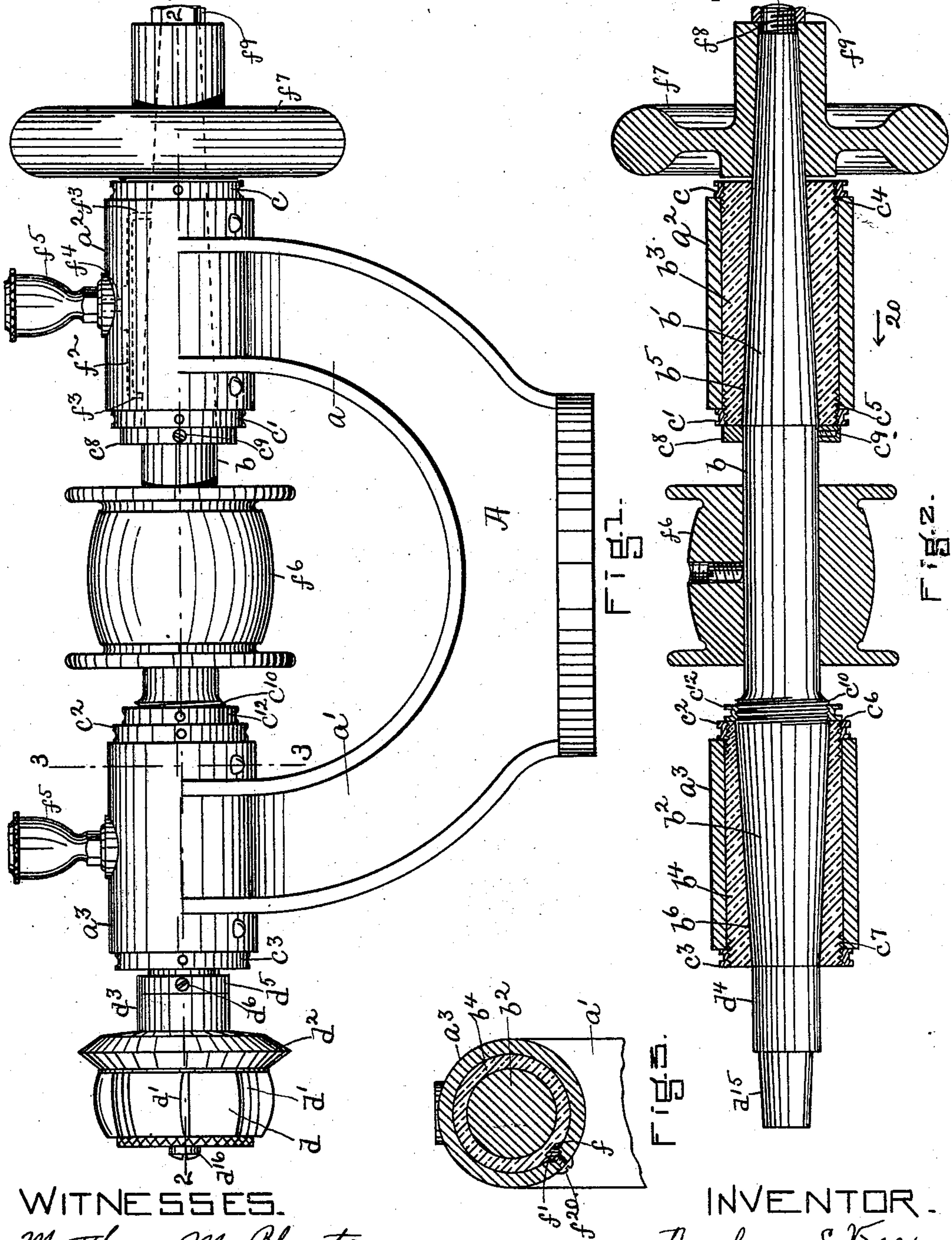


(No Model.)

A. S. VOSE.
ROTARY SHAFT AND JOURNAL BOX.

No. 538,055.

Patented Apr. 23, 1895.



WITNESSES.

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ROTARY SHAFT AND JOURNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 538,055, dated April 23, 1895.

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To all whom it may concern:

Be it known that I, AMBROSE S. VOSE, re-
siding in Boston, county of Suffolk, and State
of Massachusetts, have invented an Improve-
ment in Rotary Shafts and Journal-Boxes, of
which the following description, in connec-
tion with the accompanying drawings, is a
specification, like letters on the drawings rep-
resenting like parts.

This invention relates to a novel construc-
tion of rotary shaft and its journal boxes,
whereby lateral or radial motion or vibration
of the shaft is avoided, and this invention is
especially adapted to machines in which an
operating tool is secured directly to the shaft
to rotate therewith.

In the present instance, this invention is
illustrated in a machine for treating the heels
of boots or shoes, and the said machine is
herein shown as provided with a rotary cut-
ter, which may be of any suitable or desired
construction for trimming the heels or edges
of the sole of boots and shoes.

In machines of the class referred to, as now
commonly constructed and known to me, the
rotary cutter shaft is made cylindrical and is
supported in cylindrical journal boxes, and
after running for a substantially short time,
the journal box becomes worn or enlarged, so
that, the rotary shaft is afforded a slight ra-
dial or lateral movement, which produces a
vibration or trembling of the shaft and its at-
tached cutter or tool, and as a result, the work
is imperfectly performed, that is, the rotary
cutter or tool chatters, and minutely gouges
the leather or other material, producing im-
perfections in the finished work, so that, af-
ter running a substantially short time, the
machine is rendered practically inoperative
for perfect work, until supplied with new
journal boxes, which results in inconvenient
delays and expense.

This invention has for its object to obviate
the above mentioned defects in machines of
the class referred to, and this result is accom-
plished in a manner as will be described. In
accordance with this invention, the shaft is
provided at its opposite ends with tapering
or cone-shaped journals, the tapers of which
extend in opposite directions, and the bear-

ings for the said shaft are provided with jour-
nal boxes, having tapering or conical open-
ings through which the tapering journals are
extended, the said conical or tapering open-
ings corresponding to the taper of the said
journals. The journal boxes referred to, may
be made cylindrical in form on their outer
circumference to fit cylindrical bearings on
the machine, and the said boxes are made ad-
justable as will be described to take up the
wear, and thereby maintain a true fit of the
journals without liability of radial or lateral
movement thereof.

These and other features of this invention
will be pointed out in the claims at the end
of this specification.

Figure 1 is a front elevation of a sufficient
portion of a machine embodying this inven-
tion to enable it to be understood; Fig. 2, a
longitudinal section of the machine shown in
Fig. 1 on the line 2—2, and Fig. 3, a sectional
detail on the line 3—3, Fig. 1.

Referring to Fig. 1, A represents a yoke-
shaped casting provided with arms a a' hav-
ing hollow bearings a^2 a^3 , which parts may be
of any suitable construction, such as now
commonly employed in boot and shoe trim-
ming machines, the frame-work described be-
ing usually supported upon an upright col-
umn or other suitable foundation. The yoke-
shaped piece or frame-work A supports a cy-
lindrical shaft b (see Fig. 2) which in accord-
ance with this invention is made tapering or
conical at its opposite ends to form tapering
journals b' b^2 , the tapers of the said journals
extending in opposite directions as clearly
shown in Fig. 2.

The tapering journals b' b^2 have co-operat-
ing with them journal boxes b^3 b^4 , which may
be of any suitable material, and which, in the
present instance, are shown as cylindrical in
shape to fit into and extend through the hol-
low bearings a^2 a^3 of the framework.

The journal boxes b^3 b^4 are provided with
holes or openings b^5 b^6 extended through them,
and tapered or made conical to fit their co-
operating journals. The journal boxes b^3 b^4
are adjustably secured or held in position
within the bearings a^2 a^3 against longitudinal
movement by suitable means, which, in the

present instance, is shown as threaded collars or rings c c' c^2 c^3 engaging screw threads c^4 c^5 c^6 c^7 on the outside periphery of the journal boxes b^3 b^4 at their ends, the said threaded rings or collars, when in adjusted position, abutting against the opposite ends of the bearings a^2 a^3 as clearly shown in Fig. 2.

The shaft b may be prevented from moving longitudinally in any suitable or desired manner, and in the present instance, the cylindrical portion of the shaft intermediate of the conical journals is represented as provided at one end with a ring or collar c^8 rendered fast on the shaft by a set screw c^9 , the ring or collar c^8 co-operating with the journal box b^3 , while the opposite end of the cylindrical portion of the shaft may be provided with a similar collar, but I prefer to extend the tapering journal b^2 beyond its box b^4 and provide the extended portion with screw threads c^{10} with which co-operates a threaded ring or collar c^{12} .

From the above description, it will be seen that the journal boxes b^3 b^4 may be adjusted longitudinally on their journals, as the said boxes become worn or enlarged, thereby enabling the same journal boxes to be used a substantially long time or until practically worn out, while, at the same time, a true and accurate bearing for the shaft is obtained, which prevents any radial or lateral movement of the shaft at either end, thereby avoiding any vibration of the same, which would be productive of an imperfect action of the operating tool carried by the shaft.

In the present instance, I have chosen to illustrate the operating tool as a rotary cutter consisting of a cutter head or carrier d , and a plurality of cutters or knives d' , which tool may be supposed to be a rotary trimmer for acting upon the heel of a boot or shoe, the said cutter having co-operating with it an edge guard or disk d^2 provided with a sleeve d^3 loose upon a cylindrical portion or extension d^4 of the journal b^2 , the sleeve d^3 being prevented from longitudinal movement in one direction by the cutter head d and in the opposite direction by the collar d^5 fast on the shaft b by the set screw d^6 .

The cutter head or carrier d is fitted on a portion d^{15} of the shaft extended beyond the cylindrical portion d^4 , and may be secured thereon in any suitable manner, it being shown in Fig. 1, as fastened on by a screw d^{16} , which extends into a threaded socket in the end of the extension d^{15} and not herein shown.

The journal boxes b^3 b^4 , while adjustable longitudinally on their respective journals, are prevented from rotary movement thereon in any suitable or desired manner, and in the present instance, this is accomplished by providing each journal box with a longitudinal groove or slot f on its outer circumference, into which projects a spline or key f' also fitted into a corresponding groove or slot in the inner circumference of the bearing as shown in Fig. 3, the said key or spline

being rigidly secured by means of the set screw f^{20} by which lateral movement or play of the journal box in its bearing is avoided. Furthermore, each journal box may be provided with a suitable channel f^2 extended toward the opposite ends of the said box and provided with branch ducts or channels f^3 extended through the said box, the channel f^2 communicating by a supply duct f^4 in its bearing with an oil cup f^5 , as shown in Fig. 1.

The cylindrical shaft b , as herein shown, has fast to it in any suitable manner, a pulley f^6 , and the tapering journal b' may be extended beyond its box b^3 and have fitted on it a fly or balance wheel f^7 having a tapering bore or hole in its hub to fit the tapering end of the said journal, the extreme end of which may be provided with screw threads f^8 to receive a nut f^9 , which locks the said fly wheel on the said journal.

In the present construction of the machine, the journal box b^3 may be adjusted on the journal b' to take up the wear, by partially unscrewing the threaded collar c , and then screwing up the collar c' , which latter, acting against the bearing a^2 , draws the journal box up on the tapering journal b' , after which the collar c^8 is placed against the box b^3 and rendered fast on the shaft b .

To adjust the journal box b^4 , the operator unscrews the threaded collars c^{12} , c^3 and screws up the collar c^2 , which latter acts against the bearings a^3 and draws the journal box b^4 upon the journal b^2 .

I claim—

1. The combination with a rotatable shaft provided with tapering or conical journals extended in opposite directions, journal boxes having tapering holes through which said journals extend, bearings for said boxes, and adjustable means at opposite ends of the said bearings to adjust the said boxes on the tapering journals, and secure or lock the said boxes in their bearings in their adjusted positions, for the purpose specified.

2. The combination with a rotatable shaft provided with oppositely extended tapering or conical journals, journal boxes having tapering holes through which said journals extend, and provided with screw threads on their outer peripheries, hollow bearings through which said boxes extend, and threaded collars to engage the screw threads of the journal boxes at opposite ends of their bearings, substantially as and for the purpose specified.

3. The combination with a rotatable shaft provided with tapering journals, tapering journal boxes for said journals, bearings for said boxes through which the said boxes extend, means adjustable on the opposite ends of the said boxes co-operating with the opposite ends of the bearings to adjust the boxes on their tapering journals and lock the said boxes in their adjusted positions against longitudinal movement in their bearings, substantially as described.

4. The combination with the shaft b pro-

vided with the oppositely extended tapering journals b' b^2 , the tapering journal boxes b^3 b^4 co-operating therewith and provided at their ends with screw threads on their outer peripheries, the bearings a^2 a^3 , and the threaded collars engaging the threaded peripheries of the journal boxes and co-operating with the said bearings to adjust and lock the boxes in their adjusted positions, substantially as described.

5. In a machine of the class described, the following instrumentalities, viz:—a yoke-shaped frame provided with arms a a' having bearings, oppositely tapered journal boxes extended through said bearings, the shaft b provided with oppositely tapering journals extended through the said journal boxes, and means secured to the shaft b intermediate of its journals and by which rotation of the shaft in its journal boxes, may be effected, substantially as described.

6. In a machine of the class described, the combination with a rotary shaft provided with oppositely tapering journals, oppositely tapering journal boxes through which said journals extend, bearings for said boxes, means to adjustably secure the said boxes in their bearings, an operating tool secured to one of the

tapering journals beyond its box, and a fly or balance wheel provided with a tapered bore to fit the tapered end of the other journal extended beyond its box, substantially as described.

7. In a machine of the class described, the combination with the shaft b provided at one end with the tapering journal b' and at its other end with the oppositely tapering journal b^2 having its end adjacent to the shaft b provided with screw threads c^{10} , journal boxes b^3 b^4 provided with tapering holes b^5 b^6 , screw threads on the peripheries of the said boxes at their opposite ends, bearings for said journal boxes, threaded collars c , c' , c^2 , c^3 , the threaded collar c^{12} engaging the screw-threads c^{10} , the pulley f^6 fast on the shaft b intermediate of its journals, the fly wheel fitted on the extended end of the journal b' , and a cutting tool secured to the extended end of the journal b^2 , substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AMBROSE S. VOSE.

Witnesses:

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J. MURPHY.