

(No Model.)

2 Sheets—Sheet 1.

F. TOMPKINS.
CRANK POWER.

No. 550,206.

Patented Nov. 19, 1895.

Fig. 1.

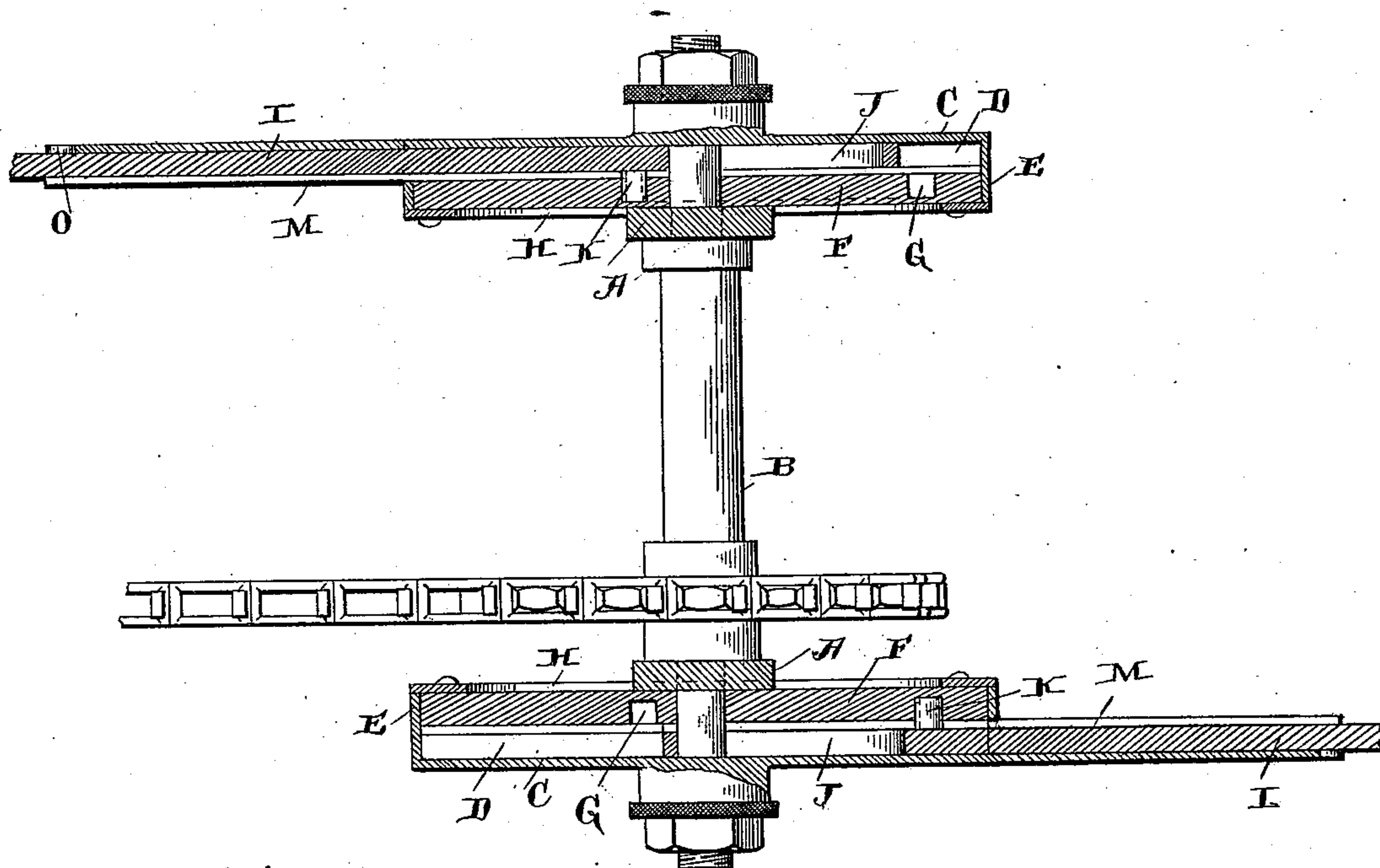


Fig. 4.

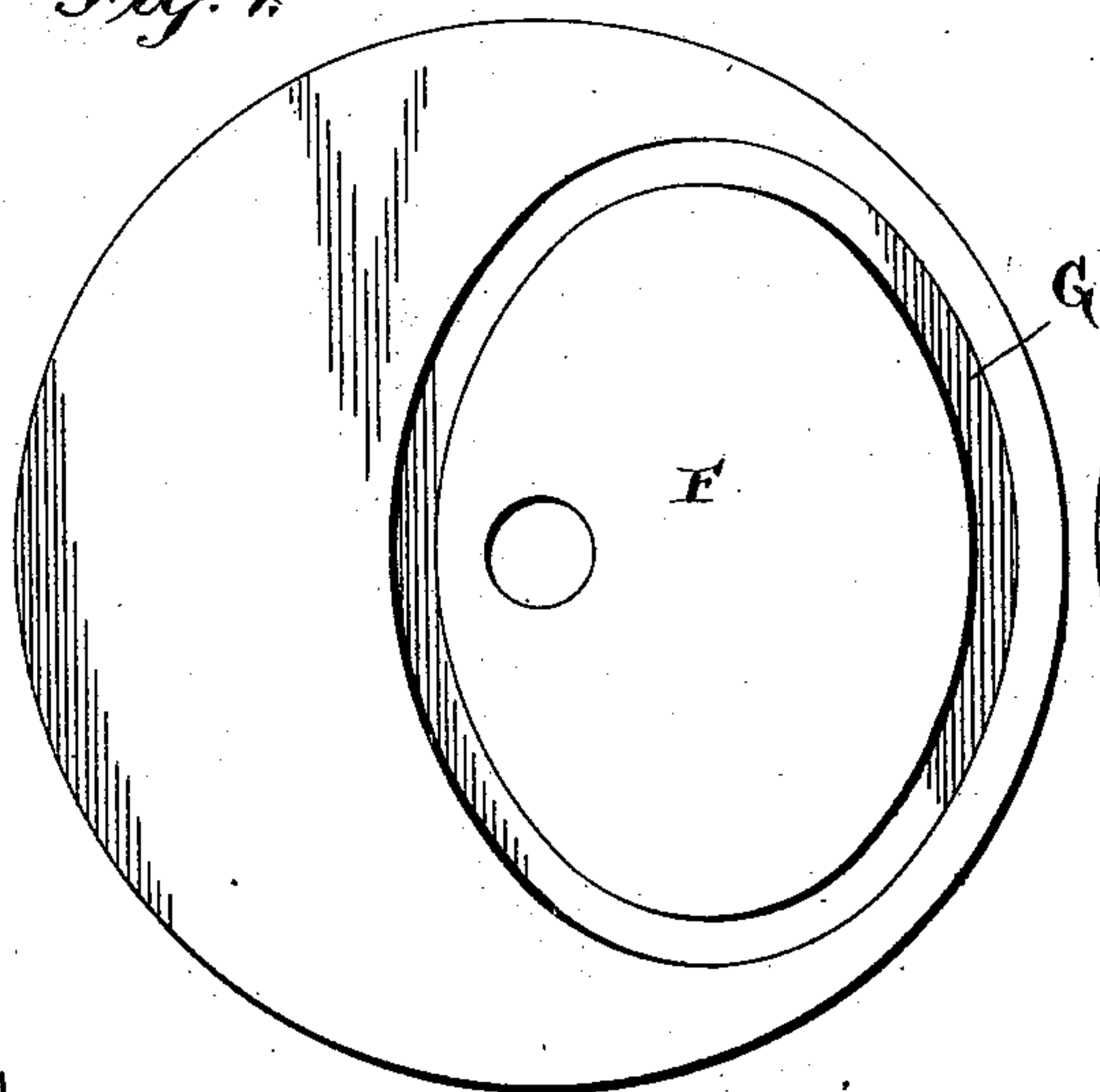
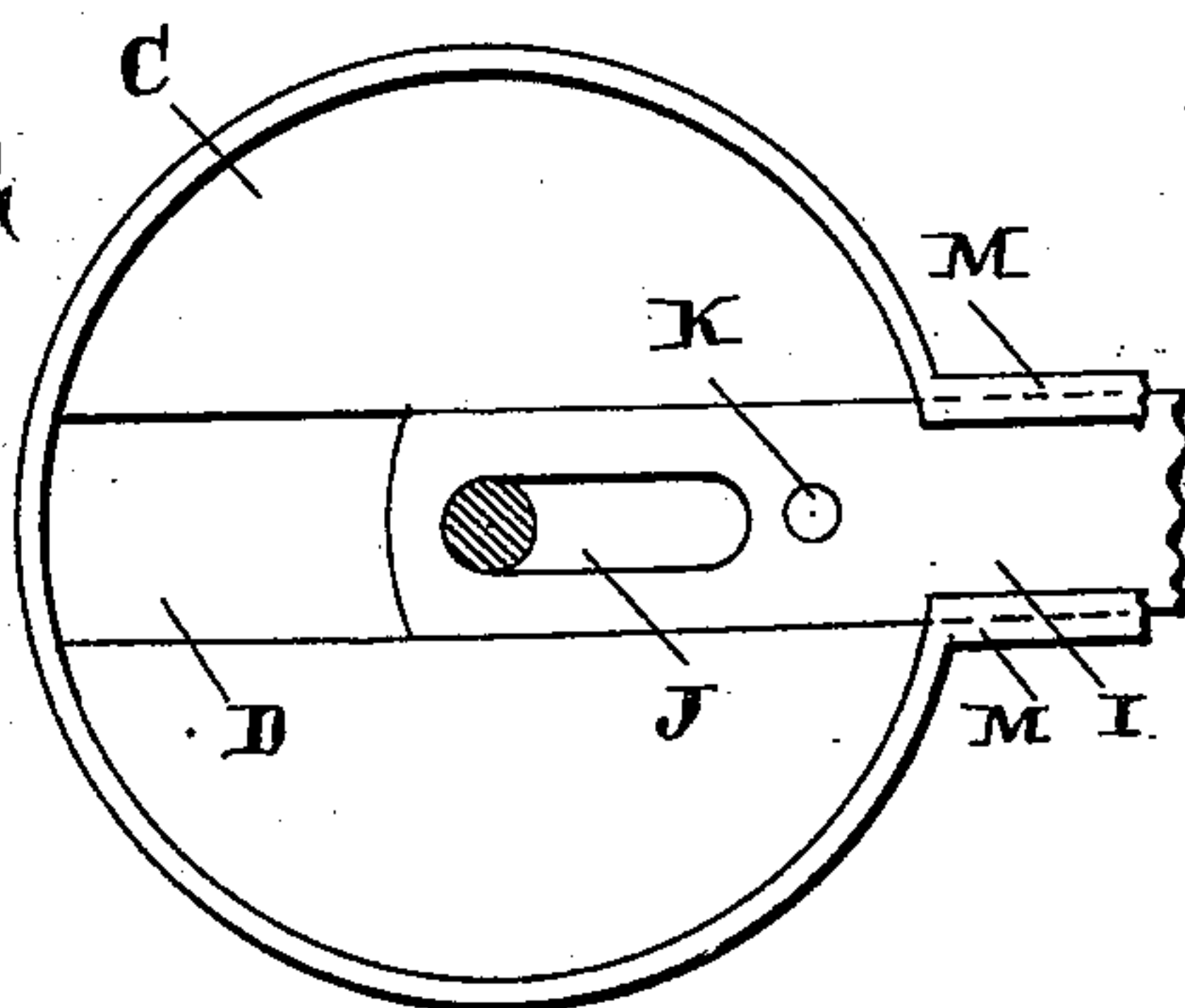


Fig. 5.



WITNESSES.

Geo. C. Frick.

Poland C. Fitzgerald.

INVENTOR.

Frank Tompkins.

By Lehman Patterson & Nesht-
attys

(No Model.)

2 Sheets—Sheet 2.

F. TOMPKINS.
CRANK POWER.

No. 550,206.

Patented Nov. 19, 1895.

Fig. 2.

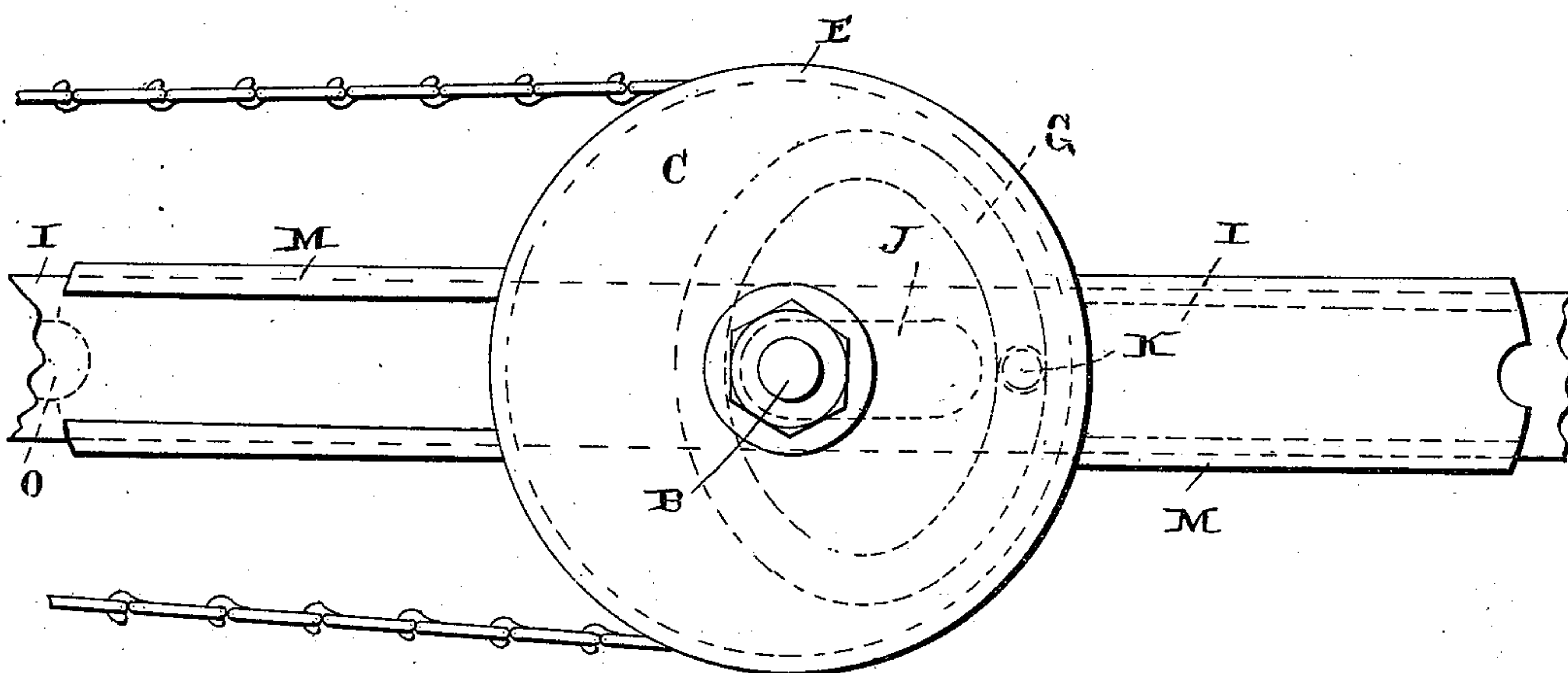
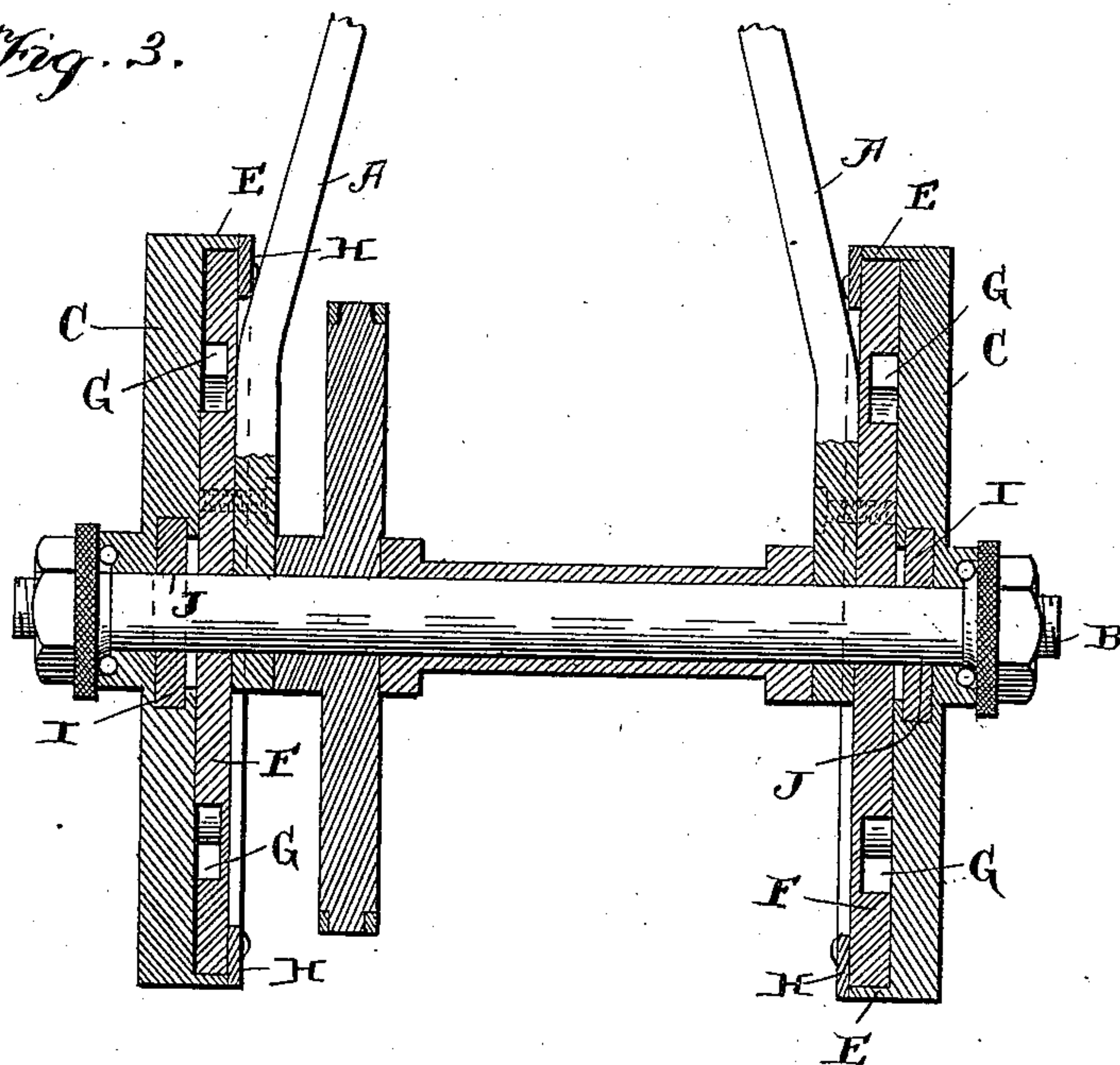


Fig. 3.



WITNESSES.

Geo. C. Frech,
Roland C. Fitzgerald.

INVENTOR.

Frank Tompkins,
By Lehmann Patterson & Nash,
attys.

UNITED STATES PATENT OFFICE.

FRANK TOMPKINS, OF PENN YAN, NEW YORK.

CRANK-POWER.

SPECIFICATION forming part of Letters Patent No. 550,206, dated November 19, 1895.

Application filed September 29, 1893. Serial No. 486,815. (No model.)

To all whom it may concern:

Be it known that I, FRANK TOMPKINS, of Penn Yan, in the county of Yates and State of New York, have invented certain new and useful Improvements in Crank-Powers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improved crank-power; and it consists in the novel features of construction hereinafter fully described, and especially pointed out in the claims.

The object of my invention is to construct an improved variable crank-power in which the leverage of the crank is enlengthened or increased for the active portion of its stroke and correspondingly shortened or decreased for the inactive or return, thereby increasing greatly the leverage at the time the power is being applied and at the same time reducing to a minimum the heft of the object which may be operating the crank as it is brought to an active or propelling position.

For the purpose of ready description and illustration of my invention I have here shown and described the same as applied to a bicycle; but it is not my desire to be limited to its use in this connection, as it is readily applicable to any form of machine using crank-power.

Referring to the accompanying drawings, Figure 1 is a sectional plan view of my improved invention as applied to a bicycle. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical cross-sectional view. Fig. 4 is an elevation of one of the eccentrically-grooved disks. Fig. 5 is an inside view of one of the heads C.

A designates the fork-bearing of the machine, and B the drive-shaft journaled therein, having secured to its opposite ends the circular heads C, which latter are formed upon their inner sides with the transverse slideway depressions D. The peripheries of these heads are flanged inward, as shown at E, to incase the circular disk F, secured to frame A, and which disks have formed upon their outer sides the elliptical grooves G. Shaft B extends through these disks, and is

also encircled by the said grooves; but the greater portion of the respective grooves are arranged upon the same sides of the shaft, as shown, so as to effect a perfect alternate movement of the cranks presently to be described. In order to prevent dirt or dust from passing between the periphery of the disks and flanges E, I provide the packing plates or rings H, which are secured to the non-movable disks and effectually exclude the dirt from the said parts.

I designate the crank-arms, slotted at their inner ends at J, through which slots shaft B extends, and which crank-arms are adapted to move in and project from the slideways D. Each crank-arm carries a pin K, which pins travel in the elliptical grooves G of the stationary disk, and thereby effect the longitudinal movement of the crank-arm while rotating. The crank-arms are supported in their extended position by the extensions M of slideway D, so that the arms are securely braced and at the same time firmly connected to the revoluble head which actuates the drive-shaft B.

For a bicycle-gearing the outer ends of the cranks are provided with pedals of the usual construction, and immediately behind these pedals are pins O, which are adapted to engage the outer ends of extensions M, thereby preventing any unnecessary endwise play. The wrist-pins are provided with friction-rollers, so as to reduce friction.

The greater portion of the elliptical grooves being on one and the same side of the drive-shaft and the crank-arms projecting in opposite directions from the drive-shaft, it will be seen that as one crank-arm is in an active position while taking the downward stroke it will be extended its full length, so as to secure the greatest amount of leverage upon its head C, while at the same time the other crank will be ascending or returning to an active position, during which time it will be drawn inward, thus reducing materially the leverage of the same upon its drive-head and thereby lessening the amount of power required to return it to an operative position and to elevate the foot which is resting upon its pedal. Thus it will be seen that for each portion of an entire revolution the crank-arm will be reciprocated within the guideway D and

thus brought to the desired position by the engagement of its wrist-pin with the elliptical groove.

When this form of power is to be applied to any other kind of machinery, it is apparent that the disks F will constitute a stationary portion of such machine-frame, while the shaft to which the power is imparted may be the main drive-shaft or a mere auxiliary shaft of such machine.

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

1. In a bicycle, the combination of a fork, the crank shaft mounted therein, the two disks F, F, rigid on outersides of the fork and through which the shaft concentrically passes, the disks having the similarly arranged elliptical grooves G in their outer faces, each with a long side near the shaft, the disks C, C, rigid on the outer ends of the crank shaft close to and concentric with the disks F, F, and having the peripheral flanges E, E, embracing the outer edges of the disks F, F, the

diametrical depressed ways in said disks C, C, having radial extensions M, and the crank arms countersunk and movable longitudinally in said ways and having pins K, in said grooves as described and shown.

2. In a bicycle, the combination with the frame provided with a disk or circular head, of a revoluble wheel located opposite the disk head and having a crown flange encircling and to that extent inclosing and protecting the head, a channel transversely of and in the interior face of the wheel, a pedal-crank fitted and reciprocable in the channel and adapted to rotate the wheel, and means on the pedal crank and disk head complementary to each other and within the space inclosed by the crown flange of the wheel for extending and withdrawing the crank radially.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK TOMPKINS.

Witnesses:

M. F. HOBART,

D. AGNES HOBART.