

P. J. CONBOY.
BRAKE APPARATUS.

APPLICATION FILED AUG. 17, 1903.

NO MODEL.

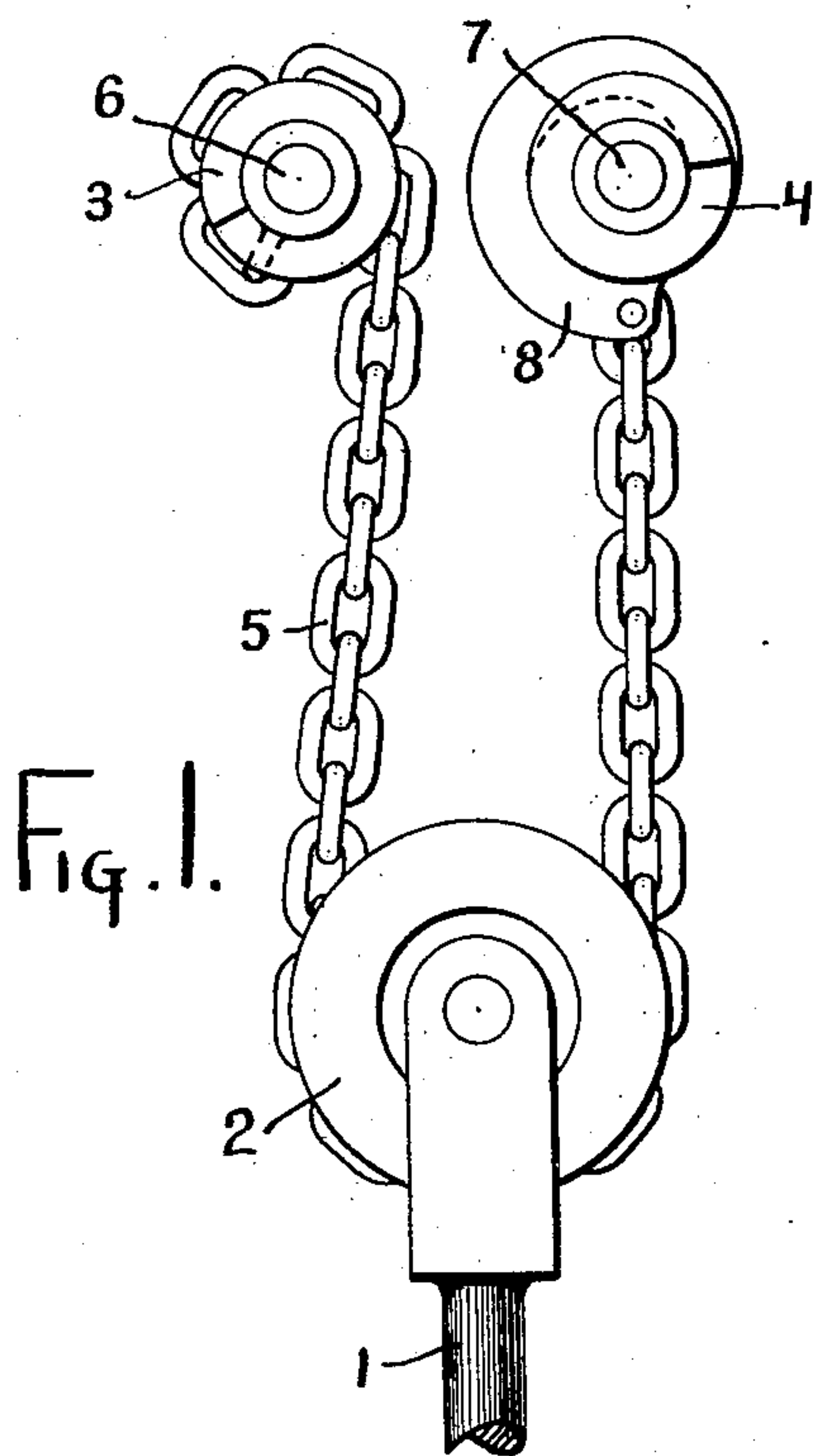


Fig. 1.

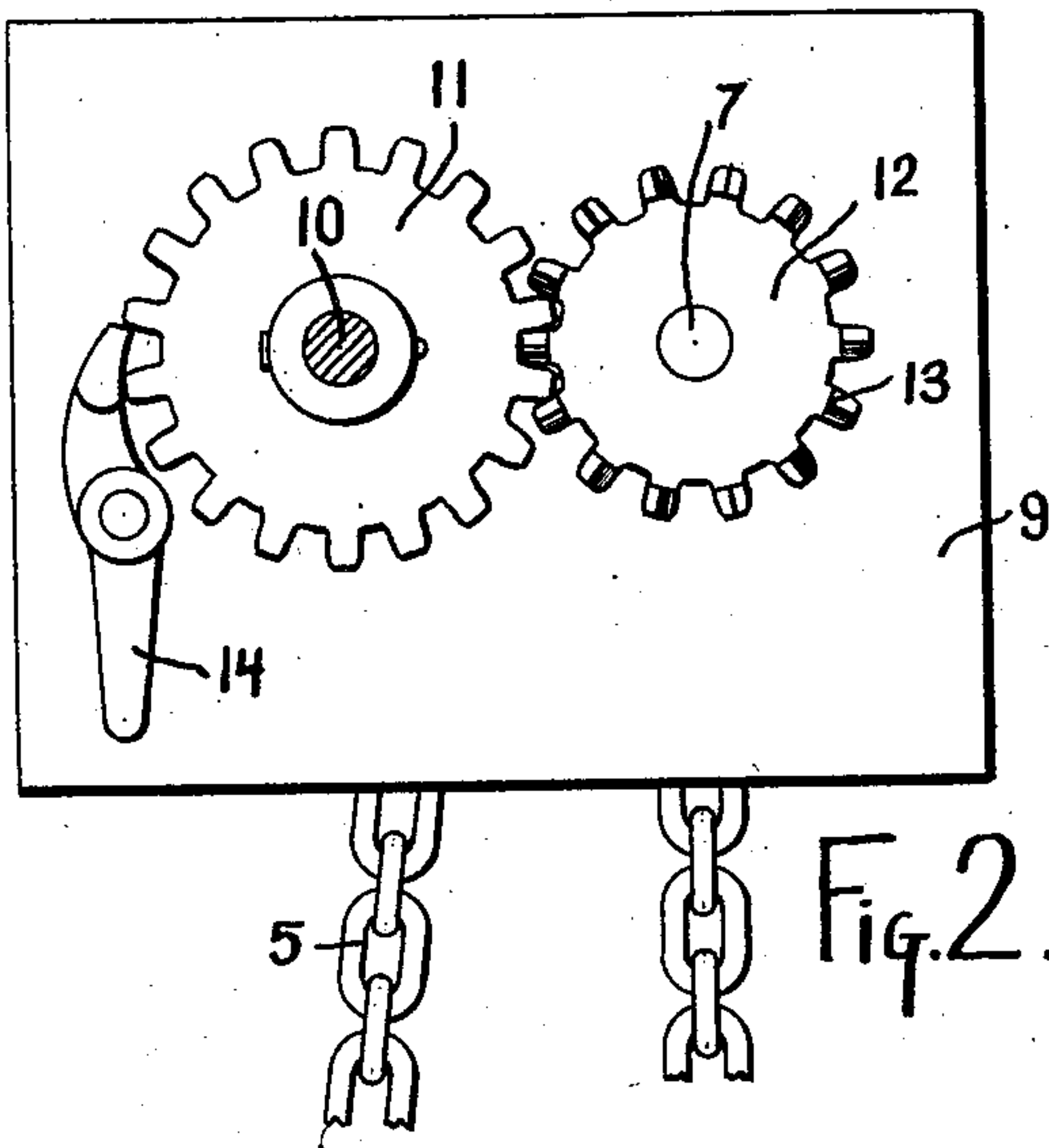


Fig. 2.

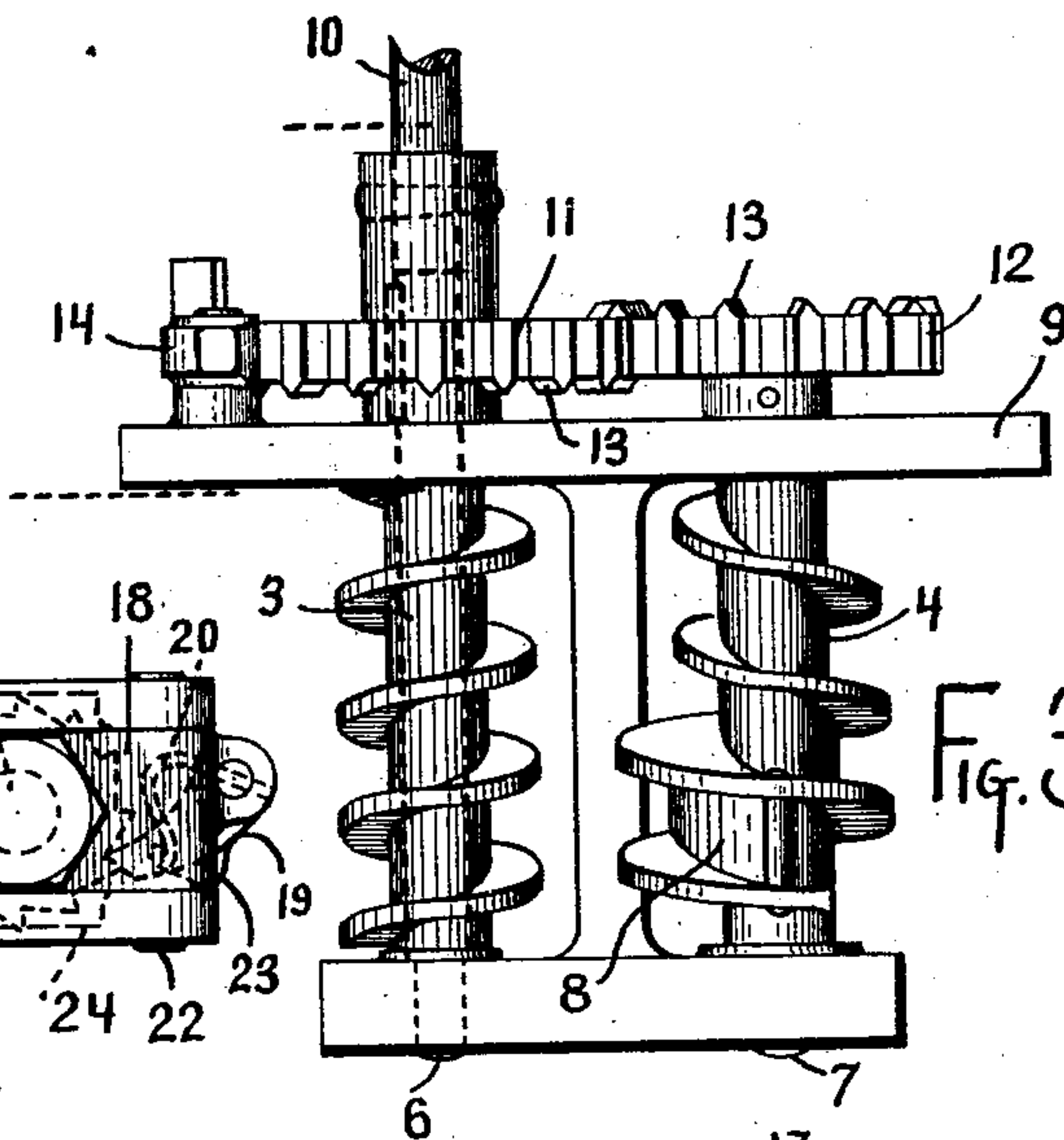


Fig. 3.

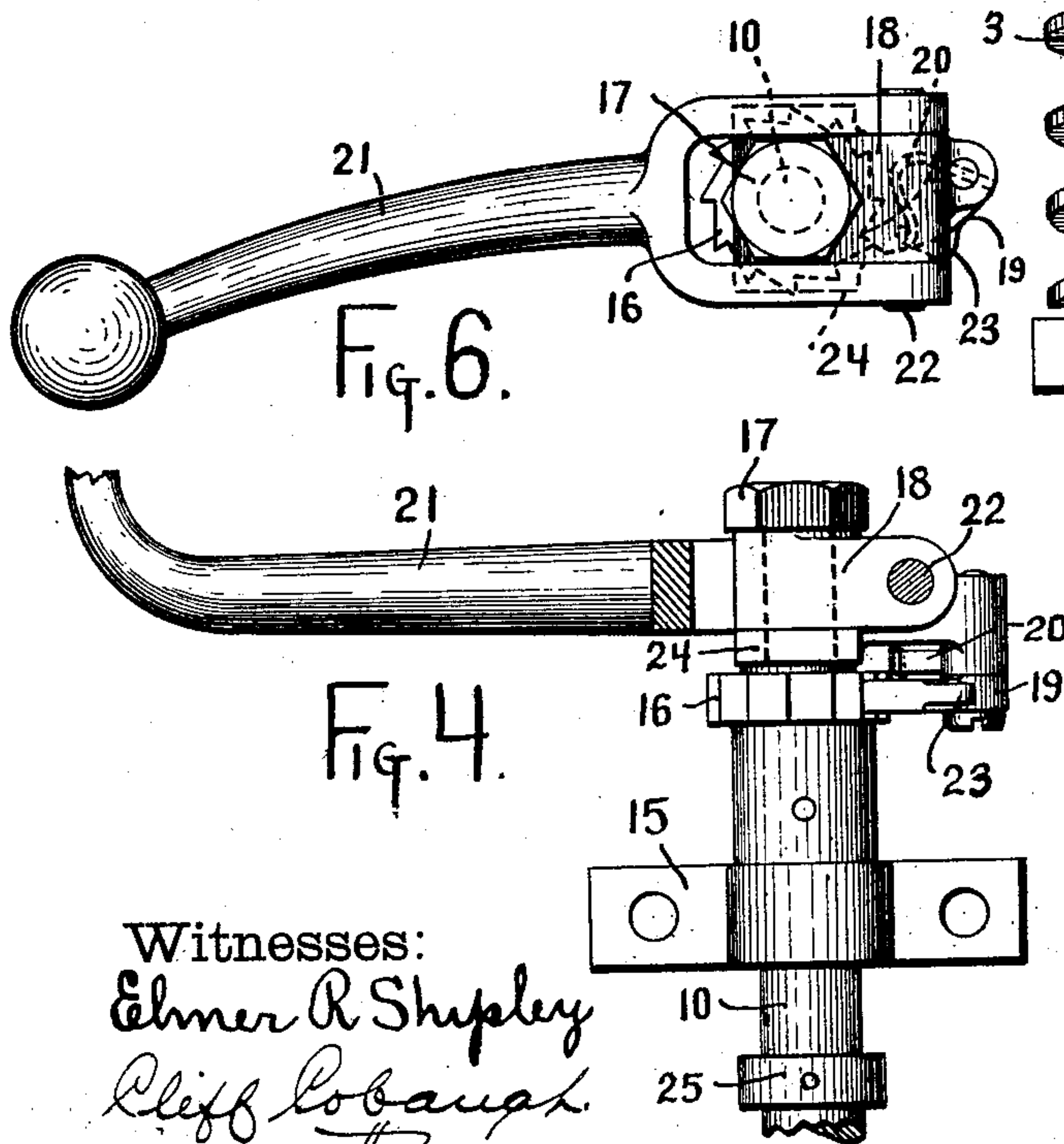


Fig. 4.

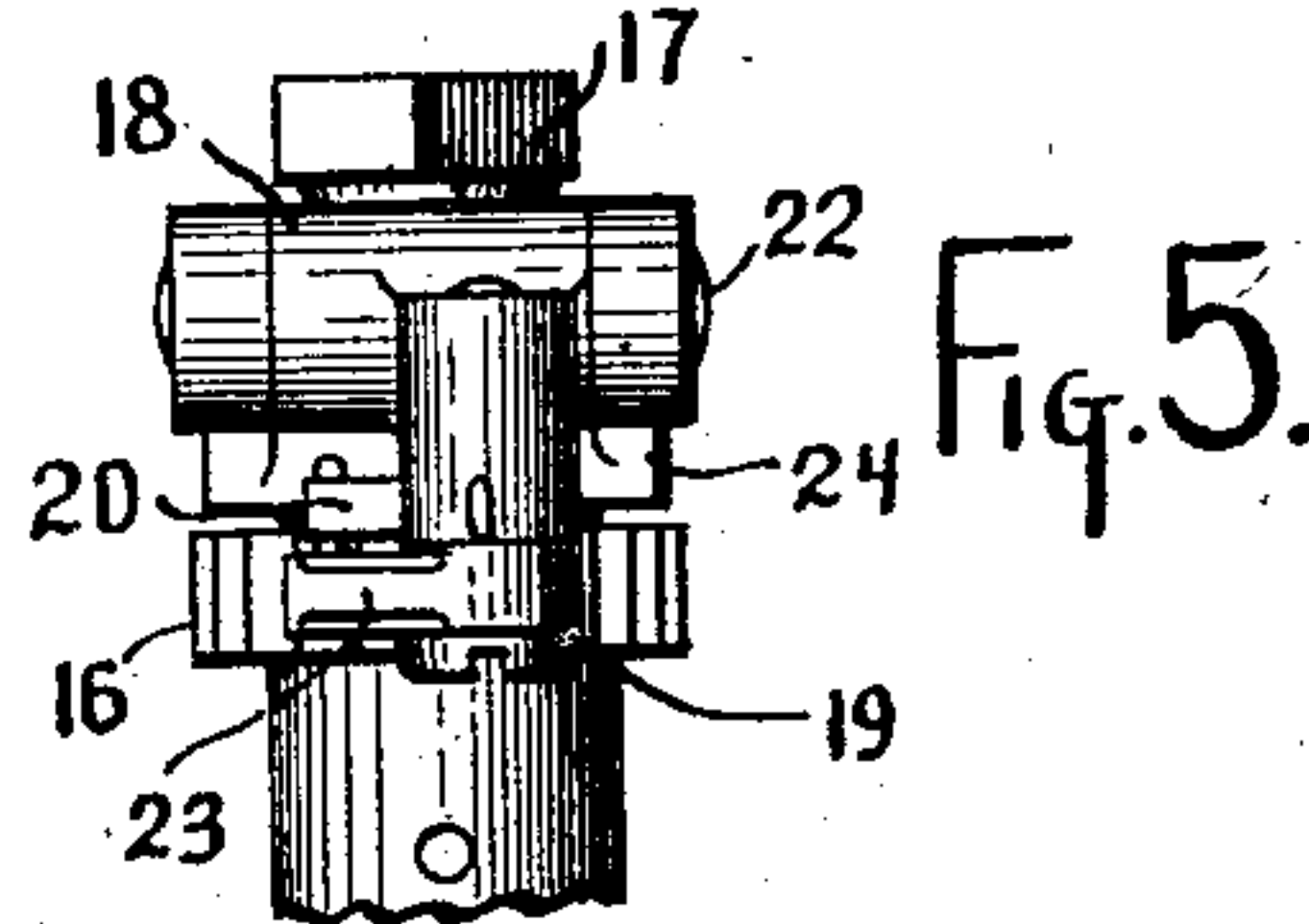


Fig. 5.

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UNITED STATES PATENT OFFICE.

PHILIP J. CONBOY, OF HAMILTON, OHIO, ASSIGNOR OF ONE-HALF TO WILLIAM H. HURM, OF HAMILTON, OHIO.

BRAKE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 747,378, dated December 22, 1903.

Application filed August 17, 1903. Serial No. 169,698. (No model.)

To all whom it may concern:

Be it known that I, PHILIP J. CONBOY, a citizen of the United States, residing at Hamilton, Butler county, Ohio, (post-office address No. 334 Ludlow street, Hamilton, Ohio,) have invented certain new and useful Improvements in Brake Apparatus, of which the following is a specification.

This invention pertaining to brake apparatus will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a plan of the lower or winding portion of my improved brake apparatus; Fig. 2, a plan at the platform-plate, the brake-staff appearing in horizontal section; Fig. 3, an elevation of the apparatus minus the upper portion of the brake-staff; Fig. 4, a side elevation, part vertical section, of the brake-handle and its immediate accessories; Fig. 5, an end elevation of the same, and Fig. 6 a plan of the same.

In the drawings, 1 indicates a member of the brake-rigging to be drawn upon in applying the brake, this member being shown as a rod; 2, a sheave carried by the end of the rod; 3, one of the winders, which I will herein term the "first" winder, the same being illustrated as a rotary cylinder provided with a helical flange adapted for the guidance of the chain; 4, a second winder disposed near to and parallel with the first one and having the same form except as herein indicated; 5, a chain looped around sheave 2 and having one end hitched to but not normally wound upon the second winder 4, the other end of the chain being normally wound upon first winder 3 to a greater or less extent; 6, the lower part of the brake-staff fast with the first winder; 7, the spindle of the second winder; 8, a volute enlargement at the lower end of the second winder, it being to the larger extremity of this enlargement that one end of the chain 5 is hitched; 9, a bearing-plate and bracket adapted to furnish a housing for the lower portion 6 of the brake-staff and for the spindle of the second winder and adapted to be secured to the platform of the car or other structure in connection with which the brake device is to be employed; 10, the upper portion of the brake-staff ex-

tending from lower brake-staff portion 6 upwardly to the brake-handle; 11, a gear fast on upper brake-staff 10 and splined on the upper end of lower brake-staff 6; 12, a smaller gear on the upper end of the spindle of the second winder, this gear engaging the gear 11; 13, triangular projections from the upper ends of the teeth of one of the gears and from the lower ends of the teeth of the other gear; 14, a pawl engaging gear 11 and serving to lock it when desired against motion in the non-clockwise direction; 15, a bearing for the upper portion of the upper brake-staff 10; 16, a ratchet fast on the upper brake-staff; 17, a non-circular head, shown as hexagon, on the upper brake-staff above the ratchet; 18, a pawl-block journaled on the brake-staff between the ratchet and the head 17; 19, a pawl carried by the brake-block and engaging the ratchet and adapted to turn the brake-staff in clockwise direction; 20, a pawl-spring carried by the pawl-block; 21, a brake-handle having at its inner end a fork adapted to straddle the pawl-block and when raised thereto to fit hexagon head 17; 22, a horizontal pivot uniting the fork-arms of the brake-handle to the pawl-block and serving to support the brake-handle in normal horizontal position or to permit it to be turned upwardly and over and downwardly alongside the brake-staff; 23, a portion of the pawl normally free of obstruction, but adapted to be engaged by one of the fork-arms when the brake-handle is turned over and downwardly; 24, ledges projecting sidewise from the base of the pawl-block and adapted to support the brake-handle in normal position, and 25 a stop upon the upper brake-staff to limit its upward motion.

Consider Figs. 1 and 2, which assume the brake as being off. In applying the brake the first winder 3 is by means of the brake-handle turned in clockwise direction. This unwinds the chain from that winder; but as the second winder is geared to the first winder so as to turn at a higher rate the result is that the chain is wound upon the second winder at greater rate than it is unwound from the first winder, and consequently the loop of the chain is shortened with great power due to the differential action of the winders. The

volute 8 at the lower end of the second winder may for the present be ignored. The chain should in normal condition, with brake off, be fairly free from slack, and slack may at any time be taken out of the chain by raising the upper portion 10 of the brake-staff, which may be readily done by hand, and with it the gear 11, thus disengaging the gears and permitting extra slack to be wound upon the first brake-winder 3, after which the gears may be reengaged, leaving the affair in normal working condition. The angular projections 13 on the teeth of the gears serve when the gears are being reengaged to steer the teeth into the tooth-spaces, and thus prevent gear 11 from being arrested in its descent by gear 12. The first effect of the brake-applying motion of the winders is to take up any slack there may be and then to move the brake-shoe toward its work and then to forcibly apply the brake to its work. The first stages call for comparatively little power, and quick action is desirable, hence the volute engagement at the point where the chain is anchored to the second winder.

In applying the brake the brake-handle is turned in clockwise direction, as has been explained, and the pawl-and-ratchet connection between the brake-handle and the brake-staff permits the motion to be given to the brake-staff by oscillating the brake-handle in an obvious and usual manner; but when the two winders are to be disconnected for the purpose of removing surplus slack from the chain then the brake-staff must be turned in non-clockwise direction, and obviously the pawl-and-ratchet system would defeat this. Provision is therefore made for locking the brake-handle to the brake-staff. By raising the brake-handle upon its pivot 22 its fork engages hexagon head 17 after the manner of a wrench, and the brake-staff may then be turned positively in either direction.

The brake-handle may be turned up, over, and downwardly alongside the brake-staff out of the way, and when this is done one arm of the fork forms an obstruction to the portion 23 of the pawl and locks the pawl.

I claim as my invention—

1. In brake apparatus, the combination, substantially as set forth, of a first winder, a second winder disposed parallel thereto and connected therewith for superior winding action, a chain hitched to the second winder and wound upon the first winder and arranged to wind upon the second winder as it unwinds from the first winder, means for turning said winders, and a sheave engaging the loop of the chain.

2. In brake apparatus, the combination, substantially as set forth, of a first winder, a second winder disposed parallel thereto, gearing connecting the two winders to give them a differential winding effect, a chain hitched to the second winder and wound upon the first winder and arranged to wind upon the second winder as it unwinds from the first

winder, means for turning said winders, and a sheave engaging the loop of the chain.

3. In brake apparatus, the combination, substantially as set forth, of a first winder, a second winder disposed parallel thereto, a chain hitched to the second winder and wound upon the first winder and arranged to wind upon the second winder as it unwinds from the first winder, means for turning the first winder, gears connecting the two winders to give them differential winding effect, said gears being arranged for relative motion in an axial direction so that they may be engaged and disengaged, and a sheave engaging the loop of the chain.

4. In brake apparatus, the combination, substantially as set forth, of a first winder, a second winder disposed parallel thereto and connected therewith for superior winding action, a volute enlargement at one end of the second winder, a chain hitched to the volute enlargement of the second winder and wound upon the first winder and arranged to wind upon the second winder as it unwinds from the first winder, means for turning said winders, and a sheave engaging the loop of the chain.

5. In brake apparatus, the combination, substantially as set forth, of a first winder, a second winder disposed parallel thereto, a chain hitched to the second winder and wound upon the first one and adapted to wind upon the second one as it unwinds from the first one, a sheave engaging the loop of the chain, detachable gearing connecting the two winders to give them a differential winding effect, a brake-staff connected with the first winder, a brake-handle on the brake-staff, a pawl and ratchet connecting the brake-handle with the brake-staff, and means for locking the brake-handle to the brake-staff for giving it motion in either direction.

6. In brake apparatus, the combination, substantially as set forth, of a first winder, a second winder disposed parallel thereto, a chain hitched to the second winder and wound upon the first one and adapted to wind upon the second one as it unwinds from the first one, a sheave engaging the loop of the chain, detachable gearing connecting the two winders to give them a differential winding effect, a brake-staff connected with the first winder, a ratchet fast on the brake-staff, a non-circular head fast on the brake-staff, a pawl-block journaled on the brake-staff, a spring-pawl carried by the pawl-block and engaging the ratchet, and a forked brake-handle connected with the pawl-block by a pivot at right angles to the axis of the brake-staff and adapted to engage with and disengage from said non-circular head.

7. In brake apparatus, the combination, substantially as set forth, of a first winder, a second winder disposed parallel thereto, a chain hitched to the second winder and wound upon the first one and adapted to wind upon the second one as it unwinds from the first

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gles to the axis of the brake-staff and adapt-
ed to engage with and disengage from said
non-circular head, said brake-handle being
adapted to turn over and down alongside the
brake-staff and to obstructively lock said 15
pawl.

PHILIP J. CONBOY.

Witnesses:

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