No. 672,585. Patented Apr. 23, 1901.

R. G. ARMSTRONG.

STRAP PUNCHING MACHINE.

(Application filed Sept. 24, 1900.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.

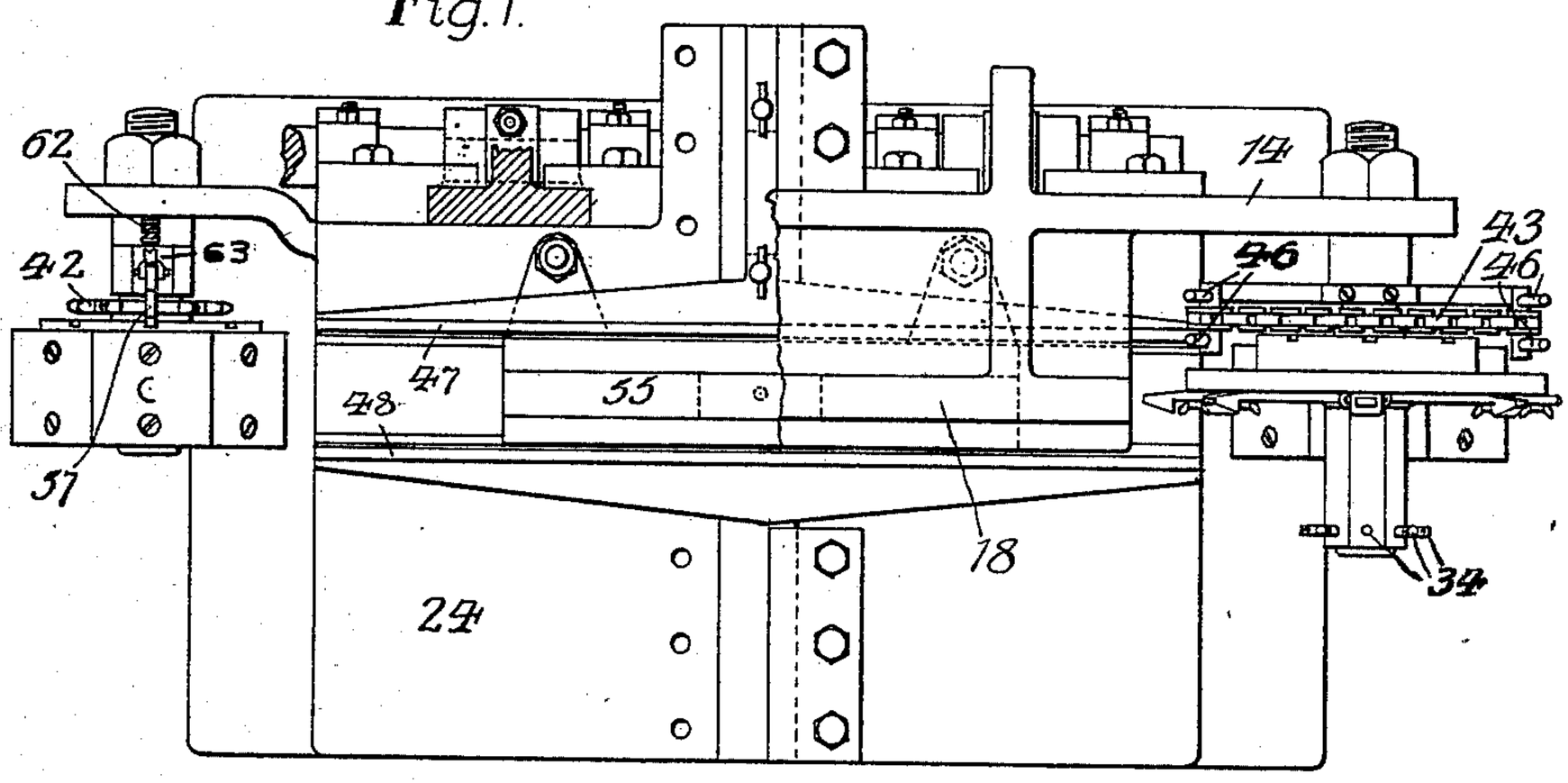
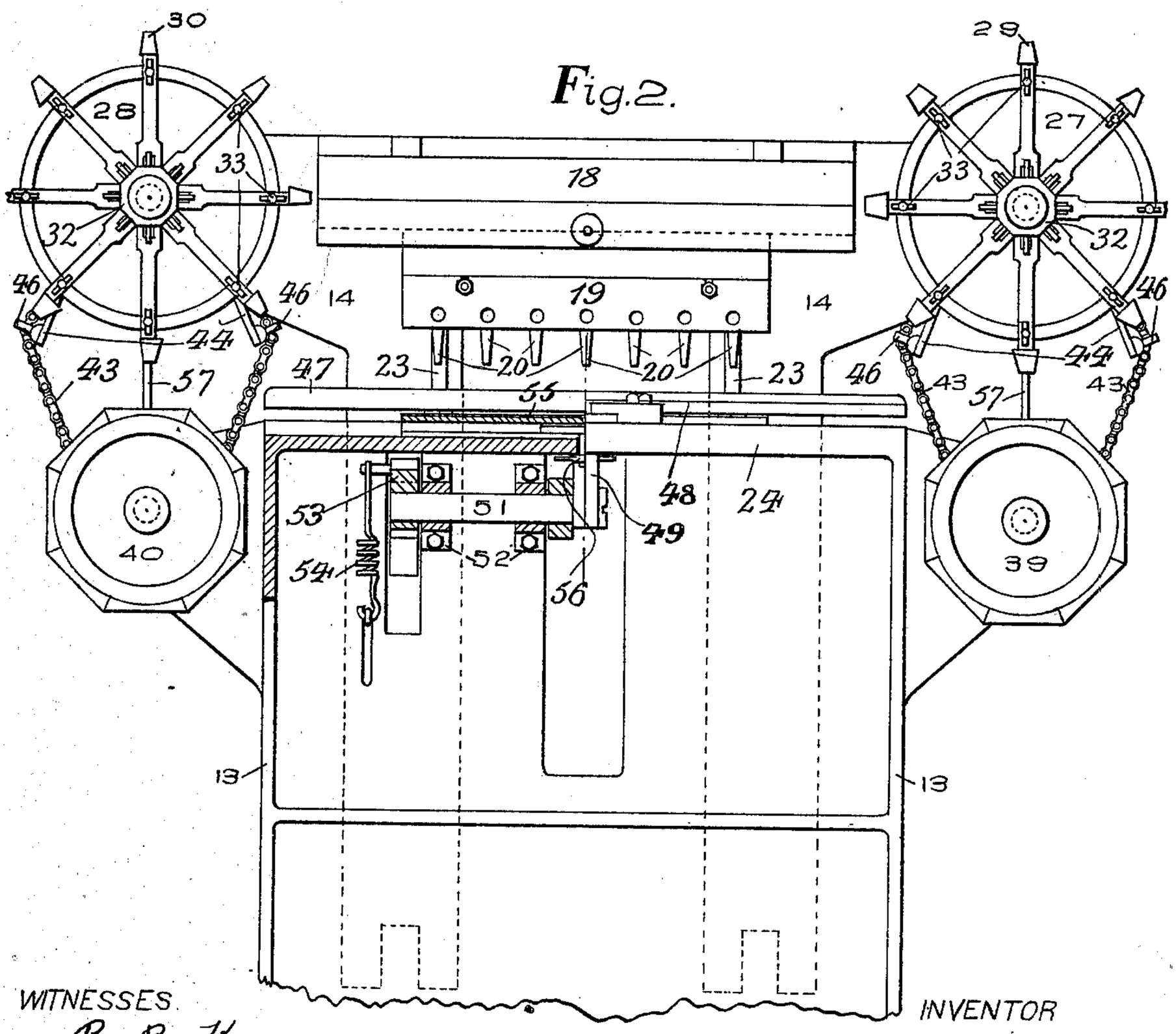


Fig. 2.



WITNESSES.
R. B. Keese
Fred. C. Dawson

INVENTOR
Robert G. Armstrong
By. Dwight D. Bloheever
Atty.

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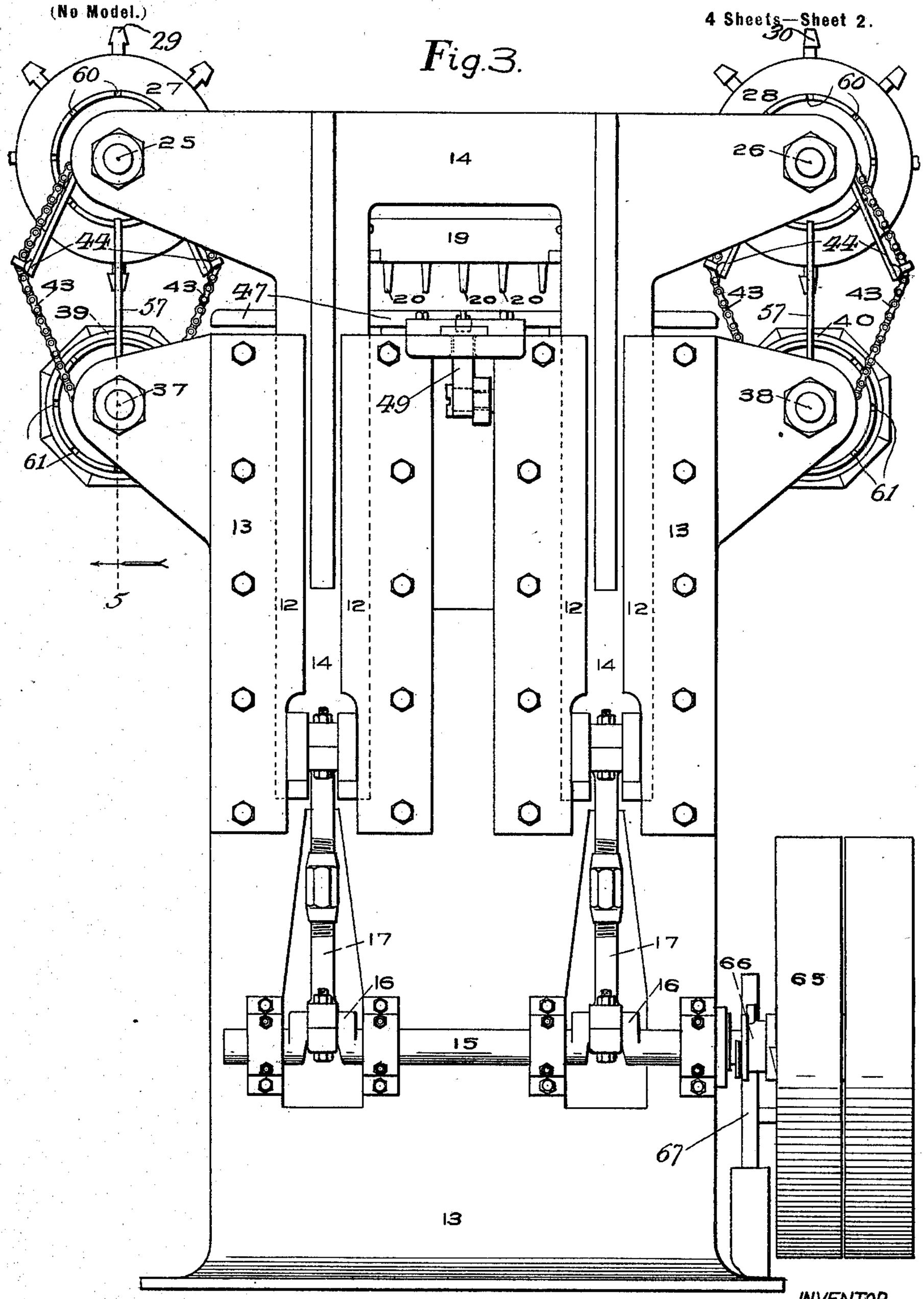
Fig. 3.



WITNESSES

R. B. Keese

Geo. C. Dawson

INVENTOR

Robert G Armstrong

By Dwight B Sheever

Atty.

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R. G. ARMSTRONG.

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(No Model.) 4 Sheets—Sheet 3.

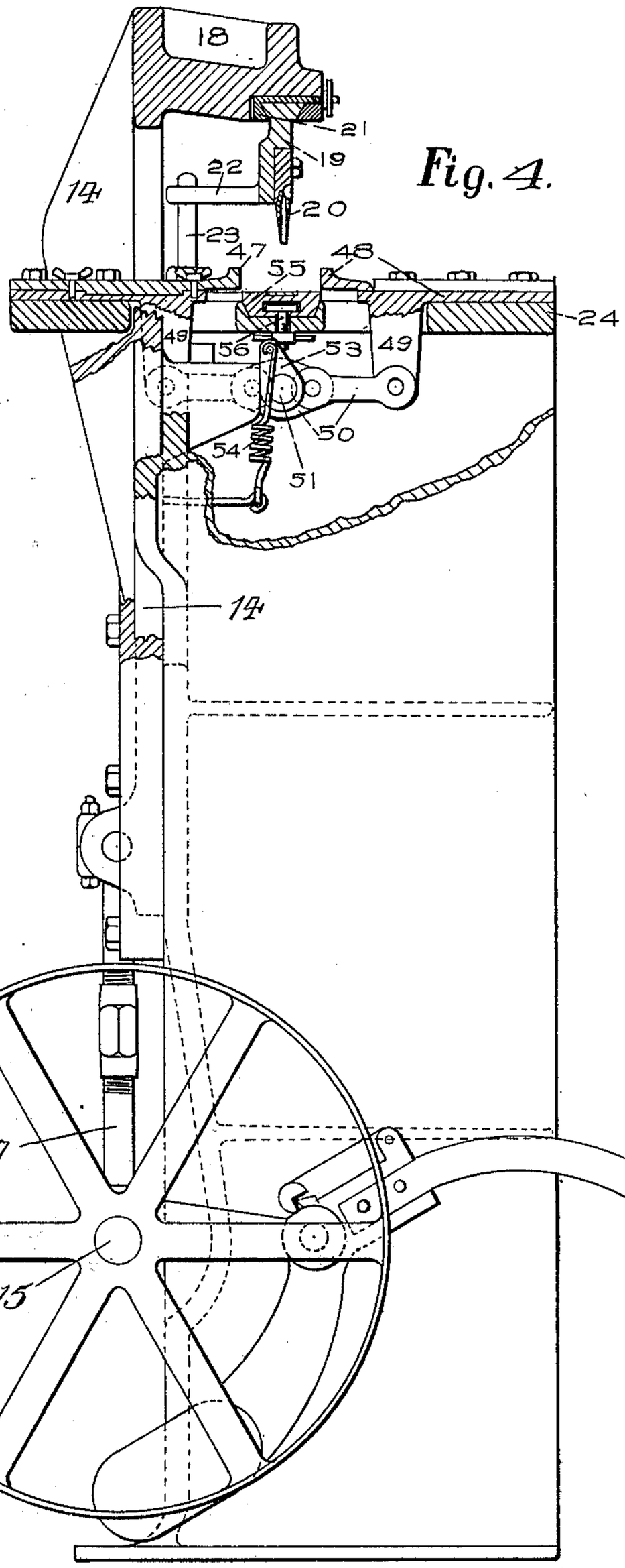

Fig. 4.

WITNESSES
R. B. Keese
Geo. C. Dawson

INVENTOR
Robert G. Armstrong
By Dwight & Bloheever
Atty

No. 672,585. Patented Apr. 23, 1901.

R. G. ARMSTRONG.

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(No Model.) 4 Sheets—Sheet 4.

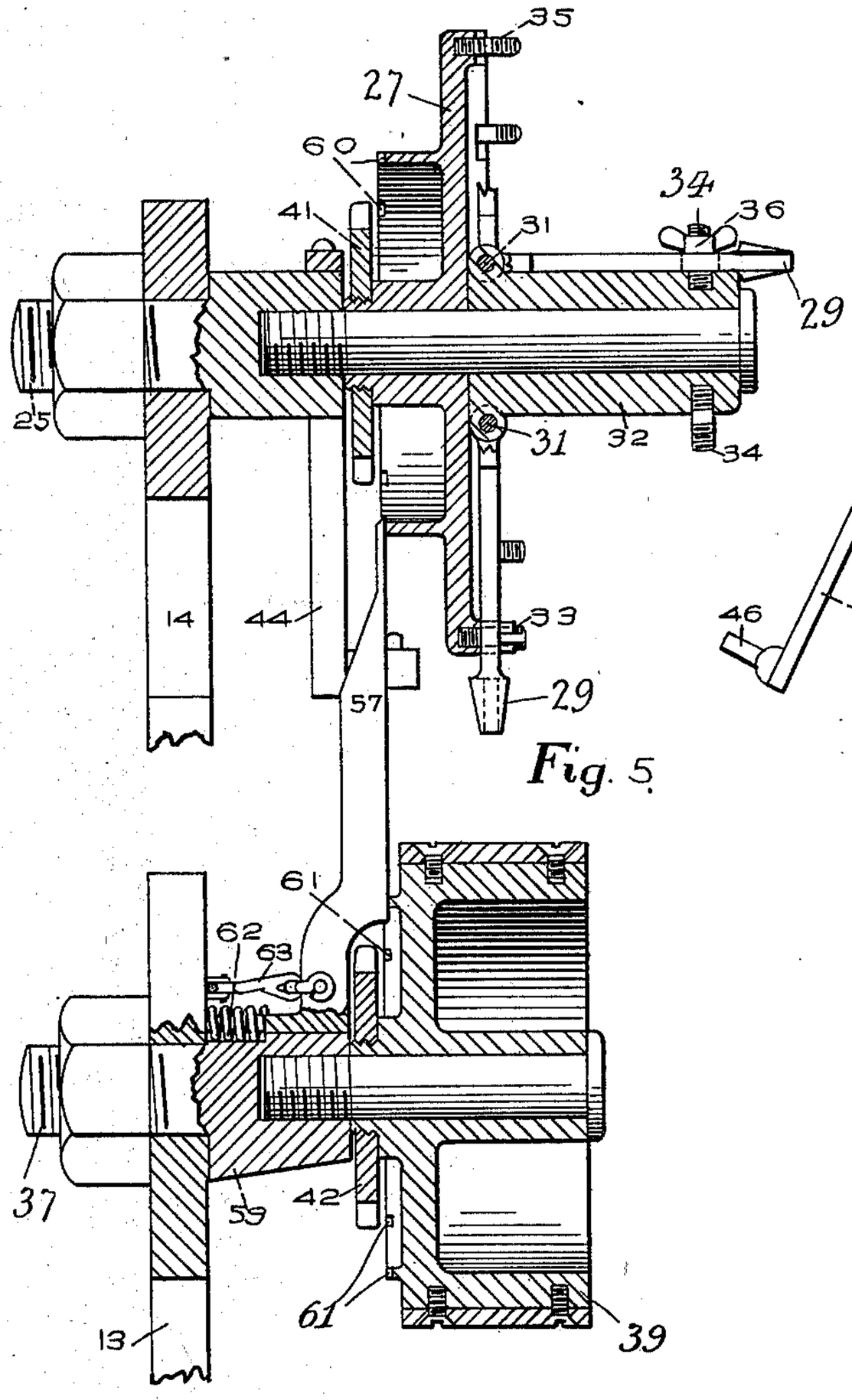

Fig. 5.

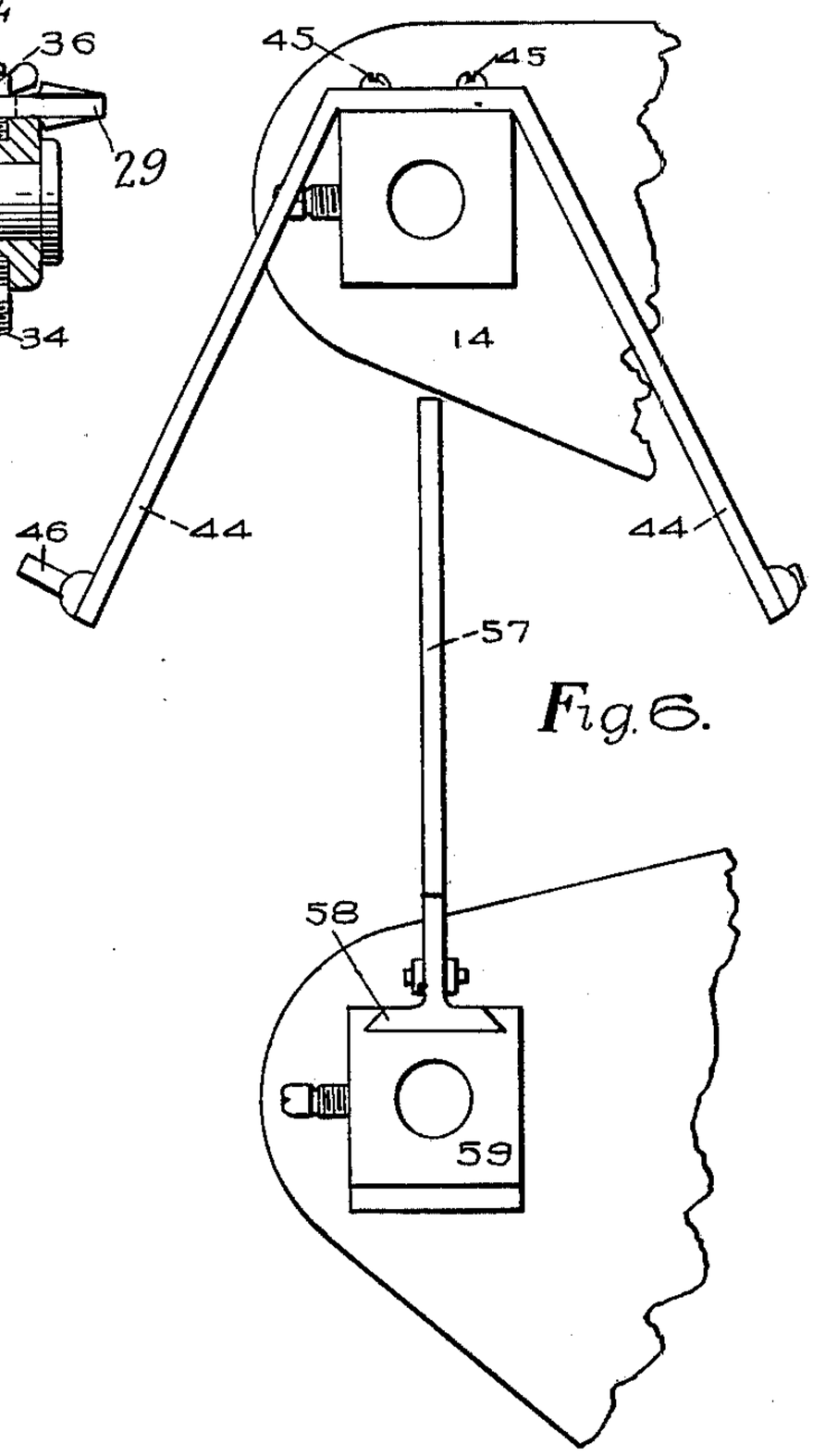

Fig. 6.

WITNESSES
R. B. Keene
Geo. C. Dawson

INVENTOR
Robert G. Armstrong
By Dwight & Bleecker
Atty.

UNITED STATES PATENT OFFICE.

ROBERT G. ARMSTRONG, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO MORLEY BROTHERS SADDLERY CO. AND JOHN P. JESSEN, OF SAME PLACE.

STRAP-PUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,585, dated April 23, 1901.

Application filed September 24, 1900. Serial No. 30,887. (No model.)

To all whom it may concern:

Be it known that I, ROBERT G. ARMSTRONG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Strap-Punching Machine, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to machines for punching straps, and particularly to one for punching all the holes in the strap and at the same time rounding the ends of the strap.

It consists of a machine for doing this work, which is adapted to be quickly adjusted to work on straps of different widths and in which different-sized punches and end-cutters can be quickly and practically automatically substituted for those in use.

It also consists in the details of construction hereinafter more fully described and claimed.

In the drawings, Figure 1 is a plan, Fig. 2 a front, Fig. 3 a rear, and Fig. 4 a side sectional view of my machine. Fig. 5 is a sectional view through the turrets. Figs. 6 and 7 are detail front views of parts of the same.

Slidably mounted in the guides 12 on the frame 13 of the machine is the cross-head 14. Journaled to the frame 13 is the crank-shaft 15, having its cranks 16 connected to cross-head 14 by the connecting-rods 17, so that when the shaft 15 is rotated the cross-head 14 is reciprocated up and down. Extending from and rigidly secured to the cross-head 14 is the arm 18, to which the gang-punch bar 19, holding the punches 20, is detachably secured by the clamp-jaws 21. The punches are braced by the arm 22, which fits over and slides up and down upon the post 23, rigidly attached to the table 24.

Journaled to the cross-head 14 at 25 and 26 are the two turret-wheels 27 and 28, the former bearing an assortment of bag-punches 29 for cutting the hole for the tongue of the buckle in the end of the strap and the latter an assortment of cutters for rounding the end of the strap. These bag-punches 29 and cutters 30 are pivoted at 31 to the hub 32 of the turret-wheel, so that when they are wanted for use they can be swung up against the rim of the turret-wheel and secured by the thumb-screw 33 on the screws 35 on the rim of the wheel and when not in use can be swung down over the screws 34 on the hub of the wheel and be there secured by the thumb-screws 36. By thus securing the idle punches to the hub they are entirely out of the way of the workman. The machine may, however, be used while all the punches are secured to the rim of the turret; but it is not so convenient.

Journaled at 37 and 38 to arms extending from the frame of the machine are wheels 39 and 40, carrying the punch-beds for the punches 29 and 30, having as many punching-surfaces as there are punches or cutters on the turret opposite. These punching-beds are covered with copper; but wood or any other soft composition metal may be used. Manifestly punches consisting of male and female dies might be used in these turrets, the male punch being secured to the upper turret and the female to the lower one. In order that the same face of this wheel bearing the proper punch-bed may always be opposite the same punch or cutter, I rigidly secure to the turret-wheel a sprocket-wheel 41, and I secure a sprocket-wheel 42 with the same number of teeth to the punching-block wheel. Around these two sprocket-wheels is the sprocket-chain 43. This chain passes over and is held tight at all times by the springs 44, rigidly secured in the middle by screws 45 to the cross-head 14. The chain is prevented from slipping from the springs by the guards 46.

Slidably mounted on the table 24 are the jaws 47 and 48 for clamping the strap. Depending from these jaws through slots in table 24 are the arms 49, connected by the toggle-joint 50 to the shaft 51, journaled on the under side of table 24 in the bearings 52. On this shaft 51 is the arm 53, connected by the spring 54 to the cross-head 14.

The punching-plate 55, carrying the punch-block for the gang-punches 20, is detachably secured to the table by means of the clamps 56, so that the punch-plate corresponding to the size of gang-punch 20 in use in the machine may always be used. In order that the gang-punch and its punch-plate may always be in alinement when working, I place the two together when putting the arm 22 over

the guide-post 23. I bring the cross-head down onto the gang-bar 19 and secure the gang-punch in its place and the punch-plate in its place before I raise the cross-head, thereby separating the punch and punch-plate.

The wheels 27 and 39 and the wheels 28 and 40 are held in working alinement by the catch 57, which is adapted to slide backward and forward in groove 58 in the block 59, rigidly attached to frame 13. This catch is normally held in the notches 60 in the turret-wheels and notches 61 in the lower wheels by the spring 62, the fitting-notches 60 in the upper wheel being loose enough so that the catch does not prevent the vertical movement of turret-wheel. The catch 57 is connected by the chain 63 to an independent foot-lever or hand-lever. (Not shown.) When the workman moves this lever, he pulls the catch 57 out of engagement with the turret-wheels, thereby permitting them to be turned, and when he releases the lever the spring 62 forces the catch back into engagement with the wheels, thereby locking them.

The shaft 15 is driven by the belt-wheels 65, connected by a belt to any convenient source of power. These wheels are connected to the shaft 15 by the clutch 66, which may be any one of the many common forms of clutch. It is operated by foot-lever 67 under the control of the workman.

In the operation of the machine the workman first selects the desired size of gang-punches 20 and inserts them, with the proper punch-plate, in the machine in the manner described. He then selects the proper punch 30 and cutter 29 for active use on their respective turret-wheels, fastens them to the rims of the wheels by the set-screws 33, and after releasing the catch 57 turns the turret-wheels so that these active punches and cutters are in proper position and allows catch 57 to lock them. The workman now places the strap between the jaws 47 and 48 and steps on the lever 67. This causes shaft 15 to rotate and the cross-head 14 to descend. As the cross-head starts downward toggle-joint 53 is tightened and the jaws 47 and 48 are brought against the sides of the strap, thereby centering and clamping it. When the jaws touch the strap, their motion stops, and further motion of the cross-head being taken up by the spring 54, which is of such strength that while it is strong enough to carry the strain necessary to move the jaws up to the strap, it is not strong enough to force the jaws together against the resistance of the strap, thereby bending it. As the cross-head descends after the jaws grasp the strap in the manner above described the punches 20 and 29 and the end-cutter 30 descend upon and cut the strap. As the revolution of shaft 15 is completed these are withdrawn from the strap and the jaws holding the strap are released. If the workman has removed his foot from the lever 67, the machine is stopped by the automatic release of clutch 66 when the shaft 15 completes its stroke. As the turret-wheels are carried down by the cross-head 14 the springs 44 force the chains outward, thereby keeping them tight over the sprocket-wheels 41 and 42. As the turrets rise to their original position the chains are straightened to their original position against the action of the springs. When the machine completes the cycle of operations above described, the workman removes the strap and inserts another, which it is desired to make correspond with the last one.

If a different-sized strap with different-sized holes is desired, the workman unfastens the punches and cutters just actively used from the rims of the turrets and fastens them against the hubs 32 by the thumb-screws 36 in the manner heretofore described and fastens the now-desired punches against the rims of the turrets and turns the turrets in the manner heretofore described, so that they are in working or active position. If a different set of gang-punches 20 are desired, they, with the corresponding punch-plate, are inserted, and the machine is ready to have a new lot of straps punched, as above described.

I do not limit myself to the form and materials of my machine, which may be varied within wide limits without departing from my invention. Manifestly the cutters or bag-punches or gang-punches or any two of them may be used without the others, if it is so desired.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the class described, the combination of a turret-wheel carrying a variety of punches, another wheel carrying a punch-plate corresponding to each punch on the turret-wheel, sprocket-teeth on each of said wheels, a chain over said sprockets, mechanism for imparting reciprocatory motion to one of said wheels relative to the other, and a spring adapted to at all times exert sufficient pressure on said chain to at all times keep it stretched over said sprockets.

2. In a machine of the class described, the combination of a turret-wheel carrying a variety of punches, another wheel carrying a punch-plate corresponding to each punch on the turret-wheel, sprocket-teeth on each of said wheels, a chain over said sprockets, mechanism for imparting reciprocatory motion to one of said wheels relative to the other, and a forked spring so mounted adjacent to said chain that its ends bear against said chain and exert sufficient pressure against it to at all times keep it stretched over said sprockets.

3. In a machine of the class described, the combination of a turret-wheel carrying an assortment of punches, another wheel carrying a punch-plate corresponding to each punch on the turret-wheel, mechanism for

locking said wheels against rotation when a punch is in operative working relation to its punch-plate, an equal number of sprocket-teeth on each of said wheels, a chain over said sprockets, mechanism for imparting reciprocatory motion to one of said wheels relative to the other, and a spring adapted to at all times exert sufficient pressure on said chain to at all times keep it stretched over said sprockets.

4. In a machine of the class described, the combination of a turret-wheel carrying an assortment of punches, another wheel carrying a punch-plate corresponding to each punch on the turret-wheel, mechanism for locking said wheels against rotation when a punch is in operative working relation to its punch-plate, an equal number of sprocket-teeth on each of said wheels, a chain over said sprockets, mechanism for imparting reciprocatory motion to one of said wheels relative to the other, and a forked spring so mounted adjacent to said chain that its ends bear against said chain and exert sufficient pressure against it to at all times keep it stretched over said sprockets.

5. In a machine of the class described, a turret-wheel having a series of working tools pivotally mounted on said wheel, means for detachably securing each tool in radial position when it is desired for active work and means for securing it in a position approximately parallel to the axis of the wheel when it is not wanted for active work.

6. In a machine of the class described, a turret-wheel having a series of arms bearing working tools pivotally mounted to the hub of said wheel, means for detachably securing each of said arms to the rim of said wheel when the tool is desired for active work, and means for securing said arm to the hub of the wheel when said tool is not wanted for active work, substantially as described.

7. In a machine of the class described, the combination of a cross-head carrying a turret-wheel with a variety of bag-hole punches, a gang-punch and another turret-wheel carrying an assortment of cutters; the frame of the machine carrying a wheel having a punch-plate corresponding to each bag-punch, a punch-plate corresponding to the gang-punch, and another wheel having a punch-plate corresponding to each cutter; flexible connections between each turret and its punch-plate wheel; mechanism for holding the active working punch or cutter in register with its own punch-pad; mechanism for grasping and holding a strap under said punches and cutter; and mechanism for reciprocating said cross-head and attached wheels up and down.

8. In a machine of the class described, in combination with the table thereof, a pair of jaws, a toggle-joint connecting said jaws, a flexible connection between said toggle-joint and the moving parts of the machine whereby said jaws are adapted to grasp and hold, without bending, straps of different widths, substantially as described.

ROBERT G. ARMSTRONG.

Witnesses:

HARRY W. YOUNG,

CHAS. C. ROSE.