

(No Model.)

3 Sheets—Sheet 1.

DE WITT C. PRESCOTT.

HOISTING APPARATUS.

No. 313,104.

Patented Mar. 3, 1885.

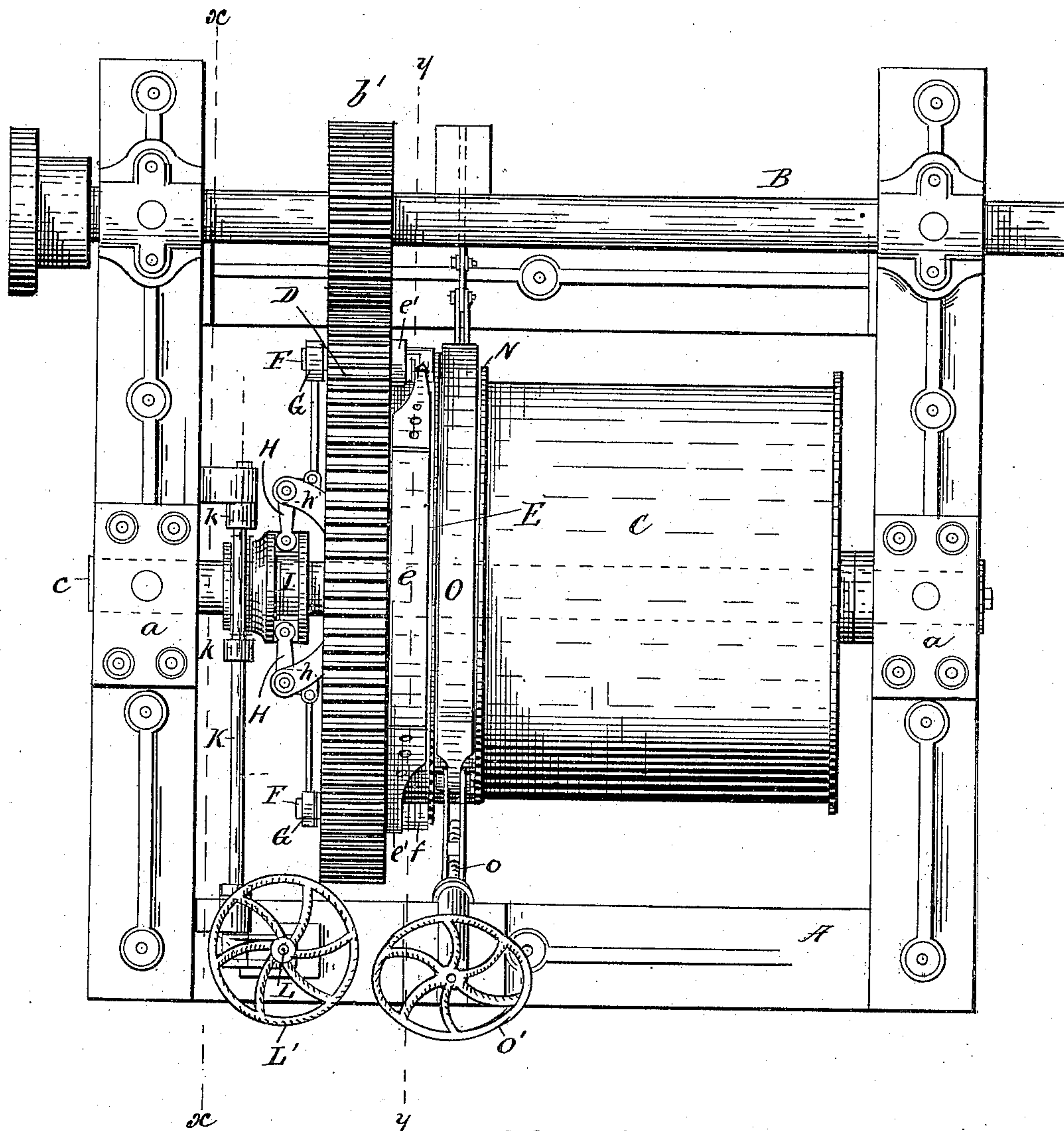


Fig. 1

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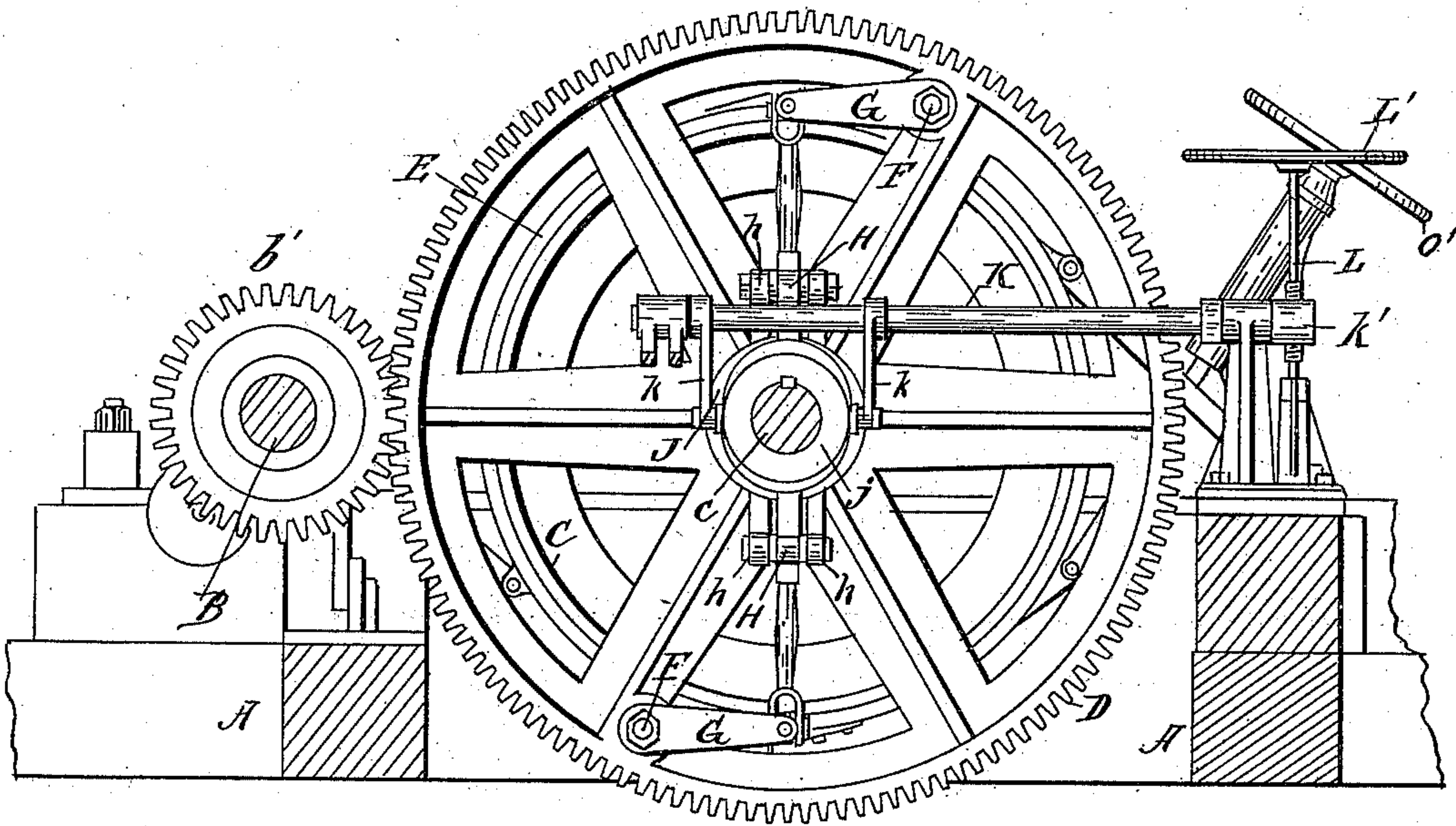


Fig 2

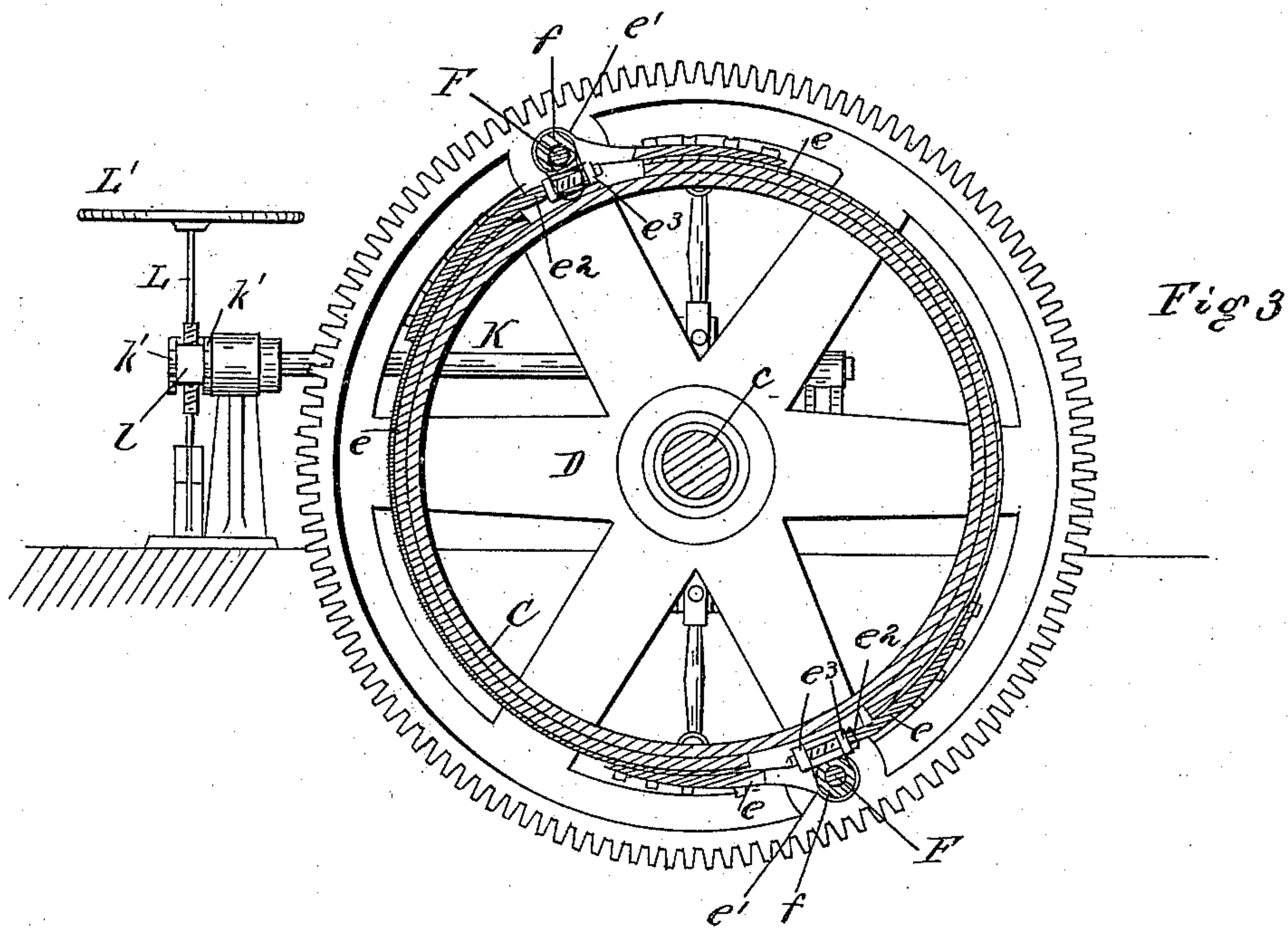


Fig 3

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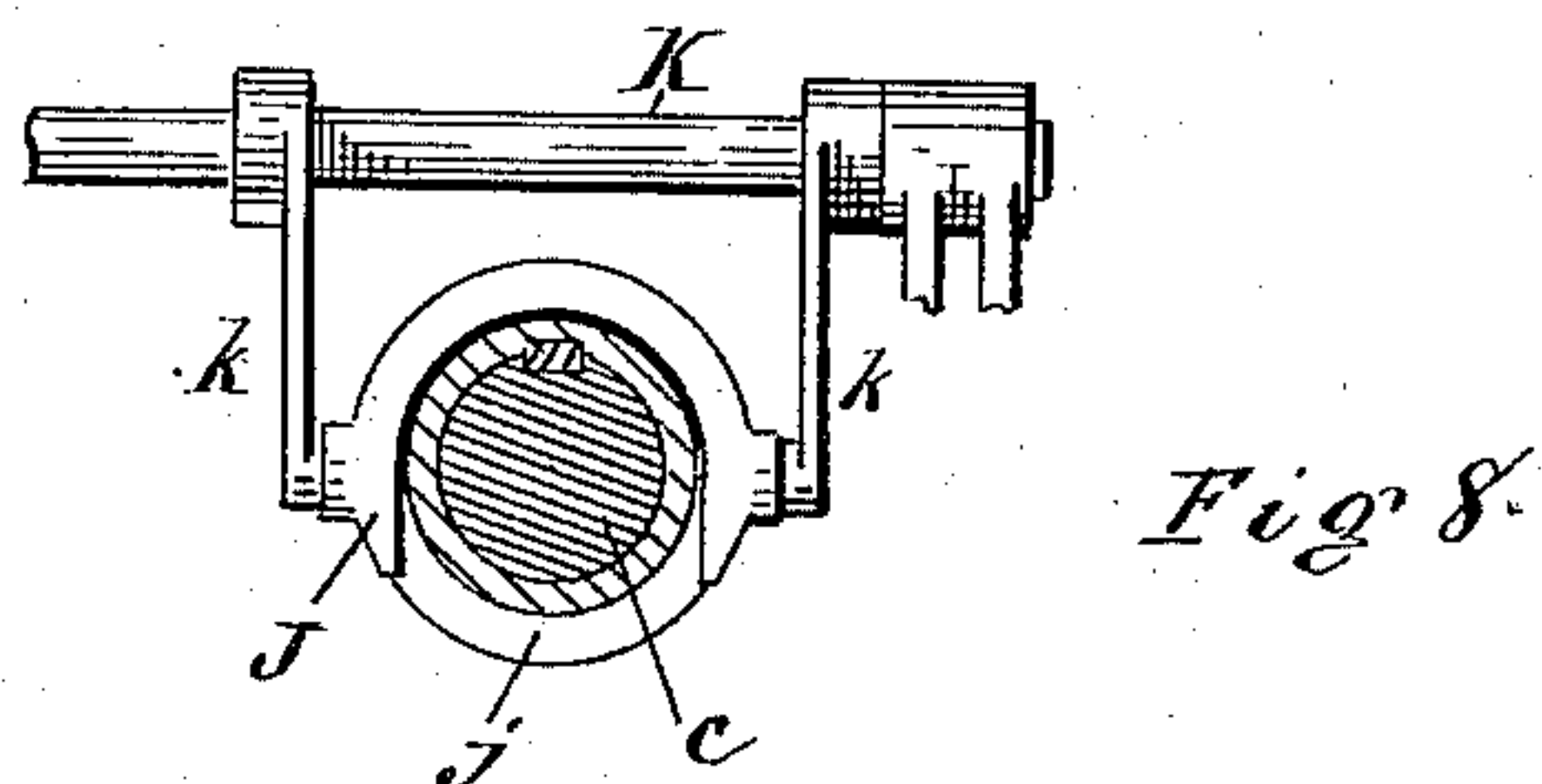
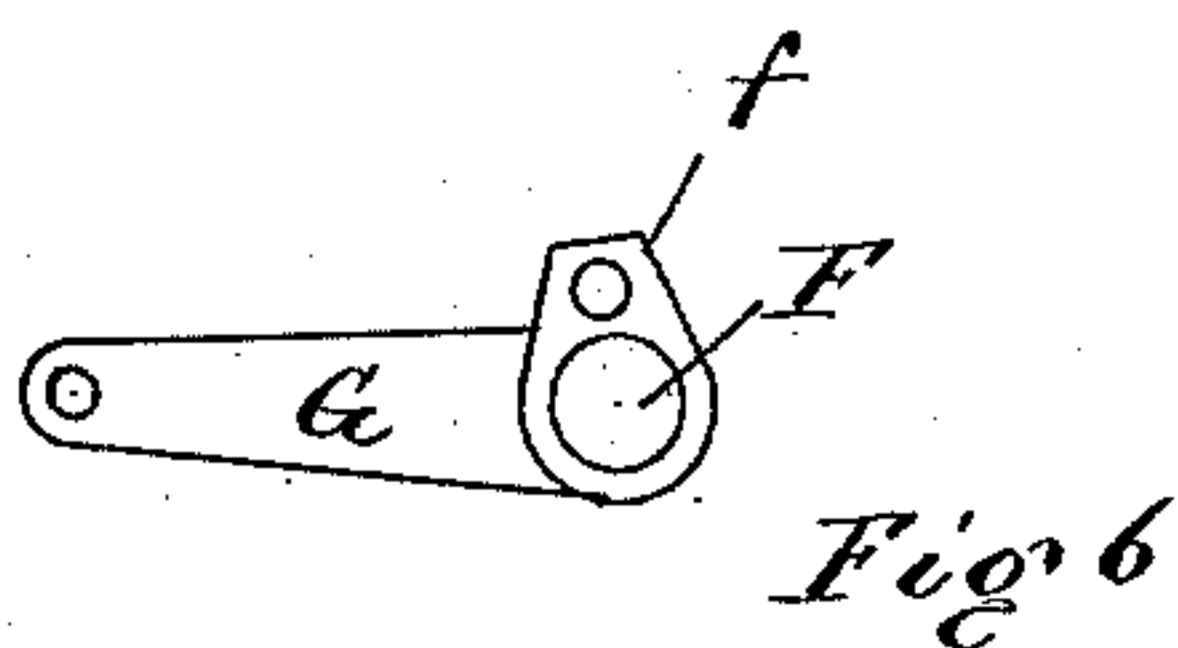
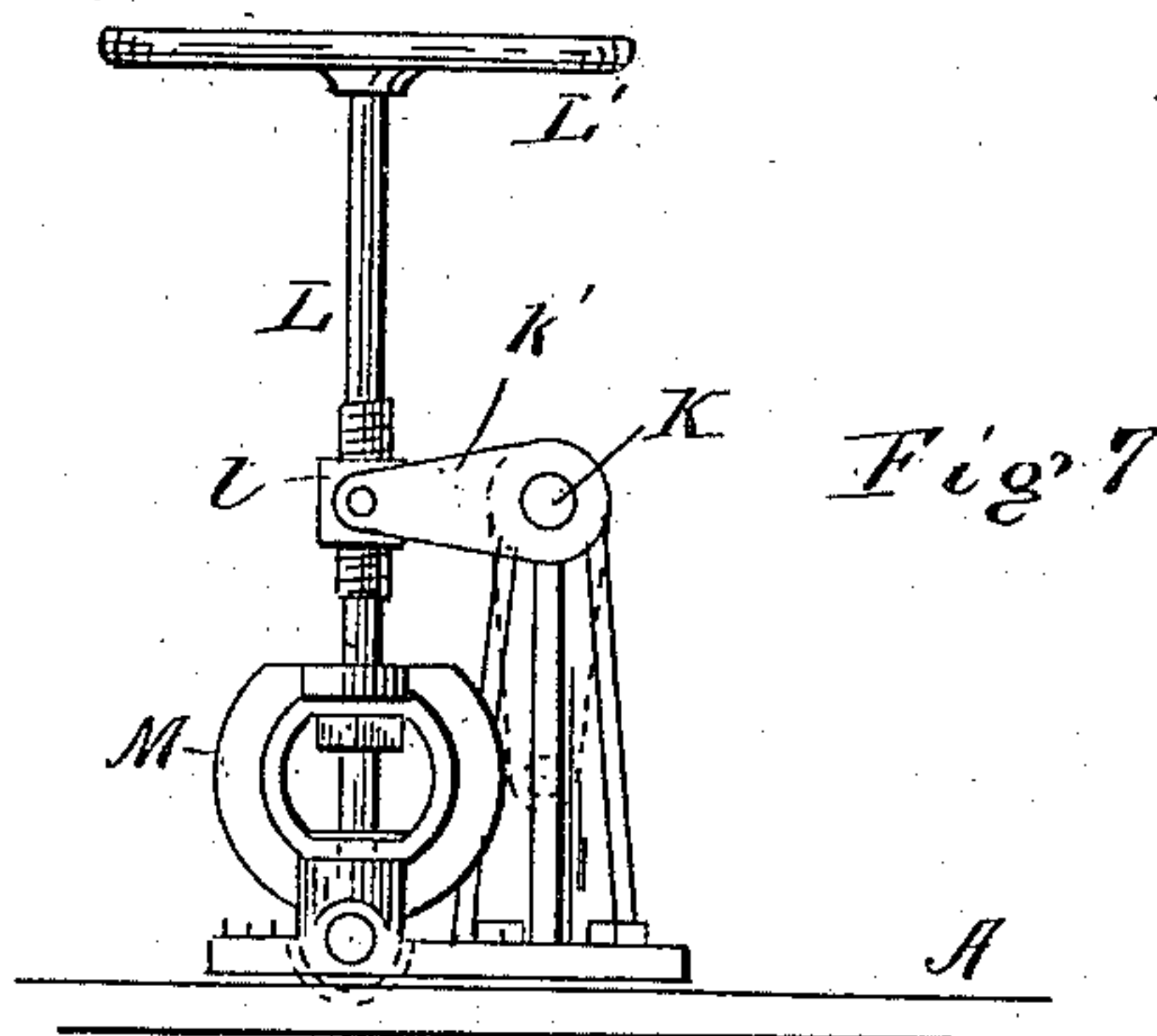
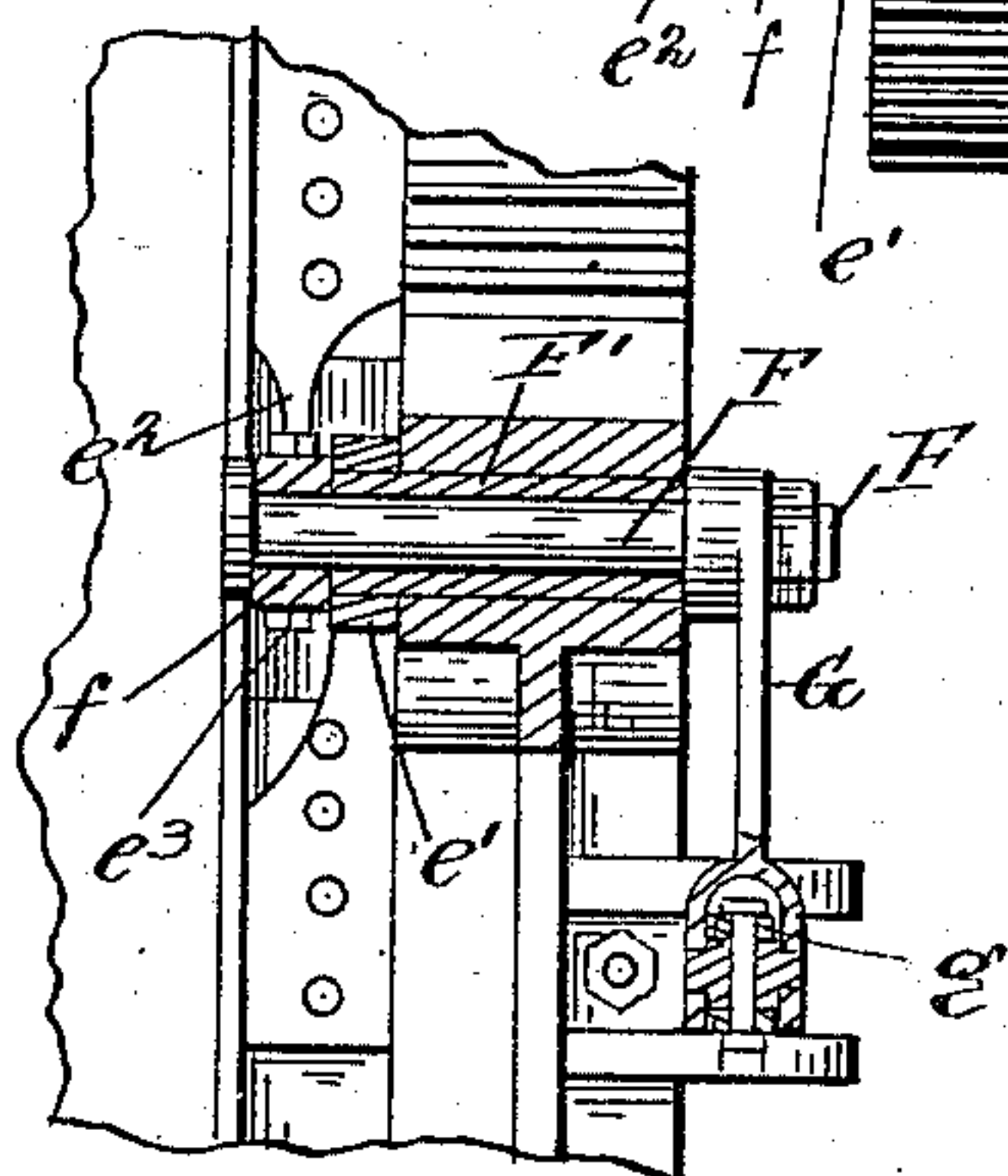
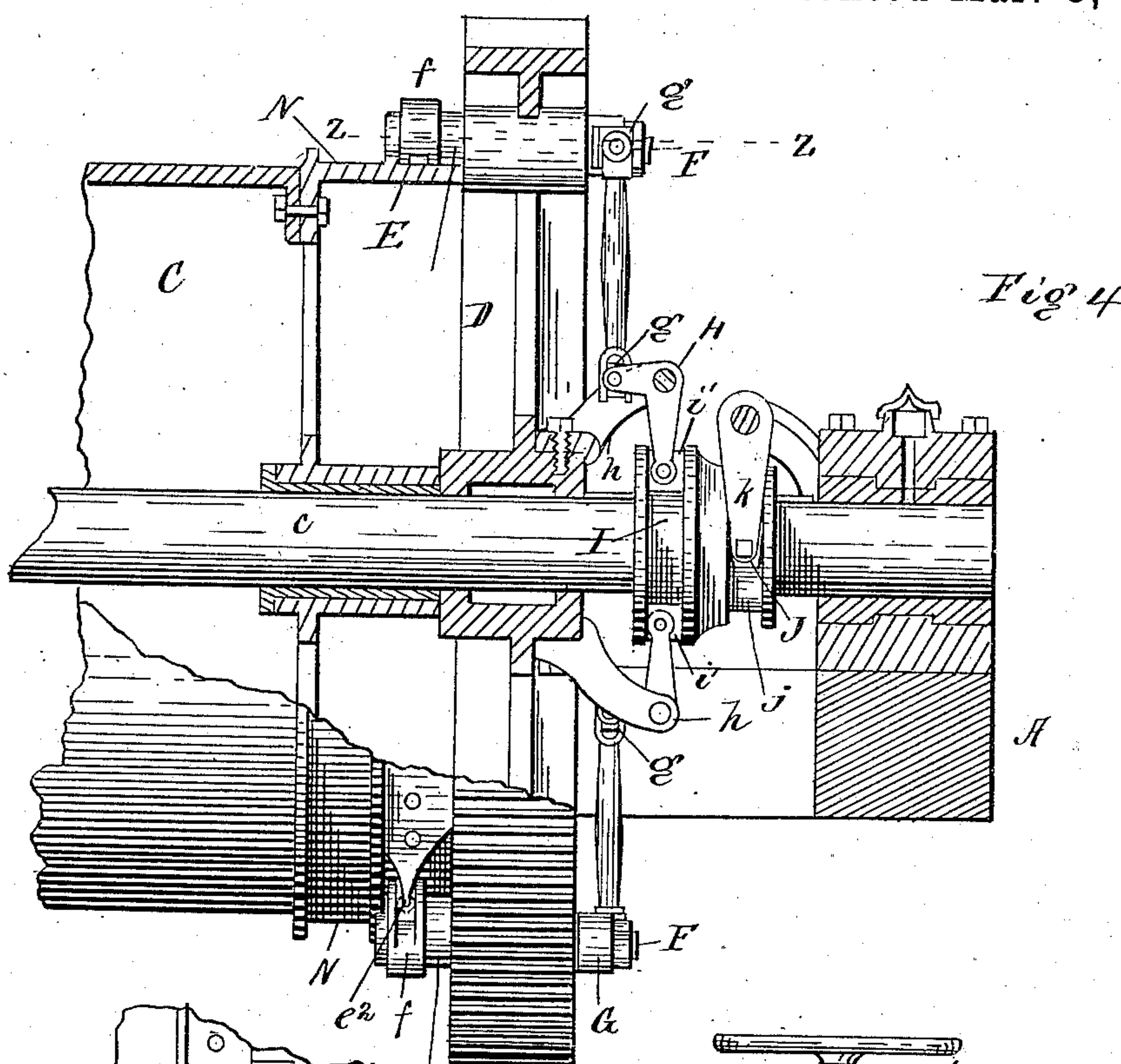
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UNITED STATES PATENT OFFICE.

DE WITT CLINTON PRESCOTT, OF MARINETTE, WISCONSIN, ASSIGNOR TO THE MARINETTE IRON WORKS COMPANY, OF SAME PLACE, AND MAXIMILIAN JACKER, OF FLORENCE, WISCONSIN.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 313,104, dated March 3, 1885.

Application filed July 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, DE WITT C. PRESCOTT, a citizen of the United States, and residing at Marinette, in the county of Marinette and State of Wisconsin, have invented certain new and useful Improvements in Hoisting Apparatus, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a sectional view on the line xx of Fig. 1, looking toward the main drive-wheel. Fig. 3 is a sectional view on the line yy of Fig. 1, looking toward the main drive-wheel. Fig. 4 is a vertical central sectional view, partly in elevation. Fig. 5 is a sectional view on the line zz of Fig. 4; and Figs. 6, 7, and 8 are detail views.

My invention relates to hoisting-machines 20 which are intended for heavy work, and especially such as are used at mines for hoisting ore, though not intended to be limited to machines for this special purpose; and it consists in an improvement upon the machine patented to Maximilian Jacker, July 1, 1884, No. 301,125, the novel features of which will be hereinafter described, and then specifically pointed out in the claims.

30 In the above-mentioned machine a main frame, A, is provided with suitable boxes to receive the main driving-shaft B, which is suitably connected with the engine or other motor. A pinion, b' , is keyed on the main shaft at a suitable point to engage with the main wheel D of the drum. The drum C is mounted 35 loosely on a shaft, c , running in suitable boxes, a , on the frame A, this shaft being parallel with the main shaft. On this shaft c the main wheel D is keyed or otherwise secured. A friction-wheel, E, is made fast to one end of the drum in any suitable manner, but of course is loose on the drum-shaft. This friction-wheel is surrounded by a suitable friction-band, e , the friction-wheel and its band being 40 next to the driving-wheel. A short shaft, F, (which may be called the "lever-shaft,") is mounted in the main wheel, through which it extends from side to side. This shaft is in-

closed in a sleeve or thimble, F' , which is secured in the wheel, and projects a little beyond 50 the inner face thereof, as shown in Figs. 4 and 5 of the drawings. On the inside of the main wheel one end of the friction-band is fastened directly to the inner end of the sleeve F' by means of a collar, e' , passing around it, as 55 shown in Figs. 4 and 5 of the drawings. On the inner end of the lever-shaft is a short arm, f , fastened to it in any suitable way. The other end of the friction-band is secured to the outer end of this short arm f in any suitable way. 60 In the drawings it is shown as fastened to the arm by passing the end e'' through the arm, and securing it in position by nuts e''' on each side thereof, which not only fasten the band to the arm, but also afford means for adjusting its 65 length within certain limits.

It is obvious that the oscillation of the lever-shaft will vibrate the short arm on the inner end thereof, which movement will tighten or 70 loosen the friction-band on the wheel, and thereby connect or disconnect the drum and its drive-wheel.

My improvement relates, especially, to an improved mechanism for oscillating this lever, whereby I provide a simplified and efficient de- 75 vice for the purpose, which is easy to construct, its parts being simple in construction and readily put together or taken apart for repairs, and which acts powerfully and positively upon the friction-band to tighten it. To this end I 80 attach to the outer end of the lever-shaft F in any suitable manner a crank-arm, G, which is connected by a suitable pitman to a bell-crank lever, H, mounted on the drive-wheel D.

Fig. 6 shows an end view of the lever-shaft, 85 inner arm, and crank-arm G. In the drawings this bell-crank lever is shown as pivoted on an arm, h , bolted to the hub, and the pitman is shown as pivoted at each end to a block, g , which is in turn pivoted by gudgeons at 90 right angles to the pivot-bolt of the pitman, between the forked ends of the crank-arm and bell-crank. The other end of the bell-crank lever enters a groove, i , in a sleeve, I, splined and capable of longitudinal movement on the 95 drum-shaft C, so as to operate the bell-crank

lever, pitman, and crank-arm to oscillate the lever-shaft and tighten the friction-band.

In the above-described construction only one friction-band is employed; but I prefer the construction shown, wherein two friction-bands and operating mechanism, as above described, are employed, the machine being better balanced in its parts and more effective. It is evident, moreover, that more than two may be used, if deemed advantageous.

In order to prevent lost motion in the operation of the device, I prefer to pivot the ends of the bell-crank lever which enter the groove *i* to blocks *i'*, which fit the said groove, and cause the device to operate smoothly and immediately.

In order to operate the sleeve I on the shaft C, I provide in the said sleeve a second groove, *j*, in which sets a half collar or yoke, J, (shown in detail in Fig. 8,) which yoke is pivoted to two crank-arms, *k k*, secured on a rock-shaft mounted in suitable bearings on frame A, and provided with suitable means for rocking the same. In the construction shown the rock-shaft is operated by means of a crank-arm, *k'*, secured thereto, and having pivoted in its outer forked end a nut, *l*, through which is passed a screw-threaded shaft, L, provided at its upper end with a hand-wheel, L', and swiveled at its lower end in a hinged bracket, M, as shown. It is evident that the rotation of shaft L will raise or lower the end of crank-arm *k'*, and thereby oscillate the rock-shaft K, and, by means of the intervening connecting mechanism, tighten or loosen the friction-band. The hoisting-drum is also provided with an ordinary brake-wheel, N, arranged just inside of the hoisting friction-wheel, to which is applied a friction brake-band, O, operated in any usual way. In the drawings I have shown a shaft, *o*, provided with a hand-wheel, *o'*, which has a threaded section arranged to operate in a well-known way to draw together or separate the ends of the brake-band, for the purpose of applying it to the brake-wheel or releasing it therefrom in the usual way. The brake hand-wheel *o'* is arranged near the hand-wheel L', so as to be readily reached by the attendant, and when the hoisting is completed a few turns of the hand-wheel L' will ease the friction-band sufficiently to permit it to slip, and the drum will stop, when the attendant may at once apply the brake-band to hold the drum firmly in place, and then the driving-friction may be further released at will.

It will be seen that my mechanism for operating the lever-shaft is all open for constant inspection, and any part thereof can be reached without removing it or other parts; and, further, that it is noiseless, no gear-wheels being employed, on which account, also, there is no lost motion owing to backlash.

I do not wish to be understood as confining myself to all the details of construction, as above described, as they may be modified in many particulars without departing from the principal features of my invention.

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

1. In a machine of the character described, the combination, with the lever-shaft and the devices operated thereby, of a pitman connected with a bell-crank lever engaging an adjustable sleeve on the drum-shaft, substantially as and for the purpose specified.

2. In a hoisting-machine, a drive-wheel fixed to the drum-shaft, a drum loose on said shaft, a friction-wheel attached to said drum, and a friction-band thereon attached to and carried by the drive-wheel, in combination with a lever-shaft mounted in the drive-wheel, and having an inner arm to tighten and loosen the friction-band, and an outer arm connected by a pitman with a bell-crank lever mounted on the drive-wheel, and engaging an adjustable sleeve on the drum-shaft, substantially as and for the purpose set forth.

3. In a machine of the character described, the combination, with the lever-shafts and the devices operated thereby, of pitman-rods connected with bell-crank levers on the drive-wheel engaging a sleeve splined on the drum-shaft and grooved to receive a yoke connected with the arms of a rock-shaft for adjusting the said sleeve on the drum-shaft, substantially as and for the purpose specified.

4. The combination, in a hoisting-machine, of the rock-shaft K, having the arm *k'*, carrying the nut *l*, and the threaded shaft L, having hand-wheel L', and swiveled in the hinged bracket M, substantially as and for the purpose set forth.

5. In a hoisting-machine, the combination of a drive-wheel fixed to the drum-shaft, a drum loose on said shaft, a friction-wheel attached to the drum, a friction-band thereon attached to and carried by the drive-wheel, and lever-shafts mounted in the drive-wheel, and having each an inner arm to tighten and loosen the friction-band, and an outer arm connected by a pitman with one arm of a bell-crank lever the other arm of which enters a groove in a sleeve splined on the drum-shaft, and having another groove to receive a yoke pivoted to the crank-arms of a rock-shaft, having another arm carrying a nut traveling on a screw-shaft provided with a hand-wheel and swiveled in a hinged bracket, substantially as and for the purpose specified.

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Witnesses:

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