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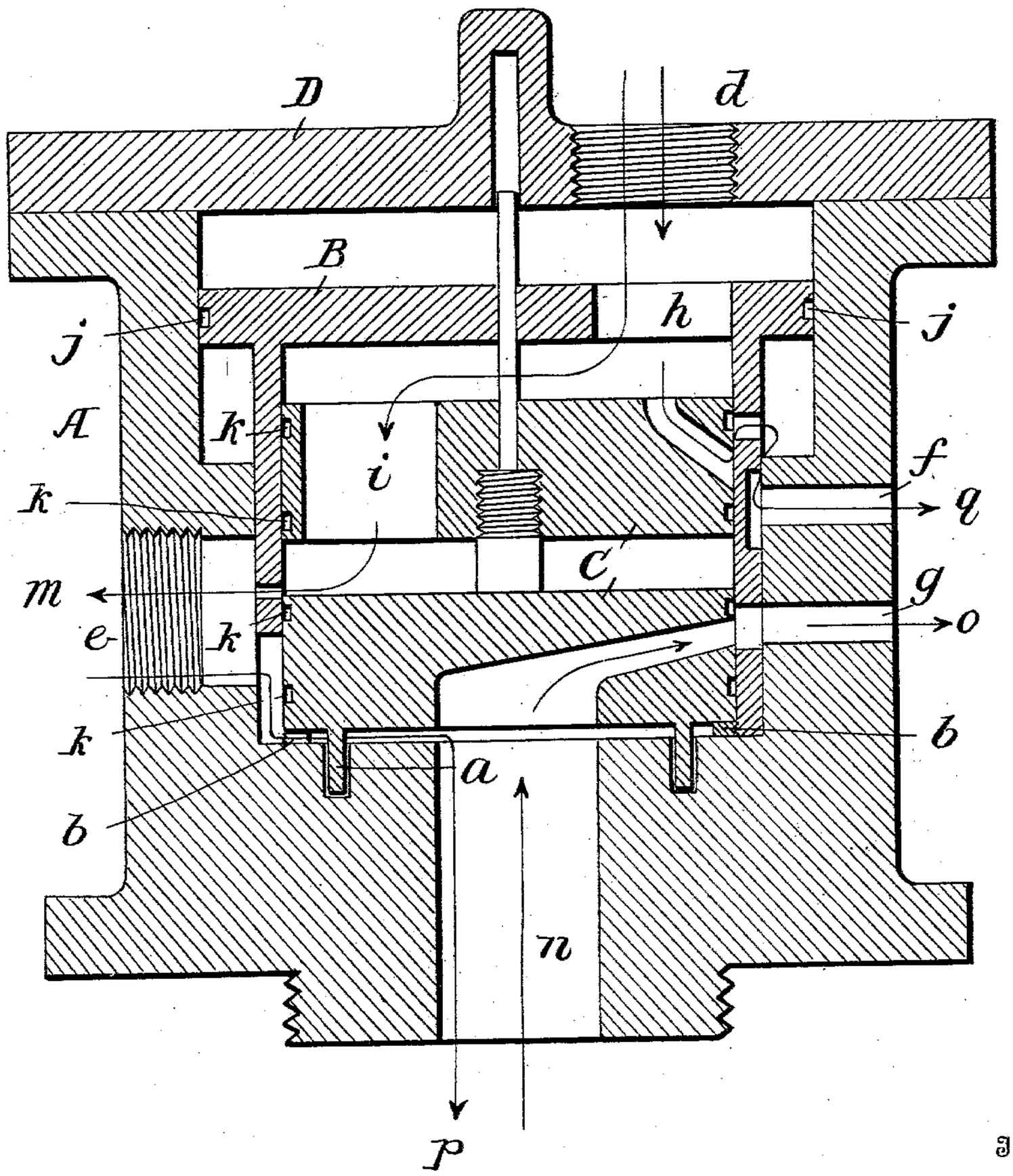
H. B. SÆTER.

AUTOMATIC TELESCOPE VALVE.

APPLICATION FILED MAY 7, 1903.

NO MODEL.



Witnesses
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No. 745,527. Patented December 1, 1903.

UNITED STATES PATENT OFFICE.

HALLVARD B. SÆTER, OF GOTHENBURG, SWEDEN.

AUTOMATIC TELESCOPE-VALVE.

SPECIFICATION forming part of Letters Patent No. 745,527, dated December 1, 1903.

Application filed May 7, 1903. Serial No. 156,127. (No model.)

To all whom it may concern:

Be it known that I, HALLVARD B. SÆTER, a subject of the King of Sweden and Norway, residing at Gothenburg, Sweden, have invented certain new and useful Improvements in Automatic Telescope-Valves, of which the following is a specification.

The triple valve now generally used in connection with air-brakes is rather complicated, and a special annoyance is that in cold weather the valves are liable to stick to their seats. I therefore have constructed a valve which I will now describe and which is simple in construction, efficient, and durable.

My improved valve for air-brakes is shown in section in the annexed drawing; and it consists of three cylinders A, B, and C, arranged within each other in the form of a telescope, the cylinder A being stationary and the two others movable. The inner cylinder C is shown in the drawing in two parts, which are connected by a threaded stud *c*; but, if preferred, the cylinder may be made in one piece. In the drawing the valve is shown in position to permit the brake-cylinder to exhaust to the atmosphere and the reservoir to receive air from the compressor. In the cover D of the cylinder A is arranged a threaded opening *d*, through which the air from the compressor may pass, and in one side of the cylinder A is arranged a corresponding opening leading to the air-reservoir, the air passing through the opening *h* in the cover of the cylinder B and then through the passage *i* to the opening *e*. In the bottom of the cylinder there is also an opening *n*, through which the air may pass to the brake-cylinder, and in the other side two openings *f* and *g*, leading to the atmosphere. The cover of the cylinder B is provided with packings *j* on the circumference, and in the lower end of this cylinder is screwed a ring *b*, the object of which will be described later on. The cylinder C is also provided with packings *k* and also with a guide-rod *l*, that may be placed in the center or somewhat eccentric and which is arranged to travel in a corresponding slot in the cylinder-cover D. In the other end the cylinder is fitted with a guide-ring *a*, traveling in a corresponding slot in the body of the cylinder A. Suitable packings are applied in the slot.

My improved valve works as follows: The air passes from the compressor, as shown by the arrow *m*, into the air-reservoir. At the same time the brake-cylinder is in connection with the atmosphere through the opening *n* and the passage *g*, as shown by the arrow *o*. Under the usual stops and startings the cylinder C only moves, while emergency braking is effected by the movement of cylinder C and cylinder B, which then slides to the top of cylinder A, and thereby provides for a larger opening from the reservoir to the brake-cylinder. If the pressure in the passage *d* be reduced, the cylinder C slides upward and cuts off the air from the reservoir at the same time as the difference in pressure is augmented between both sides of the cylinder or piston C. The cylinder C then slides to the upper end of the cylinder B, and thereby the cylindrical ring *a* is lifted out of its slot in cylinder A, whereby the air from the reservoir passes into the brake-cylinder and effects the braking, as shown by the arrow *p*. If the pressure be further reduced, the cylinder B also slides upward, and thereby opens communication from the passage *h* to the atmosphere, as shown by the arrow *q*. This, however, only occurs during the sliding in order to more speedily reduce the pressure in the passages *h* and *d*. When the cylinder B has reached the cover D, communication between the passage *h* and the atmosphere is again closed. In order to release the brakes, pressure in the passage *d* is reëstablished from the compressor to overcome the pressure on the cylinders B and C from the air-reservoir and the brake-cylinder. If only the cylinder C has moved, the pressure on its upper side will force it down to the position shown in the drawing, when communication between the brake-cylinder and the atmosphere will be again established and also communication between the compressor and the air-reservoir. If both cylinders B and C have been moved, the cylinder C will first be moved down until it engages the ring *b*, and then both will move down together to the position shown in the drawing.

Having described the invention, I claim—

An automatically-operating valve for air-brakes, consisting of three cylinders arranged telescopically one inside another, the outer

cylinder being stationary and the others movable axially relatively to each other and to the outer cylinder, and the latter having independent passages for connecting its interior respectively with an air-compressor, an air-reservoir, a brake-cylinder, and the atmosphere, and the inner valves having suitable passages for permitting air to flow from the compressor to the reservoir, from the reservoir to the brake-cylinder, and from the brake-cylinder to the atmosphere, and said inner valves being moved automatically by varying the pressure in the passage from the air-compressor to the interior of the outer cylinder to set or release the brakes, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HALLVARD B. SÆTER.

Witnesses:
EMANUEL JOHNSON,
AXEL HOLENER.