

Vose & Anderson.

Coiling Springs.

N^o 85,549.

Patented Jan. 5, 1869.

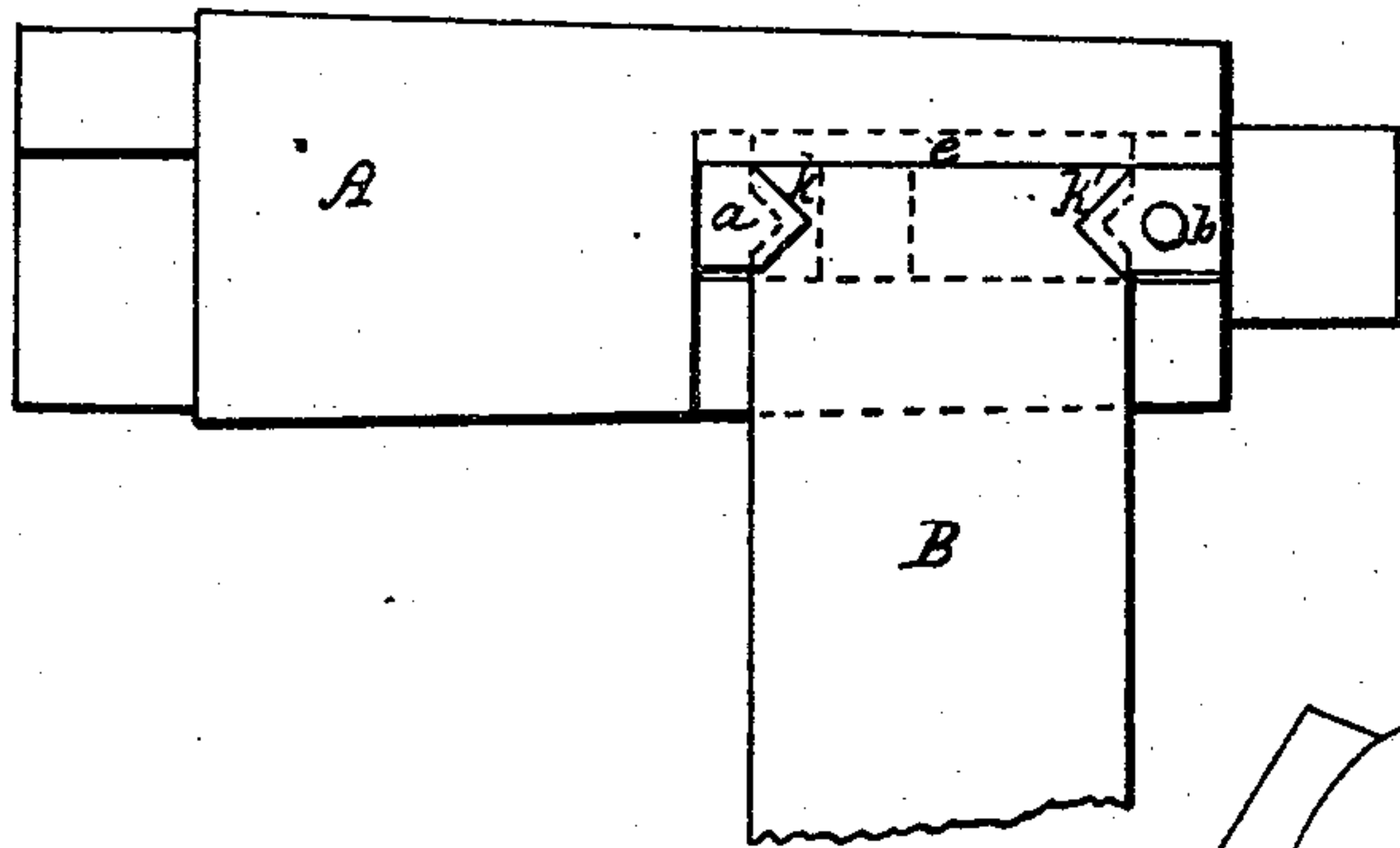


Fig. 1.

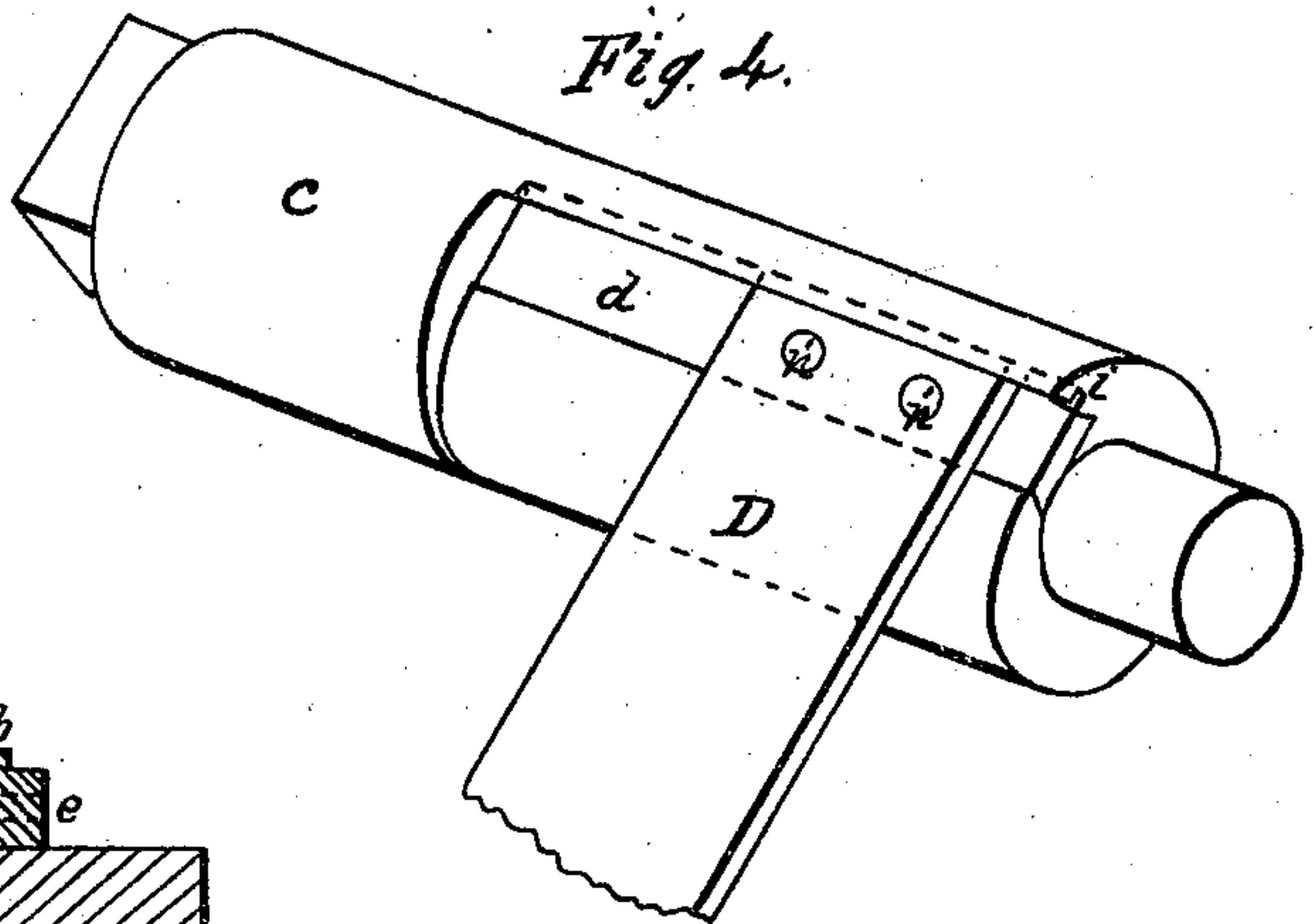


Fig. 4.

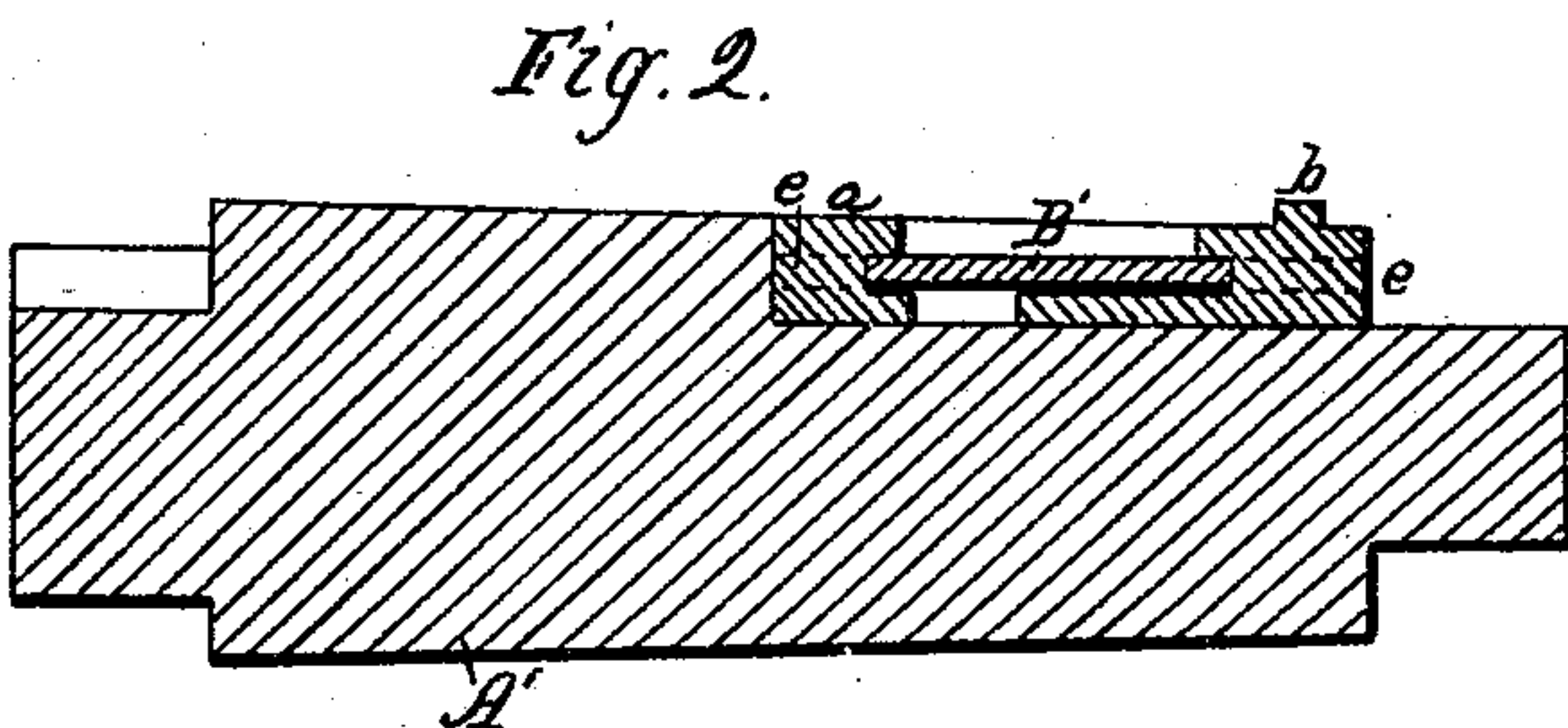


Fig. 2.

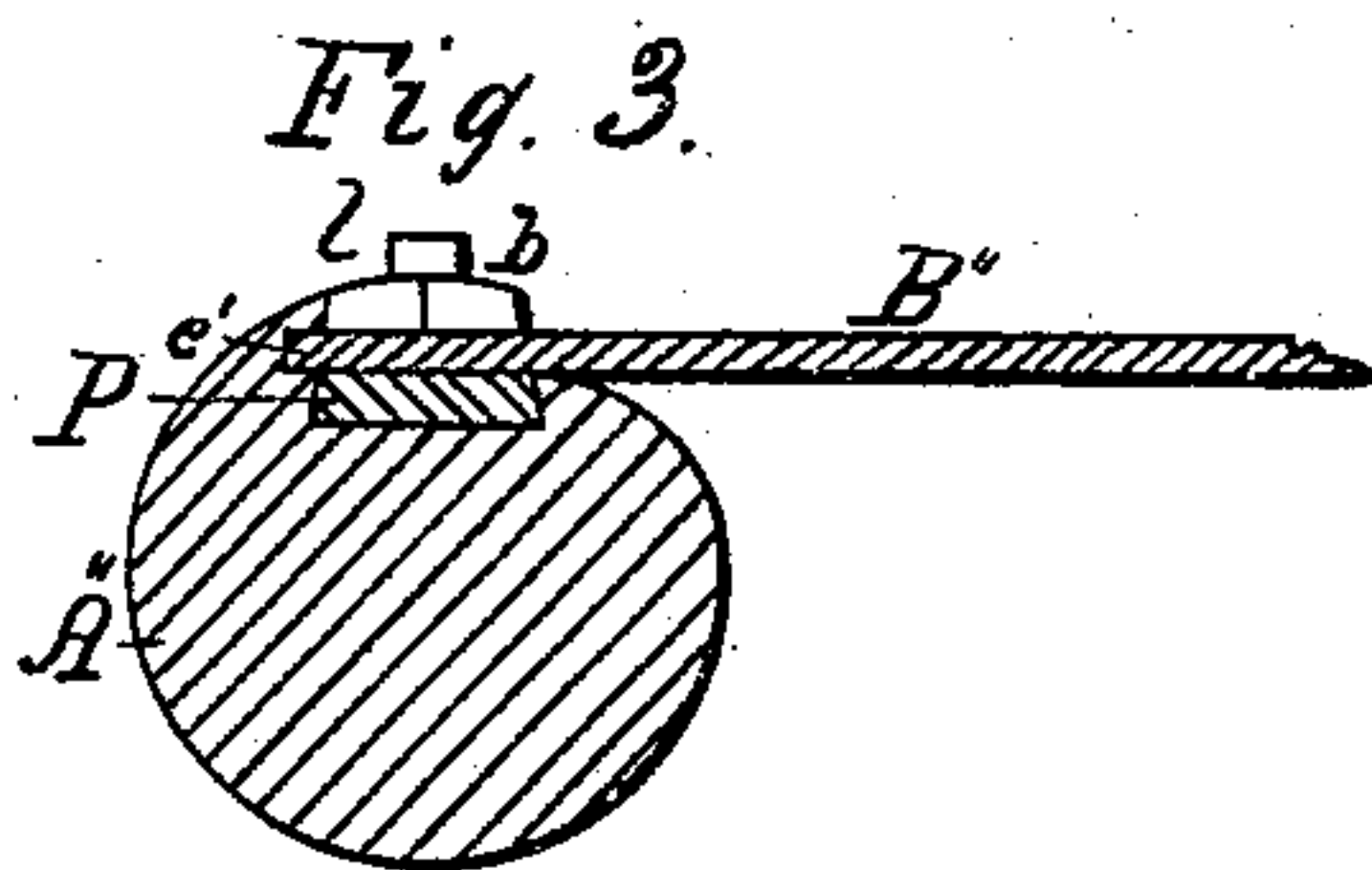


Fig. 3.

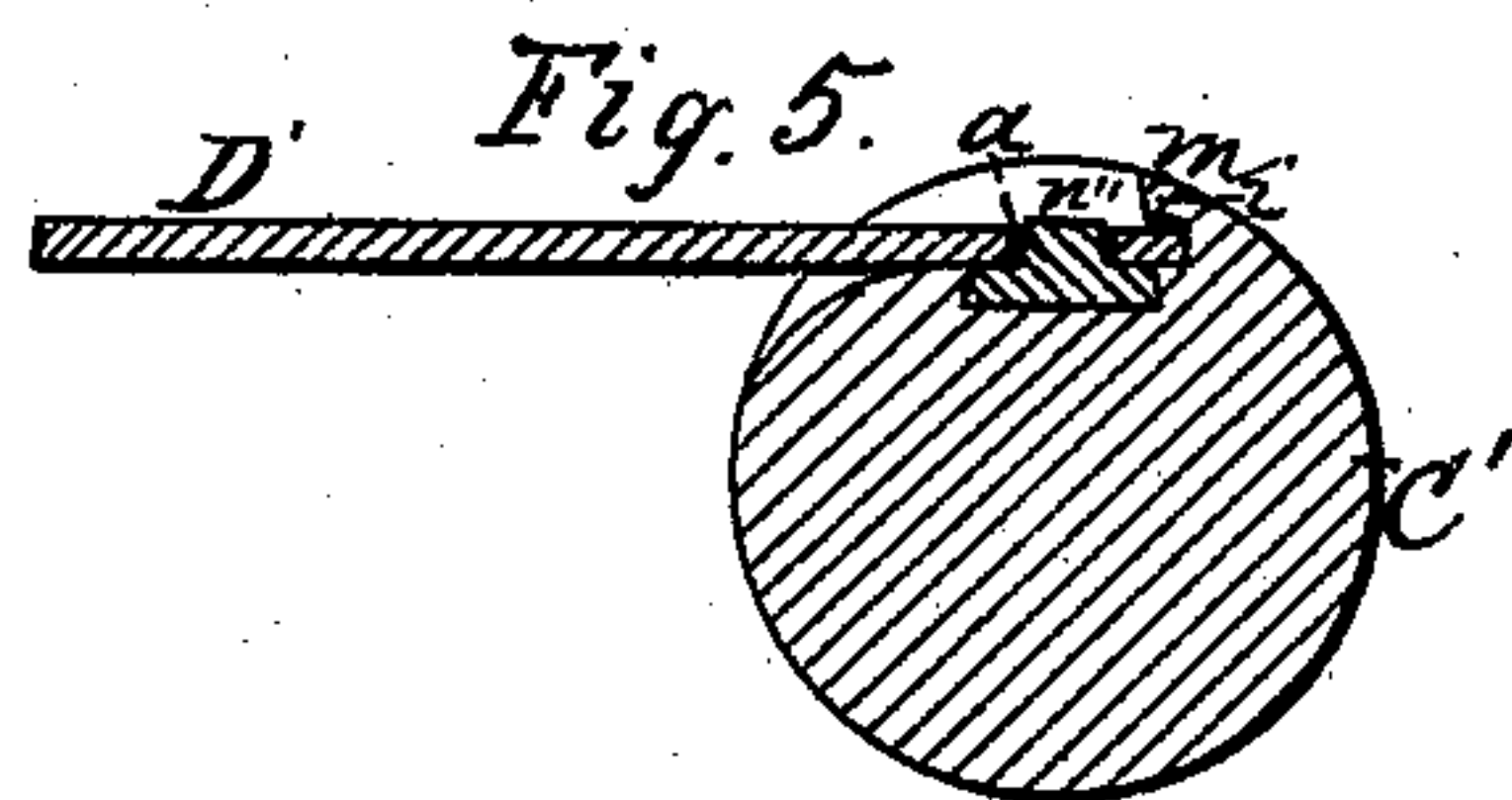


Fig. 5.

Witnesses.

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RICHARD VOSE AND JAMES ANDERSON, OF NEW YORK, N. Y.

Letters Patent No. 85,549, dated January 5, 1869.

IMPROVED MANDREL FOR COILING SPRINGS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that we, RICHARD VOSE and JAMES ANDERSON, of the city, county, and State of New York, have invented a new and useful Improvement in the Method of Holding the Bar of Metal on the Mandrel in the Process of Coiling Springs; and we hereby declare the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming part of this specification, and the letters of reference marked thereon.

Our invention relates to the method of attaching a bar of steel or other metal to a mandrel, for the purpose of coiling it around the mandrel into a volute or other form of spring.

The method heretofore ordinarily employed, consists in forming a longitudinal groove in the body of the mandrel; the said groove being cut at or near right angles with a tangent to the periphery of the mandrel, or, in other words, from the circumference towards the centre.

The end of the bar to be coiled is inserted into this groove, and then when the mandrel is revolved, the portion of the bar within the groove is bent at right angles with the rest of the bar, and when the whole has been coiled, that part that was within the groove occupies a portion of the central space or core of the spring, and has to be removed or bent back into line with the coil of the spring, to leave the core free to receive the supporting-pin or bolt on which the spring is placed for use.

Our invention consists in cutting into the body of a mandrel a groove in a direction at right angles, or nearly so, to a radial line drawn from the open side of the groove at the periphery, to the centre, in contradistinction to one cut into the mandrel in the direction of such a radial line, and combining, with the mandrel having such a groove, a suitable device for locking or holding the end of a bar of steel in the groove, during the operation of coiling the same around the mandrel.

The groove, and the device for holding the bar in the same, have to be so constructed, that while the end of the bar cannot escape from the groove during the process of coiling, the spring may be conveniently removed from the mandrel after the operation of coiling has been completed.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and mode of operation.

Figure 1 is a surface view of a mandrel, A, with a groove made in accordance with our improved method, having the end of a bar of steel, B, placed in it ready for coiling, and held in by one form of device which we employ.

Figure 2 is a central longitudinal section of the same.

Figure 3 is a cross-section of the same.

Figure 4 is a perspective view of a mandrel, having a groove similar to that in fig. 1, but with a different device for holding the bar in the groove.

Figure 5 is a cross-section of the same.

In order to form the groove *e e'*, figs. 1 and 3, a portion of the body of the mandrel is cut away on one side, in an eccentric or scroll-curve, as represented in said figures, forming a shoulder or ledge, *l*, fig. 3.

The groove is then cut directly into this ledge, at right angles, or nearly so, to a line drawn from the ledge *l* to the centre of the mandrel, as represented.

When the end of a bar, A, is placed in this groove, it needs to be held firmly from slipping out when the mandrel is revolved to coil the bar into a spring.

In figs. 1, 2, and 3, is shown one of the devices we employ for this purpose.

It consists of two jaws, *a* and *b*, that are held in a dovetailed seat, P, cut into the body of the mandrel. One of these jaws *a* may be fixed permanently in its place; the other, *b*, is movable, and arranged to slide back and forth in its seat.

On the inner faces of these jaws are angular projections or teeth, *k* and *k'*, which fit into notches cut in the bar, as shown in fig. 1.

It is evident that when the end of the bar B is inserted in the groove *e*, with its edge pressed against the jaw *a*, and the jaw *b* is pressed against its opposite edge, the teeth *k k'* being inserted in the notches made in the bar, the bar is firmly locked and cannot escape.

The mandrel being mounted on a proper frame, and connected with appropriate machinery to revolve it on its axis, (which need not be described, as the same is familiar to all persons skilled in the art of making springs,) by revolving the mandrel, the bar being held by suitable devices, is coiled around it, and a spring formed, and when completed, it is liberated from the mandrel, by simply sliding out the jaw *b*, and forcing the mandrel out of the coil.

It is evident, also, that the entire bar is by this device converted into a uniform coil, leaving no portion of the inner end standing inward from the coil, and occupying a portion of the centre or core of the spring, and which would then have to be removed or bent back into line with the coil, as is the case when the end of the bar is held in a groove cut from the circumference towards the centre.

The device for locking the bar in the mandrel, shown in figs. 4 and 5, consists of a single slide or bar, *d*, working in the dovetailed seat, the mandrel itself being constructed like fig. 1; the said slide *d* having on its outer side one or more projections or pins *n n'*. Corresponding holes are made in the bar D near the end.

The slide *d* is removed from the mandrel, and the end of the bar D is laid on it, the pins *n n'* being inserted in the holes. The slide is then slid into its place in the mandrel, the end of the bar sliding into the groove *i*.

By this device, also, it is evident that the end of the bar cannot escape from the groove, except by sliding the slide *d* out of its seat in the mandrel, in the reverse direction from that in which it was inserted.

We are aware that mandrels have been made, hav-

ing the groove cut into them in the direction at right angles to a radius drawn from the groove to the centre. We do not therefore claim mandrels, when not combined with the locking-device herein specified; but

What we do claim as our invention, and desire to secure by Letters Patent, is—

A mandrel, A, having the longitudinal groove *l* extending into it in a direction at right angles, or nearly at right angles, to a radial line drawn from the open side

of the groove to the centre, when combined with either of the locking-devices *a* and *b*, or *d*, or equivalent, the whole being constructed and operating substantially as and for the purpose specified.

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Witnesses:

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