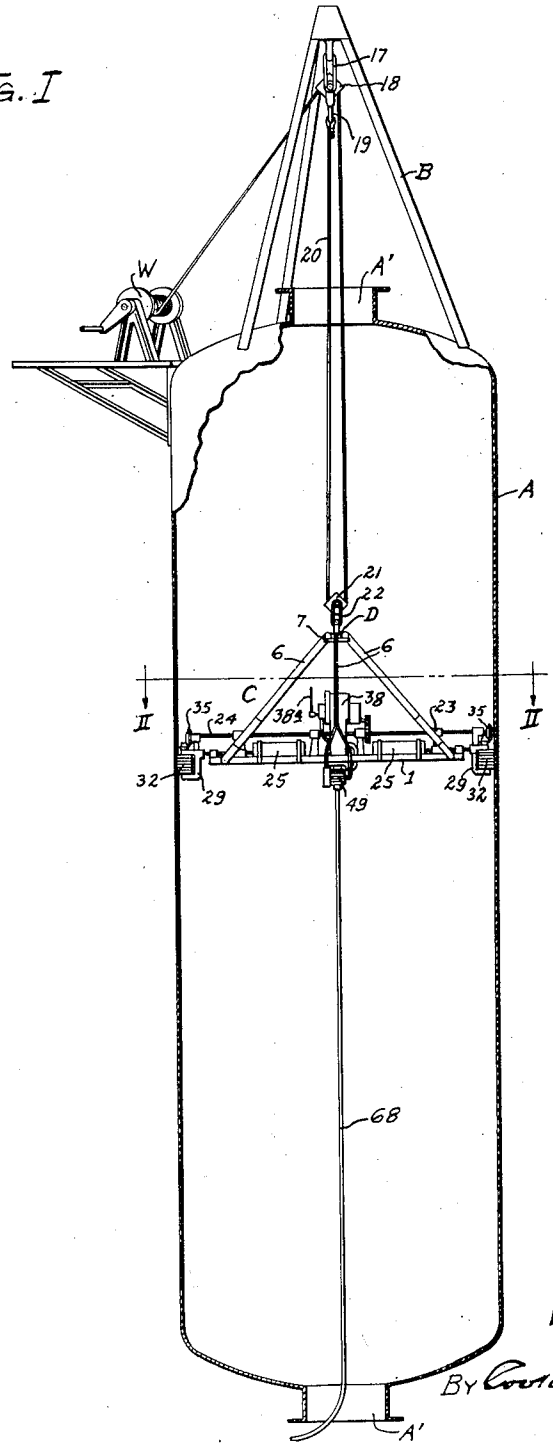
Jan. 12, 1926. **1,569,203**

W. P. RICE ET AL

SCRAPING DEVICE

Filed Nov. 21, 1923 3 Sheets-Sheet 1

FIG. I



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BY Coon & McCauley
ATTORNEYS

Jan. 12, 1926. 1,569,203

W. P. RICE ET AL

SCRAPING DEVICE

Filed Nov. 21, 1923 3 Sheets-Sheet 2

FIG. II

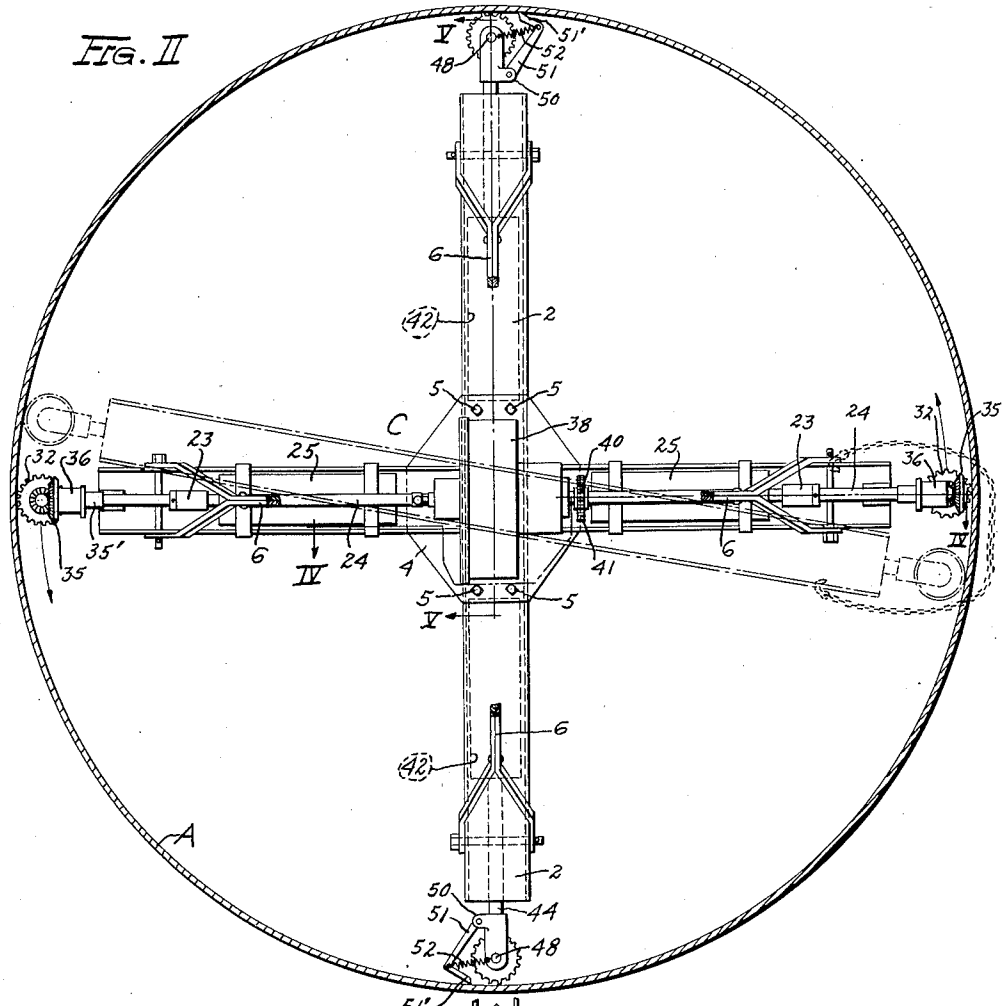
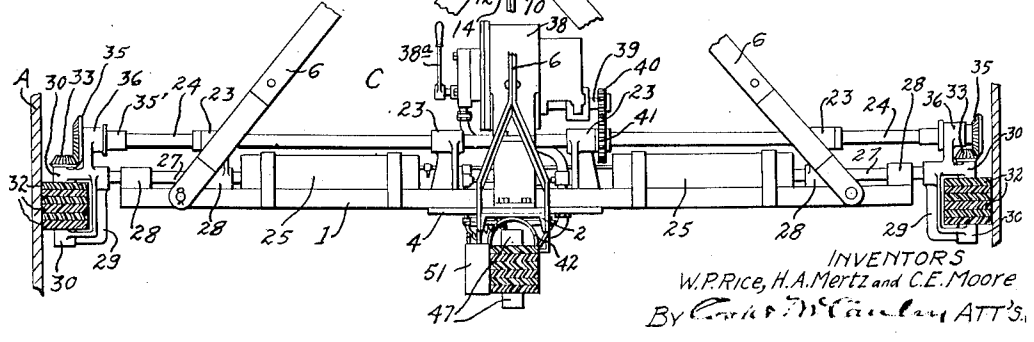


FIG. III



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Jan. 12, 1926. 1,569,203

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SCRAPING DEVICE

Filed Nov. 21, 1923 3 Sheets-Sheet 3

FIG. IV

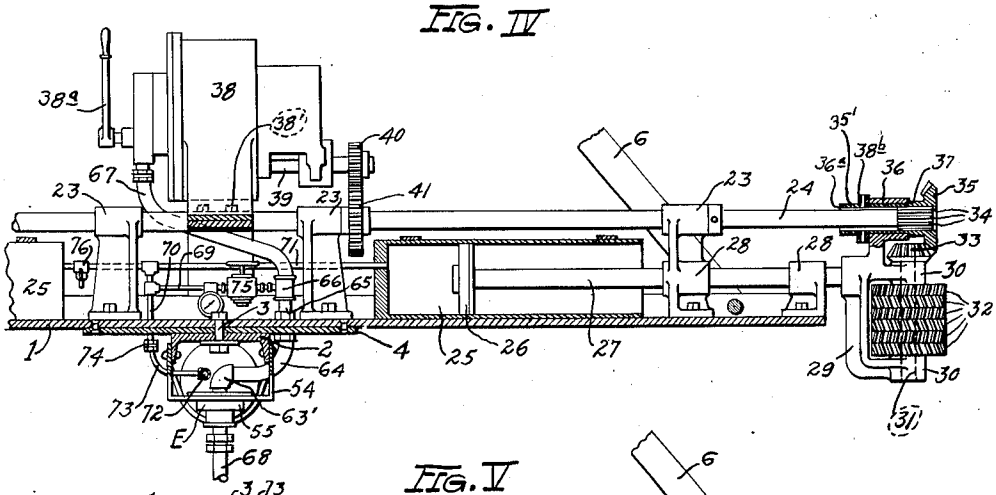


FIG. V

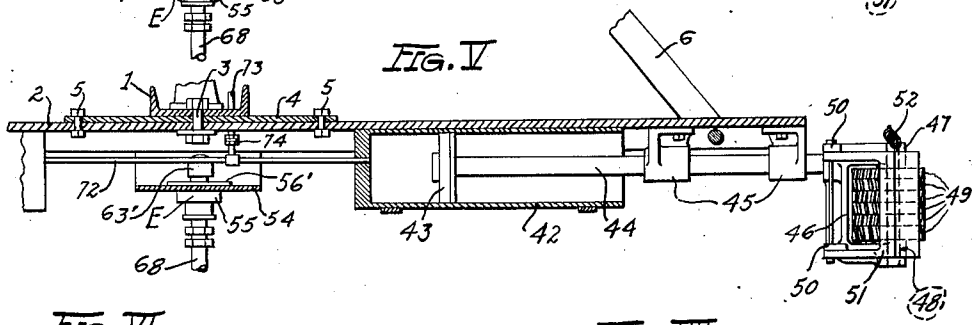


FIG. VI

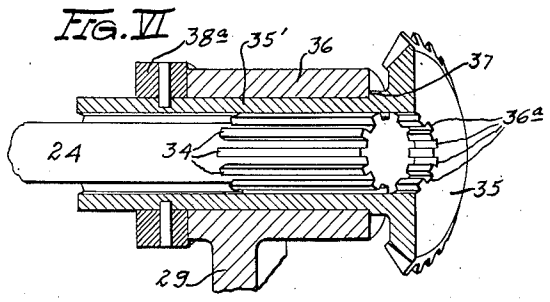
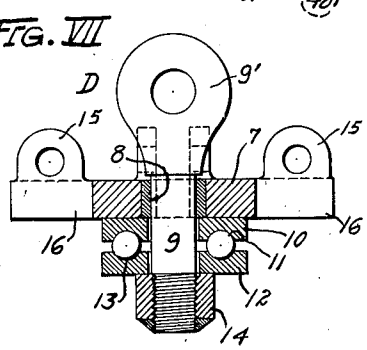


FIG. VII



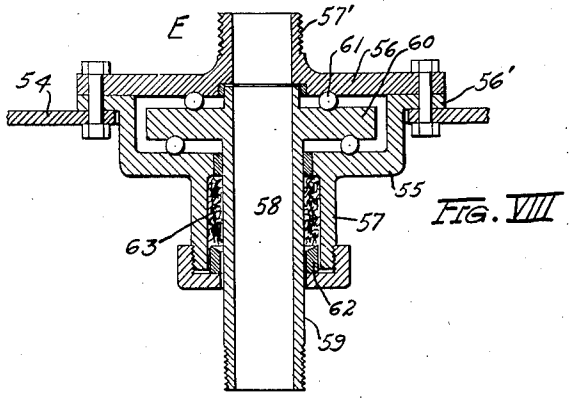


FIG. VIII

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Patented Jan. 12, 1926. 1,569,203

UNITED STATES PATENT OFFICE.

WAYNE P. RICE, HOWARD A. MERTZ, AND CHESTER E. MOORE, OF PONCA CITY, OKLAHOMA, ASSIGNORS TO MARLAND REFINING COMPANY, OF PONCA CITY, OKLAHOMA, A CORPORATION OF OKLAHOMA.

SCRAPING DEVICE.

Application filed November 21, 1923. Serial No. 676,193.

To all whom it may concern:

Be it known that we, WAYNE P. RICE, HOWARD A. MERTZ, and CHESTER E. MOORE, citizens of the United States of America, and residents of Ponca City, in the county of Kay, State of Oklahoma, have invented certain new and useful Improvements in Scraping Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates generally to improvements in scraping devices, and particularly to a scraping device which is intended for use in scraping the accumulation of solid matter from the inside face of the wall of a still of the type commonly used in cracking oil under pressure. While oil is undergoing distillation under high pressure and at a high temperature a heavy, carbonaceous substance known as coke and coke-forming matter is deposited on the inside faces of the walls of the still. This heavy substance is a heat insulator, and if it is permitted to accumulate on said inside faces of said walls the free transmission of heat from said still walls to the oil within the still will be interfered with. The efficient operation of a still therefore requires the periodical removal of this accumulation, and the main purpose of the present invention is to produce a device which will very effectually remove the accumulation mentioned from the walls of the still.

Our invention contemplates a scraping device which is capable of being folded or collapsed so that it may be introduced into the still through one of the comparatively small openings thereof, after which it may be reassembled within said still, and said scraping device preferably comprises a rotary and vertically movable member provided with coke breakers and scrapers which engage the wall of a still as said rotary member rotates, thus removing the accumulation of coke from the wall of the still.

With the foregoing and other objects in view, the invention comprises the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings wherein is shown the preferred embodiment of the invention. However, it is to be understood that the invention comprehends changes, variations and modifications which come within the scope of the claims hereunto appended.

Fig. I is a view, partly in section and partly in side elevation, of a still showing our improved scraping device associated therewith.

Fig. II is an enlarged cross section on line II—II of Fig. I.

Fig. III is an enlarged side elevation of a portion of our scraping device showing the combination breakers and driving members in contact with portions of the wall of a still.

Fig. IV is an enlarged section on the line IV—IV of Fig. II.

Fig. V is an enlarged section on the line V—V of Fig. II, the air motor being broken away.

Fig. VI is a sectional isometric view of a portion of one of the drive shafts and the associated bevel gear showing the arrangement which permits said bevel gear to move relative to said drive shaft.

Fig. VII is a vertical section of the swivel connection between the supporting cable and the scraping device.

Fig. VIII is a vertical section showing the swivel connection by means of which the flexible air conductor is attached to a rotating part of the device.

In the drawings, A designates a cylindrical cracking still which is arranged in a vertical position, said still being either a vertical still or a horizontal still which has been raised to a vertical position. Arranged upon the still A at the upper end thereof is a supporting device B which preferably comprises a tripod, said tripod being intended to support the scraping device in a manner to be hereinafter set forth.

Located within the still A is a scraping device C which, as has been already stated, is capable of being folded or collapsed so that it may be introduced into the still through one of the comparatively small openings A′ thereof. The scraping device will now be described in an assembled position, and later in the specification the manner of folding said scraping device, the manner of assembling it within the still, and its operation therein will be set forth.

The scraping device C includes a pair of channel beams 1 and 2 which are arranged crosswise of each other, the beams being positioned with their flat portions adjacent to each other at the point where said beams cross. The beams 1 and 2 are secured together at their centers by means of a bolt 3 which passes through said flat portions of said beams, as shown in Figs. IV and V, and it is apparent that in the absence of some means to prevent it said beams could be moved to positions where one of said beams would be approximately parallel with the other, as shown by dotted lines in Fig. II. Secured to the beam 1 and interposed between said beam and the beam 2 is a plate 4, said plate being intended to provide means whereby said beams 1 and 2 may be retained in the crosswise positions in which they are shown by full lines in Fig. II. The plate 4 is provided with pairs of bolt holes which receive pairs of bolts 5, said bolts being passed through said bolt holes in said plate and extending through similar bolt holes in the beam 2 (Fig. V). From the foregoing it is plain that when the beams 1 and 2 are arranged crosswise of each other and the bolts 5 are passed through the bolt holes in the plate 4 and the beam 2, said beams will be held very rigid with relation to each other and will be prevented from swinging in an arc of a circle about the bolt 3.

Pivotally secured to the beams 1 and 2 is a plurality of connecting members 6, each of said connecting members being provided with a bifurcated lower end portion which straddles a portion of one of said beams. The connecting members 6 extend upwardly from the beams 1 and 2, said connecting members converging toward each other as shown in Fig. I. Located at the upper ends of the connecting members 6 is a swivel connecting device D which comprises a plate 7 provided with a central opening 8 adapted to receive a bolt 9, which bolt has an eye 9′ at its upper end. The plate 7 is provided with a centrally located plate 10 which is secured to said plate 7, and said plate 10 is provided with a ball raceway 11. Arranged below the plate 10 is a similar plate 12, and this plate, like the plate 10, is provided with a ball raceway 13 which coincides with the raceway 11. The plates 10 and 12 are each provided with a central opening through which the bolt 9 passes, and a plurality of balls is located between said plates and in the raceways 11 and 13. To keep the plate 12 in the proper position relative to the plate 10 we thread the lower end of the bolt 9 and screw a nut 14 on said threaded end of said bolt, which nut bears against the lower face of said plate 12. Extending upwardly from the plate 7 is a plurality of ears 15, said ears being arranged adjacent to a slot 16 in said plate 7, there being four pairs of ears and four slots associated therewith. As stated, the swivel connecting device D is located at the upper ends of the connecting member 6, the upper portions of said connecting members passing through the slots 16 and between pairs of ears 15 to which ears said connecting members are pivotally connected (Fig. III).

Suspended from the upper portion of the tripod B is a link 17 which supports a sheave 18, and fixed to a member 19 supported by said link 17 is a cable 20. The cable 20 is attached to and extends downwardly from the member 19 and then passes upwardly over the sheave 18 to a windlass W supported on the platform secured to the still adjacent to the upper end thereof, around which windlass said cable is wound. Supported by the lower portion of the loop formed by that portion of the cable which extends downwardly into the still A is a sheave 21, said sheave being provided with a link 22 which passes through the eye 9′ in the upper portion of the bolt 9. In view of the mechanism just described, it is plain that by winding the cable on or unwinding said cable from the windlass W the scraping device C may be moved vertically within the still A, and it is also apparent that because of the swivel connecting device D said scraping devise may be rotated without twisting said cable.

Supported in bearings 23 fixed to the beam 1 is a shaft 24, said shaft being arranged parallel with said beam and being rotatable in said bearings, and supported by said beam 1 immediately below said shaft is a pair of air cylinders 25. One of the air cylinders 25 is located adjacent to each end of the beam 1, and each of said cylinders is provided with a piston 26 adapted to reciprocate therein. The pistons 26 are each provided with a piston rod 27 which is mounted in bearings 28 supported by the beam 1, said piston rods being adapted to reciprocate with said pistons and being capable of sliding longitudinally of the beam 1 in said bearings 28. Bifurcated members 29 are secured to the outer ends of the piston rods 27, and each of said bifurcated members is provided with a pair of spaced apart bearings 30 which support a vertical shaft 31. Fixed to the vertical shaft 31 and located between each pair of bearings 30 is a plurality of toothed wheels 32, and secured to said shafts 31 immediately above the top bearing 30 of the associated bifurcated member is a bevel gear 33. The bevel gears 33 and the toothed wheels 32 are secured to the vertical shafts, and it is apparent that if said vertical shafts were rotated said toothed wheels would be likewise rotated. The mechanism for rotating the vertical shafts 31 will now be described.

The shaft 24 is provided at each of its ends with a plurality of longitudinally extending ribs 34, said ribs being arranged around said shaft so that they resemble elongated gear teeth. 35 designates bevel gears which are mounted on the shaft 24 at the outer ends thereof. The bevel gears 35 are each provided with an elongated hub 35′, and said elongated hubs are each provided with a plurality of longitudinally extending grooves 36ª of such sizes and arrangement as to receive the ribs 34 on the shaft 24 (Fig. VI). The bifurcated members 29 are provided with bearings 36 which are formed integral with said bifurcated members and extend upwardly therefrom, and the hubs of the bevel gears 35 pass through said bearings 36 as shown in Fig. IV. The hub 35′ of each of the bevel gears 35 is provided with an annular shoulder 37 against which an end face of one of the bearings 36 bears. Collars 38ᵇ surround and are fixed to the hubs 35′ of the bevel gears 35 and bear against the rear faces of the bearings 36. Because of the arrangement just described, it is plain that if the piston rods 27 and the bifurcated members mounted thereon were moved longitudinally of the beam 1 the bevel gears 35 would be moved with said bifurcated members due to the fact that the bearings 36 are interposed between the shoulders 37 and the collars 38ᵇ. The bevel gears 35 mesh with the bevel gears 33 at all times, consequently it is plain that when the shaft 24 is rotated the vertical shafts 31 will also be rotated through the instrumentality of the bevel gears mentioned, and it is likewise plain that while the shafts 24 and 31 are being rotated it is possible to move the bifurcated members and bevel gears 33 and 35 outwardly, the hub portions of the bevel gears 35 being moved longitudinally of the elongated ribs on the shaft 24.

38 designates an air motor which is detachably secured to the beam 2 by means of bolts 38′, said air motor being provided with a drive shaft 39 having a gear wheel 40 mounted thereon. The gear wheel 40 meshes with a similar gear wheel 41 mounted on the shaft 24 whereby said shaft 24 may be rotated.

The beam 2 is provided with a pair of air cylinders 42 similar to the air cylinders 25 on the beam 1, and like said cylinders 25, the cylinders 42 are each provided with a reciprocatory piston 43 mounted on a piston rod 44 arranged to move longitudinally of the beam 2 in bearings 45 fixed thereto. The piston rods 44 are provided with bifurcated members 46 having spaced apart bearings 47 which support vertical shafts 48, and fixed to said vertical shafts at points between the spaced apart bearings 47 are groups of toothed wheels 49 similar to the toothed wheels 32 already described. Each of the bifurcated members is provided with a pair of ears 50 between which is pivotally mounted an L-shaped arm 51 having a sharpened outer end 51′. When the scraping device is in use the sharpened outer ends of the L-shaped arms 51 will be drawn into firm contact with the inside face of the wall of the still by springs 52.

As will subsequently appear, the scraping device is constantly rotating when it is in operation, and as a flexible air conductor is utilized to convey compressed air from an air compressor or reservoir to the air motor, some means must be provided to prevent said flexible air conductor from being twisted. We therefore employ a swivel connection E which is interposed between the main portion of the air conductor and that portion of said air conductor which is secured directly to and rotates with the rotatable scraping member, which swivel connection will now be described. Secured to and suspended from the beam 2 is a U-shaped metallic strap 54, and secured to the U-shaped strap 54 is a cup-shaped member 55 having an outwardly extending upper flange 56′ and a downwardly extending tubular portion 57 forming a part of a stuffing box. The member 55 is provided with a cover plate 56 having a central nipple portion 57′ provided with external threads. 58 designates a member which is arranged partly within the cup-shaped member 55, said member comprising a tubular portion 59 the lower end of which extends below the cup-shaped member 55 and an integrally formed annular flange portion 60. The flange portion 60 of the member 58, as will be seen by referring to Fig. VIII, is located within the cup-shaped member 55 and anti-friction balls 61 are interposed between the top face of said flange portion and the cover plate 56, and between the lower face of said flange portion and said bottom wall of said member 55, there being raceways formed in said faces to receive said anti-friction balls. 62 designates a stuffing box gland which is intended to compress the packing material 63 within the tubular portion 57 so that a tight joint is obtained between the stationary member 55 and the rotatable member 58.

The nipple portion 57′ of the cover plate 56, as has been stated, is provided with external threads, and screwed on this nipple portion is an elbow 63′ which is connected to a section of tubing 64. The end of the section of tubing 64 opposite to that end which is connected to the elbow 63′ is connected to a nipple 65 which passes through the lower wall of the beam 1 and through the plate 4. Screwed on the upper end of the nipple 65 is a T 66, and connected to said T is an air conductor 67 which leads to the air motor 38. The lower end of the member 58 is threaded as shown in Fig.

VIII, and attached to said threaded lower end is an end of an air conductor 68, the opposite end of which is attached to an air compressor or reservoir (not shown). From the foregoing it is apparent that when air is passed into the air motor 38 through the conductors 67 and 68 and the controlling handle 38ª of said air motor is actuated, the drive shaft 39 of said air motor will be rotated; and because the gear wheel 40 on said drive shaft is in mesh with the gear wheel 41 on the shaft 24, said shaft 24 will also be rotated.

Connected to the T 66 is an air conductor 69 which is in turn connected to and is in communication with a conductor 70. 71 designates an air conductor which extends from one of the air cylinders 25 to the other cylinder 25, and said air conductor 71 is also connected to the conductor 70. 72 designates an air conductor which extends from one of the air cylinders 25 to the other cylinder 42, said air conductor 72 being connected to the air conductor 70 by means of an air conductor 73. The air conductor 70 and the air conductor 73 are attached together by means of a coupling 74 whereby they may be readily detached from each other when it is desired to fold the scraping device. 75 designates a controlling valve by means of which the flow of air into the air cylinders 25 and 42 is regulated, and 76 designates a vent valve through which compressed air is permitted to escape from said air cylinders.

In the use of our improved scraping device, assume for the sake of simplicity of description that the scraping device is in an assembled condition outside of the still, and that it is desired to introduce said scraping device into the interior of the still to scrape the accumulation of coke from the inside face of the wall thereof. The air motor 38 is removed from the beam 2 by withdrawing the bolts 38′ therefrom, the coupling 74 is disconnected, whereby the air conductors 70 and 73 are uncoupled, the pivoted connecting members 6 are removed from the beams 1 and 2, bolts 5 removed and said beams 1 and 2 are swung in an arc of a circle about the bolt 3 until said beams are parallel with each other. The scraping device is then introduced into the still through one of the openings 8′ thereof end foremost. After the scraping device has been placed within the still the operators enter said still and assemble said scraping device, said operators arranging the beams 1 and 2 in the positions relative to each other in which they are shown in Fig. II, securing said beams rigidly in such positions by introducing the bolts 5 into the proper bolt holes, and arranging the nuts on said bolts. The members of the coupling 74 are then connected so that the air conductors 70 and 73 are connected together. The next step in assembling the scraping device is attaching the air motor 38 to the beam 2, after which the connecting members 6 are attached to said beams. The tripod B and the windlass W having been previously arranged in place and the cable 20 being associated therewith, said cable is dropped downwardly into the still where it is attached to the swivel connection D in the manner illustrated in Fig. I. After the scraping device has been assembled as described, the air conductor 68 is attached to the lower end of the member 58 of the connection E, the windlass W is now operated, and the scraping device is drawn to the top of the still and air is permitted to flow through the air conductor 68 into the other air conductors. The controlling valve 75 is then open and said air will flow through the conductor 69, conductor 70 and conductor 71 to the cylinders 25, and through the conductor 69, conductor 70, conductor 73 and conductor 72 to the cylinders 42. The air entering the cylinders 25 and 42 will exert a pressure against the pistons 26 and 43, forcing said pistons outwardly, thereby causing the toothed wheels 32 and 49 associated with said pistons to be forced firmly against the inside face of the arcuate wall of the still A. The operating handle 38ª of the air motor 38 is now actuated, and the compressed air passing into said motor will cause the drive shaft 39 to be rotated, thus rotating the shaft 24 through the instrumentality of the meshing gears 40 and 41. When the bifurcated members 29 are moved outwardly by the action of the compressed air on the pistons 26, the bevel gears 35 will move with said bifurcated members, said bevel gears moving longitudinally of the elongated ribs 34 on the shaft 24, thus retaining said bevel gears in mesh with the bevel gears 33 and transmitting rotary motion from the shaft 24 to the vertical shafts 31 and to the toothed wheels 32. The toothed wheels 32 are in firm contact with the wall of the still, consequently when said wheels are rotated the entire scraping device will be rotated within the still, and as said toothed wheels 32 and the toothed wheels 49 travel along the wall of the still said toothed wheels will break up the coke so that it will fall from the still wall. To insure the removal of all of the coke from the still wall we utilize the scrapers 51 which are drawn into contact with the wall of the still by the springs 52. In scraping the wall of a still the scraping device is started at the top of a still and the windlass W is operated so that said scraping device moves slowly downwardly within the still until the bottom thereof is reached. After the wall of the still has been scraped the scraping device is folded or collapsed

so that said scraping device assumes the condition in which it was introduced into the still, in which condition said scraping device is withdrawn from said still.

We claim:

1. A device for removing solid matter the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means comprising toothed wheels mounted on said member, the peripheries of said toothed wheels being adapted to contact with a wall of said still, means whereby said rotatable means may be rotated while in contact with said still wall thus rotating said member, and means whereby said member is moved longitudinally of the still.

2. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means mounted on said member and adapted to contact with a wall of said still, and means whereby said rotatable means may be rotated while in contact with said still wall, thus rotating said member.

3. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means mounted on said member and adapted to contact with a wall of said still, means whereby said rotatable means may be adjusted toward or away from said still wall, and means whereby said rotatable means may be rotated while in contact with said still wall, thus rotating said member.

4. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means mounted on said member and adapted to contact with a wall of said still, compressed air controlled means whereby said rotatable means may be adjusted toward or away from said still wall, and means whereby said rotatable means may be rotated while in contact with said still wall, thus rotating said member.

5. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means mounted on said member and adapted to contact with a wall of said still, means including a compressed air cylinder provided with a reciprocatory piston therein whereby said rotatable means may be adjusted toward or away from said still wall, and means whereby said rotatable means may be rotated while in contact with said still wall, thus rotating said member.

6. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means mounted on said member and adapted to contact with a wall of said still, means whereby said rotatable means may be adjusted toward or away from said still wall, and means adjustably connected to said rotatable means whereby said rotatable means may be rotated while in contact with said still wall, thus rotating said member.

7. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means mounted on said member and adapted to contact with a wall of the still, a gear wheel associated with said rotatable means, means including a compressed air cylinder provided with a reciprocatory piston therein associated with said rotatable means whereby same may be adjusted toward or away from said still wall, and means whereby said rotatable means may be rotated while in contact with said still wall, said means including a motor, a shaft driven by said motor, a gear wheel slidably mounted on said shaft and cooperating with said gear wheel associated with said rotatable means, and means whereby said slidable gear wheel is moved with said rotatable means when same is adjusted toward or away from said still wall.

8. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means comprising toothed wheels mounted on said member and adapted to contact with a wall of the still, a gear wheel associated with said rotatable means, means including a compressed air cylinder provided with a reciprocatory piston therein associated with said rotatable means whereby same may be adjusted toward or away from said still wall, and means whereby said rotatable means may be rotated while in contact with said still wall, said means including a motor, a shaft driven by said motor, a gear wheel slidably mounted on said shaft and cooperating with said gear wheel associated with said rotatable means, and means whereby said slidable gear wheel is moved with said rotatable means when same is adjusted toward or away from said still wall.

9. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means mounted on said member and adapted to contact with a wall of the still, means whereby said rotatable means may be rotated while in contact with said still wall thus rotating said member, and a scraper mounted on said member and adapted to contact with the still wall whereby the solid matter will be scraped therefrom.

10. A device for removing solid matter from the walls of stills and the like, com-

prising a member adapted to be introduced into a still, rotatable means mounted on said member and adapted to contact with a wall of the still, means whereby said rotatable means may be rotated while in contact with said still wall thus rotating said member, and a spring controlled scraper mounted on said member and adapted to contact with the still wall whereby the solid matter will be scraped therefrom.

11. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means comprising toothed wheels mounted on said member and adapted to contact with a wall of the still, a gear wheel associated with said rotatable means, means including a compressed air cylinder provided with a reciprocatory piston therein associated with said rotatable means whereby same may be adjusted toward or away from said still wall, means whereby said rotatable means may be rotated while in contact with said still wall, said means including a motor, a shaft driven by said motor, a gear wheel slidably mounted on said shaft and cooperating with said gear wheel associated with said rotatable means, and means whereby said slidable gear wheel is moved with said rotatable means when same is adjusted toward or away from said still wall, and a spring controlled scraper mounted on said member and adapted to contact with a wall of the still whereby the solid matter will be scraped therefrom.

12. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, a suspension device by which said member is supported, said suspension device being capable of permitting said member to move longitudinally within said still, a driving means mounted on said member and in contact with a wall of the still whereby said member is rotated within said still.

13. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, a suspension device by which said member is supported, said suspension device being controlled from without the still and being capable of permitting said member to move longitudinally within said still, a driving means mounted on said member and in contact with a wall of the still whereby said member is rotated within said still.

14. A device for removing solid matter from the walls of stills and the like, comprising a member adapted to be introduced into a still, rotatable means comprising toothed wheels mounted on said member and adapted to contact with a wall of the still, a gear wheel associated with said rotatable means, means including a compressed air cylinder provided with a reciprocatory piston therein associated with said rotatable means whereby same may be adjusted toward or away from said still wall, means whereby said rotatable means may be rotated while in contact with said still wall, said means including a motor, a shaft driven by said motor, a gear wheel slidably mounted on said shaft and cooperating with said gear wheel associated with said rotatable means, and means whereby said slidable gear wheel is moved with said rotatable means when same is adjusted toward or away from said still wall, and a suspension device by which said member is supported, said suspension device being controlled from without the still and being capable of permitting said member to move longitudinally within said still.

15. A device for removing solid matter from the walls of stills and the like, comprising a member capable of being collapsed so that it may be passed through a comparatively small opening in a wall of a still, rotatable means mounted on said member adapted to contact with a wall of said still, means whereby said rotatable means may be rotated while in contact with said still wall thus rotating said member, and means whereby said device may be moved longitudinally within the still.

16. A device for removing solid matter from the walls of stills and the like, comprising a member composed of a pair of beams pivoted together and capable of swinging to positions where said member may be passed through a comparatively small opening in a wall of a still, means whereby said beams may be retained in extended positions, rotatable means mounted on said member and adapted to contact with a wall of said still, means whereby said rotatable means may be rotated while in contact with said still wall thus rotating said member, and means whereby said member is moved longitudinally within the still.

In testimony that we claim the foregoing we hereunto affix our signatures.

WAYNE P. RICE.
HOWARD A. MERTZ.
CHESTER E. MOORE.