

No. 684,070.

Patented Oct. 8, 1901.

R. F. LELAND.

POWER DRIVING MECHANISM.

(Application filed Oct. 13, 1900.)

(No Model.)

2 Sheets—Sheet 1.

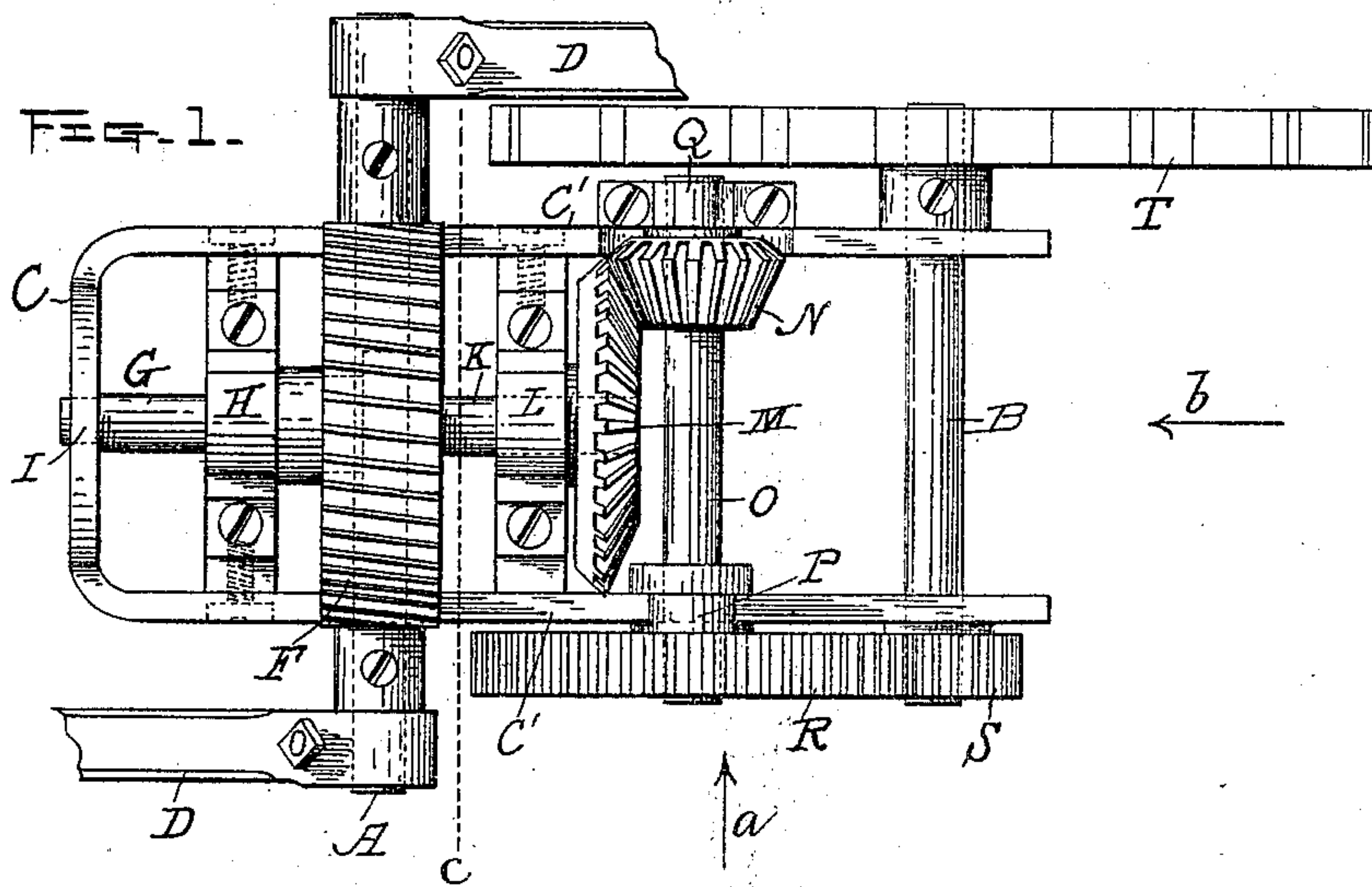
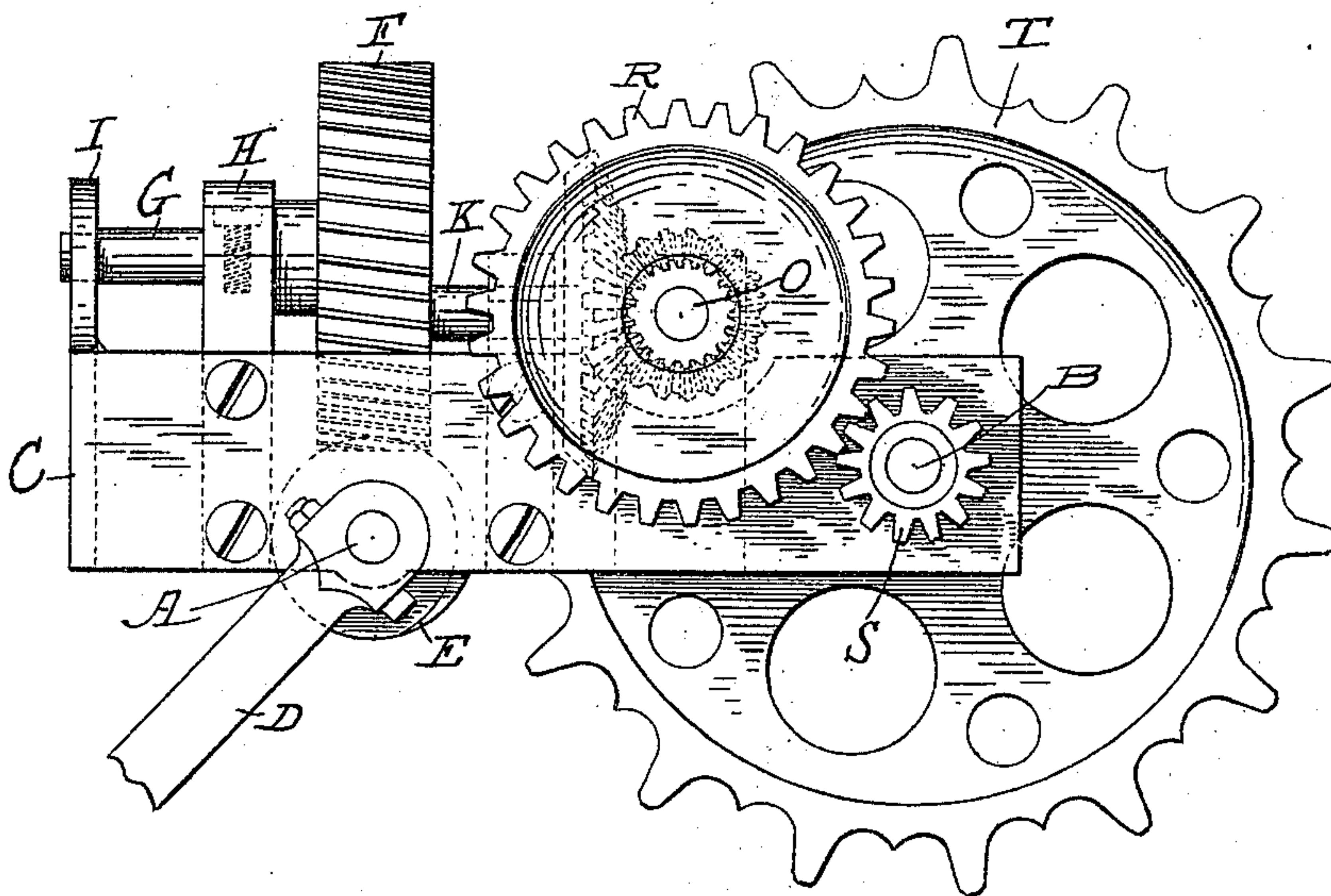


FIG. 2.



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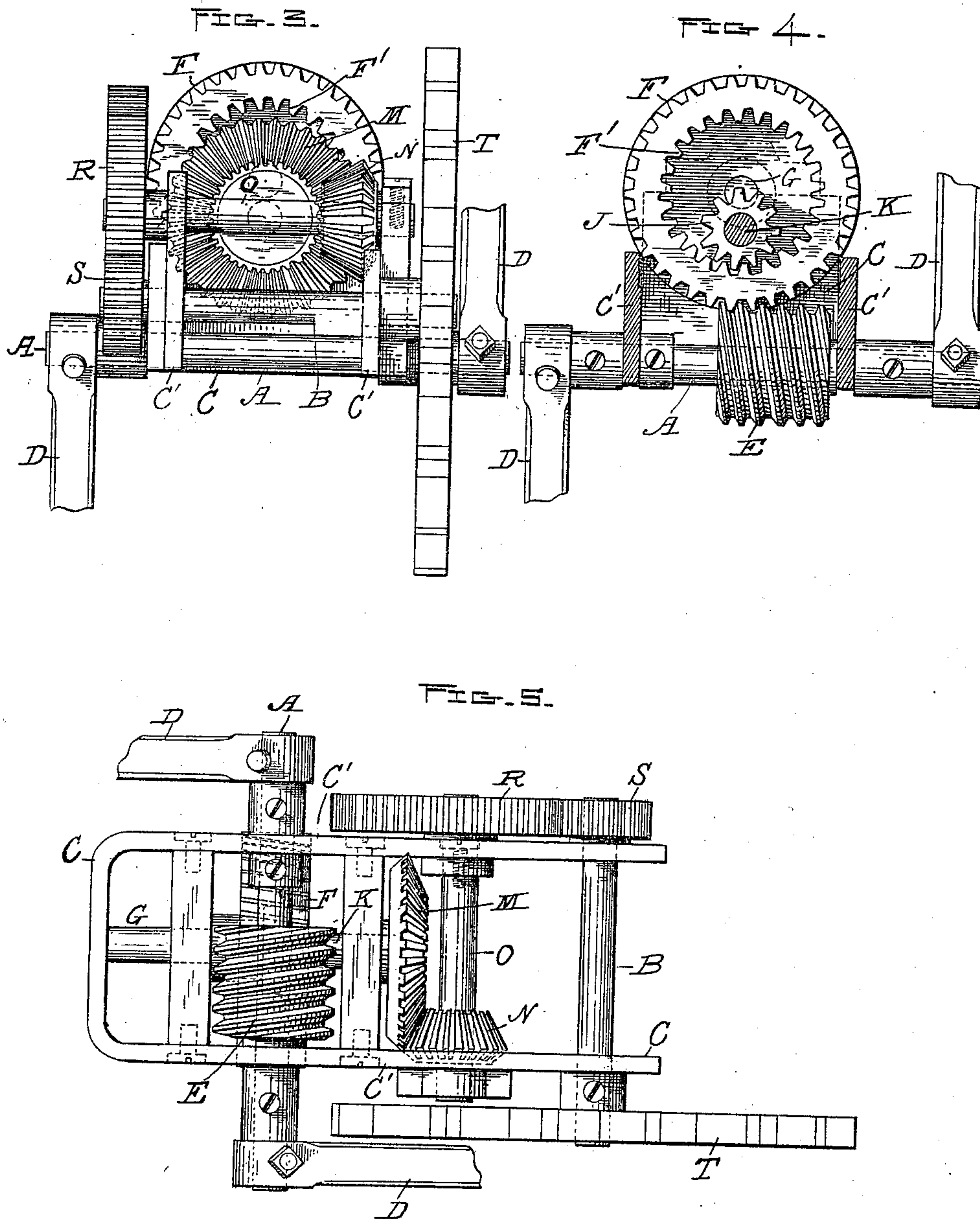
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UNITED STATES PATENT OFFICE.

RICHARD F. LELAND, OF WORCESTER, MASSACHUSETTS.

POWER DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 684,070, dated October 8, 1901.

Application filed October 13, 1900. Serial No. 32,942. (No model.)

To all whom it may concern:

Be it known that I, RICHARD F. LELAND, of the city and county of Worcester, in the State of Massachusetts, have invented certain new and useful Improvements in Power Driving Mechanism; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a top or plan view of a device embodying my said improved power driving mechanism. Fig. 2 is a side view thereof looking in the direction of arrow *a*. Fig. 3 is an end view of the device looking in the direction of arrow *b*. Fig. 4 is a transverse section on line *c*, Fig. 1, looking in the direction of arrow *b*; and Fig. 5 is a bottom view of the device.

The object of my invention is to provide a device for distributing the power from any driving to a driven point to vary the speed as desired.

Said invention consists in combining with the drive-shaft, the driven shaft, and supporting parts certain gear mechanism interposed between said driving-shaft and driven shaft, as will be hereinafter more fully set forth.

To enable others skilled in the art to which my invention appertains to better understand the nature and purpose thereof, I will now proceed to describe it more in detail.

My invention may be applied to any purpose where it is desired to distribute the power from a driving to a driven shaft to vary the speed.

In the drawings, A represents a transverse crank-shaft, which is the drive-shaft; B, a sprocket-wheel shaft, which is the driven shaft, and C a supporting-frame. Upon the crank-shaft A are mounted the cranks D D (only part of which are shown in this instance) and the worm-gear E, the latter being arranged and fastened upon said crank-shaft between the two longitudinal side bars C' C' of frame C. The crank-shaft A is fitted to turn but not to move longitudinally in frame C, and all the other shafts of the device are likewise constructed with relation to frame C.

The worm-gear E is adapted to engage with a vertical transversely-arranged large worm-gear F, which is secured upon the longitudi-

nal shaft G, fitted to turn in bearings H and I. Said worm-gear F is made with an internal spur-gear F', with which a pinion J is adapted to engage. Said pinion J is secured to one end of a short longitudinal shaft K, fitted to turn in bearing L, and to its opposite end is secured a bevel-gear M. Said bevel-gear M is in turn adapted to engage with a smaller bevel-gear N, secured to a transverse shaft O, fitted to turn in bearings P Q. Upon said shaft O is also secured a large spur-gear R, adapted to engage with a pinion S, secured to one end of the sprocket-wheel shaft B, the sprocket-wheel T being secured to its opposite end.

By the foregoing construction and arrangement it is obvious that when the crank-shaft A is turned the power from the small bevel-gear E is transmitted to the large worm-gear F, thereby driving the latter slowly, but with great power. Said power is then transmitted through the pinion J by its engagement with the internal gear F' and through the shaft K turns the large bevel-gear M, which then drives at greater speed the small bevel-gear N and thence through the shaft O the large spur-gear R at the same increased speed as said small bevel-gear N. The large spur-gear R now drives the pinion S at a still higher rate of speed and through the shaft B turns the sprocket-wheel T at the same high rate of speed.

The main essential feature of my invention is the application of the small worm-gear E and large worm-gear F, having the internal spur-gear F' to the other parts of the mechanism employed for driving the sprocket-wheel T, the object being to obtain a powerful motive power at a low rate of speed at the commencement of the distribution of said power and then increasing the speed gradually from said point to the sprocket-wheel. By thus constructing and arranging the various parts of the device, as shown and described, it is obvious that a powerful motive power may be applied and said power may be readily controlled, owing to the low speed at which the crank-shaft A is required to be operated.

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

The combination of drive-shaft A and the driven shaft B, with interposing mechanism comprising in combination the small worm-gear E, mounted on said drive-shaft A; large
5 worm-gear F, mounted on the short longitudinal shaft G and engaging with said gear E, said worm-gear F also being provided with the internal, spur-gear F'; said shaft G, fitted to turn in suitable bearings, pinion J, arranged in worm-gear F, mounted on the short
10 longitudinal shaft K and engaging with internal gear F'; said shaft K, fitted to turn in suitable bearings, large bevel-gear M also mounted on shaft K; small bevel-gear N, and large spur-gear R, both mounted on trans- 15
verse shaft O; said shaft O fitted to turn in suitable bearings; gear S mounted on the driven shaft B, and means for supporting the various parts, substantially as set forth.

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Witnesses:

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