

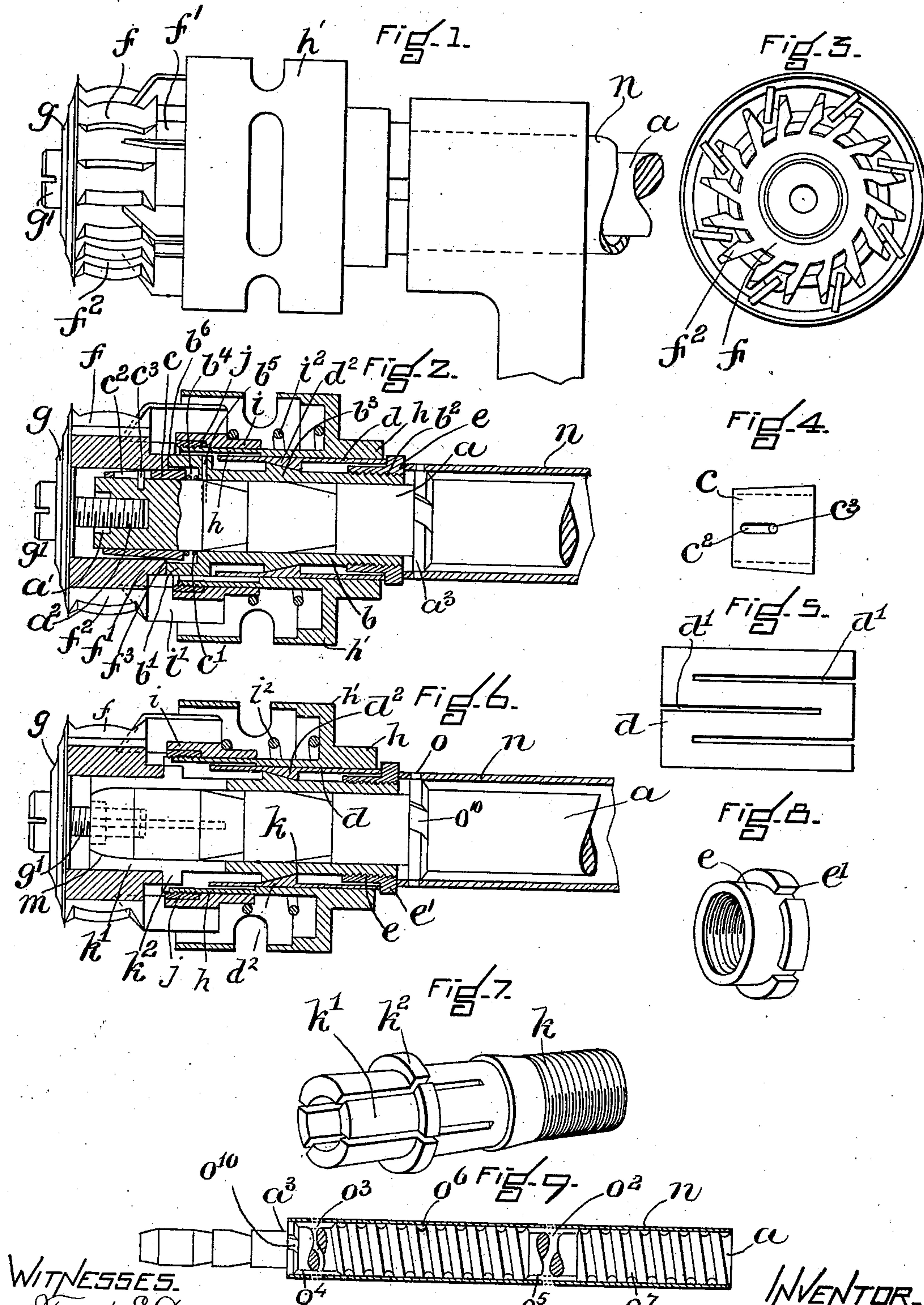
No. 668,750.

Patented Feb. 26, 1901.

F. M. FURBER.
SOLE EDGE TRIMMING MACHINE.

(Application filed July 31, 1900.)

(No Model.)



WITNESSES.

Fred O. Dorr.

A. R. Luzzeth.

INVENTOR.

Fred M. Furber

by Wright, Brown & Lundy
Attys.

UNITED STATES PATENT OFFICE.

FREDERICK M. FURBER, OF HAVERHILL, MASSACHUSETTS.

SOLE-EDGE-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 668,750, dated February 26, 1901.

Application filed July 31, 1900. Serial No. 25,416. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK M. FURBER, of Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Sole-Edge-Trimming Machines, of which the following is a specification.

This invention has relation to sole-trimming machines of the type wherein there are employed a cutter having cutting-blades, a yielding feather-edger with buffer-blades, and a casing having a chamber inclosing the latter. Such machines are rotated at a high rate of speed, and therefore subject to constant wear of the contacting parts. In order to perform work properly, however, it is essential that the cutter-blades and the blades of the feather-edger should be properly centered and remain true to their supporting-bearings.

Consequently one object of the present invention is to provide improved means for centering the cutter and the feather-edger upon the shaft and for taking up or compensating for any wear of one part upon another.

To attain this object, the invention consists of an edge-trimming machine having certain novel features of construction and arrangement of parts, as illustrated upon the drawings, described hereinafter in detail, and particularized in the appended claims.

Referring to the accompanying drawings, on which similar reference characters indicate similar parts or features, as the case may be, wherever they occur, Figure 1 represents one form of an edge-trimming machine embodying my invention. Fig. 2 represents a longitudinal section through the same. Fig. 3 represents the end of the shaft or arbor. Fig. 4 represents the centering thimble or sleeve for the cutter. Fig. 5 represents the expanding sleeve detached. Fig. 6 represents another embodiment of the invention in which the thimble for the cutter is adapted to expand. Fig. 7 illustrates in perspective view the combined sleeve and thimble employed in the device shown in the last-mentioned figure. Fig. 8 represents a collar employed in both embodiments of the invention. Fig. 9 represents the arbor.

Referring to the drawings, the arbor is in-

dicated at *a*. It may be mounted in bearings, as ordinarily, although I prefer to mount it in a manner to be subsequently explained. The end of the arbor is chambered out at *a'*, as shown, and also has a threaded aperture *a²*, the chamber *a'* being provided in order that the arbor may be placed in a lathe or other machine to true it, and the aperture being adapted to receive a screw, as will be explained. Upon the arbor and at a short distance from the end thereof is a sleeve *b*, the end of which abuts against a sleeve on the arbor. At one end the sleeve *b* is formed with the peripheral flange *b'*, and at its other end it is threaded, as at *b²*, while between its ends there is an external beveled or frusto-conical flange *b³*, which serves as a wedge, as will be explained. The flange *b'* is hollowed out to form a chamber *b⁴*, adapted to receive a tapering thimble *c*, which is placed upon the extremity of the arbor *a*, there being between the larger end of the thimble and the wall of the chamber *b⁴* a helical spring *c'*. The sleeve *b* is secured rigidly to the arbor by a screw or pin *b⁵*, while the thimble *c* is secured to the arbor to rotate therewith, but is adapted to slide longitudinally thereof, having, as shown in Fig. 4, a slot *c²*, through which a pin or screw *c³* passes into the arbor.

Upon the sleeve *b³* there is an expanding shell *d*, which is normally substantially equal in cross-diameter to the diameter of the flange *b'*. The said shell is provided with a series of slots *d'*, extending from each end part way to the other end. Between its ends the shell is formed with an internally-tapering flange *d²*, adapted to register with the flange *b³*, so that moving the shell longitudinally of the arbor toward the end of the latter the flange *d²*, sliding upon the flange *b³*, expands the said shell. To move the shell, there is a nut *e*, threaded upon the sleeve *b* and having a notched flange *e'*, by which it may be turned.

The cutter is indicated at *f*, and it has, as ordinarily, the hub *f'* and the blades *f²*, the edges of which are arranged in a circle.

g indicates the rand-guard, which is formed in the usual manner and which is secured to the arbor by a headed screw *g'*, passed into the aperture *a²*. The said rand-guard, which is in the form of a disk, bears against the end

of the cutter and when the screw g' is driven in forces the cutter radially of the shaft until it abuts against the end b^6 of the flange b' .

The thimble c is, as previously stated, tapering, and when it is engaged by the edge f^3 of the hub of the cutter it yields and enters the chamber b^4 . The spring c' , however, is of sufficient strength to hold the thimble outward with a firm pressure to wedge between the cutter and the arbor and to center the former upon the latter.

h indicates the hub of a casing h' , placed upon the shell d , and on said hub h is placed the feather-edger i , having a plurality of radial buffer-blades i' , adapted to enter between the blades of the cutter. Inserted between the hub of the feather-edger and the hub of the casing there is an internally-threaded bushing j , in threaded engagement with the hub h and having a longitudinal slot to receive a projection of the hub of the feather-edger i , said slot and projection not being shown. The rear end of the bushing serves as a stop against which the hub of the feather-edger is held by a helical spring i^2 bearing against its rear end. The end of the bushing is notched to receive a tool, by which it may be rotated to adjust the blades of the feather-edger relatively to the blades of the cutter. It will be seen that according to this construction the casing of the feather-edger may be clamped to the arbor by rotating the nut e' to expand the shell d .

The shell is provided with a plurality of apertures to permit of the escape of cuttings and to prevent their accumulation in the chamber of the casing and also to permit a free circulation of air to keep the parts cool.

From this description it will be obvious that the cutter and the feather-edger may both be clamped firmly to the arbor and be properly centered relatively thereto, and that by the provision of the tapered thimble and the adjustable expansible shell the parts may be adjusted to compensate for wear.

In Figs. 6 and 9 I have illustrated another embodiment of the invention in which the sleeve b and the thimble c are formed in one integral part. In this case the sleeve is indicated at k and the thimble at k' , being separated by a flange k^2 , corresponding to the flange b' in Fig. 2. The end of the arbor is slightly tapered, as indicated at m , and on the end of the thimble there is a tapering internal flange adapted to engage the tapered part of the arbor. The front end of the sleeve is split so that the thimble is expansible, and hence when the cutter is placed upon the sleeve until the end of its hub engages the flange k^2 and the screw g' is driven home the sleeve is moved longitudinally of the arbor to wedge the sections of the thimble apart and firmly center the cutter and clamp it tightly to the arbor. The rear portion of the sleeve, which is adapted to receive the shell, is substantially similar to that previously described. Referring now to Fig. 9, it will be

seen that between the arbor and the bearing there is placed a bushing n , which is pinned to the arbor by a pin o . The arbor is reduced at several points, as at o^2 o^3 , to form air passages or chambers o^4 o^5 . The flange or shoulder a^3 is notched to permit air to flow into chamber o^4 , the notch being arranged at an angle to the axis of the arbor. Between the chambers there is a helical channel o^6 , formed by cutting coarse threads, there being a similar channel o^7 between chamber o^5 and the end of the arbor. This provides an open-ended passage-way between the arbor and the bushing for the circulation of air. The circulation is assisted by arranging the lead of the threads so that they will act upon the air like a screw propeller or fan and force the air through the passage-way from end to end. By this means I prevent the parts from heating, since the circulation of air effectually cools them.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. In an edge-trimming machine, the combination of an arbor, a cutter thereon, a non-expansible longitudinally-yielding thimble between the arbor and the cutter to center the cutter, and means for securing said cutter to said arbor.

2. In an edge-trimming machine, the combination of a cylindrical arbor having a shoulder or abutment thereon, a cutter on said arbor, a thimble having a tapering portion slidably mounted on said arbor whereby it is adapted to be wedged between the cutter and the arbor, and a screw for clamping the cutter against the said shoulder or abutment.

3. In an edge-trimming machine the combination of an arbor, a cutter, a rand-guard bearing against the end of the cutter, a screw passed through said guard into the arbor, and a yieldingly-mounted tapered non-expansible thimble between the arbor and the cutter to center the latter.

4. In an edge-trimming machine, the combination of an arbor, a cutter, a rand-guard bearing against the end of the cutter, a screw passed through said guard into the arbor, a flange or abutment secured to the arbor against which the cutter is clamped by the screw and rand-guard, and a spring-tensioned centering-thimble between the arbor and the cutter.

5. In an edge-trimming and feather-edging machine, an arbor, a cutter secured thereto, a bushing, buffer-blades slidably supported thereon, an expansible shell between said bushing and the arbor to rigidly secure the former to the latter and to center it thereon and means for expanding said shell.

6. In an edge-trimming and feather-edging machine, an arbor, a cutter secured thereto, a feather-edger, a sleeve secured upon said arbor and having an external tapering por-

tion, an expansible shell having an internal tapering portion, and means for adjusting said shell along said sleeve, said shell and sleeve being inserted between the feather-
5 edger and the arbor.

7. In an edge-trimming and feather-edging machine, an arbor, a cutter secured thereon, a casing having a hub or bushing, a feather-edger sliding on said hub or bushing, an ex-
10 pansible shell between said casing and said arbor for securing them rigidly together and means for expanding said shell.

8. In a feather-edging machine, an arbor,

a sleeve secured to said arbor, a bushing, a feather-edger slidingly mounted on said 15 sleeve, an expansible wedging-shell between the sleeve and bushing, and a collar threaded on said sleeve for moving said split shell longitudinally to expand it.

In testimony whereof I have affixed my sig- 20 nature in presence of two witnesses.

FREDERICK M. FURBER.

Witnesses:

ALBERT M. CHILD,
JAMES E. BARTLETT.