

No. 719,669.

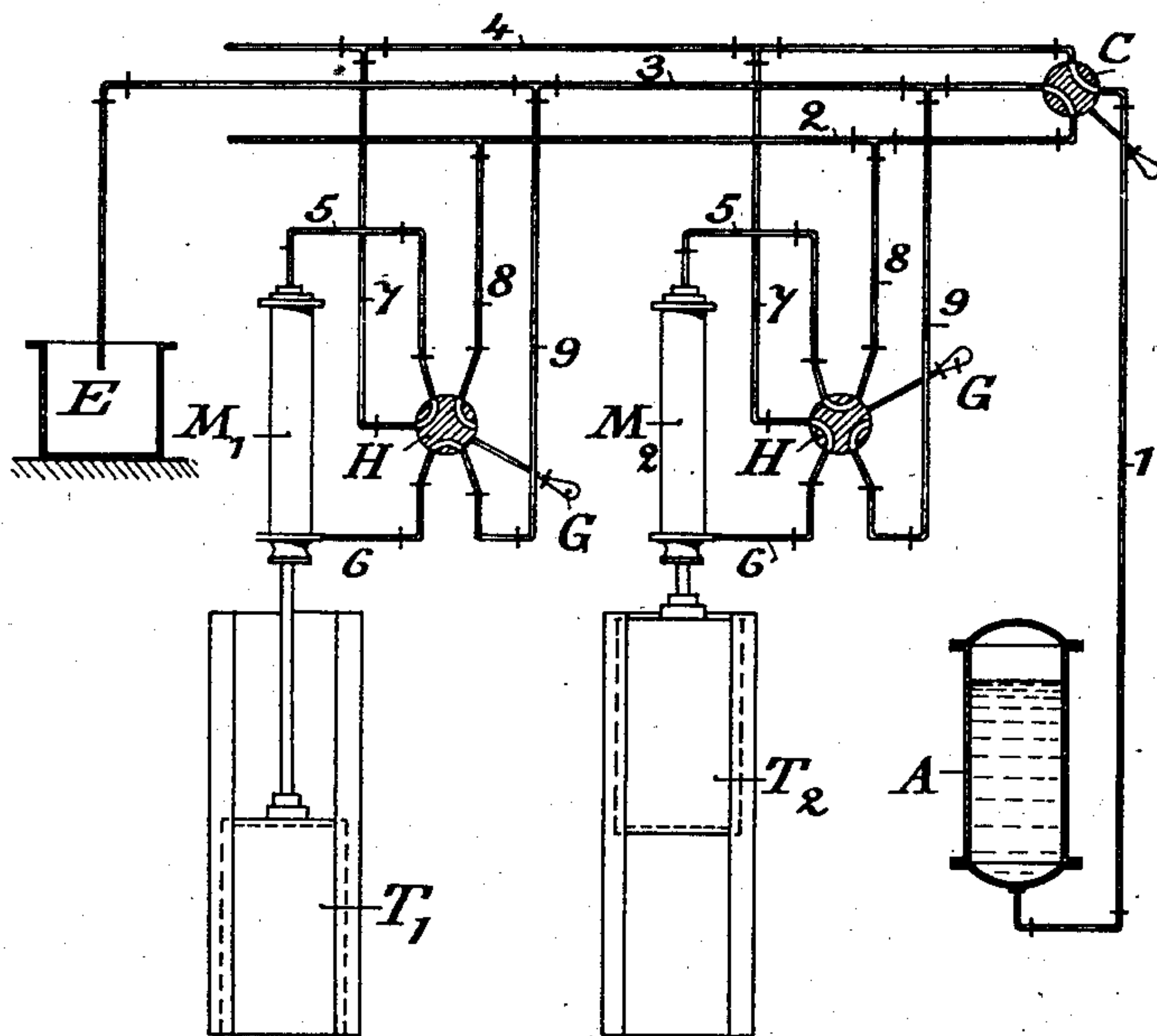
PATENTED FEB. 3, 1903.

P. HOPPE.

MEANS FOR OPERATING BULKHEAD DOORS.

APPLICATION FILED JUNE 20, 1902.

NO MODEL.



WITNESSES ;

E. Petersen
Florence M. Patrick

INVENTOR:

by Paul Hoppe
May 1961
his ATTORNEY.

UNITED STATES PATENT OFFICE.

PAUL HOPPE, OF BERLIN, GERMANY, ASSIGNOR TO NORDDEUTSCHER
LLOYD, OF BREMEN, GERMANY.

MEANS FOR OPERATING BULKHEAD-DOORS.

SPECIFICATION forming part of Letters Patent No. 719,669, dated February 3, 1903.

Application filed June 20, 1902. Serial No. 112,460. (No model.)

To all whom it may concern:

Be it known that I, PAUL HOPPE, manufacturer, a subject of the German Emperor, residing at 9/12 Gartenstrasse, Berlin, Germany, have invented certain new and useful Improvements in Means for Operating Bulkhead-Doors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an arrangement by means of which bulkhead-doors may be opened and closed from a central controlling-station.

My invention consists generally of hydraulic cylinders the pistons of which are connected to their respective doors, an accumulator, preferably filled with water and compressed air, pipes connecting both ends of the cylinders with said accumulator, and intermediate valves so disposed that by turning the same water-pressure can be admitted to either end of the cylinder, at the same time switching the other end of the cylinder into communication with an exhaust-pipe, whereby as pressure is admitted below or above the piston the door is either opened or closed.

My invention further consists in a special arrangement of the pipes and valves in this system by which all the doors connected with the system, can be closed by the action of a single centrally-disposed valve independently of the position of the local valves. Thus though it is possible to open or close any single door by the use of its local valve when the central valve is set to "open," it is not possible to open any single door by the use of the local valve when the central valve has been set to "close."

My invention is illustrated in the accompanying drawing, which is a diagram showing a valve disposed in and controlling the pipes connected with the two ends of the cylinder, which forms the subject of my invention in connection with the different parts belonging to the system and in coöperation with which it is designed to act. The constructional details of the valve itself are not shown, since they are understood by persons conversant with the art, and my invention lies not in

such details of construction, but rather with the special arrangement of the waterways in said valves and its relation to the connected pipes.

In the drawing, A is an accumulator.

C is the central controlling-valve.

1 is a pipe connecting the accumulator with the controlling-valve.

E is an exhaust-tank.

3 is a pipe connecting the controlling-valve with the exhaust-tank and passing the cylinders M' and M².

T' and T² are doors.

2 and 4 are two mains connecting the controlling-valve with all the cylinders.

H is the cock or valve, which forms an important feature of my present invention.

5 and 6 are pipes connecting the upper and lower ends of the cylinders with the valve H, and 7, 8, and 9 are branch pipes connecting the valve H with the mains 2 and 4, and also with the exhaust-pipe 3.

G is a handle by which the valve H can be set to either of the positions shown in the diagram with reference to doors T' and T². The characteristic feature of the valve H is that it is a six-way cock, while there are only five pipes to which it is connected.

The operation will be readily understood. In the drawing the central controlling-valve C is set to "open," while the local valve controlling the door T' is set to "close" and the local valve controlling T² is set to "open." It will be readily seen from the drawing that if it is desired to close the door T² it is only necessary to turn its valve H, when the pressure will be applied through the control-valve C and pipes 4 and 7, valve H, and pipe 5 to the upper end of the cylinder, operating to close the door, or the local valve may remain in its open position, and by setting the central valve C to "close" the pressure will be applied through said valve, pipes 2 and 8, valve H, and pipe 5 to the upper end of the cylinder, closing the door. Furthermore, it will be seen that by thus changing the position of the control-valve C the door T', which was already closed, is not affected. Though in this position of the control-valve the main 2 and branch pipe 8 are switched onto the accumulator instead of main 4 and branch pipe 7,

no pressure is admitted to the lower end of the cylinder, since the pressure in branch pipe 8 finds no outlet at the local valve H. The lower end of the cylinder M' remains connected by pipe 6, valve H, and pipe 7 with the exhaust-pipe 3, and the upper end of the cylinder is now likewise connected by pipe 5, local valve H, branch pipe 7, main 4, and control-valve C to the exhaust-pipe 3. Both ends of the cylinder being exhausted, the respective door T' will remain closed. It will be understood, therefore, that if the control-valve C is set to "open" all doors connected to the system can be opened or closed at will by the use of the local valves H H independently of the control-valve and of each other; but when the control-valve is set to "close" all the doors that had been opened by the use of the respective valves H H will be closed and all doors which had been closed by the use of the respective local valves H H will remain closed.

Having thus particularly described and ascertained the nature of my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an arrangement for operating bulkhead-doors from a central controlling-station, the combination with cylinders fitted to the doors, means for operating the doors according as pressure is admitted to either of said cylinders, and a pressure-accumulator, of a pair of pipes connecting the accumulator with the cylinders, a third pipe connecting the cylinders with an exhaust-tank, pipes connecting each end of said cylinders with said third pipe and controlled by a local valve, and means for switching the pressure stored in the accumulator to either of the pair of pipes and connecting the other with the exhaust-pipe.

2. In an arrangement for operating several bulkhead-doors from a common controlling-station which arrangement consists of a hydraulic cylinder fitted to each of said doors, means for operating the doors when pressure is admitted to either end of the cylinders and a pressure-accumulator, the combination with means for switching the pressure stored in said accumulator into either of a pair of pipes leading from the controlling-station to said cylinders and simultaneously connecting the other to an exhaust-pipe such means being located at the controlling-station, of means consisting of a six-way valve for connecting

the one end of said cylinders with either one of the said pair of pipes or with the said exhaust and for simultaneously connecting the other end of said cylinders with either of the said pair of pipes substantially as and for the purpose set forth.

3. In an arrangement for operating several bulkhead-doors from a common controlling-station which arrangement consists of a pressure-accumulator, a hydraulic cylinder fitted to each of said doors and means for operating said doors when pressure is admitted to either end of said cylinders, the combination with a four-way valve located at the controlling-station of a pipe connecting said central valve to said accumulator, a second pipe connecting said central valve to each of the cylinders and leading to an exhaust-tank and of two more pipes connecting the central valve with the cylinders, the central valve being arranged so as to connect either of the two latter pipes to the pressure-pipe and the other to the exhaust-pipe or vice versa and means consisting of a six-way valve for connecting one end of said cylinders with either of the said latter pipes or with the exhaust-pipe, substantially as and for the purpose set forth.

4. In an arrangement for operating several bulkhead-doors from a common controlling-station the combination with hydraulic cylinders fitted to each of said doors, means for closing and opening said doors when pressure is admitted to either end of said cylinders a six-way valve connected by a pipe or channel to each end of the cylinder, such valve being arranged and connected so as to switch the one end of said cylinders onto either of a pair of pipes connecting all cylinders with the controlling-station and the opposite end of the cylinders either onto one of said pair of pipes or onto an exhaust-pipe likewise connecting all doors with the controlling-station, of a pressure-accumulator, a pipe connecting same with the controlling-station and adapted and connected so as to switch the pressure stored in said accumulator onto either of the above said pair of pipes and simultaneously to connect the other to the exhaust-pipe, substantially as and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

PAUL HOPPE.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.