C. F. GESSERT & J. W. WHITFORD.

APPARATUS FOR CUTTING PILES OR THE LIKE BY MEANS OF GASES.

APPLICATION FILED FEB. 20, 1911.

1,000,399.

Patented Aug. 15, 1911.

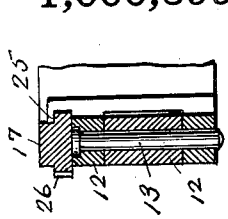

Fig. 4.

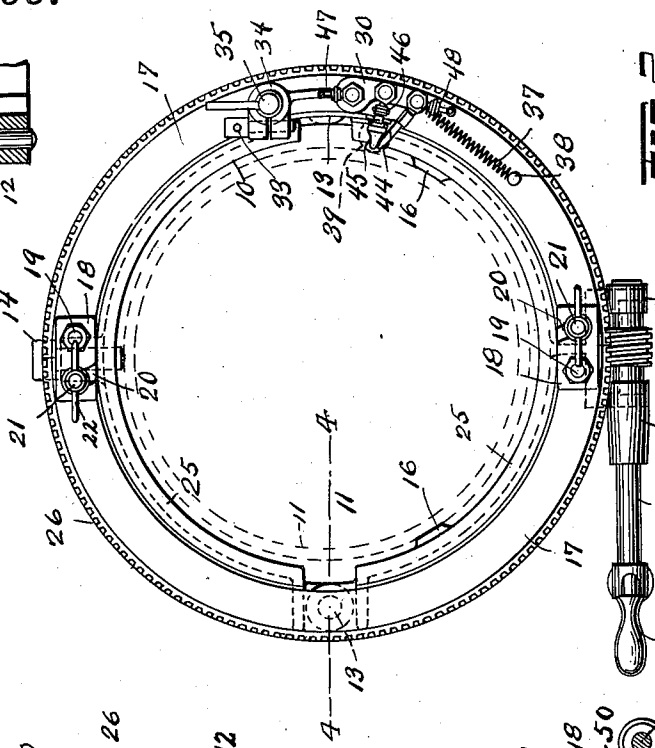

Fig. 2.

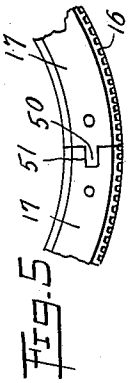

Fig. 5

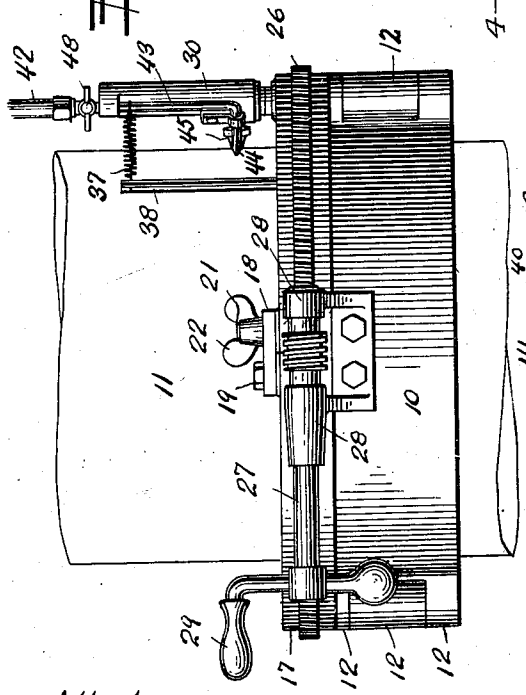

Fig. 1.

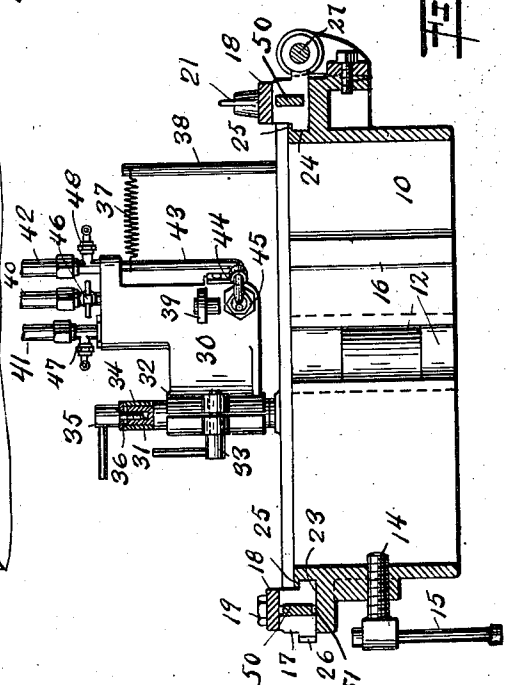

Fig. 3.

Attest:
G. Robert Thomas
M. M. Burnett.

Inventors
Charles F. Gessert and
John Walter Whitford
by F. H. Lauenburg Atty

UNITED STATES PATENT OFFICE.

CHARLES F. GESSERT, OF BROOKLYN, NEW YORK, AND JOHN WALTER WHITFORD, OF JERSEY CITY, NEW JERSEY, ASSIGNORS TO DAVIS-BOURNONVILLE ACETYLENE DEVELOPMENT COMPANY, OF PIERRE, SOUTH DAKOTA, A CORPORATION OF SOUTH DAKOTA.

APPARATUS FOR CUTTING PILES OR THE LIKE BY MEANS OF GASES.

1,000,399. Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed February 20, 1911. Serial No. 609,569.

To all whom it may concern:

Be it known that we, CHARLES F. GESSERT and JOHN WALTER WHITFORD, citizens of the United States, residing, respectively, in the borough of Brooklyn, county of Kings, and State of New York, and Jersey City, Hudson county, and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Cutting Piles or the Like by Means of Gases, of which the following is a specification.

This invention relates to apparatus for cutting metals by means of gases, and more particularly to apparatus for cutting piles off horizontally, or for cutting other hollow columns or shafts, whether in a vertical position or otherwise.

In apparatus for cutting by means of gases it is the general practice to heat the metal to be cut by a jet of a combustible mixture, such as acetylene and oxygen, and to effect the cutting of the metal so heated by means of a jet of oxygen, the two jets being adjacent to each other and the heating jet being preferably in the lead as the cutting apparatus is advanced relatively to the work along the line of the cut.

The present invention relates to novel means for supporting the jet apparatus from the pile or the like and for causing it to progress slowly and evenly around the pile in such fashion as to insure that the progress of oxidation will not be interrupted. The number and arrangement of the jets themselves, the conduits for the gases, and the provisions for effecting a combustible mixture, may be varied in accordance with approved or preferred practice.

The object of the invention is to provide a suitable support adapted to be positioned about the shaft to be cut, a carriage movable on the support about the shaft so as to cause the jet means to complete the circuit of the shaft, and suitable operating means for effecting gradual movement of the carriage.

Another object is to provide a sectional construction for the support and also for the carriage, which latter is preferably an annulus, together with suitable means for holding the sections rigidly in assembled relation, so that the apparatus can be quickly and conveniently applied around and removed from the pile or the like.

A further object is to enable the jet apparatus to be moved toward and from the shaft being cut, both so that the cutting means can be shifted away from the work and so that the nozzles may automatically maintain an invariable distance from the work.

In the particular embodiment of the invention shown and described herein for purposes of illustration the general object has been to attain a high degree of simplicity and strength, together with ease of operation.

With these and other objects in view, the invention consists in various parts, structures and combinations, specifically illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings illustrating this preferred embodiment of the invention: Figure 1 is a side elevation of the apparatus applied to a pile; Fig. 2 is a plan view; Fig. 3 is a vertical section in the plane of the joints of the sectional carriage; Fig. 4 is a detail vertical section on the line 4—4 of Fig. 2; and Fig. 5 is a detail plan view showing one pair of abutting ends of the sectional annular carriage, the locking means being removed.

The particular embodiment of the invention shown in these drawings will now be briefly described, it being understood that numerous other specific embodiments may be designed.

The numeral 10 indicates a substantial support, preferably annular, with its central opening for the reception of the pile or column, the latter being indicated at 11. This support is formed of sections, preferably two semicircular halves, and means are provided for connecting the sections rigidly together in assembled relation. Suitable and simple means include vertically apertured

interengaging tongues 12 formed on the meeting ends of the sections, and tapered or headed pins 13 removably received in the apertures in these tongues. The assembled annular support is clamped to the pile by suitable means, such as a radial clamp screw 14 having an operating head or handle 15. Preferably, the pile is clamped between the end of this screw and two internal projections 16 on the support, these three points being preferably spaced equidistantly. The projections 16 are preferably vertical ridges or strips, so as to hold the apparatus truly on the pile. The adjustability of the screw 14 enables the support to accommodate shafts having some variation in diameter, and the apparatus may be designed for as large a range of adjustment in this regard as may be desirable. It will be obvious that either of the joints 12, 13 constitutes a hinge connection.

A carriage is rotatably supported and guided on the support 10, and this carriage is preferably of the annular form indicated at 17. This carriage is also sectional, preferably comprising semicircular halves. Suitable means are provided for locking these halves together, such as plates 18 pivoted by a screw or pin 19 to one end of each section and having transversely inclined slots 20 which take over pins or screws 21 projecting upward from the abutting ends of the sections. By forcing the plates inward the ends of the sections are brought tightly together, and clamping of the plates 18 by means of the wing nuts 22 holds the parts against loosening. The ends of the carriage sections may be provided with engaging tongues and sockets 50 and 51.

The annular carriage 17 preferably rests on an annular flat seat 23 formed on the support 10 and turns on a circular external bearing 24 also formed thereon. In order to avoid looseness, narrow flanges 25 are formed on the support at the top of the bearing 24, so as to overhang the annular carriage. Thus, the carriage is received between side bearings, constituted by the seat 23 and the flanges 25. The fastening devices for the sections of the carriage, such as the plates 18 and screws 21 just described, are located so as to be entirely accessible and free from the flanges 25. The flanges 25 are particularly useful in event of the pile or shaft being in an inclined or horizontal position.

For driving the carriage slowly and uniformly a reducing gearing is employed, and it is found that a worm gearing as herein illustrated is peculiarly adapted for the particular purpose. The greatest simplicity is attained by forming gear teeth 26 on the annular carriage 17, preferably on the outer periphery thereof, to constitute the carriage a worm gear. A tangential worm shaft 27 is journaled in bearings 28 on the support with its worm meshing with this split gear. The operating handle 29 is preferably fixed directly to the worm shaft. By this construction maximum simplicity and compactness, together with best operation, are secured.

In accordance with the invention a suitable head 30 is mounted on the carriage and is movable toward and from the work. Preferably, the head is pivoted to the carriage, as by the vertical pivot pin 31, so that the head can be swung away from and back to the work. Means are provided, also, for permitting vertical adjustment of the head on the carriage, so that the cut may be effected at exactly the desired height. In the particular construction illustrated, the head is provided with a split sleeve portion 32, which may be clamped to a sleeve 34 by means of a handled screw 33. Means are also provided for rigidly holding the head against pivotal movement when desired, for illustration of which we have shown a handled screw 35 and washer 36 for clamping the sleeve 34 to the pivot pin 31.

By reason of the movability of the head 30 this part is rendered self-adjusting, and in this connection it is preferred to provide a spring 37 for urging the head toward the shaft being cut. As shown, this spring may be a coil spring connecting the head with a pin 38 projecting from the carriage. A contact member, most desirably in the form of a roller 39, is mounted on the head and extends inward beyond the jet orifices hereinafter mentioned, so as to travel along on the surface of the pile to space the nozzles at a predetermined distance from the work throughout the cutting operation.

The gas conduits with their nozzles or jet orifices may be formed in or attachable to the head 30 in any desirable manner. In the particular construction illustrated, the flexible pipes 40 and 41 conveying the oxygen and acetylene, respectively, for the heating jet, are connected with conduits in the head, which lead to a removable and replaceable tip or nozzle 45, which projects horizontally inward of the carriage 17 and in which the mixture of the gases is effected. The oxygen for cutting is led through the flexible tube 42 and the pipe 43, the latter being removably clamped to the head and having a horizontal inturned nozzle end 44 located adjacent and in the same horizontal plane as the nozzle 45. Valves 46, 47 and 48 may be provided for the several conduits.

In operation, the support 10 is assembled about the pile and clamped thereto. The annular carriage is then assembled on the support. When so placed in position the carriage covers the upper ends of the pins 13, so that loosening or removal of these pins is guarded against. The head 30, if

not already in position, is placed on the carriage and the several gas connections are effected. The heating jet is first turned on, and when the metal at the point played upon is sufficiently hot the oxygen jet is turned on. The worm gearing is operated so as to advance the jets steadily and at a rate such as to insure that the oxidation will be uninterrupted. The self-adjusting head always maintains the nozzles at the proper distance from the column irrespective of irregularities in the surface therein or a lack of concentricity between the bearing for the carriage and the pile, which latter may be the case if the pile has a diameter larger or smaller than that indicated by dotted lines in Fig. 2.

We claim—

1. Apparatus for cutting metal piles and the like by means of gases, comprising an annular support formed of separable sections, means for locking said sections together and for clamping the support about the pile, an annular carriage mounted rotatably on said support and formed of separable sections provided with means for locking them together, jet means carried by the carriage for directing gas for heating and cutting upon the pile, gear teeth on said sectional carriage, a worm mounted on the support meshing with said gear teeth, and a handle also mounted on the support for rotating said worm.

2. Apparatus for cutting metal piles and the like by means of gases, comprising a support adapted to be secured to the pile or the like, a carriage with heating and cutting jets adapted to travel around the pile to be cut, said carriage being a sectional annulus adapted to rest rotatably on said support about the pile, an overhanging retaining flange on said support, and means on the top of the annulus free of said flange for holding the sections thereof together.

3. Apparatus for cutting metal piles and the like by means of gases, comprising a sectional support adapted to be secured about the pile or the like and having a pin for holding its sections in assembled relation, and a sectional annular carriage with heating and cutting jets adapted to travel about the pile to be cut, said carriage being adapted to be mounted rotatably on said support and to retain said pin therein.

4. Apparatus for cutting metal piles and the like by means of gases, comprising a sectional support adapted to encircle the pile or the like, means for holding the sections thereof rigidly in assembled relation, means for clamping the support to the pile to be cut, a carriage with heating and cutting jets adapted to travel around the pile to be cut, said carriage being a sectional annulus provided with gear teeth, means for holding the sections of said carriage in assembled relation, and operating means mounted on the support and including a crank handle and a gear engaging with said gear teeth.

5. Apparatus for cutting metal piles and the like by means of gases, comprising a sectional support adapted to be secured about the pile or the like, jet means for directing the gases upon the pile to be cut, a sectional annular carriage for said jet means mounted rotatably on said support to encircle the pile, locking plates pivoted on top of the sections of said carriage at the ends thereof and provided with oblique slots, and pins on the abutting ends of said sections for engagement with said slots.

6. Apparatus for cutting metal piles and the like by means of gases, comprising a carriage adapted to travel about the pile, means for supporting said carriage from the pile, a head on the carriage and gas cutting means carried by the head, said head being adjustable on the carriage parallel to the axis of the pile.

7. Apparatus for cutting metal piles and the like by means of gases, comprising a support and means for securing the same about the pile, a carriage mounted and guided on the support for movement around the pile, and a head mounted on the carriage and provided with means for directing adjacent heating and cutting jets upon the pile, said head being self-adjustable on the carriage toward and from the work and being also adjustable and lockable on the carriage in directions parallel to the axis of the pile.

8. Apparatus for cutting metal piles and the like by means of gases, comprising a support and means for securing the same about the pile, an annular carriage mounted and guided on the support and means for rotating the carriage about the pile, a pivot pin on said carriage parallel to the axis thereof, and a head carrying jet means mounted on said pin so as to permit said jet means to approach or recede from the work, said head including a sleeve mounted to turn on said pin and a sleeve forming part of the head proper, and means for clamping the latter sleeve at various elevations on the former sleeve.

9. Apparatus for cutting metal piles and the like by means of gases, comprising a support and means for securing the same about the pile, an annular carriage on the support and means for rotating the carriage about the pile, a pivot pin on said carriage parallel to the axis thereof, a sleeve mounted rotatably on said pin, means for locking said sleeve to said pin, a gas-cutting head carrying jet-directing means at a distance from said pin, and means for clamping said head to said sleeve at various elevations thereon.

10. Apparatus for cutting metal piles and the like by means of gases, comprising an

annular support adapted to be held about the pile, an annular carriage mounted rotatably on said support, a head, means pivotally supporting the head on the carriage to swing about an axis parallel to the axis of the device, and jet-directing means carried by said head at a distance from the pivot thereof.

In witness whereof, we have set our hands in the presence of subscribing witnesses.

CHARLES F. GESSERT.
JOHN WALTER WHITFORD.

Witnesses:
ALFRED E. SMITH,
DOROTHY SINCLAIR.