

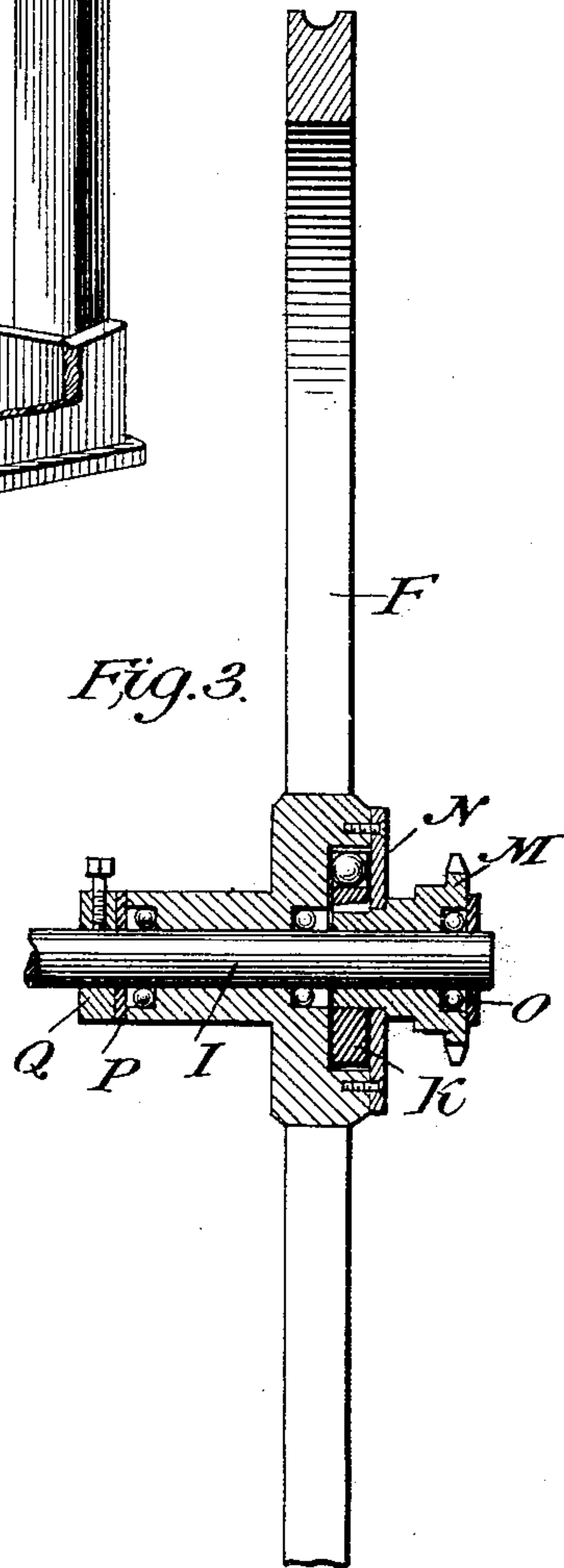
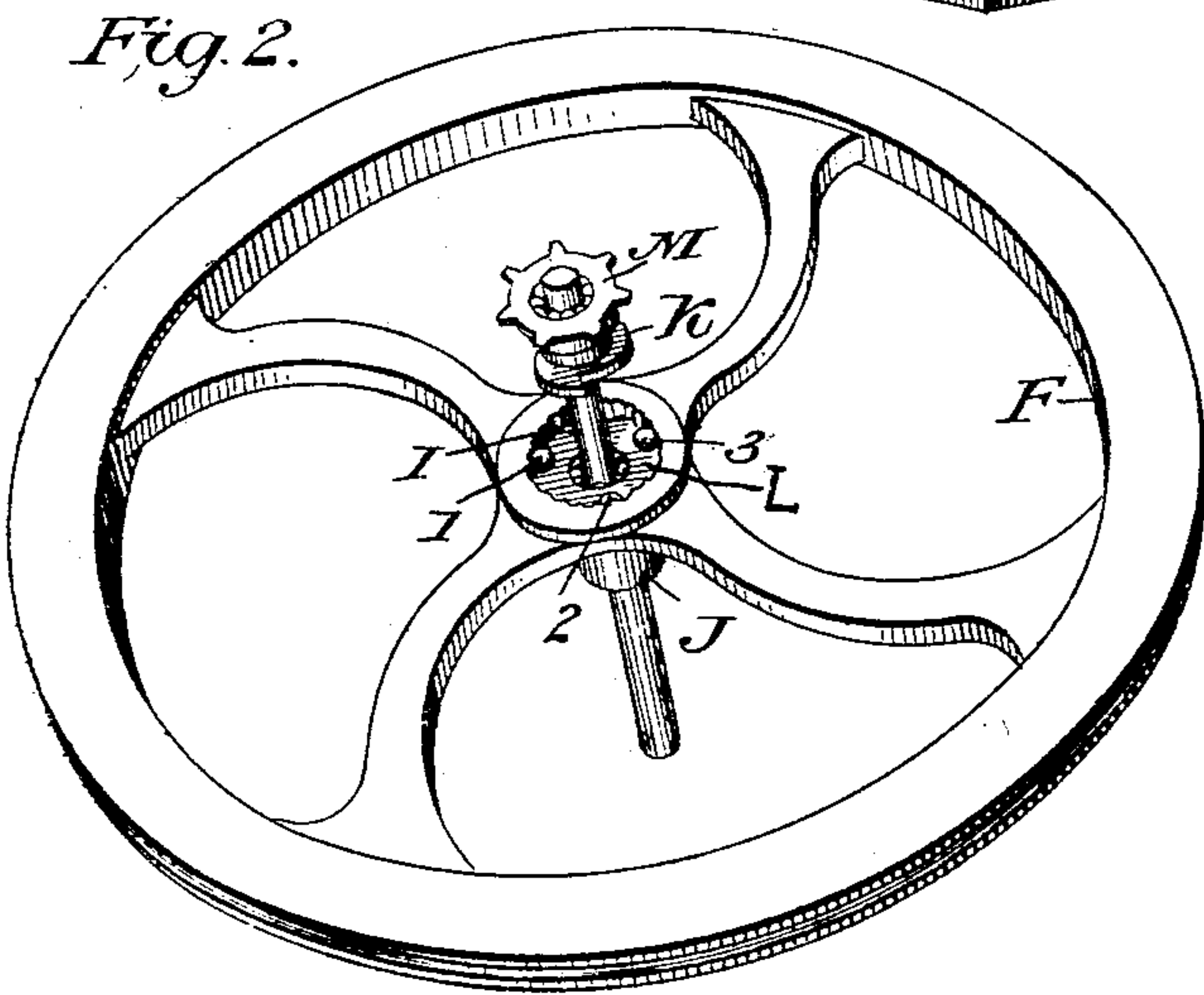
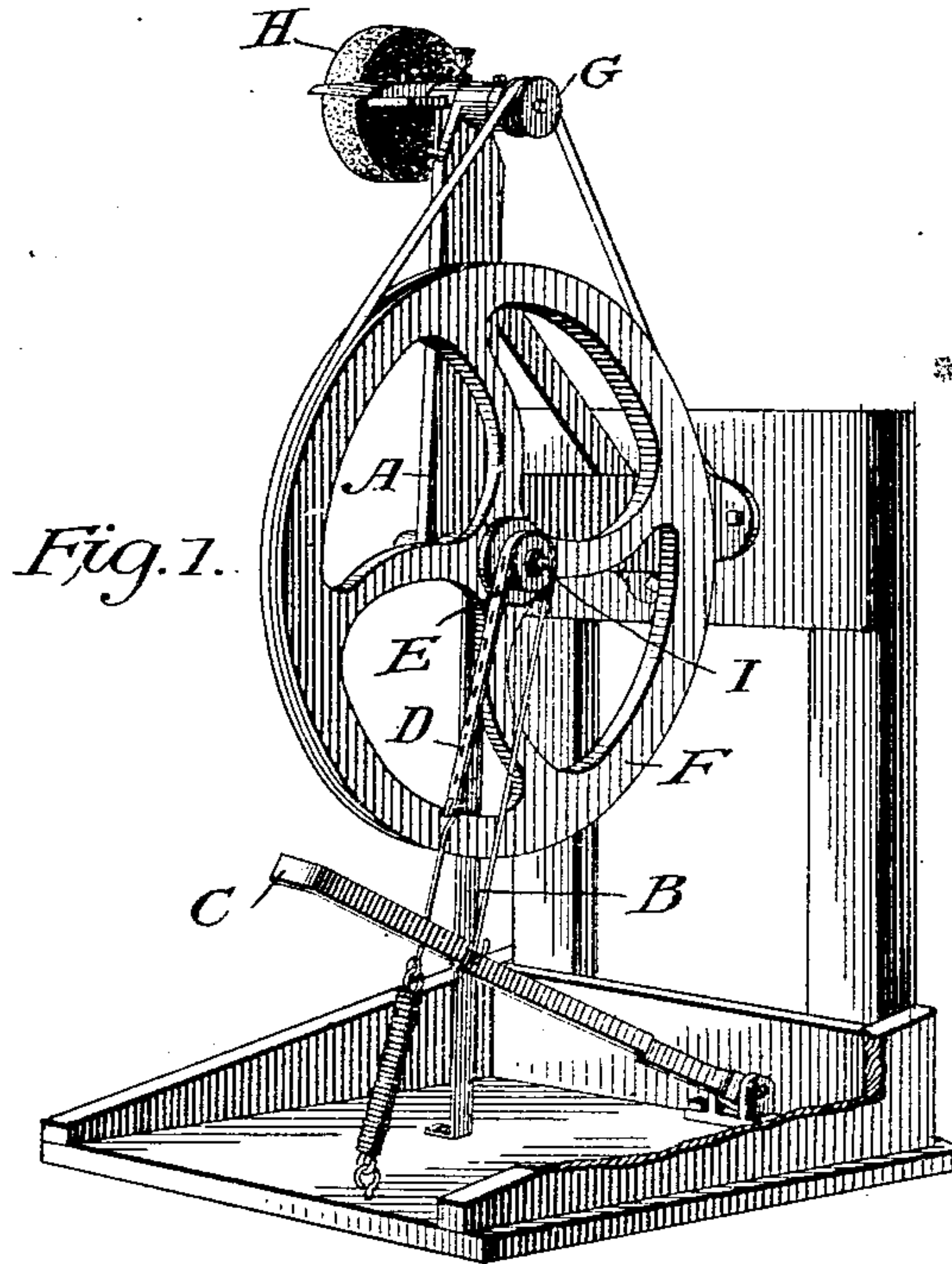
No. 704,220.

Patented July 8, 1902.

A. F. SPAULDING.  
DRIVING MECHANISM.

(Application filed Apr. 25, 1901.)

(No Model.)



Witnesses:

L. C. Eggleston  
E. M. Wooster.

Inventor:

Alfred F. Spaulding  
By D. B. Wooster  
Attorney



# UNITED STATES PATENT OFFICE.

ALFRED F. SPAULDING, OF NORTHFIELD, VERMONT.

## DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 704,220, dated July 8, 1902.

Application filed April 25, 1901. Serial No. 57,509. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED F. SPAULDING, a citizen of the United States, residing at Northfield, county of Washington, and State of Vermont, have invented a new and useful Driving Mechanism, of which the following is a specification.

My invention relates to improvements in grinding-machines in which ball-bearings operate in conjunction with a straight shaft.

The object of my improvement is, first, to provide means whereby the ball-bearings can all be brought to a bearing at once and held in place; second, to provide a machine which can be operated with very little friction. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a view of the entire machine. Fig. 2 shows one side of the balance-wheel detached from the main machine; Fig. 3, the opposite side of the wheel and other appliances connected with the machine.

Similar characters refer to similar parts throughout the several views.

The stand A and leg B constitute the framework of the machine. Treadle C is connected with sprocket-chain D, operating over sprocket-wheel E, said sprocket-wheel being connected with balance-wheel F, which is belted to drive-wheel G. The downward and upward movement of treadle, connected as hereinafter described, constitutes the motive power that drives the grinding-wheel H. Fig. 2 shows shaft I, passing through the hub of the balance-wheel J, and also cam-driving wheel K, which is connected with the sprocket-wheel with the usual pin or key. When adjusted for use, the cam-wheel is pressed down into countersink L, whose outer periphery is provided with corrugations. This countersink holds balls 1, 2, and 3, which move between cam-wheel K and the corrugations shown in the hub of the balance-wheel. The forward movement of the machine with the balls 1, 2, and 3 arranged as shown causes the balls to bind between the cam-wheel and the corrugations in the hub of the balance-wheel, and both wheels (sprocket and balance wheel) move in the same direction; but when the sprocket-wheel is reversed the balls are loosened and roll backward with the cam-wheel

without retarding the forward movement of the balance-wheel, and a continued forward movement of the balance-wheel is kept up by treadle or other similar power.

In the sprocket-wheel M there is a recess in the hub thereof, whose outer periphery is larger than the inner, and placed in this recess are balls, which when pressed into place by a cap constitute a ball-bearing on a straight shaft.

Balls shown below countersink L are contained in a recess in the hub of the balance-wheel, the same as shown in the hub of sprocket-wheel, only the recess is smaller. The hub of sprocket-wheel is long and passes down through cam-wheel K, holding the balls in place shown below countersink L.

Detached plate N holds cam-driving wheel in place and is also shown and lettered in Fig. 3.

O is a sprocket-wheel-plate follower and holds the balls there shown in place.

Sprocket-wheel hub M and cam-driving wheel K are also shown detached from the main machine.

Fig. 3 shows shaft I protruding through the balance-wheel. Formed in the hub of this wheel is a recess fashioned like that in the hub of sprocket-wheel. Balls are placed in this recess and are held in place by flat follower P.

Q is an adjusting-collar held in place on the shaft by a set-screw.

In Fig. 1 the end of shaft I is provided with a collar R, secured to the shaft by a threaded screw; but it may be secured in any other convenient way. This collar is pressed down onto the cap, which holds the balls in place in the hub of the sprocket-wheel.

When all the arrangements connected with shaft I, as described, are in place in the hub of the wheels, collar R and adjusting-collar Q are brought into use conjointly, thus holding each part in its proper place between collars R and Q. Shaft I is then secured to frame A.

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

In combination, a wheel provided with a central shaft-opening and ball-recesses communicating therewith in opposite ends of the

hub, a shaft located in said opening, balls located in said recesses and bearing upon said shaft, a washer and collar mounted upon said shaft at one end of the hub to retain the balls  
5 in the adjacent recess, a sprocket-wheel mounted on said shaft, its hub being extended to form a closure for the other of said ball-recesses, said first-mentioned hub being provided with a corrugated countersink surrounding said sprocket-hub, a cam-wheel  
10 keyed to the latter hub and located in said countersink, clutch-balls located in the space between the cam and the first-mentioned hub, a follower to retain said clutch-balls in place,  
15 the other end of the sprocket-hub being pro-

vided with a recess, balls in said recess bearing upon the shaft, and a washer and collar cooperating with the other washer and collar to retain the bearing-balls in position and the wheels in proper position on the shaft, as set  
20 forth and described.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, on this 6th day of March, A. D. 1901.

ALFRED F. SPAULDING.

Witnesses:

E. M. WOOSTER,  
DANIEL B. WOOSTER.