April 26, 1927. 1,626,491

W. B. WRIGHT

ROTARY TOOL FOR CLEANING, CHIPPING, OR SCALING SURFACES

Filed Oct. 9, 1924 2 Sheets-Sheet 1

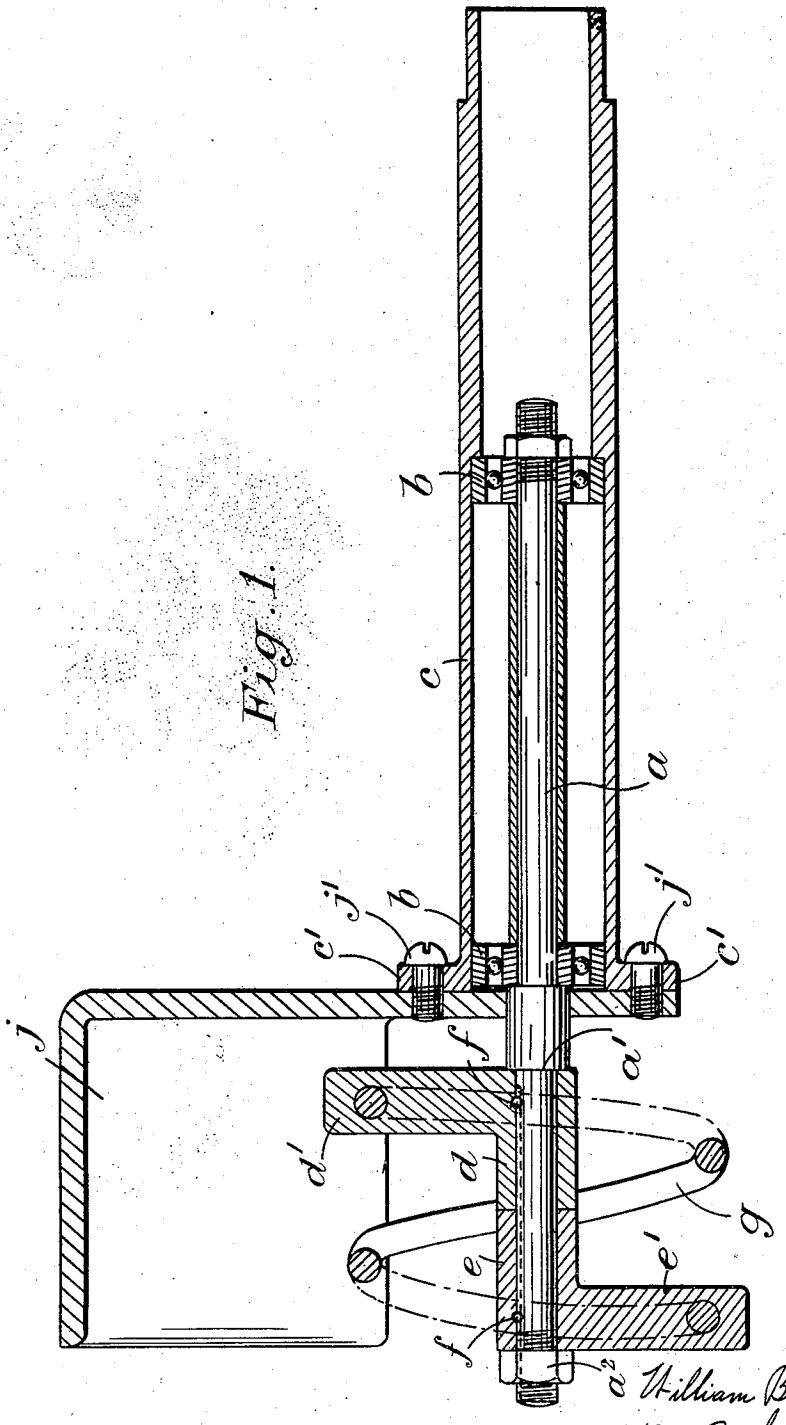


Fig. 1.

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Fig. 2.

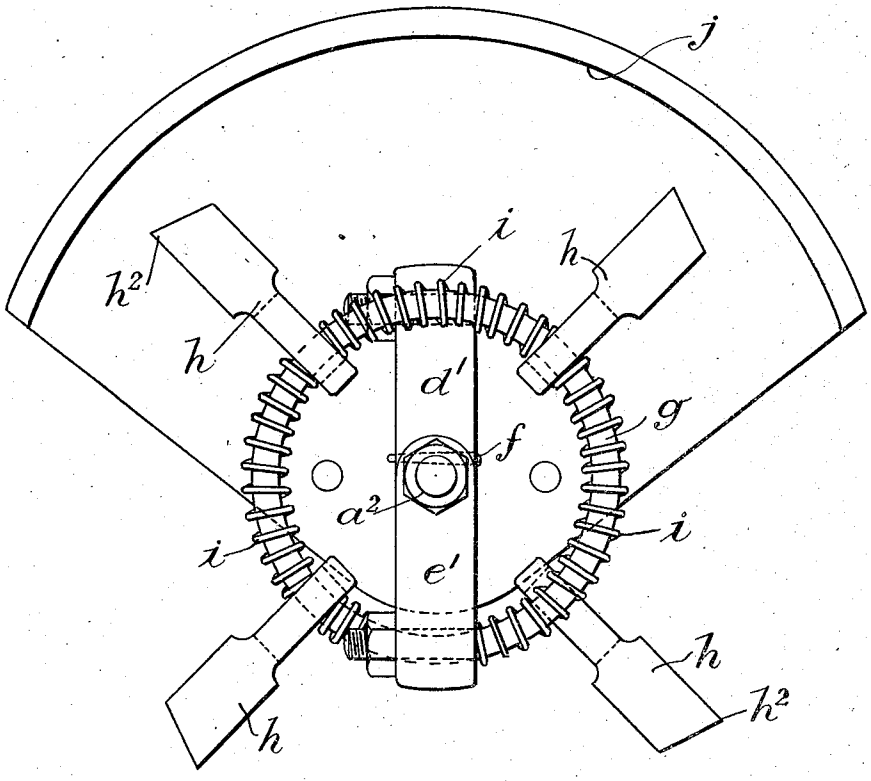


Fig. 3.

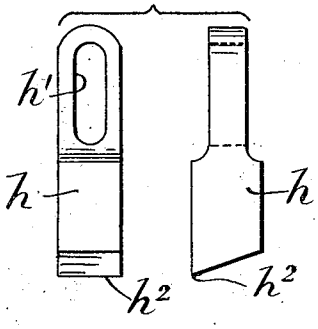


Fig. 4.

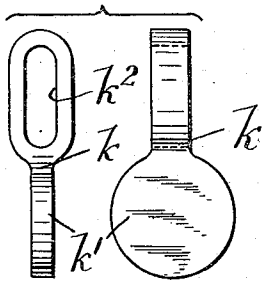
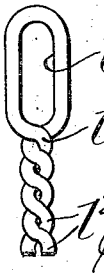


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ROTARY TOOL FOR CLEANING, CHIPPING, OR SCALING SURFACES.

Application filed October 9, 1924, Serial No. 742,733, and in Great Britain November 29, 1923.

This invention relates to rotary tools adapted for cleaning, chipping or scaling surfaces such as the plates of boilers, water and other tanks, ships' decks, hulls and the like and has for its object an improved construction capable of efficient action without imparting undue shock to the hand of the person manipulating the tool.

The improved tool forming the subject matter of this invention comprises a driving shaft and a plurality of hammers attached thereto in such manner as to project radially of the shaft at spaced intervals and be capable of universal pivotal movements. The movement of the hammers around the shaft is resisted by springs or other resilient means provided for the purpose whilst other movement of the hammers in relation to the shaft is resisted by centrifugal action.

In one practical form of construction the driving shaft which is mounted to rotate in ball or other antifriction bearings carries two spaced bosses or projections supporting between them a rigid helix surrounding the shaft for one or more convolutions and the hammers are pivotally suspended from this helix and maintained at spaced intervals by interposed springs.

The invention is hereinafter more fully explained, reference being had to the accompanying drawing in which:—

Fig. 1 is a longitudinal section of a preferred form of construction of my improved rotary tool, parts being omitted for the sake of clarity, and

Fig. 2 is an end elevation of the same.

Fig. 3 shows in front and side elevation one of the hammer members detached.

Fig. 4 shows similar views of a modified hammer member and,

Fig. 5 is a front elevation of a further modified hammer device.

Referring to Figs. 1 and 2 it will be seen that the rotary tool comprises a shaft *a* mounted in ball bearings *b* which are supported in a tubular member *c* serving as a handle by which the tool may be manipulated and a portion of the shaft projecting beyond the tubular member carries the pivotally suspended hammer devices.

Attached to this projecting portion of the shaft are two bosses *d* and *e* formed with radially projecting arms *d'* and *e'* respectively. These arms which are prevented from turning in relation to the shaft *a* by pins *f* driven through the sleeves *d* and *e* and engaging a flattened surface on the shaft, support between them a rigid helix *g* surrounding the shaft in the example illustrated to the extent of about one and a half convolutions. The sleeves *d* and *e* abut against a shoulder *a'* on the shaft *a* and are held in place by a nut a^2 screwed on the free end of the shaft.

The hammer devices *h* indicated in Figs. 2 and 3 are slotted at *h'* at one end for engagement with the helix *g* and are formed with an angular cutting edge h^2 at the opposite end which is somewhat enlarged in order to accentuate the centrifugal action thereon and so improve the striking effect of the hammers. These hammers *h* and helical compression springs *i* are threaded upon the helix *g* alternately and the ends of the helix secured to the radial arms *d'* and *e'*, so that all the hammers *h* are pivotally engaged with the helix and held resiliently against deflection by means of the springs *i*.

A shield *j* secured by screws *j'* to a flange *c'* at one end of the tubular member *c* partly encloses the operative head of the rotary tool and serves to intercept fragments dislodged by the hammers flying in the direction of the operator. The end of the shaft *a* remote from the hammers *h* may be coupled directly with a driving motor or be connected by means of a flexible shaft with some more or less distant source of power.

When in use the motor is set in operation and the hammers rotated at a high speed whilst the tool is held in proximity to the surface to be treated so that the hammers deliver upon said surface a succession of glancing blows capable of removing paint, scale, incrustation, rust or the like from the surface. By mounting the hammers resiliently at spaced intervals upon the helix the tool is enabled to act efficiently upon a larger surface than a series of hammers arranged around a circle and the tendency to vibration is reduced to a minimum.

The hammer devices illustrated in Figs. 2 and 3 are particularly adapted for operating upon large surfaces of a more or less plain character, but where the surface to be treated is pitted and uneven the hammer devices *k* shown in Fig. 4 are to be preferred. These latter are formed with a disc shaped operative end and with an elongated eye k^2 at the remote end for engagement with the helix *g*.

In cases where a lighter action resembling

brushing or scouring rather than chipping is desired, the tool may be fitted with lighter hammer devices such as that l shown in Fig. 5 comprising a length of thin metal rod or stiff wire bent at the centre of its length to form the loop l' its ends being twisted together as at l^2 to form a stiff brushing member.

I claim:—

1. A rotary tool for cleaning surfaces comprising a driving shaft mounted for rotation, a helix secured to and arranged coaxially of said shaft for rotation therewith, a series of centrifugally acting hammer elements loosely pivotally engaged with said helix and springs interposed between the adjacent hammer elements.

2. A rotary tool for cleaning surfaces comprising a driving shaft rotating in bearings, a handle member supporting said bearings, radial arms attached to said shaft, a rigid helix secured to said arms and arranged coaxially of said shaft, centrifugally acting, hammer elements loosely, pivotally engaged with said helix, springs interposed between the adjacent hammer elements and springs between the hammer elements and the radial arms.

3. A rotary tool for cleaning surfaces comprising a driving shaft rotating in bearings, a tubular handle member supporting said bearings and enclosing a portion of said shaft, a rigid helix secured to that part of the shaft outside the handle and arranged coaxially with said shaft, centrifugally acting, hammer elements loosely pivotally engaged with the helix and a shield device secured to the tubular handle and partially enclosing the helix and hammer elements.

In testimony whereof he has affixed his signature.

WILLIAM BRUCE WRIGHT.