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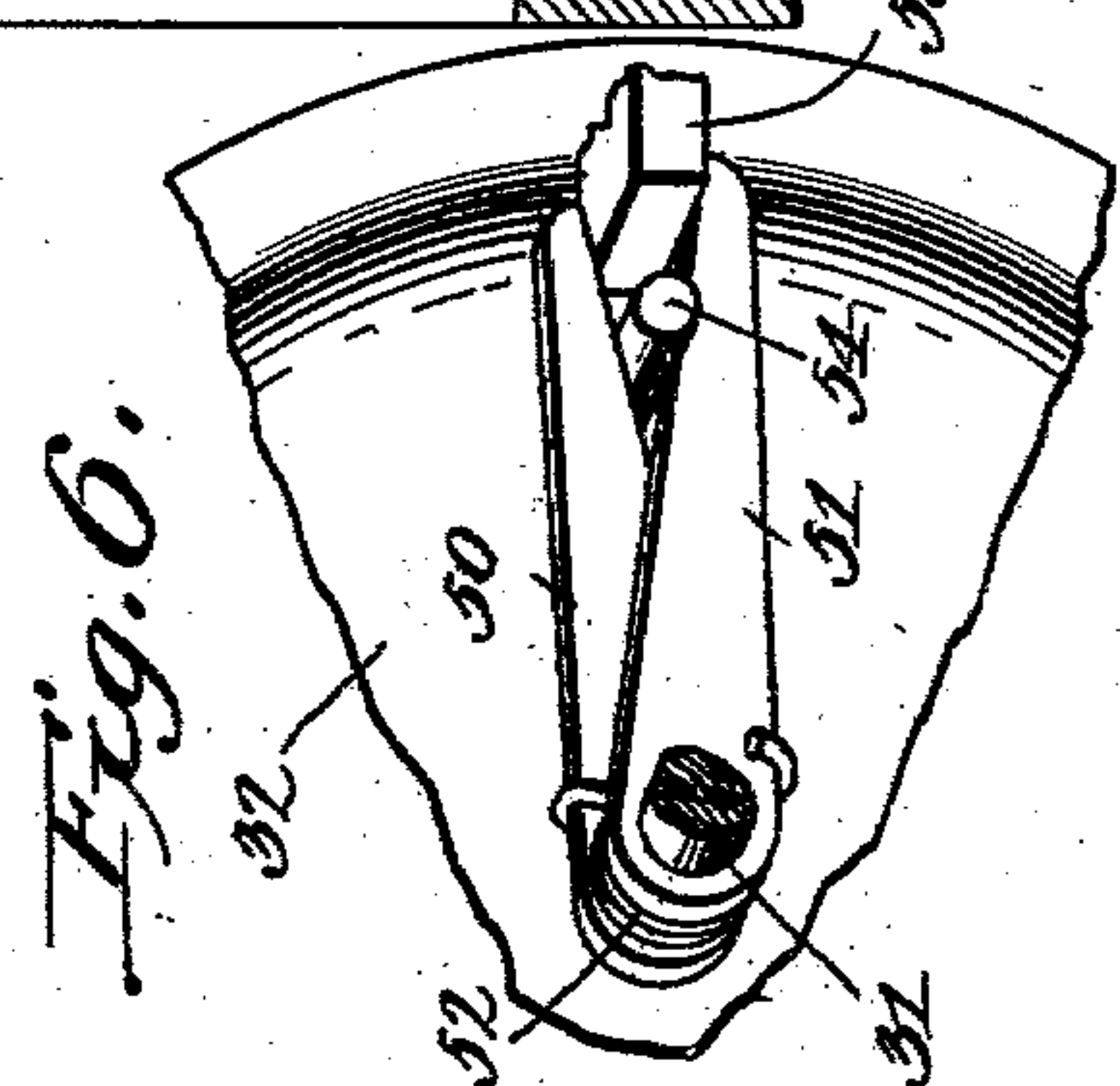
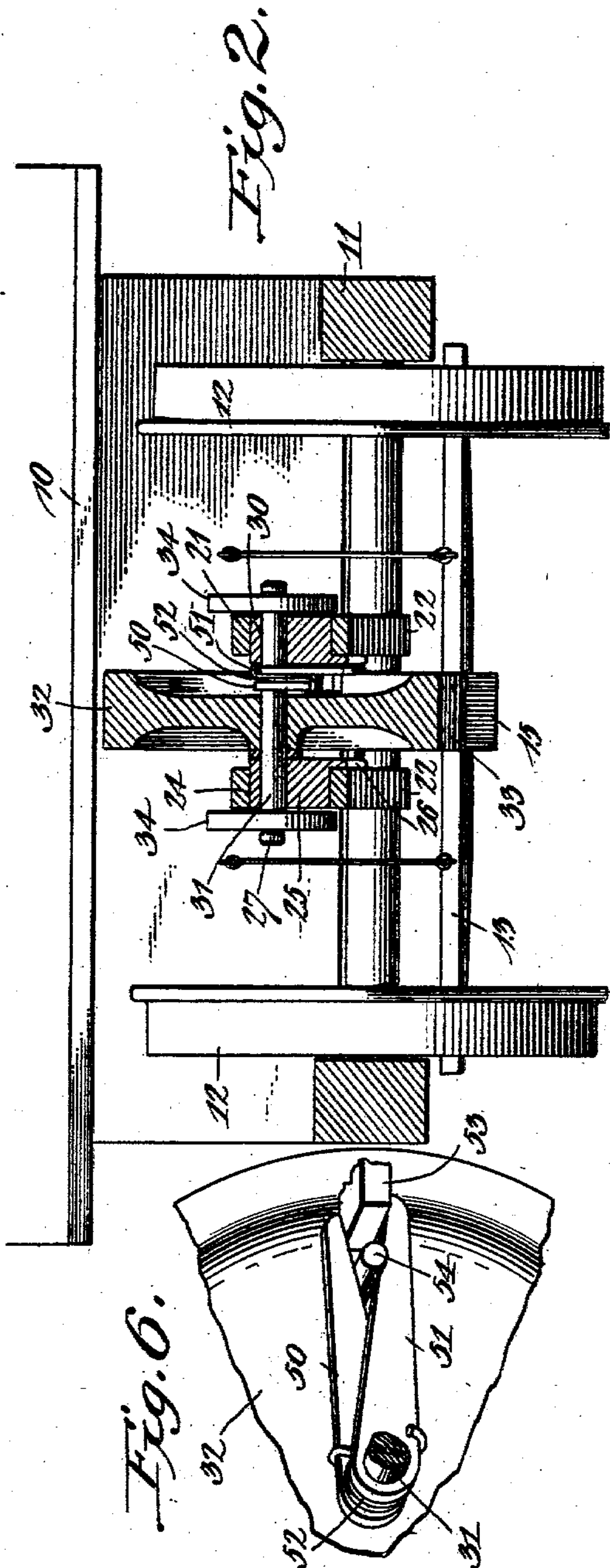
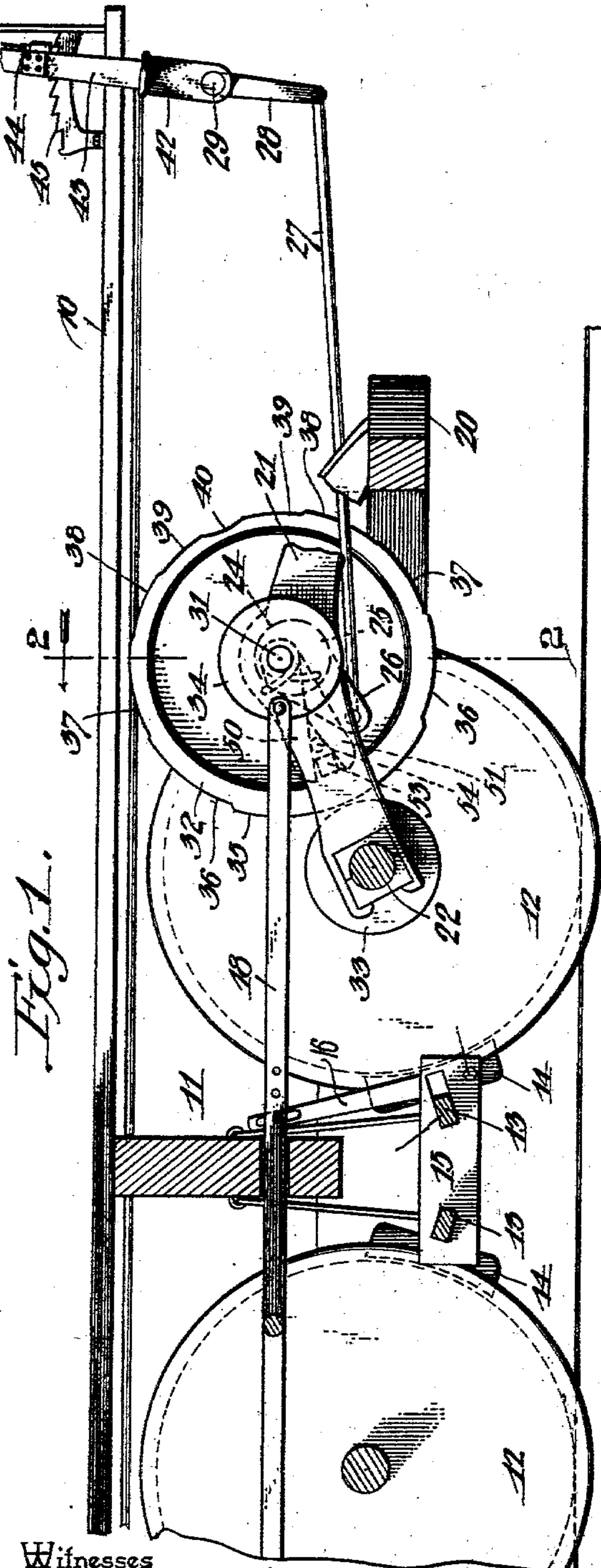
PATENTED FEB. 17, 1903.

J. E. BERRY.  
BRAKE.

APPLICATION FILED NOV. 14, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
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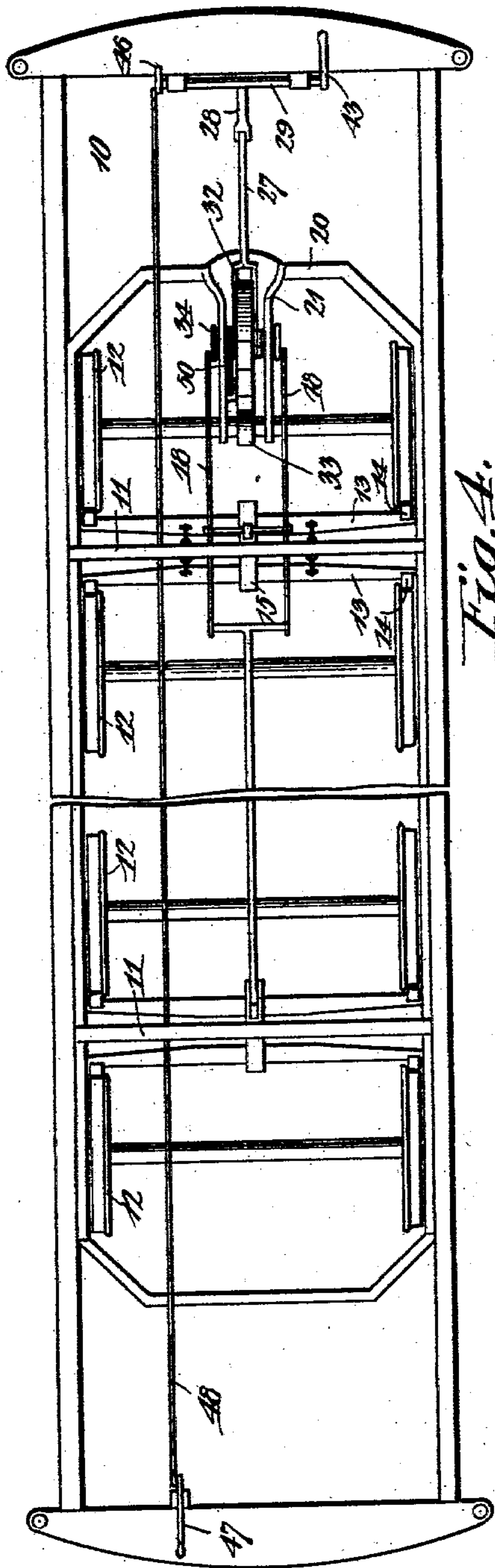


Fig. 4.

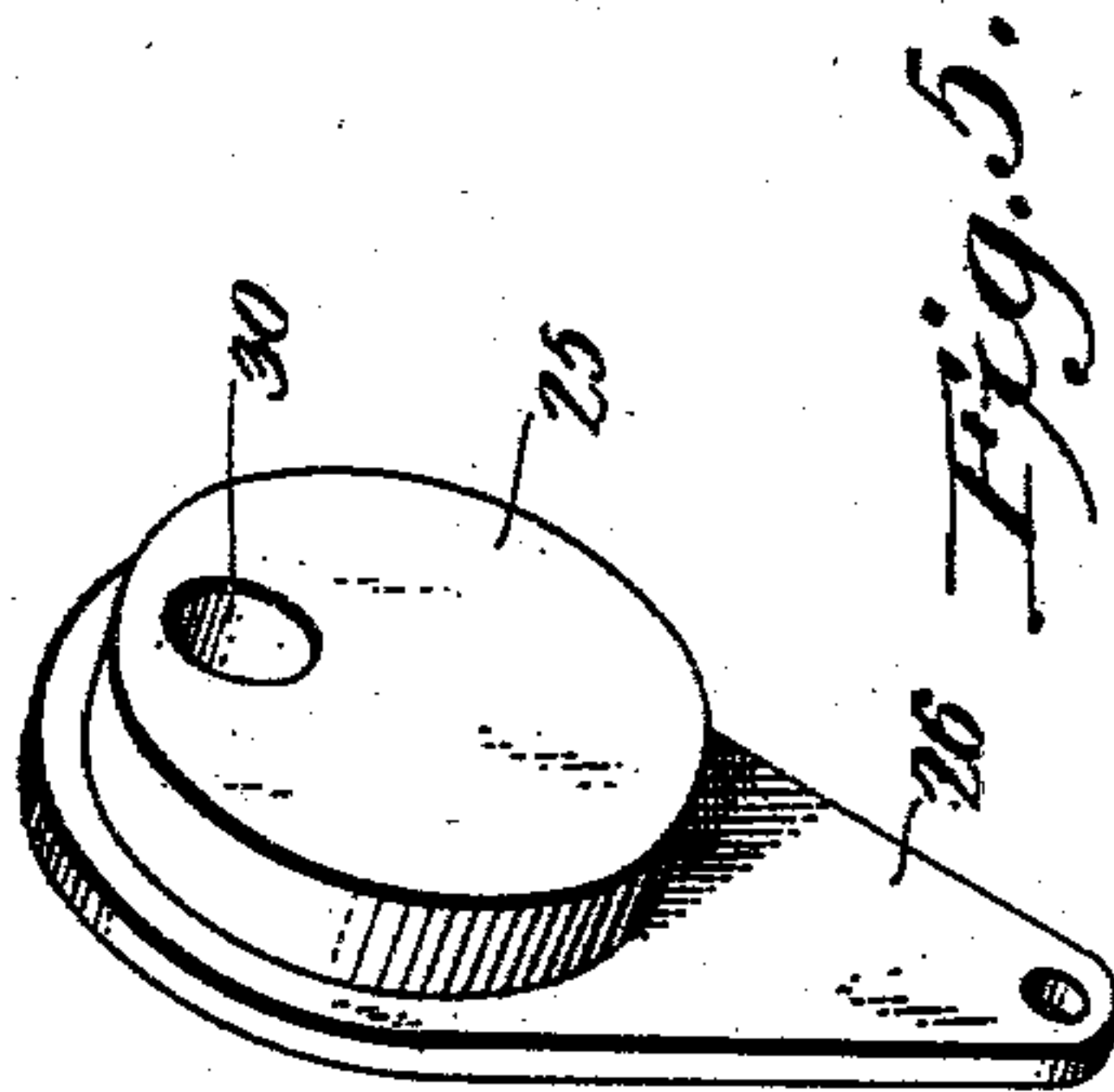


Fig. 5.

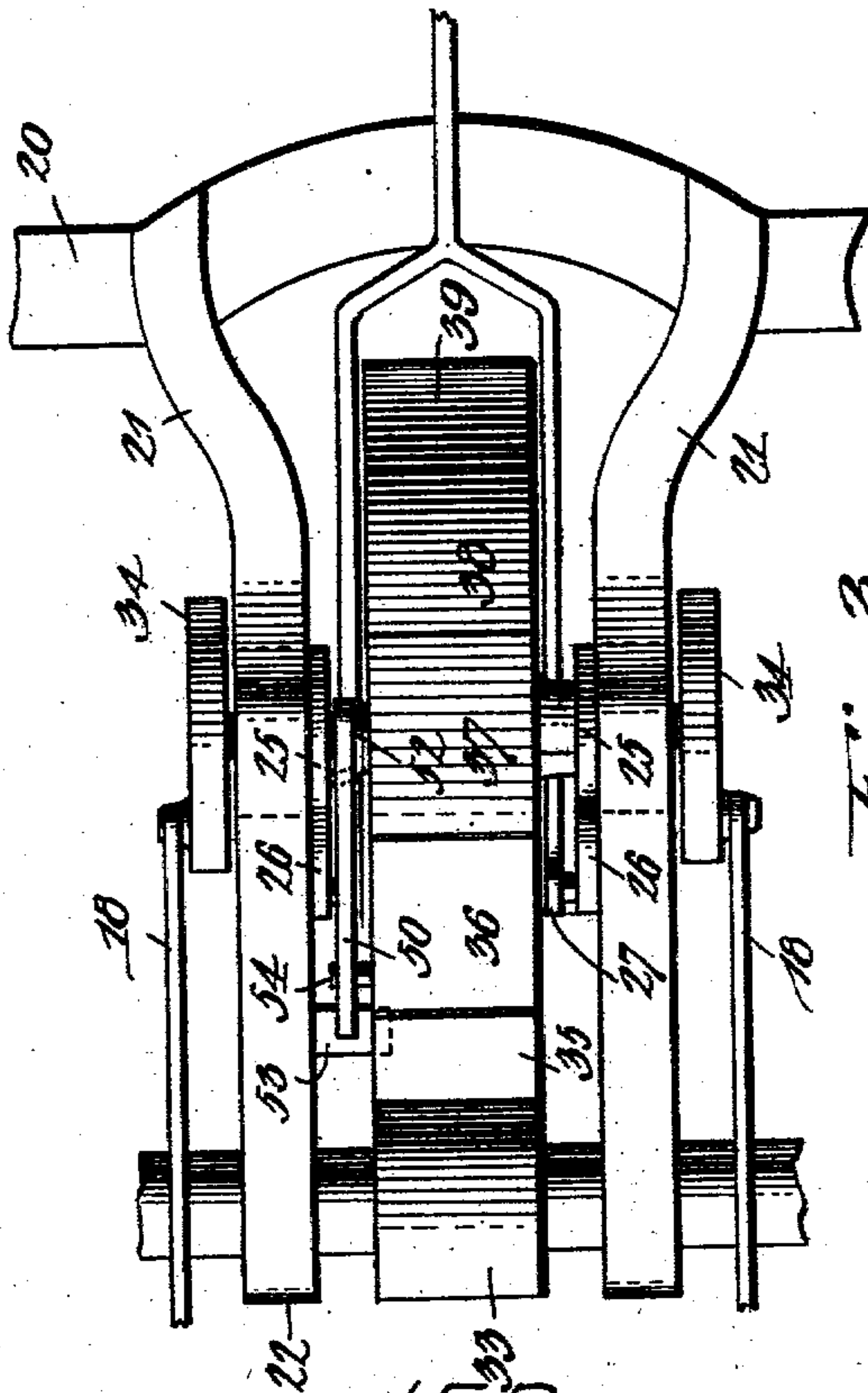


Fig. 3.

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# UNITED STATES PATENT OFFICE.

JOSEPH E. BERRY, OF CARTERVILLE, MISSOURI.

## BRAKE.

SPECIFICATION forming part of Letters Patent No. 720,777, dated February 17, 1903.

Application filed November 14, 1902. Serial No. 131,390. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH E. BERRY, a citizen of the United States, residing at Carterville, in the county of Jasper and State of Missouri, have invented a new and useful Brake, of which the following is a specification.

The invention relates to certain improvements in brake-operating mechanism for street-railway cars and the like, and has for its principal object to provide a brake-actuating mechanism operable from a shaft or other moving part of the car, and in which the braking-pressure is at all times under the control of the operator.

A further object of the invention is to provide a braking mechanism which will be equally effective in either direction of movement of the car and in which when the brakes are fully set further movement of the brake-applying mechanism is prevented until the operator readjusts the mechanism; and a still further object of the invention is to automatically restore the operating mechanism to initial position when released.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a side elevation, partially in section, of a portion of a car and truck, illustrating a brake-operating mechanism constructed in accordance with my invention. Fig. 2 is a transverse sectional elevation of the same on the line 2 2 of Fig. 1. Fig. 3 is a plan view of the principal portion of the operating mechanism. Fig. 4 is a plan view of a car, illustrating the arrangement of the mechanism for operating the brakes from either end of said car. Fig. 5 is a detail perspective view of one of the eccentric bearings for the brake-operating disk. Fig. 6 is a similar view of a mechanism which may be employed for restoring the brake-operating disk to initial position when released by the operator.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The car may be of any ordinary construction, the invention being applicable to street-railway and cars of other character; and in the drawings 10 indicates a car-platform mounted on suitable trucks 11, and having the usual flanged supporting-wheels 12. The brake mechanism for each of the trucks comprises a pair of brake-beams 13, disposed at the lower end of hanger-rods and provided with shoes 14 of the usual construction. Each pair of brake-beams is connected by a cross-bar 15, having an elongated slot to permit free movement of one of the beams, and to said bar is pivoted a brake-lever 16, having a pivotal connection with one of the brake-beams, and connected at its upper end to a system of brake-rods 18. The construction and arrangement of the brakes and brake-rods form no part of the present invention, and any suitable form or system of brakes may be employed.

To the framework of one of the trucks is secured a forwardly-projecting transversely-disposed cross-bar 20, to which are secured the forward ends of a pair of longitudinally-disposed arms or bars 21, provided at their rear ends with bearing-boxes 22 and resting upon the axle of the forward wheels of the truck. In each arm 21 is an opening 24 for the reception of a disk 25, to which is secured a radially-extending arm 26, the outer ends of said arms being connected to the bifurcated end of a rod 27, which is connected to a rocker-arm depending from a rock-shaft 29, adapted to hangers at the front end of the car-platform. The disks 25 are provided with aligning openings 30, arranged eccentric to the axis of rotation of the disks and forming bearings for the support of a transversely-disposed shaft 31; to the central portion of which is secured a brake-operating disk 32, which may be moved, by proper adjustment of the eccentric disks, into contact with a small friction-roller 33, secured to and rotating with the car-axle. On the opposite ends of the shaft 31 are secured crank-disks 34, connected to the primary brake-rods of the braking system and serving, when ro-



tated by contact of the friction disk and roller, to set the brakes. The friction-disk 32 has a stepped periphery, each half having its circumferential line divided into a plurality of friction-faces, arranged at gradually-increasing distances from the center of rotation of the disk, these faces being indicated at 35, 36, 37, 38, and 39, the length of the several faces or steps being approximately the same and the divisional line between successive steps being represented by slightly-rounded shoulders, as illustrated in Fig. 1. Each of the friction faces or steps is disposed in a line concentric with the axis of rotation of the disk, and the several friction-faces, starting with the face 35, may be successively moved into engagement with the friction-roller 33 by proper adjustment of the eccentric disks, and thus permit the setting of the brakes with any desired degree of force, while at the juncture of the friction-faces nearest the center of rotation of the disk is a curved recess or depression 40, the wall of which is arranged on an arcuate line corresponding to that of the periphery of the friction-roller 33.

To the rock-shaft 29 at the front of the car is secured a socket member 42, adapted for the reception of the lower end of an operating-lever 43, which is provided with a sliding locking-bolt 44, adapted to engage with teeth in the upper surface of a segment 45 and lock the lever in any position to which it may be adjusted, and to provide for the operation of the brakes from the opposite end of the car the rock-shaft 29 is provided with a rocker-arm 46, Fig. 4, connected in suitable manner to an operating-lever 47 by a tension-rod 48, so that the rock-shaft 29 may be circumferentially adjusted from either end of the car, and thus permit the operation of the brakes by the motorman or other operative while the car is traveling in either direction.

The initial or non-operative position of the mechanism is illustrated in Fig. 1, the median line of the friction-faces 35 being in a plane extending between the axes of rotation of the axle and the shaft 31 and the operating-lever being arranged in the forward position, with its locking-bolt engaged in the first notch of the segment. When the brakes are to be applied, the operating-lever is moved until the bolt 44 engages the second notch of the segment, and this moves the friction-face 35 into positive engagement with the rotating friction-roller 33, the movement being imparted to the disk and the crank-disks 34 rotated to effect the application of the brakes. When the disk is turned until the shoulder between the faces 35 and 36 is reached, the effective grip of the roller 33 ceases; but it still serves to retain the disks in position. If the brakes are to be further tightened, the operator moves the lever to further turn the eccentric disks and force the face 36 of the disk into engagement with the roller, the same operation taking place as before, and as the operating-lever

is further moved the friction-faces may be successively forced into engagement with the roller until the disk is turned to the extent of half a revolution, at which time the brakes will be set hard. At the end of the friction-face 39, in either direction of rotation of the disk, the friction-roller enters the curved recess or depression 40, and the disk and roller are practically interlocked, further movement being prevented, and thus checking any tendency of the friction-roller to further ride over the friction-faces forming the remaining portion of the periphery of the disk. It will be observed that each half of the disk is of the same construction, so that the brakes may be applied in precisely the same manner without regard to the direction of travel of the car. When the brakes are to be released, the operator withdraws the latch-bolt 44 from the notches of the segment and moves the lever to the initial position, this movement rotating the eccentric disks and moving the friction-disk from contact with the roller. It then becomes necessary to restore the friction-disk to its initial position, and for this purpose I preferably employ the mechanism illustrated in detail in Fig. 6. On the shaft 31, at one or at both sides of the friction-disk, are loosely mounted two radially-disposed arms 50 and 51, normally pressed toward each other by a torsion-spring 52, which loosely encircles the shaft and has its opposite ends respectively engaging the arms 50 and 51. The movement of the arms toward each other is limited by a fixed lug or pin 53, carried by the fixed frame, the stop being so arranged as to permit free movement of the arm 50 in one direction and free movement of the arm 51 in the opposite direction. From the side of the friction-disk projects a pin 54, extending between the two arms and adapted to engage with both, this pin being disposed in a radial line extending from the median line of the friction-faces 35 to the axis of rotation of the disk. When the disk is turned, the pin 54 engages with one or other of the arms 50 51 and turns said arm against the stress of the spring 52, and when the disk is released from the grip of a friction-roller the spring-pressed arm serves to return said disk to its initial position.

Having thus described the invention, what is claimed is—

1. The combination with a railway-car, of a revoluble member arranged on one of the axles, a disk movable from and toward said member and having an operative connection with a brake, the periphery of said disk being divided into a plurality of friction-faces arranged at different radial distances from the axis of the disk, and means for adjusting the position of the disk.

2. The combination with a railway-car, of a revoluble member disposed on one of the axles, a friction-disk movable from and toward said member and having an operative



connection with a brake, the periphery of said disk being stepped to provide a plurality of independent friction-faces for engagement with said revoluble member, and means for adjusting the position of the disk.

3. The combination with a railway-car, of a revoluble member arranged on one of the axles, a disk movable from and toward said member and having an operative connection with a brake, the periphery of said disk having a plurality of independent friction-faces for engaging the revoluble member and separated by shoulders with which the revoluble member engages at the completion of each operative movement to retain the disk in adjusted position, and means for moving said disk toward and from said revoluble member.

4. The combination with a railway-car, of a friction-roller arranged on one of the axles, a disk movable from and toward said friction-roller and having a plurality of independent friction-faces for engaging the revoluble member, said friction-faces being disposed in opposite relation on the opposing semiperipheral portions of the disk, means for adjusting the disk, a brake, and means for connecting the disk to said brake.

5. The combination with a railway-car, of a friction-roller arranged on one of the car-axles, a disk movable from and toward the friction-roller and having the opposite halves of its periphery divided into similar independent friction-faces arranged at different radial distances on the axis of rotation of the disk, there being a curved notch or depression at the juncture of the final friction-faces of the series to prevent excessive rotative movement of the disk by the roller, means for operating the disk, a brake, and means for connecting the disk to said brake.

6. The combination with a railway-car, of a friction-roller arranged on one of the car-axles, a disk adapted for contact with the roller, a shaft carrying said disk, a pair of circumferentially-adjustable disks having eccentrically-disposed openings forming bearings for the shaft, means for adjusting the

disk, a brake, and means for connecting the friction-disk to the brake.

7. The combination with a railway-car, of an axle member, a truck, a front bracket secured to the truck, supporting-arms having bearings at one end for the reception of the axle and connected with their opposite ends to the bracket, said arms having alining openings, disks disposed in said openings, radial arms secured to the disks, an operating-lever connected to said arms, a shaft having bearings in the disks and eccentric to the axes thereof, a friction-disk on said shaft, a friction-roller disposed on the car-axle, crank-disks mounted on the shaft, a brake, and brake-rods connecting the brake to said crank-disks.

8. The combination with a railway-car, of a friction-roller arranged on one of the car-axles, a disk adapted for contact with the roller, a brake, means for connecting the brake to the disk, means for moving the disk into and out of contact with the roller, and means for automatically turning the disk to initial position when released from contact with the roller and for stopping the disk in proper position with relation to the friction-roller.

9. The combination with a railway-car, of a friction-roller arranged on one of the car-axles, a disk adapted for contact with the roller, a brake, means for connecting the brake to the disk, means for moving the disk into and out of contact with the roller, a pair of pivoted arms, a spring connecting said arms, a fixed stop for limiting the movement of the arms toward each other, and a pin or lug carried by the disk and adapted to engage one of said arms when moved in either direction.

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

JOSEPH E. BERRY.

Witnesses:

JNO. E. PARKER,

J. ROSS COLHOUN.