(No Model.) 3 Sheets—Sheet 1.

C. J. GUSTAFSON.

BOILER BLOW-OFF VALVE.

No. 480,723. Patented Aug. 16, 1892.

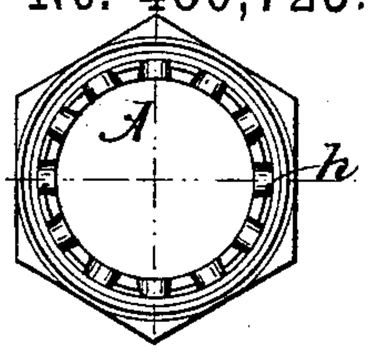

Fig. 6.

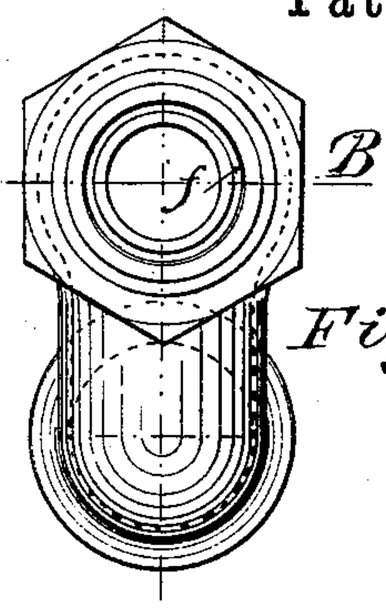

Fig. 5.

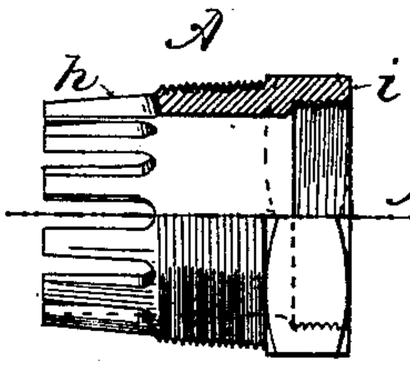

Fig. 3.

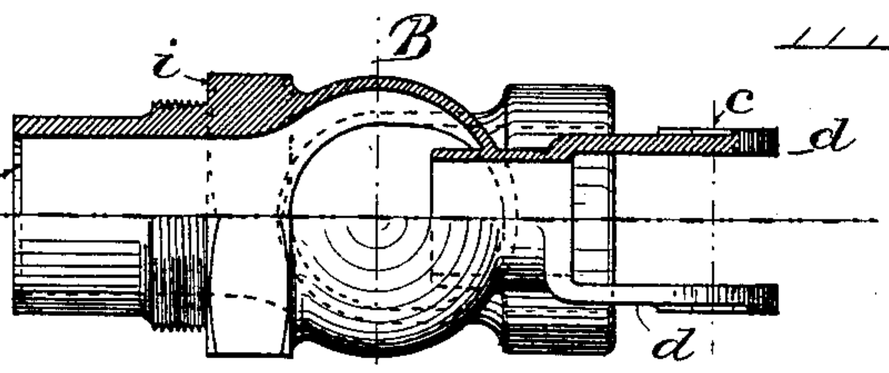

Fig. 4.

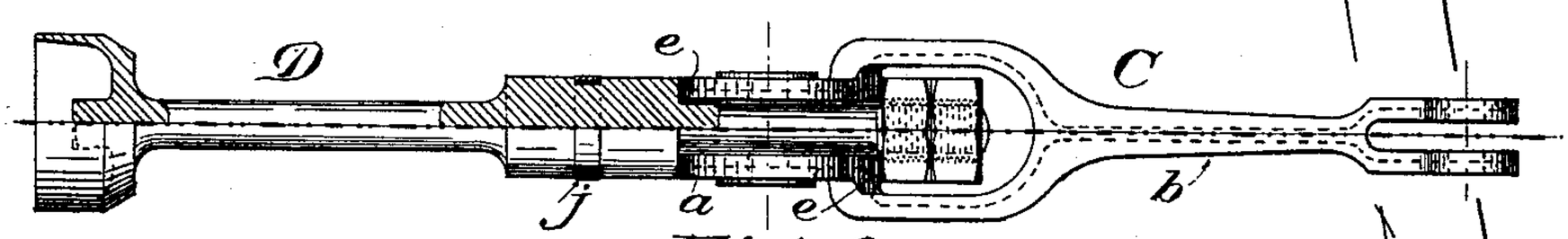

Fig. 2.

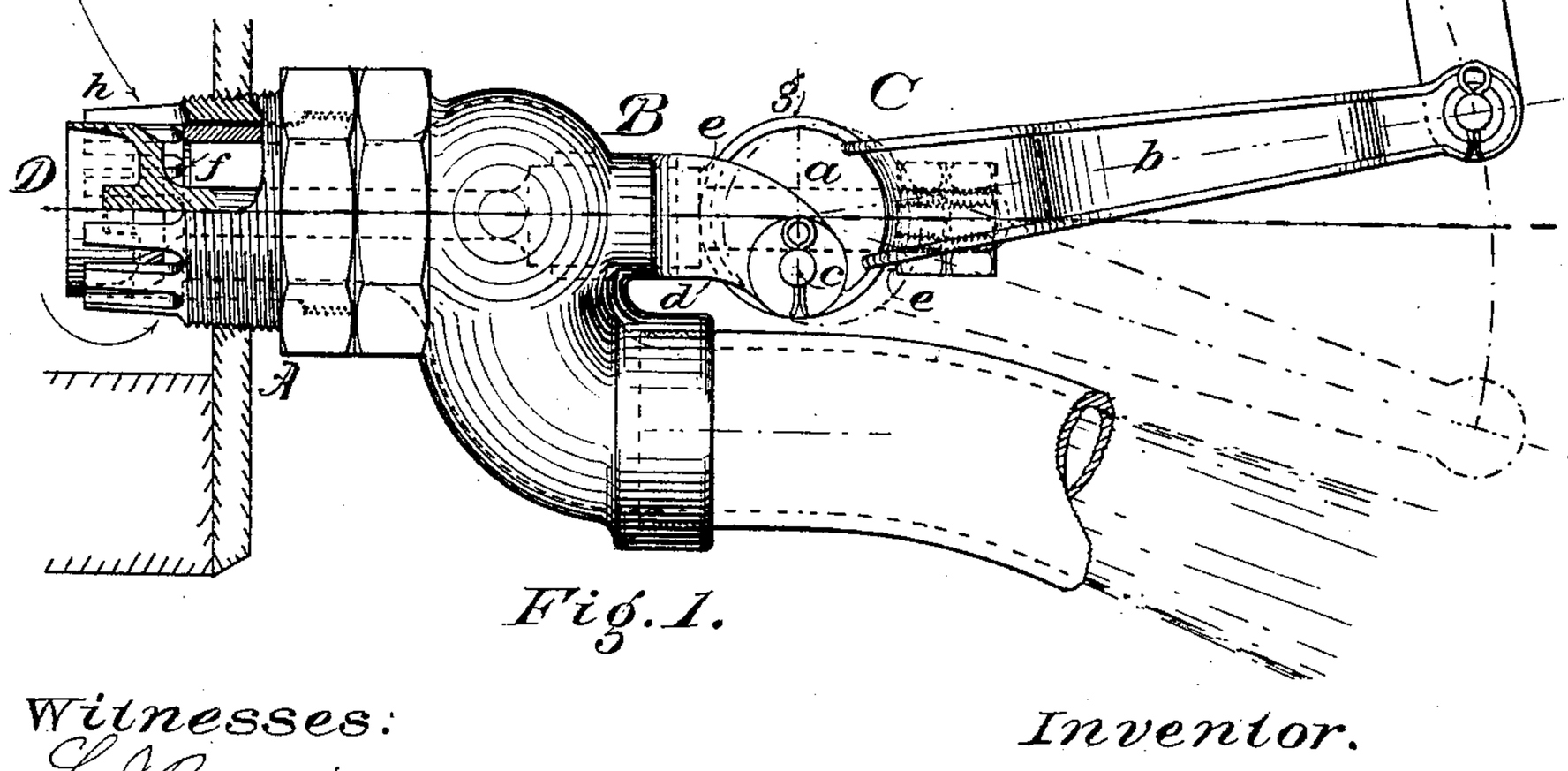

Fig. 1.

Witnesses:
L. J. Morris
H. M. Minto.

Inventor.
Chas. J. Gustafson

(No Model.) 3 Sheets—Sheet 2.

C. J. GUSTAFSON.

BOILER BLOW-OFF VALVE.

No. 480,723. Patented Aug. 16, 1892.

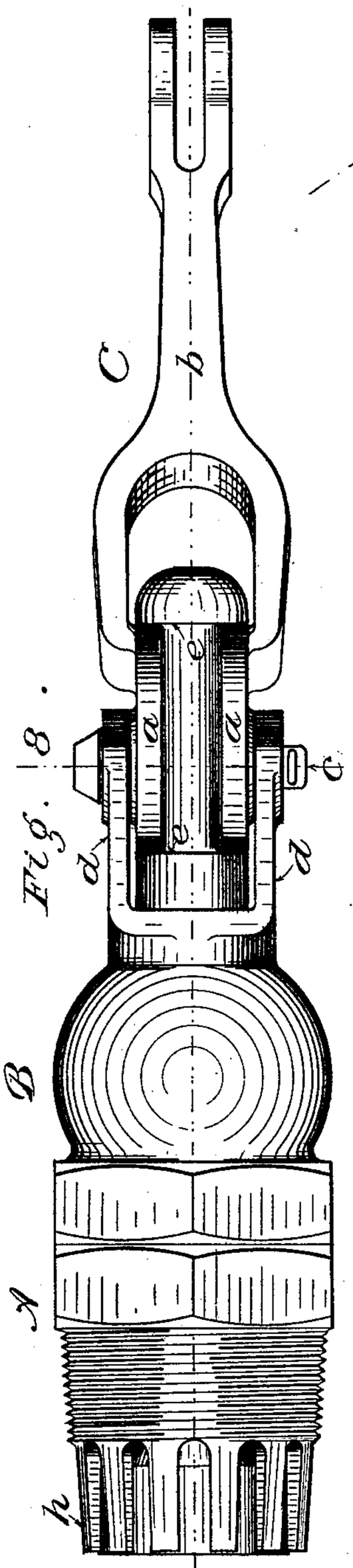

Fig. 1.

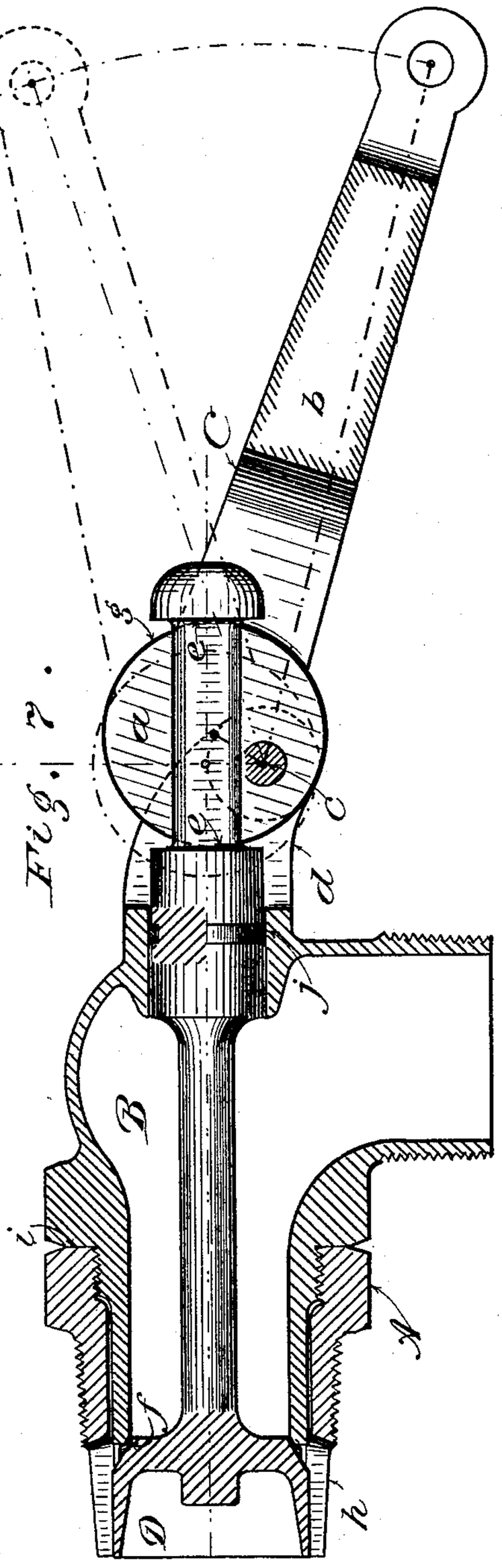

Fig. 2.

Witnesses:
L. J. Morris
H. M. Minto

Inventor:
Chas. J. Gustafson

(No Model.) 3 Sheets—Sheet 3.

C. J. GUSTAFSON.

BOILER BLOW-OFF VALVE.

No. 480,723. Patented Aug. 16, 1892.

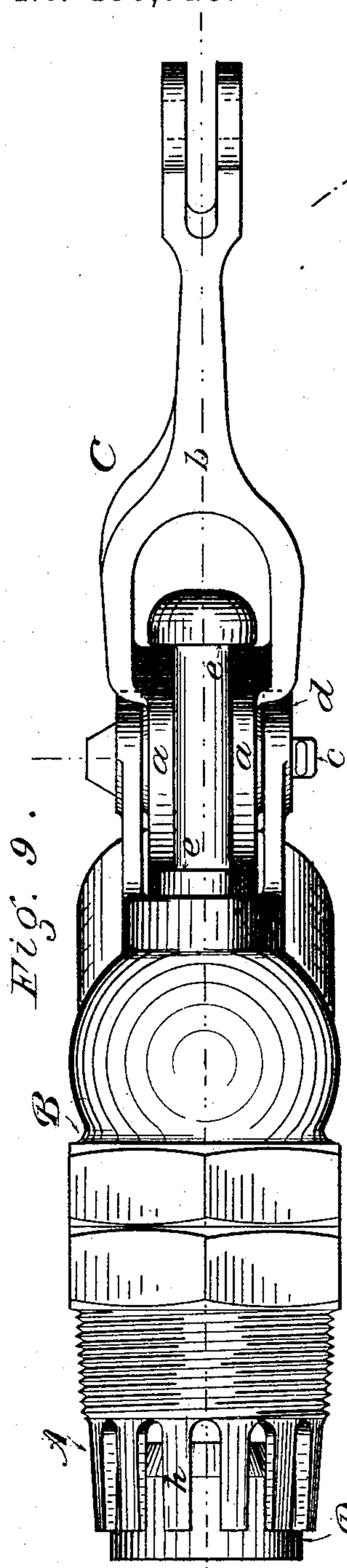

Fig. 9.

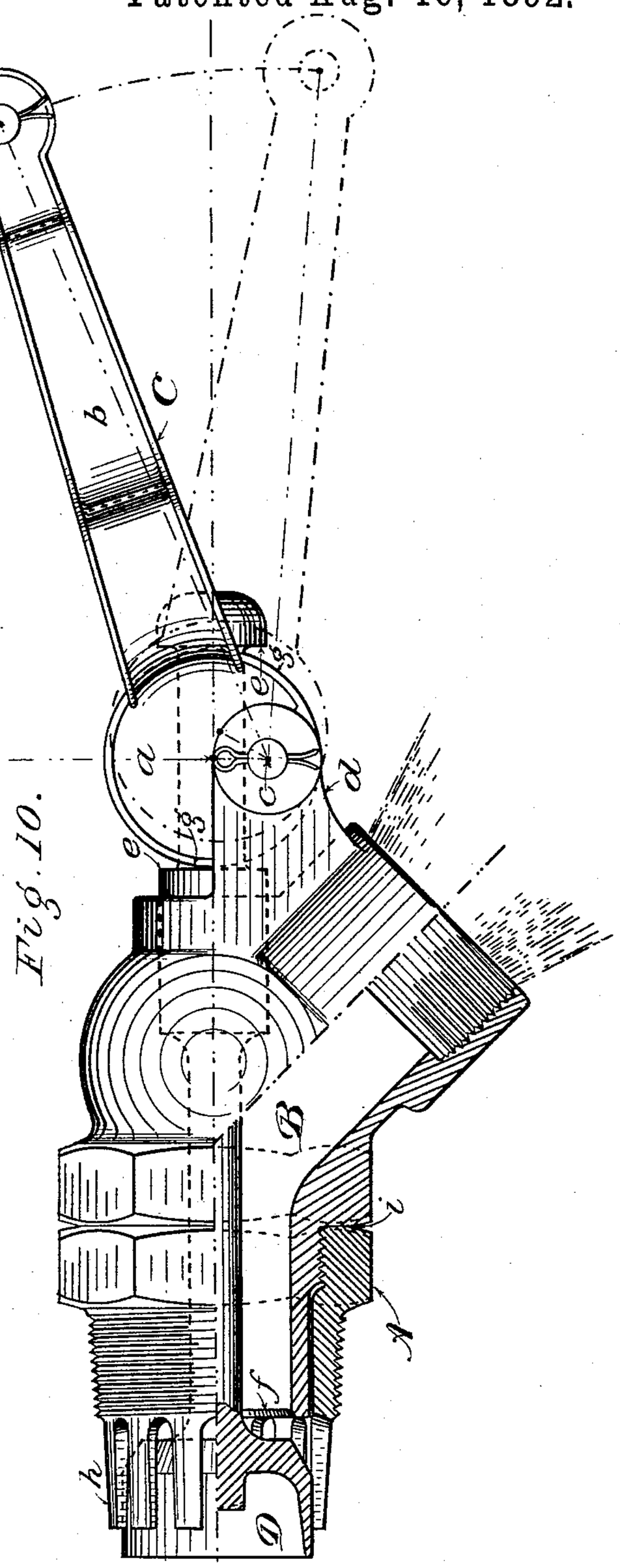

Fig. 10.

Witnesses:
L. J. Morris
H M Minto

Inventor:
Chas. J. Gustafson.

UNITED STATES PATENT OFFICE.

CHARLES J. GUSTAFSON, OF MOBILE, ALABAMA.

BOILER-BLOW-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 480,723, dated August 16, 1892.

Application filed September 11, 1891. Serial No. 405,444. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. GUSTAFSON, a citizen of the United States, residing at Mobile, in the county of Mobile and State of Alabama, have invented a new and useful Boiler-Blow-Off Valve, of which the following is a specification.

This valve is especially designed as a means of discharge for mud and other sediment deposited in locomotive-boilers, its features being such that it can be readily operated at frequent intervals—as, for instance, just after steam is shut off from the engine or other period of agitation of the water in the boiler, when the mud is more or less in a state of suspension before it has time to settle and incrustate the heating-surfaces.

The objects in a blow-off valve that I claim to have obtained with this requirement in view, therefore, are as follows: first, ease and certainty of operation; second, prevention of leakage when the valve is closed; third, prevention of "choking" or "stopping up" of its passages when valve is open; fourth, safety from cracking or leakage due to freezing in cold climates; fifth, safety from accidental discharge of scalding water, as in the case of a breakage of valve at the joint in collision or otherwise. These objects are obtained by the construction shown in Figs. 1 to 10 of the accompanying drawings, in which—

Figure 1 is a general side view showing valve complete as applied to a locomotive. Fig. 2 is a detail view of the valve, showing its engagement with the eccentric-lever. Fig. 3 is a detail view of the sleeve or combination valve-guide and strainer. Fig. 4 is a detail plan and half-section of valve-body, showing independent seat, &c. Fig. 5 is an end view of the valve-body. Fig. 6 is an end view of the sleeve. Fig. 7 is a longitudinal section of the same valve with right-angle discharge-passage designed for use under the cylindrical part of a boiler. Fig. 8 is a plan of the same valve complete with eccentric-lever in position closed. Fig. 9 is a plan of the same valve with discharge-passage at an angle. Fig. 10 is a general side view and partial section showing the most direct discharge.

Similar letters refer to similar parts throughout the different views.

This "boiler-blow-off valve" consists, essentially, of the sleeve or combination valve-guide and strainer A, the valve-body B, the eccentric-lever C, and the valve D.

The eccentric-lever C is composed of a pair of eccentrics *a*, joined to the arm *b* of the lever, which is fulcrumed at *c* in the jaws or brackets *d* of the body B. In operation the periphery *g* of the eccentrics *a* bear on the surfaces *e* of the valve-stem D with an effect equal to the leverage obtained by the throw or eccentricity of the eccentrics *a*, as the short arm of a lever fulcrumed at *c*. Hence "ease" and "certainty" of operation in opening and closing of valve are obtained.

The body B is screwed into the sleeve A and is slightly smaller in diameter than the inside of the sleeve A, the joint being formed on the surfaces *i*. The valve-seat *f* is formed on the end of the cylindrical part of the body B, which is extended beyond the thread by which it is screwed into the sleeve A a sufficient distance to prevent its true circular form from being distorted by the irregularities of the sleeve A, which is more or less distorted and squeezed out of "round" in conforming to the hole in the boiler, into which it is screwed. The valve-seat *f* is therefore independent of the distortions of both the sleeve A and the body B, although being in one piece with the latter. Hence "leakage" of the valve is prevented. This arrangement also obviates the necessity for disturbing the joint in the boiler when for any reason it becomes necessary to remove the valve. The sleeve A also answers the double purpose of "valve-guide" and "strainer" by means of its slotted extension *h*. These slots are formed with their areas enlarging toward the inside, and the discharge-passage leading from the strainer is comparatively direct and free from obstructing surfaces. Hence choking is prevented.

The packing-ring *j* on the valve-stem is used only where a slight leakage at that point when the valve is open would be objectionable. It is therefore ordinarily dispensed with.

The fourth and fifth objects are attained by locating the valve inside the line of the boiler-sheet and arranging the valve to close with the pressure, thus adapting it to use in positions other than that shown—as, for in-

stance, under the cylindrical part of a boiler, as no weighted lever is required.

What I claim, therefore, and desire to secure by Letters Patent, is—

1. In a boiler-blow-off valve seating with the pressure, the eccentric-lever C, mounted on its fulcrum *c* in the brackets *d* of the body B, operating the valve D positively in both directions—opening and closing—applied in combination with the independent valve-seat *f* and the sleeve or combination valve-guide and strainer A.

2. In a boiler-blow-off valve seating with the pressure, the sleeve or combination strainer A, applied in combination with the body B, having the independent valve-seat *f*, and the eccentric-lever C, operating the valve D, all combined and arranged substantially as shown and described in this specification.

3. In a valve closing with the pressure, the independent valve-seat *f*, forming one piece with the body B and applied in combination with the independent valve-guide and strainer or sleeve A, the eccentric-lever C, and the valve D, all combined and operated as described in this specification.

CHAS. J. GUSTAFSON.

Witnesses:
L. J. MORRIS,
H. M. MINTO.