No. 802,922. PATENTED OCT. 24, 1905.

P. EVANS.

STRAINER.

APPLICATION FILED JAN. 6, 1905.

2 SHEETS—SHEET 1.

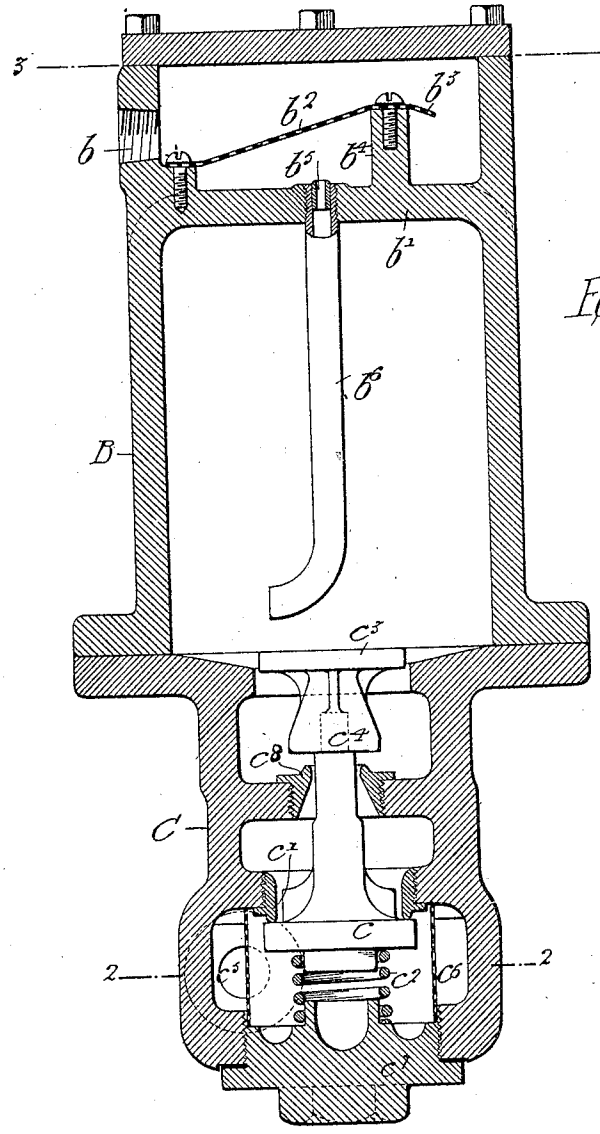

Fig. 1.

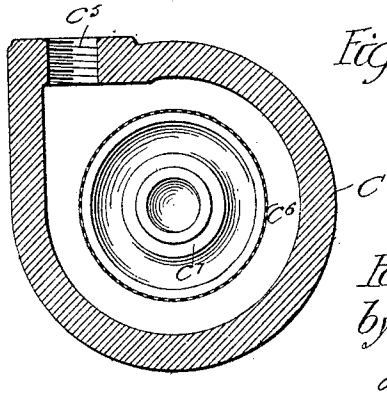

Fig. 2.

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2 SHEETS—SHEET 2.

Fig 3

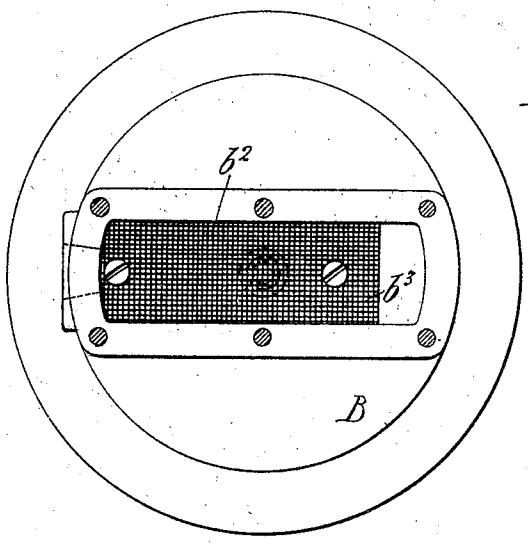


Fig. 4.

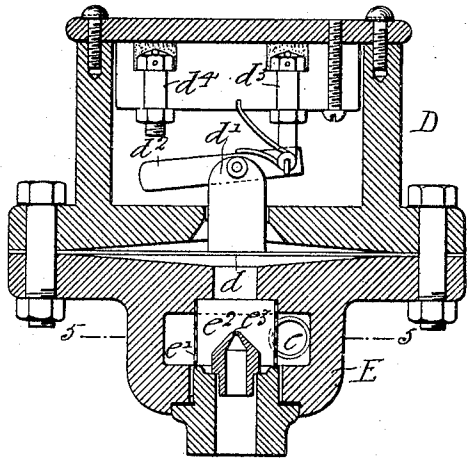
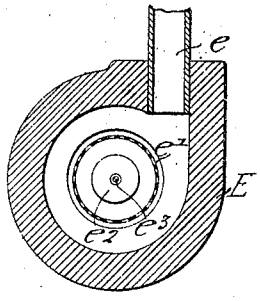


Fig. 5.



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UNITED STATES PATENT OFFICE.

POWELL EVANS, OF PHILADELPHIA, PENNSYLVANIA.

STRAINER.

No. 802,922. Specification of Letters Patent. Patented Oct. 24, 1905.

Original application filed June 4, 1904, Serial No. 211,201. Divided and this application filed January 6, 1905. Serial No. 239,893.

To all whom it may concern:

Be it known that I, POWELL EVANS, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Strainers, of which the following is a specification.

This invention relates to certain improvements in strainers, being a division of an application for Patent No. 211,201, filed by me June 4, 1904.

One object of my invention is to provide a strainer attachment for use in connection with fluid-actuated apparatus--such, for example, as automatically-acting alarm mechanism employed in connection with sprinkler or other fire-extinguishing systems—which shall be of such a nature as to prevent the possible clogging of the apparatus by means of pieces of solid material carried by the fluid. It is further desired to provide a strainer attachment and apparatus of the general class noted which while being of such a construction as to prevent lodgment upon it of particles of solid material shall provide a trap for catching such particles and preventing their continued circulation within that portion of the apparatus to which the fluid is admitted. These objects I attain as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of a flow-retarding device commonly used in connection with alarm mechanism for fire-extinguishing systems. Fig. 2 is a horizontal section of a portion of the device shown in Fig. 1, being taken on the line 2 2 of said figure. Fig. 3 is a plan view with the cap removed, taken on the line 3 3, Fig. 1, further illustrating the construction of the device. Fig. 4 is a vertical section of a form of circuit-closer commonly used in connection with fire-extinguishing systems and having applied to it my improved strainer attachment; and Fig. 5 is a horizontal section taken on the line 5 5, Fig. 4.

As set forth at length in the above-mentioned application for patent, of which the present application is a division, it is of the most vital importance, particularly in fire-extinguishing systems, that the various pieces of apparatus employed shall be ready for operation at all times and shall, moreover, be of such a nature and construction as to remain in operative condition even after the lapse of many years, and it is with the idea of increasing the certainty of operation of devices of the class noted that I have devised my invention.

Referring to Figs. 1 to 3, inclusive, of the above drawings, B and C are two casings held in any desired manner, the first being provided with an inlet b and having a partition b' dividing it into two parts, in the upper of which is a screen or strainer b^2, inclined to the line of the inlet b. This screen has a portion b^3, projecting over the recess or cavity formed by the upwardly-projecting rib or lug b^4, upon which the overhanging end of said screen is supported. There is an opening b^5 through the partition b', and in this is fixed a tube b^6, leading from the space under the screen b^2 to the interior of the casing B.

The casing C contains a valve c, normally held upon a seat c' by means of a spring c^2. The valve is provided with an upwardly-projecting stem, upon which is carried a head c^3, having a portion c^4 formed to coact with a second valve-seat c^8, so that when from any cause the valve is moved downwardly for a sufficient distance the portion c^4 of the head will rest upon said seat and close the passageway therethrough. The casing C is so constructed that it has a space or chamber below the valve c formed with an opening c^5, the line of which is preferably tangent to a circle drawn from the center line of the valve. Within this chamber and interposed between the valve c and the opening c^5 is a cylindrical screen c^6, whose surface preferably includes the circle to which the line of the said opening c^5 is tangent. The valve c, the screen c^6, and the spring c^2 are placed in position through an opening in the lower end of the casing C, which is normally closed by a threaded plug c^7.

When under operating conditions fluid is introduced into the casing C through the opening c^5, it will be seen that its direction of flow is such that it is practically impossible for pieces of solid material to gather upon and clog the openings through the strainer or screen c^6, since the rotary current of fluid outside of said screen will certainly wash from its surface any solid particles which might attempt to find lodgment thereupon on passing through the same. In designing this structure I preferably form the opening c^5 at some distance above the bottom of the cavity into which it opens, so that pieces of solid material may be permitted to gather below the line of flow of fluid passing through the opening, and thereby to a greater or less extent be held out

of the active circulation of the fluid outside of the screen c^6.

Referring to Figs. 4 and 5, I have shown my invention as applied to a circuit-closer employed to actuate an electric alarm when certain fluid-actuated apparatus employed in connection with fire-extinguishing systems is operated. In this case there are two castings D and E, usually connected together by bolts, as shown, and having upon them a diaphragm d, engaging with a plunger d', pivotally attached to a switch-blade d^2. This blade is so placed that under certain conditions of the diaphragm it is caused to complete an electric circuit between two terminals d^3 and d^4, and so actuate certain apparatus, which, as it forms no part of the present invention, is not illustrated. Entering the casing E is a pipe e, the line of which, similarly to that of the opening c^5 in Figs. 1 and 2, is substantially tangent to the surface of a cylindrical screen e'. It will be seen that the space within this screen communicates with the under side of the diaphragm d and also has entering it a nozzle e^2, provided with relatively small openings e^3 for the outflow of fluid. As before, liquid passing through the opening e will strike the cylindrical surface of the screen e' at such an angle as to effectually remove therefrom and also prevent the lodgment of particles of solid matter.

I claim as my invention—

1. A casing provided with an inlet and an outlet and having fixed within it a substantially cylindrical strainer of reticulated material interposed between said inlet and outlet and having an unobstructed annular space around it, the surface of said strainer being substantially tangential to the line of flow of fluid passing through one of said openings in the casing, substantially as described.

2. The combination of a casing having within it a substantially cylindrical screen of reticulated material so placed as to have an unobstructed annular space around it, there being an outlet to said screen in communication with the space within the same and an inlet placed to deliver fluid upon said screen in a line inclined to the surface thereof, substantially as described.

3. The combination of a casing having within it a substantially cylindrical screen of reticulated material so placed as to have an unobstructed annular space around it, there being an outlet to said screen in communication with the space within the same and an inlet placed to deliver fluid upon said screen in a line substantially tangential to the surface thereof, substantially as described.

4. The combination of a casing having a valve-seated opening between two of its portions, a valve for said opening, a substantially cylindrical strainer of reticulated material having its interior in communication with the valve-opening and having around it an unobstructed annular space, there being an inlet to the casing in communication with the space outside of said strainer, substantially as described.

5. A casing having within it a conduit and a screen of reticulated material inclosing said conduit, said casing being formed to provide an unobstructed annular chamber around said screen and being provided with an opening placed to deliver fluid in such a line that it is caused to circulate parallel with the surface of the screen within said annular chamber, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

POWELL EVANS.

Witnesses:
WM. E. WATERS,
MAURICE G. THOMAS.