

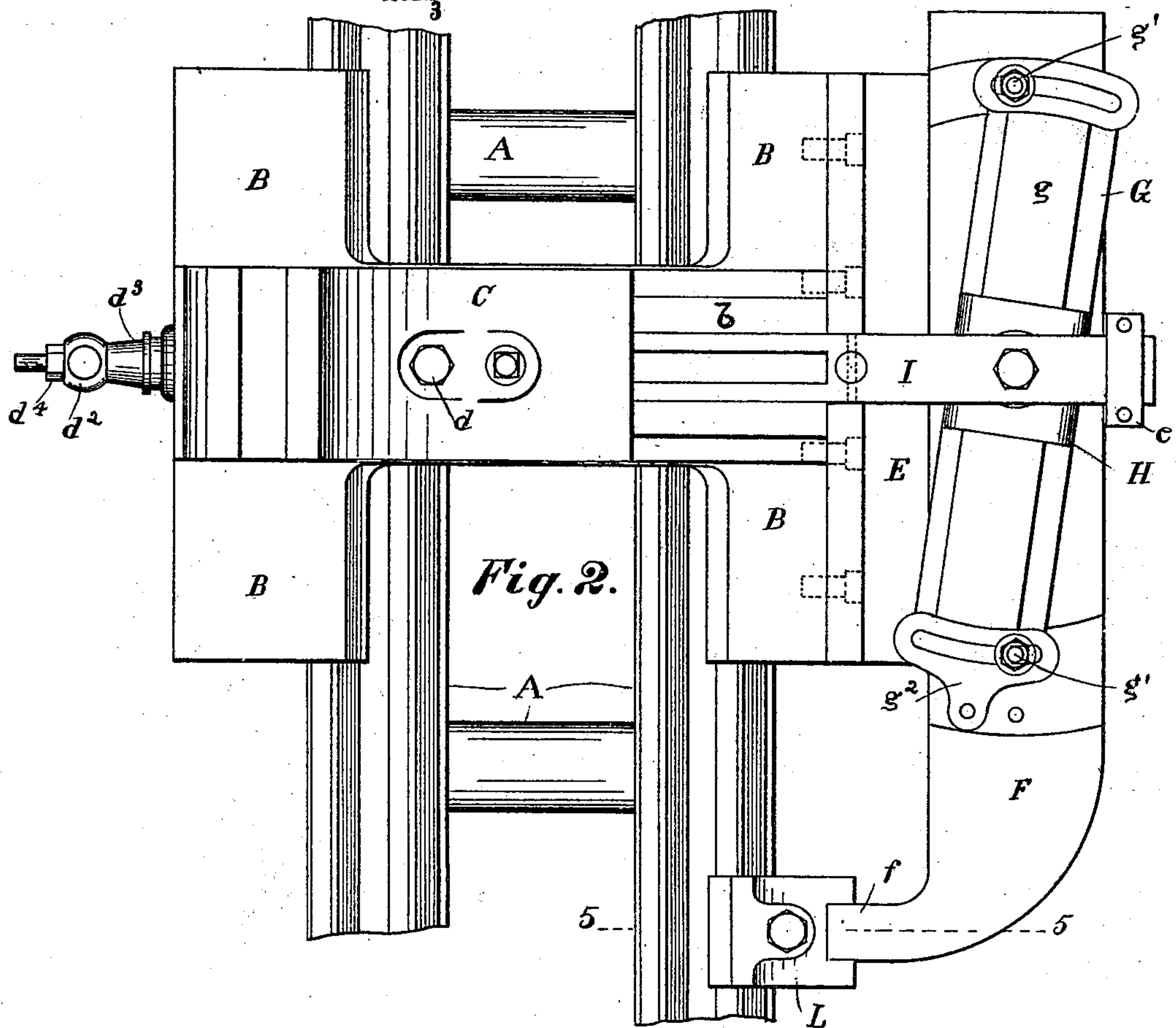
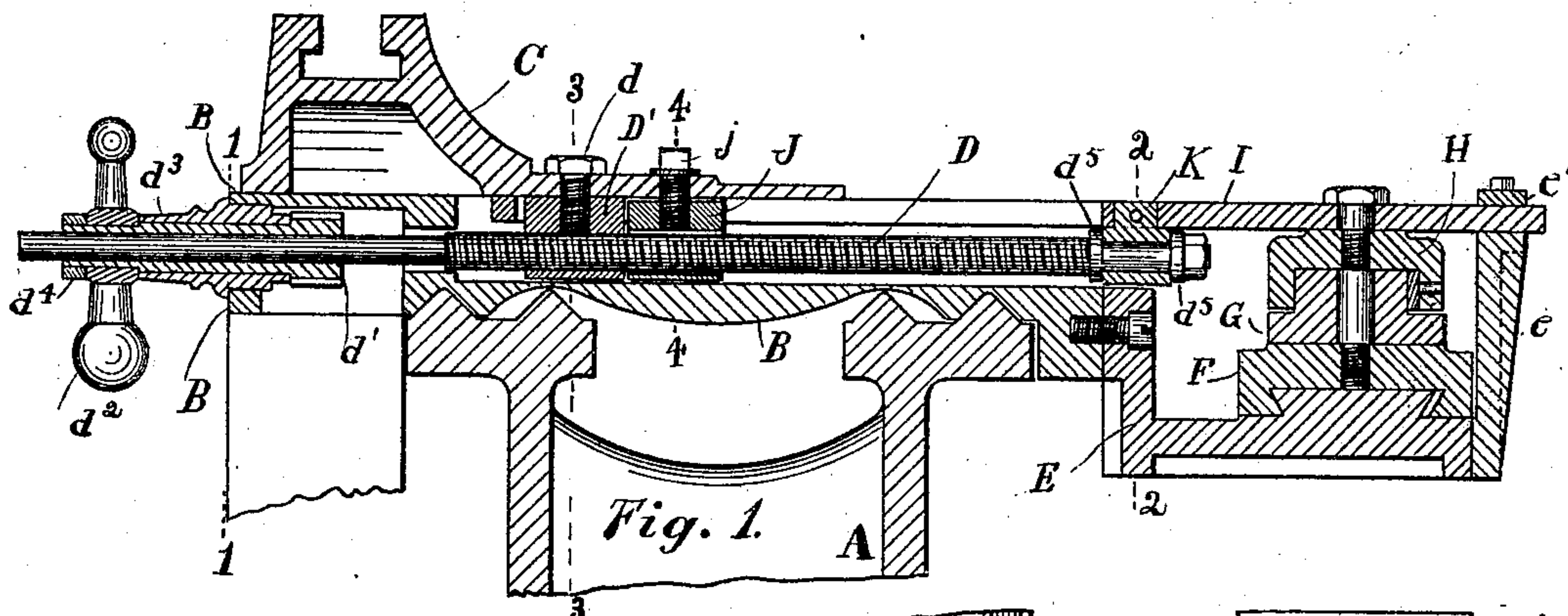
(No Model.)

2 Sheets—Sheet 1.

W. T. S. JOHNSON.
TAPER ATTACHMENT FOR LATHES.

No. 503,088.

Patented Aug. 8, 1893.



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J. A. Stewart

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By *Geo. J. Murray*
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(No Model.)

2 Sheets—Sheet 2.

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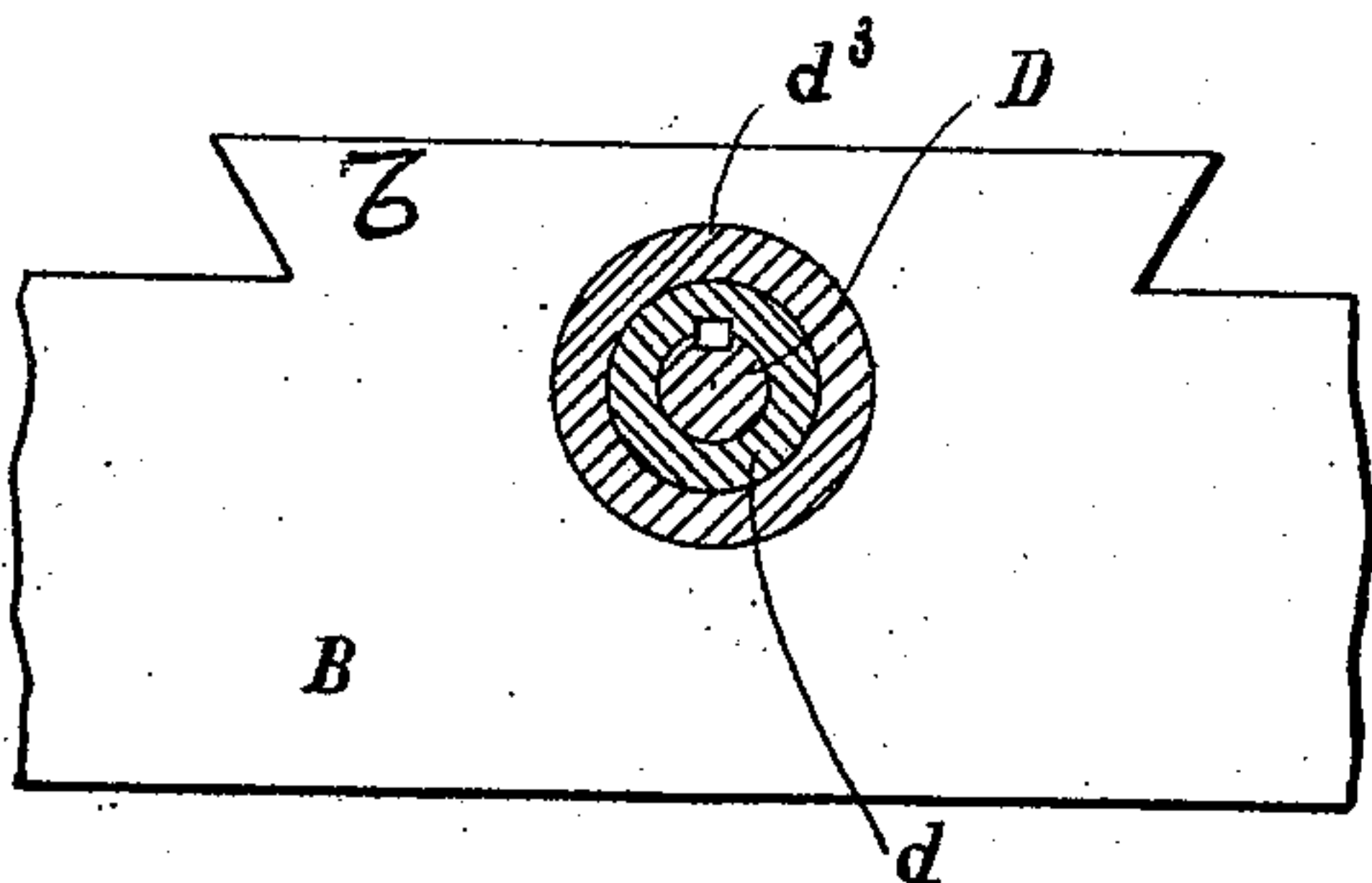


Fig. 3.

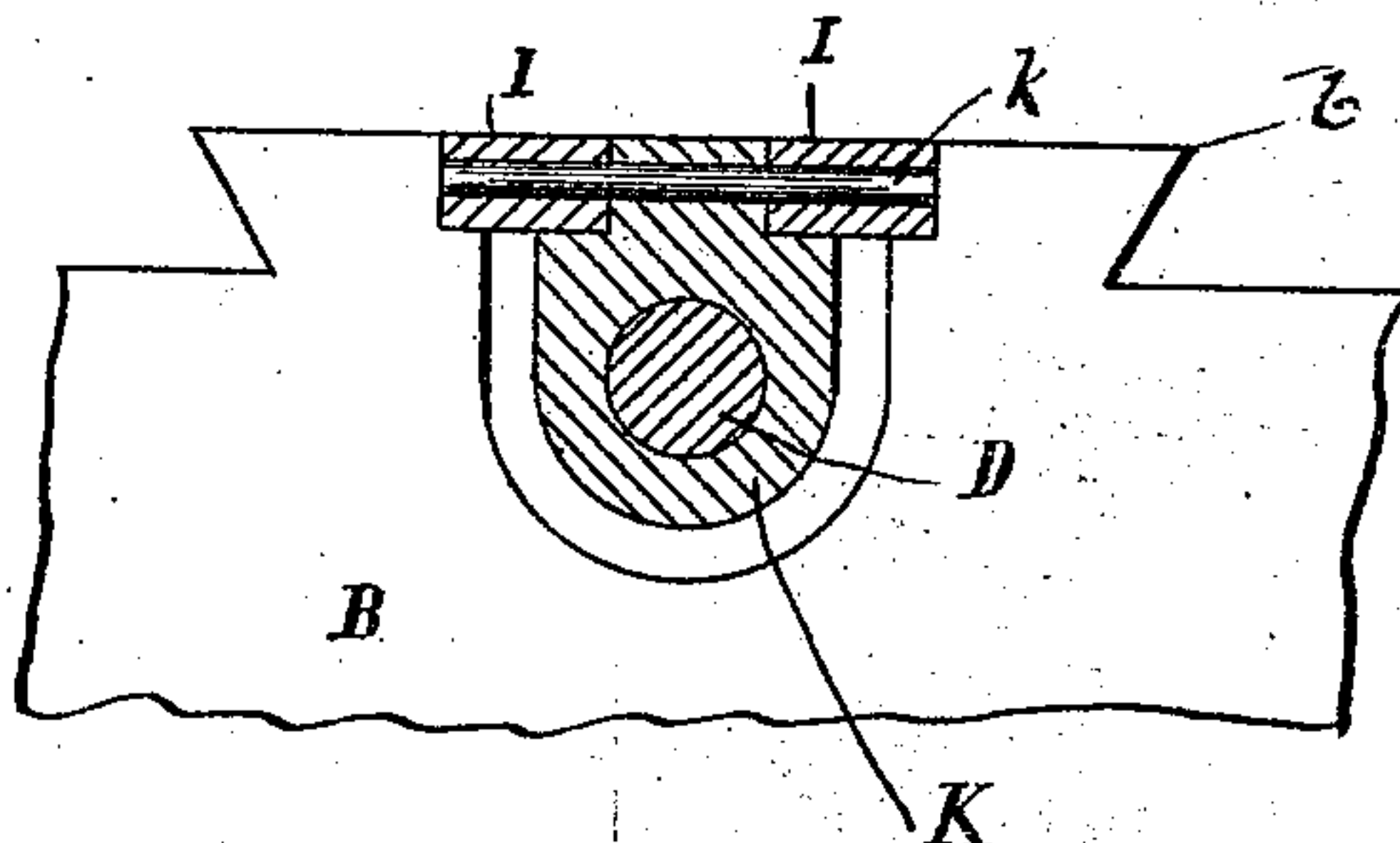


Fig. 4.

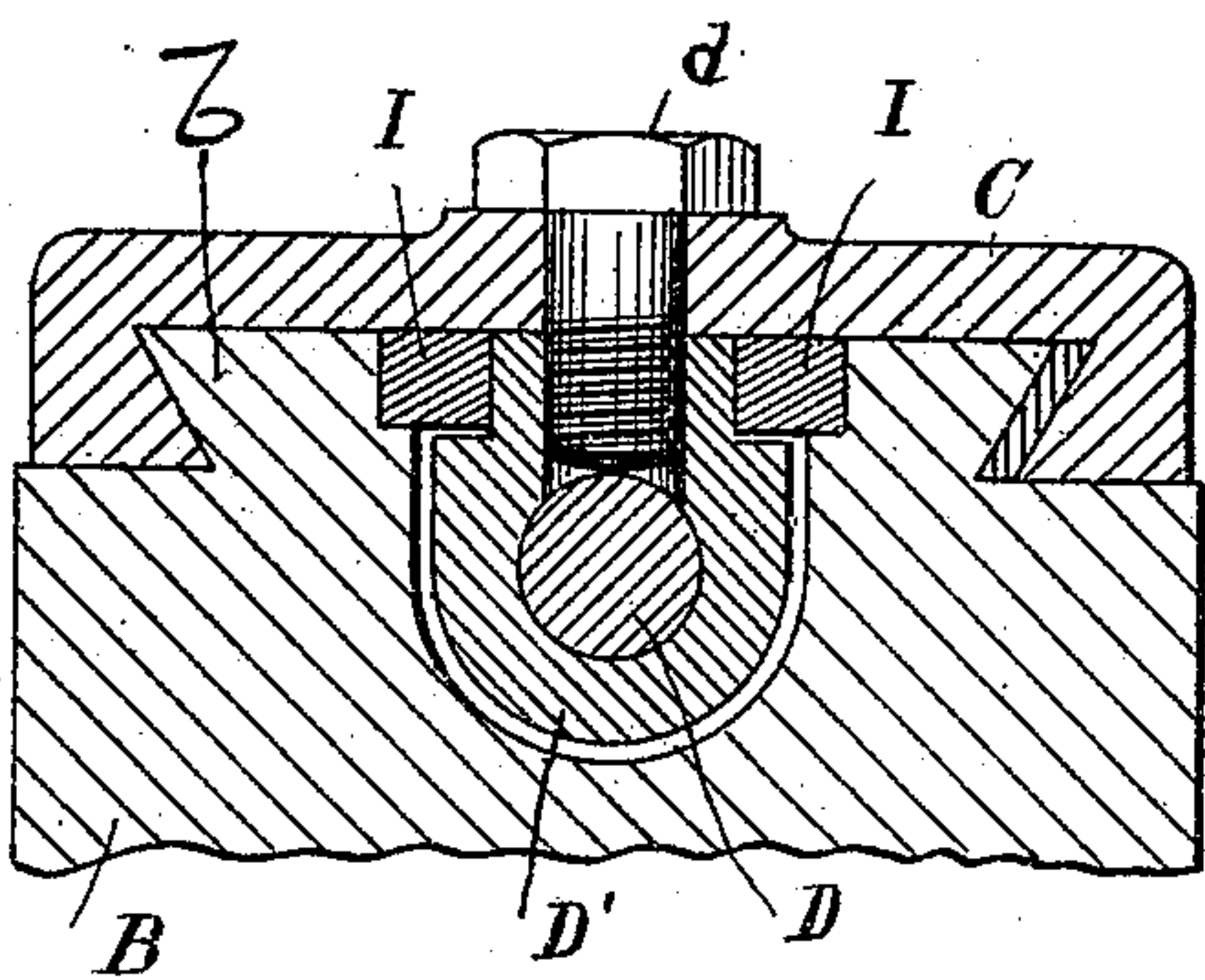


Fig. 5.

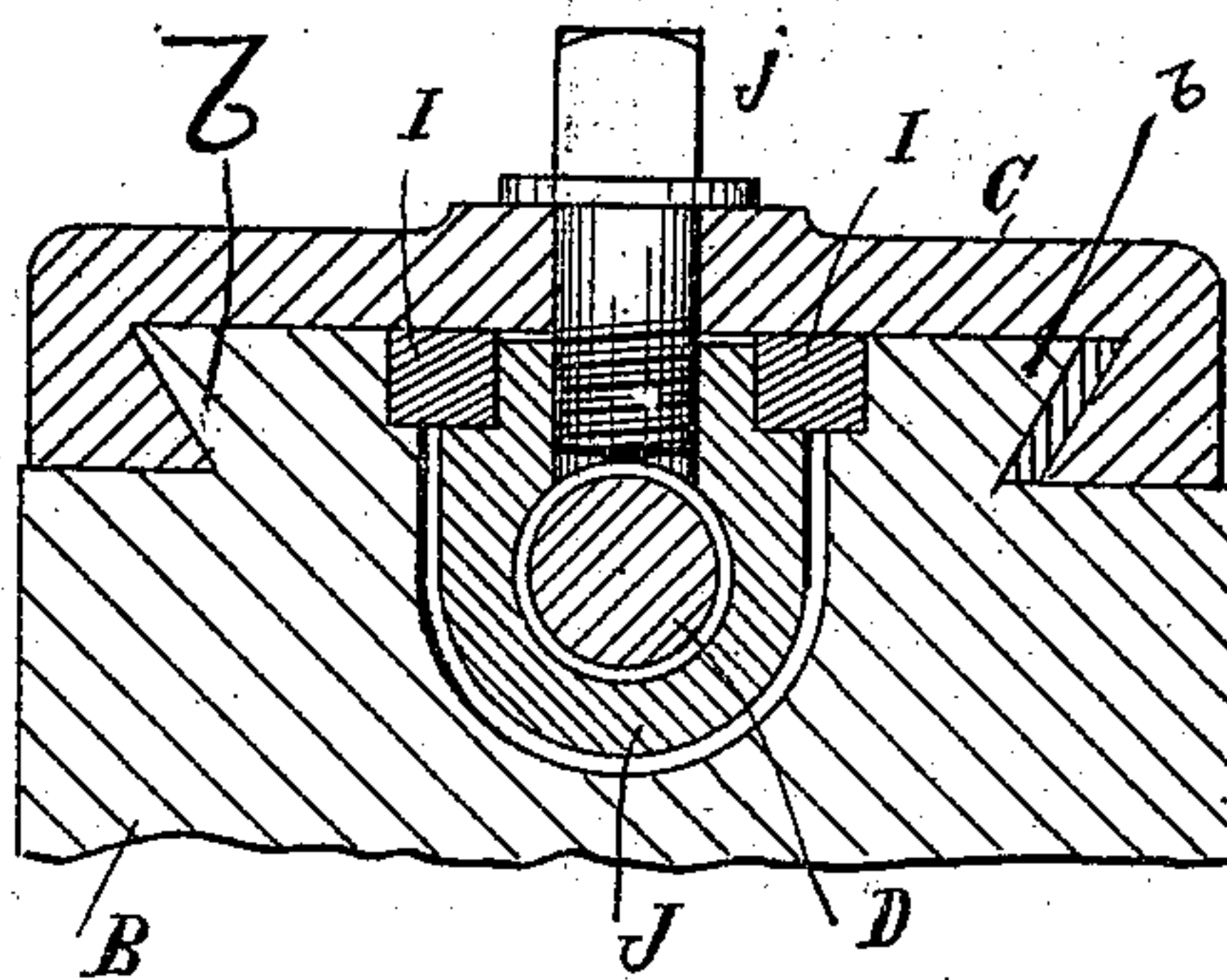


Fig. 6.

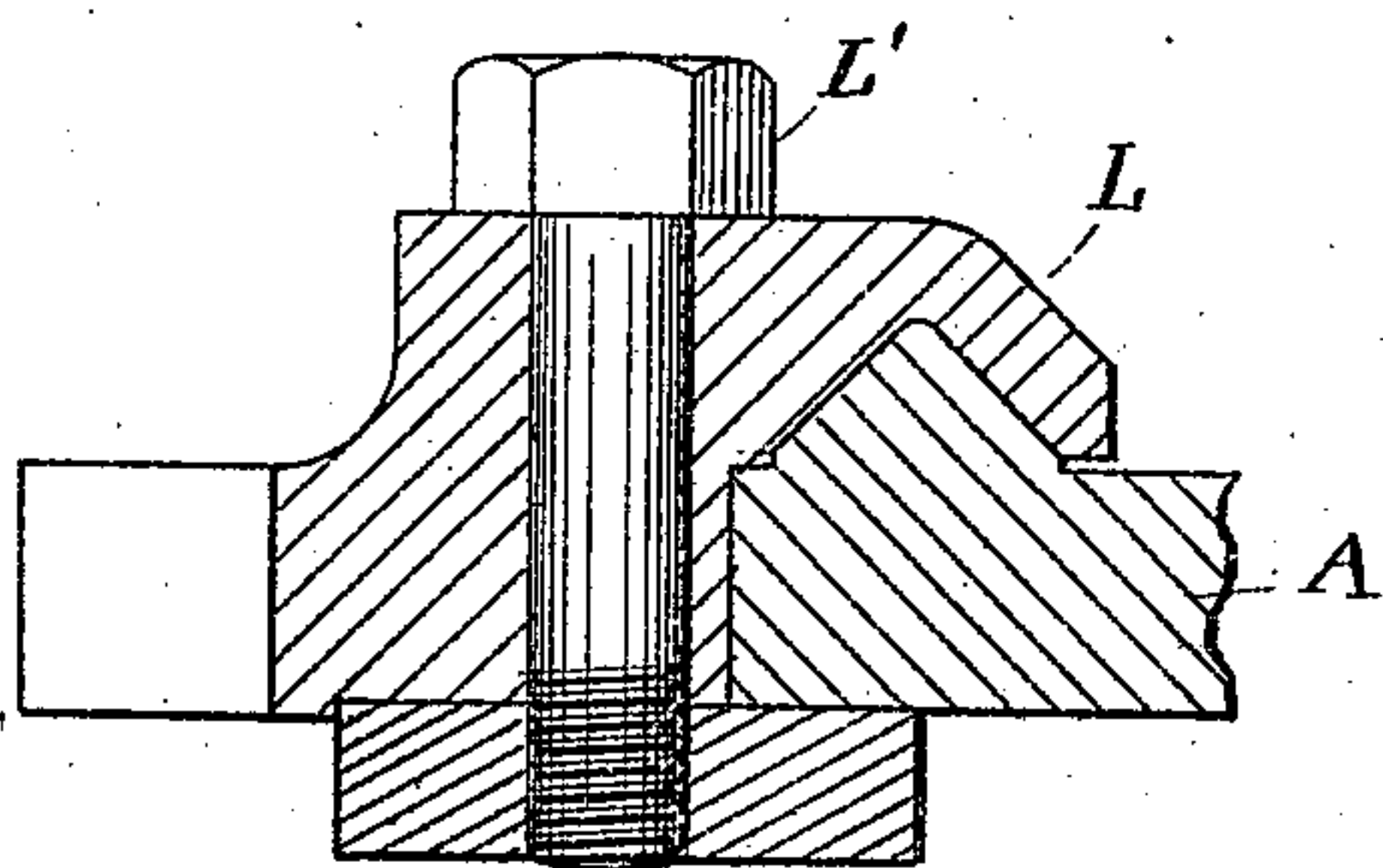


Fig. 7.

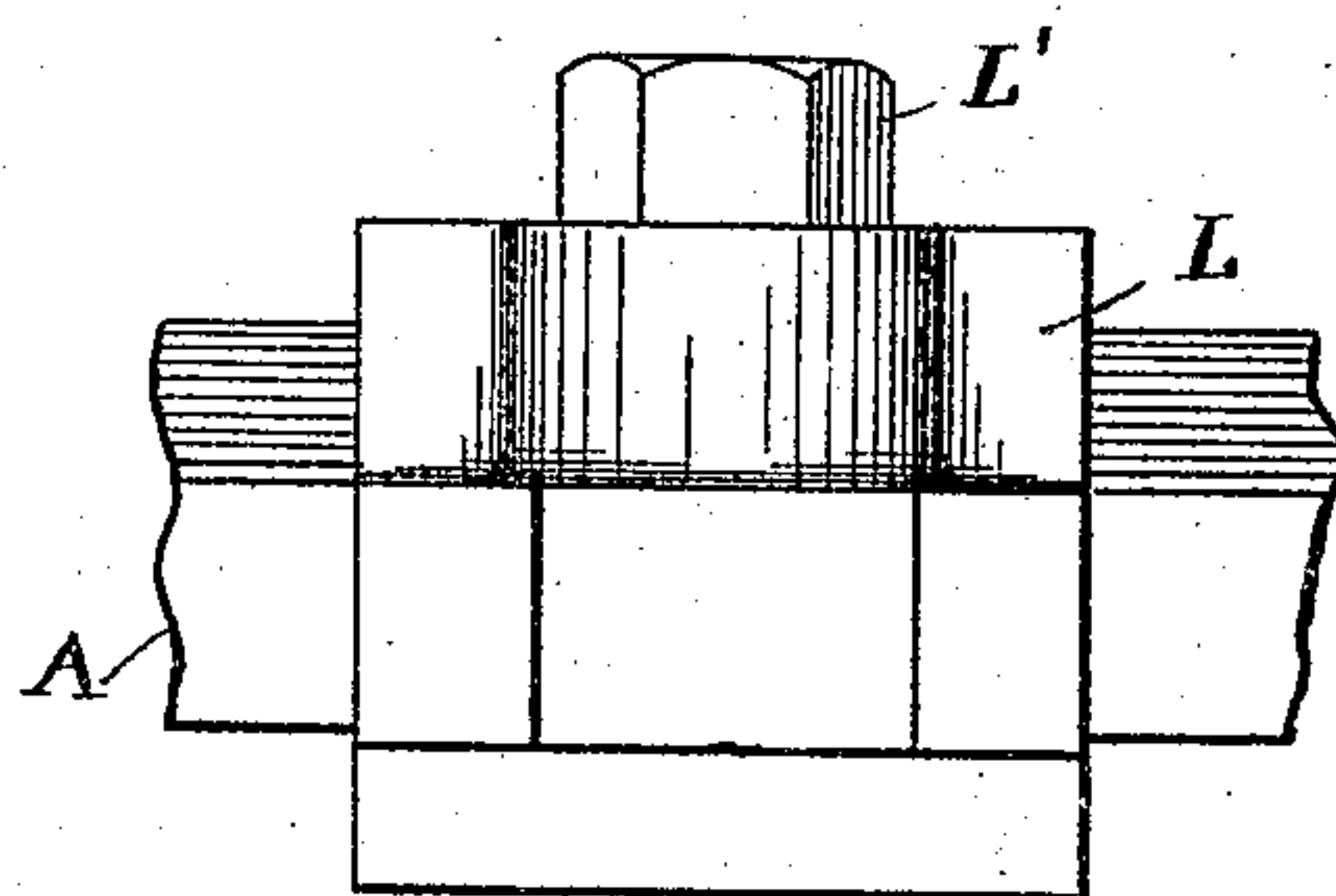


Fig. 8.

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UNITED STATES PATENT OFFICE.

WILLIAM T. S. JOHNSON, OF CINCINNATI, OHIO, ASSIGNOR TO JACOB Q. STEWART, OF SAME PLACE.

TAPER ATTACHMENT FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 503,088, dated August 8, 1893.

Application filed April 5, 1893. Serial No. 469,088. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. S. JOHNSON, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Taper Attachments for Lathes, of which the following is a specification.

My invention is an improved taper attachment for engine lathes. Its objects are to provide a simple attachment for turning tapers which may be readily adjusted to turn different sized tapers, and readily detached so that ordinary straight turning may be accomplished without removing the attachment; to provide for a steady movement of the cutting tool when turning tapers, and a convenient means for adjusting and securing the tool carrier to the sliding block of the taper attachment.

The invention consists in the means shown in the accompanying drawings for accomplishing this and other useful results, and will be fully described in connection with said drawings, and the novel features and combinations by which the results are attained will be particularly referred to and pointed out in the claims.

Referring to the said drawings, in which like parts are indicated by similar reference letters wherever they occur through the various views, Figure 1 is a vertical sectional view taken longitudinally through the attachment, and transversely through the lathe bed. Fig. 2 is a plan view of the same. Figs. 3 to 8 inclusive are detailed views upon an enlarged scale of the various parts, Fig. 3 being taken in vertical section through line 1—1 of Fig. 1; Fig. 4 being taken in vertical section through line 2—2 of the same figure; Fig. 5 being taken in vertical section through line 3—3 and Fig. 6 through line 4—4 of Fig. 1; Fig. 7 through line 5—5 of Fig. 2 and Fig. 8 is an end elevation of the view shown in Fig. 7.

Referring to the parts, A represents the lathe bed, B the carriage mounted to slide longitudinally thereon, and C the tool holder mounted to slide transversely upon the carriage. With the exceptions hereinafter described, these are of ordinary construction.

Upon the upper side of the carriage B, is a dovetailed rib *b*, which fits into a corresponding dovetailed groove in the under side of the tool holder C. The screw D, for feeding the tool holder across the carriage, engages a nut D', which is held up against the under side of the tool holder by a screw *d*. The forward or unthreaded end of the screw shaft passes through a sleeve *d'* and is connected to the sleeve by a spline, which permits it to move longitudinally within it, and to be revolved by the hand lever *d*², which is secured upon the end of the sleeve *d'*.

*d*³ is a bushing which is fitted into the front end of the carriage. The sleeve *d'* passes through this bushing, and the lever *d*², which is secured upon the end of the sleeve *d'*, is held in place by a nut *d*⁴. For turning straight work, the tool holder is fed up to its work by the screw D in the ordinary manner.

Secured to the rear end of the carriage B is an angle plate E. Upon the horizontal web of this plate is a dovetailed rib, which forms a way for the bar F. Upon this bar F is pivoted a guide plate G, upon the upper side of which is a parallel rib *g*, over which is fitted the sliding shoe or block H. The guide plate G has enlarged ends provided with slots concentric with this pivot. Through these slots are passed cap screws *g'*, which are tapped into the bar F, by which means the guide plate G may be set at any angle desired upon the bar F. One end of the guide plate G has an extension *g*², which is perforated to register with the perforations in the bar F. When in this position the guide ribs on both parts are parallel with each other.

To turn tapers, the tool holder is coupled to the sliding block or shoe H by a bar I. The bar is longitudinally slotted to pass the neck of the nut D', and also the neck of the coupling block J, which clamps the tool holder firmly to the block by means of the screw *j*, which passes through the block and is tapped into the neck of the block J. The block is perforated to freely pass the screw D. The bar I is also coupled to the end of the screw D by a stud K, which has a tenoned neck and passes through the bar to which it is secured by transverse pin *k*, which passes through

the edges of the bar and through the neck of the stud K. The inner end of the screw D, which is also plain, unthreaded, passes through the stud and is clamped to it by collars d^5 , upon each side of the stud K, which are held in place by a nut on the inner end of the screw shaft. From the inner edge of the main bearing E, is a bracket e , which projects up to the under side of the bar I. The upper edge of this bracket is grooved to allow the bar to play through it, and the bar is held in place by a cap e' , which is screwed on top of the bracket e . One end of the bar F is turned in a right angle to enter a notch in a clamp L, the upper member of which fits over the V of the lathe bed. The lower member l is let into the under side of the upper member underneath the shear or upper bar of the lathe bed. The purpose of this clamp is to prevent the bar F from moving when turning tapers, which is done by tightening the clamp on the V of the lathe.

When the lathe is to be used for ordinary work, the clamp is simply loosened, and then the taper attachment and carriage travel together. Fitting the angle end f snugly within the notch of the clamp L permits the attachment to rise and fall, and thus compensate for any wear that may take place in the V guides of the carriage or lathe beds.

While I have shown the bearing E made in a separate piece and bolted to the rear edge of the carriage, it is obvious that it and the carriage may be all cast in a single piece; there are also several features of the device, as shown in the drawings, that may be dispensed with, and still many of the advantages of my invention attained. For instance, the stud block J, and the screw j , for rigidly locking the bar I and tool holder C together, may be omitted, as may also the sleeve d' and bushings d^3 , by fixing the lever or hand wheel directly on the extended end of the screw shaft D, but the movement of the parts would not be so certain and positive with these parts omitted. It is also obvious that many mechanical changes may be made in the different parts without departing from the spirit and scope of my invention.

The operation of the device for turning taper attachments is as follows: The guide plate G, is set at the desired angle and secured in place by the screws g' and the tool fed up to the position desired by the screw D, in the usual manner. When the lathe is started, the carriage traveling forward carries the sliding block with it, while the bar F, and guide bar G, are held stationary by the clamp L. During this operation the bar moves the tool holder as the carriage progresses, and the said bar being tightly clamped to the tool holder and the screw D by the collars d^5 , insures a steady movement and prevents any lost motion between the screw and nut, while the screw slides longitudinally through the sleeve d' , and the bar I traversing the close fitting groove in the carriage bed, as well as

the box formed in the upper end of the bracket e , prevents any wobbling or unsteady motion of the tool holder.

To adjust the tool holder along the bar I for the purpose of adapting the machine to different sizes of work to be turned, the screw j , is loosened to release the tool holder and bar. The tool holder is then adjusted in the desired position by turning the screw D by means of the lever d^2 . When adjusted to the proper position, the screw j , is again tightened by clamping the tool holder and bar I firmly together. It will thus be seen that by a slight turn of the screw j , which is in a convenient position to be handled by the operator, the tool may be readily set to take a new bite, and the bar I, and tool holder quickly locked to insure a steady movement while the work is being performed.

For ordinary use it is only necessary to loosen the screw L' of the clamp L, when the taper attachment and carriage will all travel together.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the lathe bed, the carriage, the tool holder mounted to slide thereon, the inclined guide G, the sliding block or shoe H fitted to slide thereon, the bar pivoted upon said block, the screw shaft D, coupled to the bar, the stud nut D' connecting the tool holder and screw, and means of turning the screw for the purpose of moving the tool holder independently of the bar, substantially as shown and described.

2. The combination of the lathe bed, the carriage mounted to slide thereon, the tool holder mounted to slide across the carriage, the inclined guide G and g , the sliding shoe or block H, mounted thereon, the slotted bar I, pivoted upon said shoe, the screw D, the bearing K, for coupling the screw and bar I, the screw threaded nut D', to couple the bar and tool holder, and the lever d^2 , to turn the screw for the purpose of adjusting the tool holder with relation to the work, substantially as shown and described.

3. The combination of the lathe bed, the carriage, the laterally moving tool holder, the inclined guide G, the block H, mounted to slide thereon, the slotted bar I, pivoted upon said block, the screw D, the bearing K, coupling the screw and bar I, the screw threaded stud D', to couple the bar and tool holder, the stud J, and cap screw j , to permit adjustment of the tool holder to the work required, and lock the bar and tool holder together, substantially as shown and described.

4. The combination of the lathe bed, the carriage, the tool holder fitted to slide across said carriage, the support E, for the taper attachment secured to the carriage, the bar F mounted in guide ways upon said support, the clamp L to hold said bar stationary while the carriage moves, the guide G pivoted upon said bar F, the shoe fitted to slide upon said guide, the slotted bar I, pivoted upon said

shoe and passing under the tool holder, and clamping stud J, and screw *j* to adjustably couple the tool holder and the bar, substantially as shown and described.

5 5. The combination of the bed, the carriage, the sliding tool holder mounted thereon, the taper attachment support E, secured to the end of the carriage, the bar F, mounted in ways upon said support and having the inwardly projecting end *f*, the clamp L, secured
10 upon the lathe bed, and having slotted edge to embrace the end *f*, of bar F, the guide G, pivoted upon bar F, the shoe H, fitted to slide upon said guide, the bar I, pivoted upon said
15 block and coupled to the tool holder, substantially as shown and described.

6. The combination of the lathe bed, the carriage, the laterally moving tool holder, the inclined guide G, the block H, fitted to slide
20 thereon, the slotted bar I, pivoted upon said block and adapted to slide in the carriage, the screw shaft D, the stud K, for coupling the screw to the bar, the screw nut D' and screw

d, to couple the tool holder and screw, the sleeve *d*, splined upon the screw shaft, the
25 bushing *d*³ secured in the carriage and furnishing the bearing for the sleeve *d*', and the lever *d*² secured upon the sleeve, substantially as shown and described.

7. In a taper attachment for lathes, the
30 combination of the sliding carriage, the fixed bearing E secured to the end thereof, the bar mounted in ways upon said bearing, and having the inturned ends *f*, the clamp L embracing the end *f* of the bar, and the screw L' to
35 hold said clamp rigidly to the lathe bed, or permit it to slide thereon, whereby the attachment may be held while the carriage moves or permit it to slide with it, and the
40 end permitted to play vertically in the clamp to compensate for wear of the lathe slides, substantially as shown and described.

WILLIAM T. S. JOHNSON.

Witnesses:

N. J. EARLEY,

GEORGE STEWART.

Correction in Letters Patent No. 503,088.

Affidavit having been filed showing that the name of the assignee in Letters Patent No. 503,088, granted August 8, 1893, upon the application of William T. S. Johnson, of Cincinnati, Ohio, for an improvement in "Taper Attachments for Lathes," should have been written and printed *Jacob R. Stewart*, instead of "Jacob Q. Stewart," it is hereby certified that the proper correction has been made in the files and records pertaining to the case in the Patent Office, and should be read in the Letters Patent that the same may conform thereto.

Signed, countersigned, and sealed this 5th day of September, A. D. 1893.

[SEAL]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.