Oct. 16, 1923. 1,470,641

F. POCHILA

SURFACE DRESSING MACHINE

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Fig. 1

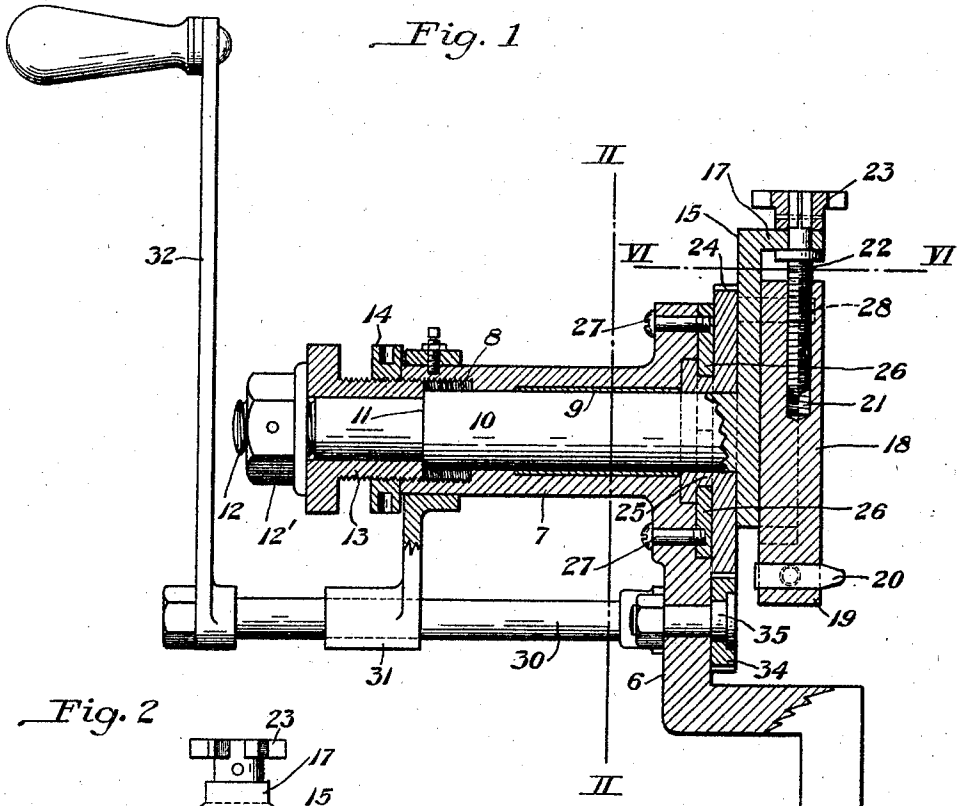



Fig. 2

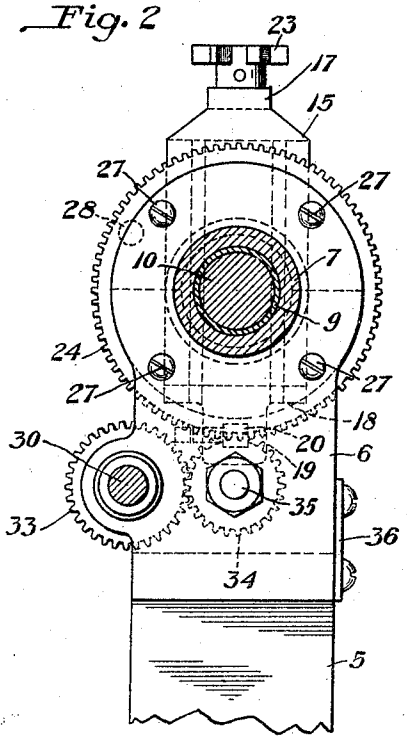
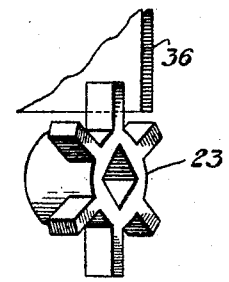
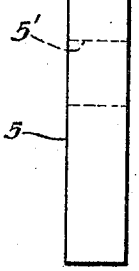



Fig. 3




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Fig. 4

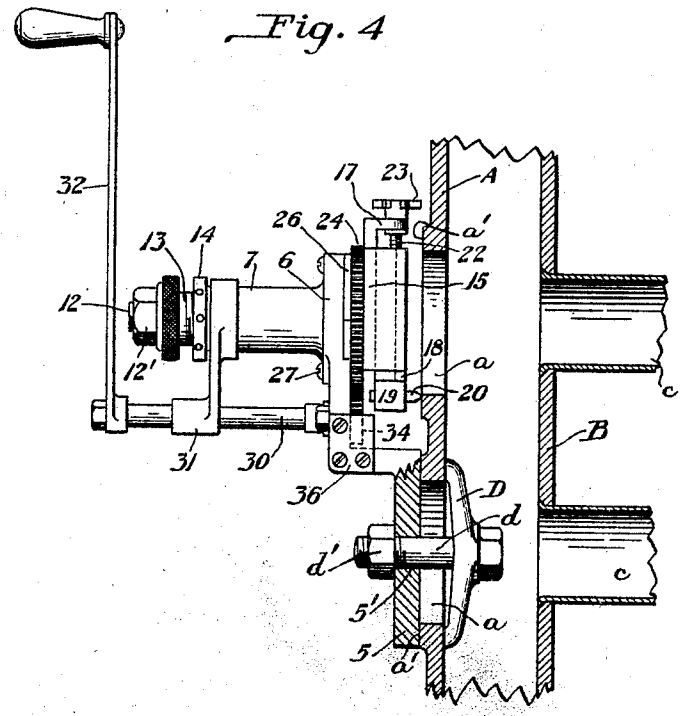



Fig. 5

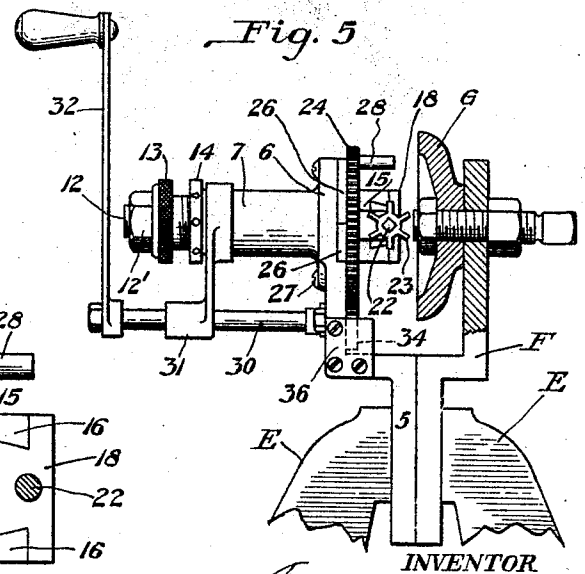
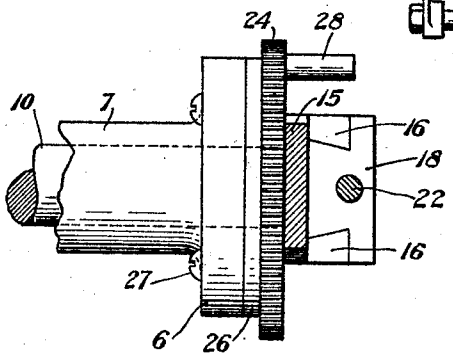



Fig. 6




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Patented Oct. 16, 1923. 1,470,641

# UNITED STATES PATENT OFFICE.

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## SURFACE-DRESSING MACHINE.

Application filed June 8, 1921. Serial No. 475,973.

*To all whom it may concern:*

Be it known that I, FRANZ POCHILA, a citizen of the United States, residing at Duquesne, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Surface-Dressing Machines, of which the following is a specification.

This invention is for a tool designed particularly for dressing the manhole seats of water tube boilers and for dressing the portions of the manhole covers which engage said seats, but which may also be useful for other purposes.

In a water tube boiler, the boiler plates are provided with manholes over which a removable cover is fitted. The cover must form a seal with the plate to prevent leakage.

The object of the present invention is to provide a dressing tool which is preferably portable for finishing the surfaces which form the seal.

Further objects are to provide a machine in which a cutter is used for machining the surface rather than by the use of an abrasive device, as has heretofore been the common practice, and to provide a machine which may be interchangeably used on boilers or on the manhole covers.

My invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a longitudinal section through the machine;

Fig. 2 is a section on line II—II of Fig. 1;

Fig. 3 is a perspective view of a part of the cutter feeding mechanism;

Fig. 4 is a side elevation showing the machine attached to the front plate of a boiler;

Fig. 5 is a similar view showing the machine supported in a vise for finishing manhole covers, and showing the cutter turned to a different position; and

Fig. 6 is a section on line VI—VI of Fig. 1.

In the drawings, 5 indicates a supporting member having an offset portion 6 on which is formed an integral sleeve 7, the upper interior end of which is threaded at 8. On the inside of the sleeve may be provided a bearing surface 9. Rotatable within the sleeve is a shaft 10 having its upper end shouldered at 11 and threaded at 12. Surrounding the upper end of the shaft 10 is an externally threaded bushing 13, the threads of which engage the threaded portion 8 of the sleeve. The lower end of the bushing 13 bears against shoulder 11 on the shaft 10. A spanner nut 14 on the bushing provides a locking means therefor. A nut 12′ is provided on the threaded end 12. By proper adjustment of the lock nut 14, the bushing 13 may be turned to move the shaft in or out of the sleeve.

On the lower end of the shaft 10 is a base or arm 15 having guide members 16 (see Fig. 6) on the outer face thereof, forming a dove-tail channel. The outer end of arm 15 is bent to provide the laterally extending portion 17.

Guided in the dove-tail channel between members 16 is a dovetailed block 18 which has a socket at 19 for removably holding a metal cutting tool 20. It will be seen that by adjusting shaft 10 in and out, the cutter block may be moved toward or away from the supporting member to regulate the depth of the cut.

Extending into the end of the block 18 opposite the end which carries the cutter, is a threaded bore 21. Journaled in the laterally extending portion 17 of arm 15 is a shaft 22 having a threaded end adapted to project into the threaded bore 21. On the outer end of shaft 22 is a star wheel 23. By turning the star wheel 23, shaft 22 may be rotated to reciprocate the cutter block 18.

Carried by the shaft 10 between the arm 15 and the inner face of the offset portion 6 of the supporting member, is a gear wheel 24 having a grooved hub 25. At 26 are sections of a split ring having edges extending into the groove 25. The sections 26 are held in place by bolts 27. Projecting from the outer face of the gear wheel 24 and near the periphery thereof, is a pin 28 adapted to engage against the side of arm 15 to rotate said arm and the shaft 10 when the gear wheel is rotated.

For rotating the gear wheel 24 there is provided a shaft 30 journaled in and passing through the portion 6 of supporting member 5, and journaled in bearing 31 supported in the sleeve 7. A crank 32 is secured to the outer end of shaft 30. To the inner end of the shaft is fixed a pinion 33 which engages a second pinion 34 carried on stub shaft 35 and which meshes with gear wheel 24. Thus, the gear wheel and

cutter are rotated in the same direction as the crank 32.

In order that the cutter carrying block 18 may be moved transversely a slight distance upon every revolution of gear wheel 24, a plate 36, or other suitable means, is secured to the portion 6 of the supporting member to engage the teeth of the star wheel 23. Every time the star wheel passes the plate 36, a tooth will be engaged thereby and the shaft 22 will be rotated a slight distance, and the cutter block 18 will thus be moved.

Passing through the supporting member is a hole 5′ for the purpose hereinafter described.

The operation of the invention in use in finishing a boiler plate may be understood by reference to Fig. 4, in which A indicates the outer plate of the boiler; B, the inner plate; and C, the water tubes. In front of each tube C and giving access thereto through plate A, are manholes *a*. On the plate A around each manhole are bosses *a′*, the faces of which must be finished to form a seat for the manhole cover. D is a spanner of a type commonly used for holding manhole covers in place, and *d* is a bolt carried thereby. The bolt *d* is passed through the hole 5′ in the supporting member 5. The member 5 is so proportioned that this will substantially center the shaft 10 over one of the other holes *a*. Nut *d′* is then tightened to clamp the machine in place. By moving shaft 10 in and out with bushing 13, cutter block 18, which is on the face of the supporting member that is turned toward the boiler plate, may be adjusted toward or away from the boss *a′*. When the cutter has been set to make a cut of the proper depth, and at the outside of the boss *a′*, crank 32 is then turned, revolving the cutter in a circle. With each rotation of the cutter, star wheel 23 is turned a slight distance to feed the cutter toward the center. Thus, a smooth true, accurately machined surface may be formed on the boss. It will, of course, be apparent that the crank could be turned in the opposite direction, and the cutter fed outwardly from the center.

For finishing manhole covers, the operation of the machine is similar, but the member 5 is clamped in a vise, indicated at E in Fig. 5, together with a supporting member F, to which the manhole cover G is bolted.

While the invention is designed particularly to be used with manholes, and manhole covers of boilers, it will be obvious that it may be used for other purposes, and that various changes and modifications may be made in the construction shown, and within the contemplation of the appended claims.

What I claim is:

1. A finishing tool comprising a supporting member, a cutter block rotatably carried thereby, cutting means on the block, means for rotating the block embodying gearing having a block turning pin, and means for moving the block transversely to its axis of rotation.

2. A finishing tool comprising a supporting member, a cutter block rotatably carried thereby, cutting means on the block, means for rotating the block embodying gearing having a block turning pin, and means for moving the block toward or away from the supporting member.

3. A finishing tool comprising a supporting member, a cutter block rotatably carried thereby, cutting means on the block, means for rotating the block embodying gearing having a block turning pin, means for adjusting the block toward or away from the supporting member, and means for feeding the block transversely a slight distance upon each rotation thereof.

4. A portable tool for finishing boiler plates and manhole covers comprising a supporting member capable of being clamped against a boiler plate and having an offset portion parallel therewith and provided with an integral sleeve, a spindle thereon having a base, a cutter holder mounted in said base provided with a cutter, and gearing mounted concentrically with the spindle having a pin abutment for engaging the base to impart movement to it and the cutter holder.

5. A finishing tool comprising a supporting member, a sleeve on the supporting member, a shaft rotatable within the sleeve, means at one end of the sleeve for adjusting the shaft in and out of the sleeve, an arm on the lower end of the shaft, a cutter block slidable along the arm, a shaft rotatably supported in the arm and having a threaded connection with the cutter block, means for rotating the cutter block, and a star wheel on the arm-supported shaft adapted to engage said abutment for imparting a rotative movement to said shaft upon rotation of the cutter block for effecting a transverse movement thereof.

6. In a finishing tool of the class described, the combination of a base member having a flat clamping portion and an integral offset portion having a spindle sleeve at right angles thereto, a spindle therein provided with a revolving head, a cutter holder slidably mounted in the head and provided with a cutter, a gear wheel surrounding the spindle having an abutment for turning the head, and means for driving said gear wheel.

7. In a finishing tool of the class described, the combination of a base member having a flat clamping portion and an integral offset portion having a spindle sleeve at right angles thereto, a spindle therein provided with a revolving head, a cutter holder slidably mounted in the head and provided with

a cutter, a gear wheel surrounding the spindle having an abutment for turning the head, intermeshing gearing rotatably mounted in the offset portion, and a driving shaft for one of said gears extending outwardly parallel with the spindle and provided with a crank handle.

8. In a finishing tool of the class described, the combination of a base member having a flat clamping portion and an integral offset portion having a spindle sleeve at right angles thereto, a spindle therein provided with a revolving head, a cutter holder slidably mounted in the head and provided with a cutter, an adjusting screw therefor mounted in the revolving head and having a terminal star wheel, and an abutment on the base member adapted to engage the star wheel at each revolution of the head to move the cutter holder.

In testimony whereof I hereunto affix my signature.

FRANZ POCHILA.