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Patented Aug. 5, 1902.

T. S. CRAPP.

ANTIFRICTION COLLAR FOR WOOD SHAPERS.

(Application filed Nov. 29, 1901.)

(No Model.)

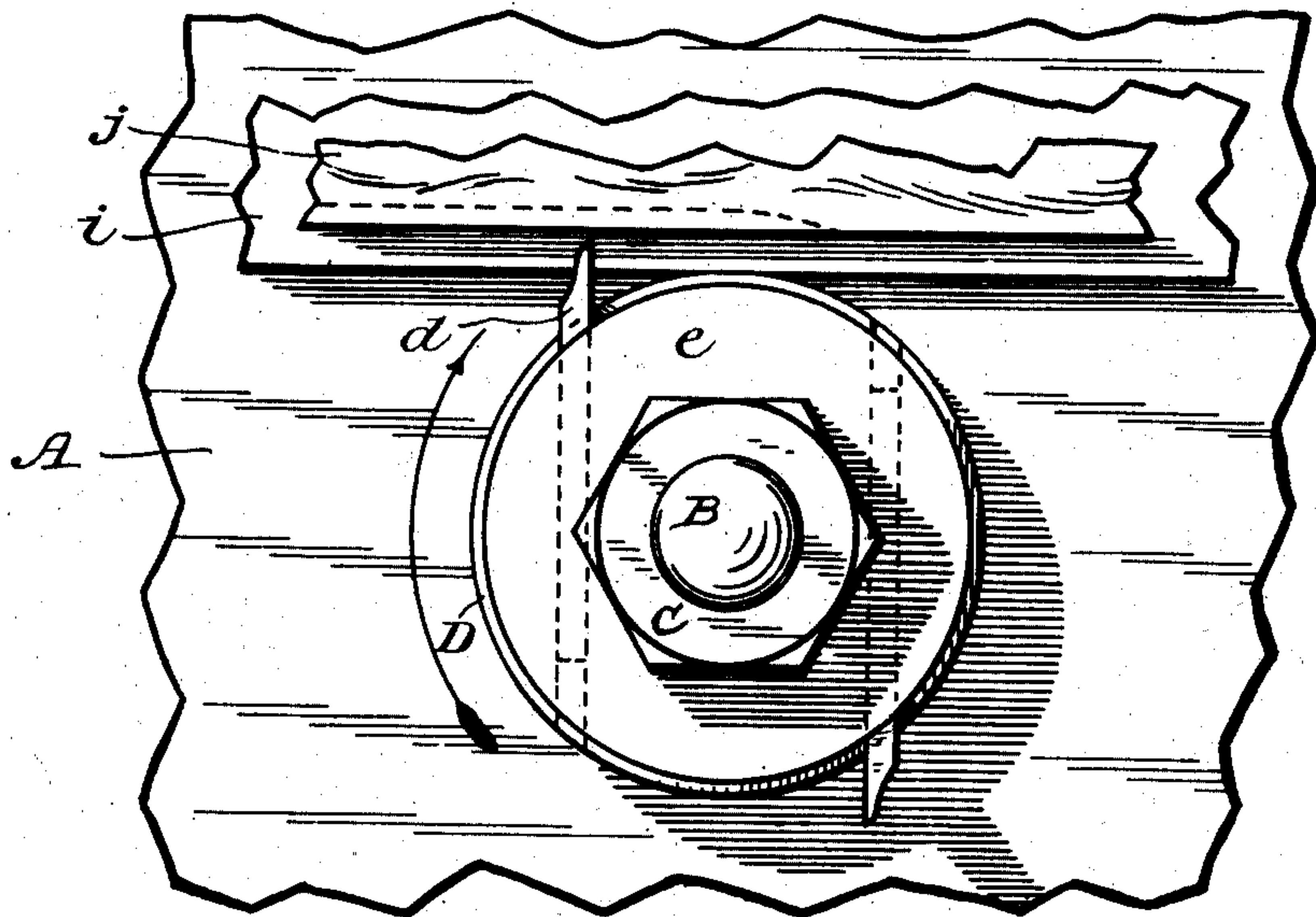


Fig. 1.

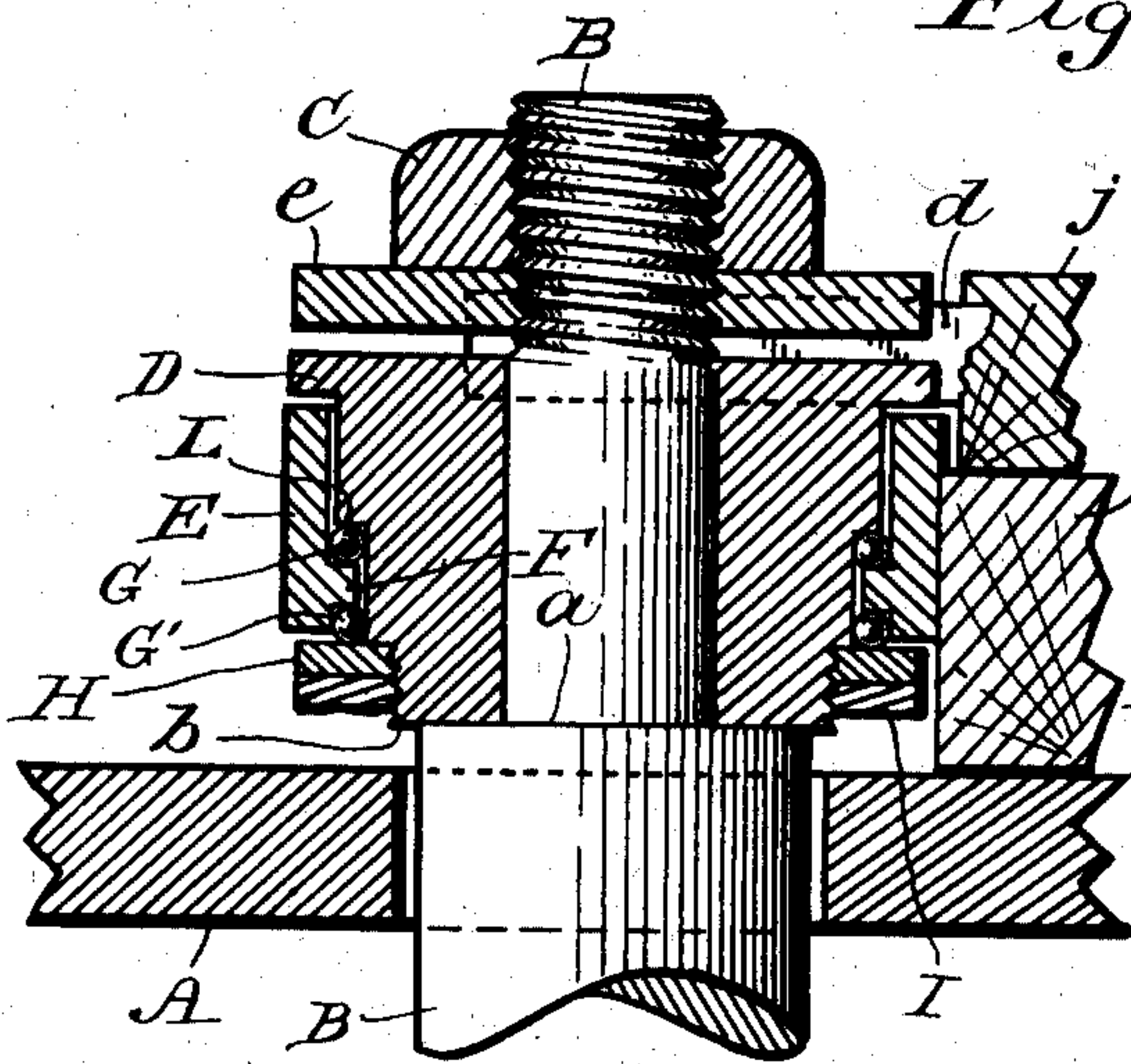


Fig. 2.

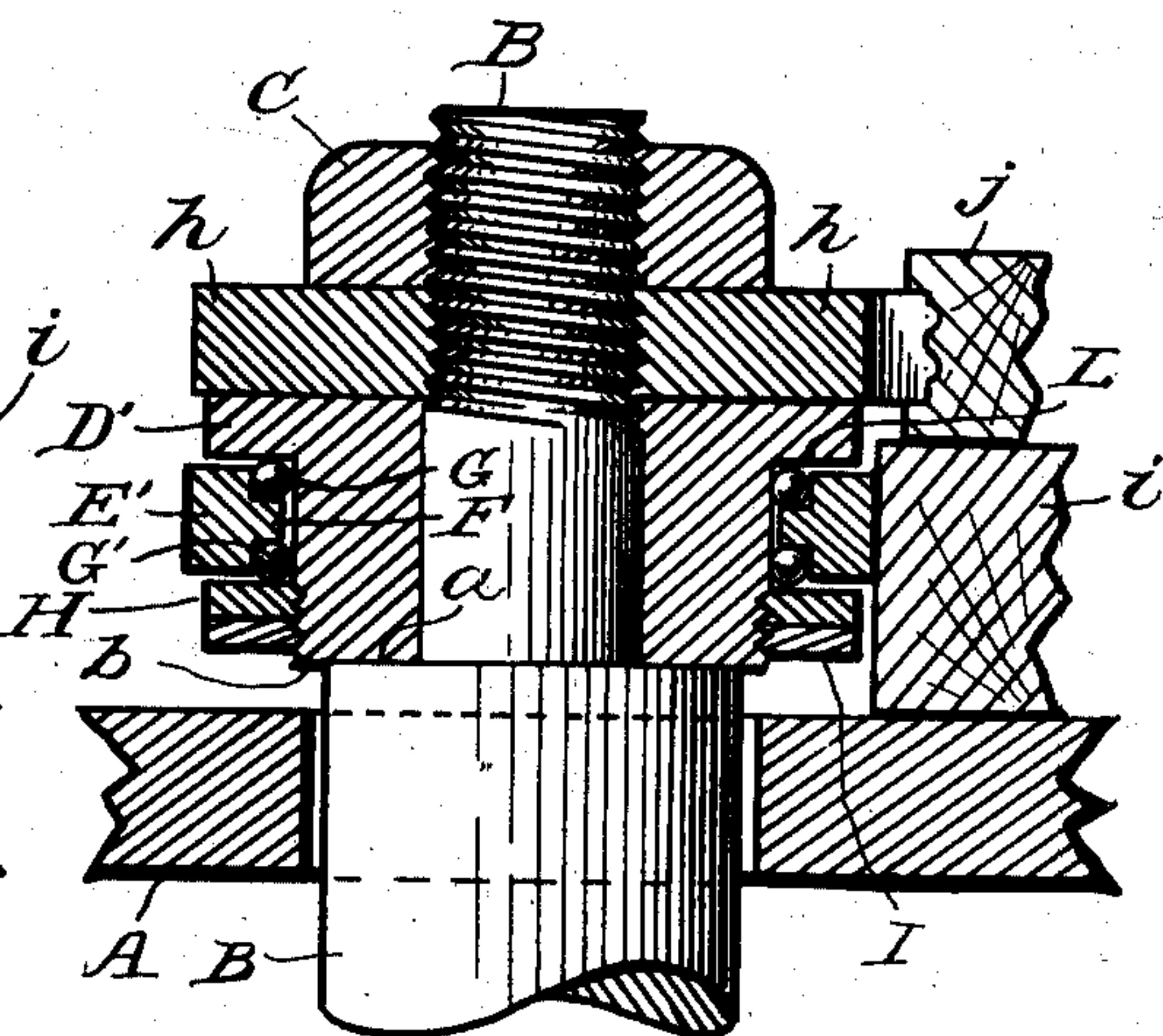


Fig. 3.

WITNESSES:

L. H. Sickels.
J. P. Mertz.

INVENTOR:

Thomas S. Crapp.
BY E. S. Silvers.
ATTORNEY.

UNITED STATES PATENT OFFICE.

THOMAS S. CRAPP, OF WAYNETOWN, INDIANA.

ANTIFRICTION-COLLAR FOR WOOD-SHAPERS.

SPECIFICATION forming part of Letters Patent No. 706,488, dated August 5, 1902.

Application filed November 29, 1901. Serial No. 84,010. (No model.)

To all whom it may concern:

Be it known that I, THOMAS S. CRAPP, a citizen of the United States, residing at Waynetown, in the county of Montgomery and State of Indiana, have invented new and useful Improvements in Antifriction-Collars for Wood-Shapers, of which the following is a specification.

This invention relates to collars for tool spindles or arbors against which patterns may be held when shaping wood on machines in a well-known manner, and refers particularly to collars that are designed to prevent burning in spots or wearing by abrasion of the pattern that may be used in connection with it on wood-shapers, the object being to provide a collar of this character against which the pattern may be operated without injury whatever thereto, thus saving the expense of redressing the patterns and making new ones on account of depressions in their working faces, which may be caused by frictional contact with a rotating collar as heretofore employed. This and other objects not hereinbefore mentioned are attained in the construction illustrated in the accompanying drawings, forming a part of this specification, to which reference may be had and in which similar reference characters designate corresponding parts in the several figures thereof.

Referring to the drawings, Figure 1 represents a fragmentary plan view showing the top of the table of a wood-shaper together with the cutter-head and cutters, and also a piece of wood as it might be operated upon connected with the pattern; Fig. 2, a fragmentary vertical sectional view showing the details of construction of the collar when designed to be attached to or form part of a cutter-head; and Fig. 3 is also a fragmentary vertical sectional view showing the details of construction of the collar when constructed independently of the cutter-head, this view showing a solid head having integral cutters.

In the drawings, A represents a horizontal table, as of a wood-shaper or similar machine, above and partly upon which the operations take place.

B represents the machine-spindle, extending through an aperture in the table, only so much of which is shown as will serve to explain the connection of my improvements

therewith. The spindle has an upper portion of reduced diameter, at the lower end of which is a shoulder *a*, against which the lower face *b* of the cutter-head is usually forced by means of a nut C, fitted to the upper end of the spindle, the head having a bore fitting over the reduced portion of the spindle. The cutter-head D is circular and is bored to fit the spindle of the machine, and at the upper end thereof it is suitably adapted to receive insertible cutting-tools or cutters, as *d*, a washer *e* being placed upon the tools and engaged by the nut C. The periphery of the head D is turned true, and at or near the middle portion thereof it has a diameter less than the portion above, so that a shoulder L is formed of suitable contour to form a ball-race. The collar E is circular internally and externally, the internal portion fitting loosely over the body portion of the head D having the greater diameter. Within the lower portion of the collar E is an annular rib F, so designed that both the upper and lower faces thereof may form ball-races. The lower end of the head D is provided with an adjustable collar H, the upper face of which forms a ball-race, and it is suitably attached to the head, as by means of screw-threads, and locked against movement by suitable means, as a jam-nut I. Balls G, of steel, are placed between the shoulder L and the rib F, and balls G' are placed between the rib F and the collar H, and thus the collar E is provided with ball-bearings operating in both horizontal and vertical directions. The head D has a flange extending over the upper end of the collar E to exclude shavings from the bearings, and the flange may obviously be formed either integrally with the head or separately as a washer upon the head. It should be understood also that the head D may be formed alone as a hub or carrier for the collar E and a filling-ring upon which to rest any suitable form of cutter-head that may be a separate part or device of the whole design.

In Fig. 3 the hub D' is bored to fit the spindle and is designed to rest on the shoulder *a*. The external diameter is substantially uniform from the lower end thereof up to the shoulder L near the upper end of the body portion. Upon the top of the hub is a solid

cutter *h*, and, as before stated, a head having insertible cutters may be used instead of the solid cutter, or the hub itself may be adapted to hold removable cutters. The collar *E'* is
 5 circular and similar to the collar *E*, having the internal annular rib *F*, which divides the two series of balls *G* and *G'*, so that two bearings are formed, the collar *H* with the shoulder *L* providing the ball-races and re-
 10 taining the balls and the collar *E'*. A flange extends from the hub partially over the top of the collar *E'*. The exterior diameter of the collar *E'* is uniform and the surface is smooth.

15 In practical use the machine-spindle being rotated rapidly will carry with it the collar *E* or *E'*. Let *i* represent the working side of a pattern that is to be moved upon the table of the machine and *j* a board attached to the
 20 pattern. The pattern may be moved against the collar *E* or *E'* and along the top of the table, the cutters forming the face of the board *j*, according to the designs of the pattern and the cutters. When the pattern engages the
 25 collar, the rotation of the latter will immediately cease, and there will thus be no rubbing contact of the collar against the pattern when the latter is momentarily allowed to rest upon the table, and as the pattern is moved along
 30 on the table the collar will roll against the pattern working face, rotating in the direction opposite to that of the cutters.

Having thus described my invention, what I claim as new is—

35 1. A wood-shaper including a spindle, a hub, cutters, means for binding the cutters and the hub to the spindle, a collar mounted rotatively

on the hub, and antifrictional bearings mounted between the hub and the collar.

2. A wood-shaper spindle provided with a 40 hub secured thereto having a projecting flange, a cutter mounted at the top of the hub, a collar adjustably secured to the hub, the spindle and the hub and the cutter moving together, a guide-collar mounted rotatively 45 on the hub between the flange and the collar, and antifrictional bearings mounted between the hub and the guide-collar.

3. An antifrictional guide-collar for wood-shaper spindles comprising a bored hub hav- 50 ing a flange at the upper portion, a collar adjustably attached to the lower portion of the hub, a collar having an internal annular rib mounted rotatively on the hub, and antifric- 55 tional bearings having contact with the sides of the annular rib and also with the hub.

4. In a wood-shaper spindle, the combination of the hub secured to the spindle and having the downwardly-facing shoulder, the bearing-collar screwed to the lower end of the 60 hub, the locking-nut engaging the bearing-collar, the guide-collar rotatively mounted on the hub and having the internal annular rib, and the ball-bearings situated at either side 65 of said rib and engaging the shoulder and the bearing-collar, with the cutter, and means whereby the cutter and the hub may be secured to the spindle, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS S. CRAPP.

Witnesses:

EDWARD KELLY,
 HARRY WILSON.