April 5, 1927. 1,623,697

W. A. OUBRIDGE

LAPPING MACHINE

Filed Aug. 31, 1925 2 Sheets-Sheet 1

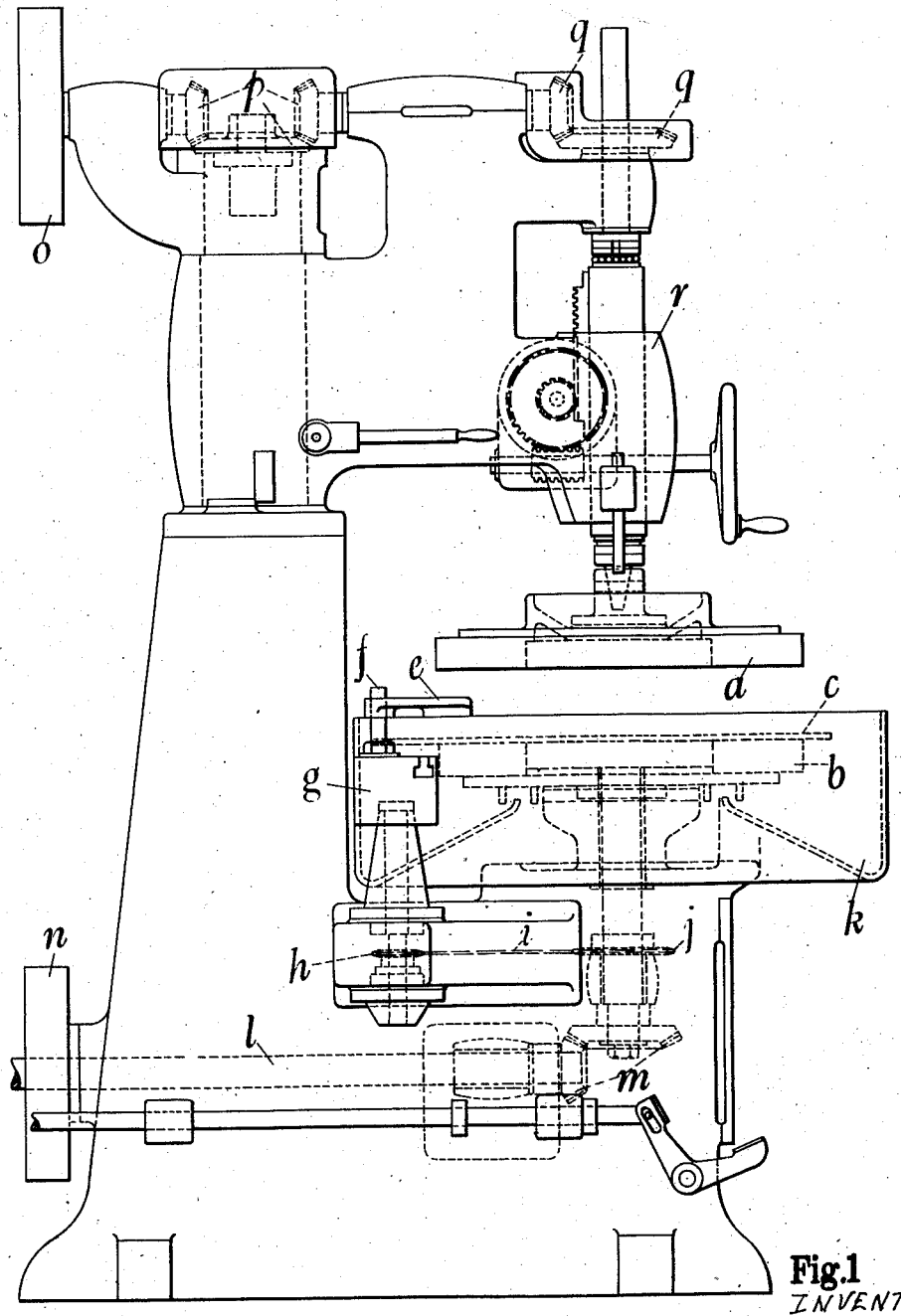


Fig.1

INVENTOR
W. A. Oubridge
By marks & clerk
attys

April 5, 1927. 1,623,697

W. A. OUBRIDGE

LAPPING MACHINE

Filed Aug. 31, 1925 2 Sheets-Sheet 2

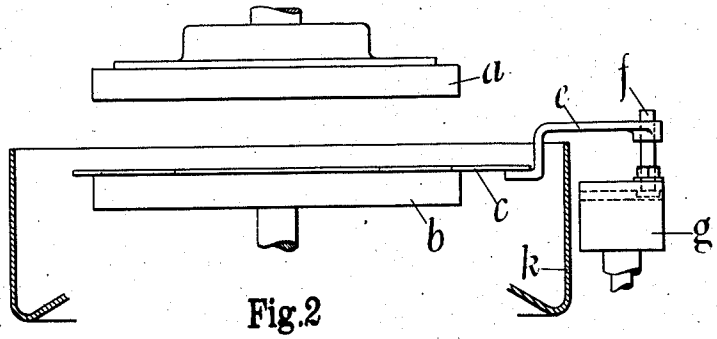


Fig.2

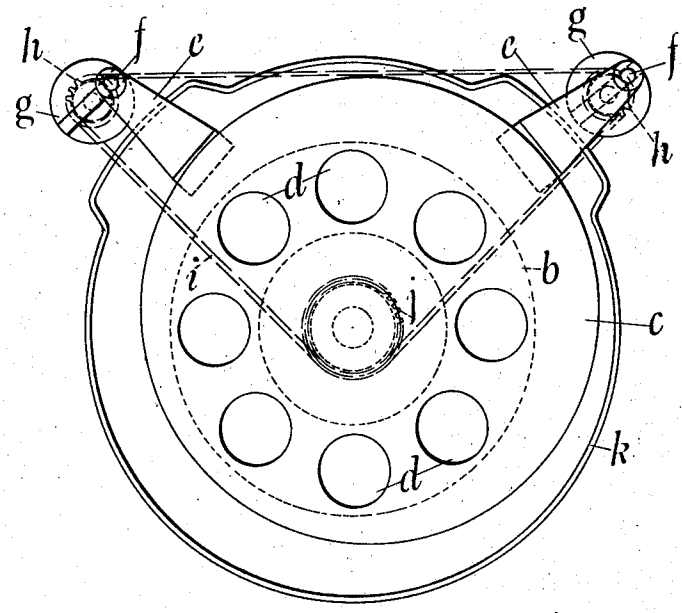


Fig.3

INVENTOR
W. A. Oubridge
By marks & clerk
attys

Patented Apr. 5, 1927. 1,623,697

UNITED STATES PATENT OFFICE.

WILLIAM ARTHUR OUBRIDGE, OF COVENTRY, ENGLAND.

LAPPING MACHINE.

Application filed August 31, 1925, Serial No. 53,679, and in Great Britain September 9, 1924.

This invention has for its object to provide an improved lapping machine of the kind in which the articles to be treated are carried in a holder which is movable between a pair of laps. The machine is intended primarily for treating such articles as piston rings, gudgeon pins, valve tappets and other like flat or round articles.

The invention comprises the combination of a pair of rotary laps, and a work holder which is actuated by means arranged outside the laps and preferably outside a tank surrounding the lower lap.

Also the invention comprises means for driving the holder actuating mechanism, and the laps, as hereinafter described.

Referring to the two accompanying sheets of explanatory drawings:—

Figure 1 is a side elevation of a lapping machine constructed in accordance with this invention.

Figure 2 is a side elevation, and Figure 3 a plan of the laps, work holder, and adjacent parts.

In the machine illustrated at Figures 1—3, the upper and lower cast iron or other suitable laps *a*, *b* are both rotated in the same or opposite directions. Between them is arranged a work holder *c*. The holder shown is in the form of a circular plate provided with a number of circular holes *d* into which piston rings can be placed for treatment between the laps. For treating gudgeon pins a ring with internally arranged pegs is employed for carrying the pins. The form of the plate varies with the work to be treated.

At positions 90° apart a pair of lugs *e* are secured to the holder and these serve to connect the holder to a pair of crank pins *f* which are adjustably secured to a pair of crank discs *g*, slots in the upper faces of the latter enabling the throw or eccentricity of the pins *f* to be varied as required.

The spindle of each crank disc has secured to it a sprocket wheel *h* and these are connected by a chain *i* which also passes around a driving sprocket *j* on the spindle of the lower lap.

By means of the crank pins the work holder is reciprocated between the laps and also has imparted to it a circular motion relatively to the laps.

The crank discs are mounted outside the lower lap and also outside a tank *k* by which the lower lap is surrounded. The actuating mechanism for the holder is therefore placed clear of the abrasive material contained in the tank.

It will be apparent that the disposition of the lugs *e* and the mechanism for actuating the holder may be varied. For example eccentrics or cams may be used instead of cranks. And instead of a chain and sprocket a belt or any other suitable driving means may be employed. But in all cases the motion given to the work holder is both reciprocatory and circular.

In machines of this kind it is desirable to avoid frequent recurrence of the same relative disposition of the laps and work holder, and for this purpose I preferably arrange that the ratio between the sprockets *j* and *h* shall differ by a small amount from say 2 : 1. For example, instead of having twenty teeth on *j* and ten on *h* the latter might have nine or eleven teeth. The laps then make a larger number of revolutions between each repetition of a particular relationship between the laps and the holder. When the cranks or the like are driven by a belt, the normal slipping of the belt gives the desired result.

In the machine illustrated motion of the laps is derived from a main shaft *l*. This drives the lower lap through bevel wheels *m*. A pulley *n* on the shaft *l* is connected to another pulley *o* by a belt, and from *o* motion is taken through bevel wheels *p* and *q* and intermediate spindles to the spindle of the upper lap which is carried by a radial movable arm *r*.

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

In lapping machines of the character described, the combination of a pair of rotary laps, a tank surrounding the spindle of the lower lap and projecting above the lower lap, a plate-like work holder located between the laps, a pair of vertical shafts journalled exteriorly of the tank, adjustable cranks on the upper ends of the shafts and operably connected with the work holder so as to support the same, and means operating about the spindle of the lower lap and the shafts for rotating the shafts to consequently effect orbital movement of the work holder.

In testimony whereof I have signed my name to this specification.

WILLIAM ARTHUR OUBRIDGE.