

No. 644,929.

Patented Mar. 6, 1900.

A. B. LANDIS.
FOOT STOCK FOR GRINDING MACHINES.

(Application filed Sept. 9, 1899.)

(No Model.)

Fig. 2.

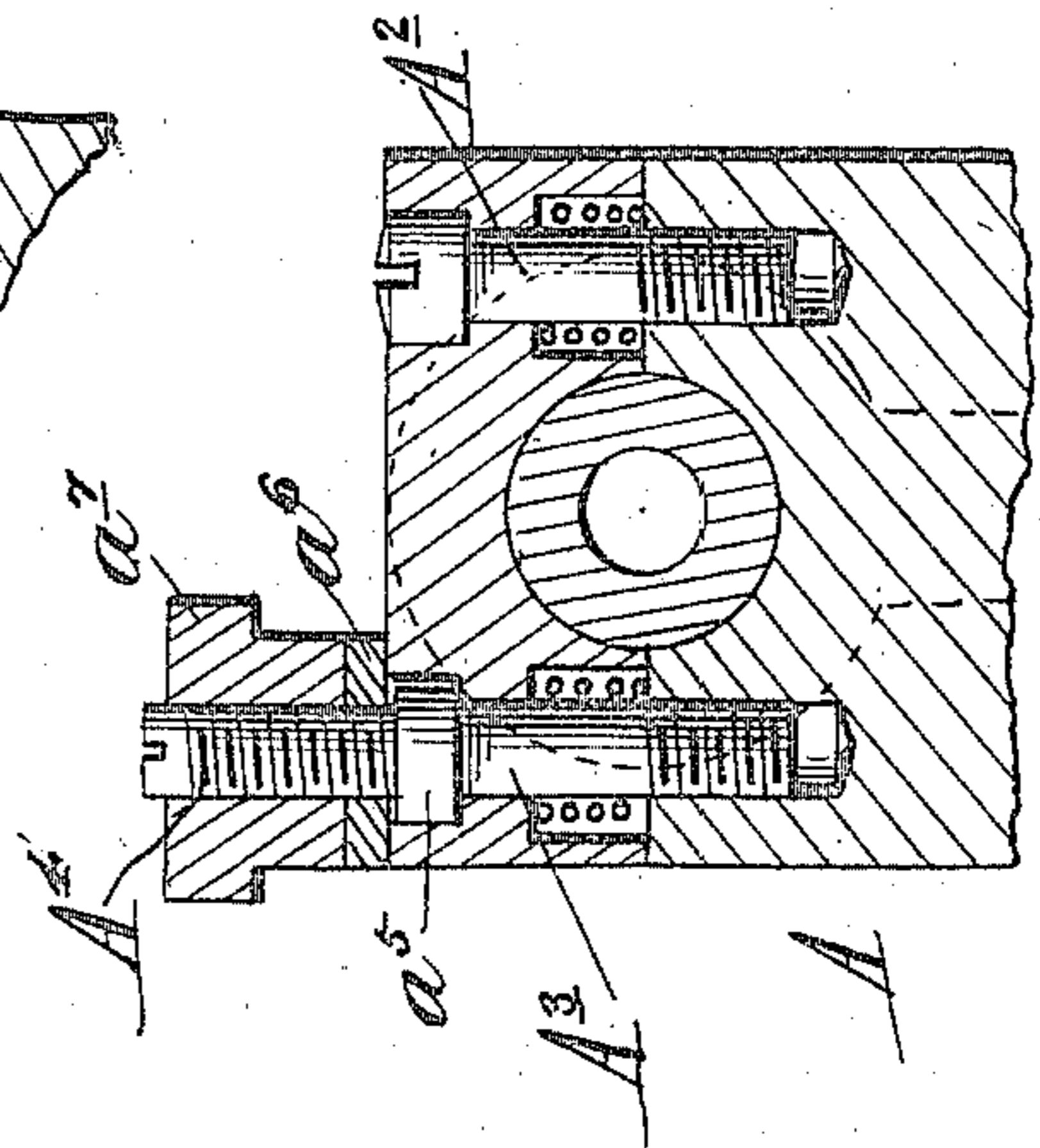
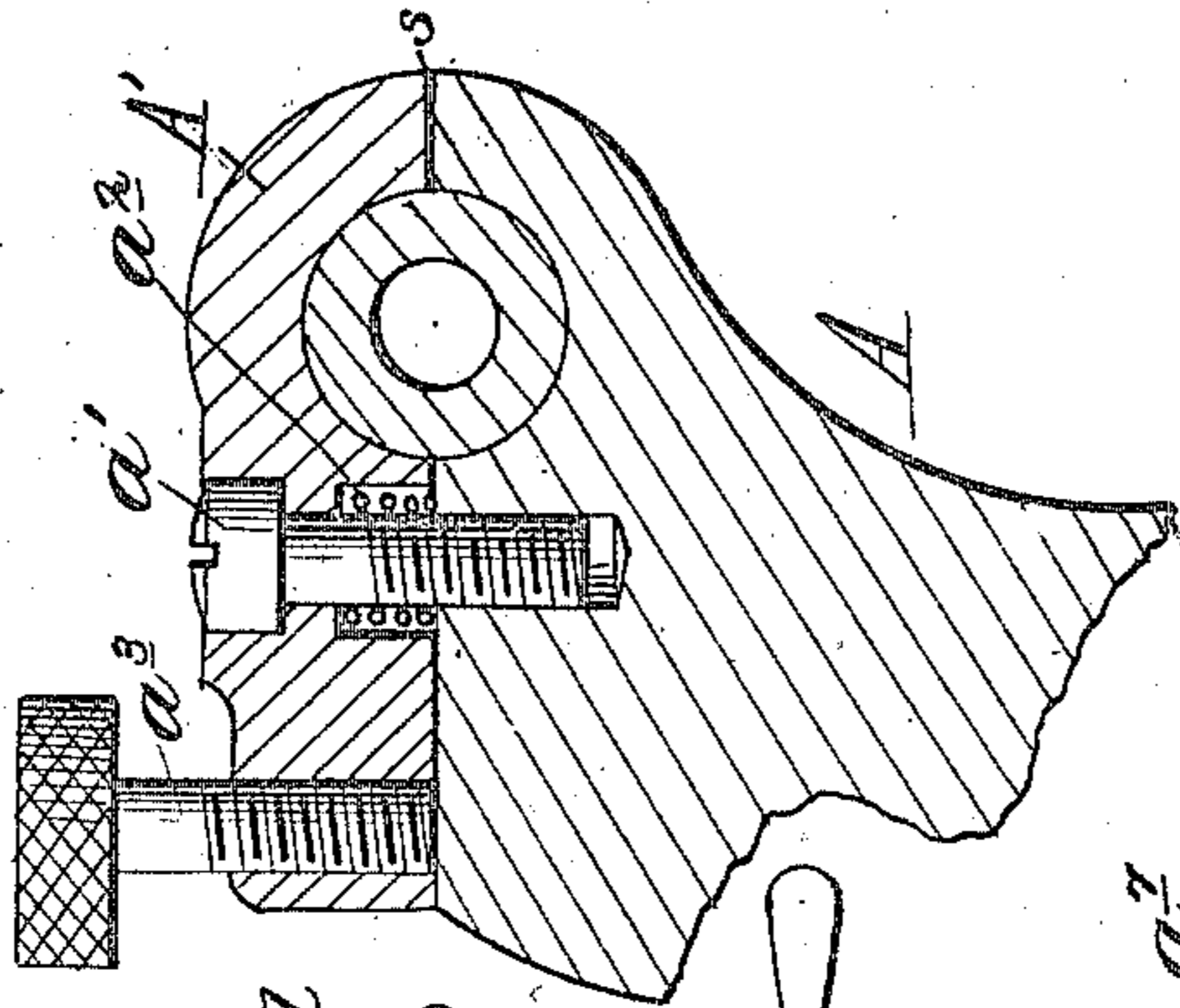


Fig. 1.

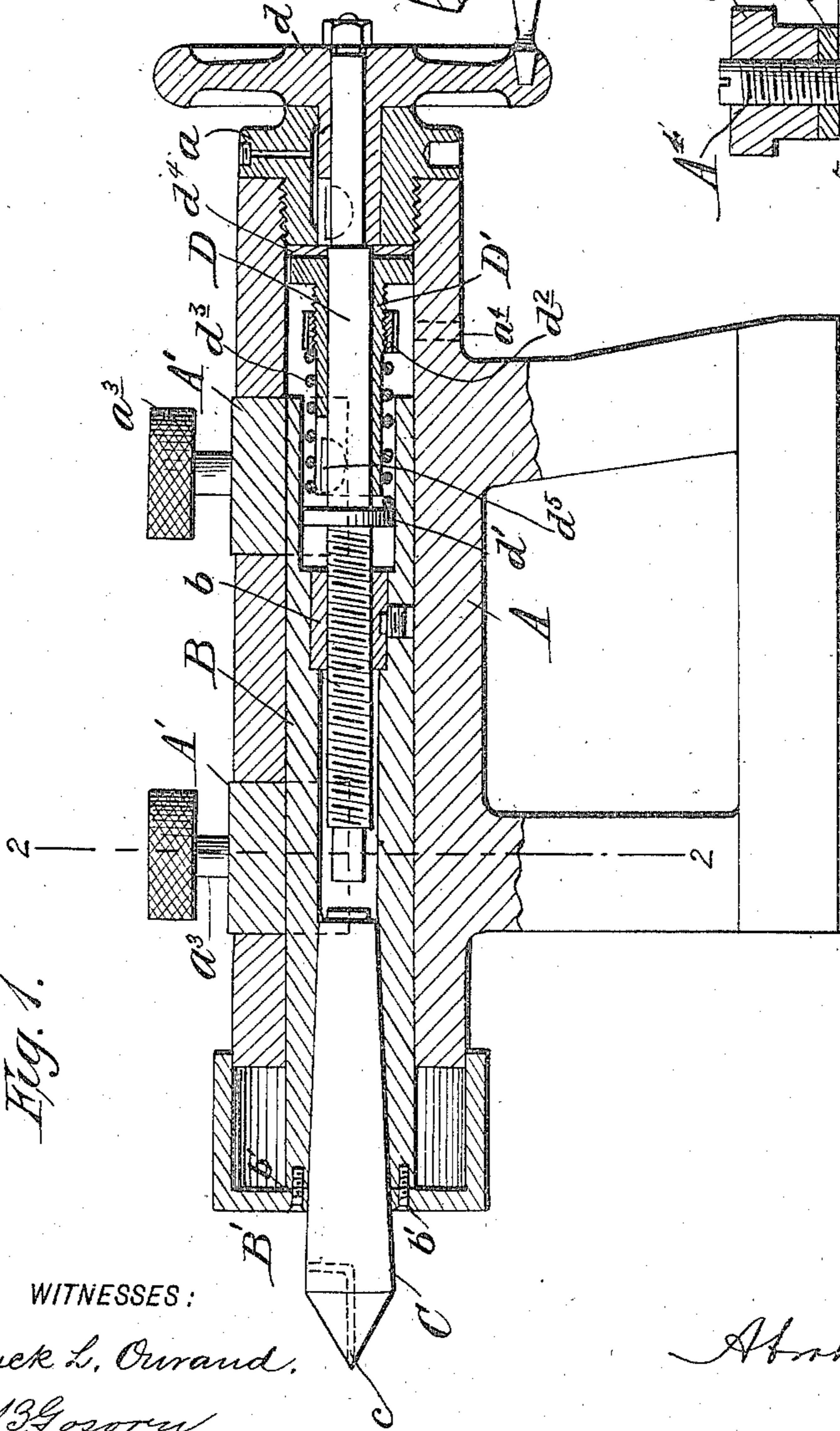


Fig. 3.

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FOOT-STOCK FOR GRINDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 644,929, dated March 6, 1900

Application filed September 9, 1899. Serial No. 729,939. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM B. LANDIS, a citizen of the United States, residing at Waynesborough, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Foot-Stocks for Grinding-Machines, of which the following is a specification.

In grindingsmall cylindrical articles—such as shafts, spindles, &c.—in ordinary grinding-machines the heat generated by the grinding sometimes will expand such work until it will “buckle” or curve slightly, and thus interfere with the operation and prevent satisfactory results.

The object of my said invention is to provide a foot-stock for holding one end of such work in which there may be a slight elasticity to allow for such expansion without the article buckling; and it consists in various improvements in the construction whereby this object is accomplished and in further improvements whereby a very rigid, durable, and comparatively inexpensive foot-stock is provided wherein the spindle is held to permit of the necessary movements without disturbing its perfect adjustment as at first secured, all as will be hereinafter more particularly described and claimed.

Referring to the accompanying drawings, which are made a part hereof and on which similar letters of reference indicate similar parts, Figure 1 is a central longitudinal section through a foot-stock embodying my said improvements; Fig. 2, a cross-section through the same on the dotted line 2 2 in Fig. 1, and Fig. 3 a similar view of a modified form.

In said drawings the portions marked A represent the spindle-bearing; B, the spindle; C, the center, and D the operating-screw.

The spindle-bearing A is formed of a solid block, with one, two, or more channels cut across the same from the top down to the center of the spindle. In each of these channels a block A', formed to fit closely therein, is mounted and secured by a screw a'. This is preferably done before it is bored, and the blocks are thus bored with the bearing, which blocks may then be dressed off on their under sides to permit them to clamp the spindle when drawn down tightly. The rear end of the perforation is screw-threaded, and a

bearing-block a, in which the rear end of the operating-screw is mounted, is fitted therein by means of the screw-threaded connection, as shown.

The bearing-blocks A', as before stated, are secured in their seats in the channels by the screws a'. Around the perforation for said screw, in the under side of each block, is formed an enlarged seat or cavity, in which a stiff coiled spring a² is mounted. Said spring serves to keep a tension on said screw and also to force the block off the spindle when the clamping-screw is loosened. Said screw a' is located close to the spindle, and near the outer end of the block is mounted another screw a³ in a screw-threaded perforation, its lower end bearing upon the floor of the channel. Said screw a' operates to hold the block in its normal position when the spindle is not clamped and free to move in its bearings, and a slight space being left at s when the parts are in such position the turning down of screw a³ will operate to lift up the end of said block in which it is mounted and force down the opposite end, thus clamping the spindle and holding it securely. By this arrangement the normal adjustment of the spindle-bearing is not changed after being once adjusted as desired, the slight movement of the block necessary to clamp the same being secured by the operation of screw a³ without touching screw a'.

In the modified form shown in Fig. 3 the holding-screws are mounted on opposite sides of the spindle. The screw A² and the lower part A³ of the screw on the opposite side of the spindle correspond in use and operation to the screw a' of the principal construction. Said screw A³ is formed with a midway shoulder a⁵, which acts as the head to the lower portion, and its top A⁴ extends up a distance above the top of the block and is provided with a nut a⁷, which when forced down against the top of the block or a washer thereon serves to force down the block to clamp the spindle, as will be readily understood.

The spindle B is in most respects of a common form, being bored to form a suitable seat for the center C at its front end and having a nut b for the operating-screw D located near its lower end. At the rear end of said

nut a shoulder is formed, and the bore is enlarged from this point to the end to furnish a suitable way for the travel of the collar d' on said screw.

5 The screw D is mounted, at its inner end in the nut b and at its outer end is journaled in the bearing-block a . A flanged sleeve D' is mounted on the rear end of said screw, with its outer end bearing against the inner
10 face of said block a or a washer d^4 , interposed between them. Said sleeve is exteriorly screw-threaded and has a collar d^2 mounted thereon, between which and the collar d' of screw D is interposed a coiled spring d^3 . Said sleeve
15 is secured to turn with said screw by means of a spline d^5 , but is permitted to slide longitudinally thereon by means of a slot therein, with which said spline engages, as shown in Fig. 1. The hand-wheel d on the outer end
20 of the screw D serves as the means for operating it, as is usual.

On the outer end of the spindle B a cap B' is preferably secured by means of screws b' , said cap extending back to engage around
25 the outer end of the bearing A, the two parts being dressed to make a close joint at this point. By this means all grit and dirt are kept out of the joint between the spindle and its bearing, and much destruction from wear
30 ordinarily resulting from this cause is thus avoided.

The center C is of a common form, provided with the oil-hole c and mounted in the spindle B in a common manner.

35 In use the spindle is mounted and secured in its bearing by a proper adjustment of the screws a' , which hold the blocks A' . The spindle B, carrying the center C, is adjusted out and in by means of the screw D engaging
40 with the nut b . It is forced up to the work by turning said screw in the proper direction by means of the hand-wheel d until the spring is compressed to bring the collar d' back against the end of sleeve D' , and if the work
45 to be held is of a heavy variety the center can be forced against it with as much force as desired. If, however, the work is small and such as is liable to be affected by the heat of grinding, after the collar and end of
50 sleeve come together the screw is then backed half a turn or so to separate the parts and throw the load upon the spring, which holds the work yieldingly and prevents it from buckling if expanded by said heat. When it
55 is desired to clamp the spindle to hold the same rigidly under a certain tension, the clamping-screws are used, as described.

The tension of the spring can be adjusted

by means of a pin inserted through a hole a^4 , in the bearing A to engage with a slot in the collar d^2 , which is thus held from turning, when the screw D can be turned to compress said spring or allow it to expand to increase or lessen its tension, as will be readily understood.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a holding-center, its spindle, the means for operating said spindle, the spindle-bearing, said spindle-bearing consisting of a solid block bored to receive said spindle, and having a transverse channel with a bearing-block mounted therein, formed with a bearing-face which rests upon said spindle, and means for adjusting and securing said block to hold said spindle, substantially as set forth.

2. The combination of the bearing A having the transverse channel containing bearing-block A' , said block secured therein by a screw, the tension-spring around said screw, the clamping-screw engaging one side of said block, the spindle, the operating devices, and the center carried by said spindle, substantially as set forth.

3. The combination, of a holding-center, its spindle, the bearing for said spindle, a screw journaled in the end of said bearing and engaging a nut in the end of said spindle, a sleeve mounted on said screw to turn therewith and slide thereon, a spring interposed between a collar on said sleeve and a collar on said screw, said collar being secured on said screw in front of said sleeve, substantially as described and for the purposes specified.

4. In a foot-stock, the combination, of the holding-center carried by a spindle which is adjustably mounted in a bearing and adapted to be supported against longitudinal thrust through a yielding or spring connection, substantially as set forth.

5. The combination of a holding-center carried by an adjustable spindle, adjusting means therefor, a rigid support for said parts, and a spring interposed between said support and parts, whereby by slightly separating said parts the load will be thrown onto said spring, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Waynesborough, Pennsylvania, this 31st day of August, A. D. 1899.

ABRAHAM B. LANDIS. [L.S.]

Witnesses:

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