

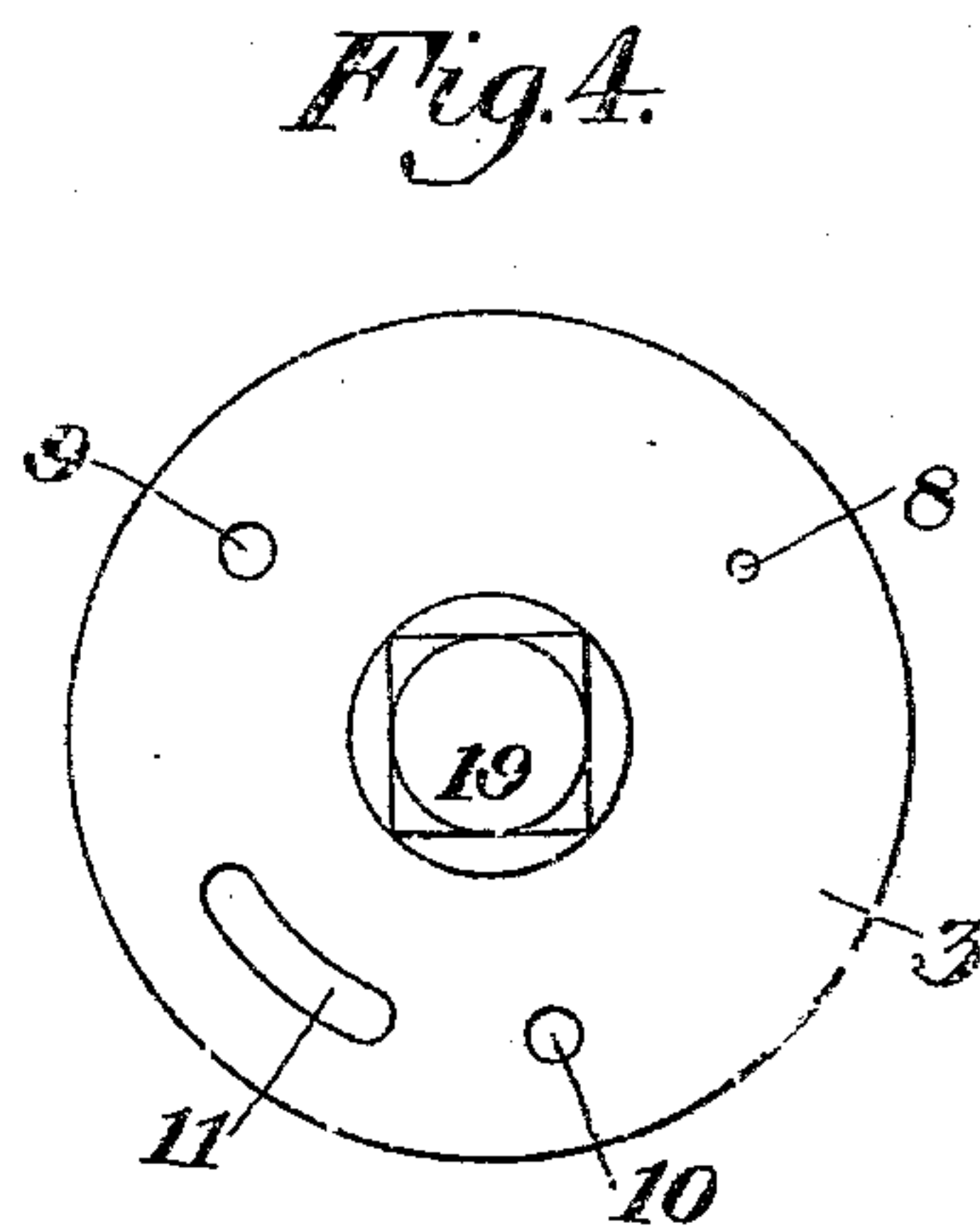
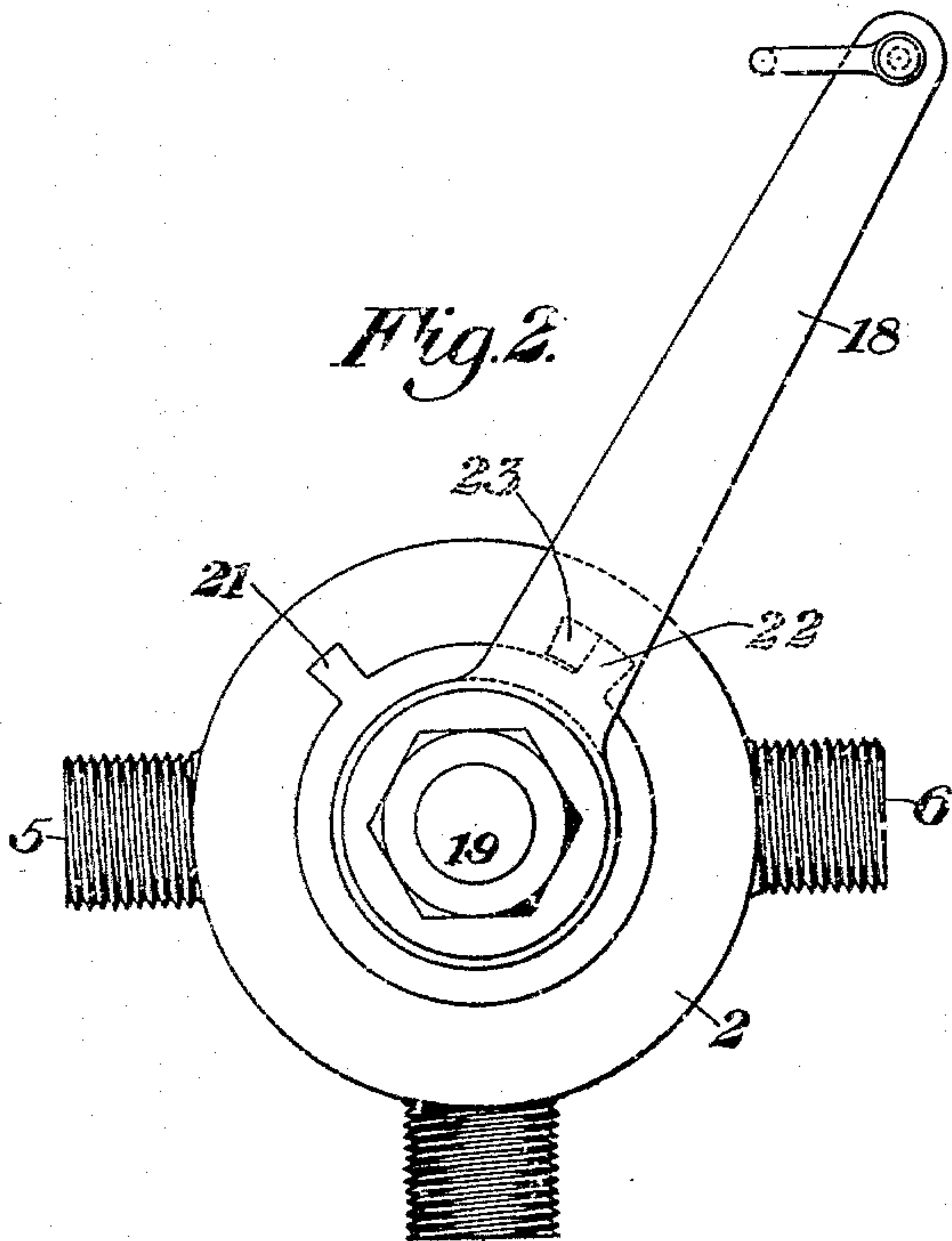
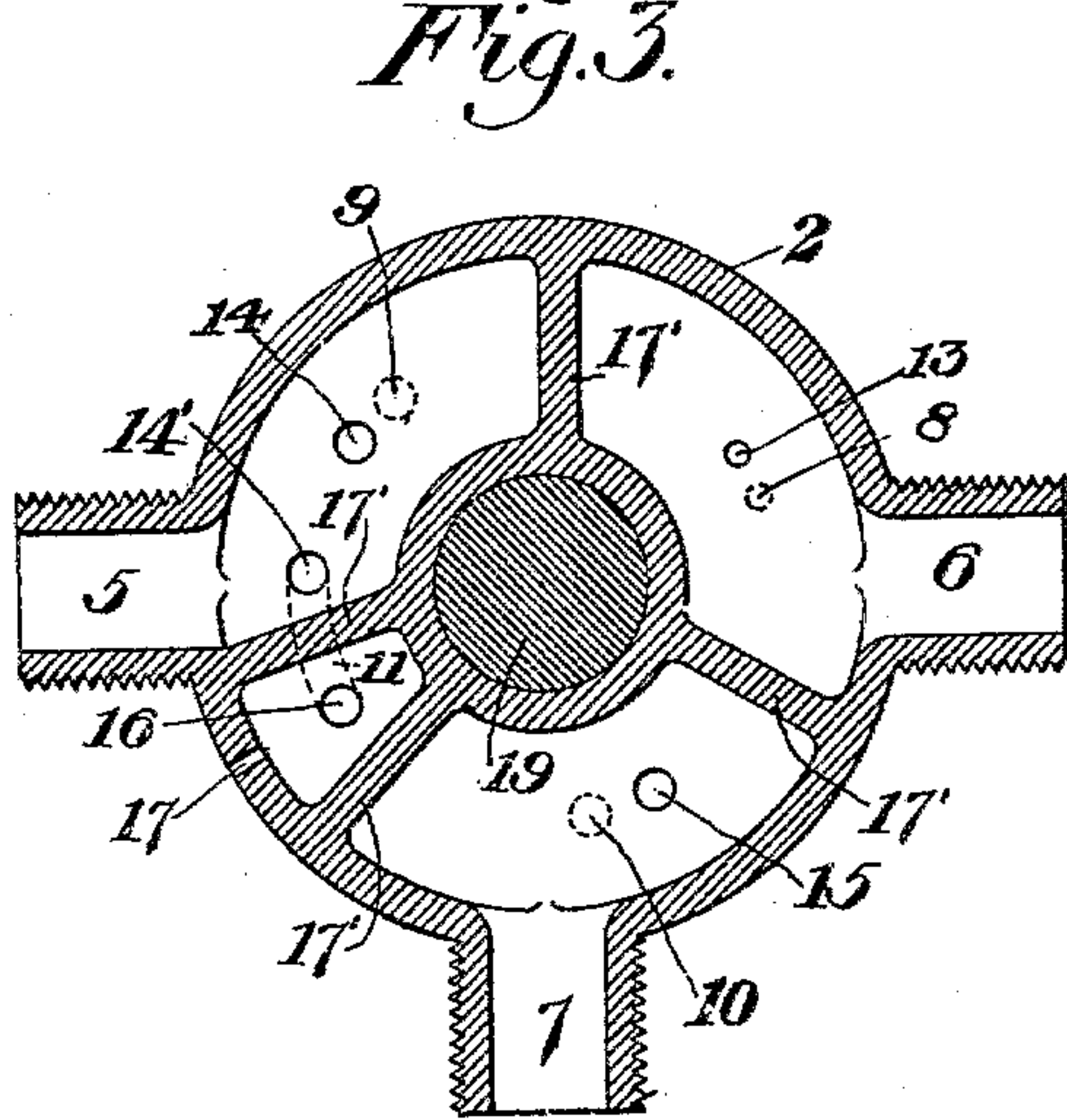
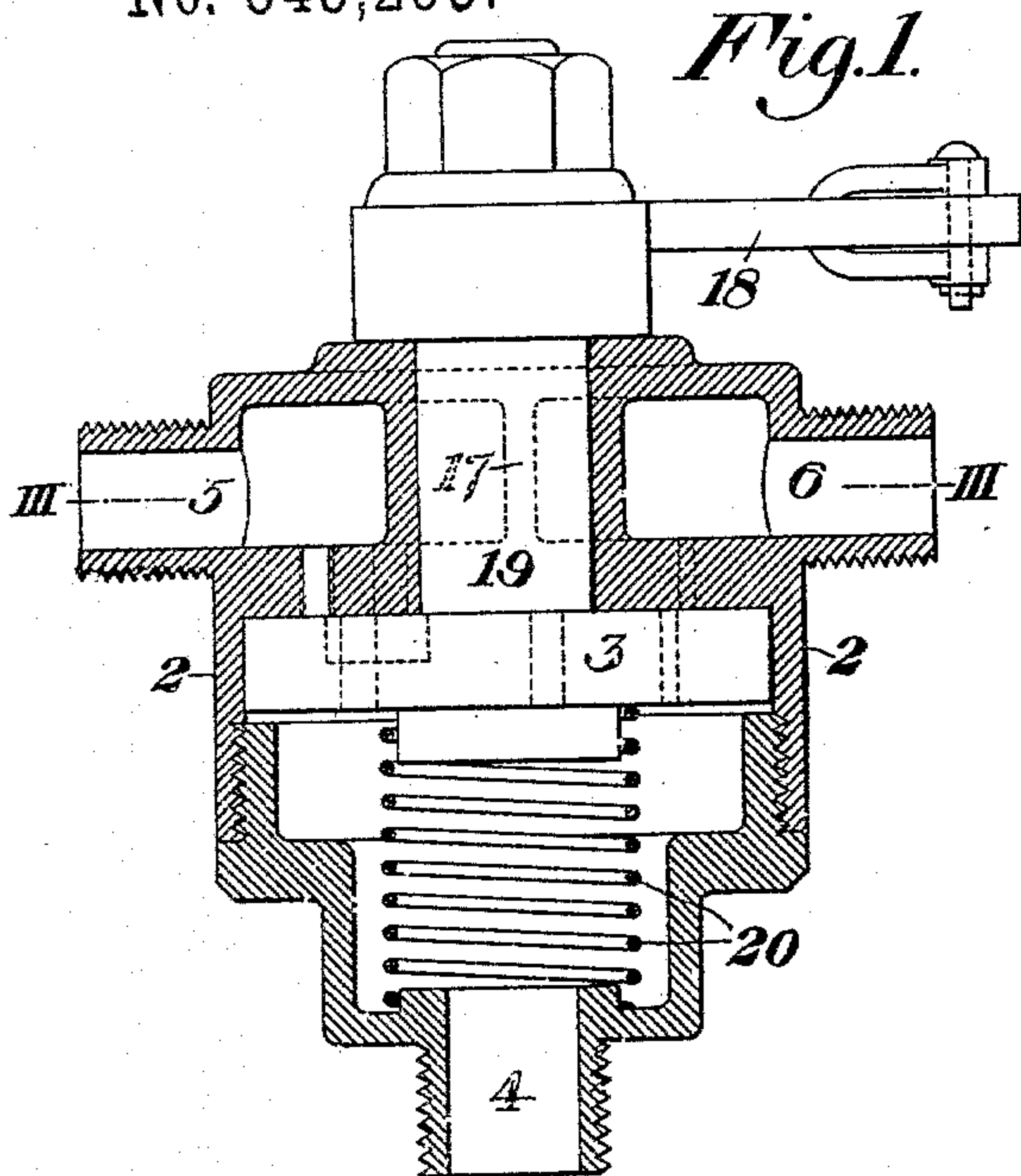
(No Model.)

2 Sheets—Sheet 1.

H. E. HUNT.
AIR BRAKE SYSTEM

No. 545,295.

Patented Aug. 27, 1895.



WITNESSES

N. B. Corwin
Harmon H. Stewart

INVENTOR

Herbert E. Hunt
by N. B. Corwin
his Attorney

(No Model.)

2 Sheets—Sheet 2.

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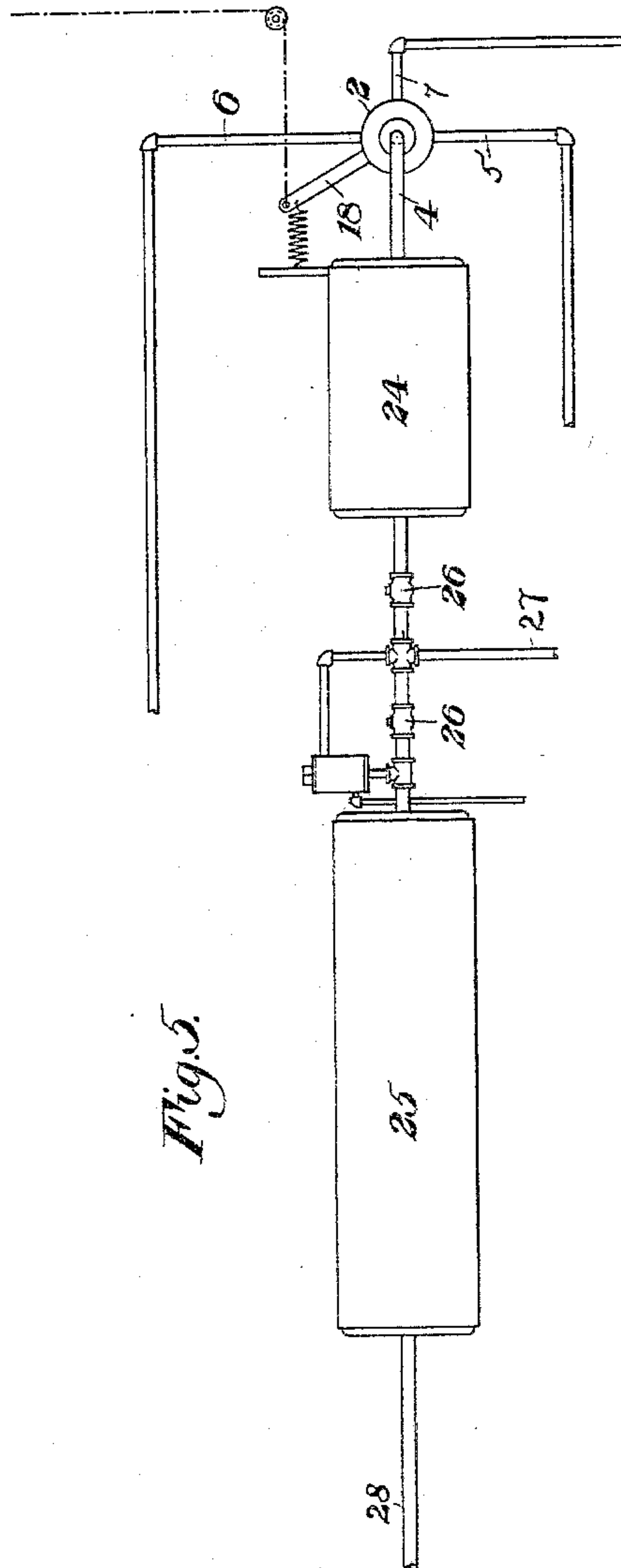


Fig. 5.

WITNESSES

N. B. Conover
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UNITED STATES PATENT OFFICE.

HERBERT E. HUNT, OF PITTSBURG, PENNSYLVANIA.

AIR-BRAKE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 545,295, dated August 27, 1895.

Application filed December 24, 1894. Serial No. 532,759. (No model.)

To all whom it may concern:

Be it known that I, HERBERT E. HUNT, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Air-Brake Systems, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a side elevation, partly broken away, of my improved emergency-valve. Fig. 2 is a top plan view of the same. Fig. 3 is a cross-section on the line III III of Fig. 1. Fig. 4 is a plan view of the valve-disk, and 15 Fig. 5 is a diagrammatic view of my preferred system.

My invention relates to the air-brake systems for use upon electric, cable, and other street-cars, wherein "straight air" is used, and is designed to provide a valve which may 20 be operated by the conductor from any part of the car, and which shall bring the car to a stop as quickly as possible.

In the drawings, 2 represents the valve-casing having an inner flat seat against which is 25 pressed the upper face of the disk-valve 3. In this casing are several openings, of which 4 is the supply-port leading air from the reservoir into the lower end of the casing, and 5 is 30 the port leading to the cylinder which operates the sand-supply to the wheels of the car, while port 6 leads to a whistle and port 7 to the braking-cylinder. The disk 3 is provided with holes or through-ports 8, 9, and 10 35 and with a grooved port 11. The valve-seat is provided with a port 13 leading to the whistle-pipe, ports 14 and 14' leading to the sand-supply cylinder, a port 15 leading to the brake-pipe, and an exhaust-port 16 leading 40 into a recess having an opening 17 leading to the atmosphere. Bridges 17' are provided, as shown, between the ports 13, 14, 15, and 16 to cut off intercommunication between these ports. The disk-valve is rotated by a lever 45 18, applied to a rotary stem 19, which extends through the valve-casing, and to hold the valve in place when there is no pressure in the chamber I provide the light spiral spring 20, pressing against the under face of the disk. 50 There are preferably provided two stop-shoulders 21 and 22 on the valve-casing, adapted to engage a lug 23 upon the operating-le-

ver at the opposite limits of motion of the valve. The ports in the valve-seat are so related in position to each other that when the 55 valve is at one extremity of its motion and in its normal position none of the ports in the valve register with those in the seat except the grooved port 11, which connects the ports 14' and 16. When the valve-lever is moved 60 from this position, the port 8 registers with the port 13, thus sounding the whistle, and at the same time the port 9 registers with the port 14, thus operating the sand-releasing cylinder and supplying sand to the wheels. As 65 the lever passes on, these ports are cut off and the port 10 comes into register with the port 15, thus connecting the air-reservoir with the brake-cylinder and setting the brake. A spring is preferably connected with the actu- 70 ating-lever 18 to force it back to its original position as soon as released, upon which the ports are all thrown out of register, except that the port 11 connects ports 14' and 16, thus exhausting the air from the sand-supply cyl- 75 inder. The air in the brake-cylinder is exhausted by the motorman by means of the ordinary three-way valve in the cab. The lever 18 is operated by a cord, which preferably extends the entire length of the car, so 80 that the valve may be operated from any point in the car, the valve itself being located beneath the seat or in any other convenient locality. I preferably employ for this emergency-valve the auxiliary reservoir 24 of Fig. 85 5, in which figure 25 is the main reservoir, and 26 are check-valves in the supply-pipe to each. 27 is the supply-pipe leading to the reservoir, and 28 the pipe leading from the main reservoir to the motorman's valve. 90

By this system the emergency-valve is entirely independent of the usual braking system, and the auxiliary reservoir can never be exhausted except by the emergency-valve itself, and hence is always ready for such emergency. 95

The advantages of my valve and system will be apparent to those skilled in the art, since, in the event of the necessity of a quick stop, the conductor may throw on this valve 100 from any part of the car, and the air is applied immediately, the wheels being sanded to give them a better hold while the brakes are applied.

Many changes may be made in the form, construction, and arrangement of the parts of my device by the skilled mechanic without departing from the invention, since

5 What I claim is—

1. In an air-brake system, the combination with a whistle, a braking cylinder and a sanding cylinder, of a valve having an inlet from the air reservoir, and ports leading to each
10 of said cylinders and whistle; substantially as described.

2. In an air-brake system, the combination with a braking cylinder and a sanding cylinder, of a valve having an inlet from the air
15 reservoir, ports leading to each of said cylinders, and an exhaust port for the sanding cylinder; substantially as described.

3. In an air-brake system, a main reservoir, and an auxiliary reservoir, having a connection therebetween provided with a check-
20 valve arranged to prevent back flow from the auxiliary reservoir, a supply pipe leading into said connection, a pipe leading from the main reservoir to a valve controlling the brake-

cylinder and a pipe leading from the auxil- 25
iary reservoir to an emergency valve controlling the brake-cylinder; substantially as described.

4. In an air-brake system, the combination with a braking cylinder and a sanding cylinder, of an emergency valve arranged to first
30 admit air to the sanding cylinder and thereafter to the brake-cylinder, said valve having a port arranged to exhaust the sanding cylinder after the air is cut off from the braking- 35
cylinder; substantially as described.

5. In an air-brake system, the combination with a whistle, a sanding cylinder and a braking cylinder, of a valve arranged to admit air
40 first to the whistle and sanding cylinder and thereafter to the braking cylinder; substantially as described.

In testimony whereof I have hereunto set my hand.

HERBERT E. HUNT.

Witnesses:

H. M. CORWIN,

W. B. CORWIN.