

No. 726,590.

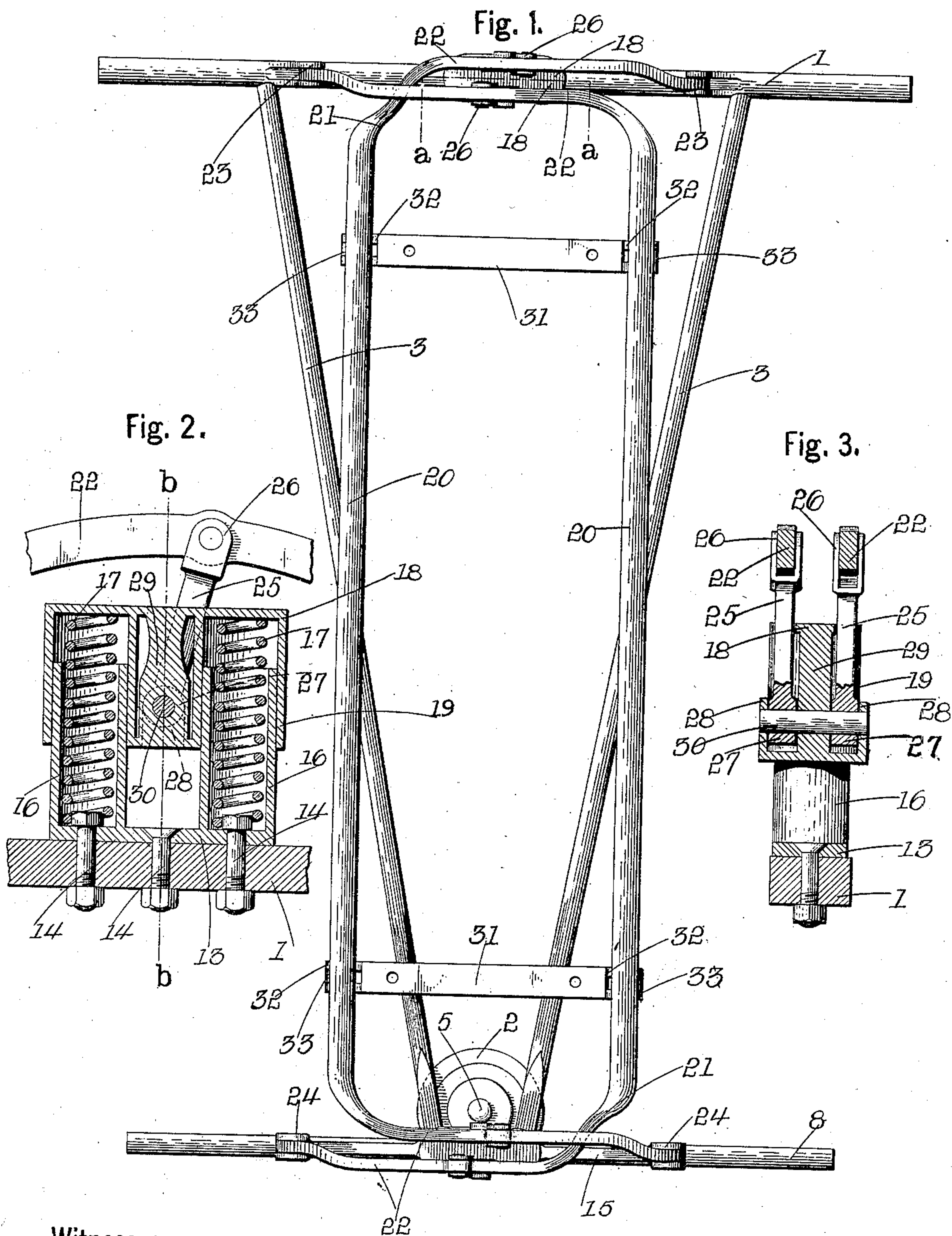
PATENTED APR. 28, 1903.

F. STRATTON.  
VEHICLE.

APPLICATION FILED JUNE 16, 1902,

NO MODEL.

3 SHEETS—SHEET 1.



**Witnesses.**

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3 SHEETS—SHEET 2.

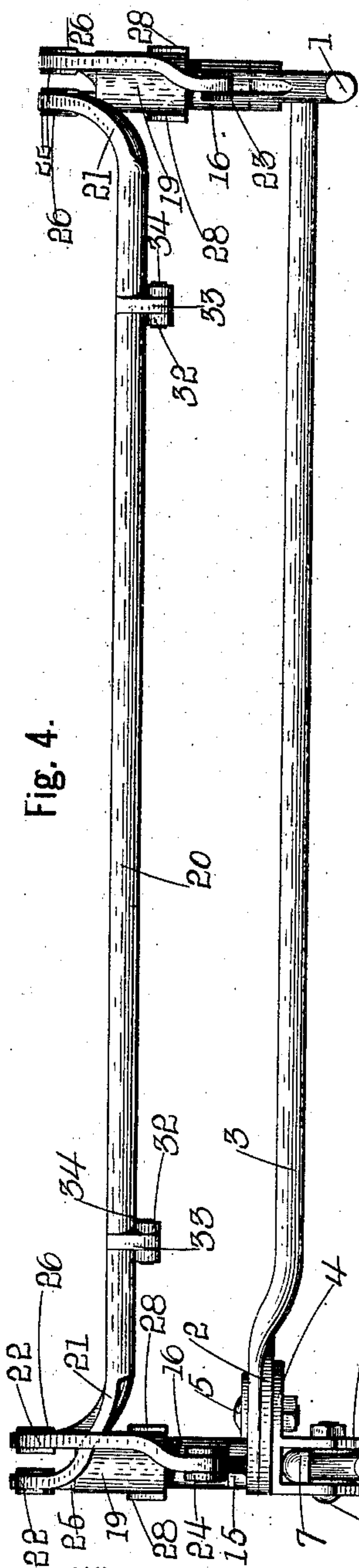


Fig. 4.

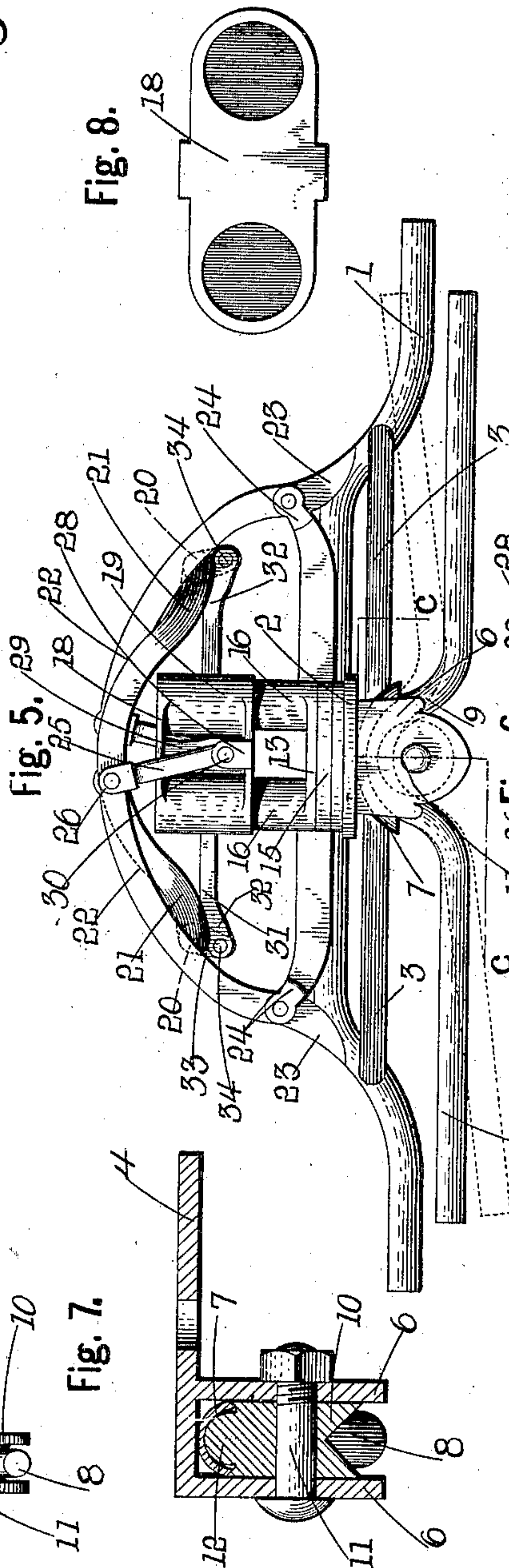


Fig. 5.

Fig. 8.

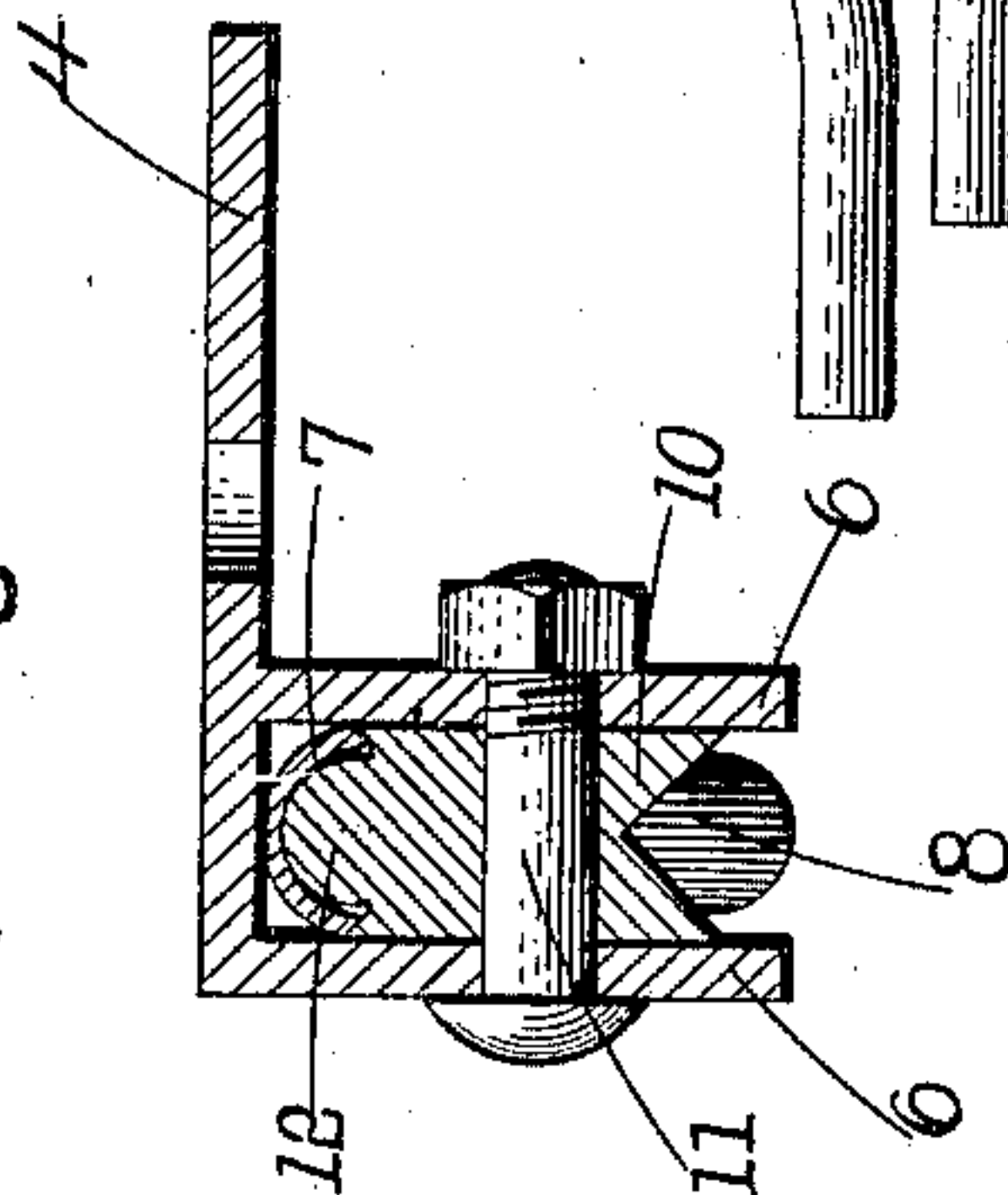


Fig. 7.

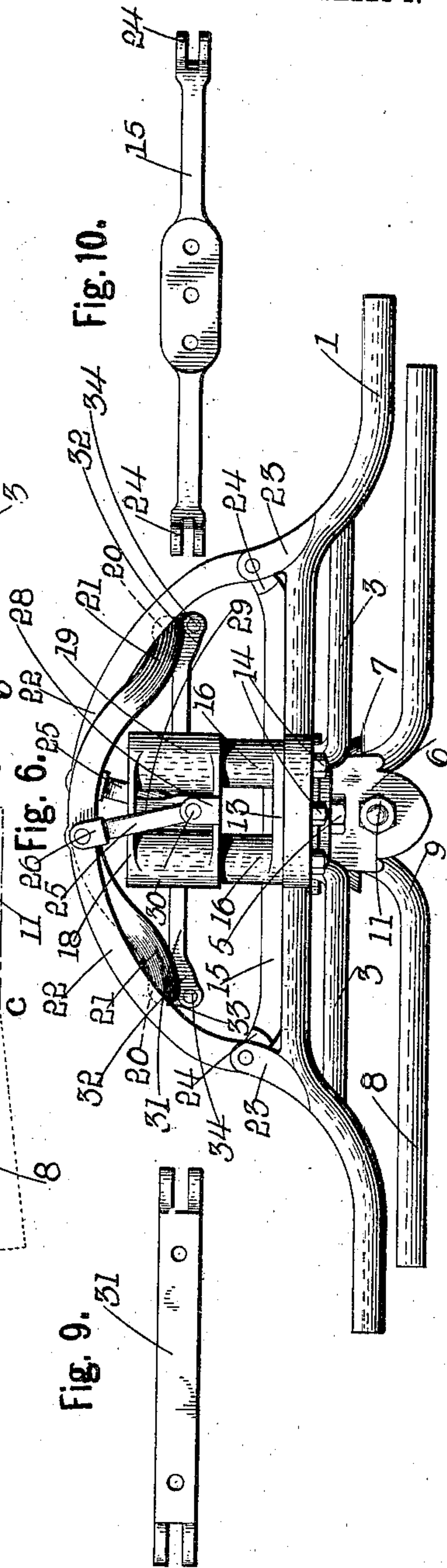


Fig. 6.

Fig. 9.

Fig. 10.

Witnesses.

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3 SHEETS—SHEET 3.

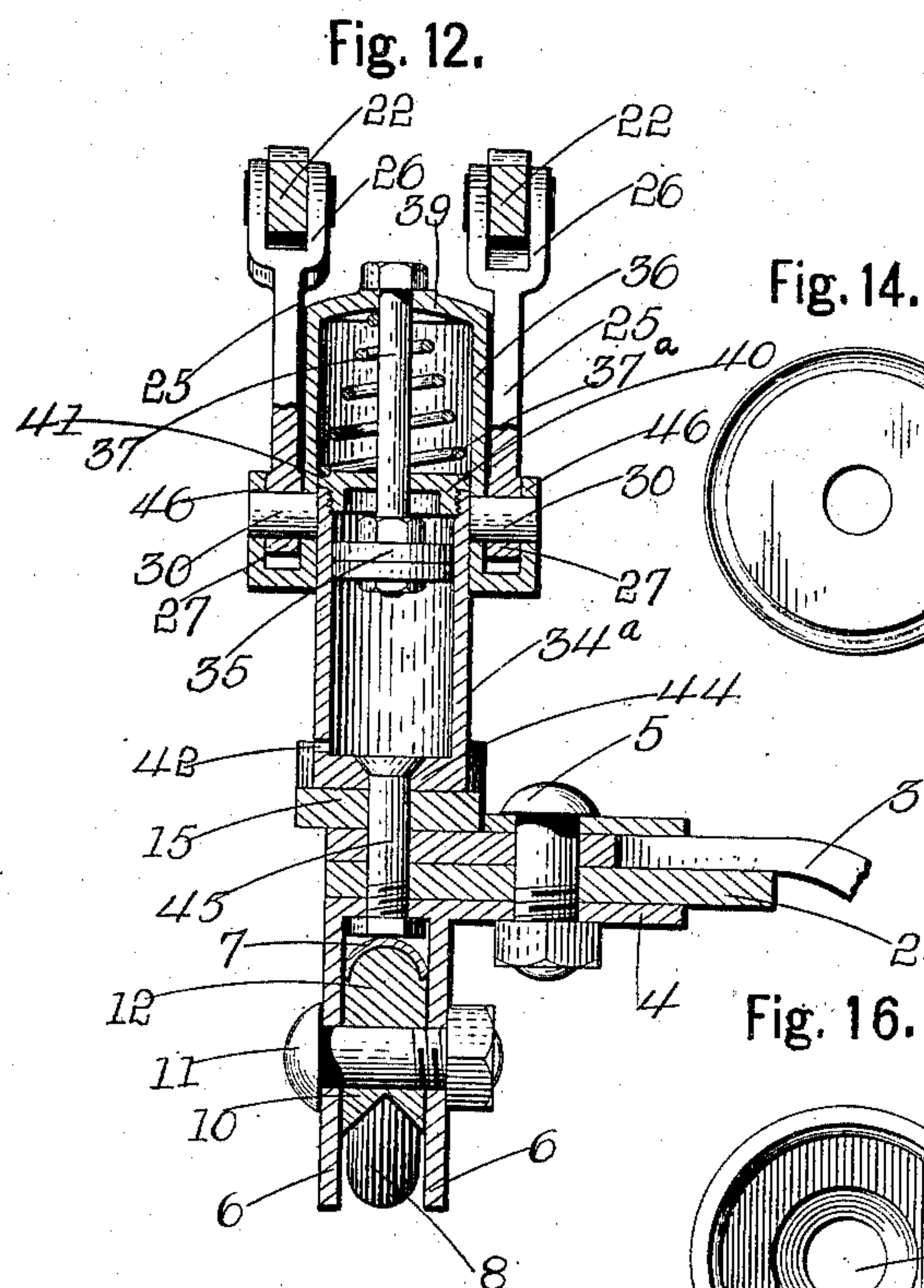
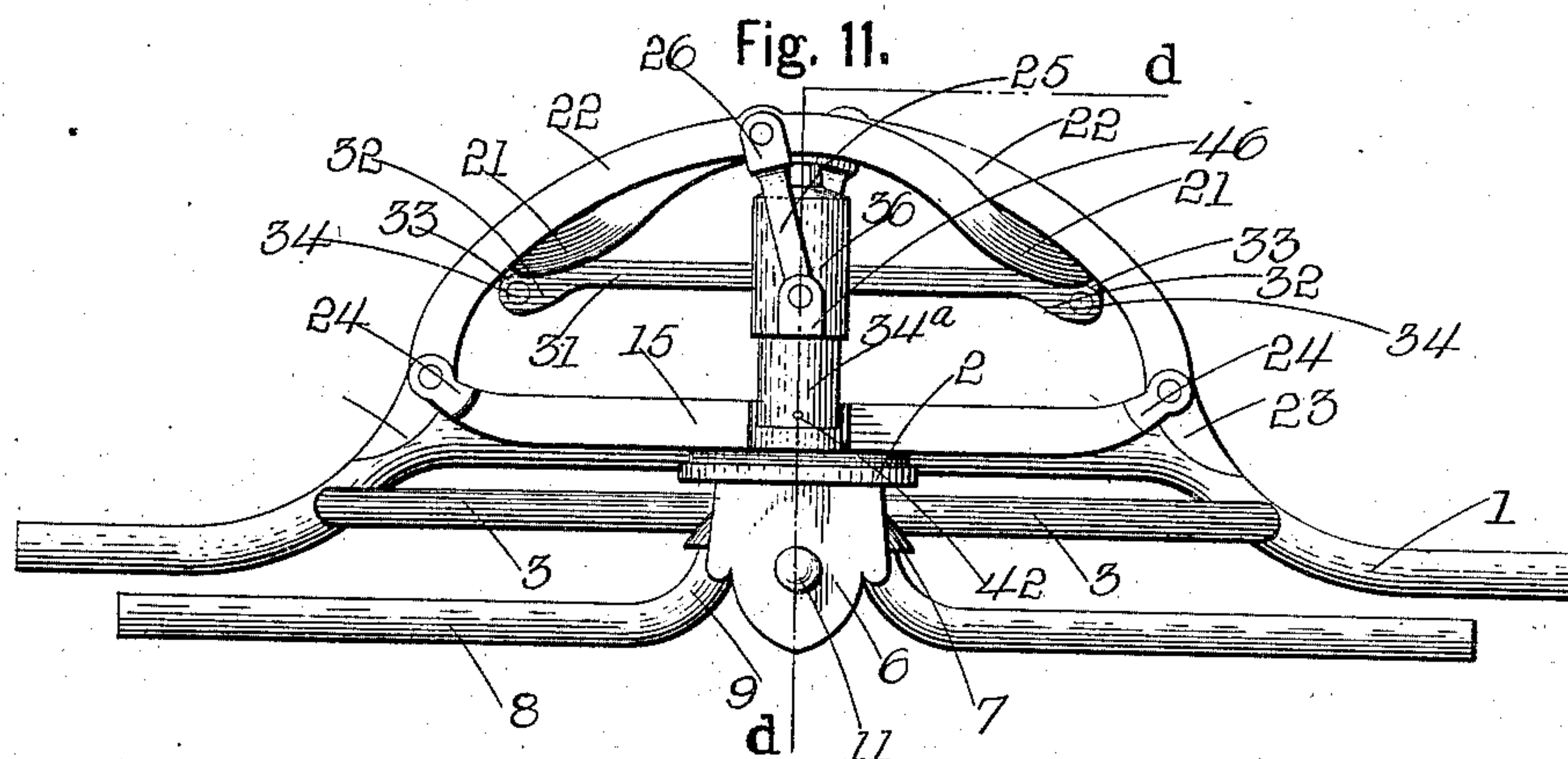


Fig. 13.

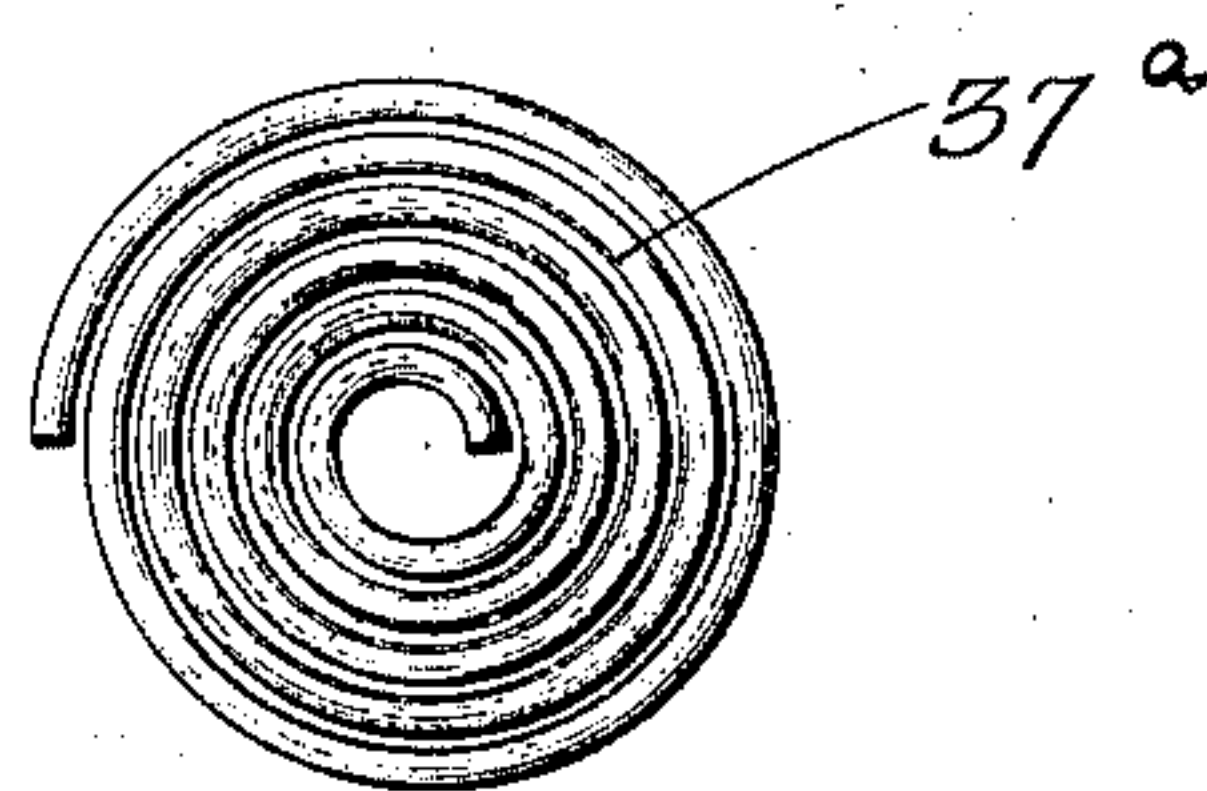


Fig. 14.

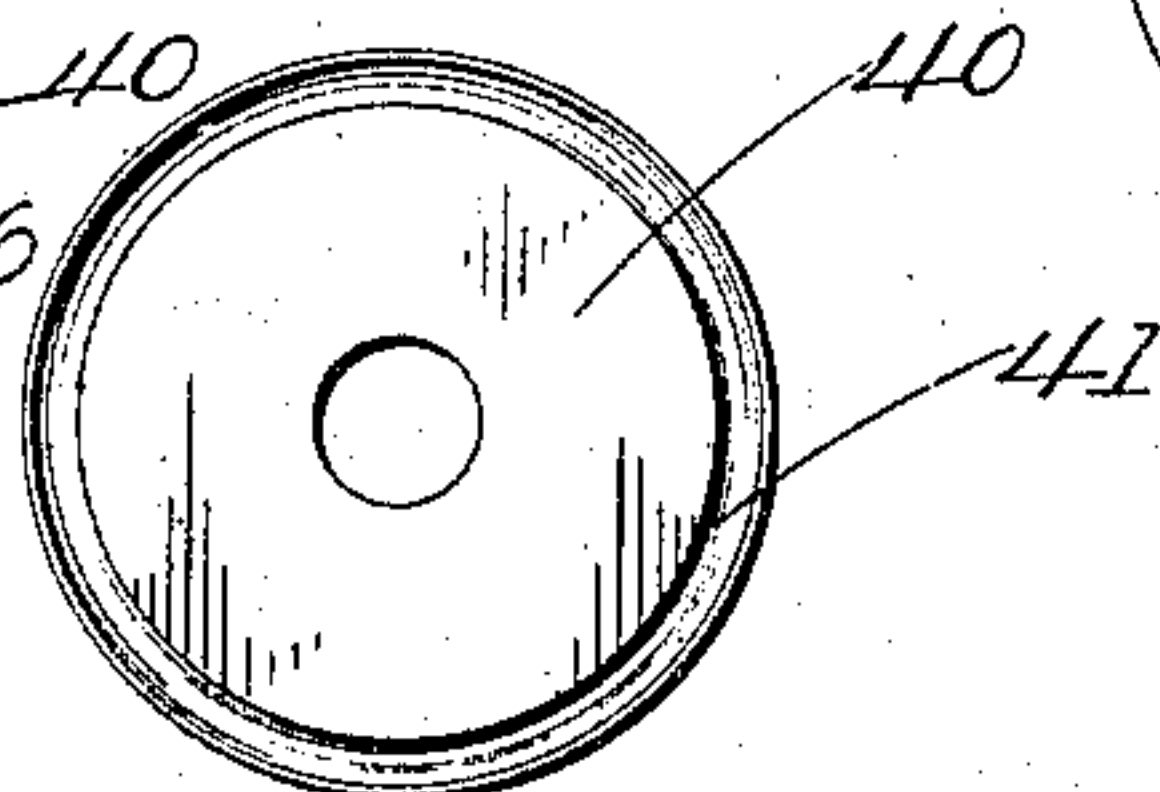


Fig. 15.

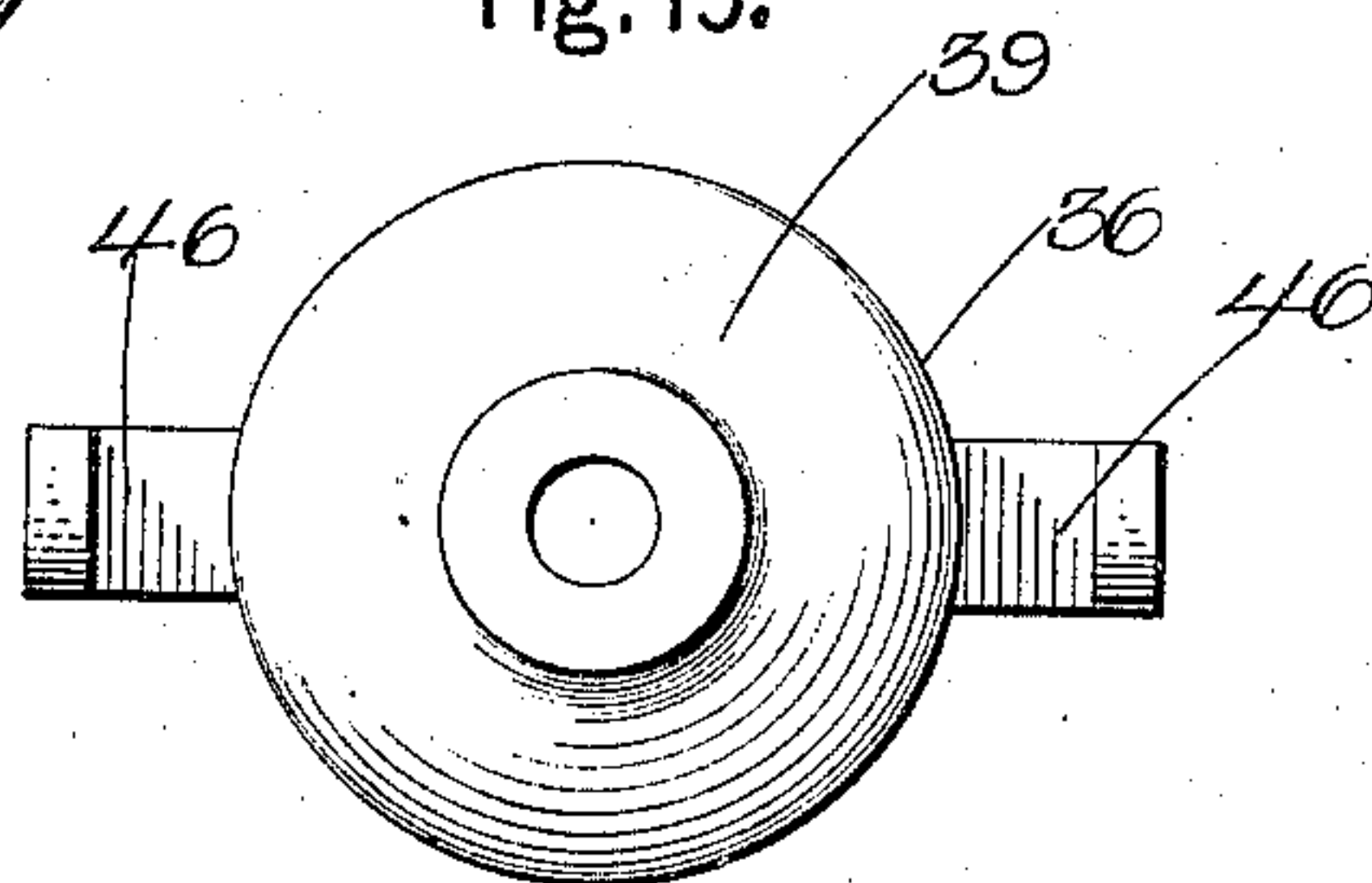
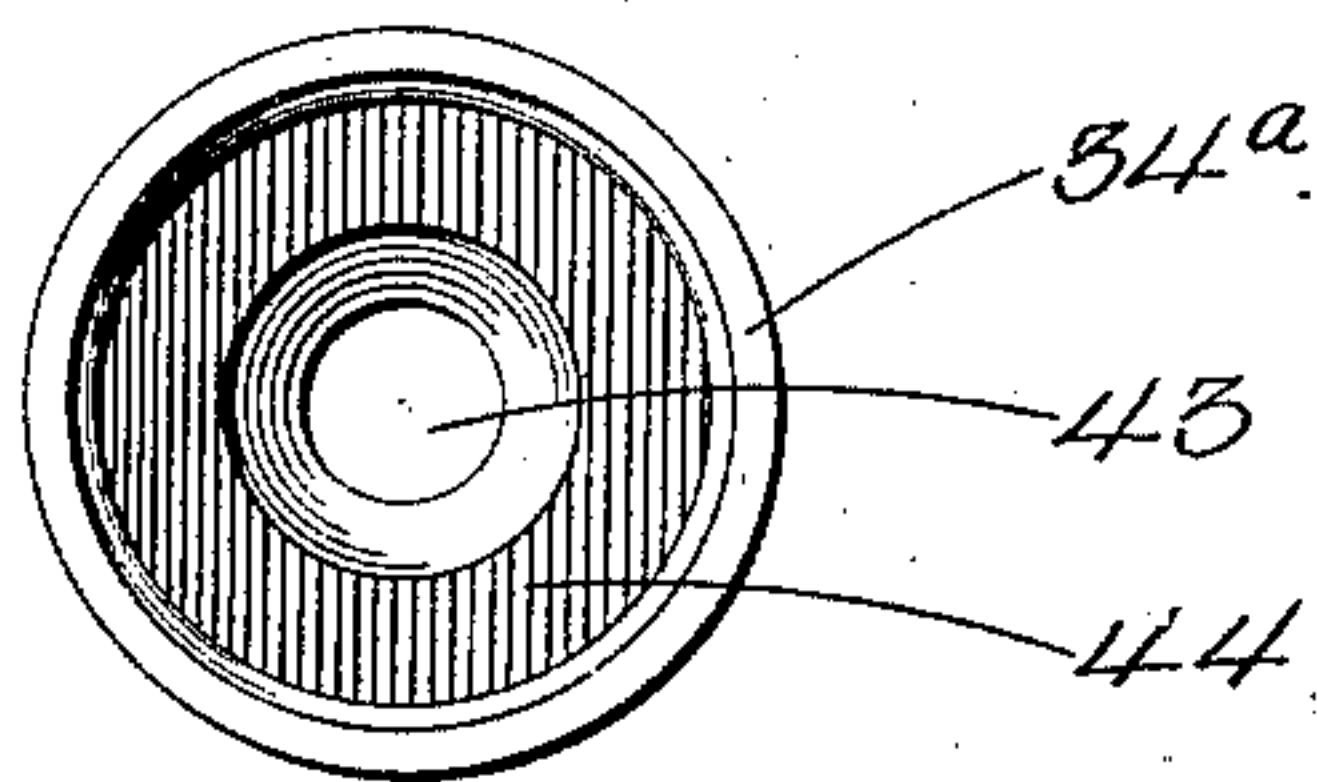


Fig. 16.



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# UNITED STATES PATENT OFFICE.

FRANKLIN STRATTON, OF BUFFALO, NEW YORK.

## VEHICLE.

SPECIFICATION forming part of Letters Patent No. 726,590, dated April 28, 1903.

Application filed June 16, 1902. Serial No. 111,880. (No model.)

*To all whom it may concern:*

Be it known that I, FRANKLIN STRATTON, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Vehicles, of which the following is a specification.

This invention has reference to running-gears for vehicles, and principally to an improved form of equalizing device in which the axles are connected by rods that are linked to the vehicle-springs or other yielding means between the vehicle-body and the axle.

The principal object is to provide a comparatively simple and efficient equalizing device.

The invention also relates to certain details of construction, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 represents a top plan view of one construction of the running-gear of my improved vehicle. Fig. 2 is a fragmentary section on line *a a*, Fig. 1. Fig. 3 is a fragmentary section on line *b b*, Fig. 2. Fig. 4 is a side elevation of the running-gear. Fig. 5 is a front view of the gear, the front axle being shown in level position in full lines and in an inclined position in dotted lines. Fig. 6 is a rear view of the gear. Fig. 7 is a fragmentary section on line *c c*, Fig. 5. Fig. 8 is an enlarged detached bottom view of the double cap. Fig. 9 is an enlarged detached view of one of the transverse connections. Fig. 10 is an enlarged detached view of the front connecting-rod. Fig. 11 is a front end view of a gear having another form of spring. Fig. 12 is an enlarged central vertical section through the form of gear shown in Fig. 11 on line *d d*. Fig. 13 is an enlarged detached plan view of the form of spring shown in Fig. 11. Fig. 14 is an enlarged detached plan view of the cover for the air-cylinder. Fig. 15 is an enlarged detached plan view of the spring-cylinder. Fig. 16 is an enlarged detached plan view of the air-cylinder.

In referring to the drawings for the details of construction like numerals designate like parts.

The rear axle 1 is formed in any well-known way and is connected to the front supporting-

plate 2 by reach-rods 3. (See Fig. 1.) A plate 4 is secured beneath the front supporting-plate 2, being rotatably secured thereto by a king-bolt 5. A forked support 6 depends from the plate 4, and a curved dished plate 7 is arranged in the upper portion of the fork. (See Fig. 5.)

The front axle 8 has its central portion bent or curved upward into a substantially inverted-U-shaped form, as shown at 9 in Figs. 5 and 6, and a block 10 is rigidly fastened in the U portion, which is journaled on a bolt or pin 11, which passes horizontally through the forked support 6. The object of this is to provide a means whereby the front axle can rock vertically to permit one wheel to move upward while passing over an obstruction or to prevent tipping the vehicle or automobile while turning a corner at rapid speed.

The ends of the curved dished plate 7 form shoulders which limit the upward movement of the front axle, substantially as shown in dotted lines in Fig. 5.

The upper portion of the block 10 is curved in cross-section to correspond with the curve of the dished plate 7, as shown at 12 in Fig. 7.

The equalizing mechanism comprises yielding means, such as springs or air-cushions, mounted on or supported from the axles, and angular rods, the main portions of which extend between the axles and the ends of which bend and are pivoted to the axles or to supports mounted on or sustained from the axles, the bent portions being connected to the yielding means intermediate their bending-point and their point of connection to the axle or support.

Referring more especially to Fig. 2, one form of the yielding means has a plate 13, secured either to the axle or support mounted on the axle by screw-bolts 14. As the front and rear yielding means are precisely the same, with the exception that the rear is bolted directly to the rear axle and the front is secured to a front forked connecting-rod 15, (shown in Fig. 10,) similar parts of both will be designated by the same numerals.

Cylinders 16, in which spiral springs 17 are supported, extend vertically upward from the plate 13. While two of these cylinders are shown in one form of the gear, it is immate-



rial whether one or more are used, as exactly the same effect is obtained with one as with a plurality. A double cap 18 is provided with a like number of cylinders 19 of larger diameter, in which the cylinders 16 telescope, as shown in Fig. 2. Angular connecting-rods have longitudinally-extending portions 20, which extend between the axle and bend near their ends at 21 to extend approximately parallel with the axles. Two of these rods are preferably employed, and their transverse portions 22 cross each other, as shown in Fig. 1, the rear ends at their extremes being pivoted to ears 23, extending up from the rear axle, and the front ends being pivoted between the forked ends 24 of the front connecting-rod 15. The rods are connected to the double cap 18 by links 25, which have forked upper ends 26, which straddle and are pivoted to about the middle of the transverse portions 22 of the angular rods, as shown in Figs. 1, 4, 5, 6, and especially Fig. 3. The lower ends 27 of the links 25 are pivoted to the lower portion of the double cap 18 between the two cylinders, being secured between the ears or lugs 28 and the surface of the middle portion 29 of the double cap by the pivot-pin 30. The longitudinal portions 20 of the angular rods are preferably connected by transverse connections 31, formed substantially as shown in Fig. 9, the connection having forked ends 32, in which lugs 33, depending from the portions 20, are pivoted by the pins 34, so that the angular rods may rock or turn when in operation.

The body of the vehicle, which is not shown in the drawings, is mounted on or supported from the angular bars in any of the well-known ways.

In the other form of yielding means (shown in Figs. 11, 12, 13, 14, 15, and 16) an air-cylinder 34<sup>a</sup> is mounted on or supported from the axle, in which a piston 35 operates, and a spring-containing cap or cylinder 36 is arranged above the air-cylinder and telescopes on said air-cylinder. The upper end of the piston-rod 37 is fastened to the cylinder 36, so that the depressing of the cylinder 36 will force down the piston. A spiral spring 37<sup>a</sup> is mounted in the cylinder 36, being supported between the closed top 39 of the cylinder and the screw-cap 40, closing the top opening in the air-cylinder. (See Fig. 12.) The screw-cap 40 is provided with a top circular groove 41, in which the bottom convolution of the spring seats. (See Fig. 14.) The spring is preferably formed as shown in Fig. 13, having convolutions which increase in size from the top downward, so that each convolution will pass the others, which permits the spring to be depressed within a space in height of not more than the thickness of the spring when depressed to its lowest point. The air-cylinder is provided with an exhaust-opening 42 for the air. A countersunk opening 43 is formed in the bottom 44 of the air-cylinder, through which a bolt 45 passes to

secure it to the axle or a support. The links 25 are pivoted to the cap 36 and the angular rods in the same manner as described with reference to the first-mentioned construction, with the exception that lugs or ears 48 extend directly from opposite sides of the cap 36 to which the lower ends of the links are pivoted, as shown in Fig. 15.

The operation of the device will be easily understood from the foregoing description and the drawings.

I claim as my invention—

1. The combination with front and rear axles of yielding means having support from said axles, a plurality of angular rods having bent ends which cross each other and are pivotally supported at their extremes from the axles and links connecting the rods to the yielding means.

2. In a device of the character described, the combination with the front and rear axles, of a cylinder having support from each of said axles, and angular rods extending between and pivotally connected to each axle, a cap on each cylinder, a spring between each cap and cylinder, and a link connection between each cap and each rod, substantially as set forth.

3. In combination, front and rear axles, a cylinder having support from each of said axles, a cap adapted to telescope on each cylinder, springs between each cap and cylinder, body-supporting rods extending between the axles, the ends of which bend and cross each other and have pivotal support from the axles and links connecting the rods to the caps, substantially as set forth.

4. In a vehicle, the combination with the front and rear axles and yielding means such as a vehicle-spring having support from the axles, of angular rods which extend between the axles and bend near their ends to cross each other and have pivotal support from the axles, substantially as set forth.

5. In a vehicle, an axle, an air-cushion cylinder mounted on the axle, a cap telescoping on the cylinder, a spring between the cap and cylinder, and a piston-rod connecting to the cap and passing through and connecting to a disk within the cylinder.

6. In combination, in a vehicle, front and rear axles, yielding means having support from the axles, and angular rods extending between the axles which bend near their ends cross each other and have pivotal support from the axles and connection with the yielding means, substantially as set forth.

7. In combination, in a vehicle, front and rear axles, yielding means having support from the axles, and angular rods extending between the axles which bend near their ends cross each other and have pivotal support from the axles and the bent portions being connected to the yielding means, substantially as set forth.

8. In a vehicle, front and rear axles, an air-cylinder having support from each axle, a cap



adapted to telescope on each cylinder, a spring between the cap and cylinder and rods having connection to the caps, substantially as set forth.

- 5 9. In a vehicle, front and rear axles, an air-cylinder having support from each axle, a cap adapted to telescope on each cylinder, a spring between the cap and cylinder, angular

rods having bent ends which cross each other and have pivotal support from the axles and links pivotally connecting to the rods and caps, substantially as set forth.

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