

No. 757,571.

PATENTED APR. 19, 1904.

H. G. SEDGWICK.
AIR VALVE FOR SAFETY TRAIN STOPS.

APPLICATION FILED AUG. 24, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

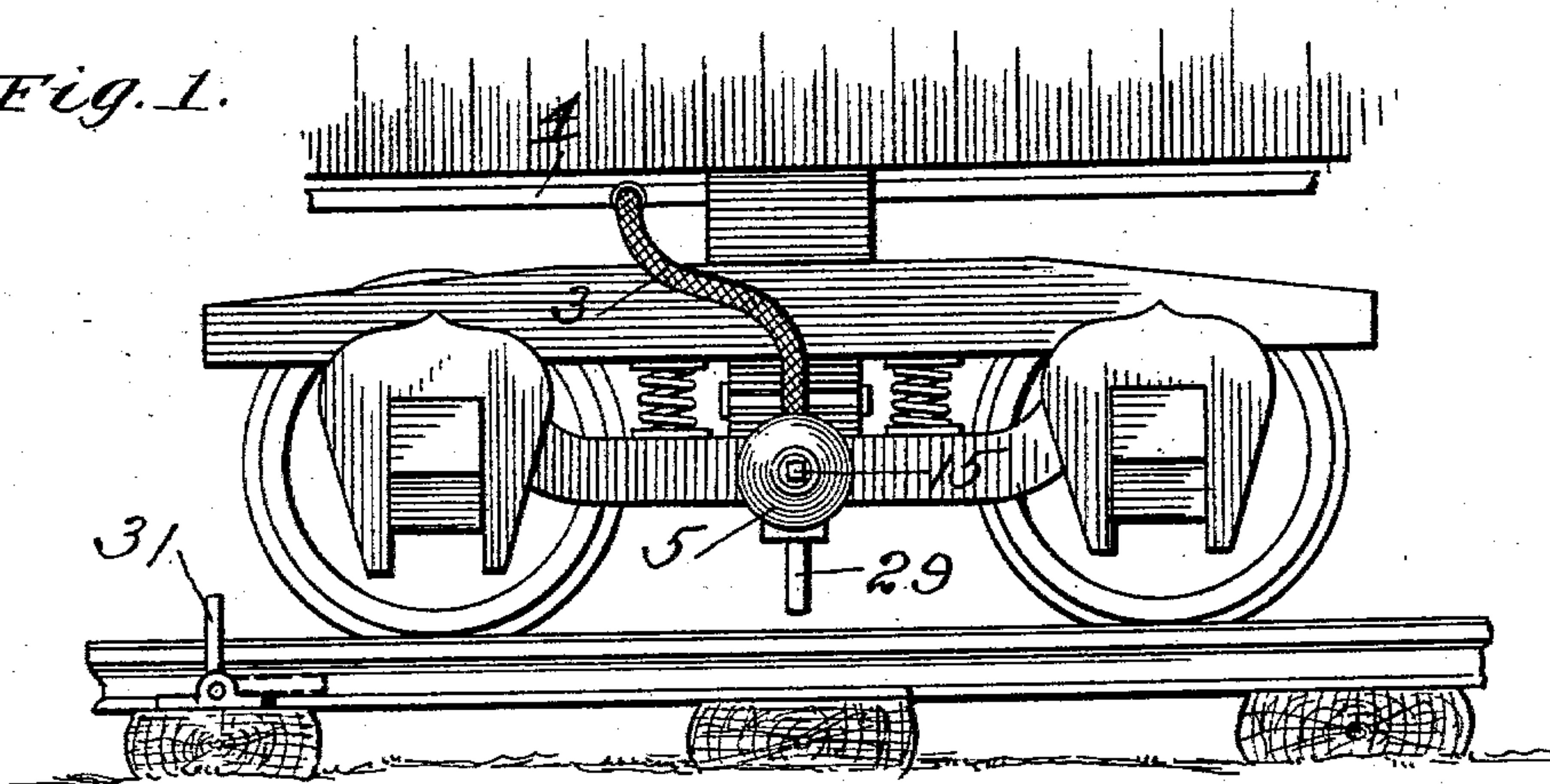
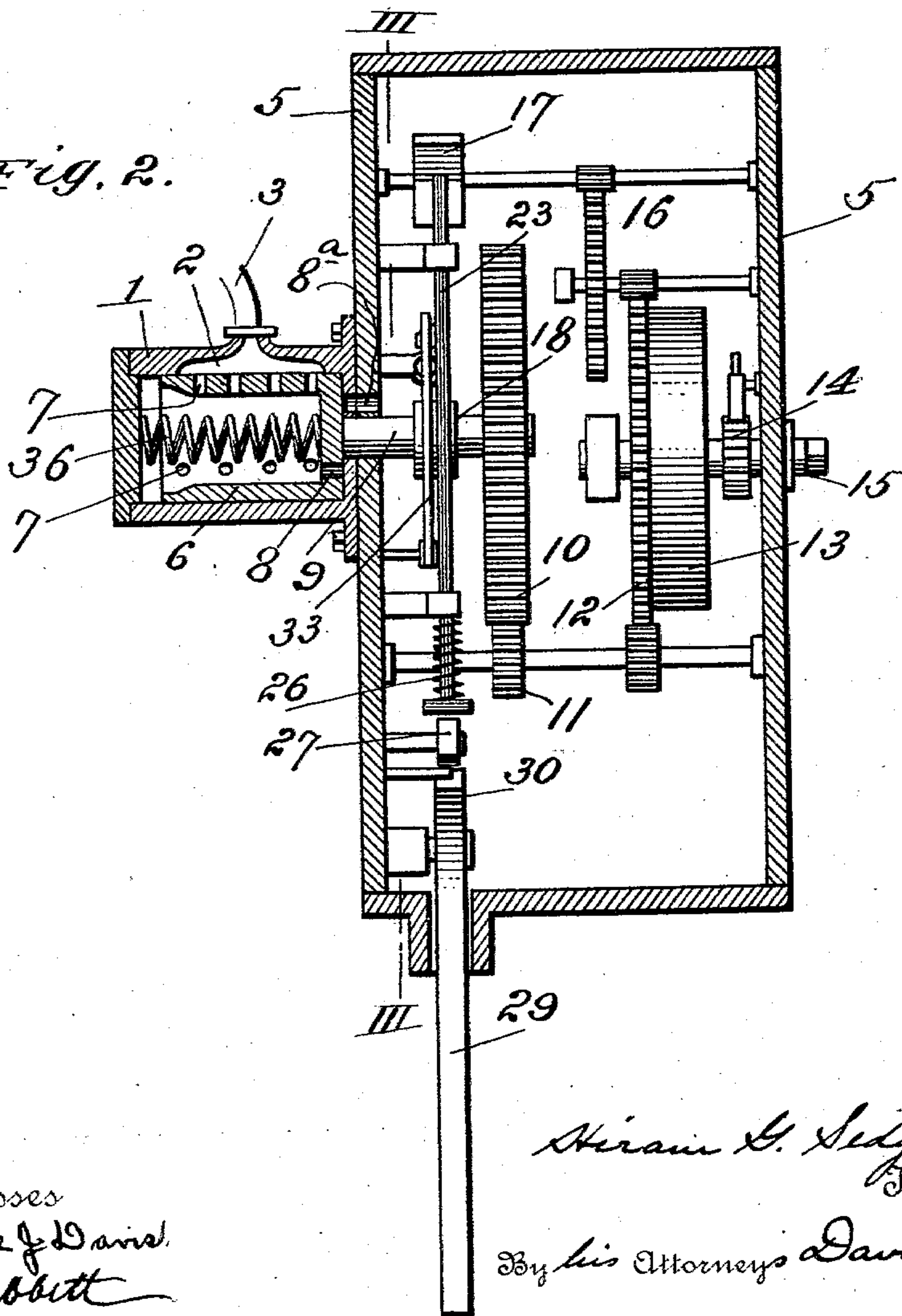


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

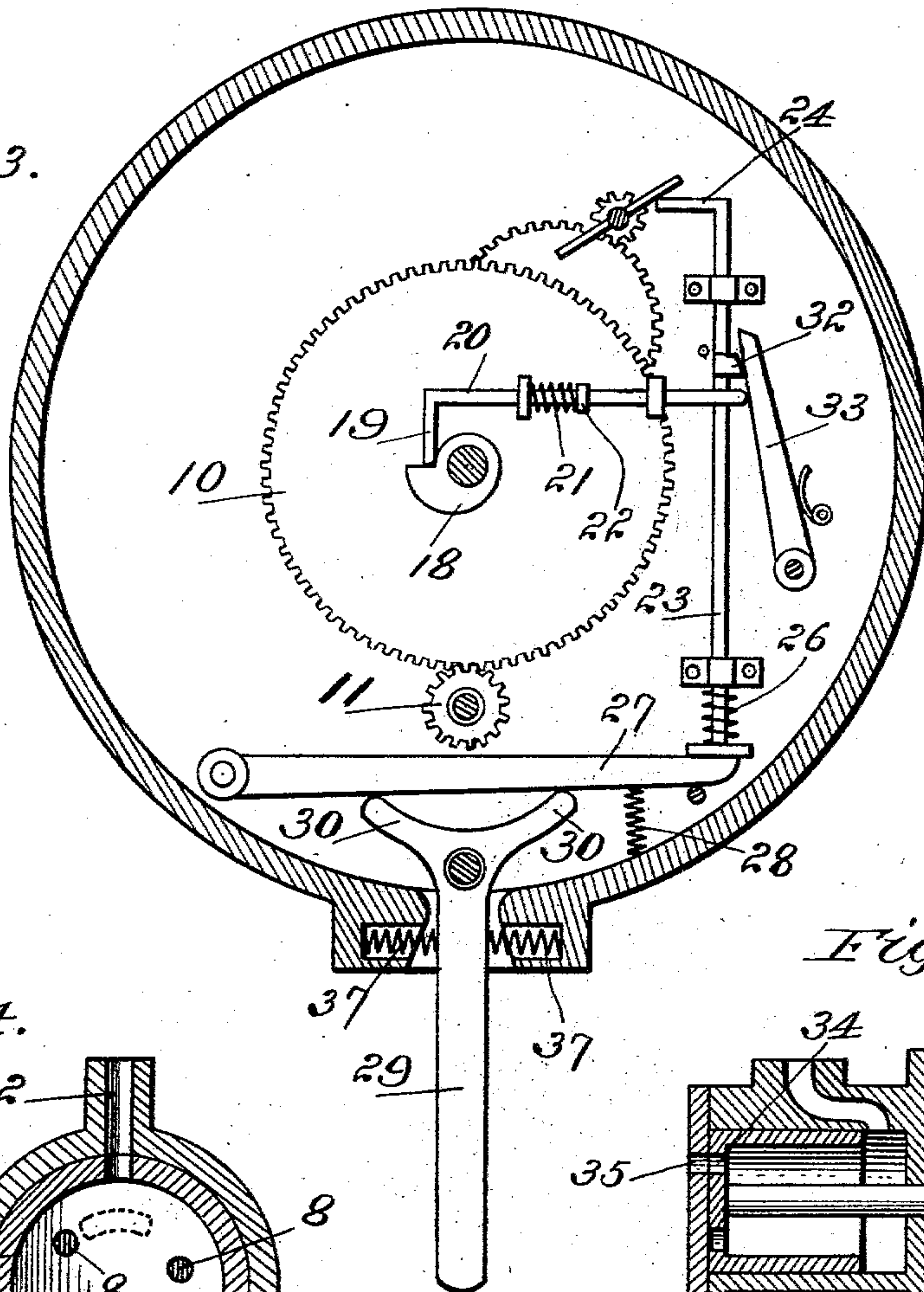


Fig. 4.

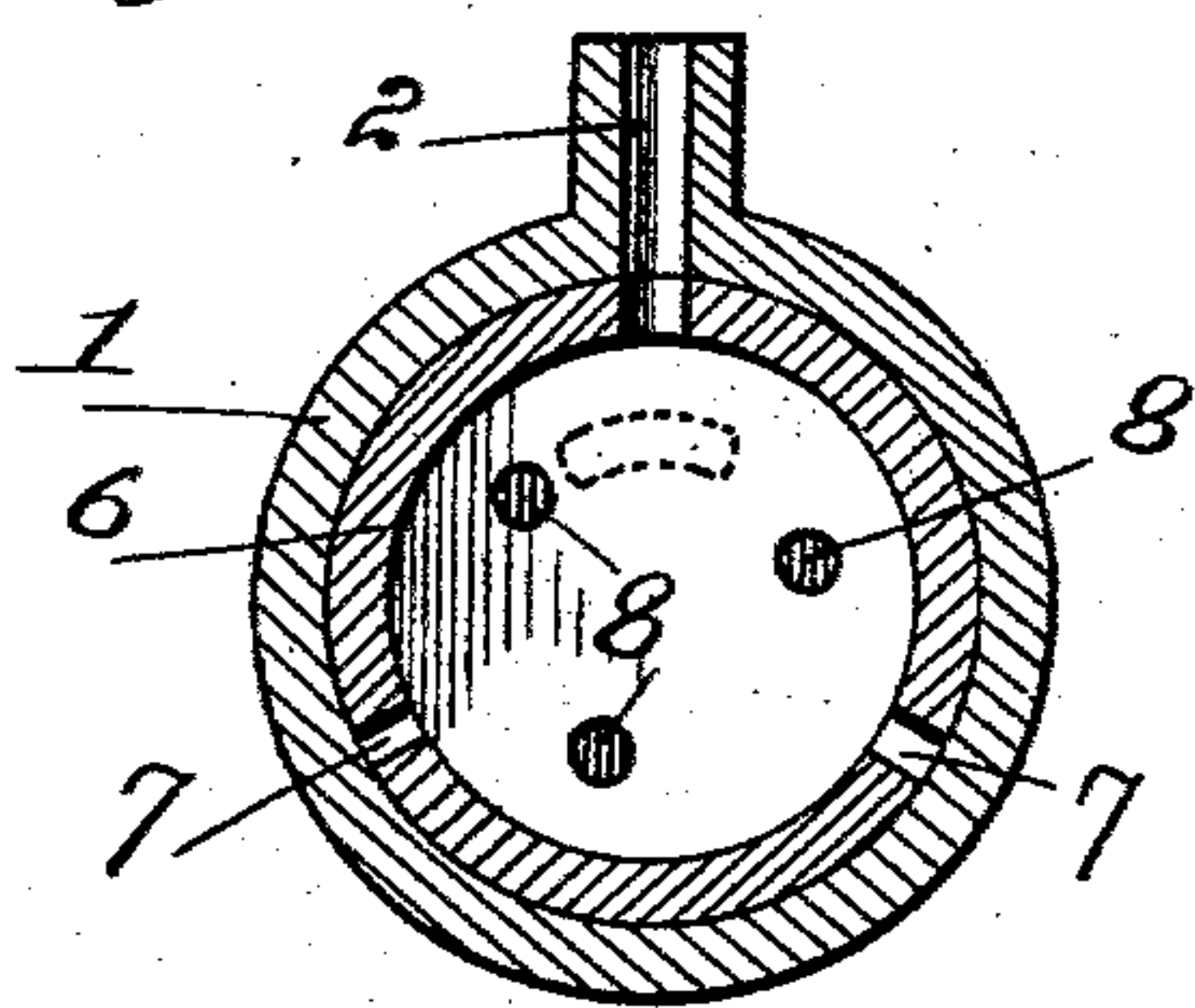


Fig. 5.

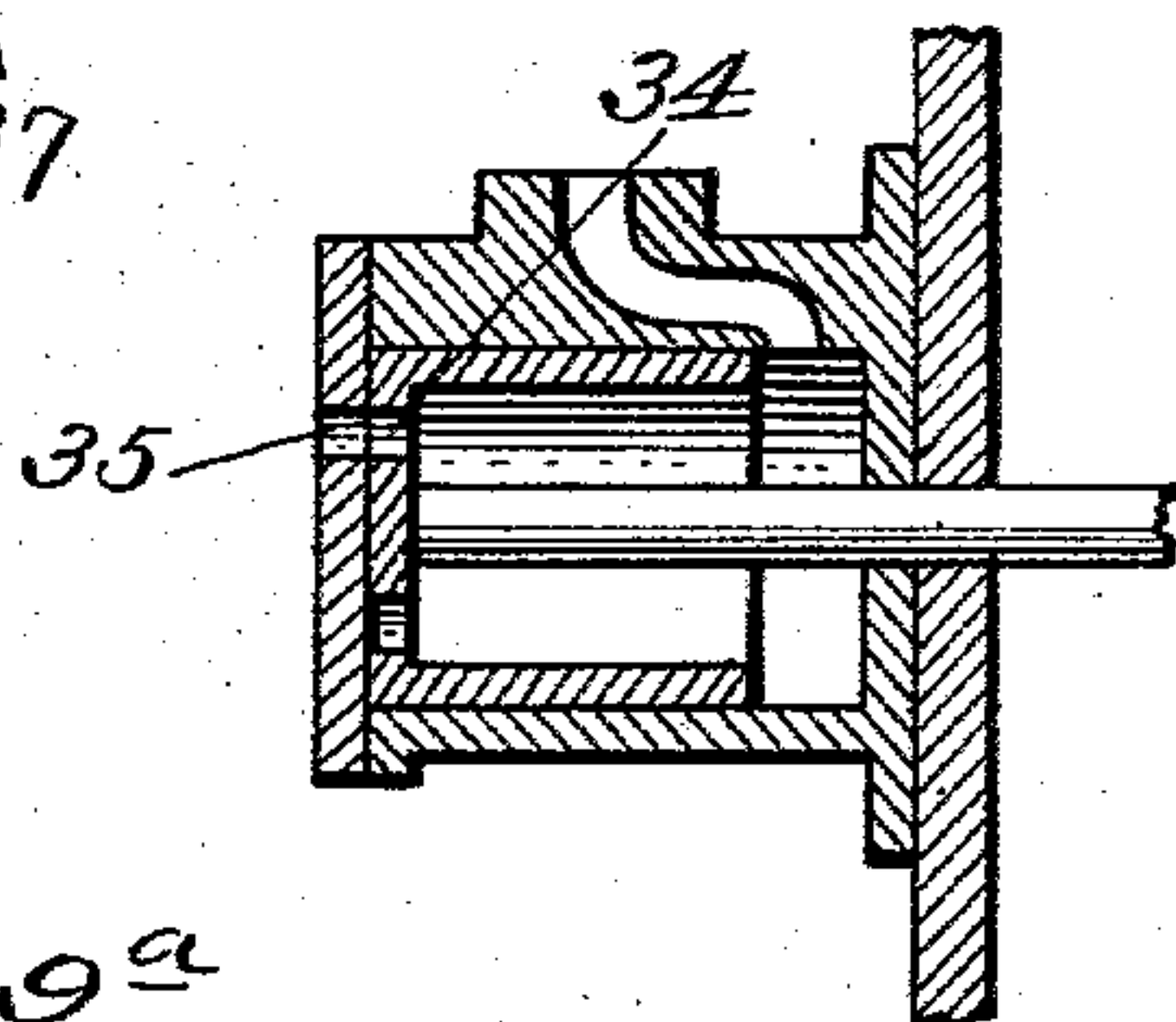
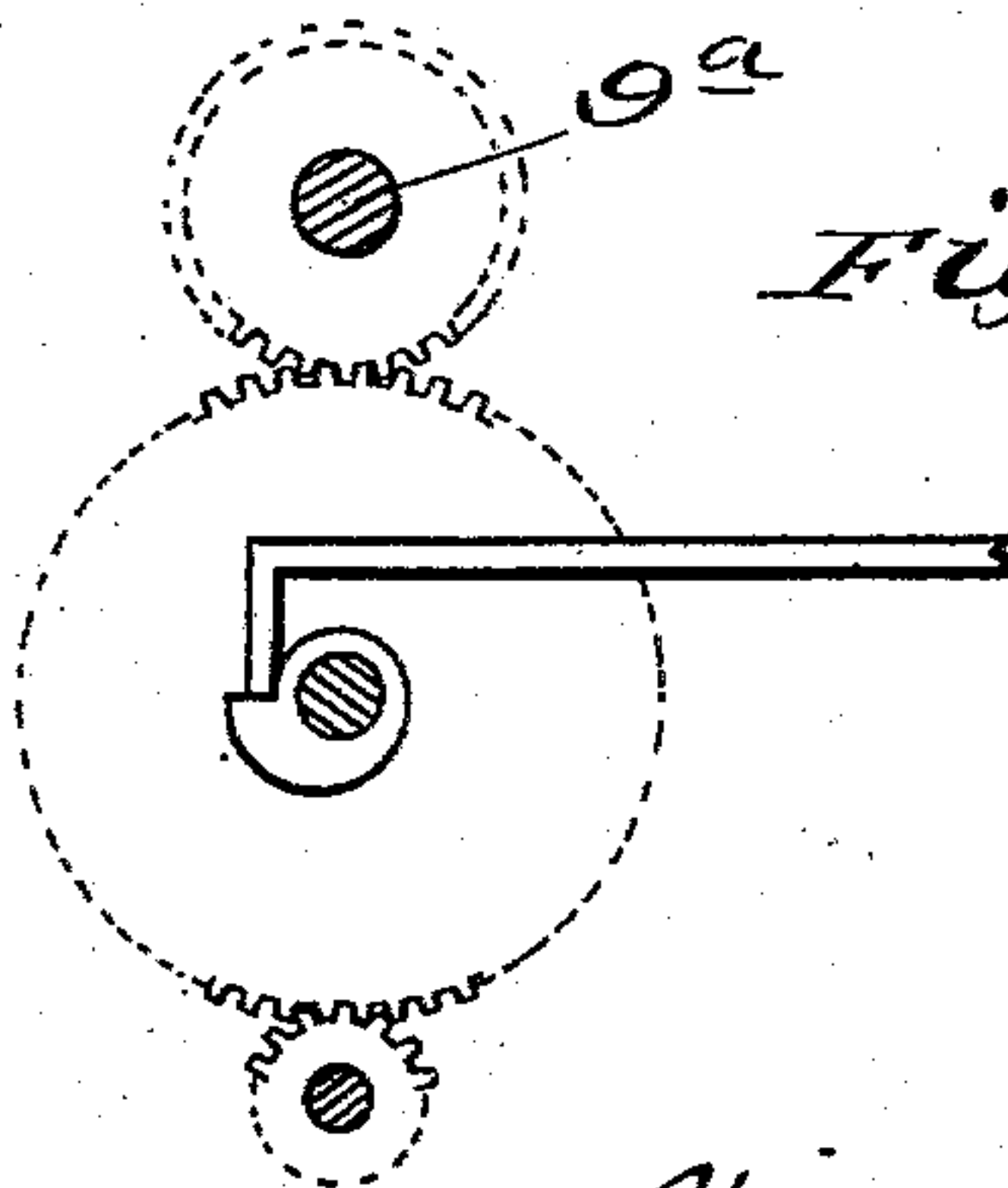


Fig. 6.



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UNITED STATES PATENT OFFICE.

HIRAM G. SEDGWICK, OF NEW YORK, N. Y.

AIR-VALVE FOR SAFETY TRAIN-STOPS.

SPECIFICATION forming part of Letters Patent No. 757,571, dated April 19, 1904.

Application filed August 24, 1903. Serial No. 170,517. (No model.)

To all whom it may concern:

Be it known that I, HIRAM G. SEDGWICK, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Air-Valves for Safety Train-Stops, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a side elevation of a railroad-car truck, showing the valve in position thereon and connected to the train-pipe of the air-brake system; Fig. 2, a longitudinal vertical sectional view of the air-valve and mechanism for operating it; Fig. 3, a transverse vertical sectional view on the line III III of Fig. 2; Fig. 4, a detail cross-sectional view of the air-valve; Fig. 5, a detail view of a slightly-different form of valve, and Fig. 6 a detail view of a slightly-modified form of the valve-rotating means.

It is the purpose of my present invention to provide an automatically-operating air-valve for use in connection with my automatic train-stopping apparatus shown and described in previous applications; and it has for its object to provide a single valve which when set in motion will automatically vent the train-pipe of an air-brake system at successive intervals, whereby the brakes will be gradually applied and the train stopped gradually and without sudden and dangerous jars and shocks.

The invention consists in providing a valve of suitable construction, placing it in communication with the train-pipe of an air-brake system, and providing automatically-operating mechanism for so moving said valve that the train-pipe will be vented at successive intervals until the brakes are applied. The actuating mechanism is so designed that it will return the valve to its normal closed position and will itself come to rest in proper position for the next operation.

Referring to the various parts by numerals, 1 designates the valve-casing, which in the present instance is a cylinder having an inlet-port 2, said inlet-port being connected by a pipe 3 to the train-pipe 4 of the brake system. This valve-chamber is rigidly secured to the inner side of a casing 5, which is adapted to

contain the valve-operating mechanism, and is rigidly secured to the cross-bar of the truck-frame. Within the valve-chamber fits snugly a rotary cylindric valve 6, which is closed at one end and open at its other end and is provided with inlet-ports 7 through its cylindric wall. These inlet-ports are arranged at intervals around the cylinder. In the closed end of the valve outlet-ports 8 are formed, said ports being located suitable distances apart and concentric around the valve. These ports are adapted to register with a suitable outlet-port 8^a, formed in the casing 5. The valve is mounted on a short shaft 9, which extends into the casing 5 and is provided with a large gear 10. Meshing with this gear 10, so as to rotate the same slowly, is a small pinion 11, this pinion being rotated by means of a gear 12. This latter gear is mounted upon a barrel 13, which contains an operating-spring, said spring acting in the manner of a clock-spring to rotate the barrel. The shaft 15 may be rotated in any suitable manner to wind the spring, the end of the shaft being shown square to receive a suitable key. A ratchet-wheel and pawl 14 are provided to prevent the rotation of the spring-carrying shaft 15 in one direction. Driven by the gear 12 is a train of gearing 16, which very rapidly rotates a governor-fan 17.

On the valve-shaft within the casing is secured a cam 18, which engages the depending arm 19 of the horizontal trip-rod 20, said rod being mounted in suitable bearings. A spring 21 surrounds this rod, one end thereof bearing against a fixed stop and the other against a collar 22, secured to said rod, said spring normally opposing the action of the cam on the valve-shaft. Mounted to reciprocate in suitable bearings is the vertical stop-rod 23, the upper end of said rod being provided with a lateral arm 24, which lies in the path of the governor-fan and prevents the rotation thereof. This rod is provided with a spring 26, which normally holds said rod depressed and the arm 24 normally in the path of the governor-fan. Below the stop-rod 23 is mounted a horizontal lever 27, whose free end is adapted to engage the lower end of the stop-rod and force said rod upward, a spring 28 being

provided to normally hold said lever depressed. Pivoted in the casing is an actuating-lever 29, having two operating-arms 30, which extend upward in opposite directions. This actuating-lever extends downward a suitable distance below the lower end of the casing and is adapted to be engaged by a suitable contact-arm 31 or other road-bed device located on the road-bed by the side of the track at any suitable point. By providing the two arms 30 the lever 27 will be swung upward when the lever 29 is moved in either direction by contact with the arm 31. The stop-rod near its upper end is provided with a suitable lug 32, which is adapted to be engaged by spring locking-pawl 33 to hold said stop-rod elevated after it has been raised by the actuating-lever 30 and the lever 27 to free the fan, and thereby set in motion the valve-rotating mechanism.

The operation of the apparatus will be readily understood, but may be briefly described as follows: When a person desires to stop an approaching train, it is simply necessary to raise the contact-arm 31 to its vertical position, as shown in Fig. 1, or to adjust any other road-bed device that may be used, so that as the train passes it will contact with the depending actuating-lever 29 and cause said lever to lift lever 27, thereby throwing up the stop-rod 23. As soon as this stop-rod is raised a sufficient distance to release the governor-fan the locking-pawl 33 will drop under the lug 32 and maintain said stop-rod in its elevated position. When the governor-fan is released, the valve is rotated, slowing through the medium of the gears, and the inlet-ports are brought into register with the inlet-ports of the valve-chamber. This permits air to pass from the train-pipe into the valve-chamber, and said air is permitted to escape from the valve-chamber when the outlet-ports are brought into register with the outlet-port of the valve-chamber. The inlet-ports and outlet-ports of the valve are so arranged that they do not simultaneously register with the corresponding ports of the valve-chamber. In this way the air is permitted to escape from the train-pipe in successive charges, and the train-pipe is never in direct open communication with the atmosphere. In this way a too free escape of air from the train-pipes is avoided and the brakes are gradually applied to bring the train to a stop without undue shocks and strains. During the rotation of the valve-shaft the cam 18 engages the depending arm 19 of the trip-rod 20 and moves said rod against the tension of the spring, and as soon as the valve has made a complete revolution the trip-rod is released from the cam and is projected by the spring against the locking-pawl 33, releasing the same from the lug 32 and permitting the stop-rod to drop to its normal position, thereby interrupting the governor-fan and stopping the motor.

It will of course be understood that any desired form of valve may be used to accomplish the successive venting of the train-pipe. In Fig. 5 is shown a form of valve by which the train-pipe is successively vented through ports 34, which are brought in succession into register with an outlet-port 35 in the valve-casing, thereby putting the train-pipe into communication with the atmosphere.

In Figs. 2 and 3 mechanism is shown by which the valve is given one rotation, and the valve is provided with a series of ports by which the successive venting of the train-pipe is accomplished. It will be readily understood, however, that one port will be sufficient for this successive venting of the train-pipe, provided mechanism be supplied by which the valve will be given a series of rotations. Such a mechanism is shown in Fig. 6, in which shaft 9^a is the valve-shaft. It will be readily understood that by this structure the valve-shaft will be given a series of rotations before the cam releases the trip-rod and permits it to strike the locking-pawl, and thereby release the stop-rod.

It will of course be understood that this air-valve and mechanism for operating it may be mounted on the engine or on any of the cars or trucks. It is also equally clear that one or more of these valves may be used on a train. It is preferred, however, to mount the valve on the engine.

A spring 36 is provided to hold the valve to its seat to prevent the escape of air through the outlet-port when the valve is closed. It is thought, however, that this spring may be dispensed with, if desired. Springs 37 are provided to maintain the actuating-lever 29 yielding in its normal vertical position.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber adapted to be connected to the train-pipe of the air-brake system, a valve therein, mechanism connected to and adapted to automatically move said valve to successively vent the train-pipe, and means adapted to be engaged by a road-bed device to set said valve-moving mechanism in operation.

2. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber adapted to be connected to the train-pipe of an air-brake system, a valve in said chamber, mechanism connected to and adapted to move said valve to successively vent the train-pipe.

3. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber, a rotary valve therein, mechanism for rotating said valve to successively vent the train-pipe, and mechanism adapted to be actuated by a road-bed device to set the valve-rotating mechanism in operation.

4. An air-valve for automatic train-stop-

ping apparatus comprising, a valve-chamber, a rotary valve therein formed with a series of ports, mechanism for rotating said valve, and a mechanism adapted to be engaged by a road-bed device to set the valve-rotating mechanism in operation.

5. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber, a rotary valve therein, mechanism for rotating said valve to successively vent the train-pipe, and mechanism adapted to be actuated by a road-bed device to set the valve-rotating mechanism in operation, and means to arrest the movement of the valve after the successive venting of the train-pipe.

6. An air-valve for an automatic train-stopping apparatus comprising, a valve-chamber, a rotary valve therein mechanism for rotating said valve to successively vent the train-pipe, mechanism adapted to be actuated by a road-bed device to set the valve-rotating mechanism in operation, and means operating automatically to arrest the valve in its closed position after the successive venting of the train-pipe.

7. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber, a rotary valve therein provided with a series of ports, means for rotating said valve, means normally holding the valve-rotating mechanism out of operation, means adapted to be op-

erated by a road-bed device to release the valve-rotating means, and means for automatically arresting the valve-rotating mechanism after the successive venting of the train-pipe.

8. In an automatic safety train-stop mechanism, the combination of a train equipped with a fluid-brake system, an actuating device on the road-bed, and a single valve device connected to the system and adapted to successively vent the same when actuated by the road-bed device.

9. In an automatic train-stopping mechanism, a train equipped with a fluid-brake system, an actuating device on the road-bed, and means connected to the system for successively removing separate charges of fluid therefrom to apply the brakes gradually.

10. In combination a train equipped with a fluid-brake system, means connected to the system for successively venting the system to apply the brakes, and actuating means on the road-bed.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 13th day of August, 1903.

HIRAM G. SEDGWICK.

Witnesses:

R. B. TREAT,
C. B. STRONG.