No. 741,172. PATENTED OCT. 13, 1903.

J. C. SCHNEIDER.

VALVE FOR HYDRAULIC AIR COMPRESSORS.

APPLICATION FILED SEPT. 24, 1901.

NO MODEL.

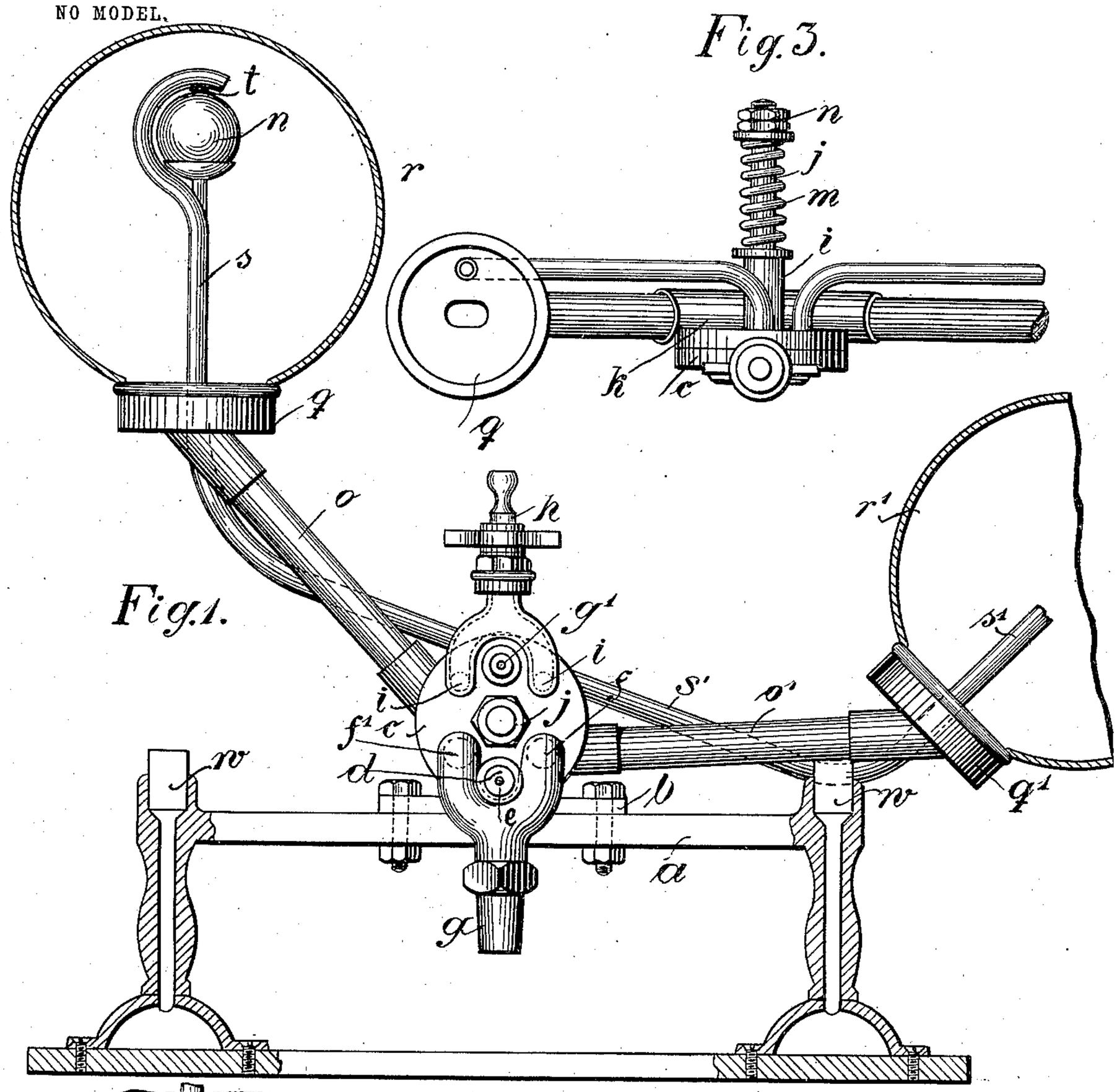

Fig. 3.

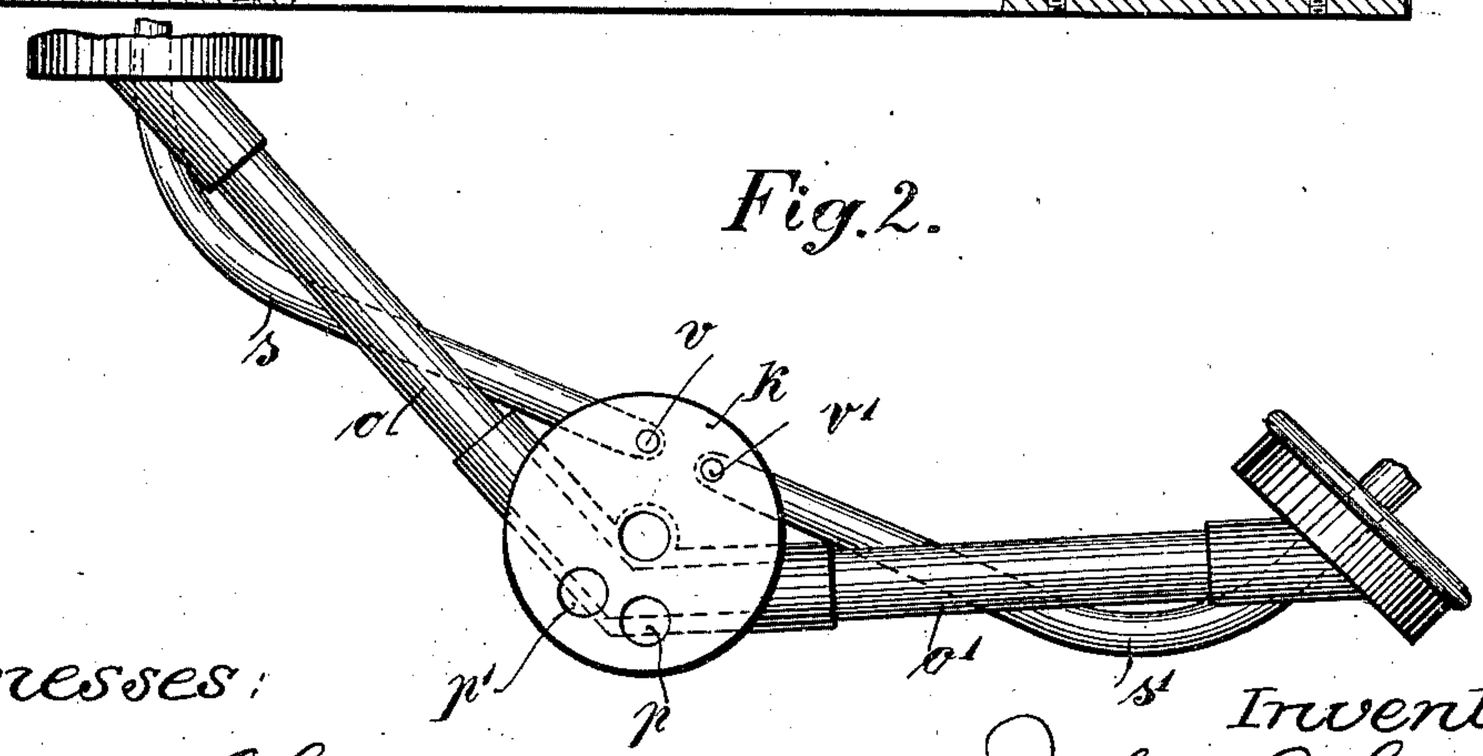

Fig. 2.

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No. 741,172. Patented October 13, 1903.

UNITED STATES PATENT OFFICE.

JOHN CÄSAR SCHNEIDER, OF HAMBURG, GERMANY.

VALVE FOR HYDRAULIC AIR-COMPRESSORS.

SPECIFICATION forming part of Letters Patent No. 741,172, dated October 13, 1903.

Application filed September 24, 1901. Serial No. 76,347. (No model.)

To all whom it may concern:

Be it known that I, JOHN CÄSAR SCHNEIDER, a citizen of the free and Hanseatic city of Hamburg, residing at Hamburg, in the German Empire, have invented certain new and useful Improvements in and Connected with the Valves of Water-Pressure Apparatus, of which the following is a specification.

This invention relates to the valves of hydraulic air-compressors.

It is a great disadvantage that with the usual water-pressure apparatuses for beer and other engines the continuous rotary motion of the valve-faucet against the plug very soon makes them so loose that they do not work air and water tight against each other, with the result that the working capability of the apparatus is very much impaired. My invention overcomes this disadvantage by making the valve in two parts, the one of which works on and is pressed against the face of the other.

The new valve is characterized by two metal disks arranged on a horizontal spindle, the one being fixed, while the other rotates and is held against the fixed disk by pressure.

The annexed drawings show by way of example a method of carrying out the invention.

Figure 1 is a front elevation with the lower part in section; Fig. 2, a view of the movable valve-disk, and Fig. 3 a part plan of Fig. 1.

Secured fast to the frame *a* by means of the plate *b* is a disk *c*, which is provided with a water-inlet *d*, through the hole *e* of which the water passes to the inner side of the disk. Two branches *f f'* are connected with a coupling *g*, which serves as the water-outlet. A hole *g'* is made in the upper part of the disk and corresponds to the hole *e*. This hole, which is closed at the outside by a valve with an india-rubber face, serves as the air-outlet. The air enters by a coupling *h* the two branches *i i'*, which communicate by holes with the inside of the disk. A spindle *j*, on which the disk *k* works, is screwed fast to the disk *c*. A spring *m*, whose pressure can be adjusted by the nuts *n* on the spindle *j* presses against a sleeve *l* on the back of the disk *k*, so that this disk is constantly pressed against the disk *c*, with the result that it works tight.

The disk *k* is provided with two hollow arms *o o'*, which are arranged at a suitable angle to each other and which cross over at the back of the disk *k*, so as to communicate, respectively, with the openings *p p'*. The outer ends of the arms are provided with circular plates *q q'*, covered, by preference, with glass reservoirs *r r'*. Projecting up within the glass reservoirs are tubes *s s'*, which are bent at their upper ends, and each is provided with a valve-opening at *t*, which can be closed by an india-rubber ball *u* on the cup-stand *u'*. A small space is left between the opening *t* and the ball *u* when at rest. The tubes *s s'* pass down through the plates *q q'* and are connected with the openings *v v'* of the disk *k*. India-rubber cushions *w* are also fitted on the frame *a*.

Figs. 1 and 2 show the two disks *c k* in the positions adopted when the left side of the machine is about to operate.

The apparatus is connected with the water-pipe by the coupling *d*, through which the water flows through the channel *e* into the channel *p*, hollow arm *o*, and the reservoir *r*, with the result that the air therein is compressed and caused to pass by the opening *t* into the pipe *s* and from thence by the opening *v* into the coupling *g'*, provided with the india-rubber non-return valve, and from thence into the air-pressure pipe connected with this valve. When the water reaches a certain height in the reservoir *r*, it floats the valve *u* and closes the passage *t*, so that neither air nor water can escape. The weight of water in the reservoir *r* causes the left side of the apparatus to fall and rest upon the cushion *w*, with the result that the relative positions of the openings in the disks are changed. Water now flows into the reservoir *r'* through the opening *p'* and hollow arm *o'*, and the air passes from the reservoir through the pipe *s'*, opening *v'*, and outlet *g'*. The water exhausts from the reservoir *r* through the hollow arm *o* and passage *p* to the branch *f* of the coupling *g*, while air enters the reservoir *r* through the pipe *h* and tube *s*. The right-hand side of the apparatus when the reservoir *r'* is filled with water acts in a similar manner to the left-hand side, and so on. In this manner the engine is kept constantly working.

The spring *m* presses the disks together, so as to take up any wear and keep the faces working tight.

What I desire and claim to secure by Letters Patent of the United States is—

The combination of a valve consisting of two disks, facing each other, one of which is mounted to turn on an axis and the other fixed, air and water inlets in the fixed disk, two hollow arms extending in opposite directions from the movable disk and communicating with ports therein, reservoirs carried at the ends of the arms, air-pipes leading from the upper ends of the reservoirs to ports in said movable disk and floats in the reservoirs for closing the air-pipes, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

JOHN CÄSAR SCHNEIDER.

Witnesses:
LEO FOLLES,
ERNEST H. L. MUMMENHOFF.