

No. 801,492.

PATENTED OCT. 10, 1905

J. WEST.  
GAS RETORT CHARGING MACHINE.  
APPLICATION FILED NOV. 13, 1903.

3 SHEETS—SHEET 1

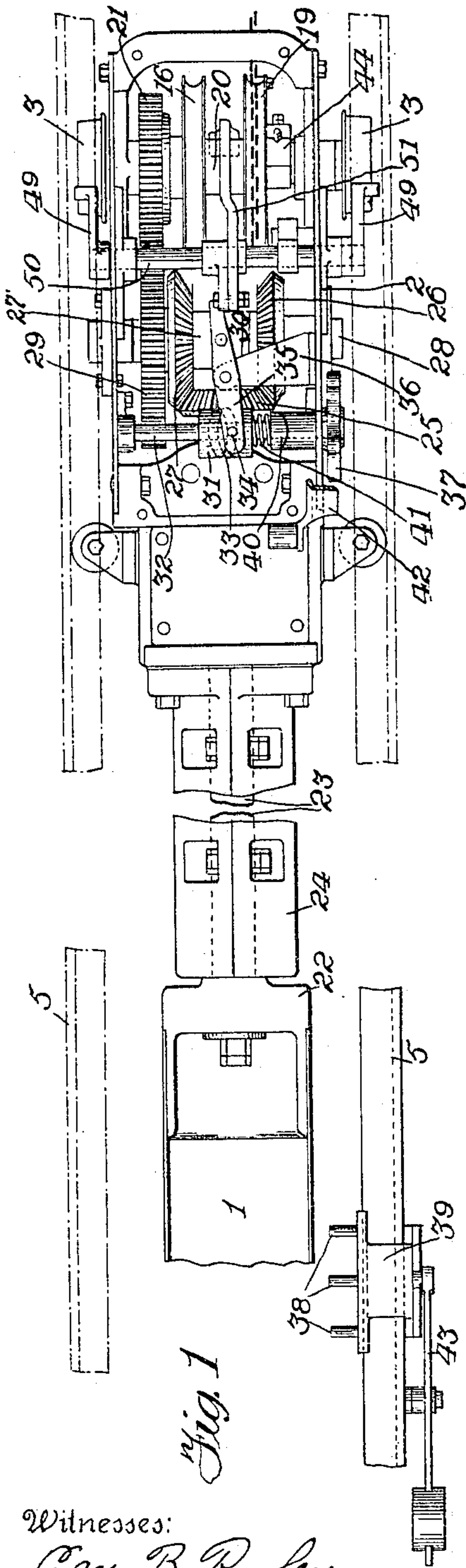


Fig. 1

Witnesses:

Geo. B. Rowley

C. Williams

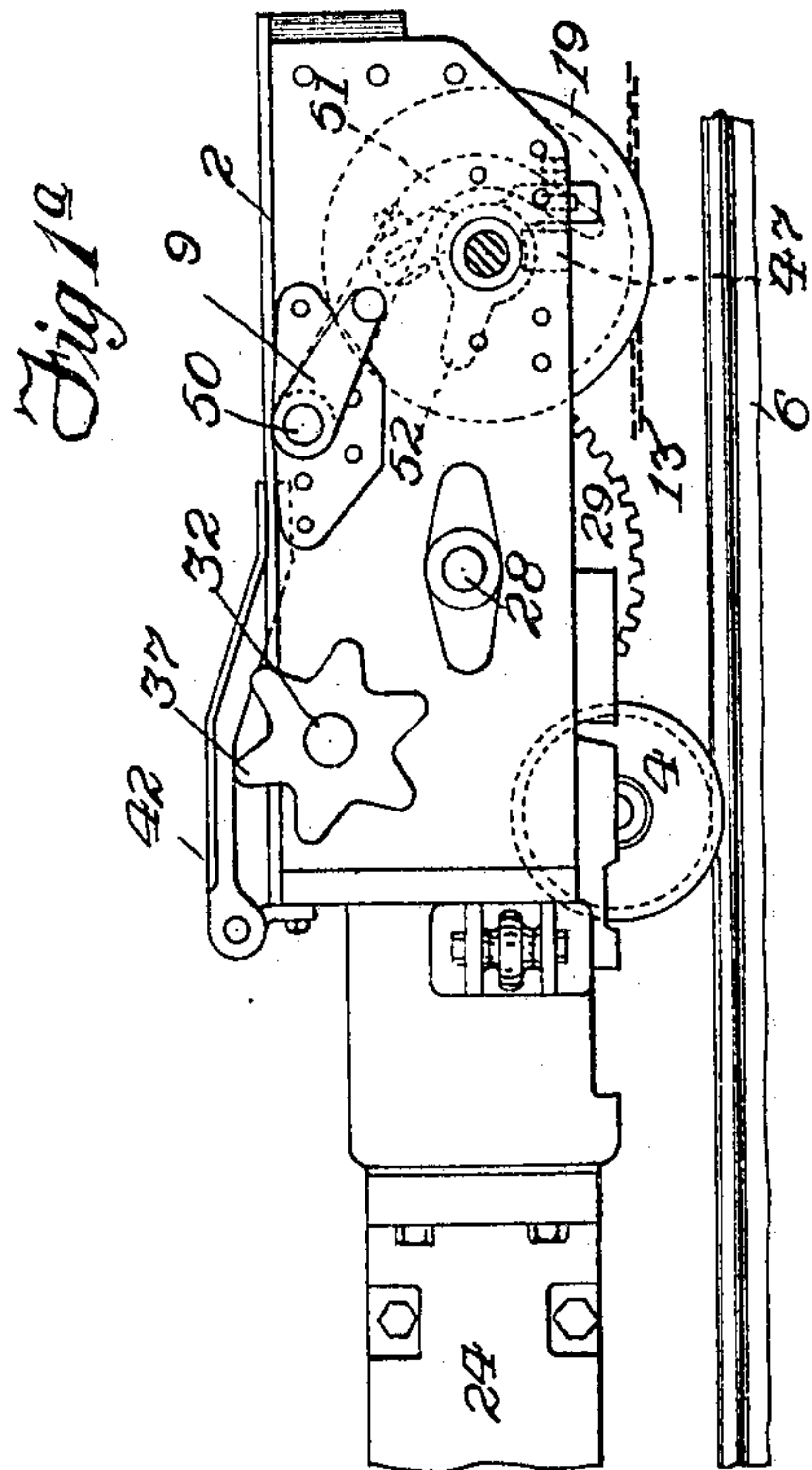


Fig. 1a

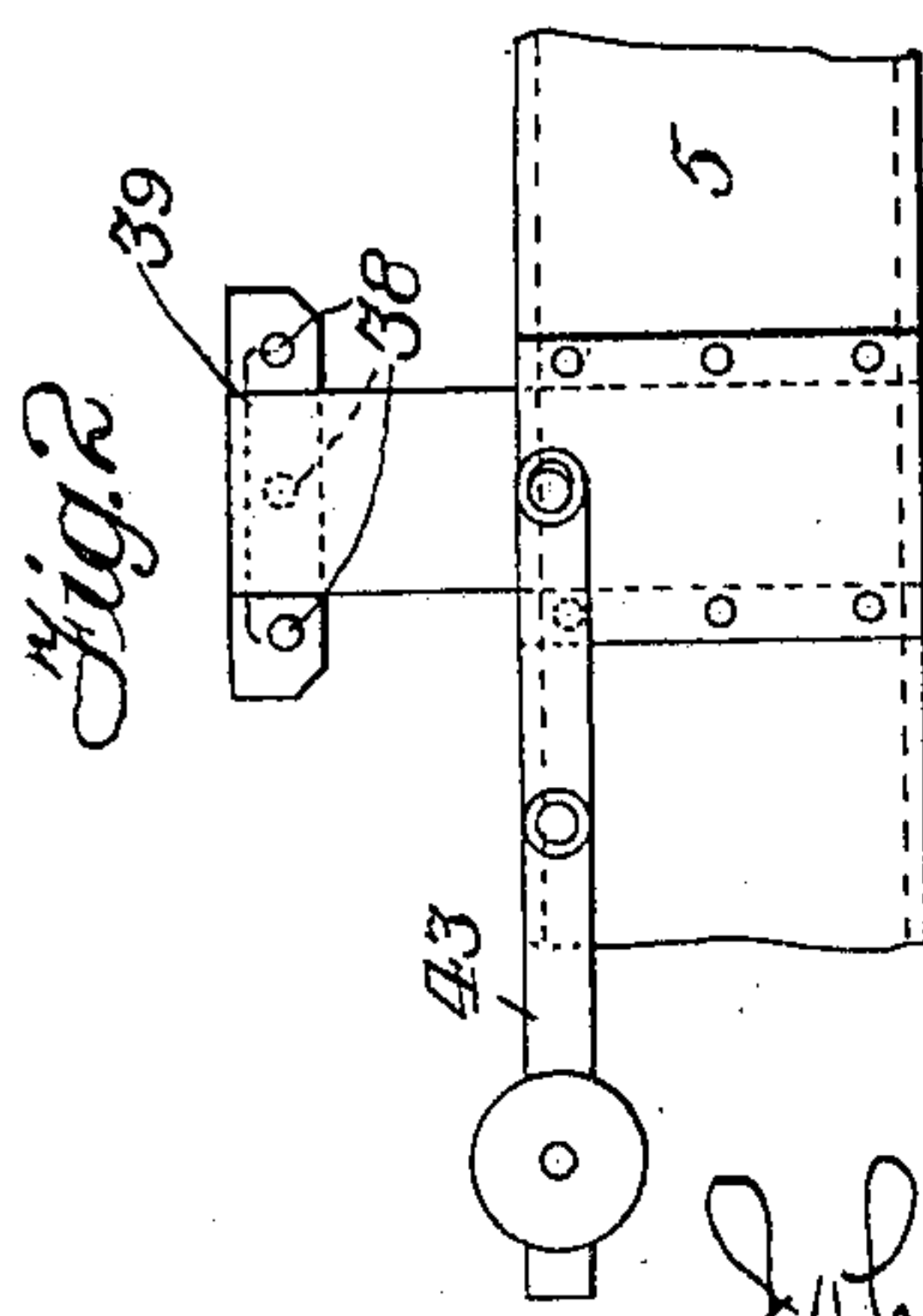


Fig. 2

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John West  
John H. Roney  
his Attorney.

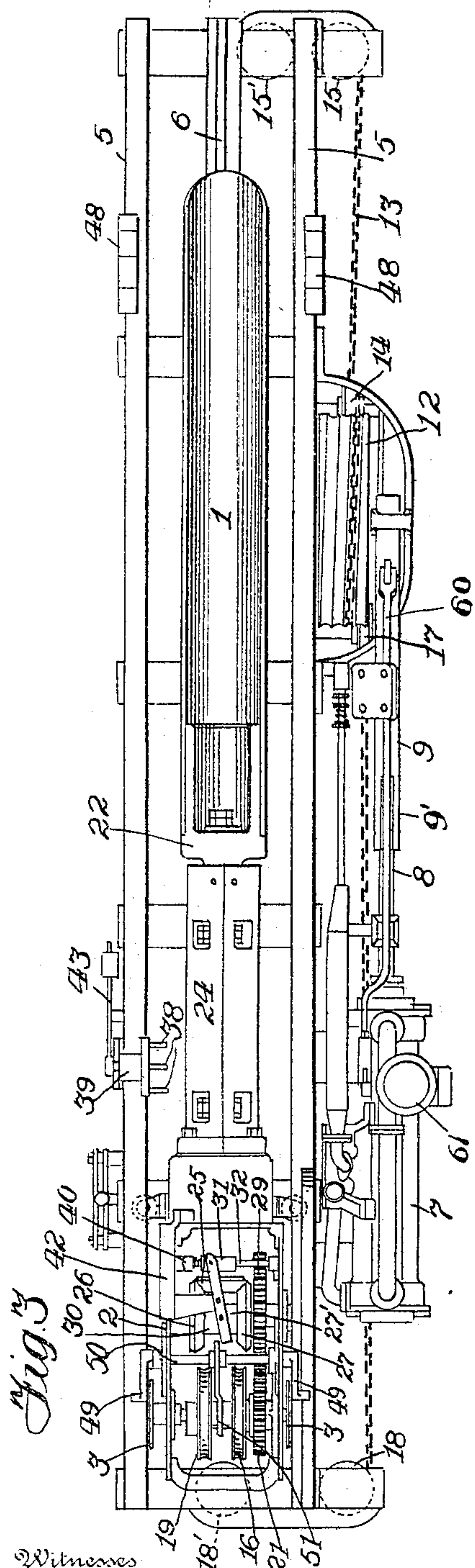
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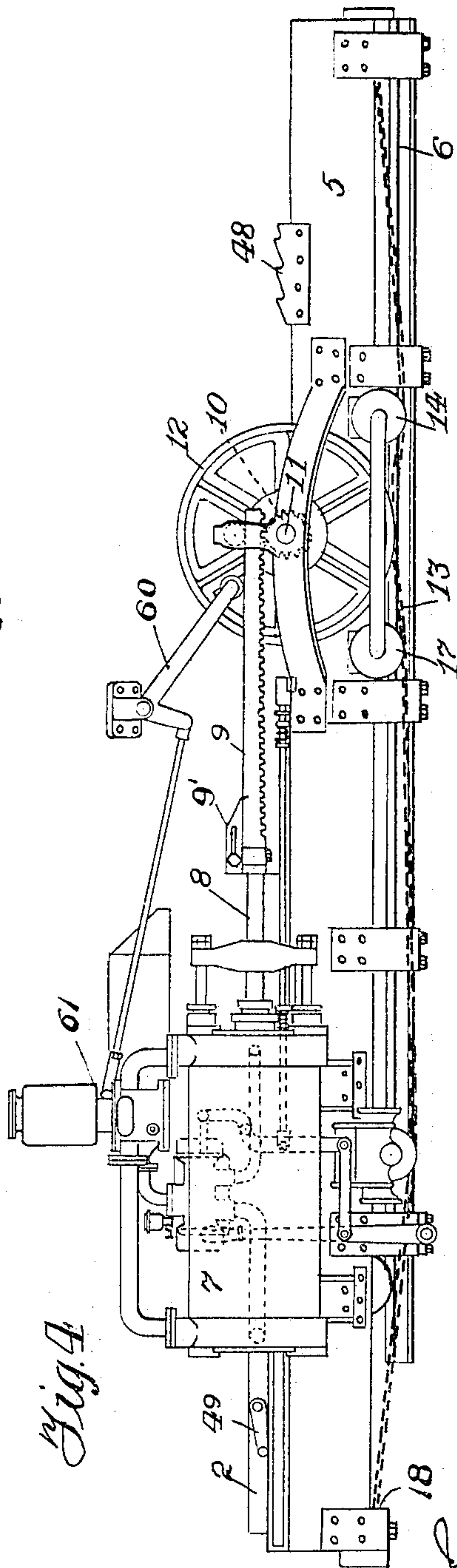
3 SHEETS—SHEET 2.



Witnesses

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Fig. 4



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3 SHEETS—SHEET 3.

Fig. 5

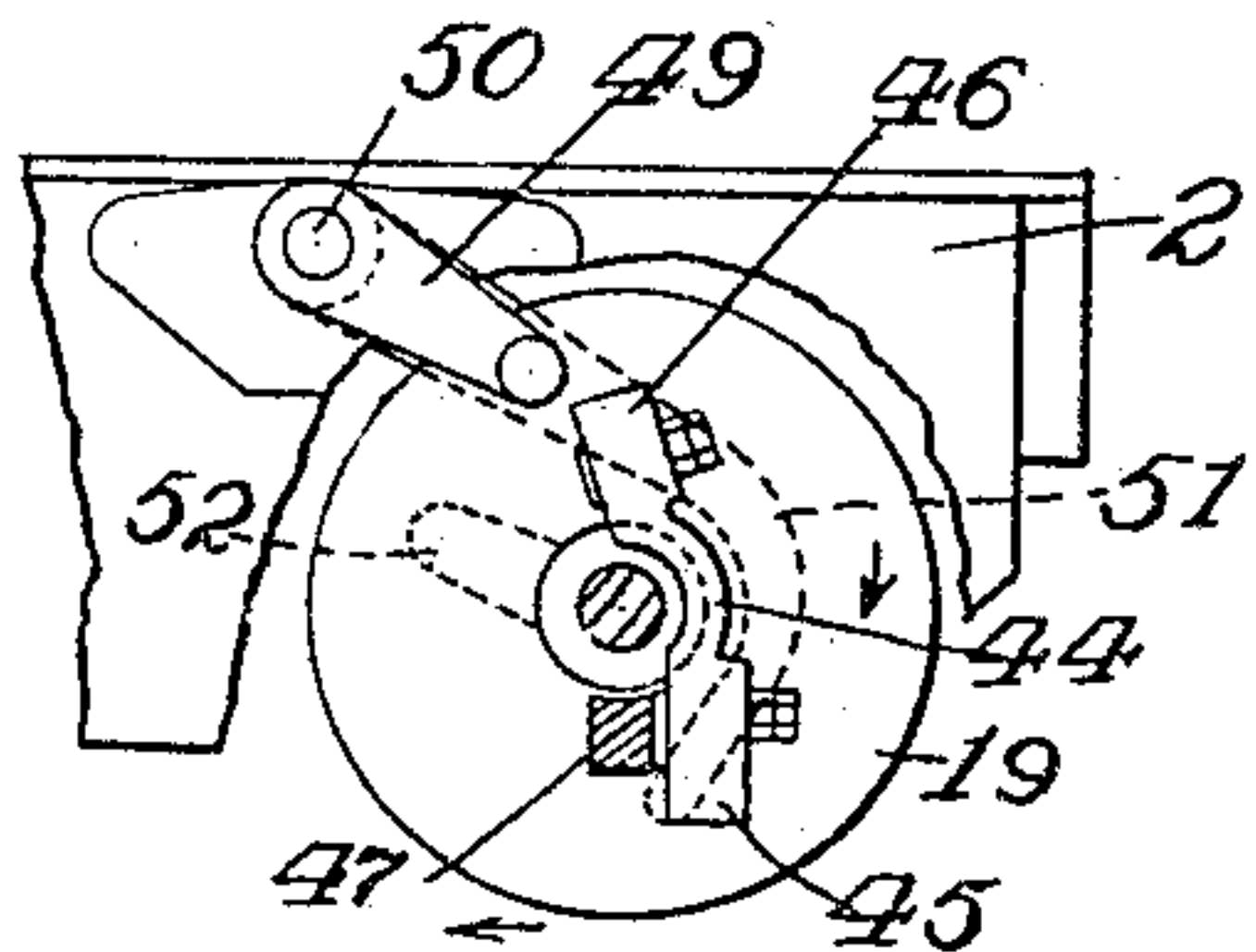


Fig. 6

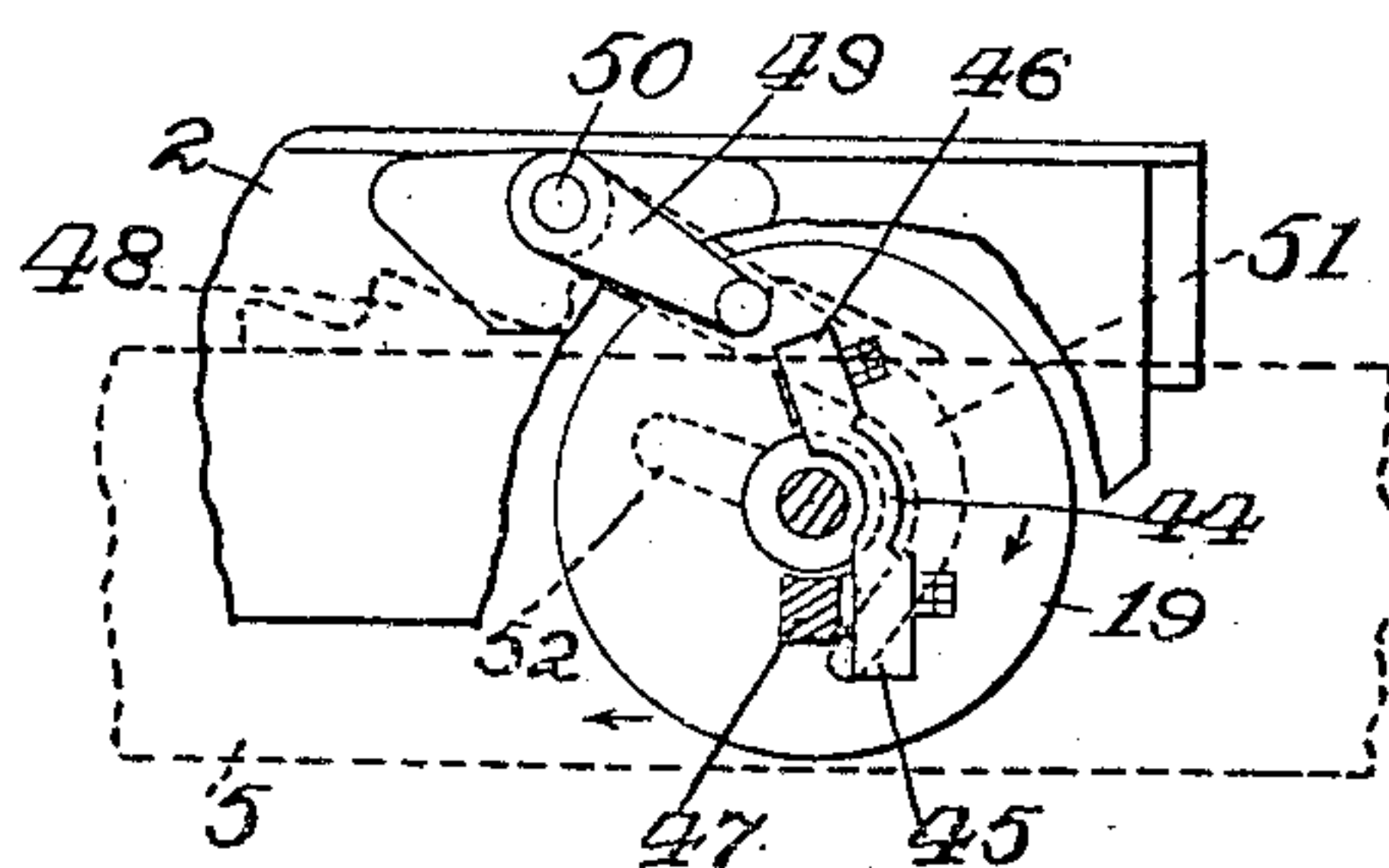


Fig. 7

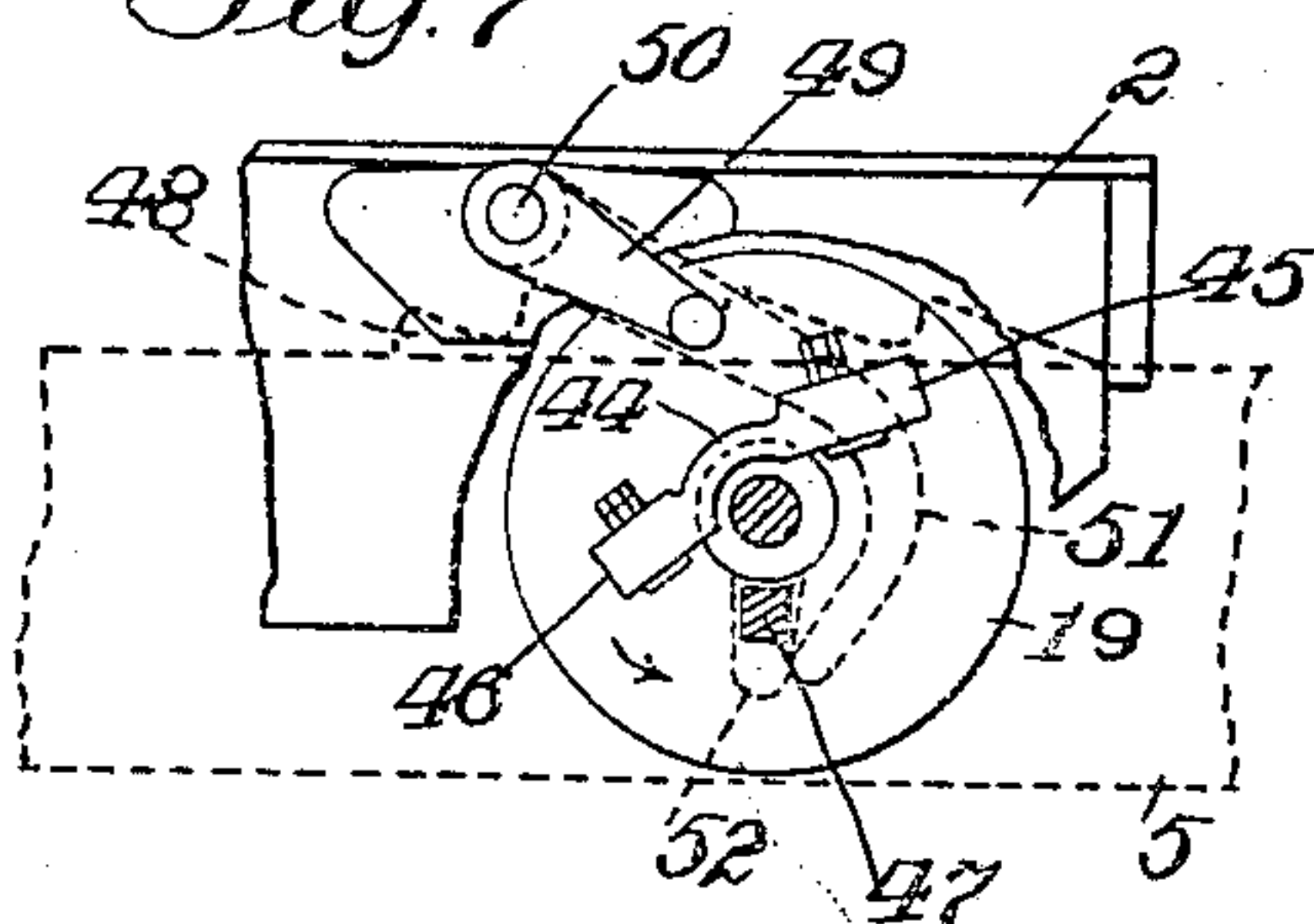


Fig. 8

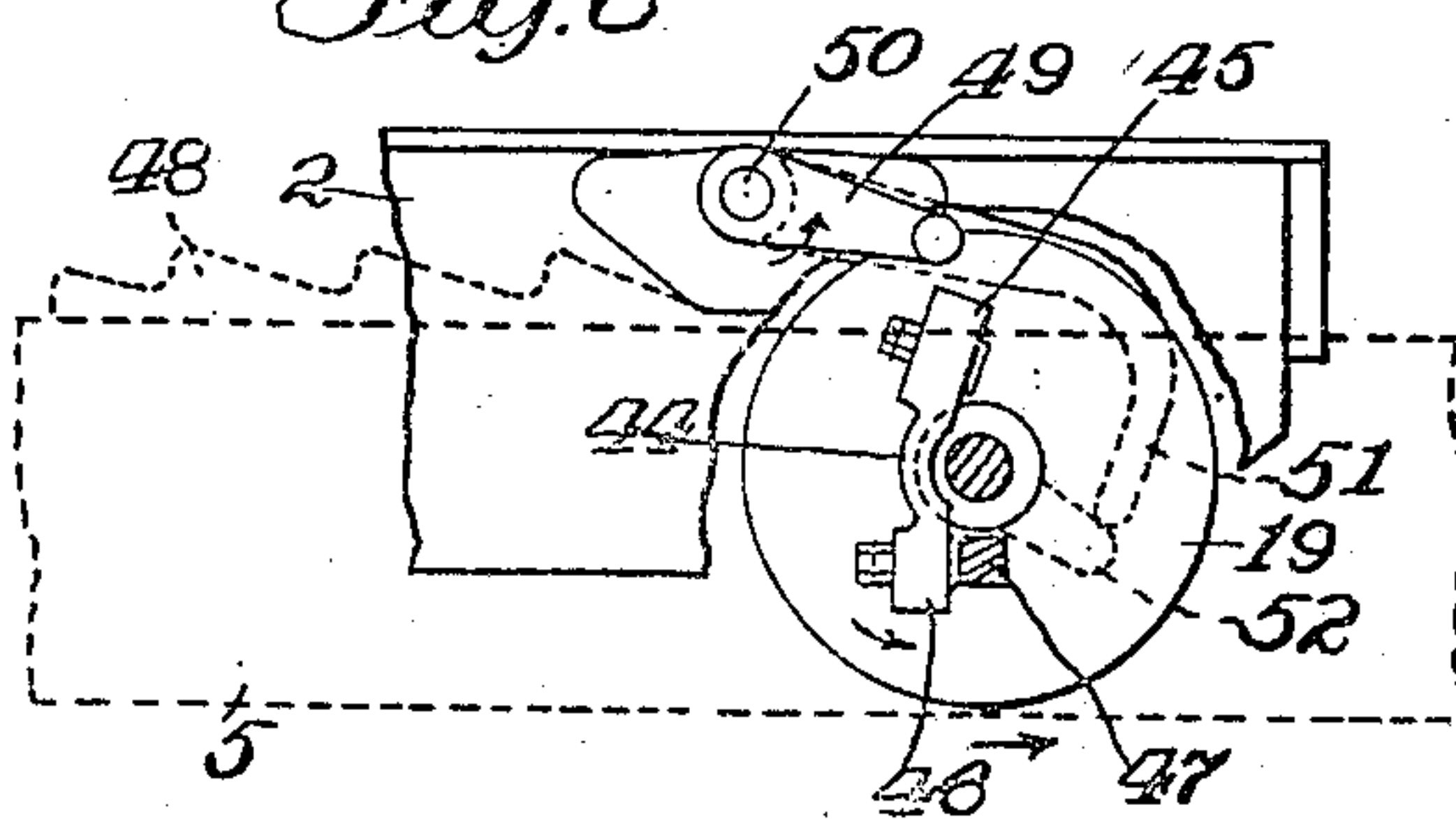


Fig. 9

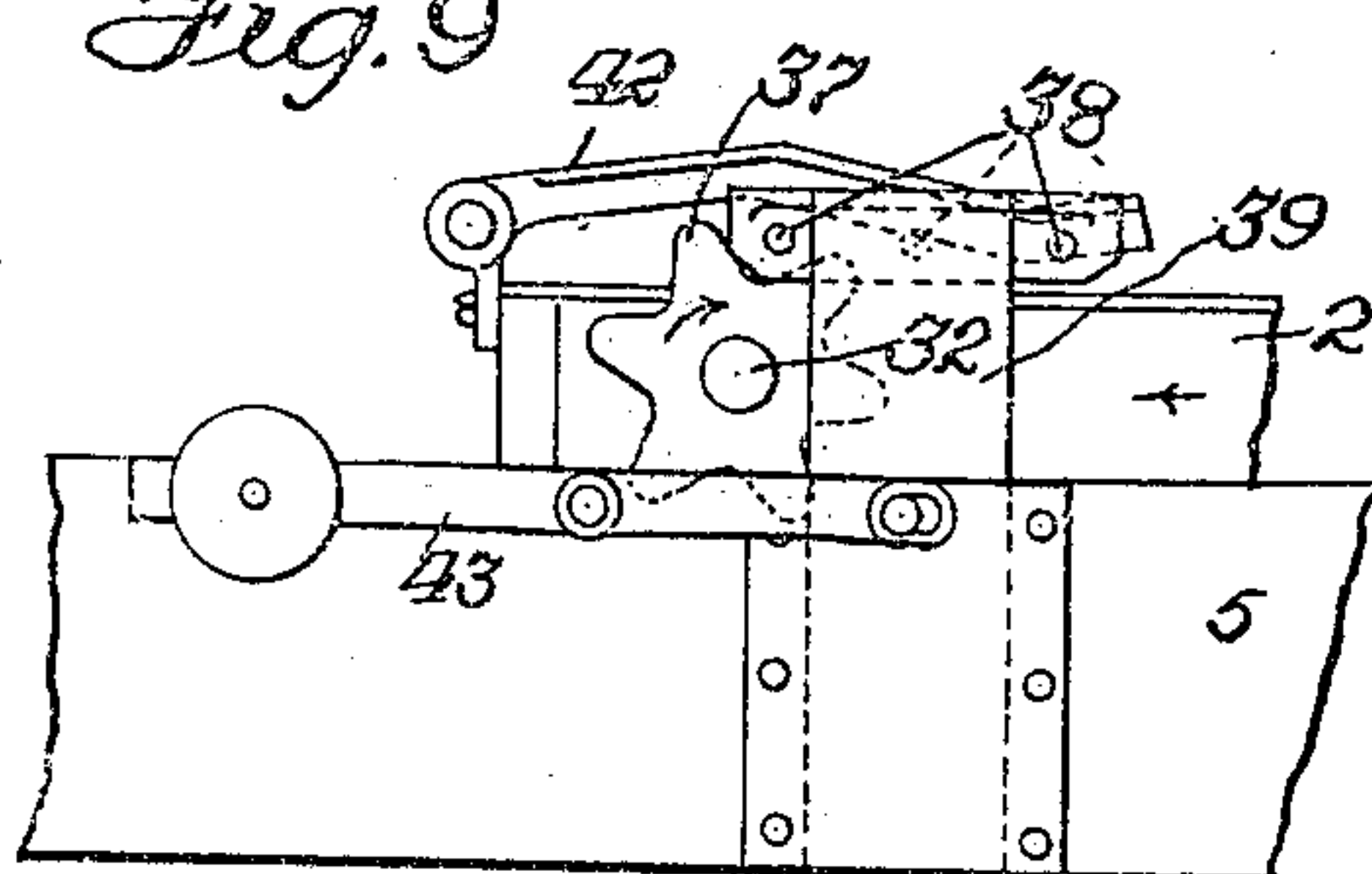
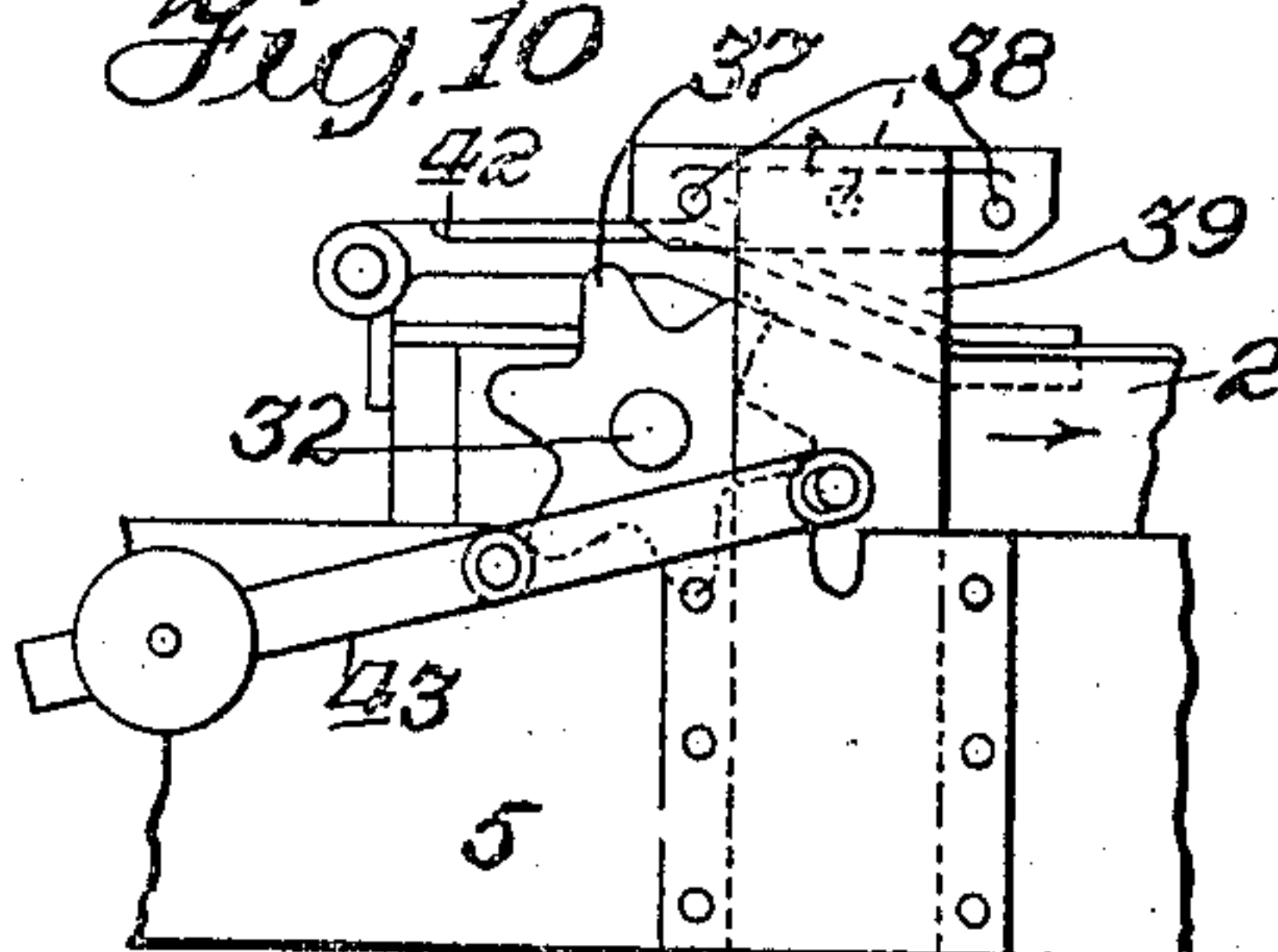


Fig. 10



Witnesses

Geo. B Rowley  
A. Williams

John West <sup>Inventor</sup>

By

John H. Roney  
his Attorney



# UNITED STATES PATENT OFFICE.

JOHN WEST, OF SOUTH PORT, ENGLAND.

## GAS-RETORT-CHARGING MACHINE.

No. 801,492.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed November 13, 1903. Serial No. 181,027.

*To all whom it may concern:*

Be it known that I, JOHN WEST, a subject of the King of Great Britain, residing at the Firs, Park Road, South Port, in the county of Lancaster, England, have invented a new and useful Improvement in Gas-Retort-Charging Machines, of which improvement the following is a specification.

My invention relates to improvements in gas-retort-charging machines, and particularly to mechanism for automatically tilting the scoop alternately in different directions to discharge the contents thereof into the retort.

The object of my invention is to provide means in a charging-machine for gas-retorts to advance and reverse the scoop and automatically tilt the contents into the retort; and to accomplish this object my invention consists in the novel construction and arrangement of parts hereinafter more specifically described, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of the scoop-actuating mechanism carried in the scoop-carriage, the scoop and support for the same being partially broken away. Fig. 1<sup>a</sup> is a side elevation of the charging-carriage. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of the carriage, its tracks, and the mechanism for moving the carriage. Fig. 4 is a similar view in side elevation. Figs. 5, 6, 7, and 8 are detail views of the scoop-tilting mechanism, showing the different movements of the same. Figs. 9 and 10 are detail views showing the mechanism for actuating the scoop-tilting clutch.

Referring to the drawings, the reference-numeral 1 indicates the scoop, and 2 the scoop-carriage. The said carriage has traction-wheels 3 3 rotatably mounted at its sides near the rear of the same, and a wheel 4 is mounted centrally and beneath said carriage at its front. Channel-beams 5 5 form a track for the wheels 3 3, and a track 6 is mounted between the beams 5 5 to form a surface for the wheel 4 to travel on. Said beams 5 and track 6 may be mounted in any suitable framework (not shown)—such a frame, for instance, as shown in my application, Serial No. 120,133, filed August 18, 1902.

The mechanism for moving the carriage consists of a ram 7, preferably mounted to one side of the carriage-trucks, the said ram having secured to the forward end of the piston-rod 8 the rack 9, which meshes with a

pinion 10, secured to the shaft 11, on which is also mounted the chain-drum 12, around which a driving-chain 13 passes. One end of said chain 13 is carried under the idler-roll 14 and around the pulleys 15 15', secured near the forward end of the tracks 5 and 6, and thence under and partially around the wheel 16, to which it is secured, the said wheel being carried in the carriage 2, the other end of the chain passing from the drum 12 under idler-pulley 17, around pulleys 18 18' at the rear of the trucks, and under and partially around the wheel 19, to which it is secured and which is also carried by the carriage 2, located adjacent to the wheel 16, both of these wheels being secured on the sleeve 20, on one end of which the gear 21 is also secured. It will be noted by this arrangement that the rotation of the drum 12 will pull one or the other ends of the chain 13, dependent upon the direction of rotation of said drum, and that this will tend to turn the sleeve on which the gear 21 is secured through the medium of the wheels 16 and 19, to which the ends of the chain are secured. The rotation of this gear is for the purpose of tilting the scoop, as will be more fully hereinafter described.

The scoop 1 has its rear end secured to the casting 22, to which is secured a supporting and actuating shaft 23, the said shaft having a long bearing in the box 24, carried by the carriage 2, and to the rear of this shaft the bevel-gear 25 is secured. Two bevel-gears 26 and 27 are carried on sleeves 27' on a shaft 28 and mesh with the gear 25. Mounted on the shaft 28 is the gear 29, which meshes with the gear 21, before described, and a clutch 30 is mounted on the shaft 28 between the gears 26 and 27 and is adapted to connect one or the other of the said gears with the said shaft, whereby when the gear 29 is rotated by the gear 21 the scoop, through the medium of the shaft 23, gear 25, and one or the other of the gears 26 and 27, will be tilted to discharge its load, the side to which it tilts being determined by which of the gears 26 and 27 is connected with the shaft 28, this of course being determined by position of the clutch 30.

In practice it is desirable to deposit the coal from the scoop first from one side and then from the other in succeeding operations, and to automatically carry this out it is necessary to actuate the clutch 30 between each depositing operation of the scoop, and to do this I employ the cam 31, secured to the shaft 32, which is



mounted in the scoop-carriage 2, the said cam being of the form known as a "surface" cam, the cone-slot 33 formed in the same being engaged by a pin 34, carried by the clutch-operating lever 35, which is fulcrumed intermediate its length in the bracket 36, secured to one side of the carriage. The shaft 32 has secured to one end the gear or star wheel 37, which when the carriage is advanced is engaged by the pins 38, mounted in the vertically-slidable plate 39. This operation automatically turns the cam 31, thus moving the clutch to such a position that it engages the other one of the gears 26 27 to which it has just been connected. To insure the clutch being thrown to a proper position and also to hold the same in place, a collar 40 is mounted on the shaft 32 by a spline connection, the outer end of said collar being convex, as shown, and the shaft-bearing, against which the said collar abuts, being concave, as shown. A spring 41 normally holds said collar against said bearing, thereby preventing the shaft from turning until the proper force is applied thereto.

From the foregoing description it is obvious that the star-wheel 37 should only be acted upon once between each advance movement of the scoop, and in order to prevent the pins 38 contacting with said wheel on its return the member 42 is pivotally suspended above said wheel, the rear end thereof being formed on such an incline that as the carriage returns it will engage and actuate the pins 38, as shown in Fig. 10, but in advancing it will ride over the pins, as shown in Fig. 9. The slide 39 is connected with the counterweighted lever 43 in order that the movement of the same may be more readily accomplished.

The wheel 19, over which one end of the driving-chain passes and is secured, is provided on its side adjacent to the carriage with the segmental lug 44, the ends 45 and 46 thereof being provided with cushioning contact-blocks, and a projection 47, formed on the inner side of the carriage, is adapted to confine the rotation of the wheel to the space between the ends 45 and 46 of the lug 44, as clearly shown in Figs. 5 to 8.

Secured to the side tracks near their forward ends are the notched plates 48, the notches being so arranged that the members 49 may move over them in one direction—that is, when the carriage is advancing—but the return of the carriage is prevented until such time as the said members 49 are withdrawn from the notches in the plate 48. The members 49 are secured on a shaft 50, journaled in the sides of the carriage, and intermediate the length of the said shaft the arm 51 is secured thereto. A knocker 52 is adapted to act on the arm 51 when the wheels 16 and 19 are properly rotated, this forming a means whereby the members 49 may be withdrawn from the plate 48.

The operation of the device is as follows: The scoop having been filled with the desired material, fluid is conducted to the ram 7 in such a manner that the drum 12 is properly rotated, and the wheels 16 and 19, lugs 45 and 46, and projection 47 being in the position shown in Fig. 5 the carriage will be pulled forward until the members 49 engage one of the notches in the plate 48, as shown in Figs. 6 and 7, the scoop now being in a proper position for tilting. During this advance of the carriage the clutch-throwing mechanism, hereinbefore described, is actuated as stated. The direction of rotation of the drum is now reversed automatically by the engagement of lever 60, controlling reversing-valve 61 of ram 7, with the inclined trip 9' on bar 9, thus causing the ram 7 to retract the bar 9, whereby the wheels 16 and 19 will be pulled around, as indicated in Fig. 7, the knocker 52 then contacting with the arm 51 for disengaging the members 49 from the plate 48, this partial rotation of the wheels 16 and 19 also revolving the gear 21 and through the hereinbefore-described gearing tilting or dumping the scoop 1. The wheels will continue to rotate until the projection 46 abuts against the projection 47 on the carriage, at which time the member 49 will be wholly free from the notches in the plate 48, as shown in Fig. 8, at which time further movement of the chain will return the carriage to its normal position, and when the movement of the chain is stopped the momentum of the carriage will carry it a slight distance, whereby the wheels 16 and 19 will be revolved in a reverse direction to that used in dumping the scoop until such time as the lug 45 contacts with the projection 47, when the mechanism is in a suitable position to again be advanced.

I claim as my invention and desire to secure by Letters Patent—

1. In a gas-retort-charging apparatus, the combination of a carriage, means to move the same, a ram, the stem of which is provided with a rack, a chain-drum, a shaft having parallel wheels mounted thereon over which the chain on said drum operates, a gear mounted on said last-mentioned shaft adapted to mesh with a gear mounted upon a shaft in advance of said last-mentioned shaft, a cam adapted to operate a clutch mechanism alternately in different directions laterally, in combination with mechanism to prevent the cam-shaft operating until the proper time.

2. In a gas-retort-charging apparatus, the combination of a carriage, a scoop or charging vessel operated by the carriage, a pressure-operated motor, a valve controlling said motor, means operated by said motor for traveling the carriage back and forth, means for dumping the scoop, and means for automatically operating the valve to reverse the motor, said means automatically acting after dumping of the scoop, whereby the carriage



is automatically returned and the scoop withdrawn from the retort.

3. In a gas-retort-charging apparatus, the combination of a carriage, a scoop or charging vessel operated by the carriage, a pressure-operated ram, a valve controlling said ram, a drum, flexible connections winding on said drum for operating the carriage to and fro, a gear for turning the drum, a rack meshing with the gear and operated by the ram, and means operated by the rack for automatically operating the valve to reverse the ram after dumping of the scoop to cause automatic return of the carriage and scoop.

4. In a gas-retort-charging apparatus, the combination with a carriage, and means for advancing and returning said carriage, of a rocking or tilting scoop or charging vessel operated by said carriage and having a shaft with a gear thereon, separate driving-gears adapted to be independently driven to independently and alternately operate the gear aforesaid to turn the shaft in opposite directions to cause the scoop to dump from opposite sides thereof at different times, and means automatically operated at predetermined times by the movements of the carriage, whereby the respective driving-gears aforesaid are made to alternately drive the scoop-operating gear aforesaid.

5. In a gas-retort charging and drawing apparatus, the combination with a carriage, and means for advancing and returning said carriage, of a rocking or tilting scoop or charging vessel operated by said carriage and having a shaft with a gear thereon, separate driving-gears adapted to independently operate the gear aforesaid to turn the shaft in opposite directions to cause the scoop to dump from opposite sides thereof at different times, a cam-controlled clutch for causing the driving-gears to independently and alternately operate the scoop-operating gear, a toothed wheel operating said cam, and a member adapted to turn the toothed wheel when the carriage is at a predetermined position and thereby cause automatic reversal of the scoop.

6. In a gas-retort-charging apparatus, the combination with a carriage, and means for advancing and returning said carriage, of a rocking or tilting scoop or charging vessel operated by said carriage, means carried by the carriage for rocking or tilting said scoop, relatively stationary means for engaging with said scoop rocking or tilting device at a predetermined time during the movement of the carriage to cause tilting of the scoop, and means for preventing coöperation of the devices for tilting the scoop on the other movement of the carriage and thereby rendering them inactive.

7. In a gas-retort-charging apparatus, the combination with a carriage, and means for advancing and returning said carriage, of a rocking or tilting scoop or charging vessel operated by said carriage, a toothed wheel carried by the carriage for tilting or rocking the scoop, a movable member having a member to engage the toothed wheel on one movement of the carriage to cause rocking or tilting of the scoop, and a movable guard adapted for interposition between the toothed wheel and the operating member aforesaid to prevent their coöperation on the other movement of the carriage.

8. In a gas-retort-charging apparatus, the combination with a carriage, and means for advancing and returning said carriage, of a rocking or tilting scoop or charging vessel operated by said carriage, a toothed wheel for causing tilting or rocking of the scoop, a slide, means for retracting said slide, a pin on said slide adapted for engagement with the toothed wheel to turn the same on the return movement of the carriage, and a pivoted guard carried by the carriage, adapted for interposition between the toothed wheel and slide to prevent coöperative engagement of the slide and toothed wheel on the advance movement of the carriage.

9. In a gas-retort-charging apparatus, the combination with a carriage, and means for advancing and returning said carriage, of a rocking or tilting scoop or charging vessel operated by said carriage, and having a shaft with a gear thereon, separate driving-gears adapted to independently operate the gear aforesaid to turn the shaft in opposite directions to cause the scoop to dump from opposite sides thereof at different times, a cam-controlled clutch for causing the driving-gears to independently and alternately operate the scoop-operating gear, a toothed wheel for operating the cam of the clutch, a shaft on which said toothed wheel is secured, a stationary locking member, a collar adapted to engage with the stationary locking member, said collar being slidably splined on the shaft of the toothed wheel, a spring normally holding the collar and the locking member in engagement, and a member adapted to turn the toothed wheel when the carriage is at a predetermined position and thereby cause the automatic reversal of the scoop.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN WEST.

In presence of—

CLARENCE A. WILLIAMS,  
JOHN H. RONEY.