

No. 881,793.

F. D. GREEN.
WOOD MOLDING MACHINE.
APPLICATION FILED AUG. 3, 1906.

PATENTED MAR. 10, 1908.

4 SHEETS—SHEET 1.

Fig. 1.

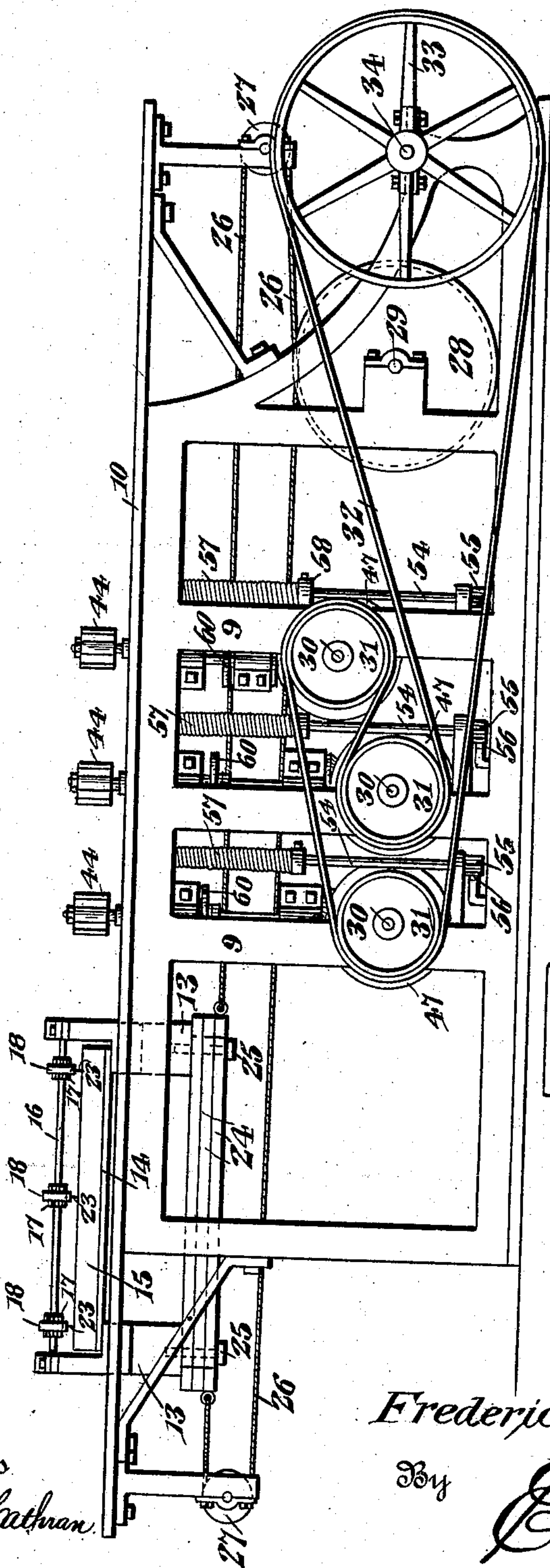


Fig. 7.

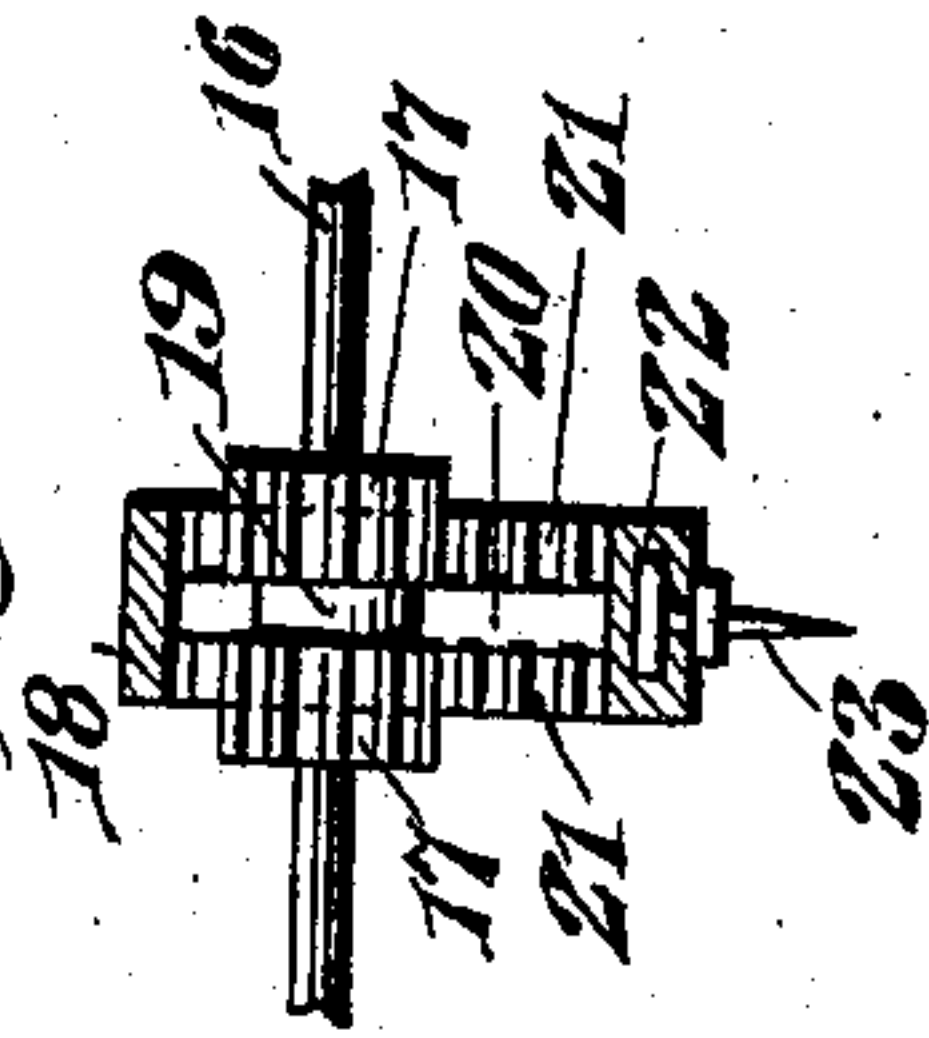


Fig. 8.

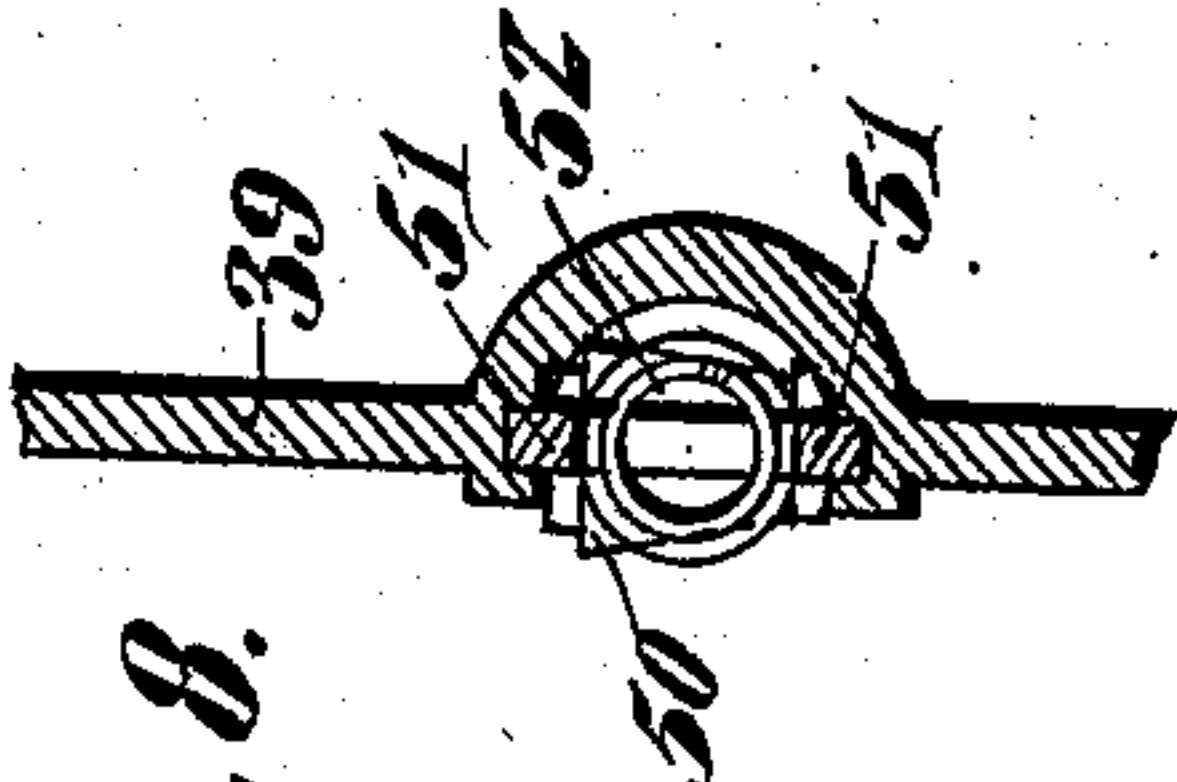
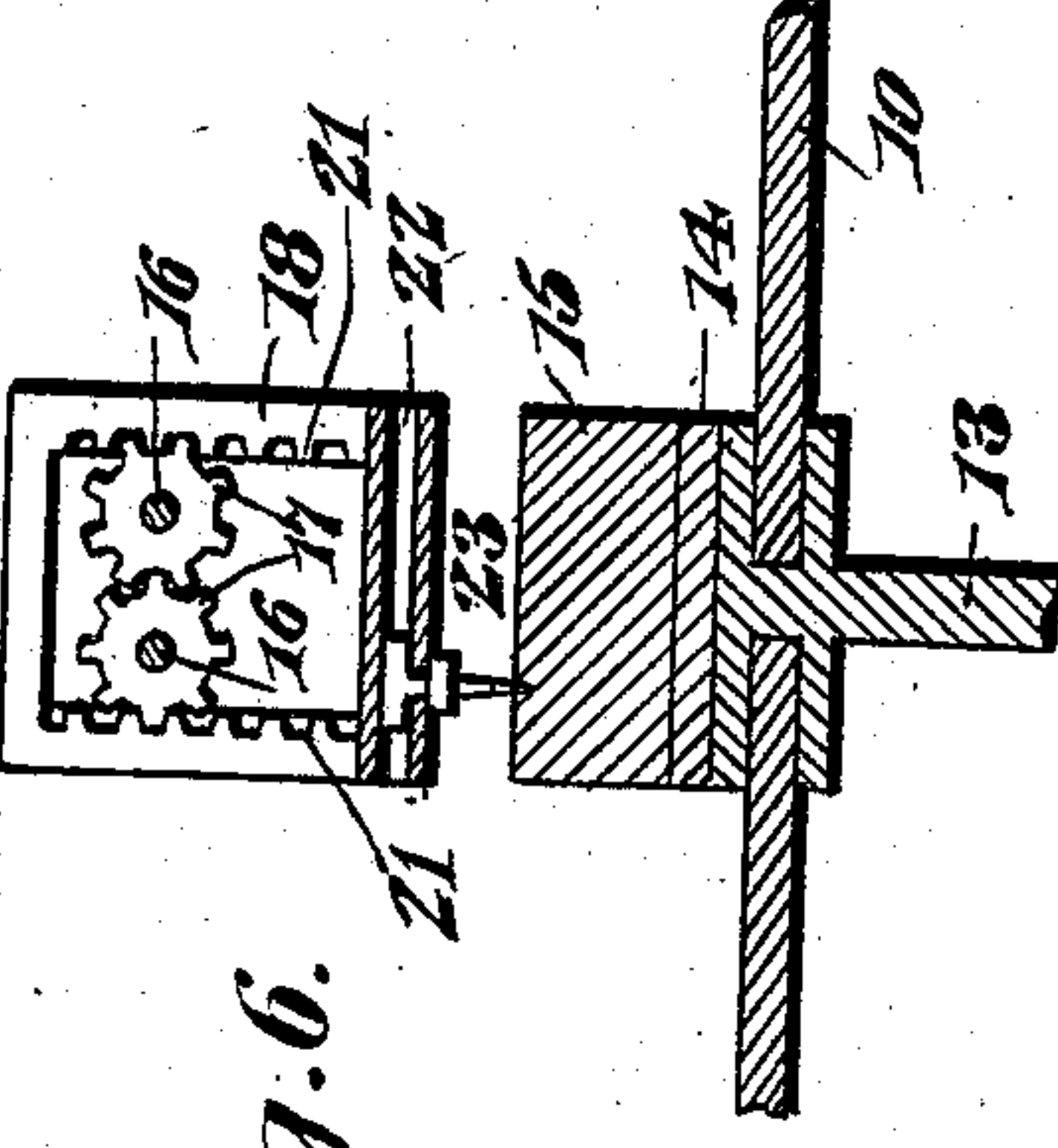


Fig. 6.



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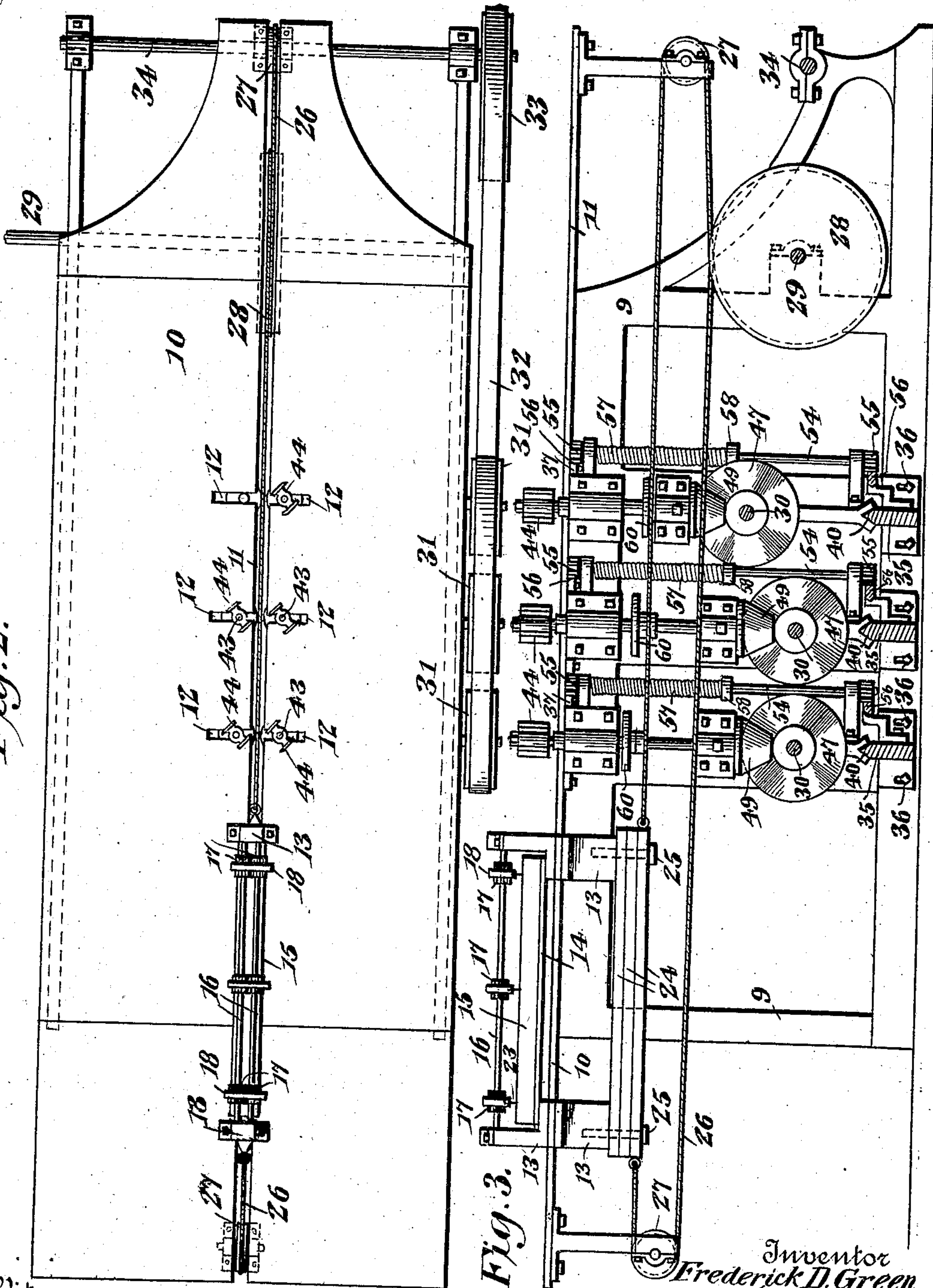
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

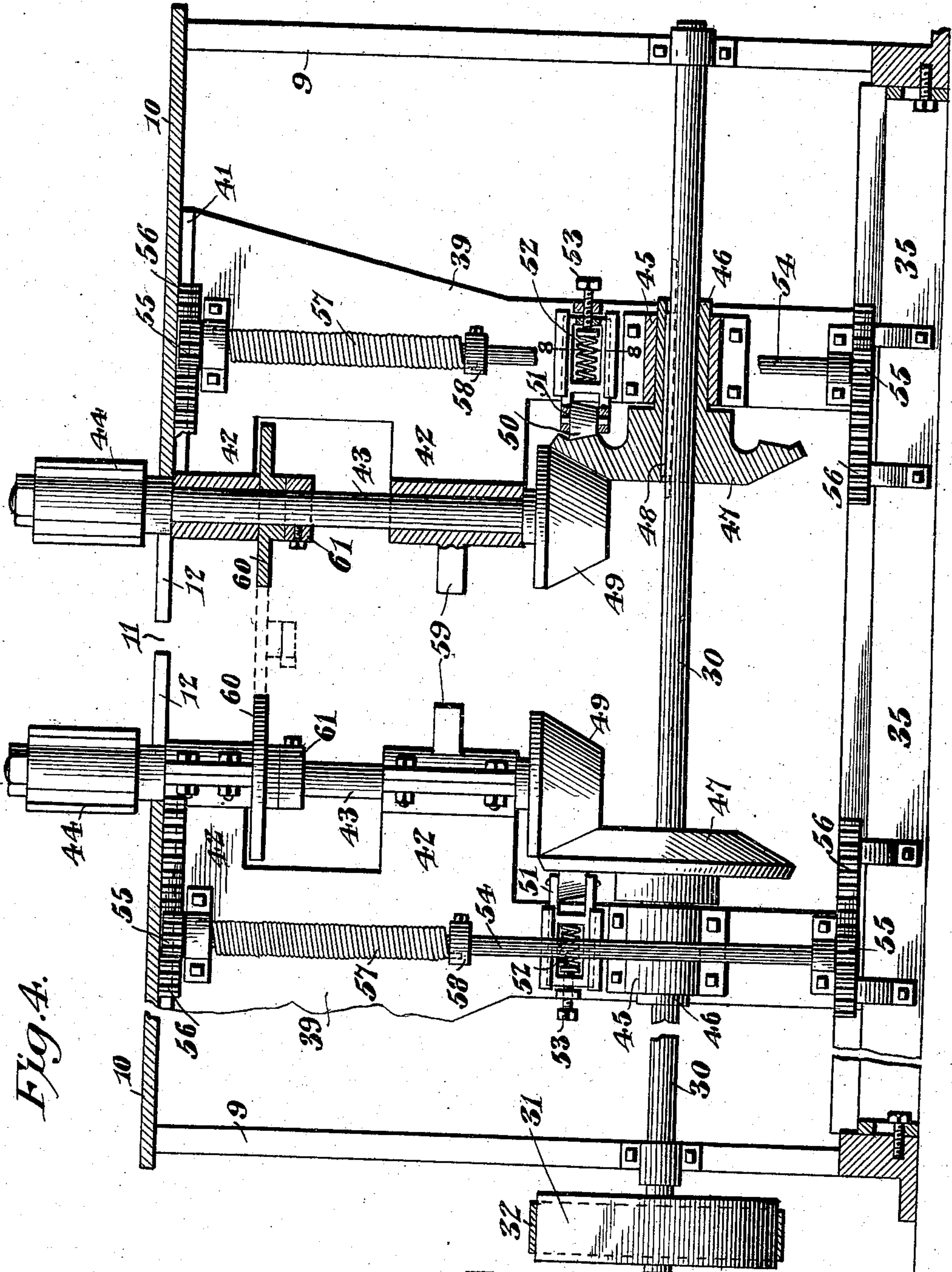


Fig. 4.

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4 SHEETS—SHEET 4.

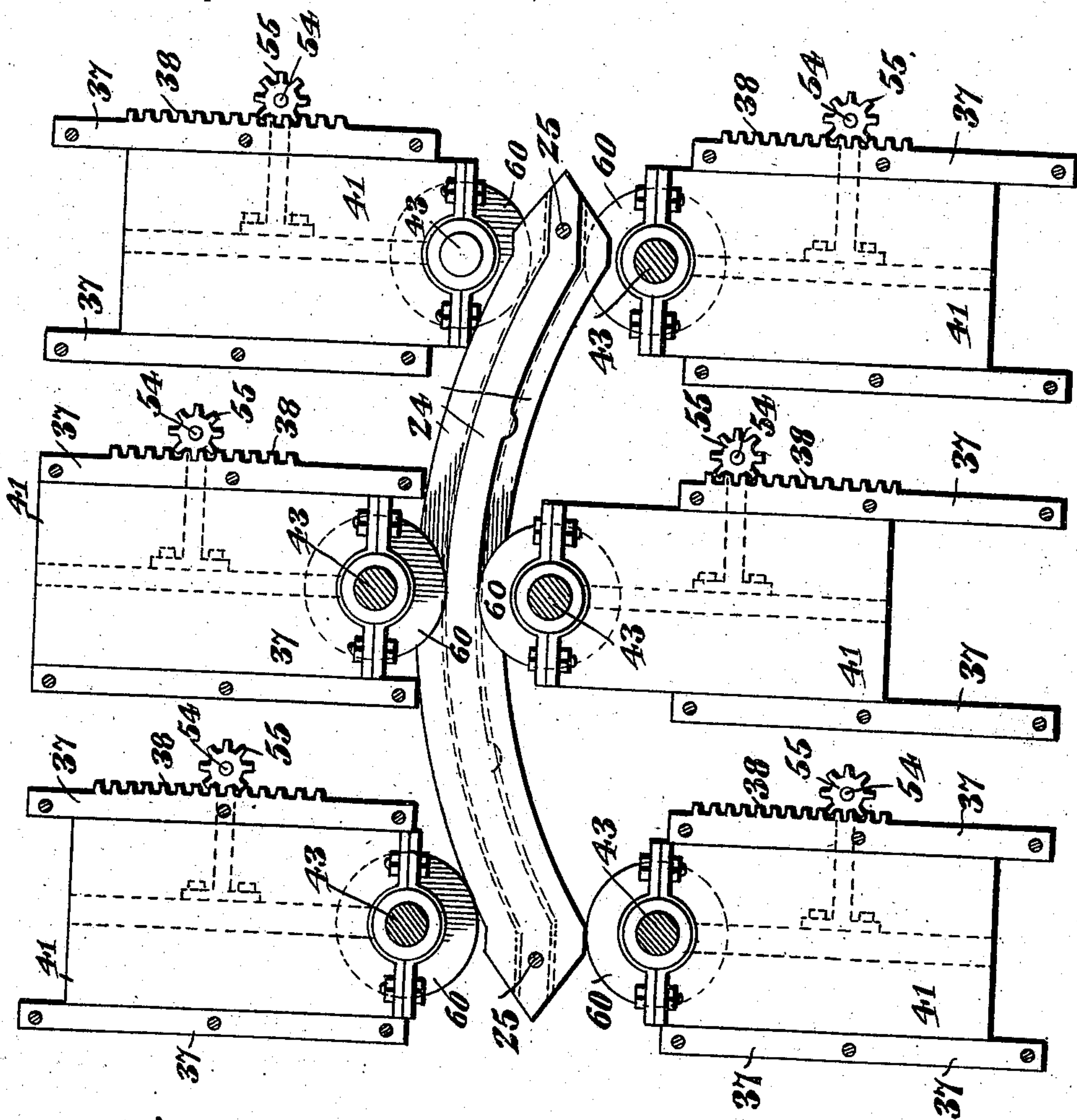


Fig. 5.

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UNITED STATES PATENT OFFICE.

FREDERICK D. GREEN, OF FLORENCE, ALABAMA, ASSIGNOR OF ONE-HALF TO WILLIAM T. ADAMS, OF CORINTH, MISSISSIPPI.

WOOD-MOLDING MACHINE.

No. 881,793.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed August 3, 1906. Serial No. 329,065.

To all whom it may concern:

Be it known that I, FREDERICK D. GREEN, a citizen of the United States, residing at Florence, in the county of Lauderdale and State of Alabama, have invented a new and useful Wood-Molding Machine, of which the following is a specification.

This invention relates to machines wherein movable cutters are employed that are moved into and out of engagement with the work, to cut irregular forms and the like, and the primary object of the invention is to provide exceedingly simple and novel mechanism in which a plurality of cutters are utilized, together with means for independently controlling the operation of each cutter, so that different cuts can be made in the order and shape desired, and the cutters will properly operate with respect to the grain of the wood.

The preferred form of construction is illustrated in the accompanying drawings, and is described in the following specification.

In said drawings:—Figure 1 is a side elevation of the machine. Fig. 2 is a top plan view thereof. Fig. 3 is a longitudinal sectional view. Fig. 4 is a vertical cross sectional view. Fig. 5 is a horizontal sectional view. Fig. 6 is a vertical cross sectional view through the work-carrier. Fig. 7 is a sectional view taken at right angles to Fig. 6. Fig. 8 is a detail sectional view on the line 8—8 of Fig. 4.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the machine shown in the accompanying drawings, a support is employed, in the form of a table, having side frames 9, and a top 10, the latter being provided with a longitudinal slot 11 and transverse slots 12 extending in opposite directions from the longitudinal slot. A work- and pattern-carrier is slidably mounted in the longitudinal slot 11, and consists of end brackets 13 connected by a base 14, on which the work, as 15, rests. Shafts 16 are journaled in the upper portions of the end brackets 13, and are disposed longitudinally over the base 14. These shafts have intermeshing pinions 17, which are surrounded by yokes 18. The pinions are disposed in pairs, and are slightly spaced apart, forming annular grooves 19 between them, and the side bars of the yoke 55 have ribs 20 engaged in the grooves, so that

said yokes are held against longitudinal movement upon the shafts. The side bars of the yoke furthermore are provided with racks 21, disposed on opposite sides of the ribs 20, and mesh with the outer sides of the pinions 17. The lower cross bars of the yoke are channeled, as shown at 22, and in the same are slidably mounted holding dogs 23 that are thus adjustable transversely of the yokes and of the base 14.

The portions of the end brackets 13, below the table top 10, are arranged to hold the patterns, which are shown at 24, and are detachably secured in place by suitable screws 25 or other fastening means. The work and pattern-carrier thus provided, reciprocates in the slot 11, its movement being accomplished by any suitable mechanism. Thus in the present embodiment, a cable 26, connected thereto, passes about pulleys 27, mounted at the ends of the table, said cable also passing about a suitable drum 28. This drum is carried by a shaft 29 that is operated by any desired means.

A plurality of driving shafts 30 are disposed transversely beneath the table top, and have pulleys 31, located at one side of the table. These pulleys are engaged by a driving belt 32, passing about the same so as to rotate the shafts in different directions, as shown in Fig. 1. The belt also passes about a pulley 33, carried by a power member, shown in the form of a shaft 34, journaled at one end of the table, and operated from any suitable source of power. A plurality of transversely disposed supporting tracks 35 are adjustably secured, as shown at 36 to the side frames of the table, and are located directly beneath the driving shafts 30. Secured to the underside of the table top 10 are spaced sets of guides 37. Certain of these guides have racks 38 formed on their outer sides. Carriages 39, movable transversely beneath the table top, have lower channels 40 that receive the upper edges of the tracks 35, and have upper flanges 41 that slide between the guides 37. The carriages 39 are provided with spaced inwardly extending ears 42, in which are journaled upright countershafts 43 that project through the slots 12 of the table top, said countershafts bridging the spaces between the ears 42. Cutter heads 44 are detachably secured to the upper projecting ends of the countershafts 43, and are thus located above the table top, the

cutter heads being disposed in pairs, one behind the other and arranged on opposite sides of the longitudinal slot 11, and consequently on opposite sides of the path of movement of the work-carrying means.

The lower portions of the carriages 39 are provided with boxings 45, in which are journaled the hubs 46 of beveled friction gears 47, said friction gears being movable with the carriages and feathered, as shown at 48, to the shafts 30, so that they will rotate therewith, but are permitted to have reciprocal movements thereon. The lower ends of the countershafts 43 are provided with beveled friction gears 49 that are engaged by the upper portions of the gears 47. The proper frictional engagement of these gears is secured by rollers 50 that bear against the rear sides of the gears 47, and are journaled in sliding frames 51 mounted on the carriages 39. These rollers 50 are yieldingly urged against the gears 47 by coiled springs 52 that bear against the frames 51. The tension of the springs is regulable by suitable adjusting screws 53. It will thus be seen that the rotation of the driving shafts effect the rotation of the countershafts in opposite directions through the medium of the friction gears, and that the countershafts 43 will be rotated without regard to the positions of the carriages 39. These carriages are provided with means for yieldingly holding them in their innermost positions. To this end, upright shafts 54 are journaled on the sides of the carriages, their upper and lower ends being provided with pinions 55. The upper pinions mesh with the racks 38, while the lower pinions are in mesh with other racks 56, secured to the base of the machine. Springs 57 are coiled about the shafts 54, and are each secured at one end to the same by an adjustable collar 58, their other ends being engaged in certain journals of the shafts 54. The springs 57 are so tensioned that they will urge the carriages towards each other, and yet will permit them to be forced apart. The movement of the carriages towards each other is limited by inwardly extending lugs 59, carried by certain of the ears 42, and arranged to abut, as will be evident.

The patterns 24 to which reference has already been made may be of any desired shape, depending upon the character of the cuts to be made. In the present embodiment three patterns are shown, and three sets of cutters are employed, though it will be evident that any number may be used, as desired. The patterns are located in different horizontal planes, and each set of cutting devices is provided with a pair of positioning elements in the form of rollers 60, the rollers being journaled directly on the shafts 43 between the ears 42, and being supported by collars 61 secured to said

shafts. Each set of rollers 60 coacts with one of the patterns, and as a result, it will be seen that each set of rollers 60 is located in a different horizontal plane from the other sets, as will be evident by reference to Figs. 3 and 5. The heights of the rollers may be varied by vertically adjusting the collars 61.

In operation, the work and pattern-carrier is first moved to one end of the table, and the work to be operated upon, is placed upon the base 14, and clamped by the dogs 23. When the carrier is in this position, the carriages 39 will be in their innermost positions with the lugs 59 abutted so that the cutter heads 44 will just clear each other. If now, the drum 28 is thrown into operation, the carrier will be drawn towards the rear end of the table, and the work passed between the cutter heads. The character of the patterns determines the independent movement of each carriage toward or away from the work, and thus substantially any shape may be cut. Moreover, the cutters being disposed one behind the other and rotating in opposite directions, the cutters rotating in the proper direction to the grain of the wood, can be employed, while the others may be maintained out of engagement. During the passage of the carrier between the sets of cutters, the springs 57 will be continually urging said cutters inwardly, and consequently the rollers 60 will operate against the opposite edges of the different patterns or pattern sections, and the positions of the cutters will be controlled thereby. One of the principal advantages for this machine resides in the fact that the workman is never in dangerous proximity to the cutters, but places the block in the carrier at one end of the table, and does not have to handle it during its passage through the machine.

From the foregoing, it is thought that the construction, operation, and many advantages of the herein described invention, will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a machine of the character described, the combination with a support, of work holding means movably mounted thereon, a carriage movable transversely of the path of movement of the work holding means, upper and lower guides for the carriage, a driving shaft located between and longitudinally of the guides, a countershaft journaled on the carriage and having a cutter, and friction

gears connecting the shafts, one of the gears being slidably mounted on the driving shaft and movable with the carriage.

2. In a machine of the character described, the combination with a movable work-carrier, of a driving shaft disposed transversely of its path of movement, a carriage movable longitudinally of the shaft, a counter-shaft on the carriage, friction gears connecting the driving and countershafts, one of said gears being movable on the driving shaft, yielding tension means associated with the gears for maintaining them in frictional engagement, and a cutter mounted on the countershaft.

3. In a machine of the character described, the combination with a movable work-carrier, of a carriage movable transversely of its path of movement, a shaft journaled on the carriage and having a cutter, a friction gear carried by the shaft, a driving friction gear associated with the first mentioned friction gear, and movable with the carriage; said latter gear being also capable of a limited movement with respect to said carriage, and yielding means for effecting such limited movement and insuring a proper frictional engagement between the gears.

4. In a machine of the character described, the combination with a table, of a work and a pattern-carrier mounted thereon, upper and lower guides located beneath the table transversely of the carriers, a driving shaft located longitudinally of and between the guides, a carriage slidably mounted on the guides and driving shaft, a countershaft journaled on the carriage and projecting above the table, cutters mounted on the upper end of the shaft, and gearing connecting the shafts, one of the gears being movable with and journaled on the carriage between the guides, said gear being slidable on the driving shaft but held against rotation thereon.

5. In a machine of the character described, the combination with a movable work-carrier, of a driving shaft disposed transversely of its path of movement, a carriage movable longitudinally of the shaft, a countershaft on the carriage, friction gears connecting the driving and countershafts, one of said gears being movable on the driving shaft, a tension device yieldingly mounted on the carriage and associated with the gears for maintaining the same in frictional engagement, and a cutter mounted on the countershaft.

6. In a machine of the character described, the combination with a movable work-car-

rier, of a carriage movable transversely of its path of movement, a shaft journaled on the carriage and having a cutter, a driving shaft, coacting friction gears carried by the shafts, one of said gears being slidably mounted on the driving shaft and having a hub slidably engaged in the carriage, and yielding means for effecting such sliding movement of the hub on the carriage to insure the proper frictional engagement between the gears.

7. In a machine of the character described, the combination with a support, of a work holder movably mounted thereon, a plurality of driving shafts disposed transversely of the path of movement of the work holder, means for rotating the shafts in opposite directions, a pair of movable carriages associated with each shaft, the carriages of each pair being located on opposite sides of the path of movement of the work holder, rotatable cutters journaled on and movable with the carriages, and friction gears for transmitting motion from the driving shaft to the respective cutter, certain of said gears being movable on the driving shaft and permitting the free movement of the carriages.

8. In a machine of the character described, the combination with a supporting table, of a work holder operating above the same, a plurality of driving shafts journaled in the table below the work holder and transversely of its path of movement, means for rotating the shafts in opposite directions, a pair of movable carriages associated with each shaft beneath the table and movable toward and from the path of movement of the work holder, the carriages of each pair being located on opposite sides of the path of movement, rotary countershafts journaled on the carriages and movable therewith, cutters carried by the upper ends of the countershafts and operating above the table, friction gears fixed to the lower portions of the countershafts, other friction gears movable with the carriages, said latter friction gears being mounted on the driving shafts and frictionally engaging the gears of the countershafts, and means for urging the carriages of each pair toward each other.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FREDERICK D. GREEN.

Witnesses:

E. E. ELDER,

C. E. JORDAN.