

No. 674,674.

Patented May 21, 1901.

C. F. FERNALD.

SAFETY VALVE.

(Application filed Mar. 18, 1901.)

(No Model.)

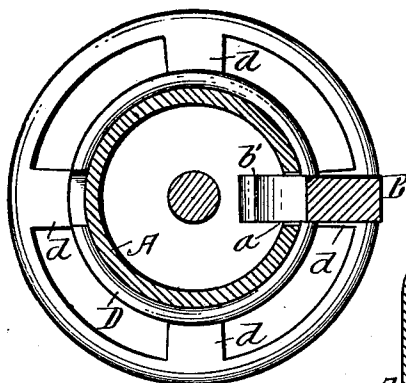


Fig. 2.

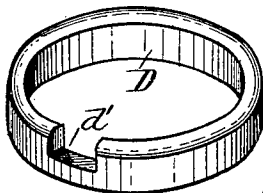


Fig. 3.

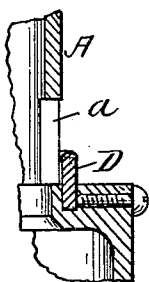


Fig. 6.

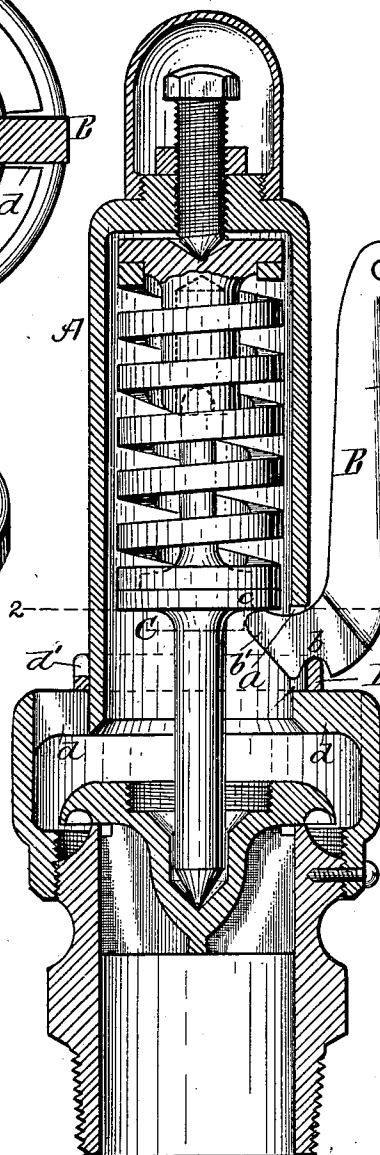


Fig. 1.

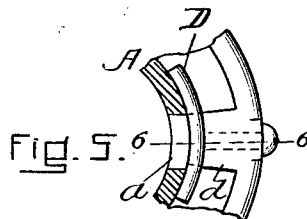


Fig. 5.

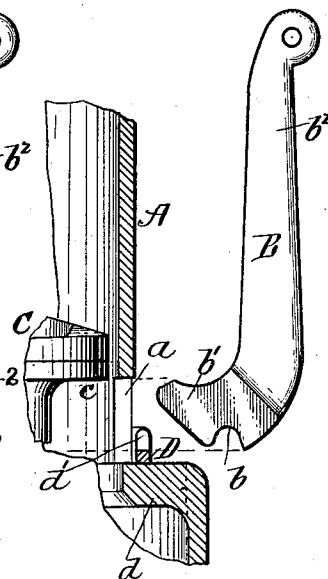


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES F. FERNALD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO STAR BRASS MANUFACTURING COMPANY, OF SAME PLACE.

SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 674,674, dated May 21, 1901.

Application filed March 18, 1901. Serial No. 51,615. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. FERNALD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Safety-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates especially to the manner of attaching a lever to a safety-valve and also to means for providing it with a fulcrum. The lever in question is that used occasionally for lifting the movable seat of the valve from the stationary seat for the purpose of testing the operative condition of the valve. It is desirable that such levers be readily and cheaply attached to the valve-case and that the fulcrum of such levers be located as near the weight as possible in order to increase their power.

The present invention consists in providing a means of attachment of the lever to the valve-case and also a fulcrum for the same by means of a bar or ring movable with respect to a hole in the valve-casing through which a portion of the lever extends and so as to open the same for the admission of the end of the lever and then to partially close the same to secure the lever to the case and also to serve as a fulcrum for the lever.

I will now describe the invention in detail in conjunction with the drawings, wherein—
Figure 1 is a view in vertical central section of a safety-valve equipped with my improvement. Fig. 2 is a view in horizontal section upon the dotted line 2 2 of Fig. 1. Fig. 3 is a view in perspective of an annular locking fulcrum-bar removed from the valve. Fig. 4 is a detail view, in vertical section, to show the way in which the bar is employed to permit the placing or removal of the lever. Figs. 5 and 6 are detail views to illustrate a modified form of the locking-bar fulcrum to which reference is hereinafter made.

Referring to the drawings, A represents a portion of the valve-case. a is a slot or recess therein.

B is the lever. It has the fulcrum b , the short arm b' , and the long arm b^2 . The short

arm is adapted to be passed through the slot or recess a beneath the shoulder c of the movable valve-stem C and when in position its fulcrum b is just outside the case.

D is the locking bar or ring. It is supported by and preferably is laterally movable upon the arms d of the case from a position at one side of the fulcrum of the lever to a position beneath the fulcrum, and when so moved it is locked to the case by a set-screw or in any other desired way. In Fig. 1 I have shown the locking-bar as an annular ring of a size to slip over the case A and rest upon the arms d , and I have shown it as provided with a recess d' , extending from its upper edge downward, which is adapted to be moved into line with the recess a in the case to permit of the insertion in or removal from the recess of the lever B and which after the lever has been so inserted is moved to bring any portion of the remainder of the ring under the fulcrum b of the lever to serve as its fulcrum point or rest, and the ring is then fastened to the case by a set-screw or in any other desired way.

In Fig. 5 the locking-bar is represented as a section of a ring and supported by one of the arms d of the valve, which has a recess for receiving it (see Fig. 6) and in which it may be laterally movable. The arm nearest the recess a in the case is the one usually taken for thus holding the bar. The bar is used in conjunction with the lever and the recess a in the same manner that the ring is employed—that is, it is moved to one side of the recess to permit the lever to be inserted or removed and then after the insertion of the lever moved laterally to secure it in place and provide it with a fulcrum-rest and is then locked in position by a locking-screw or in any other suitable way.

On some accounts I prefer the ring construction to the locking-bar, as the ring provides a fulcrum-rest any part of which may be used for supporting the lever.

I prefer that the lever be formed so that its fulcrum shall be at the inner end of a recess having a shoulder on each side which shall act to interlock with the attaching and fulcrum bar by extending below the upper surface thereof on each side, thus preventing

the lever from being removed when the bar is in position to act as a fulcrum. (See Fig. 1.)

It will be seen that the locking-bar serves to partially open or close the lever-recess *a* and also to act as a fulcrum for the lever.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a safety-valve, a safety seat-lifting lever, having a fulcrum, a valve-case having an aperture through which a portion of the lever extends to engage a movable part of the valve, and a movable attaching fulcrum-bar for the lever which partially closes the aperture,

2. In a safety-valve, the combination of a case having an aperture, a safety-lever, the fulcrum of which is adjacent to the aperture, one arm of which engages a portion of the movable valve, the other arm of which affords means by which the lever is operated, the said lever having a fulcrum with a shoulder upon each side, and a movable attaching-bar securable to the case of the valve and movable with respect to its aperture, whereby by its movement in one direction the aperture is enlarged and the lever rendered removable with respect to the case and whereby by its movement in another direction the lever is secured to the case and a fulcrum-rest provided for it.

3. The combination in a safety-valve, of a valve-case having an aperture, a valve-lifting lever extending through said aperture, and a lever-attaching and fulcrum-forming bar

movable laterally with respect to the aperture to secure the lever to the case and also to provide an extended fulcrum-rest, a portion only of which is used at a given time as a rest.

4. In a safety-valve, the combination of a case having an aperture, a lever extending through said aperture to engage the movable valve, and an annular locking and fulcrum bar surrounding the case, held by laterally-extending supports, the said ring having a recess in its upper surface adapted to be moved into line with the aperture to open it and permit the placing or removal of the lever, and a surface forming a fulcrum-rest for the lever.

5. In a safety-valve, the combination of a case having an aperture for a valve-lifting lever, a valve-lifting lever extending through said aperture to engage the movable valve, and an annular locking and fulcrum bar surrounding the case in line with the lower part of the aperture, held by laterally-extending supports of the case, the said bar having a recess extending from its upper surface adapted by movement of the bar to be brought into line with the aperture of the valve-case to open it for placing or removal of the lever, and the remainder of said bar acting when moved to partially close the recess and to form a continuous fulcrum-rest for the lever.

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