C. H. FOSTER.

VALVE.

APPLICATION FILED MAY 16, 1908.

913,632. Patented Feb. 23, 1909.

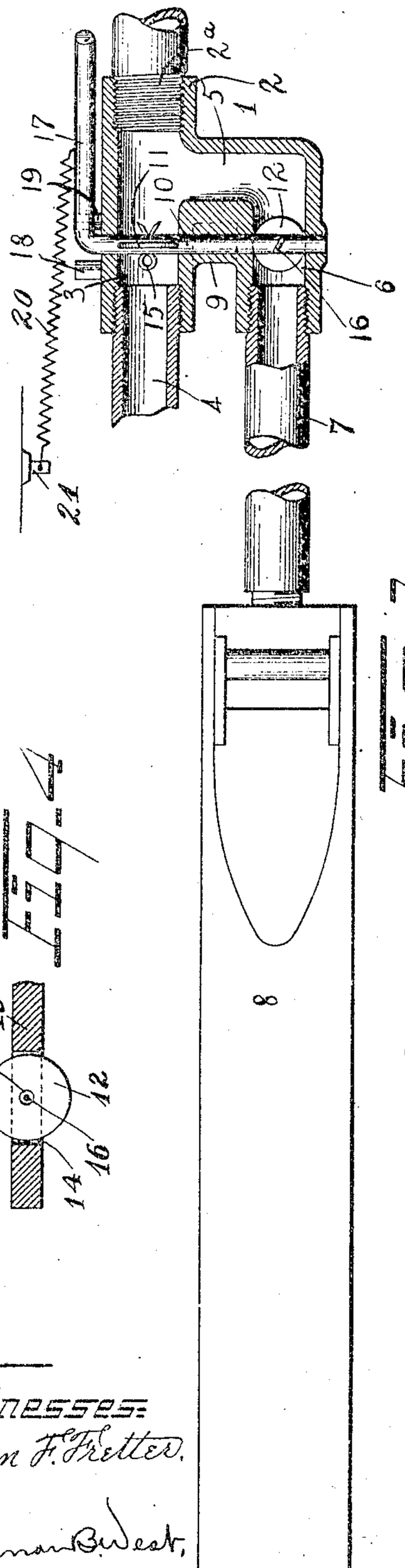

FIG. 1.

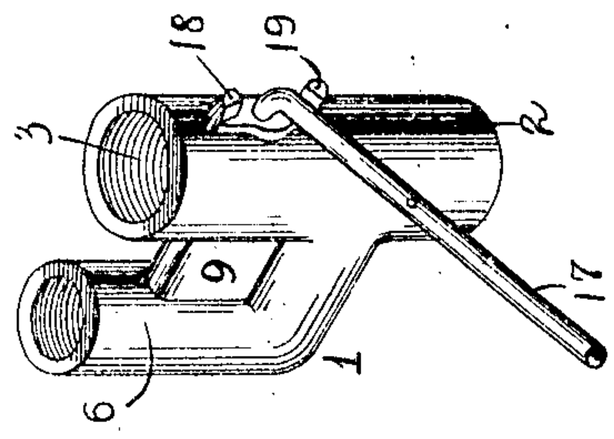

FIG. 2.

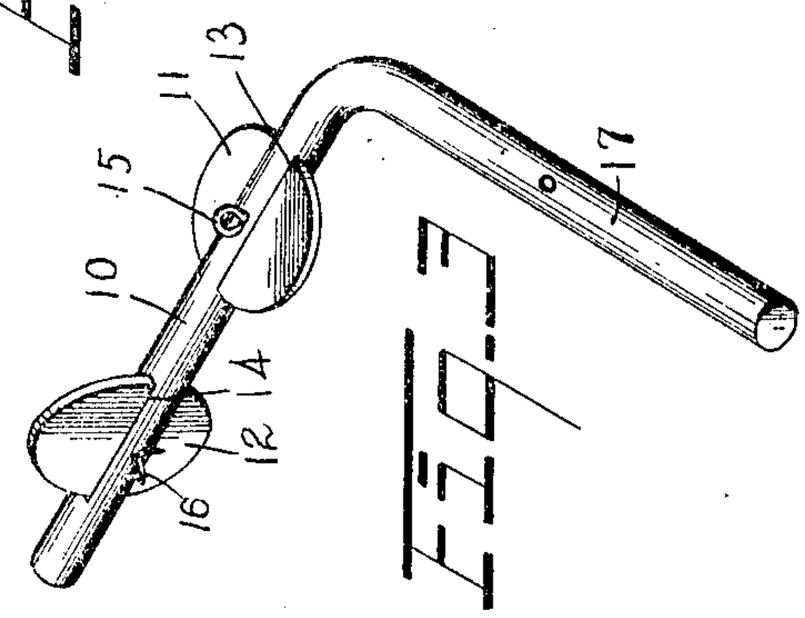

FIG. 3.

FIG. 4.

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UNITED STATES PATENT OFFICE.

CLAUD H. FOSTER, OF CLEVELAND, OHIO.

VALVE.

No. 913,632. Specification of Letters Patent. Patented Feb. 23, 1909.

Application filed May 16, 1908. Serial No. 433,163.

To all whom it may concern:

Be it known that I, CLAUD H. FOSTER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to valves, and more particularly to valves which are applicable as "cut-out" valves for use with engines to divert the exhaust directly into the atmosphere and for the operation of horns from the exhaust of an engine, especially horns of the type shown in my patents 802,386 and 808,530, issued October 24th, 1905 and December 26th, 1905, respectively.

The object of this invention is to provide a particularly simple but efficient valve construction by means of which the exhaust may be discharged in the manner above referred to and which may be operated easily and, when used with an explosive engine, without the production of sufficient back pressure to stop such engine.

A further object of the invention is to provide a valve construction which may be very easily assembled and which may be quickly adapted for various conditions of use.

Generally speaking, the invention may be defined as consisting of the combinations of elements embodied in the claims hereto annexed and illustrated, in one embodiment, in the drawings forming part hereof, wherein—

Figure 1 represents a view, partly in elevation and partly in section, showing a valve constructed in accordance with my invention applied to the exhaust pipe of an explosive engine, with a horn applied to the pipe which receives the exhaust when the muffler is cut out; Fig. 2 represents a perspective view of the valve fitting; Fig. 3 represents an enlarged perspective detail of the valve disks and operating stem; and Fig. 4 represents a sectional detail of the valve stem and one of the valve disks, illustrating the manner in which the valve disks are mounted in said stem.

Describing the parts by reference characters, 1 represents the valve fitting, the same comprising a casing having an inlet connection 2 and an outlet connection 3 arranged in a straight line to form a through passageway.

2ª denotes an inlet pipe, which is shown as threaded into connection 2. This pipe may lead from an explosive engine.

4 denotes an outlet pipe, shown as threaded into the connection 3 and leading to a muffler (not shown).

The fitting 1 is provided with a branch passageway 5 extending at right angles from the through passageway connecting the inlet 2 and outlet 3. The branch passageway 5 extends at right angles to the former passageway for a comparatively short distance and then extends substantially parallel with such passageway, as shown at 6. Preferably, the end of outlet connection 3 and the end of branch 6 are in substantially the same plane. Branch 6 may discharge directly into the atmosphere, but is provided with a thread for the reception of a pipe 7, which pipe may be connected to a horn 8 through which branch 6 may discharge indirectly into the atmosphere. The horn is preferably of the construction shown in my Patents Nos. 802,386 and 808,530 previously referred to.

9 denotes a web, preferably integral with the fitting and connecting the outlet branches 3 and 6.

10 denotes a valve stem which extends transversely of the branches 3 and 6 and the passageways therein, being journaled in apertures formed in the walls of said branches and in a bore formed in the web 9. This stem is provided with a pair of disk valves 11 and 12, the former being located within the passageway connecting 2 and 3 and the latter being located in the passageway in branch 6. These valves are arranged at right angles to each other and are of a size to close their respective passageways when swung across the same. As a convenient and efficient means for securing said valves to their common operating stem, they are mounted in slots 13 and 14 provided in the valve stem and arranged at right angles with respect to each other, the valve disks being secured in place by cotter pins 15 and 16, respectively, which extend through the valve stem and through the valve disks. As it is difficult to locate the bore for the valve stem so that the latter will cross the branches 3 and 6 at the exact centers thereof, I bore the holes through

the valve disks somewhat larger than the diameter of the cotter pins, so that the disks can adjust themselves to the bores of the branches. This construction is illustrated in Fig. 4, wherein the valve disk 12 is shown as provided with a perfora ion 12ª considerably larger than the pin 16. The valve stem projects through the fitting and is provided with an operating handle 17 bent at substantially right angles to said stem. The fitting is provided with a pair of stop lugs 18 and 19, located on opposite sides of the valve stem and having reversely inclined faces which are adapted to engage the angular extension 17 of said stem and limit the rotation thereof to a quarter revolution, the parts being so arranged that, when the extension 17 is in engagement with the beveled face of 18, valve 11 will be in full open position and valve 12 will be in full closed position and, when said extension is in engagement with the beveled face of stop lug 19, valve 11 will be in full closed position and valve 12 will be in full open position.

From the foregoing description, the operation of my device will be clear. When operating under ordinary conditions, the valve 12 will be closed, and the valve 11 will be open. By rotating the extension 17 toward stop 18, more or less of the exhaust will be diverted into branch 6. When the parts are in the positions shown in Fig. 1, substantially all of the exhaust will be diverted into the branch 6 and the muffler will be cut out. A spring 20 tends to hold extension 17 against the lug 18 and keep the muffler connection open and the outlet branch 6 closed. This spring is connected at one end to the extension 17 and at its other end to any convenient point of attachment, as to a lug 21 carried by the vehicle frame. Under certain conditions, it will be desirable to use my fitting simply as a relief valve, in which case the valve disk 11 may be removed and valve disk 12 be employed alone. The resistance or back pressure produced by the muffler will be sufficient to divert the greater part of the exhaust into the branch 6 without the necessity for employing the valve 11. The construction shown and described herein renders such removal of valve 11 extremely simple and convenient.

It will be apparent that I have produced an extremely simple and convenient device whereby the exhaust gases may be discharged into the muffler or may be diverted at will into the atmosphere (whether directly, or indirectly through the horn 8). Furthermore, the device may be readily and conveniently assembled and disassembled. A further advantage of my construction resides in the fact that the valves 11 and 12 are balanced, so that practically no resistance is offered thereby to the rotation of the valve stem. Furthermore, the arrangement whereby one valve opens as the other closes prevents undue back pressure from being thrown upon the engine by operating the valve stem.

Having thus described my invention, I claim:

1. A valve fitting provided with a passageway and a branch communicating with said passageway, a valve stem, a valve disk in said passageway, and a valve in said branch, said valve and said disk being supported by said stem, said disk being so arranged that the passageway will be closed when the branch is open, and vice versa.

2. The combination, with the exhaust pipe of an engine, of a valve fitting connected to said pipe, said fitting having an inlet and a branched outlet, a valve stem extending across both branches of the outlet, and a valve disk in each of said branches supported by said stem, said disks being so arranged that one of said branches will be closed when the other is open, and vice versa.

3. The combination, with a fluid supply pipe, of a valve fitting connected thereto, said fitting having a passageway communicating with said pipe and a branch passageway communicating with the former passageway and extending substantially parallel thereto, a valve in each of said passageways, and a common stem for said valves, said valves being so arranged that one passageway will be open when the other is closed, and vice versa, one of said valves being a disk.

4. The combination, with a fluid supply pipe, of a valve fitting having a passageway communicating with said pipe and a branch passageway communicating with the former passageway and extending substantially parallel thereto, a valve stem extending across said passageways, and valve disks carried by said stem, said disks being arranged at right angles to each other.

5. The combination, with a fluid supply pipe, of a valve fitting having a passageway communicating with said pipe and a branch passageway communicating with the former passageway and extending substantially parallel thereto, a valve stem extending across said passageways, and a valve disk removably carried by said stem in each of the said passageways.

6. The combination, with a fluid supply pipe, of a valve fitting having a passageway communicating with said pipe and a branch pasageway extending substantially parallel to the former passageway and communicating therewith, a valve stem extending across said passageways, a valve disk carried by said stem in each of said passageways, the disk in one of said passageways being removably fitted to the stem.

7. The combination, with a fluid supply pipe, of a valve fitting having a passageway communicating with said pipe and a branch

passageway communicating with the former passageway and extending substantially parallel thereto, a valve stem, a valve in each passageway connected to said stem, said valves being arranged at right angles to each other, and stops carried by said fitting and arranged to limit the rotation of the valve stem to a quarter revolution.

8. A valve fitting having a passageway and a branch passageway communicating with the former passageway and substantially parallel therewith, a web uniting said passageways, a valve stem extending across said passageways and through said web, and valves carried by said stem and located in said passageways.

9. A valve fitting having a passageway and a branch passageway communicating with the former passageway and substantially parallel therewith, a valve stem extending across both of said passageways and having a valve in each of the same, an operating extension for said valve stem extending substantially at right angles therefrom, and a pair of stops on said casing on opposite sides of the valve stem and adapted to engage said extension to limit the rotation thereof.

10. A valve fitting having a passageway and a branch passageway communicating with the former passageway and the branches whereof are substantially parallel therewith, a valve stem extending across both passageways and having in each a valve, said valves being arranged at right angles to each other, an operating extension for said valve stem located outside of said casing and extending substantially at right angles to said stem, and a pair of reversely inclined stops located on opposite sides of the valve disk stem and adapted to engage said extension and limit the rotation thereof to a quarter revolution.

11. A valve fitting comprising a casing having a passageway, a valve stem extending across said passageway, said stem being provided with a slot, a valve disk mounted in said slot, and means for removably securing said valve in place in said slot.

12. A valve fitting having a passageway, a valve stem extending across said passageway, said stem being provided with a slot within said passageway, a valve disk mounted in said slot, and a cotter pin extending through said disk and said stem.

13. A valve fitting having a passageway and a branch passageway communicating with the former passageway and substantially parallel therewith, a valve stem extending across both of said passageways and having in each a slot, said slots being arranged at right angles to each other, and a valve disk removably fitted in each of said slots.

14. A valve fitting comprising a casing having a passageway and a branch communicating with said passageway, a valve in said passageway, a valve in said branch, a single stem for both of said valves, an operating extension for said stem, stops arranged to engage said extension and so limit the movement thereof that one of said valves will be open when the other is closed and vice versa, and a spring tending to hold said extension against one of said stops.

15. A valve fitting comprising a casing having a passageway for fluid, a valve stem extending across said passageway, a disk valve having an aperture through the central portion thereof, and a pin of smaller diameter than said aperture and extending therethrough and securing said disk to said stem.

16. A valve fitting comprising a casing having a passageway and a branch communicating with said passageway and extending substantially parallel therewith, a valve stem extending across said passageway and said branch, a valve disk for said passageway, a valve disk for said branch, and means for securing said disks to said stem, said means comprising a pin extending through each disk and connected to said stem, the aperture for the pin in each disk being of greater diameter than said pin.

17. A valve fitting having a passage-way and a branch passage way communicating with the former passage-way, a valve stem extending across said passage-ways, and a valve disk mounted on said stem in each of said passage-ways so as to permit a limited relative movement between the disk and the stem.

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

CLAUD H. FOSTER.

Witnesses:
MALCOLM HARD,
J. B. HULL.