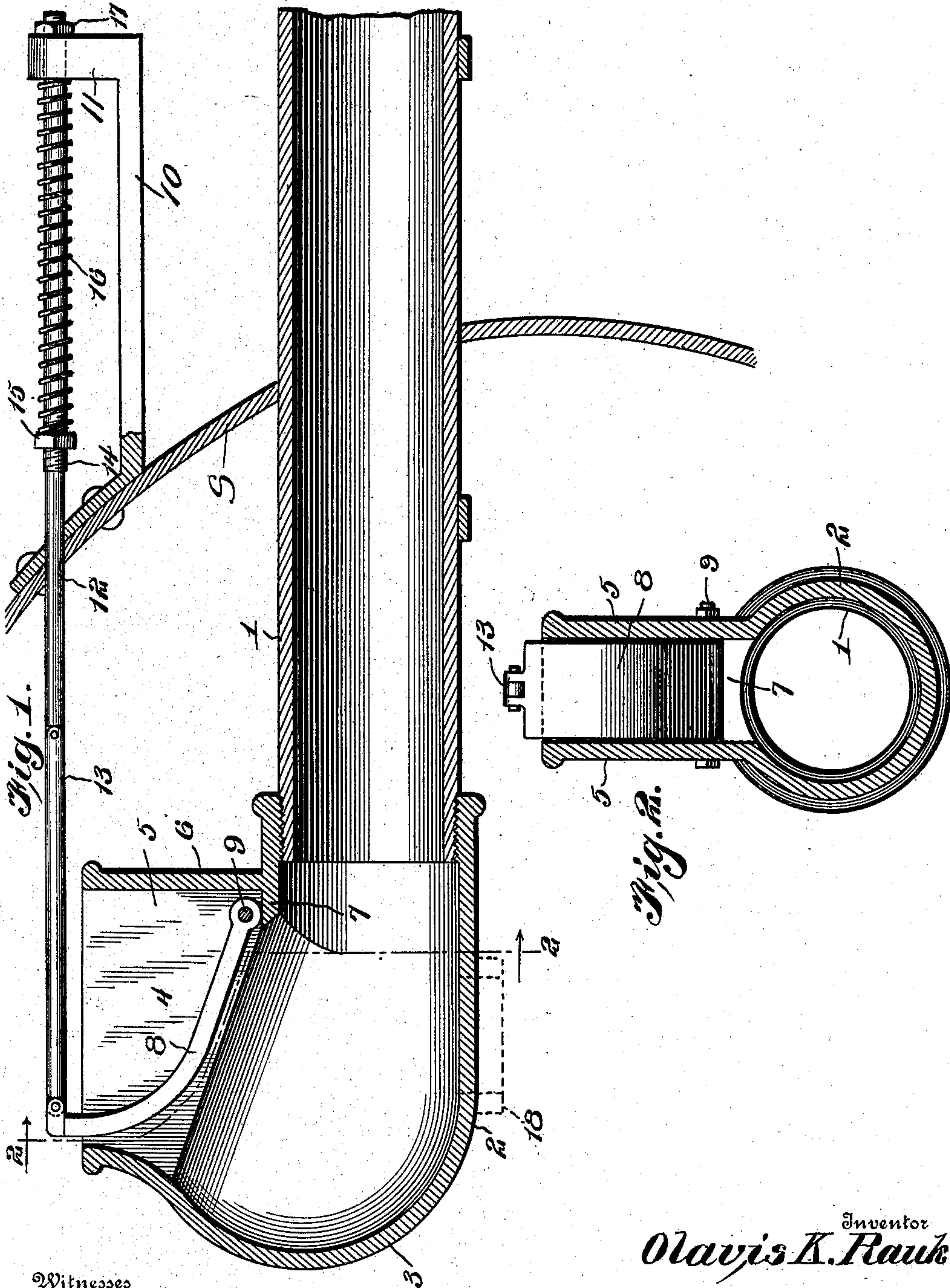


O. K. RAUK.  
EXHAUST REGULATOR.  
APPLICATION FILED SEPT. 13, 1907.

899.471.

Patented Sept. 22, 1908.



Witnesses

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# UNITED STATES PATENT OFFICE.

OLAVIS K. RAUK, OF RACINE, WISCONSIN.

## EXHAUST-REGULATOR.

No. 899,471.

Specification of Letters Patent.

Patented Sept. 22, 1908.

Application filed September 13, 1907. Serial No. 392,755.

*To all whom it may concern:*

Be it known that I, OLAVIS K. RAUK, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented new and useful Improvements in Exhaust-Regulators, of which the following is a specification.

This invention relates to exhaust regulators for steam engines, and it has for its object to provide an improved device whereby the area of the exhaust aperture will be automatically regulated, the area increasing and decreasing approximately in the same ratio as the volume of the exhaust.

A further object of the invention is to regulate the draft of a boiler furnace by regulating the exhaust discharge into a flue or smoke-stack.

Further objects of the invention are to simplify and improve the construction and operation of this class of devices.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention; it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawing, Figure 1 is a longitudinal vertical sectional view of an exhaust pipe equipped with the improved regulating device. Fig. 2 is a vertical transverse sectional view taken on the plane indicated by the line 2—2 in Fig. 1.

Corresponding parts in both figures are denoted by like characters of reference.

Upon the discharge end of the exhaust flue or pipe 1 is mounted a casing 2 having expanded side walls and breast 3 and provided on its upper side with a discharge passage 4 of rectangular cross-section having vertical parallel side walls 5—5 and a straight vertical rear end wall 6 at the lower end of which is formed a shoulder or offset 7. The breast 3, which constitutes the front wall of the casing, is curved upwardly and rearwardly; and the rear wall of the discharge aperture is

formed by a valve 8 of cycloid shape which is hingedly mounted upon a transverse pin or shaft 9 extending through the side walls 5—5 above and adjacent to the shoulder or offset 7; the valve being of such shape that in the various positions occupied thereby the curvature of that portion of said valve which is opposed to the front wall of the discharge aperture shall approximately correspond to the curvature of said front wall, so that no matter what is the area of the discharge aperture, the shape of said aperture will remain practically unchanged. This is regarded as important in order to prevent the exhaust from being suddenly checked or obstructed at any time as would be liable to be the result of any radical change in the shape or outline of the discharge aperture.

Suitable supporting means or bearings, such as a bracket 10, secured upon the wall of the smoke-box or casing S into which the exhaust is to be discharged and having at its outer end an upturned arm 11, is provided for a longitudinally slidable rod 12, the front end of which is connected with the valve 8 by means of a link 13. The rod 12 has a screw threaded portion 14 upon which a nut 15 is adjustable; a spring 16 being coiled upon the rod 12, between the nut 15 and the bracket arm 11 and serving to force the rod 12 in a forward direction and tending to move the valve 8 to an obstructing position in the discharge aperture 4. The movement of the rod 12 in a forward direction is limited by means of a nut 17 adjustable upon the rear end of said rod and adapted to abut upon the outer side of the bracket arm 11; it will be seen that by properly adjusting this nut the movement of the rod 12 in a forward direction will be limited, thus regulating the normal size of the escape aperture formed between the valve 8 and the front and side walls of the casing constituting the escape passage.

The improved exhaust regulator may be arranged to discharge into a smoke-stack or flue which latter however has not been shown in the drawings; when thus arranged, it is obvious that the draft will be regulated with the volume of the exhaust and the area of the exhaust aperture. The device may also be utilized as a muffler for gasoline engines; when thus utilized however it is preferred that the exhaust be directed into the bottom of the casing 2 which, in the drawing has been



shown as provided with a flange 18, indicated in dotted lines, to enable the necessary connection to be made.

5 The exhaust steam or fluid entering the casing 2 will displace the valve 8 against the tension of the spring 16, thus automatically governing the size of the exhaust aperture; the tension of the spring will be previously regulated by means of the adjusting nut 15, thus causing the valve to resist the impulse  
10 of the exhaust fluid to the desired extent; between the pulsations of the exhaust, the valve will be restored to normal or initial position by the action of the spring 16.

15 Having thus fully described the invention, what is claimed as new is:—

20 1. An exhaust nozzle, a valve pivoted therein, a longitudinally slidable operating rod, a supporting bracket constituting a bearing for the latter and having an upturned arm at its outer end, a nut adjustable upon the operating rod and adapted to abut against the upturned arm of the supporting bracket, a nut adjustable upon the operating

rod, a spring coiled about the operating rod between the latter-named nut and the upturned bracket arm, and a link connecting the operating rod with the valve, the tension of the spring being exerted to move the valve to an obstructing position.

3 2. An exhaust nozzle, a valve pivoted therein, a longitudinally slidable operating rod, bearings for the latter, a nut adjustable upon the operating rod and adapted to abut upon one of the bearings, a nut adjustable upon the operating rod intermediate the bearings, a spring coiled upon the operating rod between the latter nut and one of the bearings, and a link connecting the operating rod with the valve; the tension of the spring being exerted to move the valve in an obstructing position.

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

OLAVIS K. RAUK.

Witnesses:

FRED G. LIEGLER,  
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