

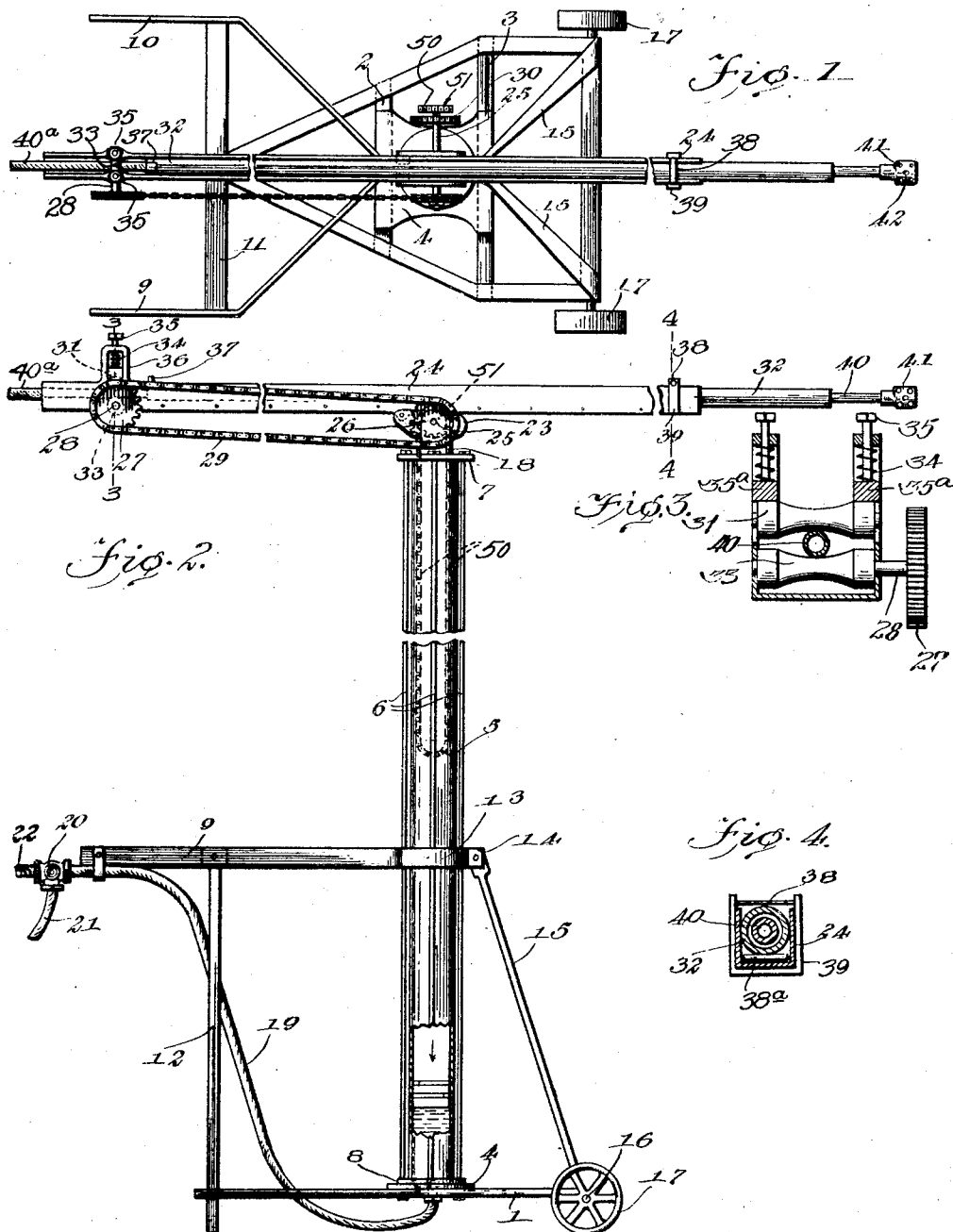
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PORTABLE SOOT BLOWER

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WITNESSES

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PORTABLE SOOT BLOWER.

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This invention relates to portable blowers and is more particularly directed to a portable blower for removing the soot from the exterior of boiler tubes.

- 5 It has been proposed to provide blowers which have a fixed position relative to the tubes of a boiler and which are always located within the flame passing around the tubes even when the blowers are not in use.
- 10 In the use of fixed blowers leaks occur which cause warping of the boiler tubes. Brackets are likewise required to support the fixed blowers in the boilers.

- 15 It is an object of this invention to provide a portable soot blower which may be moved along an alley between the boilers and having a nozzle adapted to be applied to certain openings in the sides of the boiler for directing steam against the exterior of the boiler tubes to remove the soot, the nozzle being readily removable from the boiler when the operation has been completed.

- A further object of the invention is the provision of a simple and reliable portable soot blower which may be readily applied to openings in the sides of steam boilers and which is provided with telescoping tubes equipped with steam nozzles which are moved between the pipes when removing extraneous matter from said pipes, said matter forming an insulation which prevents heat from being transmitted to the interior of the boiler tube.

- 25 Other objects and advantages will become apparent during the course of the following description.

The invention is illustrated by way of example in the accompanying drawings, in which,

- 40 Figure 1 is a plan view of my portable soot blower.

Figure 2 is a side elevation of the same.

- Figure 3 is a transverse section along the line 3—3 of Fig. 2, showing driving mechanism for the steam tubes, and

- 45 Figure 4 is a transverse section along the line 4—4 of Fig. 2, showing a roller in a guide for limiting movement of the steam tube.

- 50 Referring to the drawings, 1 designates a base frame work having transverse bars 2 and 3 to which is rigidly secured a plate 4. A cylinder 5 is rigidly mounted on the base plate 4 by means of the tie-rods 6 which
- 55 pass through the plate 4 and through the

upper and lower flanges 7 and 8 formed integrally at the opposite ends of the cylinder 5.

Spaced handle bars 9 and 10 are located above the base frame 1 and at a distance 60 whereby the same may be readily grasped by the hands of the operator of the soot blower. A transverse bar 11 connects said handle bars while legs 12, connected with the transverse bar 11 at one end, are adapted to 65 engage the floor at their other ends and aid in maintaining the handle bars in spaced relation with the floor.

The inner ends of the handle bars 9 and 10 are bent at an angle towards each other 70 and provided with a semi-circular portion 13 adapted to engage around the cylinder 5 and midway of its ends. The outer ends of the semi-circular members 13 which form the collar are directed outwardly at an angle 75 to form ears 14 to which are secured the upper ends of the angularly disposed brace bars 15. The bars 15 are directed downwardly and secured at opposite ends to the forward portion of the base frame 1. 80

An axle 16 is mounted transversely of the frame and adjacent the forward end and provided with wheels 17 for spacing the frame 1 above the floor and providing means for transporting the soot blower to the dif- 85 ferent boilers.

A piston 18 is mounted for reciprocation within the cylinder 5 and is adapted to be driven by water pressure. A flexible pipe 90 19 is connected with the lower end of the cylinder 5 and is provided with a three-way valve at 20 having an exhaust pipe 21 and an inlet pipe 22. The inlet pipe 22 is connected with a source of water under pressure. When the valve 20 is operated to admit water from the pipe 22 to the pipe 19, the piston 18 is elevated and when the valve is so arranged as to permit the water in pipe 19 to exhaust to pipe 21, the piston 18 will be correspondingly lowered. 100

The piston 18 is provided with a head 23 upon which is mounted a U-shaped track 24 and a transversely disposed shaft 25. The track 24 and shaft 25 are carried upwardly or downwardly as the case may be when the piston 18 is actuated. On the outer end of the shaft 25 is rigidly mounted a pinion 26. A pinion 27 is rigidly mounted on a shaft 28 (Figure 3) which is rotatable in bearings on the channel member 24. A chain 29 engaged 105 110

with the gears 27 and 26 imparts rotary motion to the gear 27 when the shaft 25 is rotated by a knurled wheel 30 which is rigidly secured on an end of said shaft which is opposite to the end upon which the gear 26 is mounted. Rotation of the shaft 25 causes rotation of gear 26 and through the chain 29, rotates gear 27.

Pressure rollers 31 and 33 are adapted to engage the flexible portion 40^a of a steam pipe 40 received within a sleeve 32, the sleeve being slidable in the channel member 24. The roller 33 is rigidly connected to a shaft 28 and rotated when the gears 26 and 27 are revolved. Springs 34 embrace guide studs 35 connected with blocks 35^a slidable in brackets 36. The springs exert a downward pressure on the blocks 35^a with the blocks resting on the ends of the roller 31 so that the roller will always be forced downwardly towards the roller 33 and will thereby engage the flexible piping 40^a.

A lug 37 on the sleeve 32 is adapted to be engaged by a stop 38 carried by a strap 39 rigidly connected with the outer end of the channel member 24 to limit the outward movement of the sleeve 32. Said sleeve rides on roller 38^a mounted in the channel member 24, said roller being substantially in the same vertical plane with the stop 38. The pipe 40 is slidably mounted within the sleeve 32 and is adapted to carry steam and spray the same through a nozzle 41 which is provided with a plurality of spaced perforations 42 around the periphery thereof. The flexible tubing 40^a connects the steam pipe 40 with a source of steam. When the roller 33 is revolved it will force the steam pipe forwardly with the sleeve 32 acting as a carriage or support for the steam pipe 40.

The operation of my device is as follows:

A portable soot blower is transported by means of the wheels 17 into the alley side of the boilers. Two inch holes are provided in vertical and horizontal alinement along the alley side of a steam boiler through which is adapted to be inserted a nozzle 41 and the pipe 40. When the soot blower has been properly arranged, water pressure is admitted to the valve 20, tube 19 and to the cylinder 5 for elevating the piston 18 and the nozzle 41 to the proper height whereby said nozzle may be located adjacent one of the small openings in the side of the boiler.

Rotation of the knurled wheel 30 will cause inward movement of the steam nozzle 41 and the sleeve 32 and pipe 40 through said opening and project said nozzle and steam pipe 40 in between the boiler tubes. Steam is admitted to the pipe 40 as soon as the nozzle has been inserted within one of the openings and continued with the inward movement of said nozzle. When the tubes have been sufficiently cleaned of soot or other extraneous matter the nozzle 41 is with-

drawn and the steam is turned off from the pipe 40.

By operation of the valve 20 the piston 18 and likewise the nozzle 41 are either lowered or raised as the case may be for further insertion in other openings in the side of the boiler.

The knurled wheel 30 is again rotated rotating gear 26 and likewise rotating gear 27 through the operation of the chain 29. Rotation of gear 27 causes rotation of shaft 28 and roller 33. Since roller 33 engages the flexible pipe 40^a said pipe is moved forwardly and due to the fact that there is sufficient frictional contact between pipe 40 and sleeve 32, sleeve 32 will likewise be moved forwardly. The rotation of gear 27 and the forward movement of pipe 40 and nozzle 41 are continued until the nozzle 41 is in proper position for spraying steam around the exterior of the boiler pipes to remove the soot. The nozzle is again retracted and steam turned off as said nozzle reaches the entrance opening to the boiler. Other openings in the side of the boiler may receive the nozzle 41 with the pipe 40 projected sufficiently inward of the boiler between other pipes for dislodging the remaining soot on said pipes. A chain 50 is trained over a sprocket 51 rigid with the shaft 25 so that when the piston is elevated to such an extent that the wheel 30 is disposed out of reach of the operator, said chain may be manually operated to cause rotation of the shaft 25.

What I claim is:

1. In a portable soot blower, a movable carriage, a cylinder mounted on the carriage, means connecting said cylinder with a source of fluid under pressure, a piston movable in said cylinder, a head connected with the piston and projecting outwardly of the cylinder, a track rigidly connected with the head in a horizontal position, a shaft rotatably mounted transversely of the head, a gear rigidly connected with the shaft, a second shaft rotatably mounted at one end of the track, a gear rigidly connected with the second shaft, a chain connecting the two gears, a pressure roller rigidly connected with the second mentioned shaft, a pressure roller spaced above the first roller, a sleeve slidably mounted in the track, means for rotating the first mentioned shaft, a steam pipe slidably mounted within the sleeve and provided with a nozzle at one end and with means for connecting its other end with a source of steam under pressure, said connecting means being in engagement with the pressure rollers for causing reciprocation of the sleeve and pipe.

2. In a portable soot blower, a movable carriage, a cylinder mounted on the carriage, means for connecting said cylinder with a source of fluid under pressure, a piston movable in said cylinder, a head connected with

the piston and projecting outwardly of the cylinder, a track rigidly connected with the head in a horizontal position, a shaft rotatably mounted transversely of the head, a gear rigidly connected with the shaft, a second shaft rotatably mounted at one end of the track, a gear rigidly connected with second shaft, a chain connecting the two gears, a pressure roller connected with the second mentioned shaft, a second pressure roller spaced from the first roller, a sleeve slidably mounted in the track, a steam pipe slidably mounted within the sleeve and provided with a nozzle at one end and with means for connecting its other end with a source of steam under pressure, a stop mounted on the sleeve, a stop mounted at the forward end of the track and engageable with the stop on the sleeve for maintaining the slidable sleeve within the track, said connecting means being in engagement with the pressure rollers for causing reciprocation of the sleeve and pipe, and means for rotating the first

mentioned shaft, and likewise the pressure rollers.

3. In a portable soot blower, a movable carriage, an elevating means mounted on the carriage, a track carried by said elevating means, a sleeve slidably mounted in the track and a steam pipe mounted for slidable movement within the sleeve and for simultaneous movement with the sleeve in the track, a flexible pipe connected with the steam pipe, a pair of rollers engaging diametrically opposite points on the flexible pipe, means for operating one of the rollers for moving the flexible pipe, the sleeve and steam pipe outwardly of the track, a nozzle connected to one end of the pipe, said flexible pipe constituting means for connecting a source of steam to the first mentioned pipe, stop means on the track and a stop on the sleeve arranged to cooperate with said stop means to limit movement of the sleeve on the track.

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