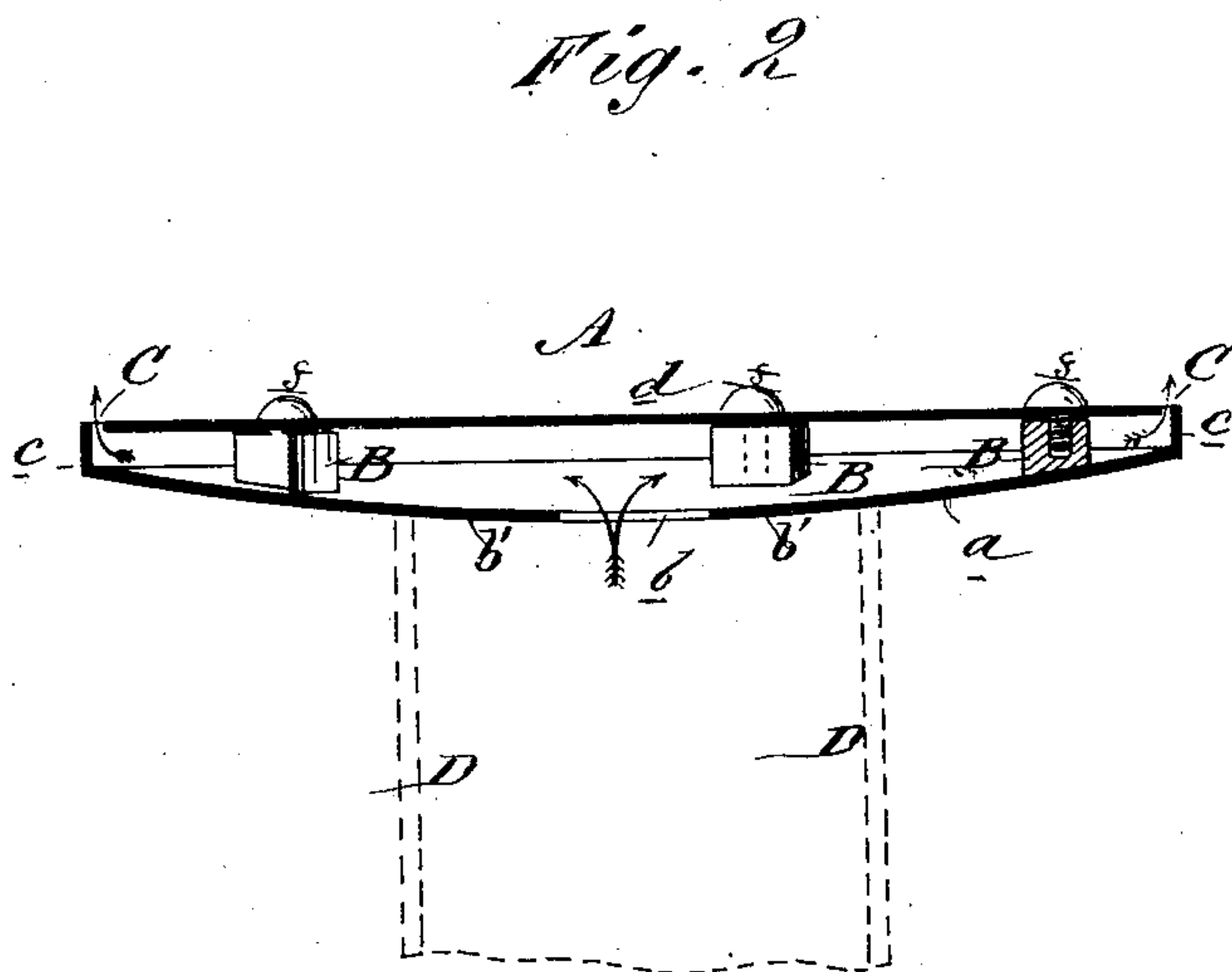
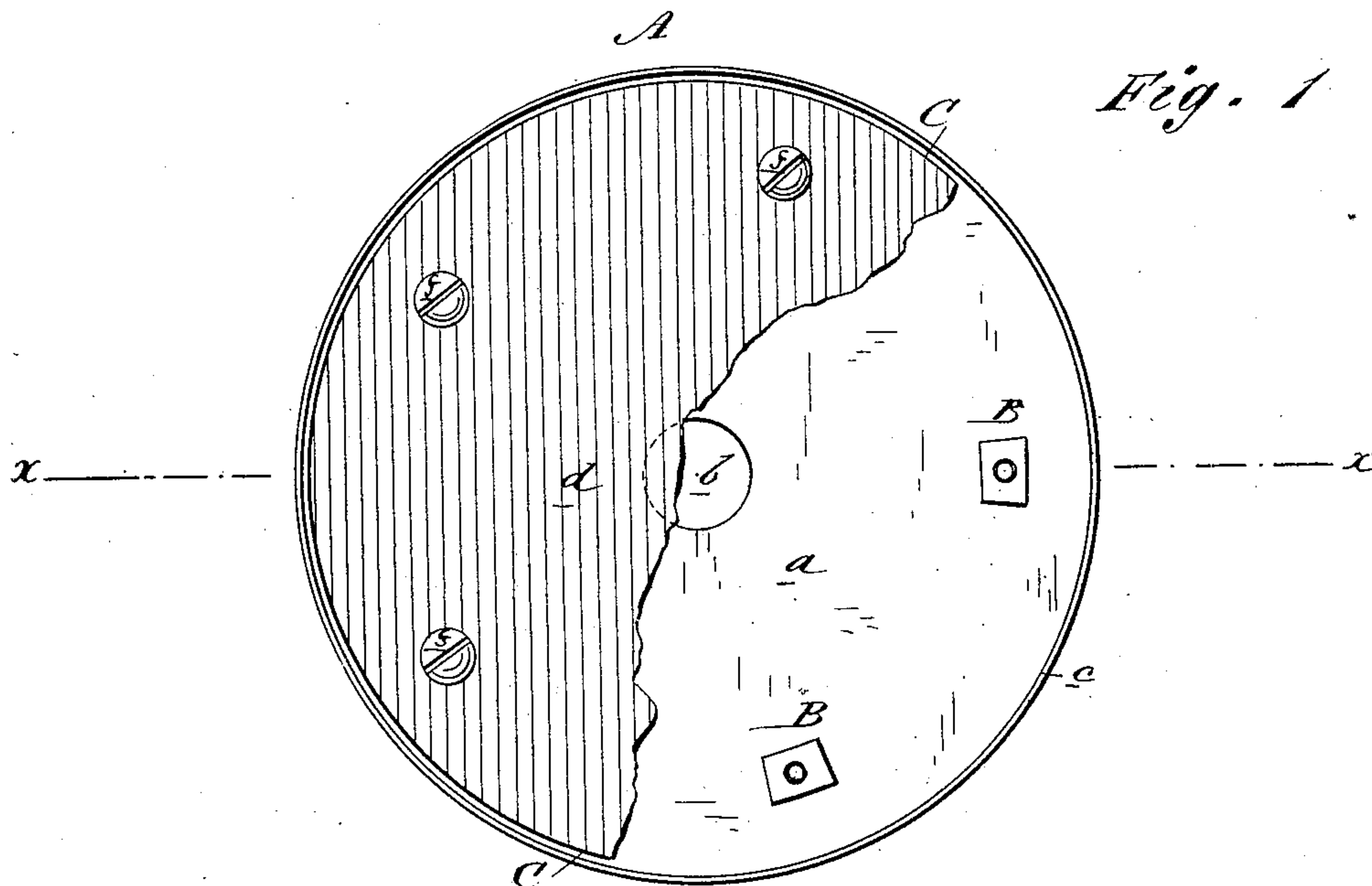


G. RICHARDS.
Steam-Muffler.

No. 227,302.

Patented May 4, 1880.



WITNESSES:

C. Neveu
C. Sedgwick

INVENTOR:

G. Richards

BY

Muntz

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE RICHARDS, OF ROXBURY, MASSACHUSETTS.

STEAM-MUFFLER.

SPECIFICATION forming part of Letters Patent No. 227,302, dated May 4, 1880.

Application filed December 30, 1879.

To all whom it may concern:

Be it known that I, GEORGE RICHARDS, of Roxbury, Suffolk county, and State of Massachusetts, have invented a new and Improved Steam-Muffler, of which the following is a specification.

Figure 1 is a plan view of the device with a portion broken away, the better to exhibit the parts; and Fig. 2 is a transverse sectional elevation of the device on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to muffle and decrease the noise made by the escape of steam from locomotive and other boilers.

The invention consists of a muffler composed of two plates of a diameter very much greater than the diameter of the pipe through which the steam escapes from the boiler, so that the steam has room to expand before escaping to the outer air, its expansion effectually deadening the noise caused by the passage through the contracted escape-pipe.

The lower plate is a circular vessel with a raised rim and a central perforation, having fixed on its upper surface several small studs or projections, to which is fastened a circular plate of less diameter than the vessel itself, so that an annular space is formed between the periphery of the top plate and the rim of the dish-shaped vessel.

In the drawings, A represents the muffler, consisting of the dish-shaped vessel *a*, provided with a central perforation, *b*, of smaller diameter than the steam-pipe to which it is attached, so as to leave an annular plate, *b'*, around the opening, against which the column of steam first strikes, and thereby is broken up before passing into the vessel and expanding-chamber *a*, and a raised rim, *c*, and having fixed on its inner and concave face the studs B, that project upward about on a level with the edge of the rim *c*.

d is a circular plate of less diameter than

the vessel *a*, and is secured by screws *f* or otherwise, fastened on the studs B in a horizontal position, as shown, so that an annular space, C, is formed between its periphery and the rim *c* of the vessel *a*.

The dotted lines D D represent a pipe, drum, or pot surrounding the safety-valve of a locomotive, and to the top of this drum or pipe the muffler A is bolted, screwed, cast, or otherwise secured.

Steam issuing from the safety-valve inclosed within the pipe or drum D will pass up through the hole *b* of the muffler, and, striking the plate *d*, will spread and pass out through the annular space C, which annular space should be of about equal area with the openings of the safety-valve.

By this device the usual noise of the steam escaping from the safety-valve is muffled or greatly decreased by reason of the steam being made to act or impinge upon a larger atmospheric area when issuing from the annular opening C than when issuing from the safety-valve or the pipe or drum D in a compact body.

I do not confine myself to the exact form and construction of any of the parts of the within-described muffler, as they may be varied without departing from my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The steam-muffler herein described, consisting of the plate *a*, having annular flange or rim *c*, and the central opening, *b*, the latter made smaller than the steam-pipe, so as to form the annular plate *b'*, against which the steam strikes, in combination with the plate *d*, secured to the lower plate and forming the annular opening C, constructed and operating substantially as specified.

GEORGE RICHARDS.

Witnesses:

BENJ. ANTHONY,
ANTHONY B. SHAW.