No. 734,186. PATENTED JULY 21, 1903.

C. E. MACK.

VALVE.

APPLICATION FILED APR. 19, 1902.

NO MODEL.

Fig. 1.

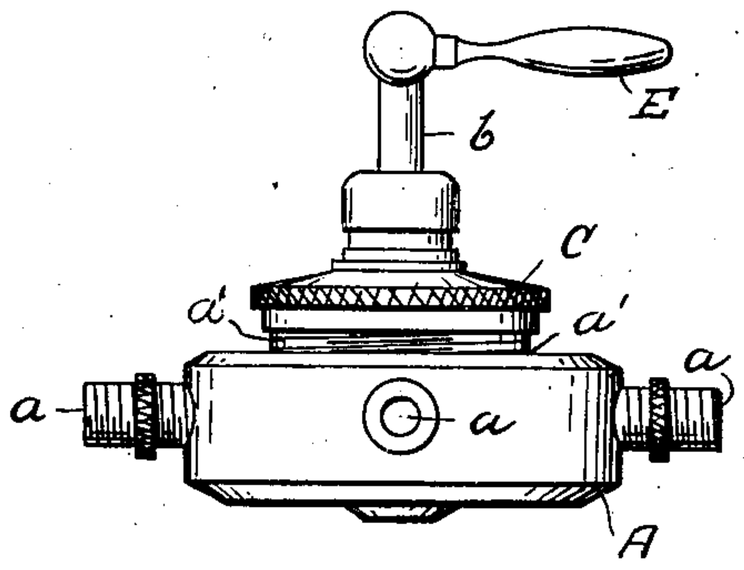

Fig. 2.

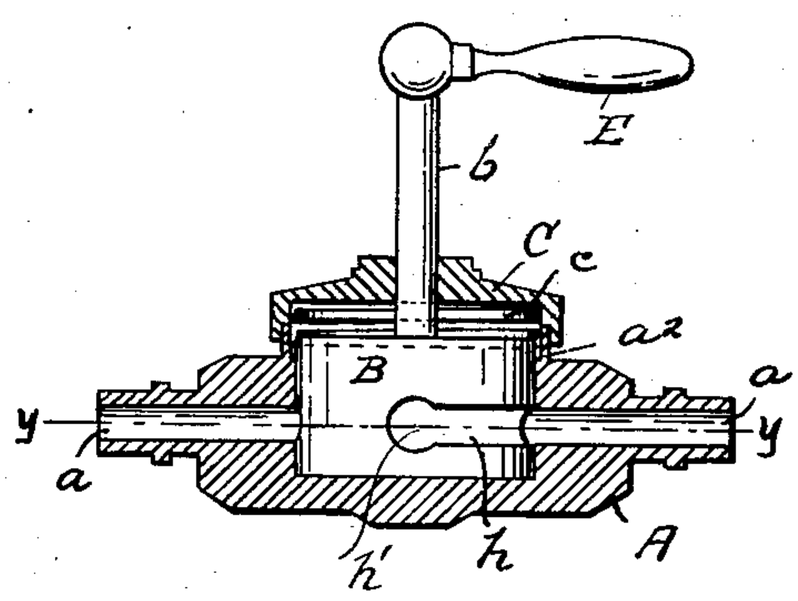

Fig. 4.

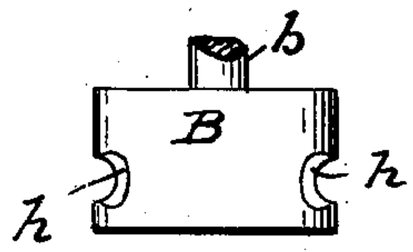

Fig. 3.

Witnesses
Florence Kelly
Katharine Kelly.

Inventor
Charles E. Mack.

By Attorney Ed. A. Kelly

No. 734,186. Patented July 21, 1903.

UNITED STATES PATENT OFFICE.

CHARLES E. MACK, OF READING, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO JAMES D. BOYNTON, OF READING, PENNSYLVANIA.

VALVE.

SPECIFICATION forming part of Letters Patent No. 734,186, dated July 21, 1903.

Application filed April 19, 1902. Serial No. 103,679. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. MACK, a citizen of the United States, residing at Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Valves; 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.

This invention relates to improvements in valves, and is intended more particularly for use in connection with steam or the like.

The object of the present invention is to produce a valve wherein the inlet and outlet may be changed at will—that is, a valve in which the casing is formed with a number of radiating outlets or openings leading from the valve-seat and a valve located therein and so constructed as to change the direction of the current of steam by turning said valve.

To this end my invention consists in the details of construction more fully explained in the following specification, and clearly illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of my complete valve. Fig. 2 is a vertical sectional view on line $x\,x$ of Fig. 3. Fig. 3 is a cross-sectional view on line $y\,y$ of Fig. 2, and Fig. 4 shows a side view of the valve itself.

The valve-casing A is of dish form and is provided with four equidistant openings a, radiating from the central opening or valve-seat a^2. That portion of the valve-seat a^2 in which the valve is seated is cylindrical and of equal diameter for its entire length. Around the mouth of the central opening a^2 is an upwardly-extending flange a', which is screw-threaded externally.

The valve B is truly cylindrical and is provided with a broad flat top and base. Said valve is adapted to fit easily within the central valve-seat a^2, and extending from its upper face is an upwardly-projecting stem b, on which is arranged a packing-box C, which box is screw-threaded internally and is adapted to engage the threaded flange a'. A coiled spring c encircles the stem b inside of said packing-box and tends to bear down on the valve and keep it seated, while its broad flat base bears against the bottom of the seat a^2, causing a greater frictional surface which tends more effectually to hold the same securely in position. Furthermore, said valve is completely housed in this construction, and any steam which should escape around the sides thereof would only pass to the top of the casing and assist the spring in holding the same. The stem b is provided with a suitable handle E for operating the valve. This valve is also formed with openings or ports h, cut into the periphery and partly encircling the valve on alinement with the openings a in the casing A. These ports or grooves h are provided at their extremities with enlargements or openings h', which are somewhat larger and deeper than the grooves h, and said grooves are so arranged that when one of the openings a registers with one of the depressions or enlargements h' at the ends thereof the opposite end will register with one of the openings a at right angles thereto, and the other two openings a will in like manner register with both ends of the opposite port or groove h, thus forming two direct passages through the valve in opposite directions. The valve being set for the steam to pass in the desired direction, it will enter the proper opening a in the casing and will pass directly into the enlargement h' in the valve-stem and will be directed through the grooves h to the proper outlet. This construction will cause the steam to strike the valve on entering in a direct line, causing said valve to be properly seated in case the operator should not get the exact adjustment by means of the handle E, and will also prevent the steam from striking said valve at a tangent. For instance, in Fig. 3 the steam enters at 1 and exits at 2. In like manner it will enter at 3 and exit at 4. Now should it be desired to change the course of the steam a quarter-turn of the valve B will bring the port h, which now registers with openings 1 and 2, to a like position with relation to openings 2 and 3, and the opposite port h would then register with the openings 4 and 1, thus changing the course of the steam, so that the steam entering opening 1 would exit through 4 and that entering 3 would exit through 2. It is evident that to close both the inlets and outlets the valve is turned to a position mid-

way of either two quarters or openings in the casing A. An indicator may be applied to the stem or other outside portion, if desired, so that it will be possible to determine the relation of the ports with the openings *a*.

It is evident that this valve when applied to a steam connection will permit the changing of the course of the steam with ease.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

A valve comprising a casing having a truly cylindrical valve-seat, and a series of equidistant openings radiating therefrom, a flange around the upper portion of the casing, surrounding the seat, and screw-threads on said flange, a truly cylindrical valve seated within the casing, said valve being provided with a broad flat base and two diametrically opposite grooves in its periphery, said grooves being enlarged at their extreme ends to form pockets, a stem secured to the upper face of the valve and terminating in a handle, a packing-box surrounding the stem and adapted to engage the flange, to entirely house said valve, and a coiled spring surrounding the stem and interposed between the upper face of the valve and the packing-box to hold said valve seated, entirely within the casing.

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

CHARLES E. MACK.

Witnesses:
ED. A. KELLY,
GEO. M. MILLER.