

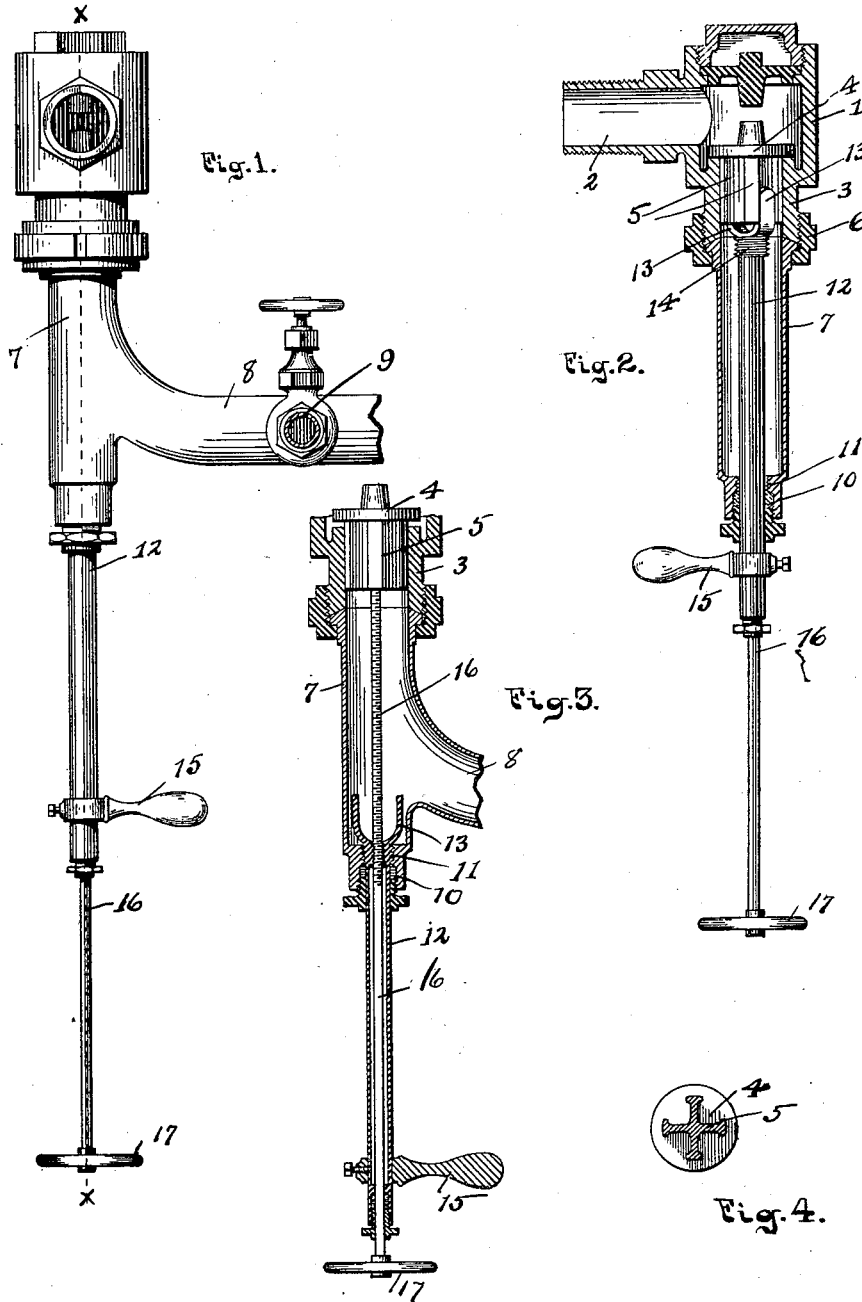
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Patented June 18, 1901.

E. E. W. CROSSLEY.
SCALE REMOVING AND VALVE GRINDING DEVICE.

(Application filed Feb. 2, 1901.)

(No Model.)



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SCALE-REMOVING AND VALVE-GRINDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 676,617, dated June 18, 1901.

Application filed February 2, 1901. Serial No. 45,695. (No model.)

To all whom it may concern:

Be it known that I, EMMONS E. W. CROSSLEY, a citizen of the United States, residing at Newark, in the county of Licking and State of Ohio, have invented a certain new and useful Improvement in Scale-Removing and Valve-Grinding Devices, of which the following is a specification.

My invention relates to the improvement of scale-removing and valve-grinding devices, and has particular relation to means for removing scale which may accumulate about the check-valve or check-valve seat of a boiler water-feed.

The objects of my invention are to provide, in conjunction with a boiler feed pipe and valve, improved means for raising the valve off its seat and discharging the accumulated scale and to combine therewith means for grinding the valve in its seat for the purpose of removing scale which may have become fixed therein and to produce certain improvements in details of construction and arrangement of parts, which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a view in elevation of a boiler feed-pipe having my improvements. Fig. 2 is a central longitudinal section thereof on line *xx* of Fig. 1, showing the valve grinding or rotating device in position for operation. Fig. 3 is a similar view with a portion of the valve-casing broken away and showing the valve opening or lifting device in position for operation, and Fig. 4 is a transverse section of the check-valve.

Similar numerals refer to similar parts throughout the several views.

1 represents the usual check-valve casing, which is provided with the usual boiler-connecting short pipe-arm 2 and valve-casing arm 3, arranged at right angles with each other. Within the lower portion of the valve-casing is seated the body of the usual check-valve 4, this valve being formed with the usual downwardly-extending guide-blades 5, which extend loosely within the valve-arm 3. The outer end portion of the valve-arm 3 is, through the medium of a coupling 6, connected with a downwardly-extending pipe 7, from which leads laterally to the injector of a lo-

comotive-boiler a pipe-arm 8. This pipe-arm 8 is provided with a valve-controlled outlet 9. The lower end of the pipe 7 is reduced slightly in size, the outer portion of said reduced part being provided with suitable internal packing 10, while the upper portion thereof is internally threaded, as indicated at 11.

12 represents a tubular body, the upper end of which is provided with a bifurcated or yoke termination 13, adjacent to which said tubular body is externally threaded, as indicated at 14. The tube 12 is adapted, as indicated in Fig. 3 of the drawings, to have its yoke-shaped portion extending within the lower end portion of the pipe 7 and its threaded portion 14 engaging the threaded portion 11 of said pipe 7, or, as indicated in Fig. 2, said tube 12 is adapted to be forced upward in said pipe 7 until the arms of its yoke termination 13 engage the opposite angles of the valve-guide extension 5. Adjacent to its outer end the tube 12 is provided with a fixed laterally-projecting handle 15. Running through the tube 12 is a screw-rod 16, the threads of which are adapted to engage the internal threads of the bifurcated head of the tube 12. This rod 16 carries on its outer end an operating hand-wheel 17.

In utilizing my device for removing scale which may accumulate about the check-valve 4 the valve 9 is opened and the rod 16 turned inward by operating the hand-wheel 17 until the upper end of said rod by contact with the center of the valve-guide extension 5 lifts the valve 4 off its seat. This opening or lifting of the valve 4 results in a rush of water and steam from the boiler to the arm 2, valve-casing 1, and pipe-arm 8, out through the opening 9, the water and steam thus discharged carrying the accumulated scale away from the valve-seat.

In case scale should become fixed in connection with the valve or its seat and it becomes necessary to grind or rotate the valve on its seat for the purpose of removing the accumulated scale, the tube 12 may be turned inward until its threaded portion 14 is out of engagement with the threads 11, after which said tube may be pushed upward until its yoke-arms engage the guide extension of the valve in the manner indicated in Fig. 2. By now grasping the handle 15 and rotating the

tube 12 it is obvious that a grinding operation of the valve upon its seat may be accomplished, which will tend to readily remove the attached scale. In this grinding operation it will be obvious that a close contact of the valve and its seat will be maintained through the pressure of the water and steam from the boiler.

From the construction and operation described it will be understood that simple, reliable, and effective means are provided for raising the valve 4 and permitting the scale to be discharged therefrom and that in connection therewith improved means are provided for grinding the valve on its seat.

It will be observed that the device herein described may be readily connected with any of the ordinary locomotive feed-valve casings and that the operation of removing the scale may be accomplished without the necessity of removing the valve.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a scale-removing and valve-grinding attachment for boiler feed-pipes, the combination with a valve-casing 1 having boiler

and injector connecting arms 2 and 3 and a check-valve 4 seated in said casing, of a pipe-section 7, a pipe-arm 8 extending therefrom and provided with a valve-controlled outlet 9, a tubular body 12 extending movably within said pipe-section 7 and having a bifurcated upper end and a handle rigidly connected with the outer extension of said tube 12, substantially as specified.

2. In a scale-removing and valve-grinding device, the combination with a valve-casing 1 having pipe-arms 2 and 3 and an internal check-valve 4, of a pipe-section 7 connected with said casing-arm 3, a tubular body 12 movably entering said pipe-section 7 and having a bifurcated upper end, a handle 15 on the outer extension of said tube 12, a rod extending loosely through said tube 12, said rod having a threaded engagement with the head of the tube 12 and a pipe-arm 8 leading from said pipe-section 7, said pipe-arm 8 having a valve-controlled outlet, substantially as specified.

EMMONS E. W. CROSSLEY.

In presence of—

H. E. SMART,

J. A. FLORY.