

G. M. MORRIS & J. H. WATKINS.
BOILER ATTACHMENT.

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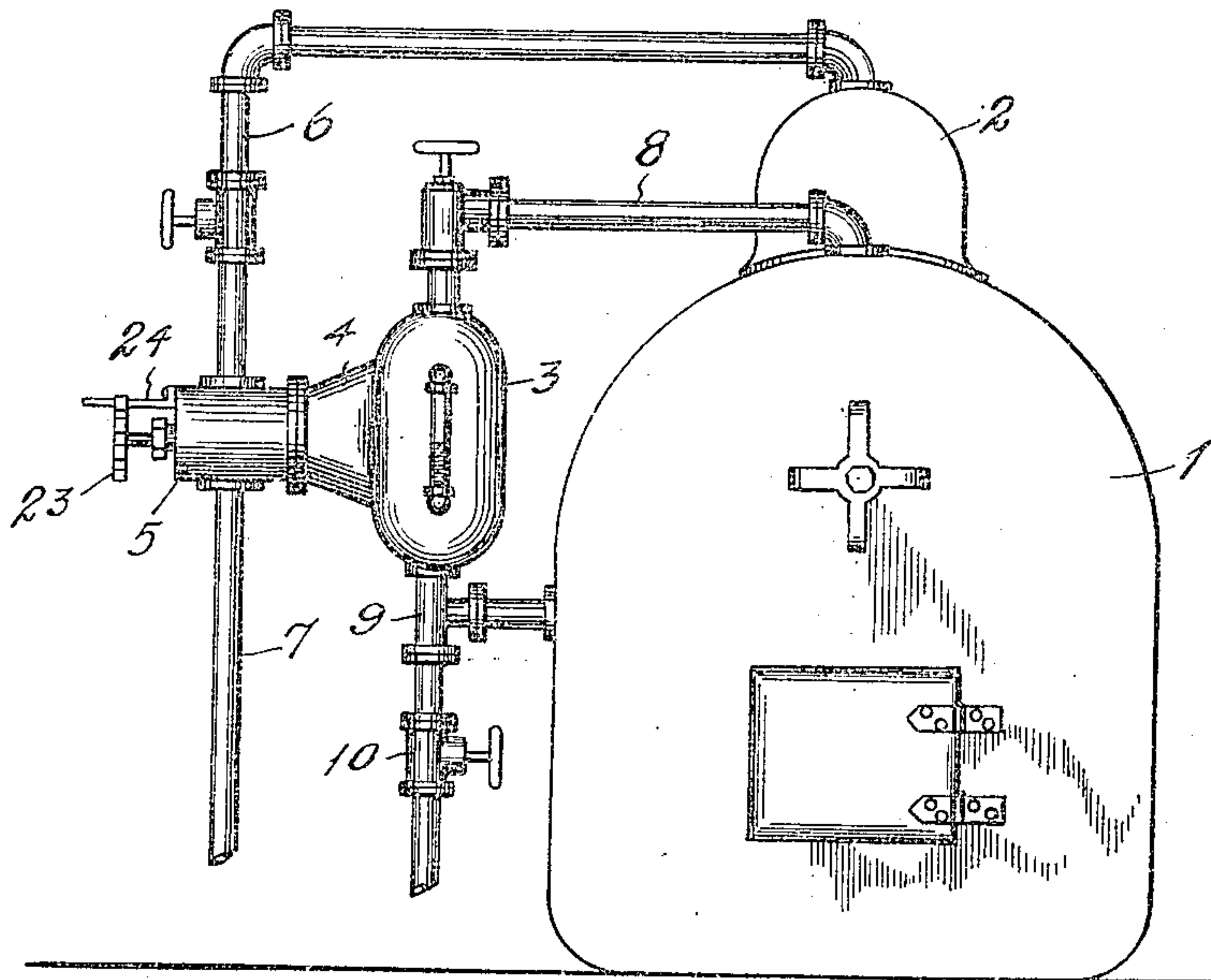


Fig. 1.

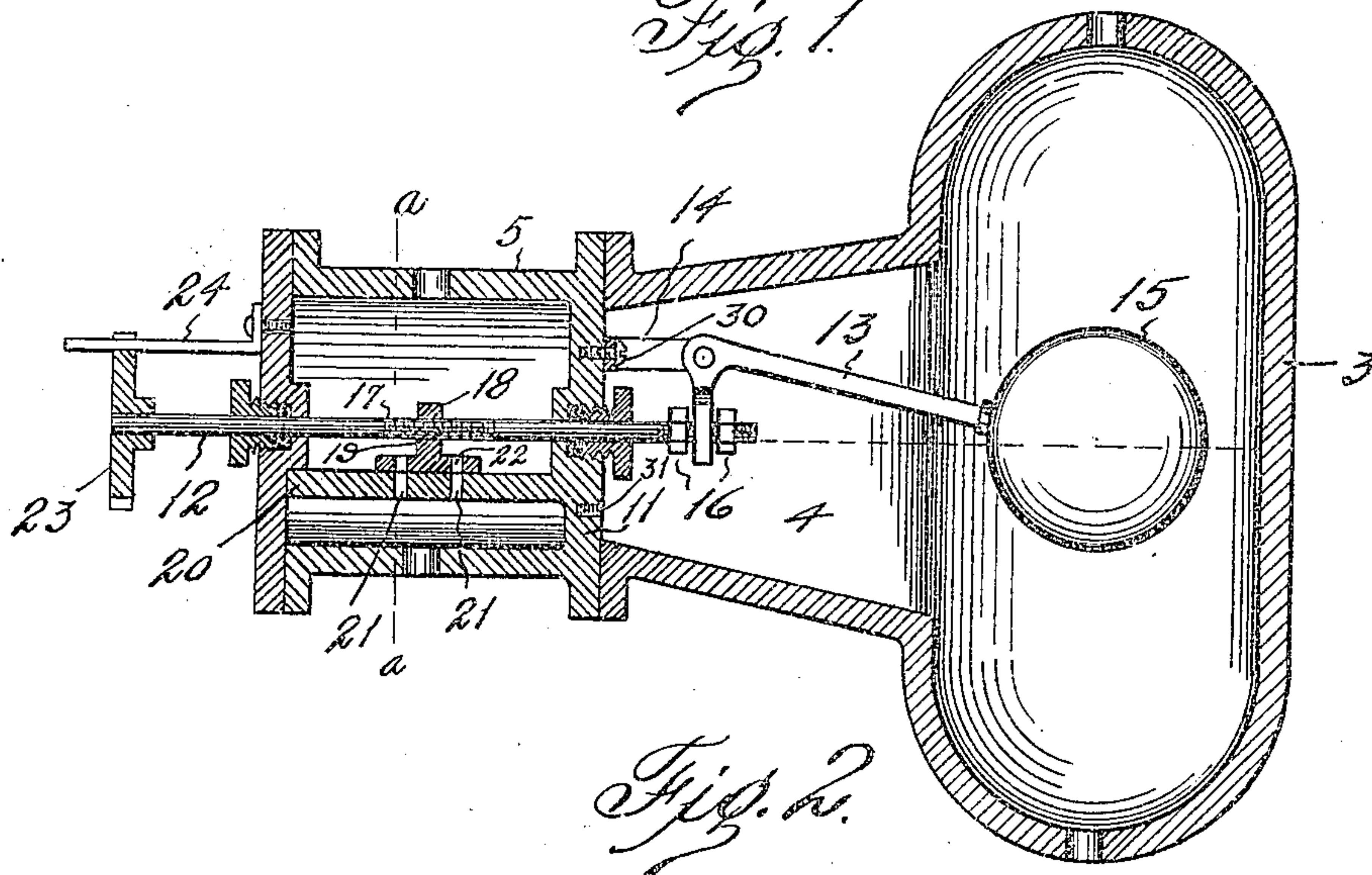


Fig. 2.

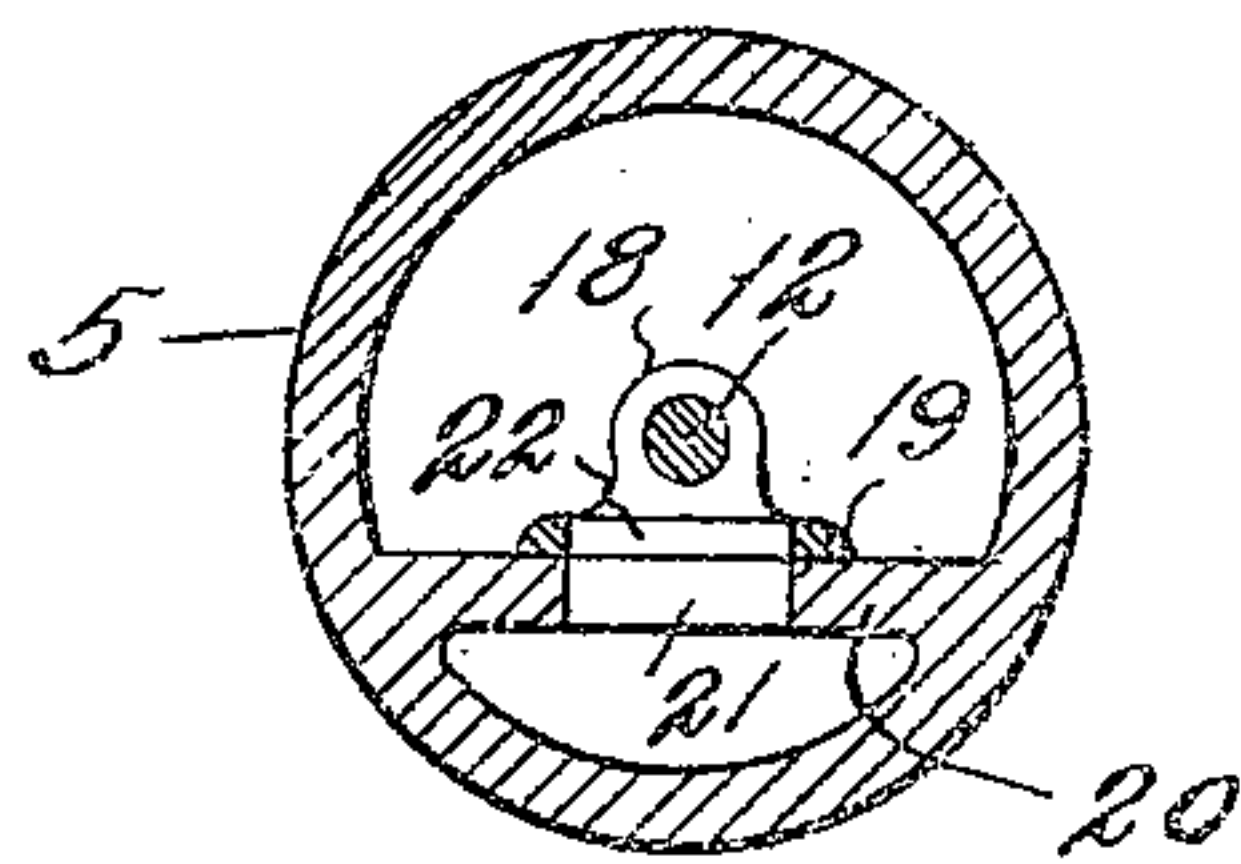


Fig. 3.

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BOILER ATTACHMENT.

960,229.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, GID M. MORRIS and JOHN H. WATKINS, citizens of the United States, residing at Palestine, in the county of Anderson and State of Texas, have invented certain new and useful Improvements in Boiler Attachments, of which the following is a specification.

Our invention relates to an improvement in boiler attachments and particularly to an apparatus for controlling the operation of the boiler feed pump or injector.

The object of the invention is to provide an apparatus suitably connected to the boiler in place of the usual water column comprising a float having connection with a cut-off in the steam supply pipe whereby the water in the boiler is maintained within the "safety" limit as long as there is a supply of water.

Finally the object of the invention is to provide means of the character described that will be strong, durable, efficient, and easy of operation, simple and comparatively inexpensive to construct, and also in which the several parts will not be likely to get out of working order.

With the above and other objects in view, the invention has relation to certain novel features of construction and operation, an example of which is described in this specification and illustrated in the accompanying drawings, wherein:

Figure 1. is an end elevation of a boiler showing the apparatus connected thereto. Fig. 2. is a vertical sectional view of the attachment, and Fig. 3. is a transverse vertical section on the line *a— a* of Fig. 2.

In the drawings the numeral 1 designates a boiler and 2, the steam dome. At one side of the boiler our attachment is positioned so that its longitudinal center will substantially aline with the water line of the boiler.

The attachment comprises a vertical float chamber 3 having at its central portion a laterally extending and converging neck 4 to which a cylindrical valve casing 5 is suitably secured. At its upper side the valve casing has connection by a pipe 6 with the steam dome 2, while from its under side a pipe 7 extends to the injector or feed pump of the boiler. Through these pipes and the valve casing, steam passes from the steam

dome. A pipe 8 passes from the top of the boiler to the upper end of the chamber 3. At its lower end the chamber has connection by a coupling 9 with the feed water pipe 10. It is obvious that the water in the chamber 3 will rise or fall to the same level as the water in the boiler, the pipe 8 permitting steam to pass from the boiler into the chamber over the water therein.

By observing Fig. 2 it will be noted that the chamber 3 and valve casing 5 are separated by a wall 11. A longitudinal valve rod passing through suitable packings extends into the neck 4 a short distance beyond the wall 11 and at its opposite end projects from the valve casing. Within the neck 4 a bell-crank lever 13 is pivoted to an ear 14 extending from the wall 11. On the outer end of the lever 13 a suitable float 15 is secured, while the inner end of the lever engages the valve rod 12 between adjustment nuts 16. From this it is obvious that as the water level in the chamber varies, the float will swing the lever to reciprocate the valve rod 12. That part of the valve rod within the valve casing is screw threaded as indicated at 17 in Fig. 2. This portion extends through an ear 18 projecting up from a slide valve 19 working on a horizontal web 20 extending across the valve chamber and separating the upper and lower portion. This web is provided with ports 21 with which ports 22 in the slide valve register. It is to be understood that these ports may be of any suitable shape as for instance round, triangular or elongated all of which are common in the art.

It is obvious that when the water falls the float will swing the arm 13 down which will slide the valve 19 through the agency of the rod 12 into such position as to register the ports 22 with the ports 21 and permit the passage of steam from the pipe 6 or the upper part of the valve casing to the lower part of the valve casing and by way of the pipe 7 to the injector or feed pump (not shown) thereby causing the same to operate and supply water to the boiler. As the water rises in the boiler the float 15 will be carried upward, the lever swung and the valve moved so that the ports will be out of alinement and the supply of steam passing through the valve casing cut off which

will stop the operation of the injector or pump.

On the projecting end of the valve rod 12 a notched wheel 23 is fastened. A spring arm 24 fastened to the valve casing engages in one of the notches of the wheel and is of sufficient length to permit the reciprocation of the rod without disengagement from the wheel. By springing up the arm the rod may be rotated and an adjustment of the valve with relation to the rod effected by reason of the screw threaded portion 17. This adjustment is provided to regulate the action of the valve and control the amount of steam passing through the valve casing when the ports are opened.

It is to be noted that the ear 14 is held on the wall 11 by a bolt 30. This bolt may be below the rod 12 by engaging the bolt in a recess 31 provided in the wall. With the parts in this position, the lever 13 is inverted. This arrangement is used in connection with a battery of boilers.

By observing Fig. 2 it will be noted that it is possible to adjust the valve 19 so that it will move from the right to register its ports with the ports 21. In Fig. 2 the float is supposed to be at the "low water" point and the valve "full open". When the float is moved upward as the water rises, the valve is moved to the right to cut-off the stream. If the ear 14 is placed below the valve rod, the valve will move to the left to cut-off stream.

What we claim is:

1. In a boiler attachment, a vertical water chamber having connection with the boiler, a lever pivoted in the chamber and provided with a float, a valve casing separated from the chamber and having a transverse flat web separating the casing into upper and lower portions, the casing having opening for steam pipe connections above and below the web, the web having a vertical port, a slide valve operating in the upper portion of the casing on the flat web and provided with a port adapted to register with the port of the web, and a horizontal valve rod extending from the valve into the chamber and having connection with the lever.

2. In a boiler attachment, a vertical chamber having connection with the boiler above and below its water line, a lever mounted to swing in the chamber, a float connected to the lever, a valve casing having a horizontal web therein dividing the same into upper

and lower portions, the web having ports, the casing having a steam inlet in its upper portion and a steam outlet in its lower portion below the web, a valve having a flat contact face arranged to slide in the casing on the web and provided with vertical ports arranged to register with the ports of the web, and a valve rod operating through the valve casing and the chamber connected to the valve and the lever.

3. In a boiler attachment, a vertical water chamber having connection with the boiler, a lever pivoted in the chamber and provided with a float, a valve casing separated from the chamber and having a transverse flat web separating the casing into upper and lower portions, the casing having openings for steam pipe connections above and below the web, the web having a vertical port, a slide valve operating in the upper portion of the casing on the flat web and provided with a port adapted to register with the port of the web, a horizontal valve rod extending from the valve into the chamber and having connection with the lever, and means for turning the horizontal valve rod to adjust the valve thereon with relation to the port of the web.

4. In a boiler attachment, a vertical water chamber having connection with the boiler, a lever pivoted in the chamber and provided with a float, a valve casing separated from the chamber and having a transverse flat web separating the casing into upper and lower portions, the casing having openings for steam pipe connections above and below the web, the web having a vertical port, a slide valve operating in the upper portion of the casing on the flat web and provided with a port adapted to register with the port of the web, a horizontal valve rod extending from the valve into the chamber and having connection with the lever, means for turning the horizontal valve rod to adjust the valve thereon with relation to the port of the web, and means for locking the valve rod against turning but permitting it to slide.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

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JOHN H. WATKINS.

Witnesses:

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