

H. W. RANSOM.  
Hub Boring Machine.

No. 232,146.

Patented Sept. 14, 1880.

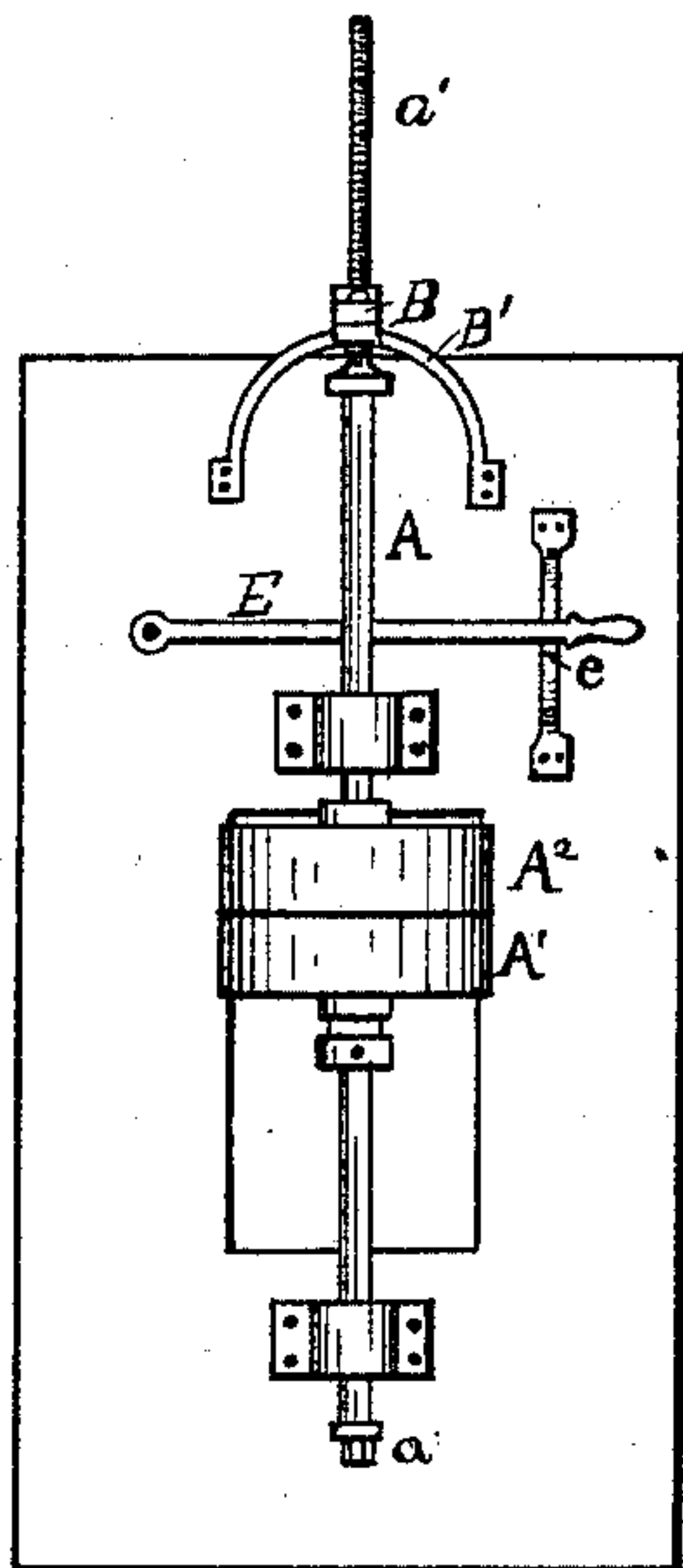


Fig. 1.

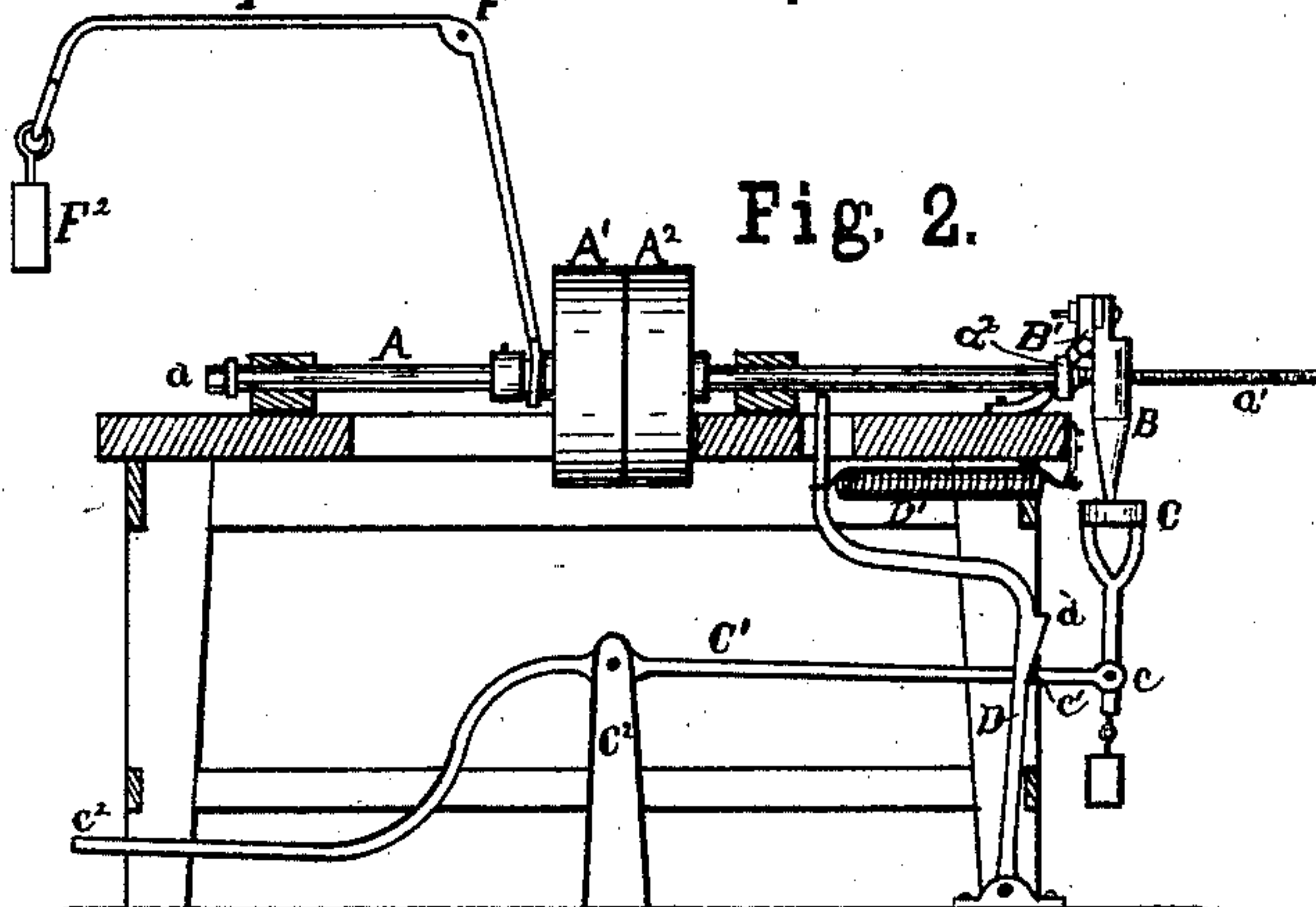


Fig. 2.

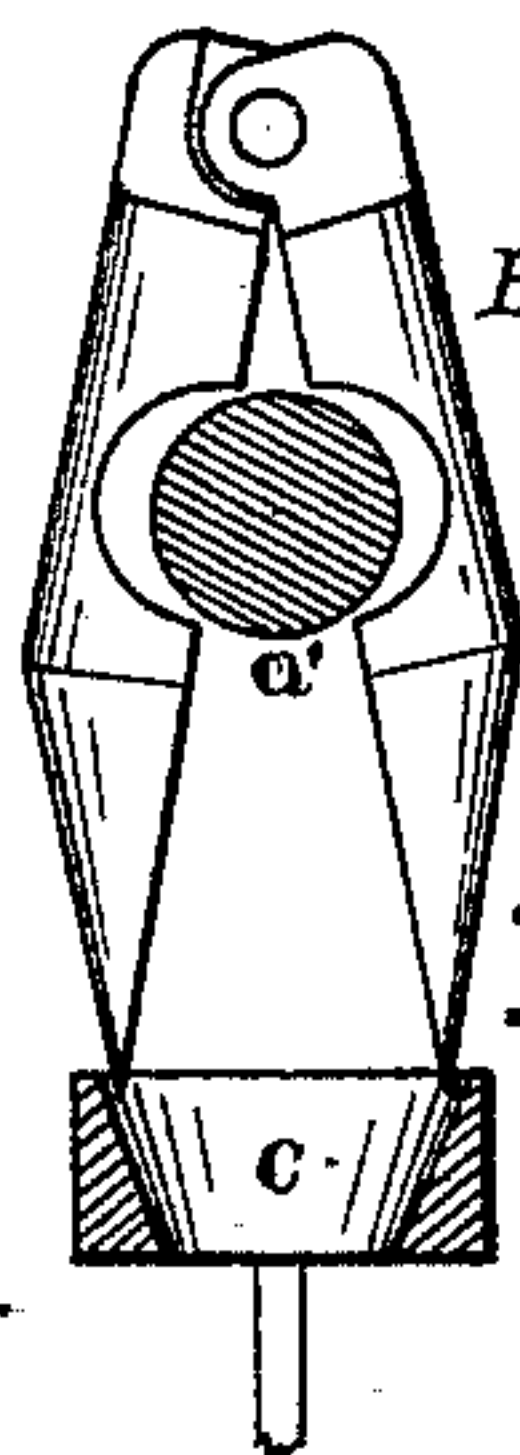


Fig. 3.

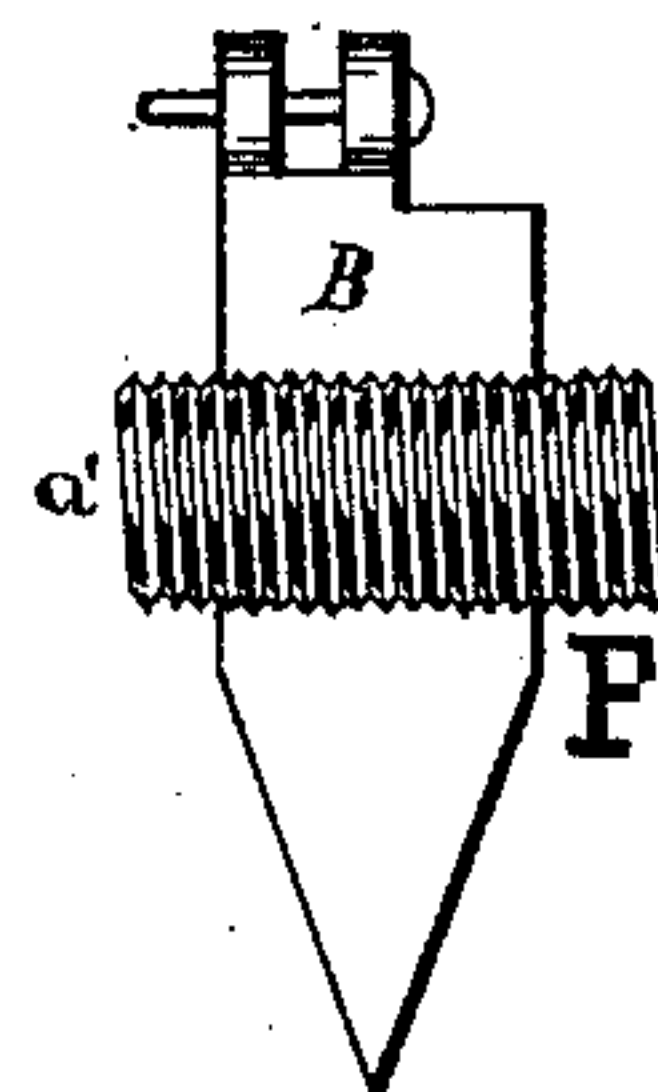


Fig. 4.

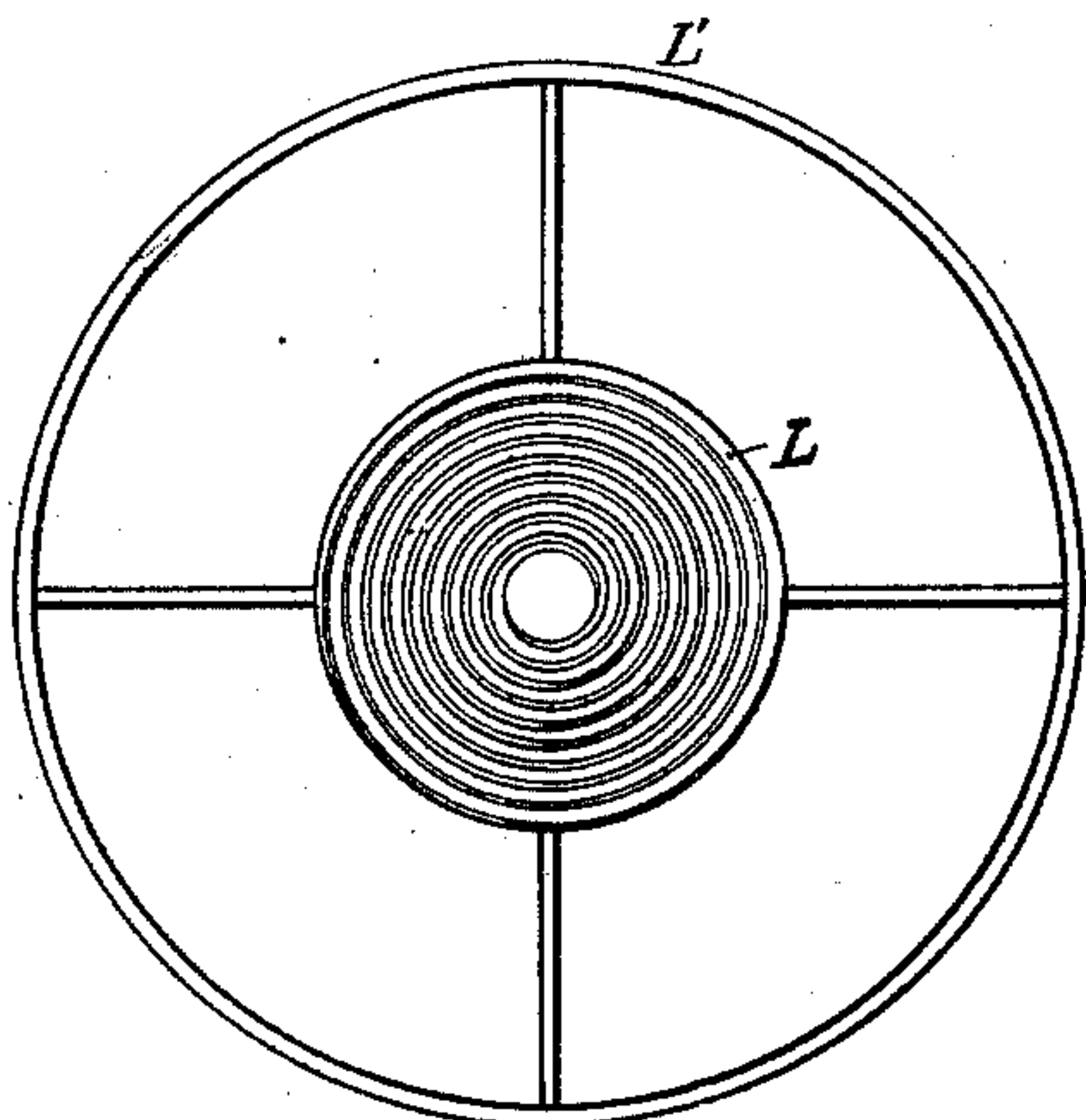


Fig. 5.

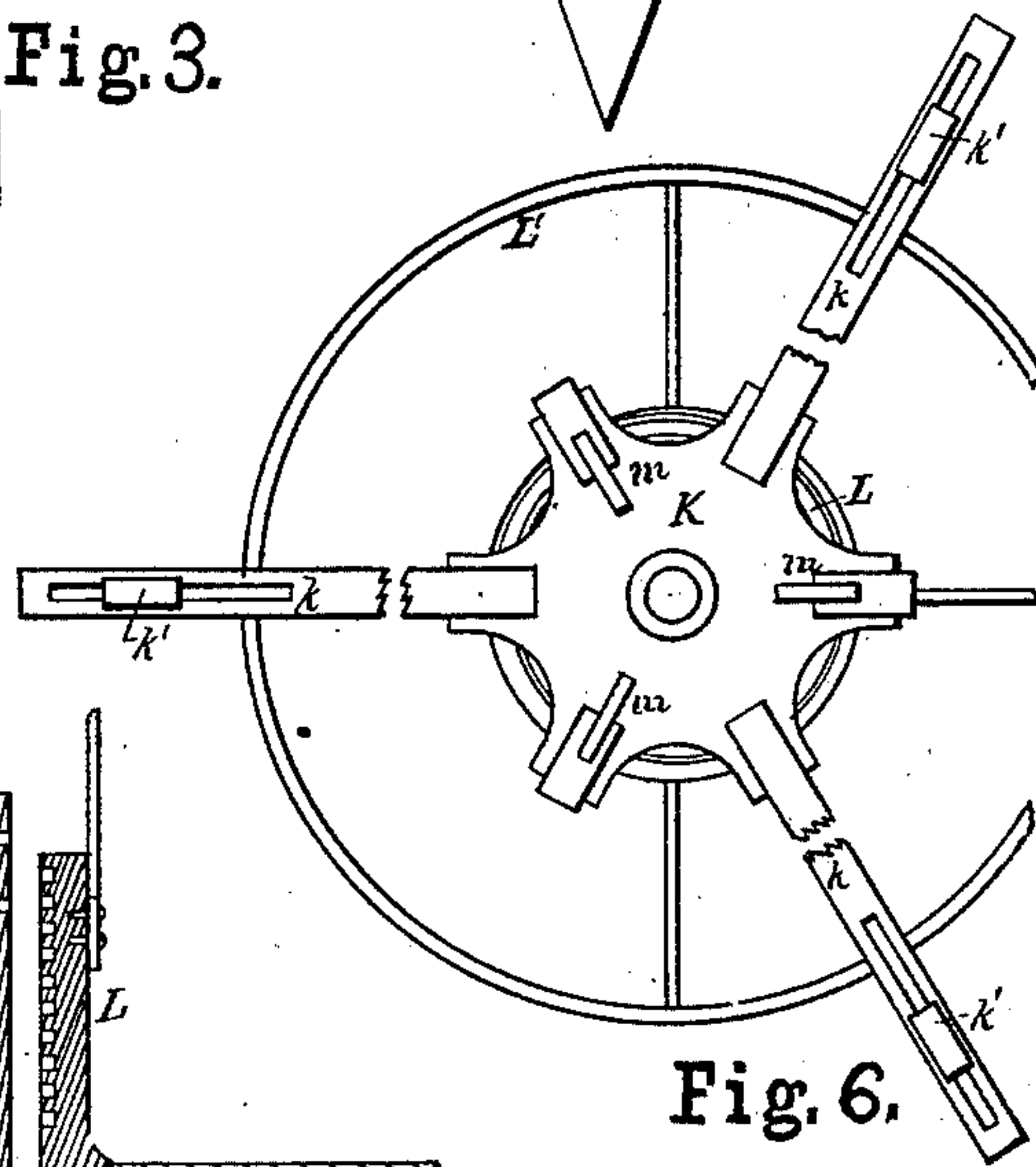


Fig. 6.

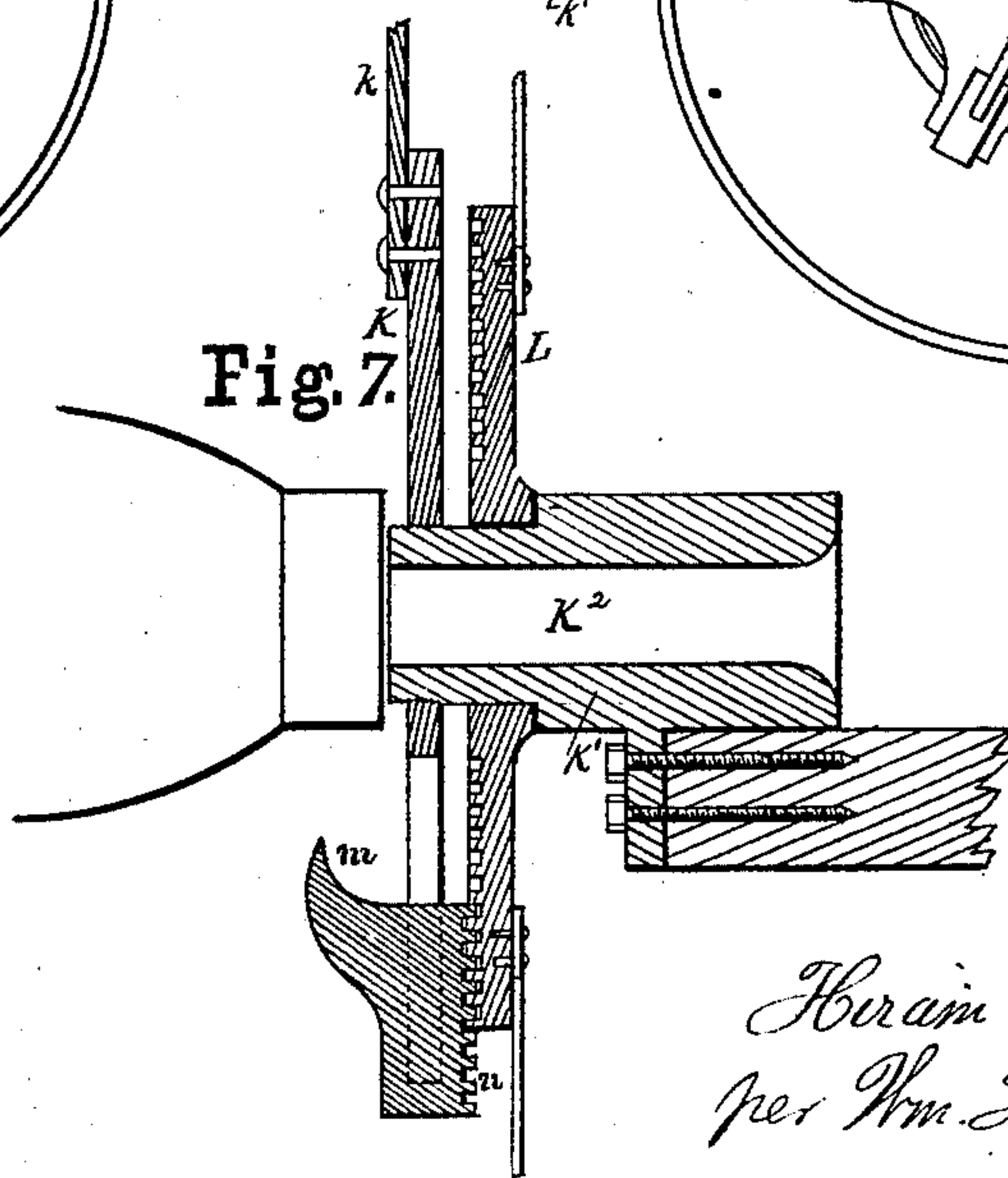


Fig. 7.

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# UNITED STATES PATENT OFFICE.

HIRAM W. RANSOM, OF CINCINNATI, OHIO, ASSIGNOR TO EMERSON,  
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## HUB-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 232,146, dated September 14, 1880.

Application filed January 24, 1880.

*To all whom it may concern:*

Be it known that I, HIRAM W. RANSOM, of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Machines for Boring Hubs, of which the following is a specification.

The object of my invention is to bore the hubs of wheels for vehicles (preparatory to inserting the boxes therein) more rapidly than has heretofore been done.

The principal feature of my invention consists in certain mechanism for propelling the bit through the hub and for causing the bit to be retracted either automatically or at the will of the operator.

Referring to the drawings forming part of this specification, Figure 1 is a plan view of the table with a portion of the mechanism for operating the bit. Fig. 2 represents a central vertical section taken longitudinally through Fig. 1. Figs. 3 and 4 are detached views of a portion of the mechanism. Figs. 5, 6, and 7 represent the device for clamping the hub preparatory to boring.

A, Figs. 1 and 2, is a shaft journaled near either end in appropriate bearings. On this shaft are two band-wheels, A' and A<sup>2</sup>, A' being firmly attached to the shaft, and A<sup>2</sup> turning on the shaft. At one end of the shaft is a socket, a, into which the bit to be used is inserted. On the other end of the shaft a screw-thread, a', is cut. This screw passes through an open nut, B, constructed in two halves, as shown in Fig. 3, in which figure the two halves are shown separated from each other at one end, so as to disengage the thread in the nut from the thread on the shaft. The two halves of the nut B are pivoted together by a bolt, which bolt also passes through a bracket, B', which is secured to the table, and the nut B is thus held in position. The free extremities of the two halves of the nut are shaped so that together they form a cone. Directly under the free extremity of the nut B is a ring, C, which is attached to an arm, which, in turn, is pivoted to one end of a lever, C', at c. From the lower end of the support of the ring C is suspended a weight, or an appropriate spring may be employed for the same purpose. The lever C' is pivoted near its center to the upright C<sup>2</sup>.

D is a lever pivoted at one end to the floor or other appropriate support. The free end of this lever passes upward through an opening in the table, the extreme end being directly under and close to the shaft A, so that this end will be pressed against by the collar a<sup>2</sup> on the shaft A when said shaft is propelled forward. To the free extremity of the lever D is attached one end of a spring, D', the other end of the spring being attached to a bracket attached to the end of the table, or to an equivalent support. On one side of the lever D is a shoulder, d. Near the end c of the lever C' is a stud, c', on said lever. This stud is so placed with relation to the lever D that when the end c of the lever C' is elevated by pressing on the other end of said lever the stud c' will pass above the shoulder d on the lever D, and the spring D' will hold the lever D in such a position that the stud c' cannot pass off from the shoulder d, and thus the end c of the lever C' and the ring C, thereto connected, will be held up, and the two halves of the nut B are held together, and the threads therein cut are made to engage the threads on the end a' of the shaft A.

A hand-lever, E, Fig. 1, is pivoted at one end to the top of the table, and so situated that it may be made to press against the end of the lever D, which is situated directly under the shaft A, and the lever D can thus be pushed aside, so that the stud c' on the lever C' will pass up and down by the shoulder d without being caught by said shoulder. The object of this will be hereinafter explained.

F is an angular lever pivoted to some suitable support at F'. The extremity of one arm of this lever is provided with a slot, the sides of which fit in a channel or groove in the hub of the band-wheel A'. This wheel is firmly fixed to the shaft A. From the extremity of the other arm of the lever F is suspended a weight. The object of this lever and weight is to return the shaft A, and thus withdraw the bit from the hub when the threads in the nut B are disengaged from the threads on the shaft A.

The hub is clamped and held in position for boring by any suitable clamping device, a very convenient form of which is shown in Figs. 5, 6, and 7.



K is a metal plate, to which are attached the arms  $k$ , provided with grooves, in which move the blocks  $k'$ , against which the felly of wheel rests when the hub is in position for boring.

5 This plate K is secured to one end of a bracket,  $K'$ , which is secured to the end of the table, and has an opening,  $K^2$ , through which the bit passes to bore the hub.

10 L is a circular plate of metal, one face of which is provided with a groove running spirally from the circumference to the center of the plate. This plate L is placed on the end of the bracket  $K'$ , behind the plate K, and is permitted to turn freely on said bracket.

15 To the plate L is attached the hand-wheel  $L'$  by means of spokes, by which the plate L is turned.

The plate K is provided with slots or ways, in which move the clamping device  $m$ , whose rear faces are provided with teeth  $n$ , which fit into the spiral groove in the plate L. Thus when the plate L is turned by means of the hand-wheel  $L'$  the clamping devices  $m$  are made to move in the groove or ways in the plate K toward and from the center of said plate to clamp the hub and to release it.

From the foregoing description of the various parts of my invention the following mode of operation will be understood.

30 The bit being secured to the end  $a$  of the shaft A, the band is thrown from the loose wheel or idler  $\Delta^2$  onto the wheel  $A'$ , which is secured to the shaft, and the shaft and bit are by this means made to revolve. The hub of the wheel is now placed opposite the opening  $K^2$  in the bracket  $K'$  and the plate L turned by the hand-wheel  $L'$ , which causes the clamping devices  $m$  to move toward and clamp the hub. When the hub is thus clamped 40 in position pressure is made on the end  $c^2$  of the lever  $C'$ , which elevates the end  $c$  of the lever and the ring C, thereto connected. As this ring is elevated it embraces the conical ends of the two halves of the nut B, the threads in which are thus made to engage 45 with the threads on the end of the shaft A, and the shaft and bit are thus propelled forward. The ring C is held up by the stud  $c'$ , which rises above and rests upon the shoulder  $d$  on the lever D. When the shaft A has been propelled forward to a sufficient extent the collar  $a^2$  on said shaft presses against the extremity of the lever D, pushing it aside, and the end  $c$  of the lever  $C'$  and the ring C are, by the 50 weight thereto suspended or by an appropriate spring thereto attached, caused to fall. Pressure is thus removed from the two halves

of the nut B, and the threads therein are disengaged from the threads on the shaft A. The end of the lever F, from which is suspended the weight  $F^2$ , and which was elevated 60 as the shaft A was propelled forward, is now, by means of the weight, depressed, which causes the shaft A to return to position, and the bit is removed from the hub.

65 To bore or ream the outer end of the hub for reception of the nut which holds the wheel on the axle, a bit of the desired form is substituted for the one which was used for boring the hub and the hub again clamped to the machine with the outer end of the hub next to the bit. As this bit bores but a short distance into the end of the hub, the shaft is not propelled forward sufficiently for the collar  $a^2$  to press against the extremity of the lever D. I therefore press the lever D aside 75 by means of the hand-lever E, so that the stud  $c'$  will pass by and not rest upon the shoulder  $d$  on said lever. I now press on the end  $c^2$  of the lever  $C'$ , which elevates the ring C, closing the two halves of the nut B, as before. When the shaft and bit have been propelled forward to a sufficient extent pressure is removed from the lever  $C'$  and the ring C falls, and the shaft is returned to its former 85 position by the weight  $F^2$  and lever F.

What I claim as new and of my invention is—

1. In a hub-boring machine, the combination of the ring C, lever  $C'$ , provided with stud  $c'$ , lever D, provided with shoulder  $d$ , and the spring  $D'$ , substantially as and for the purposes specified. 90

2. In a hub-boring machine, the combination of the nut B, shaft A, collar  $a^2$ , lever D, lever  $C'$ , and ring C, substantially as and for the purposes specified. 95

3. The combination of the levers E D, spring  $D'$ , lever  $C'$ , ring C, nut B, and the shaft A, substantially as and for the purposes specified. 100

4. The combination of the lever F, provided with weight  $F^2$ , shaft A, nut B, ring C, and its operating mechanism, substantially as and for the purposes specified. 105

5. In a hub-boring machine, the combination of the shaft A, provided with pulleys  $A'$   $A^2$ , lever F, provided with weight  $F^2$ , nut B, ring C, levers  $C'$  and D, and spring  $D'$ , substantially as and for the purposes specified.

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