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APPARATUS FOR DRAWING BOILER TUBES

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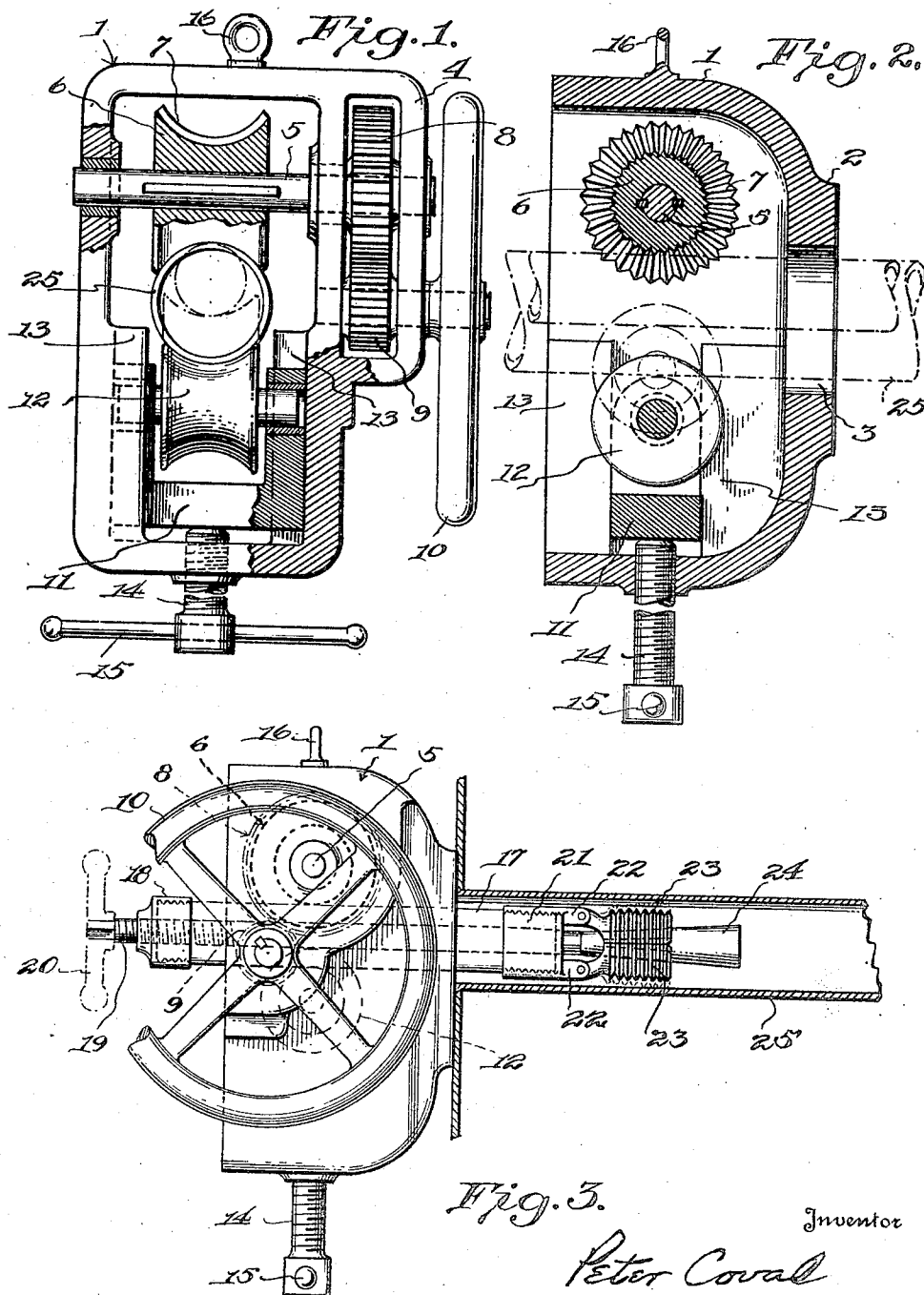


Fig. 3.

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APPARATUS FOR DRAWING BOILER TUBES.

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To all whom it may concern:

Be it known that I, PETER COVAL, a citizen of the United States, residing at Pittsburgh, county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Drawing Boiler Tubes, of which the following is a specification.

My invention relates to apparatus for removing the tubes of boilers from their heads, and has for its object to provide an improved construction of portable device adapted for this purpose, which will combine simplicity in construction with a ready adaptability to use. These objects I accomplish in the manner and by the means hereinafter described and claimed, reference being had to the accompanying drawing, in which:—

Figure 1 is a front elevation of my improved device, portions of the same being shown broken away.

Figure 2 is a central vertical longitudinal sectional view of the same.

Figure 3 is a side elevation of my improved device, the same being shown applied to a boiler heading in position to extract one of the tubes therefrom.

Similar reference numerals designate corresponding parts in the several views.

In the said drawing the reference numeral 1 denotes a casing open at its front end and partially closed at its rear end to form an abutment 2 adapted to be brought into contact with the boiler heading when in use, said abutment being centrally apertured at 5 for the passage therethrough of the boiler tube. Fixed to or formed integral with said casing 1 at one side thereof is a bracket 4, and passing through suitable bearings in the side walls of said casing 1 and the bracket 4 is a shaft 5, having keyed thereon a roll 6, whose concaved face is serrated or roughened at 7. Upon that portion of the shaft 5 lying within the bracket 4 is keyed a gear-wheel 8, in mesh with a similar but smaller gear-wheel 9, the shaft of the latter extending outside the bracket 4 and having mounted thereon an operating wheel 10. Mounted in the casing 1 below the roll 6, and in a U-shaped bracket 11, is an idler roll 12 concaved on its face to correspond with the roll 6. The bracket 11 carrying said roll 12 is disposed between vertical guides 13 formed on the inner face of the casing 1, whereby said bracket and roll are

adjustable vertically in said casing; this adjustment being accomplished by a set-screw 14 tapped through a screw-threaded opening in the bottom of the casing 1, an operating handle 15 being applied to the outer end of the same. In order to provide for suspending the casing 1 and its parts in any desired position on the face of the boiler heading, I form on the same at the top an eye 16 adapted to be engaged by a hook, which may be supported by a cable passing around a suitable pulley, whereby the device may be suspended in any desired position for operation.

In many types of boilers the ends of the tubes normally are flush with the header, and I have shown in Figure 3 a device adapted to start the tubes from their position. This device consists of a tube 17 externally screw-threaded at its outer end to receive a cap 18, through which passes a shaft 19 in screw-threaded engagement with said cap, said shaft at its outer end being squared removably to receive an operating handle 20. The inner end of the tube 17 has screw-threaded thereon a cap 21, provided with pairs of oppositely disposed ears 22, in which are pivoted the ends of two semi-circular jaws 23, serrated or roughened, on their outer faces, as shown. The inner end of the shaft 19 is formed with an expanding cam disposed between the jaws 23.

In operation this device is inserted into a boiler tube to be removed, and the casing 1 positioned so that the tube 17 lies between the rolls 6 and 12. The roll 12 then is adjusted firmly to grip said tube between the same and the roll 6, and, by the application of the handle 20, the shaft 19 may be rotated to withdraw its cam 24 outwardly, thereby forcing the jaws 23 firmly into gripping contact with the interior face of the boiler tube 25. Now, by manipulating the wheel 10 in the proper direction, the tube 17, together with the boiler tube 25, may be forcibly withdrawn outwardly until in position to be directly engaged by the rolls 6 and 12, whereupon the tube 17 and its parts may be removed, and the further withdrawal of the tube accomplished through the mechanism in the casing 1.

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

1. In a device of the character described,

a casing formed with an apertured abutment at one end, relatively adjustable gripping rolls within said casing, a bracket fixed to one side of said casing, gearing mounted in
 5 said bracket for rotating said rolls, and exterior means for operating said gearing.

2. In a device of the character described, a casing formed with an apertured abutment at one end, an upper serrated concaved
 10 gripping roll rotatably mounted within said casing, a lower concaved guide roll mounted below said upper roll, means for vertically adjusting said lower roll toward and from
 15 of said casing, gearing mounted in said bracket and connected to rotate said upper roll, and exterior means for operating said gearing.

3. In a device of the character described,
 20 a casing formed with an apertured abutment at one end, and with supporting means at its top, an upper serrated concaved gripping roll rotatably mounted within said casing, a lower concaved guide roll mounted below

said upper roll, means for vertically adjust- 25
 ing said lower roll toward and from said upper roll, a bracket fixed to one side of said casing, gearing mounted in said bracket and connected to rotate said upper roll, and exterior means for operating said gearing. 30

4. In a device of the character described, a casing formed with an apertured abutment at one end, an upper serrated concaved gripping roll rotatably mounted within said casing, a lower concaved guide roll mounted be- 35
 low said upper roll, a U-shaped bracket in which said lower roll is mounted, a set-screw tapped through the bottom of said casing and adapted to adjust said bracket vertically, means for operating said set- 40
 screw, a bracket fixed to one side of said casing, gearing mounted in said bracket and connected with said upper roll for rotating the same, and exterior means for operating
 45 said gearing.

In testimony whereof, I hereunto affix my signature.

PETER COVAL.