(No Model.)

R. P. FARIES.

BOILER CLEANER.

No. 449,671. Patented Apr. 7, 1891.

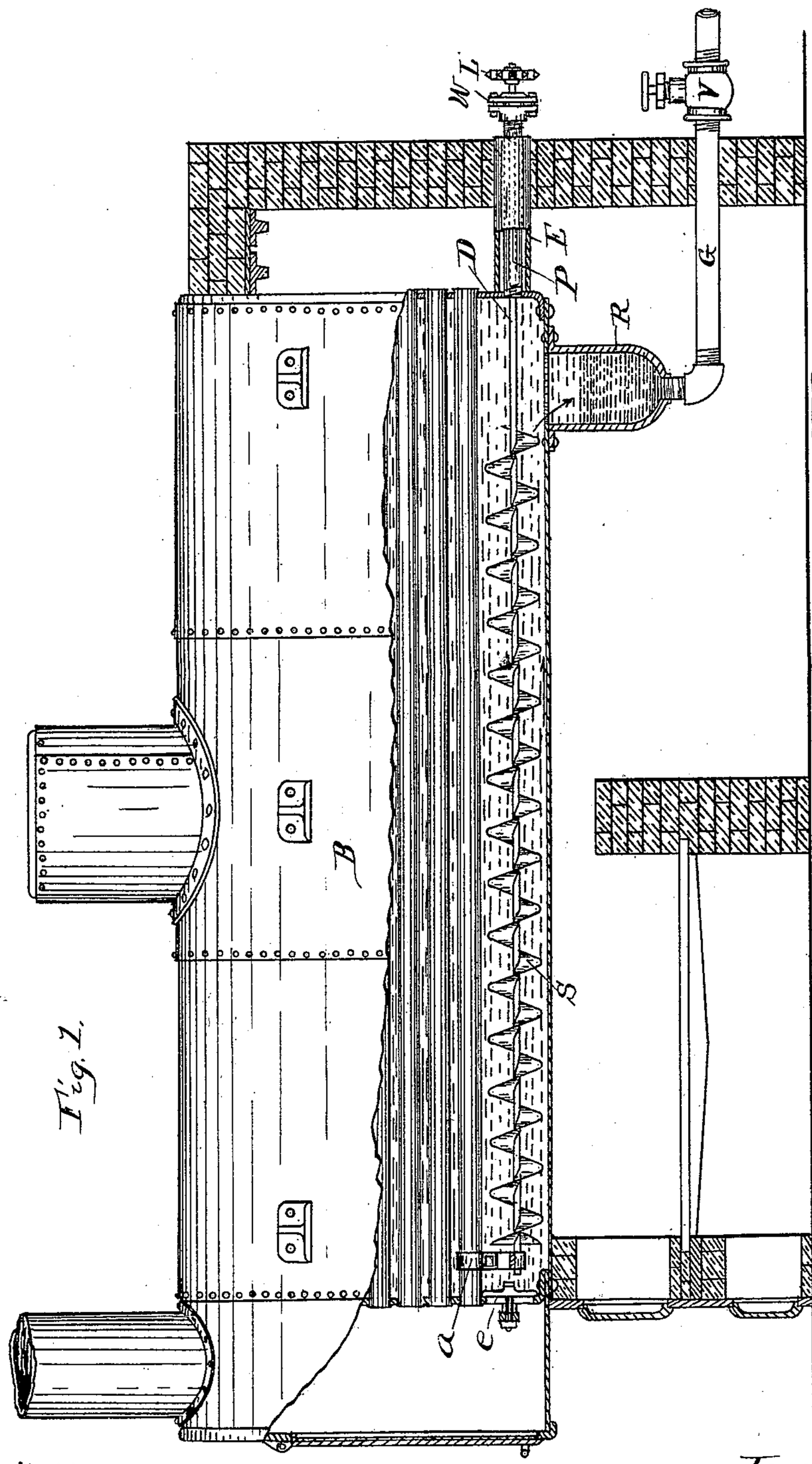

Fig. 1.

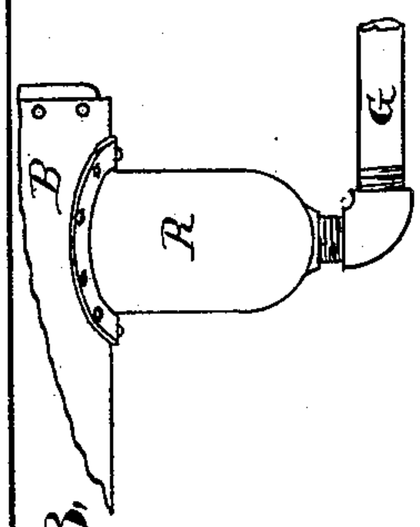

Fig. 3.

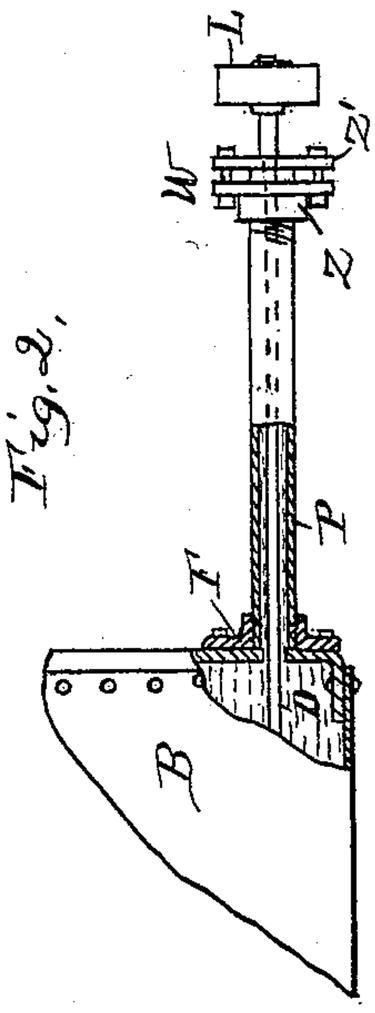

Fig. 2.

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ROYAL P. FARIES, OF WICHITA, KANSAS.

BOILER-CLEANER.

SPECIFICATION forming part of Letters Patent No. 449,671, dated April 7, 1891.

Application filed August 15, 1890. Serial No. 362,044. (No model.)

To all whom it may concern:

Be it known that I, ROYAL P. FARIES, a citizen of the United States of America, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Boiler-Cleaners, of which the following is a specification, reference being had therein to the accompanying drawings and the letters of reference thereon, forming a part of this specification, in which—

Figure 1 is a side elevation of a steam-boiler having its lower side portion broken away to show the interior thereof, and having my invention applied thereto, also showing the boiler-furnace in vertical longitudinal section. Fig. 2 is a detailed side view of the lower end portion of the boiler and a similar view of my improved boiler-packing connection, and Fig. 3 is a similar view of a portion of the boiler and of the sediment-receptacle attached thereto.

This invention relates to certain improvements in a device for washing the sediment and other foreign substances from the boiler and for giving a forced circulation to the water in the boiler during the hours of service of the boiler, and is adapted as an attachment to steam-boilers; and it consists, essentially, in operating a spiral conveyer longitudinally in the lower portion of a boiler and in attaching to the bottom of the boiler adjacent the discharge end of the conveyer, and at an opening made in the boiler, a depending receptacle for catching and holding the sediment delivered from the conveyer, and in providing the receptacle with a blow-off pipe and valve for regulating the blow-off or for emptying the receptacle.

Referring to the drawings, B represents the boiler mounted on its furnace-walls in position for ordinary use.

D is a shaft longitudinally arranged in the lower portion of the boiler, supported at one end by means of the hanging bracket-bearing *a*, which is clamped or otherwise secured to the boiler-flues within the boiler. The opposite end of the shaft is arranged protruding through the boiler-head at the rear of the boiler, but may protrude either end. The opening through the boiler-head through which the shaft is arranged is bored into the head and then screw-threaded, and a pipe P, having an interior diameter larger than the shaft, is correspondingly screw-threaded and turned into the said hole in the boiler-head surrounding the shaft, and is shorter than the shaft, but sufficiently long to extend through the furnace-wall, and has fitted, by means of being screw-threaded, on its end a packing or stuffing box W, which consists of a part Z, fixed to the pipe and for holding the packing, and of a part Z′, being the stuffing-box cap, which is held to part Z by means of bolts or screws in the usual way, as shown. This stuffing-box packs the shaft and prevents leakage of the boiler.

Fixed on the shaft D within the boiler is a spiral conveyer S, adapted to operate with the shaft, and when operated convey the sediment in the boiler along to the discharge end of the conveyer, and thus wash the boiler-bottom interior, and also, by means of the action of the conveyer, induce a forced circulation longitudinally in the boiler of the water contained therein. As a means of rotating the shaft, it is provided on its extending end with a sprocket or belt pulley L, which is driven by means of a belt from some motive power not necessary to be illustrated.

R is the sediment-receptacle, and is attached to and depends from the bottom of the boiler at a point near or at the discharge end of the spiral conveyer, and at such place the boiler-bottom is removed to permit the entrance of sediment as it is discharged from the conveyer into the receptacle, where it falls and collects. As a means of emptying the said receptacle after it has accumulated sediment, it is provided with a blow-off pipe G, leading from its bottom, which pipe is provided with a valve V, which, when the sediment is in the act of collecting in the receptacle, is closed and when it is desired to blow off the sediment to empty the receptacle the valve is opened, when the pressure of steam in the boiler will force the sediment from the receptacle and off through the pipe G, and the water following the sediment will wash the said receptacle and pipe.

As a way for entering the shaft and spiral conveyer into the boiler, I remove the man-

head *c*, then insert said parts, attach the bearing *a*, and then close the man-head.

In some instances where the boiler-head is deemed too thin to be screw-threaded and properly support the pipe P, I have provided the use of a flange-plate F, (shown in Fig. 2,) which I secure by means of rivets or screws to the boiler-head, and then screw the pipe into the flange in like manner as into the boiler-head. In ordinary use this pipe P passes through the rear part of the furnace and is therefore subjected to considerable heat from flame, and I therefore permit the water from the boiler to circulate in said pipe about shaft D, which will prevent the pipe or shaft burning, and as a means of preventing said pipe P from being subjected to direct contact with the flame from the furnace, I have arranged a pipe of considerably larger capacity sleeved over the pipe P as a cover, as shown in Fig. 1. In some instances it may be desired to provide the boiler with more than one such receptacle R along the path of the conveyer.

Having thus described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is as follows:

The combination, with a horizontal tubular steam-boiler provided with a sediment-receptacle R, depending from the bottom portion thereof, and having a blow-off pipe extending therefrom and a valve interposed in said pipe accessible from without the boiler-furnace for preventing or permitting the escape of substance from the receptacle, of the screw conveyer S, mounted on the shaft D within the lower portion of the boiler parallel with the boiler-flues, adapted to be operated for conveying sediment along the boiler-bottom to the receptacle, and for inducing a forced circulation of water in the boiler, and supported so it may be operated by means of the bearing *a*, clamped to and depending from the boiler-flues at one end of said conveyer-shaft, and the pipe P, provided with the stuffing-box at its terminal at the opposite extending end of said shaft in such manner that water from the boiler may circulate within said pipe about the shaft, and the sprocket-wheel or pulley fixed on the extending portion of the said shaft beyond said pipe P for the application of a belt, by means of which the conveyer is operated, substantially as specified.

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