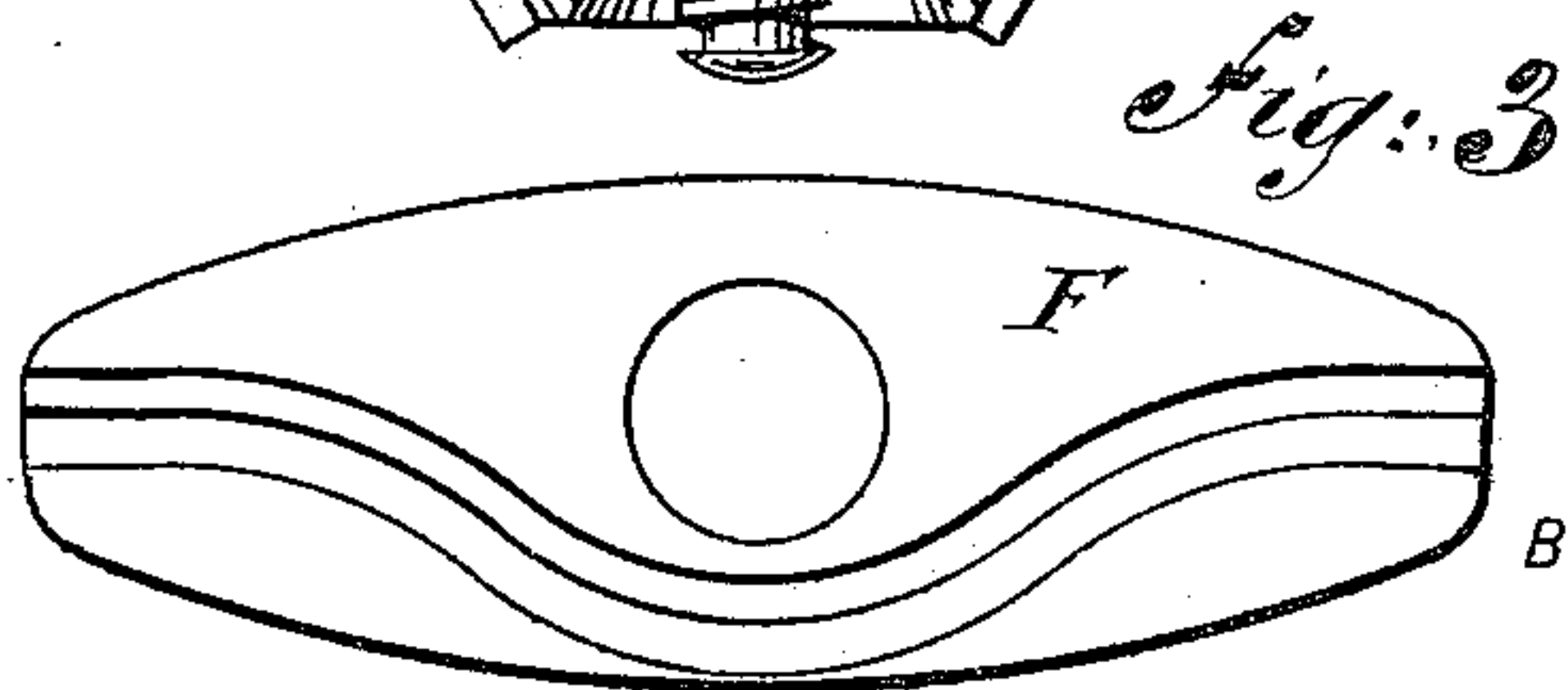
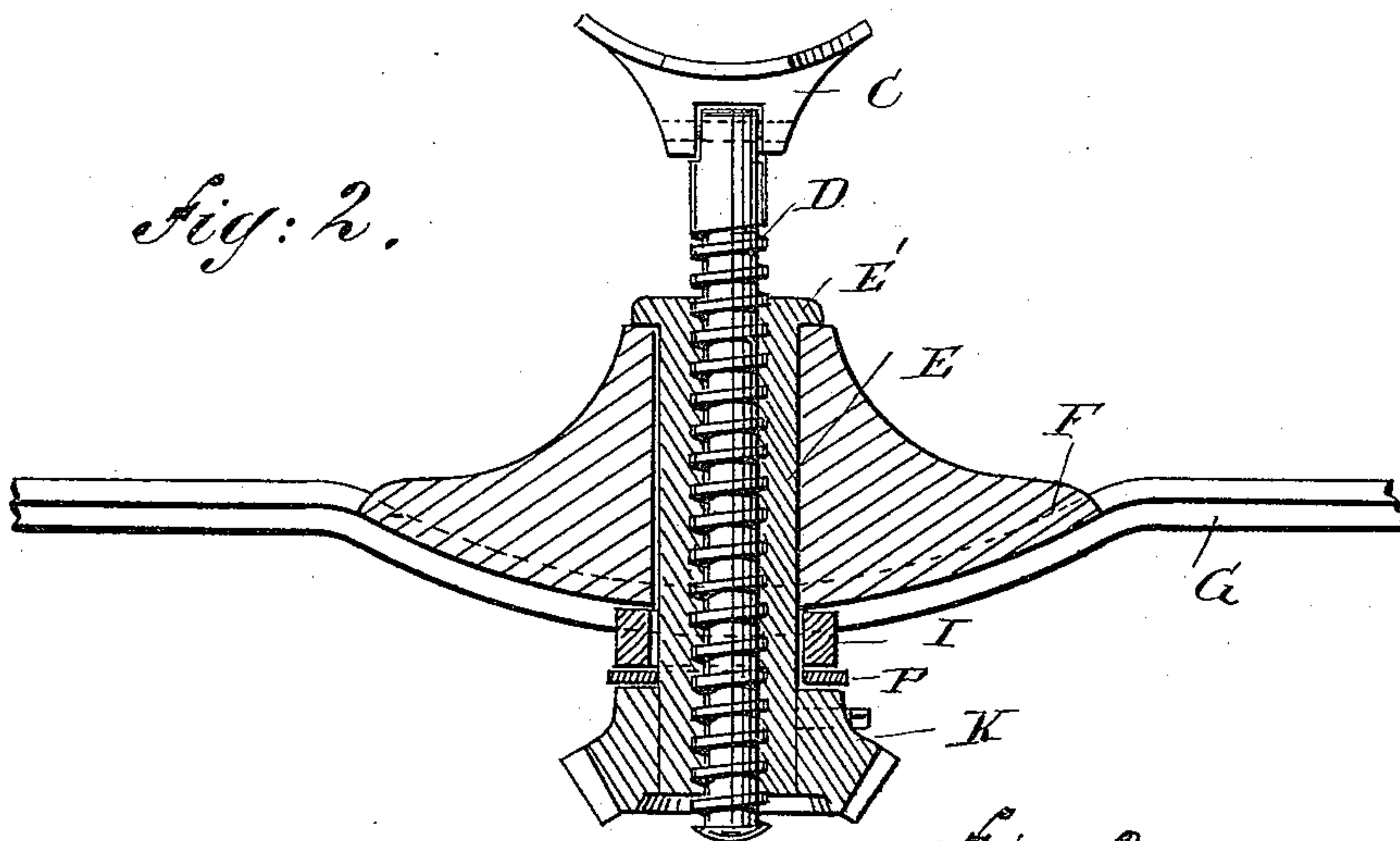
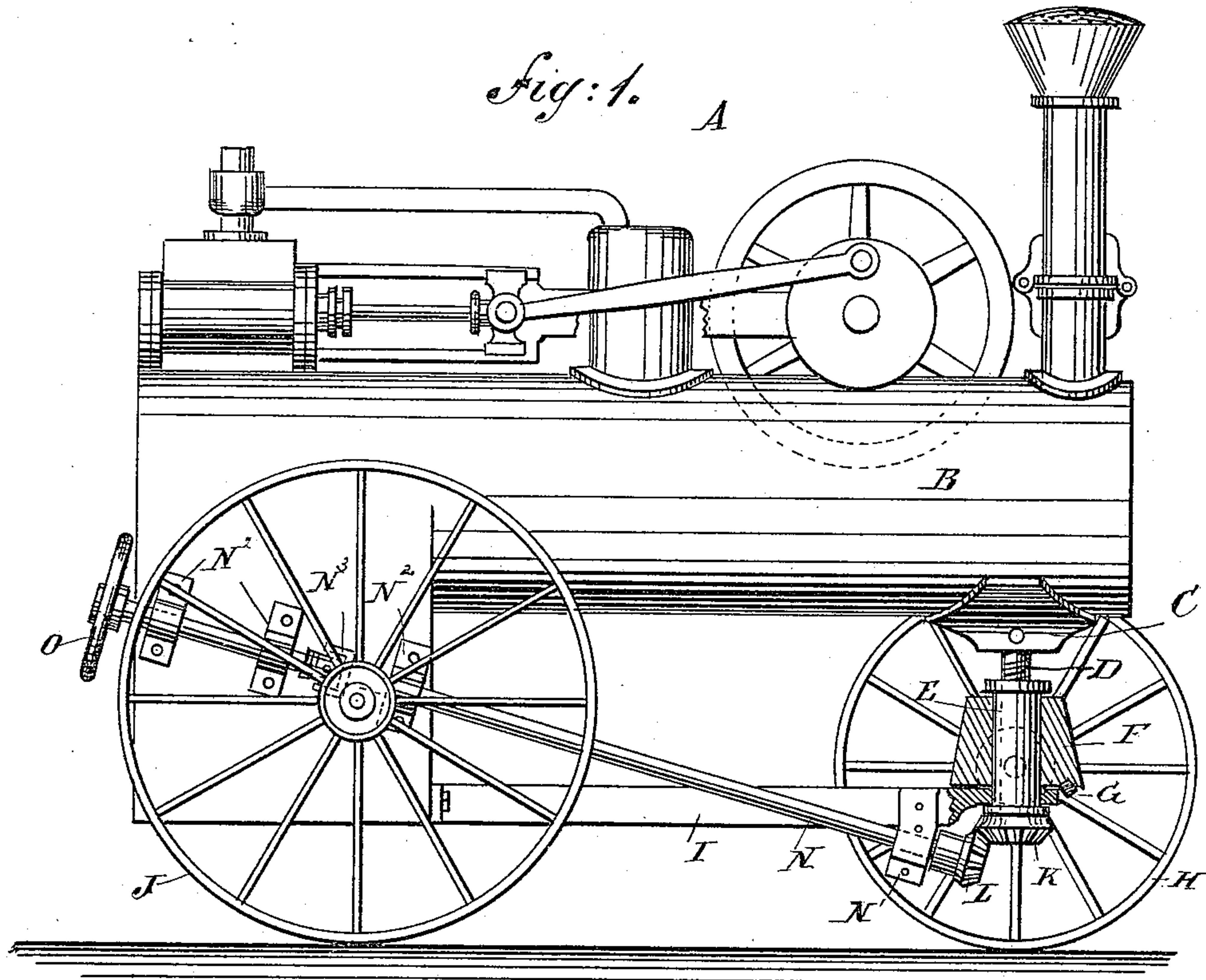


(No Model.)

O. O. KRAVIK.  
BOILER LEVELER.

No. 442,777.

Patented Dec. 16. 1890.



WITNESSES:

*Chas. Nida.*  
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INVENTOR:  
*O. O. Kravik*  
BY *Munn & Co.*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

OLE O. KRAVIK, OF ST. CARL, NORTH DAKOTA.

## BOILER-LEVELER.

SPECIFICATION forming part of Letters Patent No. 442,777, dated December 16, 1890.

Application filed April 17, 1890. Serial No. 348,341. (No model.)

*To all whom it may concern:*

Be it known that I, OLE O. KRAVIK, of St. Carl, in the county of Ward and State of North Dakota, have invented a new and Improved Boiler-Leveler, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved boiler-leveler which is simple and durable in construction, easily manipulated, and specially designed for portable boilers to raise and lower their front ends when going up or down a grade without interfering with the turning of the front wheels.

The invention consists in certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of the specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement as applied with parts in section. Fig. 2 is an enlarged transverse section of the improvement, and Fig. 3 is an inverted plan view of part of the axle.

The portable engine A, on which the improvement is applied, is provided with the usual boiler B, to the front end of which is secured at the under side a plate C, in which is pivoted the upper end of a bolt D, screwing in a bushing E, fitted to turn loosely in a block F, carrying the axle G, on which the front wheels H are mounted. The vertical axis of the screw D is in line with the center line of the axle, the latter being bent in its middle, so as to pass around the bushing E, as is plainly shown in the drawings.

On the upper end of the bushing E is formed a flange E', resting on the top of the block F, and near the lower end of the said bushing on the under side of the block F is fitted loosely the reach-rod I, connected in the usual manner with the boiler B, carrying the rear wheels J.

On the lower end of the bushing E is secured a bevel gear-wheel K, meshing into a bevel gear-wheel L, secured at one end on a shaft N, mounted to turn in suitable bearings N' and N<sup>2</sup>, of which the bearing N' is held on the reach-rod I and the bearings N<sup>2</sup> on the

rear end of the boiler, as is plainly shown in Fig. 1. The rear end of the shaft N is provided with a hand-wheel O, arranged within convenient reach of the operator following the boiler. The shaft N is also preferably provided with a universal joint N<sup>3</sup>, so as to conveniently arrange the front end of the shaft between the wheel and boiler. When the hand-wheel O is turned, the shaft N receives a like motion, and by the gear-wheels L and K the bushing E is turned in the block F, so that the screw D screws up or down in the said bushing, whereby the front end of the boiler B is raised or lowered, according to the direction in which the hand-wheel O is turned. Thus when the portable boiler A passes up a grade the operator turns the hand-wheel O so as to turn the bushing E in such a direction as to screw the rod D downward, so that the boiler B stands level on the grade. When the portable boiler is passing down a grade, the operator turns the hand-wheel O in an opposite direction, so that the screw-rod D screws upward and raises the front end of the boiler B until the latter stands level on the downgrade.

In order to avoid wearing between the gear-wheel K and the fulcrum end of the reach-rod I, a washer P is preferably placed between the two, as is plainly shown in Fig. 2.

It will be seen that the axle is free to swing at all times without interfering with the mechanism for raising or lowering the boiler, so that in going up or down a grade on a turn the leveling parts are not affected.

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

1. The combination, with the screw D, pivoted at its upper end to the attaching-plate C, of the internally-threaded bushing E upon the screw and having a gear-wheel on its lower end, and the axle-block F, in which turns the said bushing, substantially as set forth.

2. The combination, with the boiler having front and rear supporting-wheels, of the plate C, secured to the lower side of the front end of the boiler, the vertical screw pivoted at its upper end to said plate, the internally-threaded bushing E upon the screw and hav-

ing a gear on its lower end, the block F, having a vertical opening in which turns the bushing E, the said block having a recess across its lower face curved around the forward side of the said opening to receive the  
5 front axle, the reach-rod I, having a forward end opening, through which passes said bush-

ing, and the operating-rod having a pinion meshing into gear K, substantially as set forth.

OLE O. KRAVIK.

Witnesses:

JOHN O. REBRUD,  
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