

No. 754,307.

PATENTED MAR. 8, 1904.

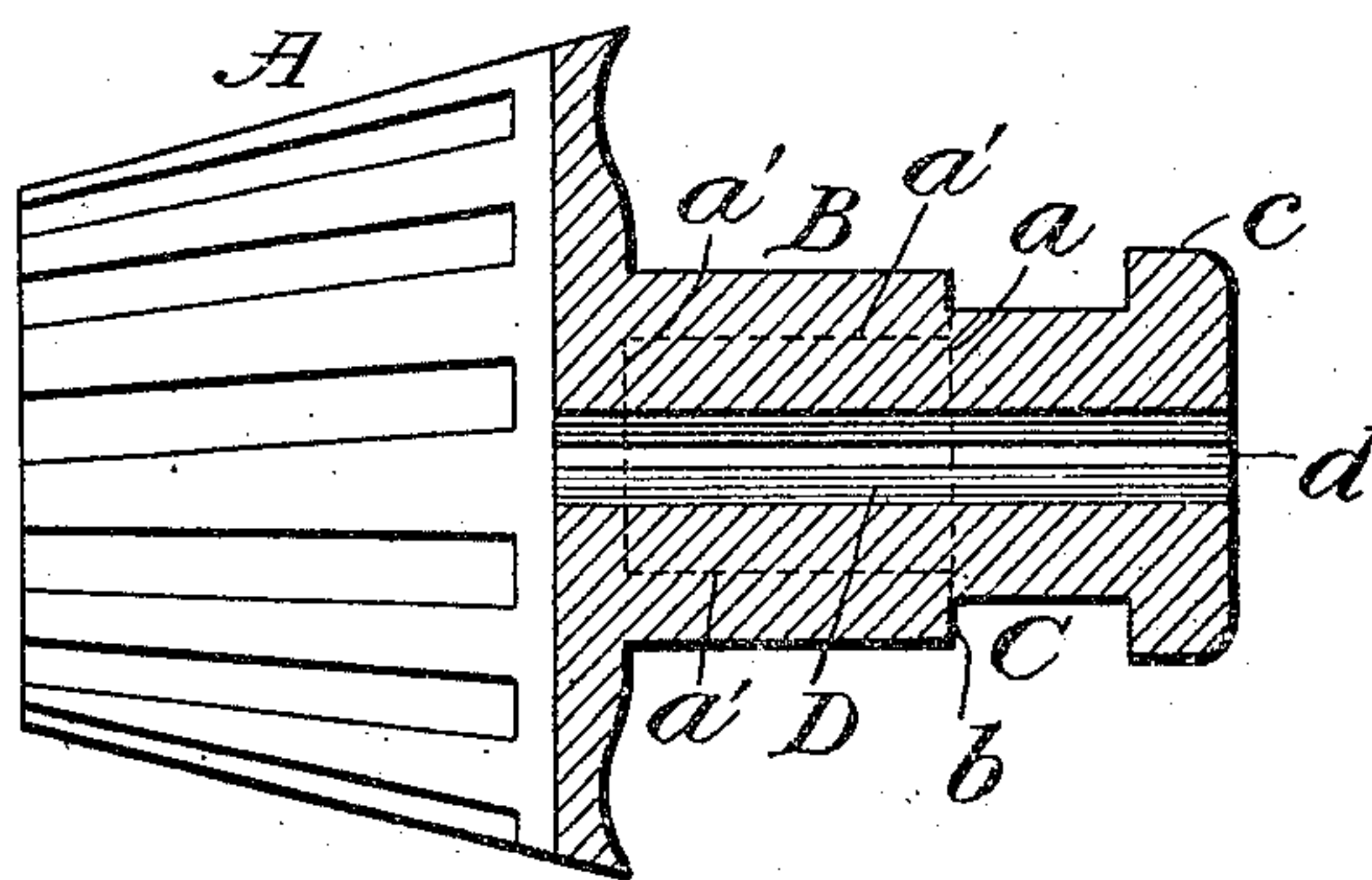
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SPEED CONE.

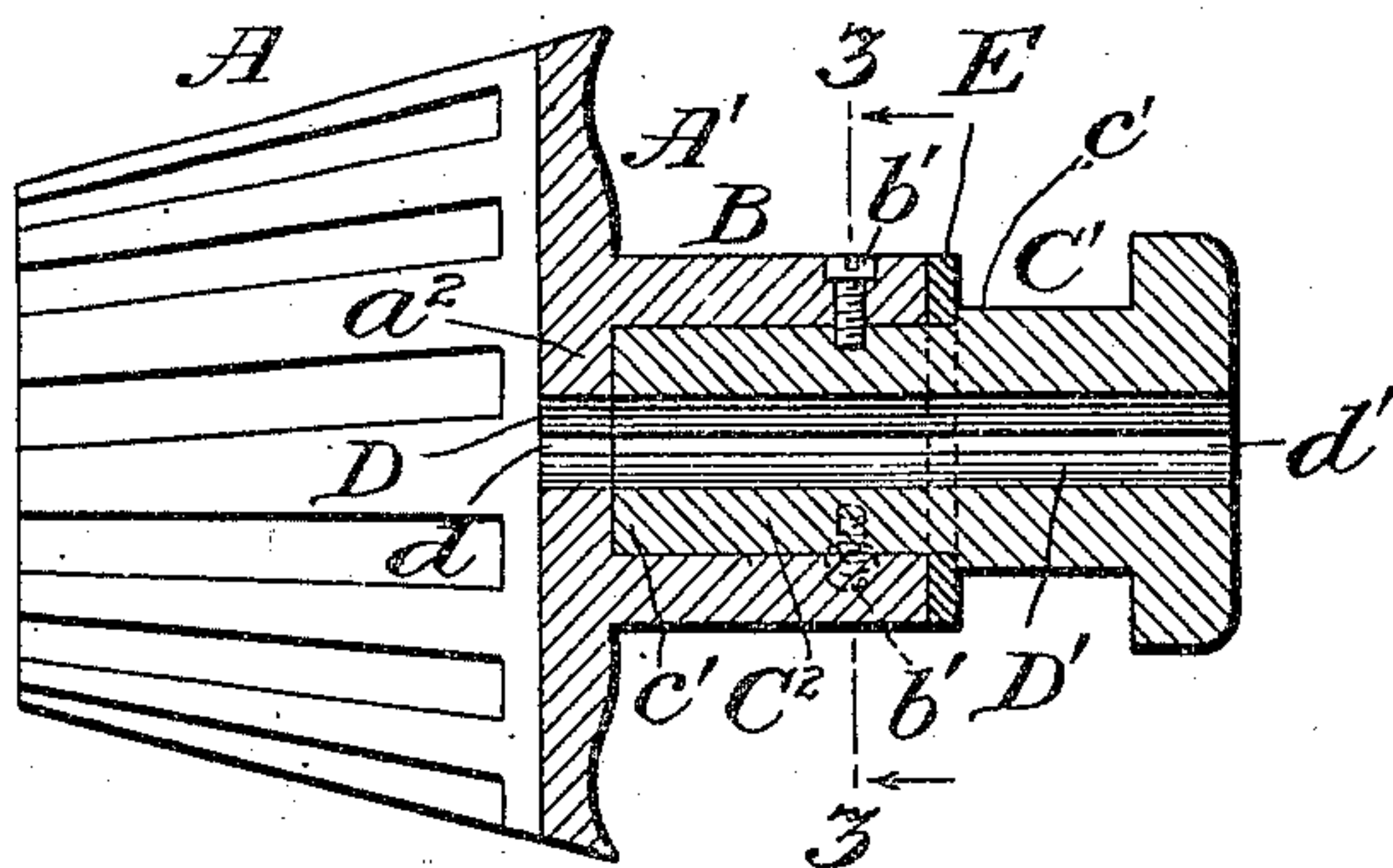
APPLICATION FILED JULY 15, 1903.

NO MODEL.

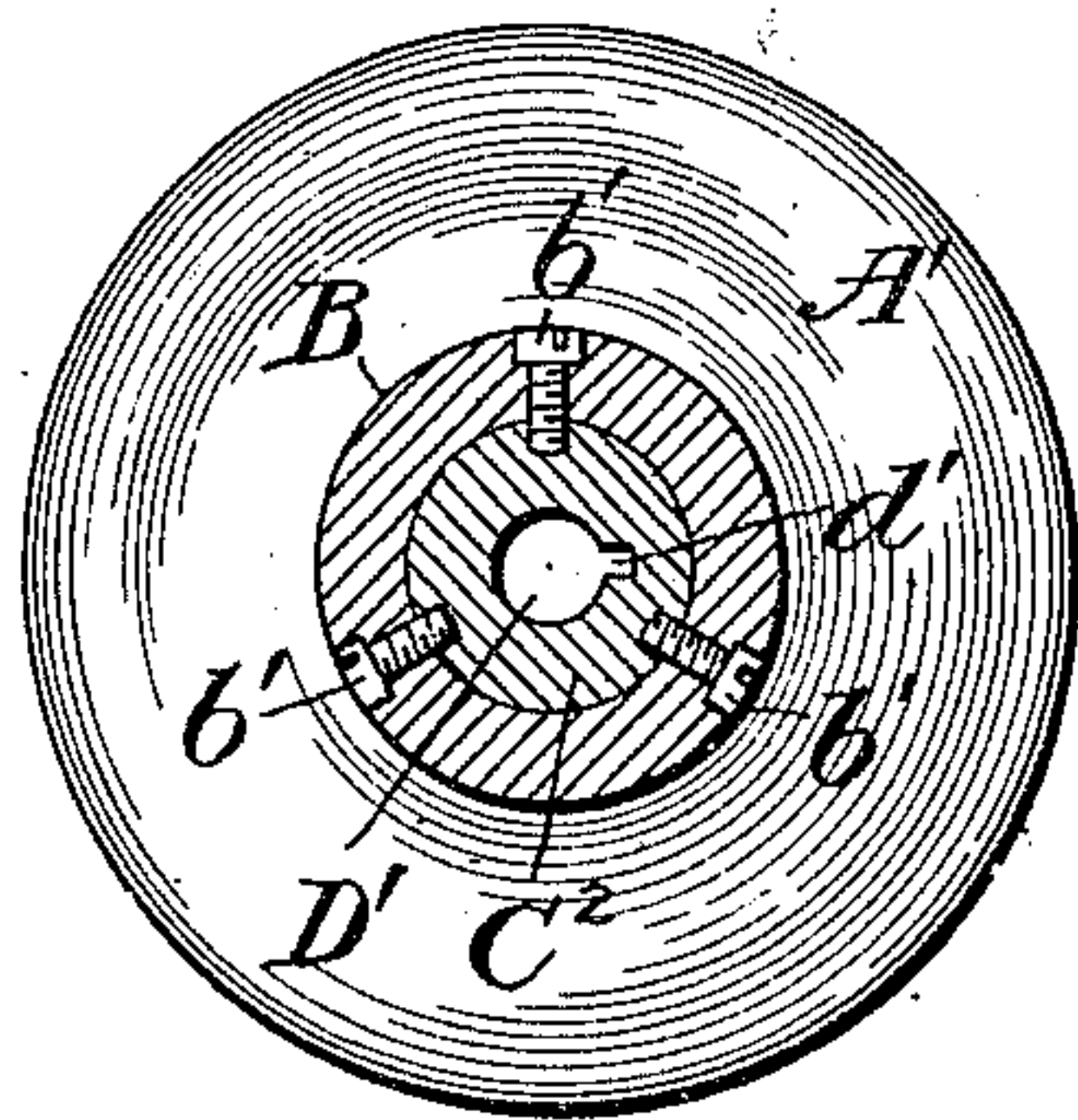
*Fig. 1*



*Fig. 2*



*Fig. 3*



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# UNITED STATES PATENT OFFICE.

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## SPEED-CONE.

SPECIFICATION forming part of Letters Patent No. 754,307, dated March 8, 1904.

Application filed July 15, 1903. Serial No. 165,822. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HEARTTAGEN, a citizen of the United States, and a resident of Allentown, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Speeder-Cones, of which the following is a specification.

The present invention relates to a speeder-cone, an element frequently employed in connection with cement-mills, wherein there are generally two pairs of such cones, the companions of each pair being relatively reversed, so that fingers thereon intermesh, said two pairs of cones being geared together by a belt passing around the same at their intermeshing portions, the cones being in coaction relation with suitable driving provision, whereby they will serve for speeding the kilns commonly termed "roasters," the arrangement being such that if the cement-rock is roasted too fast then the kiln is run faster, or in the event of the roasting not being sufficiently vigorous then the kilns are to be run proportionately slower.

In the form of a speeder-cone in vogue the rim of the cone, together with its hub and bearing portion, are all made in a single metal casting, with the result that when the bearing portion becomes worn, which occurs in a comparatively short period of time and before the rest of the cone becomes impaired for service, the entire casting becomes useless, thereby not only entailing a serious loss by reason of the expense of an entirely new cone, but also involving a considerable loss both of time and money on account of the necessity for stopping the operation of the mill while the damaged cone is removed and a new one adjusted.

By my invention I remedy the difficulties noted and at the same time provide a highly durable and efficient speeder-cone.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical longitudinal sectional view illustrating generally the form of speeder-cone heretofore used. Fig. 2 is a similar view of a speeder-cone embodying my invention. Fig. 3 is a transverse section, on an enlarged scale, of the improved speeder-cone, the section being

taken in the plane indicated by the broken line 3 3, Fig. 2, looking toward the rim thereof.

Similar reference characters are employed to designate corresponding parts in the several figures of the drawings wherein they occur.

In the construction exemplified in Fig. 1, which, as before intimated, represents the form of speeder-cone previously in use, the rim A, its hub B, and the bearing-portion C are all embodied in a single casting, the portion C being of less diameter than the hub and provided with the end flange *c*, whereby an annular recess is provided for the reception of a split collar serving to retain the cone in its bearing position in the apparatus, a fibrous washer being generally interposed between such collar and the shoulder *b*, presented by the end of the hub. Centrally through the hub and bearing portion is a longitudinal passage D, having a keyway *d* for the reception of the keyed shaft on which said cone and its intermeshing companion are to be mounted.

A cone of the character described and in good condition can be adjusted in position and will ordinarily serve for a period varying from four to eight months, the service during a portion of which will be unsatisfactory, due to increasing wear of the bearing portion. When the latter finally becomes unduly worn, the entire cone, notwithstanding the fact that the other portions are still unimpaired, has to be removed and the entire article discarded, a completely new cone being employed to replace that removed.

It is at the period when the bearing portion is rendered unserviceable that the importance and value of my invention is realized. Instead of entirely discarding the worn cone after the same is removed the bearing portion C, with its flange, is severed from the hub flush with the shoulder *b* thereof, as indicated by the dotted line *a*, Fig. 1, and the interior of the hub then bored to present an enlarged recess, as indicated by the dotted lines *a' a'*, also in said figure, leaving sufficient metal at the inner end of the recess to provide a seating *a''* and avoiding weakening of the metal at the junction of the hub with the back A' of the rim.



An independent bearing portion C', of either steel or wrought or malleable iron, is then adjusted to the hub, said portion C' embodying parts corresponding with those of the bearing portion C previously severed from the hub, with the addition of an inner cylindrical extension C<sup>2</sup> of a diameter and length permitting it to snugly fit within the hub-recess with one end c' bottoming against the seating a<sup>2</sup>. The portion C' and its extension C<sup>2</sup> have a central longitudinal passage D', provided with a keyway d', which are of such size and disposition that they register with the remaining end of the passage D and keyway d in the seating a<sup>2</sup>. The extension C<sup>2</sup> thus becomes a sleeve or bushing in the hub for the reception of the keyed shaft.

Three equidistantly-located openings are radially-tapped through the hub and into the bushing for the introduction of machine-screws b', which rigidly connect said hub and bushing together, the employment of three screws serving to more uniformly distribute the points of connection for withstanding torsional than would be the case were only two such connections established at diametrically opposite points. Furthermore, in addition to securing such uniform distribution of the fastening-screws the specific number and disposition of the latter permits the connection to be made with openings and screws of appropriate length without any one of the screw-openings intersecting the keyway, or objectionably weakening the metal of the bushing in the vicinity of said way.

With a view of preventing the outer end of the hub from becoming worn by frictional contact with the split sleeve employed for securing the speeder-cone in position the bushing C<sup>2</sup> is of such length that an annular depression is formed between the shoulder b, presented by the hub end, and a shoulder c', constituted by the inner end of the body proper of the bearing portion C', the said depression being provided for the interposition of annular washer E, of chilled or otherwise hardened steel, the screw-openings in the hub and bushing being so located that when the parts are connected the washer E will be firmly clamped between the shoulders b and c, thereby insuring its rotation with the hub and bearing portion, and consequently avoiding any wear of

either, as might be occasioned were the plate free to turn. Whatever wear is incurred is sustained by the exposed side of the washer E, and this can manifestly be superseded by one of similar character when requisite.

From the foregoing description it will be readily appreciated that the features embodying my invention are not only extremely simple, but will result in great saving of both time and money in the service for which they are designed.

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

1. A speeder-cone comprising a casting embodying a rim and hub, the latter containing a longitudinal cylindrical recess terminated at its inner end by a seating presented by the metal at the junction of the hub with the rim, said seating having a central opening with a keyway, and an independent bearing portion provided with an integral cylindrical bushing snugly located within said recess, the said portion and bushing having a longitudinal passage and keyway registering with the opening, and keyway in the seating, and means for rigidly connecting the hub and bushing.

2. A speeder-cone comprising a casting embodying a rim and hub, the latter containing a longitudinal cylindrical recess terminated at its inner end by a seating presented by the metal at the junction of the hub with the rim, said seating containing a central opening with a keyway; and an independent bearing portion having a body larger in diameter than the hub-recess, and provided with an integral cylindrical bushing snugly located within and extending beyond said recess, the said portion and bushing having a longitudinal passage and keyway registering with the opening and keyway in the seating, a hardened metal washer interposed between the hub end and body of the bearing portion, and means for rigidly connecting said hub and bushing and retaining the washer in a clamped position.

Signed at Allentown, in the county of Lehigh and State of Pennsylvania, this 13th day of June, A. D. 1903.

JOHN HEARTTAGEN.

Witnesses:

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