism will hereinafter be termed the "side" conveying mechanism.

To prevent the split portions from falling between the splitting devices or off the machine and to direct them onto the side conveying mechanism, the side of the machine-frame and the splitting devices are boarded or walled up a certain distance from the base to form pockets, at the bottom of which the conveying mechanism operates. The base is extended at one side to form a support 55, in which pulleys 56 are journaled, and a conveying device or band 57, formed substantially as the heretofore-described conveying mechanism and termed the "end" conveying mechanism, is mounted on said pulleys. The end conveying mechanism 57 operates transversely or at right angles to the side conveying mechanism and serves to remove the split portions from said side conveying mechanism.

A steam-hammer 58 is mounted in the top platform, so that its piston 59 is arranged vertically above the gripping mechanism and has a vertical operating movement against a log in the gripping mechanism.

I preferably operate the conveying mechanism from one of the shafts in the supplementary frame—for instance, as shown in the drawings, in which a sprocket-wheel 60 is mounted on the counter-shaft 33, journaled in the supplementary frame, and is connected by a chain 61 to a sprocket-wheel 62, mounted in one of the pulleys of the side conveying mechanism.

The log or other material to be split is elevated to the gripping mechanism by an inclined conveying track or device 63, the gripping-blocks being separated to receive a log to be split by the operating-lever in the hands of the operator and then automatically closing to grip the log upon the release of the lever.

With the splitting devices shown the log can be divided into either two, four, or six longitudinal parts, as desired, as the arrangement of the device 8 vertically beneath the gripping mechanism will split a log into six parts, the vertical arrangement of the device 10 in the same position will split a log into four parts, and the arrangement of the two contacting blades of the two devices will split the log into two parts.

The splitting devices are moved into proper position by the mechanism heretofore described to split the log into the number of parts desired. The steam-hammer is now operated, and the piston 59 descends and drives the log upon the splitting device, thereby splitting it into the required number of parts.

The split parts drop upon the side conveying mechanism, by which they are carried to the desired point—for instance, to a car in which they are transported.

5 The splitting devices are stationary, except that they can be adjusted to bring the desired one in splitting position, the log being driven against them by the power-hammer.

10 The gripping mechanism holds the logs between the hammer and the splitting devices and in proper position to be driven upon the splitting devices.

I claim as my invention—

15 1. A machine for splitting wood or other material having stationary splitting mechanism, mechanism adapted to support the wood or other material while it is being split and mechanism adapted to drive the wood or other material against the splitting mechanism.

20 2. A machine for splitting wood or other material comprising a frame, splitting mechanism in said frame, gripping mechanism above the splitting mechanism, and a hammer device above the gripping mechanism adapted to drive a log in the gripping mechanism upon the splitting mechanism.

30 3. A machine for splitting wood or other material comprising a frame, splitting mechanism in said frame having a plurality of splitting devices each having a different number of blades, gripping mechanism, means for driving a log in the gripping mechanism upon the splitting mechanism and means for adjusting the splitting mechanism to arrange the desired splitting device beneath the gripping mechanism.

40 4. A machine for splitting wood or other material comprising a frame, splitting mechanism in said frame, a hammer device, gripping mechanism between the splitting mechanism and the hammer device; said hammer device being adapted to drive a log in the gripping mechanism against the splitting mechanism.

50 5. A machine for splitting wood or other material comprising a frame, splitting mechanism in said frame having a plurality of splitting devices each having a different number of blades, gripping mechanism, means for driving a log in the gripping mechanism against the splitting mechanism and means

for adjusting the splitting mechanism to operatively arrange the desired splitting device with respect to the gripping mechanism.

6. A machine for splitting wood comprising 55 splitting mechanism, gripping mechanism above the splitting mechanism, hammer mechanism above the gripping mechanism, side conveying mechanism on each side of the splitting mechanism and end conveying mechanism transverse to the side conveying mechanism. 60

7. A machine for splitting wood comprising splitting mechanism having a lateral adjusting movement only, hammer mechanism having a path of movement toward or from the splitting mechanism; gripping mechanism between the splitting mechanism and the hammer mechanism and mechanism for shifting the splitting mechanism. 70

8. A machine for splitting wood comprising splitting mechanism gripping mechanism above the splitting mechanism, hammer mechanism above the gripping mechanism adapted to drive the wood or other material to be split against the splitting mechanism and conveying mechanism. 75

9. In a splitting-machine, a splitting device comprising a plurality of independent portions and each portion having a different number of splitting-blades, means for laterally adjusting said splitting device, hammer mechanism, and gripping mechanism between the splitting device and hammer mechanism. 80

10. In a splitting-machine, the combination of splitting mechanism, hammer mechanism and gripping mechanism between the splitting mechanism and hammer mechanism comprising a series of movable gripping-blocks. 85 90

11. In a splitting-machine, the combination of splitting mechanism, hammer mechanism having a path of movement toward or from the splitting mechanism, and gripping mechanism adapted to hold a log or other article in position between the splitting mechanism and hammer mechanism. 95

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Witnesses:

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