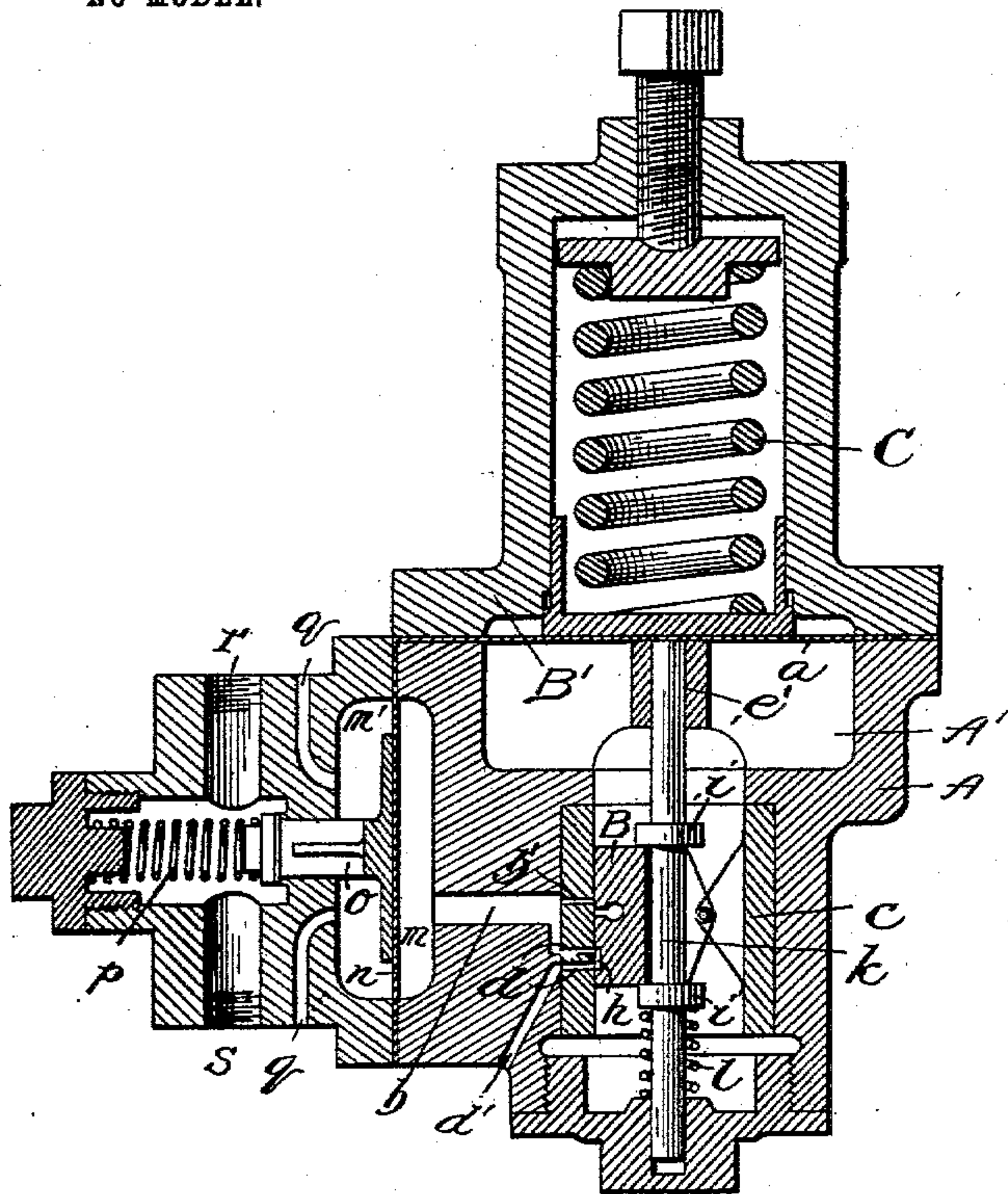


No. 745,491.

PATENTED DEC. 1, 1903.

C. GULLAND.
CONTROLLER MECHANISM.
APPLICATION FILED MAY 21, 1901.

NO MODEL.



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UNITED STATES PATENT OFFICE.

CHARLES GULLAND, OF PITTSBURG, PENNSYLVANIA.

CONTROLLER MECHANISM.

SPECIFICATION forming part of Letters Patent No. 745,491, dated December 1, 1903.

Application filed May 21, 1901. Serial No. 61,260. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GULLAND, a citizen of the United States, residing at Pittsburg, Allegheny county, Pennsylvania, have invented certain new and useful Improvements in Controller Mechanism, of which the following is a specification.

My invention is a pressure-controller adapted especially for brake systems, though not limited in its application, as with slight variations it may be adapted to control pressure from other sources, such as valves of the Gulland type.

The accompanying drawing shows a sectional view of my invention.

A shell or casing A is formed with a pressure-chamber A' in communication with the train-pipe or other source of pressure, and this chamber also contains a slide-valve B and its auxiliary parts. Closing the top of the chamber A' is a flexible diaphragm *a*, this being held in place to make an air-tight joint by a hollow head B, suitably secured to the casing A. Within the head B' is located a spring C, capable of adjustment, so as to regulate its tension. A sleeve *c* is fitted to the interior of the shell A in its contracted part, this sleeve closing an opening *b* in the shell A. The sleeve has a port *b'*, opening into the passage *b* about centrally thereof, and the sleeve is also provided with two parallel ports *d*, one of which is in communication with the passage *b* and the other with a passage *d'*, leading to the outer air. The slide-valve B controls the ports *b'* and *d*, so as to discharge pressure into the passage *b* in one position of the valve and at the same time to cut off the connection of the passage *d* with the outside air and in the other position of the valve to open communication between the passage *b* and the outside air and to break the communication through the port *b'*. The slide-valve has a channel *h* of a sufficient length to bridge the openings *d* for this purpose. The slide-valve is held between the collars *i* of a stem *k*, which is normally under the tension of the spring C through the diaphragm *a*, against the under

side of which the stem bears, the end of the stem being supported and guided as shown at *e'*. Normally the pressure of the spring C is sufficient to keep the slide-valve in a position to close the port *b'* to the passage *b*; but when excess of pressure is admitted to the chamber A' from the train-pipe the spring C is compressed, taking the pressure from the stem *k*, and immediately this is done a light spring *l*, encircling the lower end of the stem *k* and bearing against the collar *i*, exerts sufficient pressure to move the stem and slide-valve in opposition to the movement imparted by the spring C, with the result that the port *b'* is opened and the pressure passes into the passage *b*.

The passage *b* opens into a chamber *m*, provided with a diaphragm *n*, and secured to the opposite side of the diaphragm is a valve *o*, which is normally closed upon its seat by a spring *p*. In rear of the diaphragm a chamber *m'* communicates with the atmosphere through ports *q*, one or more. The exhaust from the triple-valve casing communicates with the port *r*, and normally this pressure supplements the pressure of the spring *p* to keep the valve *o* closed; but when the slide-valve B has been shifted by the excess of pressure admitted to the chamber A' this pressure passing through the port *b'* and passage *b* into the chamber *m* exerts a force upon the diaphragm, with the result that the valve *o* is quickly opened and the cylinder-pressure passes out through the chamber *m'* and the port or ports *q*. The passage *s* is controlled by a stop-cock, which is normally closed, but which may be opened when it is desired for any reason to have the exhaust pass directly to the atmosphere, thus practically cutting out the attachment.

When the slide-valve closes the port *b'*, it opens the passage *b* to the air, and thus allows the escape of any pressure remaining on the pressure side of the diaphragm *n* after the parts are restored to normal position.

What I claim is—

An exhaust-controller comprising a valve normally closed, a diaphragm connected

therewith, a chamber containing the said
diaphragm, a second chamber, a passage con-
necting the chambers, a slide-valve control-
ling the passage, a diaphragm in the said
5 second chamber connected to the slide-valve
and means for operating said slide-valve to
open the passage, substantially as described.

In witness whereof I affix my signature in
presence of two witnesses.

CHARLES GULLAND.

Witnesses:

CARL WENDELL HOLMES,
JAMES SMITH.