

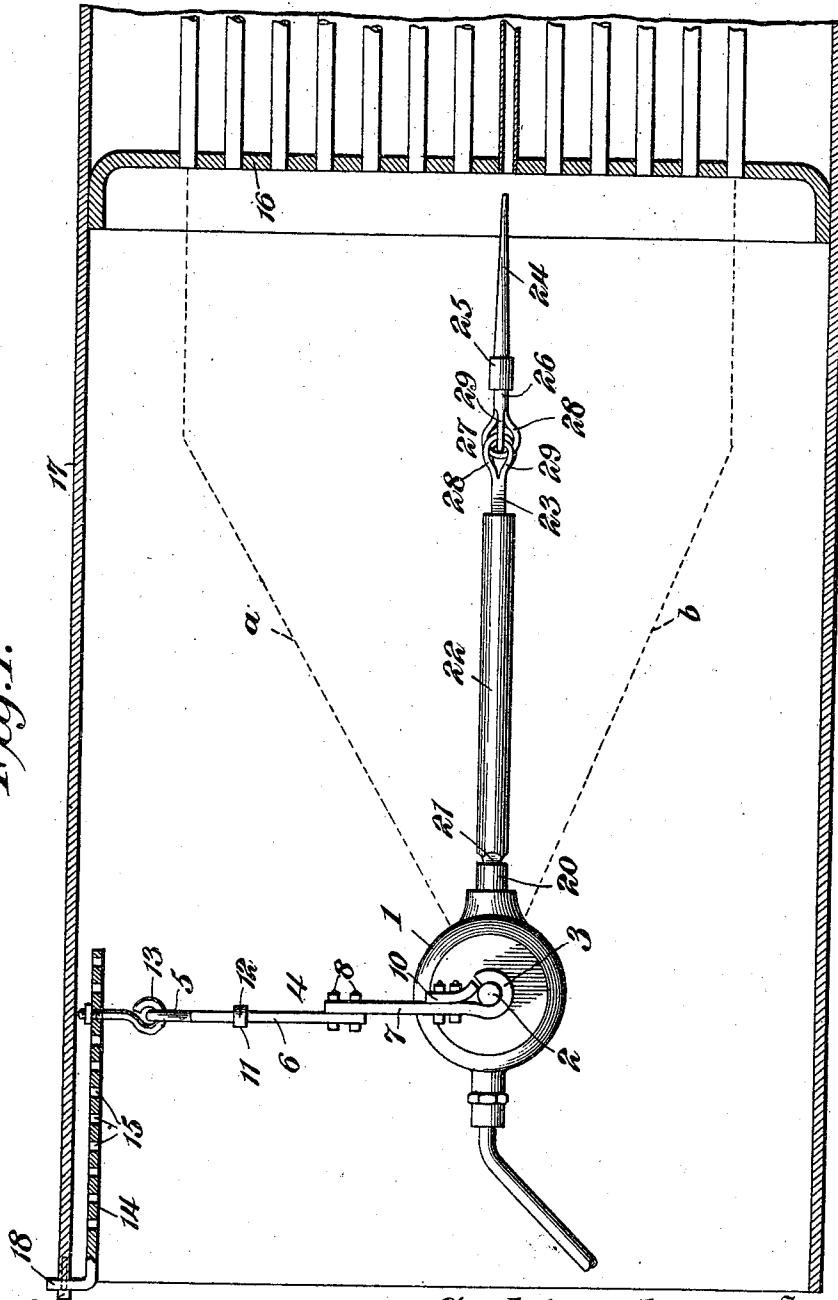
C. A. ANDERSON.
 APPARATUS FOR BOILER FLUE WORK.
 APPLICATION FILED APR. 21, 1909.

966,638.

Patented Aug. 9, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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Carl A. Anderson, Inventor,

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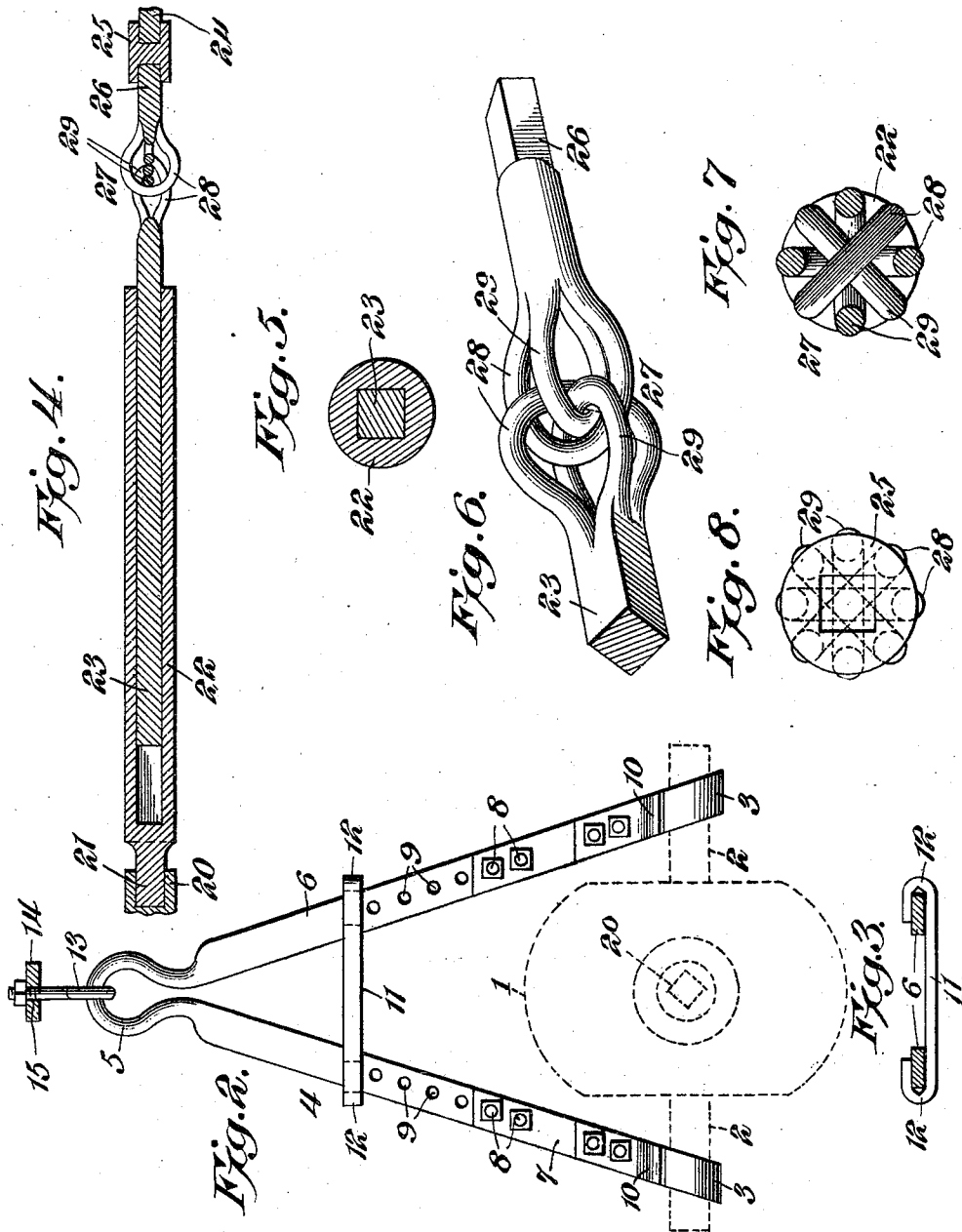
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UNITED STATES PATENT OFFICE.

CARL A. ANDERSON, OF DUBOIS, PENNSYLVANIA.

APPARATUS FOR BOILER-FLUE WORK.

966,638.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed April 21, 1909. Serial No. 491,356.

To all whom it may concern:

Be it known that I, CARL A. ANDERSON, a citizen of the United States, residing at Dubois, in the county of Clearfield and State of Pennsylvania have invented a new and useful Apparatus for Boiler-Flue Work, of which the following is a specification.

The invention relates to an apparatus for boiler flue work.

The object of the present invention is to improve the construction of apparatus for boiler flue work, and to provide a simple inexpensive and efficient apparatus of this character, equipped with means for adjustably suspending an air, or other motor in front of the flue sheet of a boiler, and capable of ready adjustment to enable flue-rolling tool, cutter, or other tool to operate at any portion of the flue sheet without changing the position of the motor with respect to the flue sheet or adjusting the hanger, which supports the motor.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is an elevation, partly in section, of an apparatus, constructed in accordance with this invention and arranged for operating on the flues of a tubular boiler. Fig. 2 is a front elevation, partly in section, illustrating the construction of the hanger for supporting the motor. Fig. 3 is a horizontal sectional view of the hanger, illustrating the construction of the brace for preventing the sides of the hanger from spreading. Fig. 4 is a detail sectional view of the shafting. Fig. 5 is a transverse sectional view of the telescopic members of the shafting. Fig. 6 is a detail perspective view of the shaft coupling. Fig. 7 is a sectional view of the shaft coupling. Fig. 8 is an end view of the front or outer tool-holding shaft.

Like numerals of reference designate cor-

responding parts in all the figures of the drawings.

The apparatus is equipped with an air motor 1, but an electric or other motor may be employed, as will be readily understood. The motor 1 is provided at opposite sides with pivots or trunnions 2, mounted in open bearings 3 of a hanger 4, which is substantially wedge-shaped or inverted V-shaped, as clearly illustrated in Fig. 2 of the drawings. The hanger 4 is composed of two upwardly inclined converging sides, connected at their upper ends by an eye 5 and composed of upper and lower sections or members 6 and 7, adjustably secured together by bolts 8. The upper and lower sections form extensible sides for the hanger, and they have overlapped portions adjustably secured together by bolts 8. The upper sections 6 of the sides of the hanger are provided at intervals with perforations 9 to secure the necessary adjustment of the parts. The lower terminals of the sides of the hanger are bent upon themselves, or otherwise shaped to provide the open hook-shaped bearings 3, and the pivots or trunnions 2 are confined in the bearings by means of plates 10, bolted or otherwise secured to the sides of the hanger and having lower outwardly bent portions, partially closing the entrance openings of the bearings 3, as clearly illustrated in Fig. 1 of the drawings. The sides of the hanger are prevented from spreading by a horizontally disposed brace 11, having hook-shaped terminals 12 bent inwardly on themselves, as illustrated in Fig. 3 of the drawings to embrace the sides of the hanger and engage the inclined outer edges thereof. The horizontal brace 11 is supported in position by the angular arrangement of the sides of the hanger, which prevent the brace from slipping downward.

The connecting eye 5, which is located at the apex of the hanger, is linked into an eye bolt 13 having a threaded shank and depending from a horizontally disposed supporting bar 14, provided at intervals with perforations 15 for the reception of the eye bolt to permit the apparatus to be adjusted toward and from the flue sheet 16 of a boiler 17. The shank of the eye bolt, which passes through any of the perforations of the sup-

porting bar, is provided with a nut, which engages the upper face of the same. The outer end 18 of the supporting bar is bent upward to form an attaching lug, which is
 5 secured by a screw 19, or other suitable fastening means to a portion of the boiler or the adjacent structure.

The drive shaft of the motor is provided with a socket 20 for the reception of a shank
 21 of one of a pair of telescopic shaft members 22 and 23. The shaft member 22, which has a longitudinal opening, which is tubular, is rectangular in cross section, and the other shaft member 23 is squared to fit the tubular
 15 member, but the parts may be slidably connected in any other preferred manner and may be of any other non-circular cross sectional configuration. The telescopic shaft members are extensible to move inward and outward a tool 24, which is detachably fitted
 20 in a socket 25 of a front tool-holding shaft 26, thus permitting the tool to be adjusted to and inserted in the several flues. This adjustment may be made by hand or any other suitable means. The tool 24 is tapered
 25 for expanding the boiler tubes or flues, but the apparatus may be equipped with a cutter, or any other suitable tool for operating on the boiler.

30 The front or tool holding shaft 26 is connected with the extensible shaft member 23 by means of a coupling 27, composed of two sections, each equipped with substantially circular loops 28 and 29, arranged at right
 35 angles to each other, one of the loops being slightly smaller than and passing through the other loop. The loops 28 and 29 of each section are linked into the loops of the other section, forming a flexible connection and
 40 adapted to permit free movement or angular adjustment of the parts without locking or affecting the rotary motion communicated to the tool-holding shaft through the extensible rotary shaft members.

45 The motor is pivotally mounted in the hanger and is adapted to be rotated to arrange the extensible shaft members either in a horizontal position or at an upward or downward inclination, as indicated by dotted lines *a* and *b*, and the shaft members are
 50 extensible to permit the tool 24 to be moved inward and outward as occasion demands, and the tool may be arranged to operate on any portion of the flue sheet without readjusting the hanger. The eye bolt forms a
 55 pivot and permits a horizontal swinging movement, and in practice the nut will be keyed or otherwise locked on the bolt.

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

1. An apparatus of the class described including a horizontal supporting bar having attaching means, a relatively fixed pivot ad-

justably mounted on the horizontal bar and
 65 adapted to be arranged at different points along the same, a hanger hung from the said pivot and having bearings, a motor having opposite pivots arranged in the bearings of the hanger, a tool holding shaft, and shaft
 70 members connecting the tool holding shaft with the motor.

2. An apparatus of the class described including an oscillatory motor, a tool holding shaft, extensible members connecting the
 75 tool holding shaft with the motor, a substantially wedge-shaped hanger having upwardly converging sides provided with straight inclined outer edges, said hanger being provided at the top with an eye connecting the sides and the latter being provided with bearings receiving the pivots of the motor, and means connecting the sides and engaged with the inclined outer edges
 80 thereof.

3. An apparatus of the class described including a hanger having straight upwardly converging sides and provided at the top with an eye connecting the sides, said hanger
 90 being also provided at the lower end of its sides with bearings, a horizontal brace extending across the hanger and having hook-shaped terminals embracing the sides of the hanger between the ends thereof, a motor
 95 journaled in the bearings of the hanger and located below the horizontal brace, and supporting means receiving the eye of the hanger and forming a pivot for the same.

4. An apparatus of the class described including a motor, a tool-holding shaft, shaft
 100 members connecting the tool-holding shaft with the motor, a hanger having bearings for the motor and constituting the sole support for the same and the shafting, a horizontal supporting bar having terminal attaching means and provided at intervals
 105 with perforations, and a pivot connected with the hanger and adapted to be arranged in any of the said perforations, whereby the hanger is adjusted along the supporting bar.
 110

5. An apparatus of the class described including a motor, extensible shaft members driven by the motor, a tool-holding shaft, and a flexible connection between the tool-holding shaft and one of the extensible shaft
 115 members, said flexible connections consisting of two sections, each being provided with a pair of loops arranged at right angles to each other and linked into the loops of the other section.
 120

6. An apparatus of the class described including a motor, and shafting provided with a flexible connection consisting of two sections, each provided with a pair of loops of different diameters arranged at right angles
 125 to each other, the loops of each section being linked into the loops of the other section.

7. An apparatus of the class described in-

cluding a motor, and shafting provided with
a flexible connection consisting of two sec-
tions, each provided with a pair of substan-
tially circular loops arranged at right angles
5 to each other, one of the loops being of less
diameter than and arranged within the other
and the loops of each section being looped
into the other section.

In testimony, that I claim the foregoing
as my own, I have hereto affixed my signa- 10
ture in the presence of two witnesses.

CARL A. ANDERSON.

Witnesses:

G. W. TOZIER,
J. B. JACOBSON.