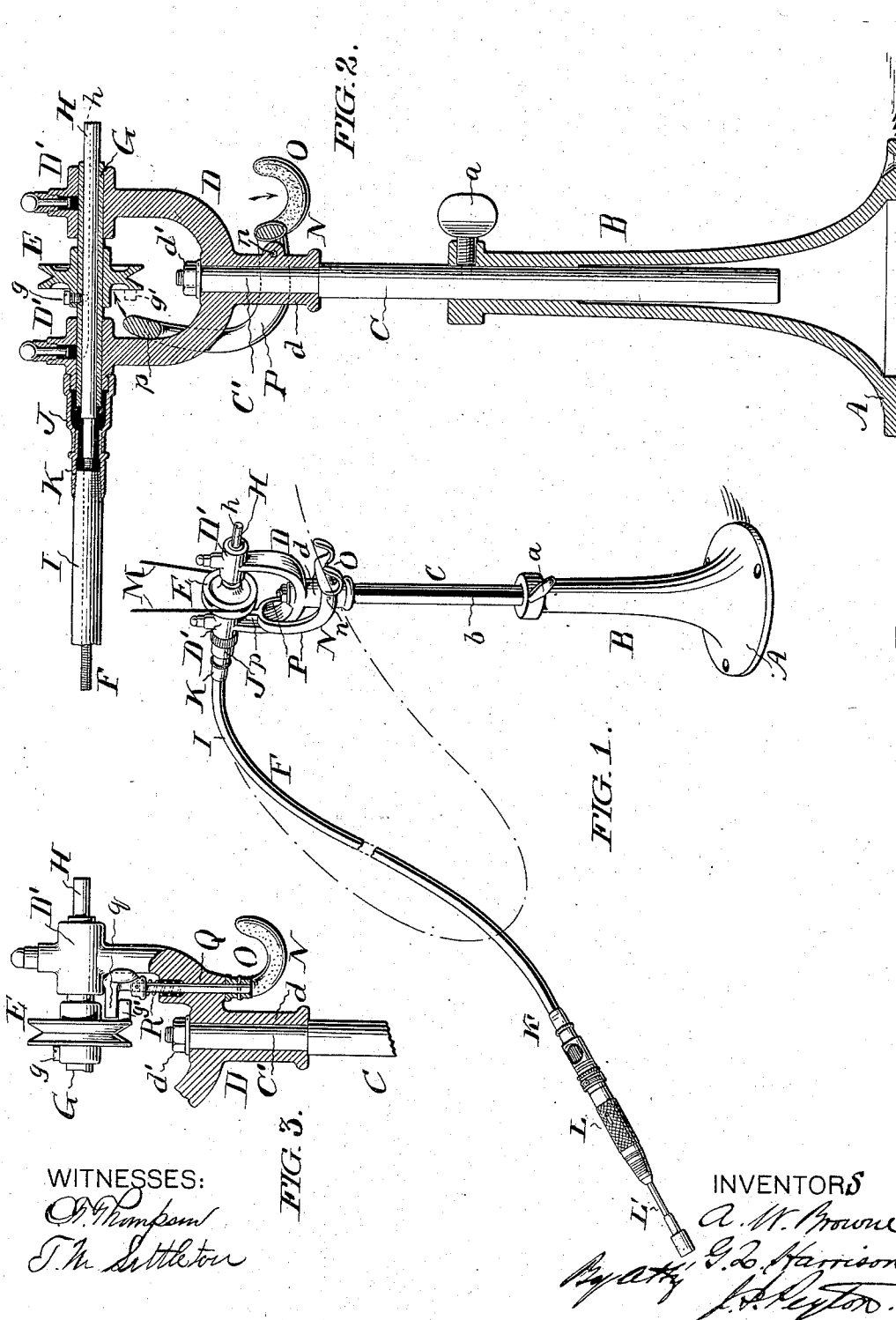


(No Model.)

A. W. BROWNE & G. L. HARRISON.
LATHE FOR OPERATING TOOLS BY FLEXIBLE SHAFTS.

No. 562,508.

Patented June 23, 1896.



WITNESSES:

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ARTHUR W. BROWNE AND GEORGE L. HARRISON, OF PRINCE'S BAY, NEW YORK, ASSIGNORS TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

LATHE FOR OPERATING TOOLS BY FLEXIBLE SHAFTS.

SPECIFICATION forming part of Letters Patent No. 562,508, dated June 23, 1896.

Application filed March 20, 1896. Serial No. 584,138. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR W. BROWNE and GEORGE L. HARRISON, citizens of the United States, residing at Prince's Bay, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Lathes for Operating Tools by Flexible Shafts; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to certain improvements, as hereinafter claimed, applicable to lathes suitable for use by die-sinkers, jewelers, and others for conveniently operating tools by flexible shafts.

In the accompanying drawings, Figure 1 is a view in perspective showing our improvements as suitably embodied in a lathe; and Fig. 2, a view, partly in vertical central section and partly in elevation, on a scale larger than Fig. 1. Fig. 3 is a view showing a modification.

A tubular support having a flanged base A and upright portion B is adapted to be attached by screws to a suitable table, frame, &c., and a standard C is fitted to slide up and down in the tubular support and may be firmly clamped in its position of vertical adjustment by a screw *a*, working in the support upright and engaging a groove *b*, extending longitudinally of the standard. A forked pulley-head or carrier D for the pulley E and the flexible shaft F, which is actuated thereby, is mounted by its bearing-sleeve *d* so as to be capable of turning freely horizontally about the reduced upper end or journal C' of the standard C. A nut *d'* serves to hold the forked carrier D in place upon the standard-journal. Separate bearings D' D' at the upper ends of the forks of the carrier serve for the horizontal tubular journal G to rotate in. This tubular journal has the driven pulley E detachably secured to it between the bearings of the forked carrier by means of a set-screw *g*, passing through the pulley-hub and engaging the journal. The stiff section or coupling end H of the flexible shaft F has a longitudinal groove *h*, which is engaged by the set-screw,

so that this section may have slight sliding movement, as usual, and the tubular journal and its pulley are also allowed the slight sliding movement customary in the operation of flexible-shaft apparatus. The flexible sheath I for the shaft is detachably coupled at its inner end to one of the bearing-sleeves D' of the carrier by means of a coupling-sleeve J. The outer end of this coupling-sleeve has detachable connection with the inner coupling end or metallic ferrule K, fixed to the sheath, and the enlarged inner end of the coupling-sleeve has screw-threaded connection with the carrier-bearing, as plainly shown. The outer coupling end or metallic ferrule K' of the flexible sheath is detachably connected with a suitable handpiece or tool-carrier L, in which any appropriate tool, such as L', is adapted to be secured so as to be rotated freely by the flexible shaft, as is well understood.

In order to hold the handpiece and flexible shaft out of the way when the tool is not in use, and at the same time guard against rotary movement being imparted to the driven pulley E by way of its driving belt or cord M, a movable support N has connection with the carrier D and is provided with a rest or holder O at its lower end for the handpiece, by the weight of which the support is moved into position to cause its upper end to engage and dog the pulley against rotation.

As shown in Figs. 1 and 2, the connection between the support N and the carrier is such that the movement imparted to the support is a rocking one about the pivot *n*, securing it to the carrier bearing-sleeve *d*. The support terminates at its upper end in a lug *p* at the junction of the arms P P, which are curved and project upwardly from the pivot at opposite sides of the carrier. The lug *p* serves to engage a suitable stop on the pulley, such as the set-screw *g*, or its equivalent, such as the stop-pin *g'*. (Shown in dotted lines in Fig. 1.)

The cord or belt actuating the driven pulley has motion imparted to it from a driving-pulley adapted to be thrown into and out of action in any suitable well-known way.

From the above description it will be seen that the carrier may be freely turned about

its standard; be adjusted to any desired height by means of the standard; the tension of the driving-cord be regulated; and that by the provision of separated bearings in the forked carrier the hub of the driven pulley is made to serve to limit the sliding movement of the tubular journal in either direction by contact with one or other of the bearings, while strain exerted upon the pulley by the cord comes between the bearings, which would not be the case were a single long bearing employed with the pulley mounted at one end of the tubular shaft.

It will further be seen that when the handpiece is placed in its rest O of the support N, it and its shaft are held out of the way, and the weight of the handpiece causes a movement of the support such as to throw its lug or dogging end into engagement with the stop on the pulley, thus insuring that the motion of the pulley be arrested should its driving-cord still be actuated, as the cord will be compelled to slip on the pulley.

It will also be seen that when the handpiece is supported by its rest accidental starting of the pulley by its cord is prevented. In this way serious injury to the apparatus and to persons in its vicinity by the thrashing about of the handpiece and shaft may effectually be prevented. As soon as the handpiece is lifted from its rest the pulley is freed from the dogging end of the support, which by gravity is caused to rock away from the stop on the pulley.

In accordance with the modification shown

by Fig. 3 a vertical sliding movement instead of a rocking movement is imparted to the support for the handpiece, the dog or stop at the upper end of the support being formed by a lug *q* and the support being adapted to slide in a bearing Q. A spring R acts upon the support to normally hold it in its elevated position, so as not to dog the pulley. The weight of the handpiece when in its rest O compresses the spring and causes the dog *q* to engage the stop *g'* on the pulley and hold it against rotation.

We claim as our invention—

The combination of the carrier, the tubular journal mounted to rotate therein, the flexible shaft provided with the stiff section having connection with the tubular journal, the handpiece carrying the tool actuated by the flexible shaft, the driven pulley on the tubular journal, and the movable support for the handpiece and flexible shaft supported by connection with the carrier and provided with the rest or holder for the handpiece and adapted to be actuated by the weight of the handpiece when placed in its rest or holder to dog the driven pulley, substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ARTHUR W. BROWNE.
GEORGE L. HARRISON.

Witnesses:

SEYMOUR CASE,
M. A. COLE.