

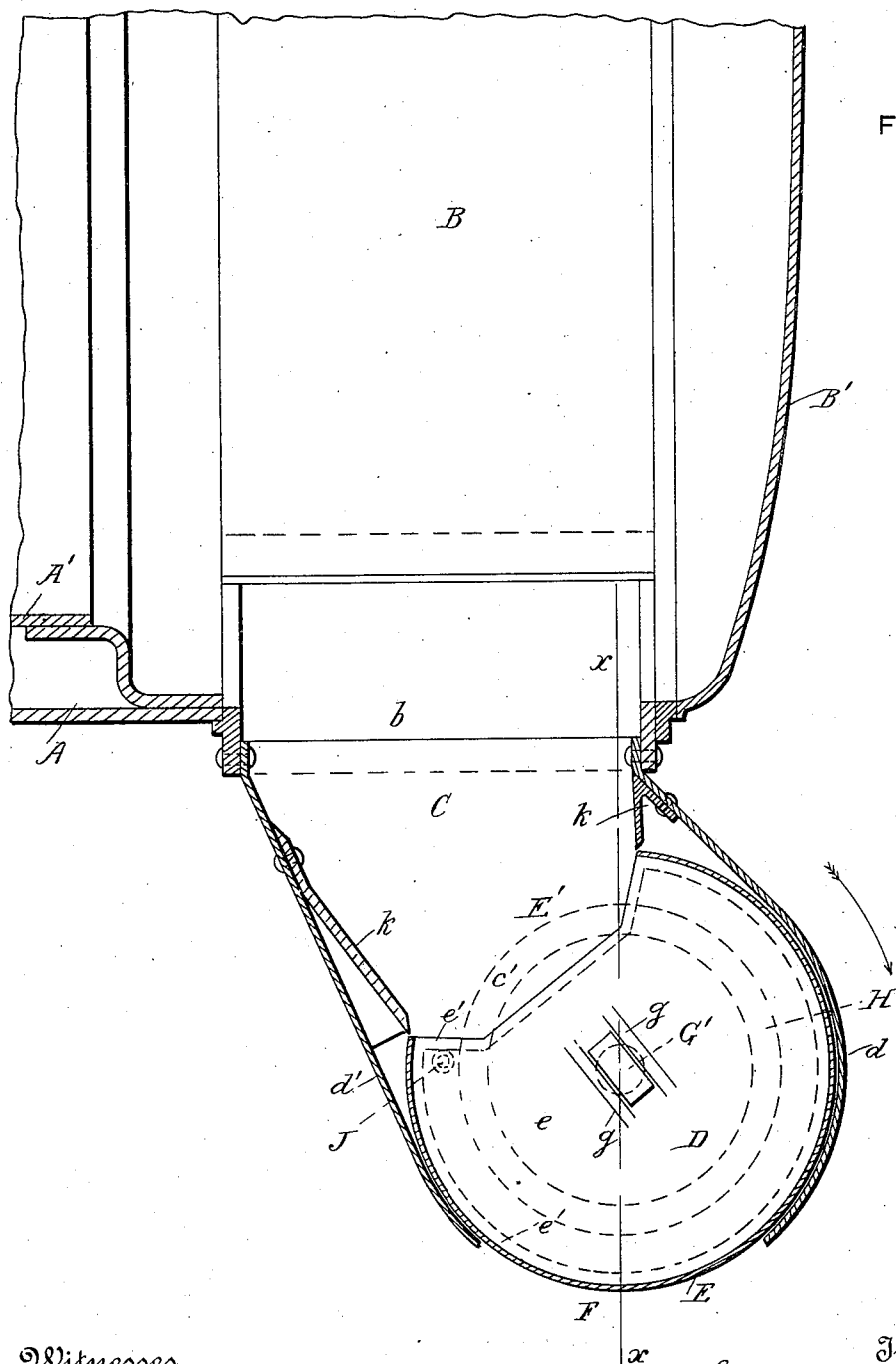
(No Model.).

2 Sheets—Sheet 1.

G. A. ANDERSON.
BOILER ATTACHMENT.

No. 576,752.

Patented Feb. 9, 1897.



Witnesses

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Frank L. Gurney
John O. Johnson

Inventor

Gustaf A. Anderson.

By Attorney *Herbert W. Jenner.*

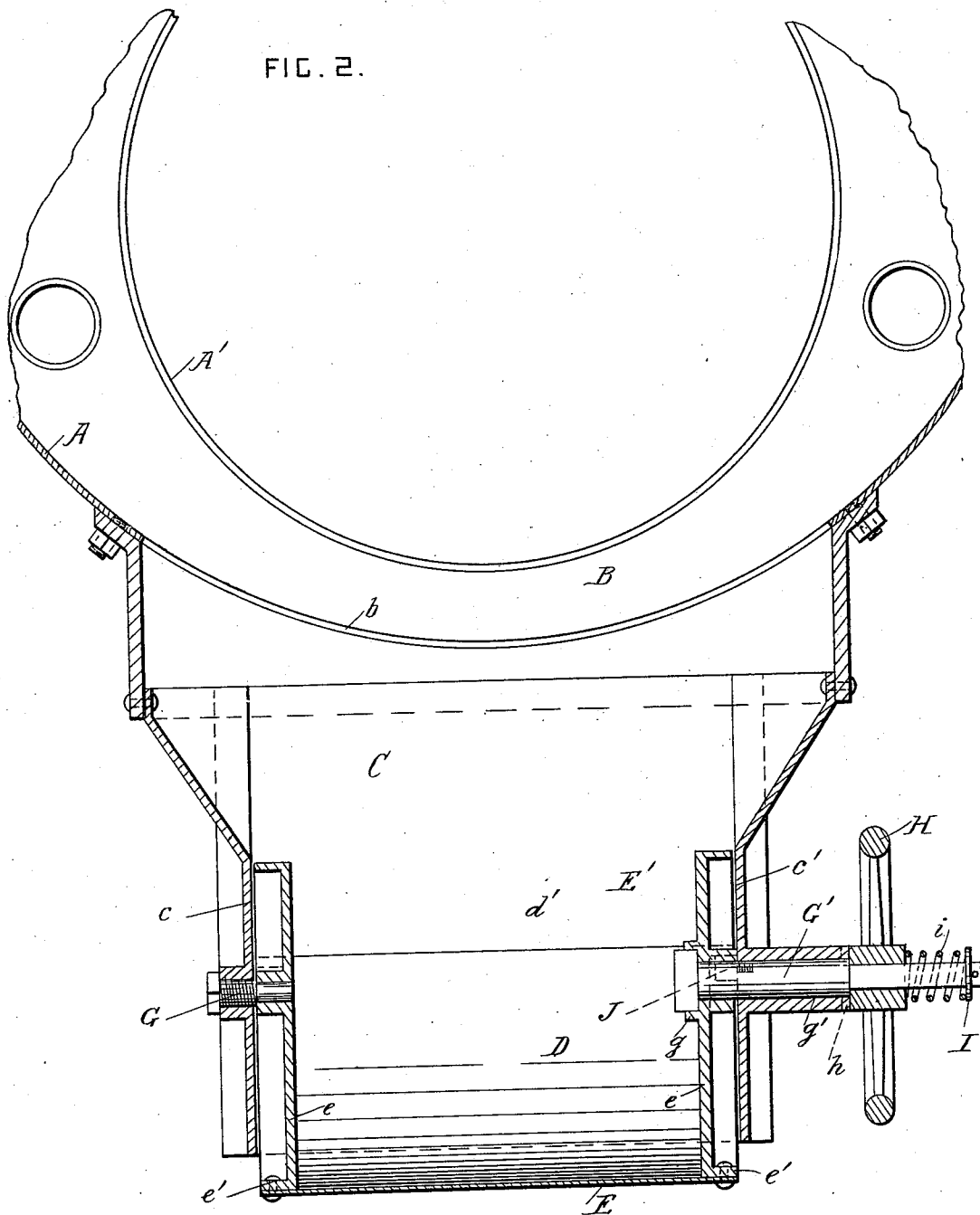
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UNITED STATES PATENT OFFICE.

GUSTAF ARVID ANDERSON, OF WAYNESBOROUGH, PENNSYLVANIA,
ASSIGNOR TO THE GEISER MANUFACTURING COMPANY, OF SAME
PLACE.

BOILER ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 576,752, dated February 9, 1897.

Application filed April 22, 1896. Serial No. 588,553. (No model.)

To all whom it may concern:

Be it known that I, GUSTAF ARVID ANDERSON, a subject of the King of Sweden and Norway, residing at Waynesborough, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Boiler Attachments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to boilers, and more particularly to those fire-tube boilers used in connection with traction and portable engines and in which straw and other similar material is used as fuel.

This invention consists in an attachment to the under side of the smoke-box whereby cinders may be discharged from time to time without admitting cold air to the smoke-box.

In the drawings, Figure 1 is a vertical longitudinal section through a portion of the smoke-box of a straw-burning boiler provided with an attachment according to this invention. Fig. 2 is a cross-section taken on the line *xx* in Fig. 1.

A is a portion of the shell of a boiler having a smoke-box B at its front end.

A' is a portion of the large fire-tube, and B' is a portion of the smoke-box door. The smoke-box B has a large opening *b* in its under side, through which the solid products of combustion fall instead of accumulating in the smoke-box and ultimately blocking up the ends of the fire-tubes. When straw is burned as fuel, cinders and ashes are deposited in large quantities in the smoke-box.

A hopper C is secured to the smoke-box below the opening *b*. This hopper may be of any convenient form and construction, and it is preferably inclined forwardly in order to leave plenty of room for the front axle of the traction or portable engine.

A double-acting-valve mechanism D is arranged under the opening *b* and operates to let the ashes and cinders fall out of the smoke-box without permitting air to enter, except it be in very small quantity by constant leak-

age around the valve mechanism, which is not necessarily absolutely air-tight.

The hopper C is preferably provided with ends *c* and *c'*, of cast metal, and a front *d* and a back *d'*, of sheet metal.

The valve mechanism D preferably comprises a barrel-valve provided with heads *e*, of cast metal, having flanges *e'*, and a periphery E, of sheet metal, secured to the said flanges. An opening E' is formed in the periphery of the barrel-valve to permit the cinders to enter it.

The barrel-valve is journaled in the lower part of the hopper, and it is supported therein in any approved manner. The front and the lower part of the hopper on each side of its mouth F is preferably curved to conform to the periphery of the barrel-valve, so as to form as nearly as possible an air-tight joint without preventing the barrel-valve from being turned on its axis.

G is a pivot-pin projecting from the end *c* of the hopper and engaging with the adjacent head *e* of the barrel-valve.

G' is a shaft secured at one end to the opposite head *e* of the barrel-valve by means of a T-shaped head which engages with lugs *g* on the head. This shaft G' is journaled in a bearing *g'*, projecting from the end *c'* of the hopper.

H is a hand-wheel or other equivalent operating device, such as a lever, splined to or mounted on the projecting square end of the shaft G'. This hand-wheel is provided with clutch projections *h* on its hub, which engage with notches in the end of the bearing *g'*. A washer I is secured at the end of the shaft, and *i* is a spring arranged between the washer and the hub of the hand-wheel and operating to hold the said projections in engagement with the said notches, so that the hand-wheel is locked to the hopper and cannot be turned to revolve the barrel-valve without first drawing the hand-wheel backward against the pressure of the spring *i* until the projections are unclutched from the notches.

The cinders which fall into the hopper and accumulate in the barrel-valve are discharged from time to time by turning the barrel-valve

from its position as shown in Fig. 1 in the direction of the arrow until its opening E' coincides with the mouth F of the hopper. The opening E' is wholly closed by the curved front d of the hopper before it communicates with the mouth F, so that no air passes upward into the smoke-box.

J is a stop-pin projecting from one end of the hopper and engaging with the flange on the adjacent head of the barrel-valve when the barrel-valve is in the position shown in Fig. 1. This stop limits the motion of the barrel-valve in each direction and arrests it at the two points or positions at which it can best receive and discharge the cinders. This stop also prevents the barrel-valve from being turned in the wrong direction. If turned in the reverse direction to the arrow in Fig. 1 to discharge the cinders, cold air would obviously pass upward through the hopper and the draft would be checked. If the draft were checked, the straw in the fire-box would cease to burn brightly, as straw fires are very sensitive and have to be kept burning under as constant and regular a draft and feed as possible.

The hopper is provided with guide-plates k for directing the cinders into the barrel-valve and preventing them from falling into the joint between the periphery of the barrel-valve and the lower part of the hopper. These guide-plates are preferably of cast metal, and they also serve to protect the hopper from the heat of the cinders. These guide-plates can be of any size and shape, so as to cover and protect as much of the internal surface of the hopper as desirable. They are

secured in position by any means that will permit them to be quickly removed and replaced when worn out.

What I claim is—

1. The combination, with a smoke-box provided with an opening in its under side, of a forwardly-inclined hopper secured under the said opening, a double-acting barrel-valve journaled in the lower part of the hopper and provided with an opening of less width than the curved front portion of the said hopper, and a stop projecting from the hopper and engaging with flanges on the said valve when the valve is in its two terminal positions, said stop also constraining the opening of the valve to pass over the said curved front portion of the hopper when being moved back and forth, substantially as set forth.

2. The combination, with a smoke-box provided with an opening in its under side, of a hopper secured under the said opening, a double-acting barrel-valve journaled in the lower part of the hopper and provided with a pivot-shaft connected to one of its heads and projecting through a bearing on one end of the hopper, and a slidable spring-pressed operating device splined on the projecting end of the said shaft and provided with clutch projections on its hub engaging with notches in the end of the said bearing, substantially as set forth.

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

GUSTAF ARVID ANDERSON.

Witnesses:

J. STOVER PRICE,

J. A. MIDDOWER.