

(No Model.)

4 Sheets—Sheet 1.

E. & B. HOLMES.  
Stave Dressing Machine.  
No. 241,138.  
Patented May 10, 1881.

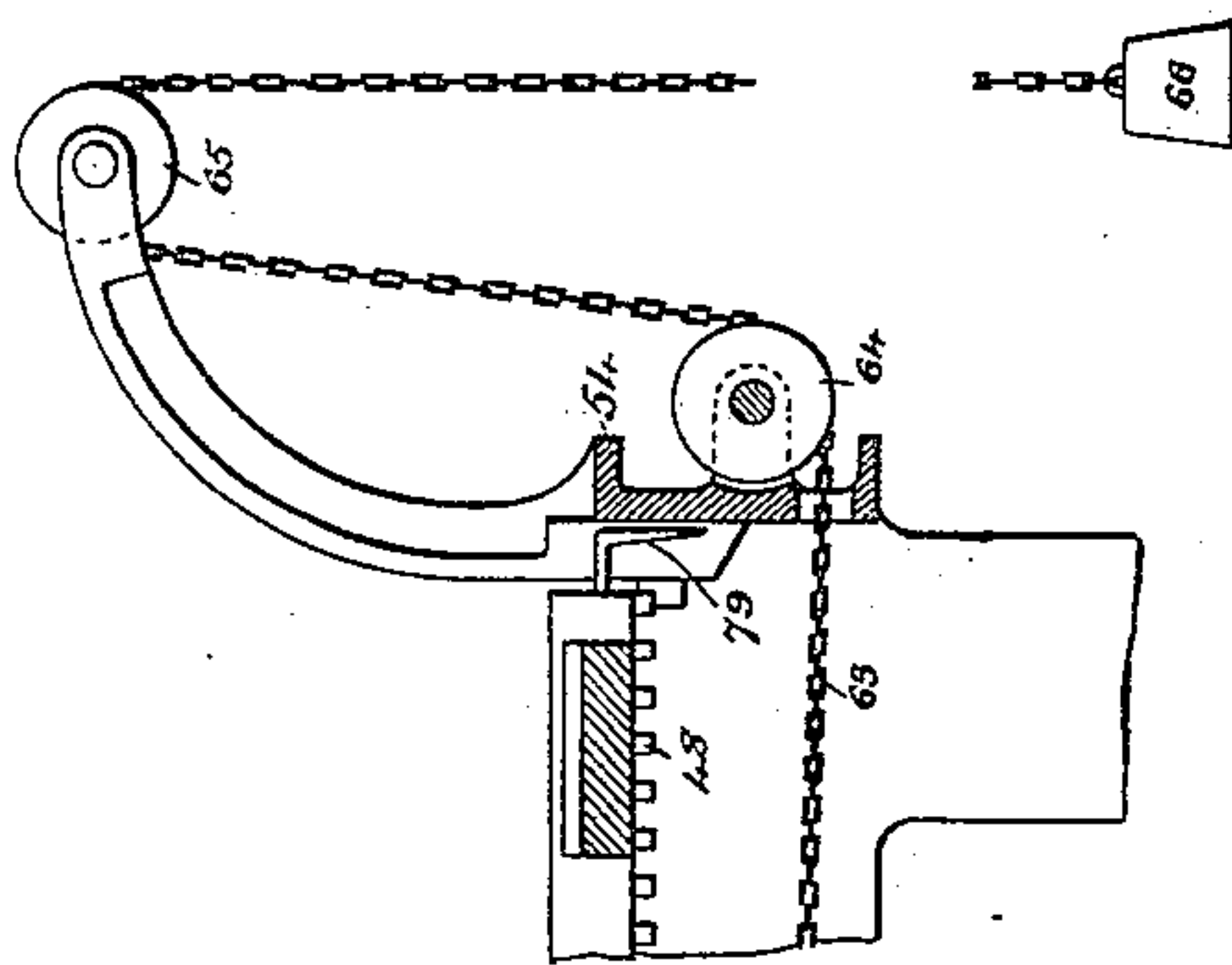


Fig. 1.

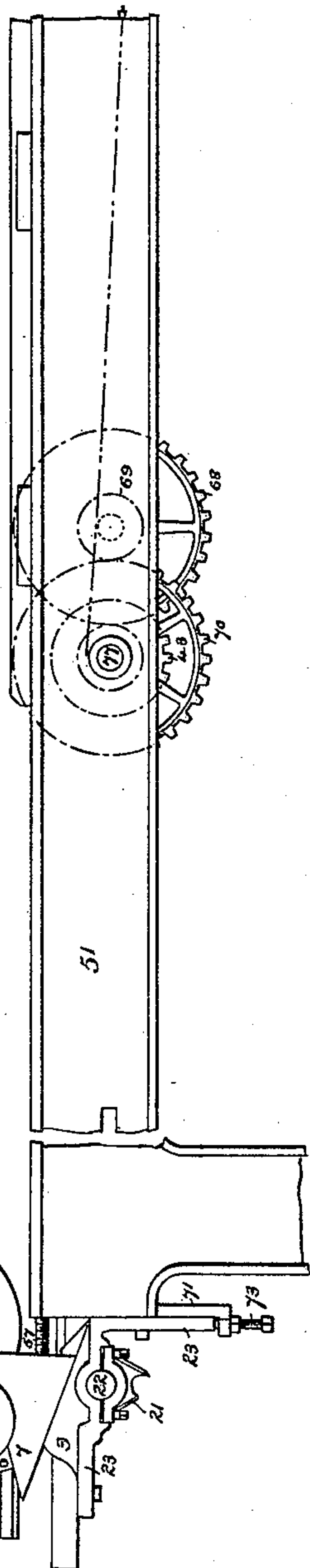
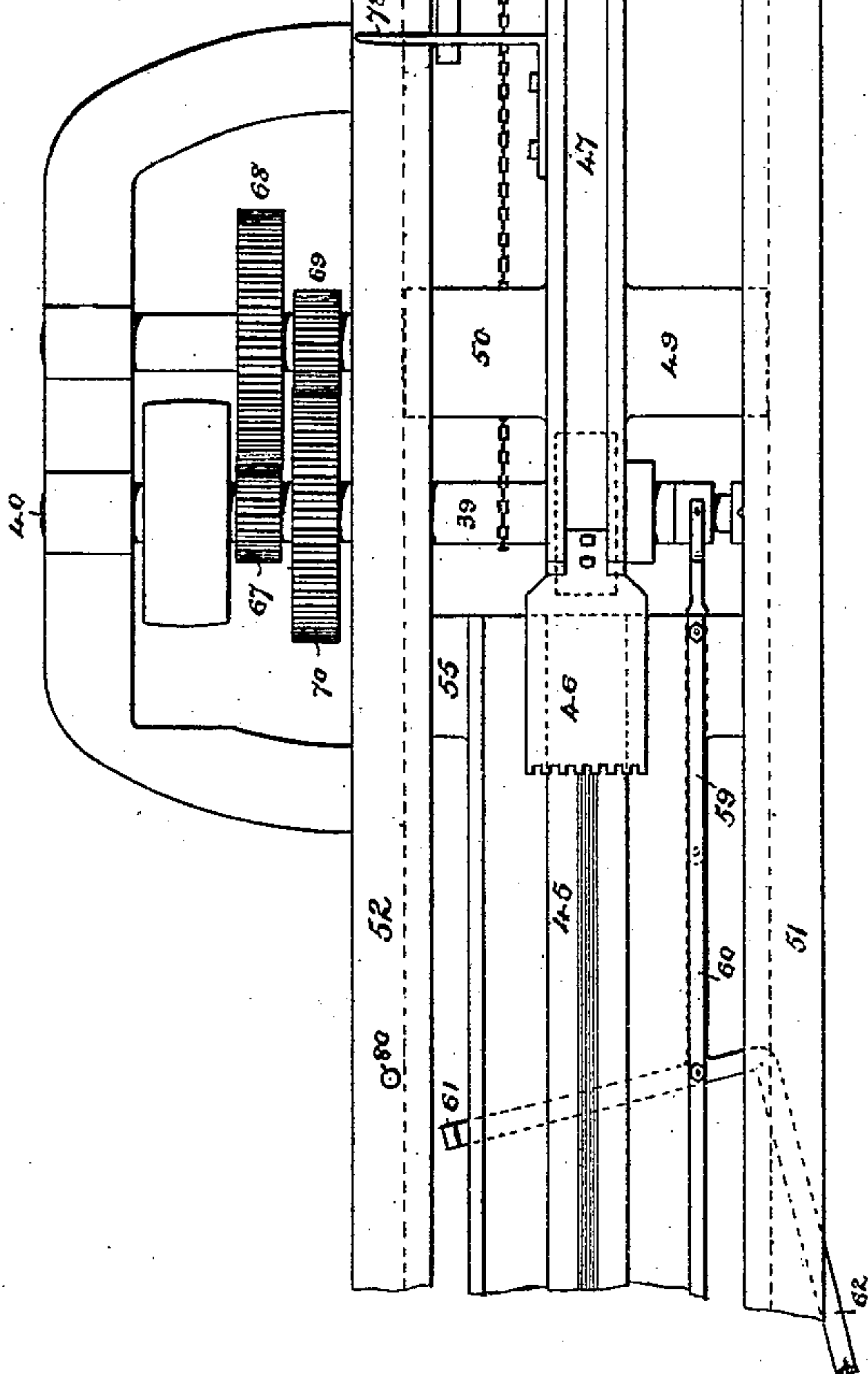
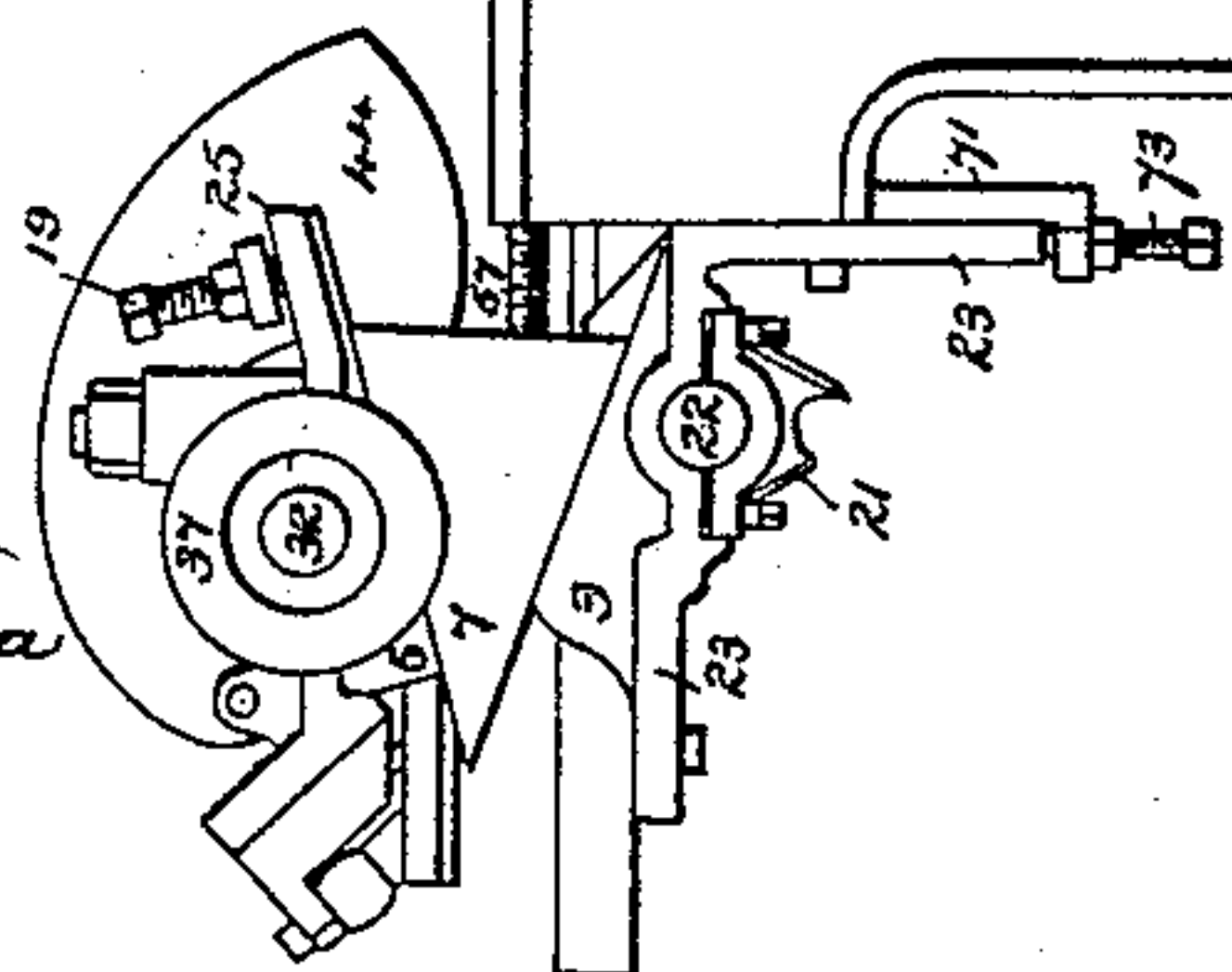


Fig. 2.



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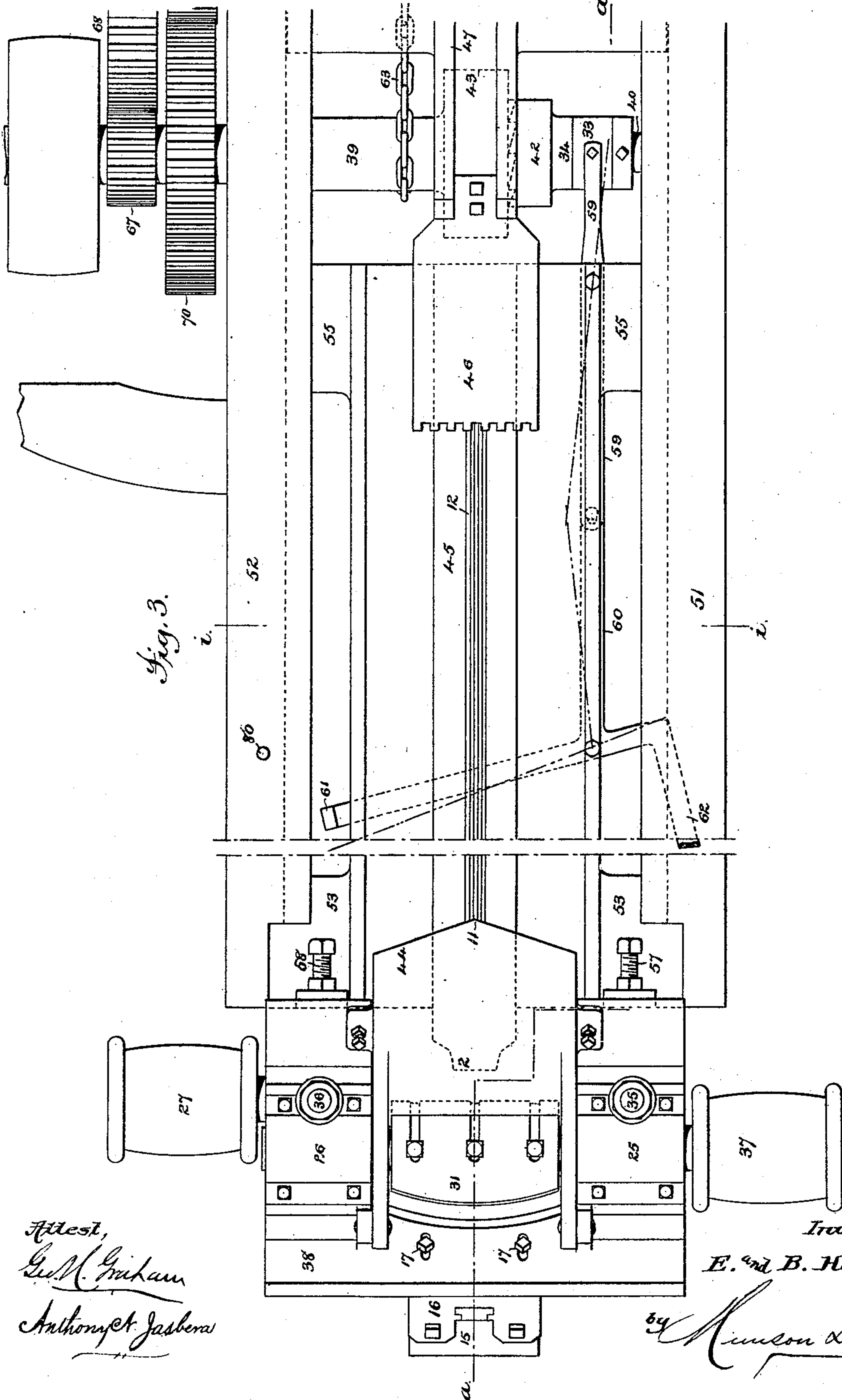
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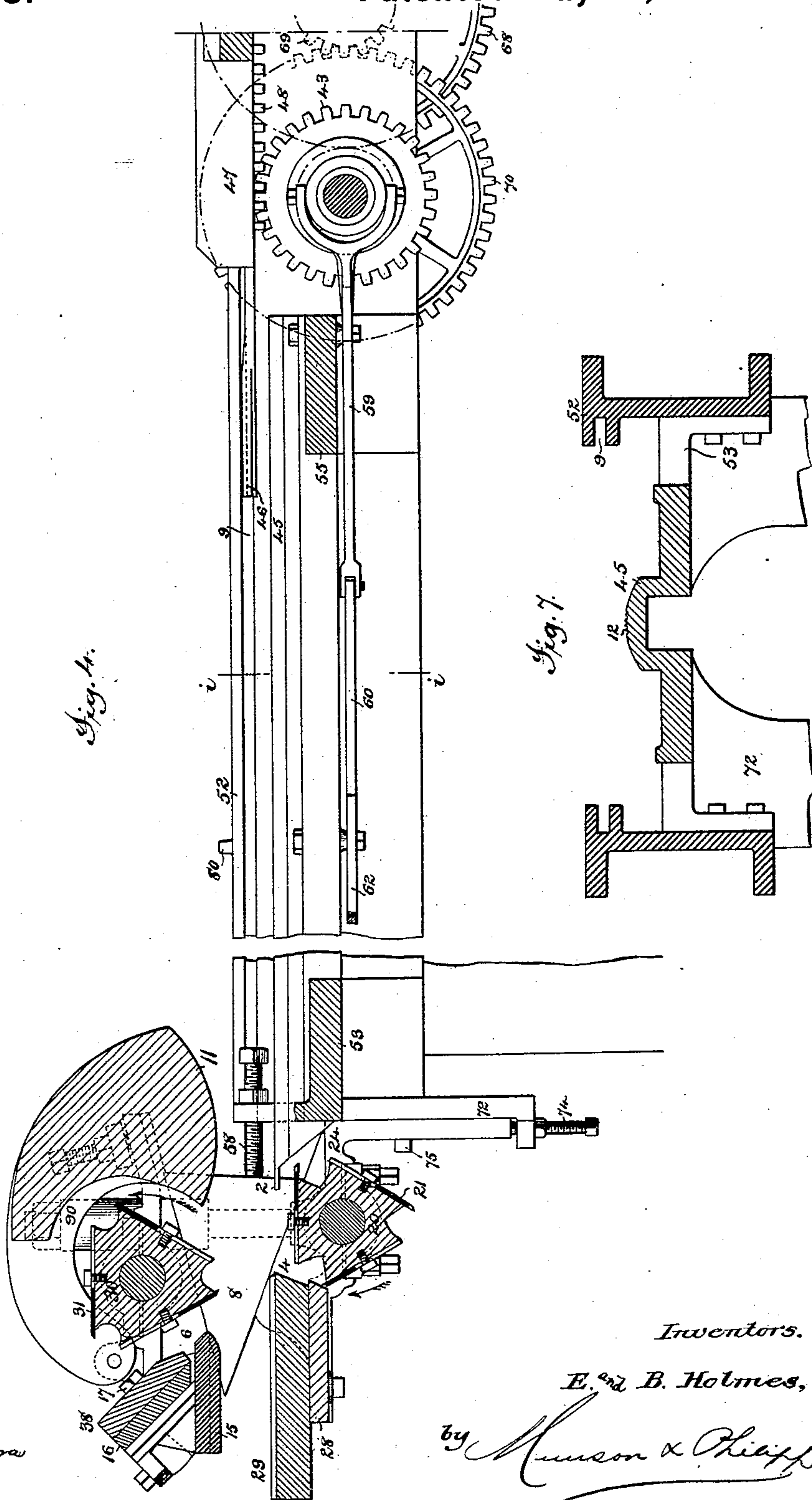
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Fig. 5.

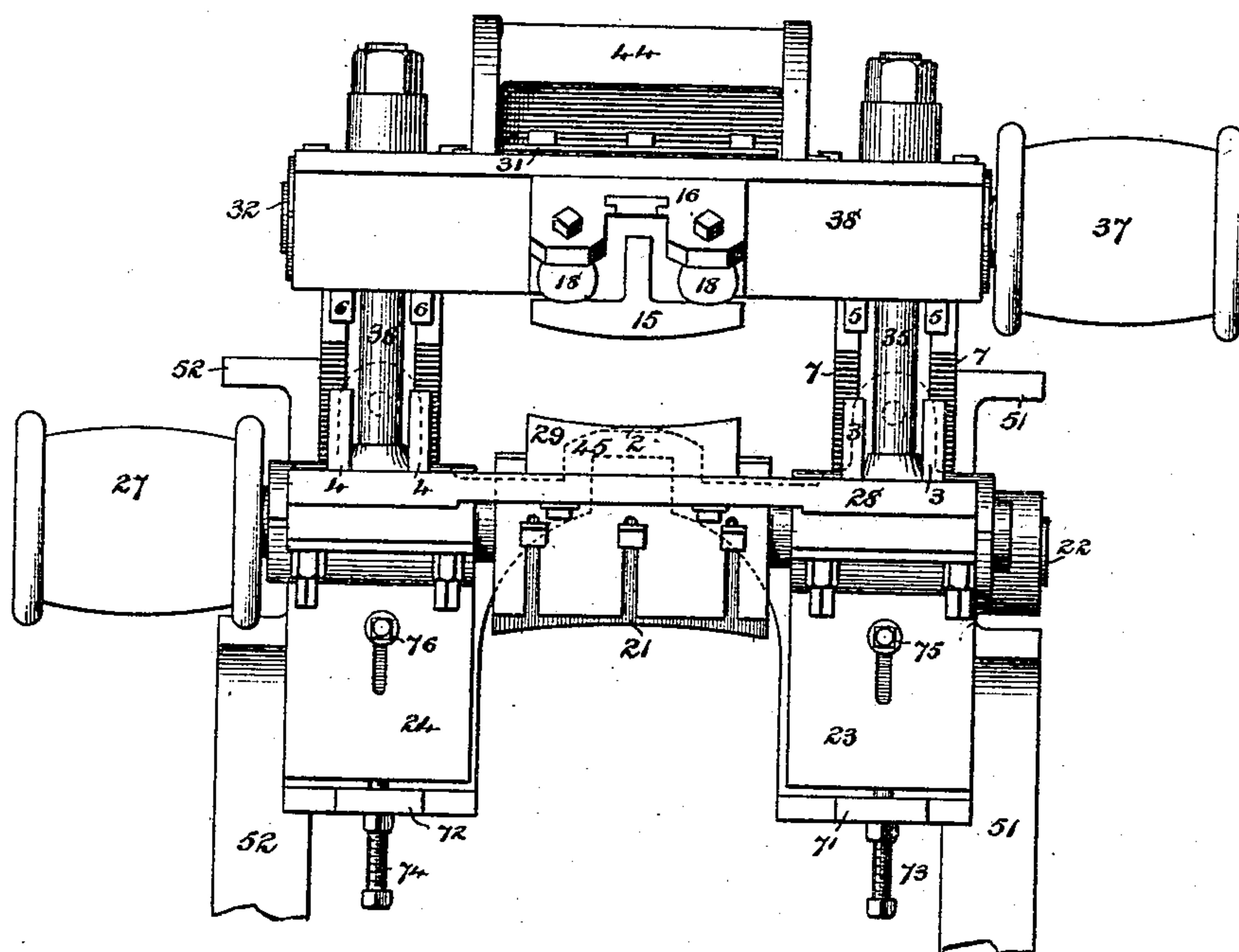
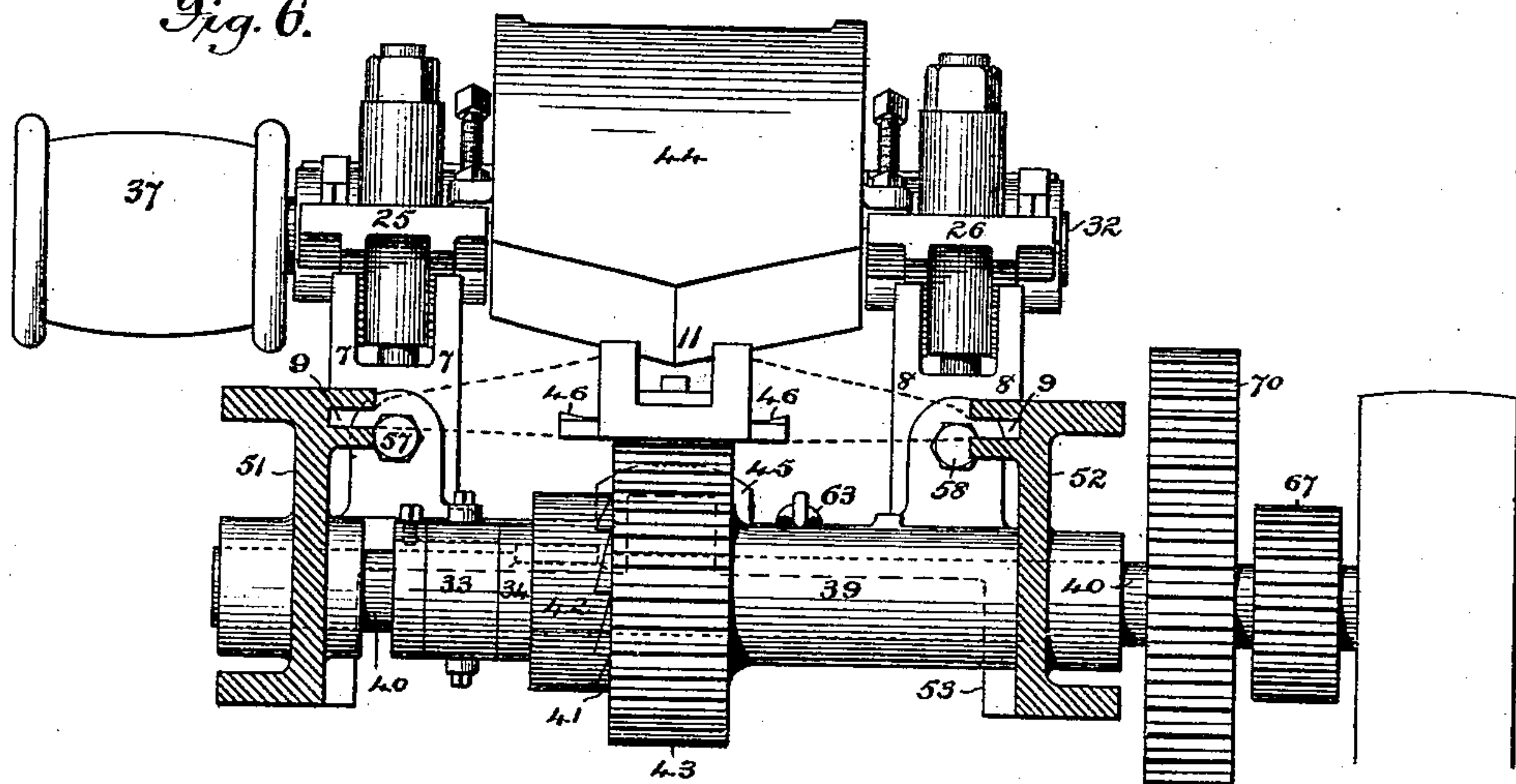


Fig. 6.



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# UNITED STATES PATENT OFFICE.

EDWARD HOLMES AND BRITAIN HOLMES, OF BUFFALO, NEW YORK.

## STAVE-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 241,138, dated May 10, 1881.

Application filed May 8, 1880. (No model.)

*To all whom it may concern:*

Be it known that we, EDWARD HOLMES and BRITAIN HOLMES, citizens of the United States, residing in the city of Buffalo, county of Erie, and State of New York, have invented certain new and useful Improvements in Machines for Dressing Staves, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

In said drawings, Figure 1 represents a longitudinal sectional elevation (one end being in section) of a machine embodying our improvements. Fig. 2 shows a plan view of the rear portion thereof. Fig. 3 is a plan view (enlarged) of the front portion of such machine. Fig. 4 is a longitudinal sectional elevation on line *a* of Fig. 3. Fig. 5 is a front-end elevation; Fig. 6, a rear-end elevation; Fig. 7, a cross-sectional elevation on the line *i* of Figs. 3 and 4.

This invention relates to that class of machines whereby a stave is dressed upon its upper and under surfaces, so as to impart to it the necessary concavo-convex form transversely that adapts it, when a suitable number are set up and held by hoops in cylindrical shape, to form a barrel-body with smooth circular exterior and interior surfaces.

The invention consists in a peculiar feeding mechanism, whereby the staves are prevented from twisting while they are forced through the cutting mechanism; in a peculiar structure of the supporting-bed, whereby the thick parts of the stave may be cut off without canting or turning the stave; in a novel structure of a work-holding weight, whereby the stave is sustained against the forward-feeding action of the cutters, and at the same time is supported in position to be properly dressed, which weight is also constructed to operate as a guide directing the shavings, and in various combinations of devices too fully hereinafter set forth to need further preliminary description.

The slab of wood in its undressed condition, as when riven or sawed from a block of timber, requires several operations to be performed upon it before it is suited for use as one of the staves forming part of a tight barrel. Thus it must be shaped so as to have a concave inner surface and a convex outer surface, it must have its edges jointed or shaped so that the

adjacent edges of two staves will fit together and form a proper joint between them, and it must be bent longitudinally to impart the bow shape at the bilge. These preliminary operations are essential before staves are formed that are in proper condition to be assembled in making "tight work," as barrels and like vessels for holding liquids are termed. Other and subsequent fitting operations are performed upon such staves, and usually after they have been "set up" or assembled and trussed, as crozing, howeling, and chamfering their ends to adapt them to receive the heads.

The present invention pertains to a machine for performing the first or dressing operation, and the apparatus herein illustrated as embodying it will now be described.

The cutting or dressing mechanism consists of an under and an upper rotating cutter.

The under cutter is composed of a triangular head, 20, to the sides of which chisel-shaped cutters 21, having concave cutting-edges, (see Fig. 5,) are adjustably fixed by slots and set-screws, which head is fast upon a transverse shaft, 22, that is journaled in box-frames 23 24, that are secured to brackets 71 72, that depend from the end or cross frame 53 of the machine, said shaft 22 being provided with a pulley, 27, whereby it may be rotated at an appropriate speed.

The upper cutter is composed of a triangular head, 30, to the sides of which chisel-shaped cutters 31, having convex cutting-edges, (see Fig. 3,) are adjustably fixed by slots and set-screws, which head is fast upon a transverse shaft, 32, that is journaled in box-frames 25 26, that are partly supported by vertical shafts 35 36, which rise from the box-frames 23 24, and this shaft is also provided with a pulley, 37, by which it may be rotated at an appropriate speed. The box-frames 23 24 also support upon a cross-plate, 28, connecting them, the lower rest-block, 29, which has a concave face transversely suited to receive the finished part of the stave, and they also carry downwardly-inclined and forwardly-projecting guide-blocks, as 3 4. The box-frames 25 26 support a lever-like work-holding weight, 44, that is pivoted by arms at its rear end, and has its forward end overhanging the work-supporting table 45, which weight has a tapered face that provides a bearing-rib, 11, that presses upon the center



of the stave only, the downward movement of which weight 44 is limited by adjusting-screws 19, that bear upon the box-frames. Said box-frames also support at their rear ends, upon  
 5 a cross-plate, 38, connecting them, the upper rest-block, 15, which has a convex surface transversely suited to receive the upper surface of the finished part of the stave. The rest-block 15 is adjustable to and from the rest-block 29  
 10 by means of a carrier, 16, that may slide up and down in guide-slots in the plate 38, and be secured in any position thereon by holding-screws 17, and this rest-block 15 is also seated elastically in its said carrier upon rubber cushions 18, that bear between shoulders upon the  
 15 guide and arms of the carrier. These box-frames are further provided with depending upwardly-inclined and forwardly-projecting guide-blocks 56, which bear upon the upper surfaces of wedge-like adjusting-blocks 7 8, the  
 20 lower surfaces of which rest upon the guide-blocks 3 4. The blocks 7 8 are adjustable longitudinally by means of actuating-screws 57 58, that are tapped through arms rising from the end frame, 53, of the machine, and bear directly  
 25 upon the rear faces of the said adjusting-blocks. These box-frames 23 24 and the cutter-head 20, the rest-block 29, and the guide-blocks 3 4 may thus be simultaneously adjusted vertically by  
 30 means of adjusting-screws 73 74, that are tapped through the arms of the brackets 71 72 and bear against the lower ends of the box-frames 23 24, holding-screws 75 76 securing the parts in fixed positions of their adjustment. By  
 35 these means the following independent adjustments may be accomplished: The position of the cutter-head 20 and its cutters 21 with respect to the work-supporting table 45 and stave-rest block 29 may be accomplished. The relation  
 40 of the bearing-rib 11 and of the weight 44 to the work-supporting table may be varied. The head 30 and the cutters it carries may be adjusted with respect to the work-supporting table 45 and the stave-rest block 29, and thus  
 45 the depth of cut it is to make be determined, as well as the thickness of the stave. The position of the stave-rest block 15 with respect to the stave-rest block 29 may likewise be suited to the position of the cutter-head 30. By  
 50 moving the adjusting-blocks 7 8 forward or back by means of the screws 57 58 the box-frames 25 26 and the devices they carry may be adjusted bodily in a vertical direction, guided by the shafts 35 36, thus bringing the relatively-  
 55 adjusted cutters 31, rest-block 15, and weight 44 into such proper relation to the work-supporting devices as is requisite to produce a stave of predetermined thickness. The relative positions of the cutter-heads 20 30, their  
 60 cutters, and the work-rest blocks 15 29 with respect to each other may be varied to adapt the machine to dress a stave to any desired thickness; and as all these parts are removable they may be exchanged for others suited  
 65 to the making of a cut of different curve, suited to the making of various sizes of barrels.

The work-supporting table 45 for the un-

dressed strip or rough stave consists of a bed of a length greater than that of the staves the machine is adapted to operate upon, which bed  
 70 is curved so as to present a convex transverse upper surface, (see Fig. 5,) the central or bearing part of which is ribbed longitudinally, as at 12, so as to more securely hold the stave. This table is supported at one end by the end  
 75 frame, 53, and at the other by a central cross-bar, 55, that unites the side frames, 51 52, of the machine together, and terminates at its front end in a tongue, 2, Figs. 3 and 5, that extends so as to stand just without the path of  
 80 travel of the lower rotating cutters, 21, and thus constructed it supports the stave along its longitudinal central portion.

The stave-feeding mechanism consists of a  
 85 serrated or toothed dog, 46, that projects forward from a longitudinally-reciprocating carriage, 47, and is wide enough and properly curved to engage the entire end of the stave  
 90 widthwise, so that when it is engaged with a stave resting upon the central ribbed portion, 12, of the bed 45, and pressed thereon by the central rib, 11, of the weight 44, such stave will be securely held, and so as not to twist or  
 95 cant as it is moved forward to and operated upon by the cutters. The carriage 47 has a number of lateral arms, 49 50, by which it is guided in longitudinal groove 9, formed in the  
 100 side frames, 51 52, the forward movement of which is accomplished by means of a rack, 48, carried on its under side, in which a driving-pin  
 105 ion, 43, gears. This pinion is secured to a sleeve, 39, that runs freely upon a shaft, 40, that is slowly but constantly driven by the multiplying-gear wheels 67 68 69 70 from the main shaft 40. This pinion is provided on one  
 110 side with a ratchet-clutch, 41, that is adapted to be engaged by a clutch-wheel, 42, which is mounted upon the shaft 40 by means of a spline, so as to slide on said shaft while it revolves with it. This clutch-wheel 42 is provided with  
 115 a hub, 34, that turns freely in a band, 33, to which the forked end of a shifting-lever, 59, is attached. This lever is pivoted to a double-armed bell-crank, 60, one arm, 61, of which terminates near the side frame, 52, and projects into the path of the reciprocating carriage  
 120 47, while the arm 62 projects through the side frame, 51, and terminates in a hand-lever. The sleeve 39 of the pinion 43 also acts as a winding-drum for a chain, 63, that runs from this sleeve or drum under a pulley, 64, over a second pulley, 65, and has depending from its end a weight, 66.

The parts all having been adjusted to suit the length of stave to be operated upon, and the thickness and degree of curvature it is to have when finished, an undressed stave is introduced into the machine by being laid upon the table 45 with its butt against the dog 46 and its head bearing under the forward end of the  
 125 weight 44. The lever 62 is then moved to throw the clutch-wheel 42 into engagement with the clutch 41, whereupon the driving-pinion 43 and the winding sleeve or drum 39 are set in mo-



tion. The pinion 43 thus drives the carriage 47 forward and slowly feeds the stave forward under the weight 44, the pressure of which resists the forward movement of the stave and compels the dog 46 to enter its butt-end, in which it secures a firm hold that sustains the stave from canting or turning while it is pressed forward upon the table 45. When the stave is thus pushed forward its end is brought into position to be engaged by the rotating cutters, the drum 39 at the same time winding up the chain 63 and raising the weight 66. As the cutters operate to dress the opposite sides of the stave they shape its end to fit between the rest-blocks 15 29, which, receiving it, act as guides, aiding to hold it in its exact relation to the cutting mechanism to secure a uniformity of cut throughout its length. When the carriage has accomplished the extent of its forward feed its front end comes into contact with the arm 61 of the bell-crank 60, and so moves the lever 59 as to separate the clutch-wheel 42 from the clutch 41, thus disengaging the driving-pinion 43 from the rotating shaft and setting said pinion free. The force of the weight 66, which has been raised to its highest position, causes the chain 63 to draw rearward and to carry with it the carriage 47 back to a position to receive another stave to be dressed, and as the carriage thus moves rearward it draws the dog 46 out of the stave end, thus allowing the latter to be carried out between the rest-blocks 15 29.

In order to assist the carriage in taking up its rearward motion when the clutch mechanism is released, it is provided about midway with a lateral spring, 78, which, having engaged with a stop-pin, 80, in the side frame as the carriage moved forward, acts by its resiliency to press the carriage rearwardly; and to prevent damage to the carriage, which runs freely backward, it is also provided at its end with a depending spring, 79, that abuts against the rear end frame, 54, and thus acts as a cushion.

As the cutters reduce the stock of the stave in imparting the requisite transversely-curved surfaces to its opposite sides the shavings produced by the cutters 21 are deflected to the floor by the inclined end of the table 45, and those produced by the cutters 31 are directed upward and discharged rearwardly by the curved under surface of the rear part of the weight 44, which is thus adapted to act as a shield, 90. What is claimed is—

1. The combination, with upper and lower rotating cutters operating upon the opposite faces of a stave, of a reciprocating stave-feeding carriage having a convex bed or rib, as 12, carrying a single holding-dog, as 46, that engages the stave end widthwise and co-operates with said cutters to sustain the stave during the dressing operation from lateral movement or twisting while feeding it forward, substantially as described.

2. The combination, with the cutters and the

stave-feeding carriage, of a holding-dog, as 46, operating to prevent lateral movement, twist, or cant of the stave, and guide-rests, as 15 29, operating to control the finished end of the stave, substantially as described.

3. The combination, with the cutters and feeding-carriage, of the work-supporting bed having a narrow longitudinal seat and holding-weight having a bearing-rib, substantially as described.

4. The combination, with the cutters and feeding-carriage, of the work-supporting bed having a narrow longitudinal seat, holding-weight having a bearing-rib, and guide-rests, as 15 29, substantially as described.

5. The combination, with the cutters and feeding-carriage, of the work-supporting bed having a narrow longitudinal seat, and the guide-rests, as 15 29, substantially as described.

6. The combination of the cutters 21 and the work-supporting table having a convex bed or rib, as 12, extended as a projecting narrow lip, 2, standing close to the edge of the cutters, whereby the common central surface of the stave-slab is rigidly supported close to the cutting-point, while its irregular parts may depend at the opposite sides of said lip, substantially as described.

7. The combination, with the concave cutters 21, of the convex-surfaced bed 45 and means for feeding the stave forward, substantially as described.

8. The combination, with the concave cutters, of the convex-surface bed 45, holding-weight 44, and means for feeding the stave forward, substantially as described.

9. The combination, with the cutters 31, of a work-holding weight having its bearing-face reduced to a longitudinal rib, substantially as described.

10. The combination, with the convex work-supporting table 45, of the vertically-adjustable cutter-head 20, provided with concave cutters, and the concave-surfaced rest-block 29, substantially as described.

11. The combination, with the work-supporting table 45, cutters 21, rest-block 29, and the holder 11, of the convex cutters 31 and convex-faced rest-block 15, arranged to be bodily adjustable with respect to said table and holder, substantially as described.

12. The combination, with the convex table 45 or rib 12, concave rest-block 29, and cutter-heads 20 30, of the independently-adjustable convex rest-block 15, substantially as described.

13. The combination, with the convex table 45 or rib 12 and means for feeding the stave forward, the cutters 21 31, and concave rest-block 29, of the elastically-seated convex rest-block 15, substantially as described.

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Witnesses:

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