

No. 776,489.

PATENTED DEC. 6, 1904.

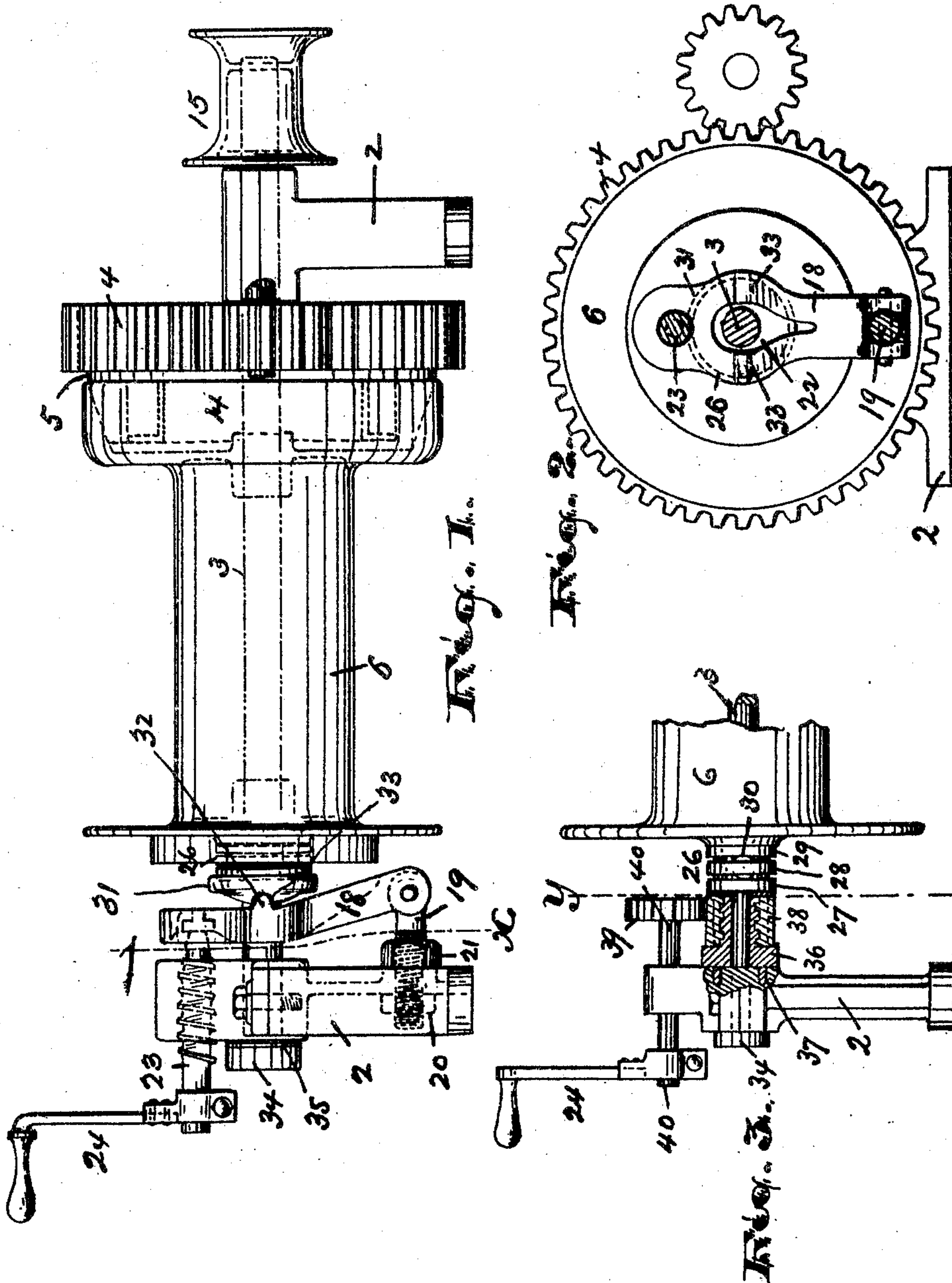
R. BOWLES & C. CAMPBELL.

HOISTING ENGINE.

APPLICATION FILED OCT. 15, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

Henry Krug

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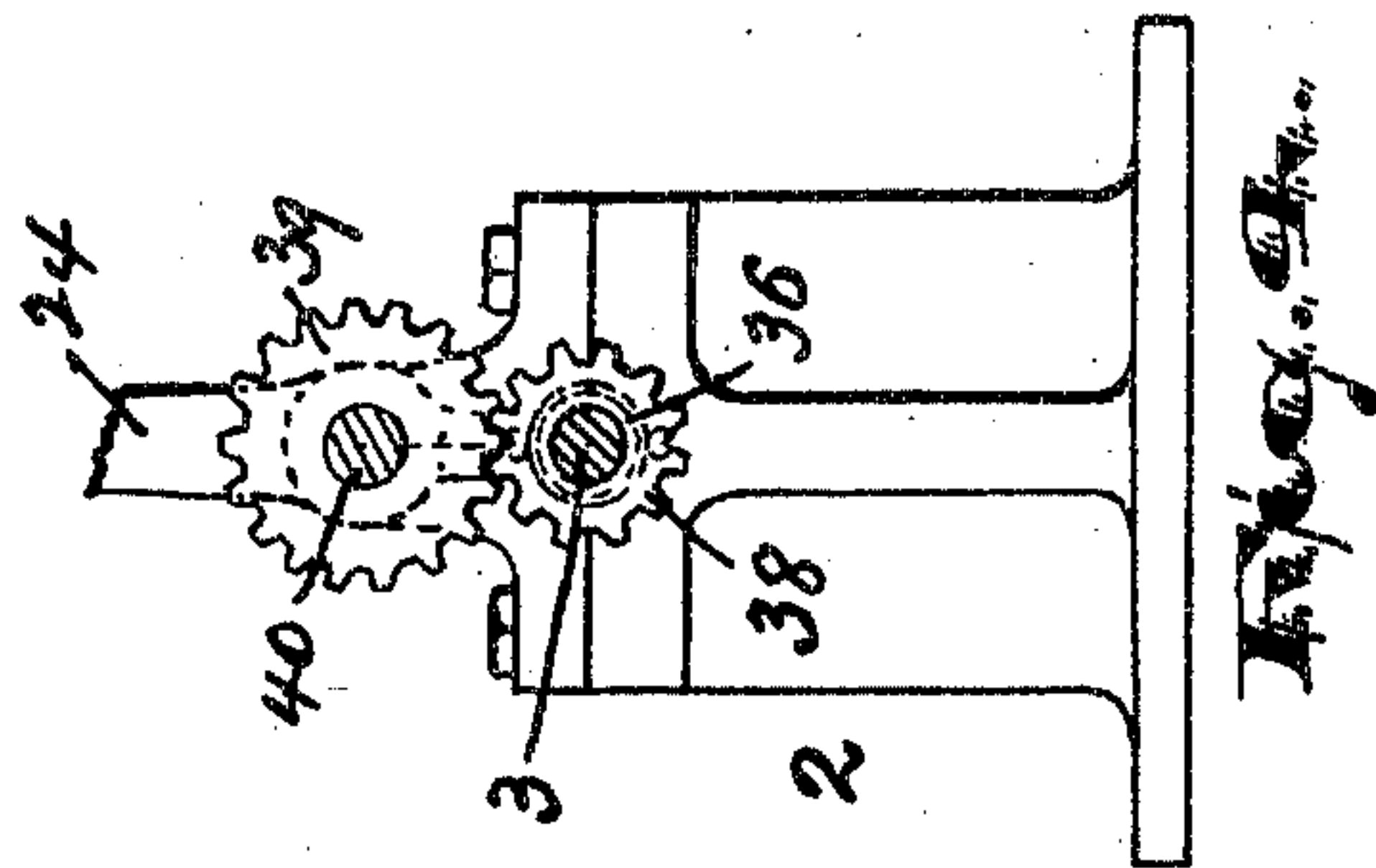
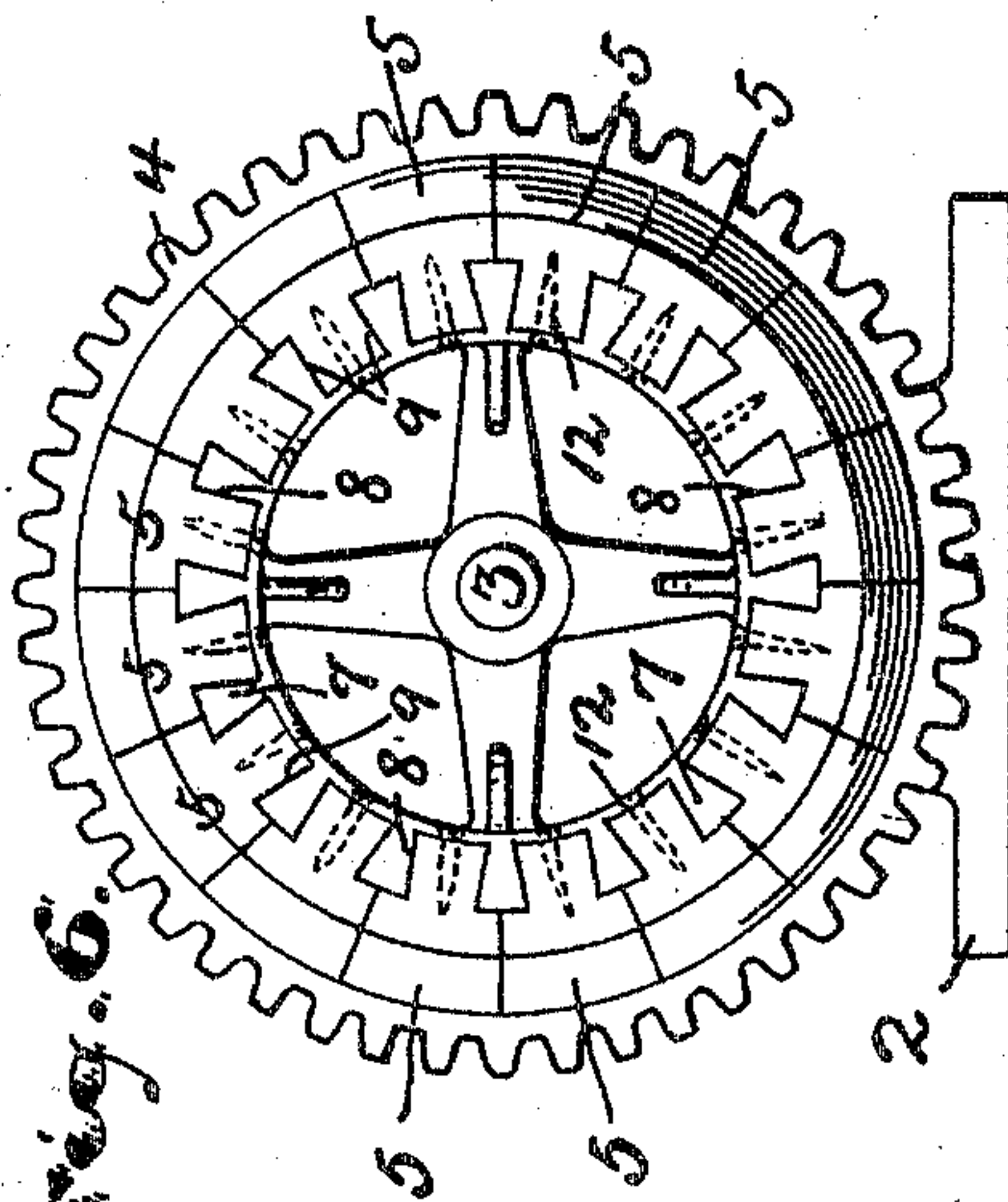
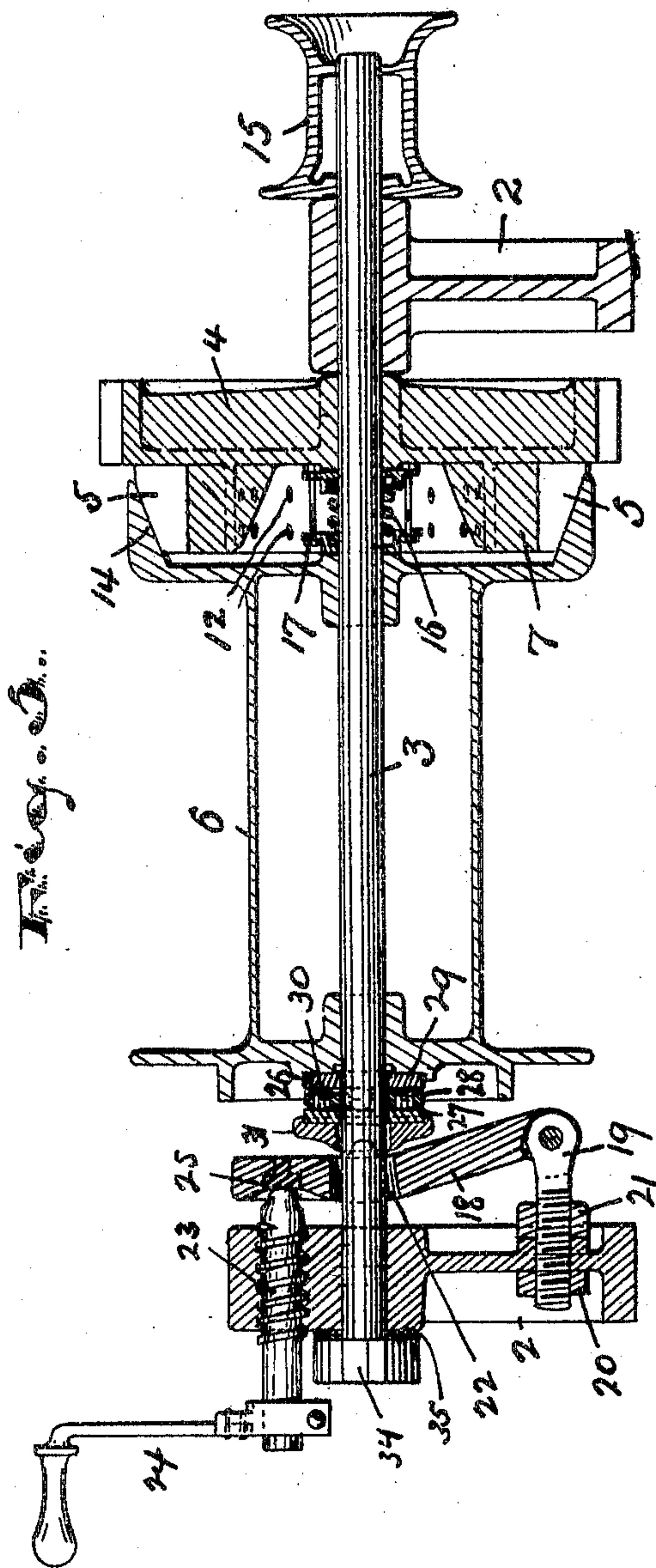
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UNITED STATES PATENT OFFICE.

RICHARD BOWLES AND COLIN CAMPBELL, OF NEWARK, NEW JERSEY.

HOISTING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 776,489, dated December 6, 1904.

Application filed October 15, 1902. Serial No. 127,328. (No model.)

To all whom it may concern:

Be it known that we, RICHARD BOWLES and COLIN CAMPBELL, citizens of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented and produced new and original Improvements in Hoisting-Engines; and we 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 appertains to make and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

The objects of this invention are to secure in a hoisting-engine having a friction-drum improved means for forcing the same against its friction-surface; to reduce the friction of the drum with said forcing means, and thus prevent the heating and welding of parts; to obtain an improved friction-surface to be engaged by the drum, and to secure other advantages and results, some of which may be hereinafter referred to in connection with the description of the working parts.

The invention consists in the improved friction-drum for hoisting-engines and means for controlling the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like numerals of reference indicate corresponding parts in each of the several figures, Figure 1 is a side elevation of a friction-drum of a hoisting-engine having our improvements applied thereto; and Fig. 2 is a sectional view of the same as on line *x*, Fig. 1. Fig. 3 is a side elevation, partly in section, of a modified form of forcing means for causing engagement of the drum; and Fig. 4 is an end view of the same, taken on line *y*, Fig. 3. Fig. 5 is a central longitudinal section of the friction-drum and related parts as shown in Fig. 1. Fig. 6 is an end view of the friction-surface against which the drum is forced, and Fig. 7 is a perspective view of one of the wooden blocks composing said surface.

In said drawings, 2 2 indicate the side portions of the bed-frame in which the drum-shaft 3 has its bearings. Just within one side

portion 2 of the bed-frame said drum-shaft carries a gear-wheel 4, fast thereon, and on the inner side of said gear-wheel are cast means for receiving wooden blocks 5 to form a friction-surface against which the drum 6, normally loose on the said shaft, may be forced to receive motion from the shaft. Said block-holding means comprise a thick annular flange 7, projecting from the side of the gear 4 and being axially coincident therewith. In the outer peripheral surface of said flange 7 recesses 8 are formed, with undercut walls 9 and being open at the end of the flange, as shown in Fig. 6. In these recesses are then seated the wooden blocks 5, each of which has a dovetail stem or foot 11, adapted to be driven into a recess 8 through its open end. A screw 12 is then passed up through the bottom of the recess into the block. The exposed portions 13 of the blocks are each segmental in shape and adapted to form a continuous ring, their outer peripheral surfaces being beveled toward the drum 6 to receive the correspondingly-beveled flange 14 thereof, as is usual. A winch 15 may be carried on the outer end of the drum-shaft, as is common, and a spiral spring 16 and limiting-collar 17, well-known in the art, be employed to normally throw the drum 6 away from the friction-surface. At the other end of the drum 6, adjacent to the opposite portion 2 of the bed-frame, is stationed means next to be described for forcing the drum against the friction-blocks. Said means comprise an upright lever 18 at the inner side of the frame 2 and fulcrumed at its lower end upon an eyebolt 19, projecting from said frame and which can be adjusted in or out by nuts 20 21 on opposite sides thereof. Said lever 18 is apertured intermediate of its ends, as at 22, to surround the drum-shaft without touching the same, and at its upper end the said lever is adapted to be engaged by a screw 23, working horizontally through the frame portion 2. This screw 23 has at the outer side of the frame 2 a crank-handle 24, set or fixed thereon for turning, and where the inner end of the screw engages the lever 18 the latter is preferably provided with a hardened contact piece or seat 25. The end of the drum next said lever is provided with a

roller thrust-bearing 26 of common construction and comprising three collars 27 28 29, loosely surrounding the drum-shaft, the middle one carrying rollers 30, engaging the other
 5 two. Outside said thrust-bearing 26 is an annular cap 31, also loose on the shaft 3 and adapted to be engaged by the lever 18. Preferably this engagement is by rocking lugs 32, projecting from the lever at horizontally op-
 10 posite sides of the shaft-aperture and adapted to enter seats 33 in the cap 31. This engagement is, furthermore, located vertically above the fulcrum 19 of the lever to secure a move-
 15 ment of the cap substantially parallel to the shaft. The outer collars 27 28 of the thrust-bearing are preferably seated in recesses therefor in the cap 31 and the drum end, respectively, and on the end of the drum-shaft out-
 20 side the side portion 2 of the bed-frame is screwed a collar 34, as common, with loose washers 35 between itself and the frame.

Under some conditions we may substitute for the lever 18, screw 23, and cap 31 the pressure means shown in Figs. 3 and 4, where 36
 25 indicates an exteriorly-threaded sleeve loosely surrounding the drum-shaft 3 between the side portion 2 of the bed-frame and the thrust-bearing 26 of the drum and being held against turning by pins 37 entering the said side por-
 30 tion 2 or other suitable means. Upon the sleeve is a nut 38, adapted at its end next the thrust-bearing to press against the same as it moves to run off the sleeve. At its periphery
 35 said nut 38 forms a gear-wheel or pinion adapted to engage a driving gear-wheel 39 on a shaft 40, journaled in the side portion 2 of the bed-frame of the engine and having at its op-
 40 posite outer end a crank 24 for turning. Thus by turning the crank 24 to oscillate the gear 39 the nut 38 may be forced toward the drum or moved away therefrom to correspondingly
 tighten or loosen said drum on the drum-shaft.

Other variations of the means shown for forcing the drum onto its friction-surface may
 45 be employed without departing from the spirit and scope of the invention as set forth in the claims so long as they permit the drum-shaft to be left entire and unperforated, and we do not wish to be limited by the detail con-
 50 struction shown except as the state of the art may require.

Having thus described the invention, what we claim as new is—

1. In a hoisting-engine, the combination
 55 with a rotary shaft, of a drum normally loose on said shaft and a friction member adapted to rotate with the shaft, one of said parts being slidable to engage and disengage the other, a lever disposed transversely of the shaft ad-
 60 jacent to said slidable part and lying intermediate of its ends contiguous to the shaft but free therefrom, an annular cap loose upon the shaft between said lever and slidable part, and means for swinging said lever toward said
 65 slidable part.

2. In a hoisting-engine, the combination with a rotary shaft, of a drum normally loose on said shaft and a friction member adapted to rotate with the shaft, one of said parts being slidable to engage and disengage the other,
 70 a lever disposed transversely of the shaft adjacent to the outer end of said slidable part, and being apertured to loosely receive the shaft, antifriction-bearings between said lever and outer end of the sliding part, and
 75 means for swinging said lever toward said slidable part.

3. In a hoisting-engine, the combination with a rotary shaft, a friction member fast on said shaft, and means for continuously rotat-
 80 ing said shaft and friction member, of a friction-drum rotatably and slidably loose on the said rotary shaft, an annular cap loose upon said shaft adjacent to the drum and having between itself and said drum antifriction-bear-
 85 ings, a stationary lever disposed transversely of the shaft, fulcrumed at one end and adapted to receive pressure at the other, said lever lying intermediate of its ends adjacent to the shaft but free therefrom and in engagement
 90 with said cap, and means for exerting pressure upon the free end of the lever.

4. In a hoisting-engine, the combination with a rotary shaft, a friction member fast on said shaft, and means for continuously rotat-
 95 ing said shaft and friction member, of a friction-drum rotatably and slidably loose on the said rotary shaft, a stationary lever disposed transversely of the shaft, fulcrumed at one end and adapted to receive pressure at the
 100 other end, said lever lying intermediate of its ends adjacent to the shaft but free therefrom and having next the drum and in horizontal plane on opposite sides of the rotary shaft, rocking lugs 32, an annular cap between said
 105 drum and lever having seats for said lugs, antifriction-bearings between said cap and drum, and means for pressing against the free end of the said lever.

5. In a hoisting-engine, the combination
 110 with a rotary shaft, side frames in which said shaft is journaled at or near its ends, a drum and a friction member on said shaft between said frames, the former being loose on the shaft and the latter fast, a lever between said
 115 drum and its adjacent side frame, disposed transversely of the shaft and lying intermediate of its ends adjacent to the shaft but free therefrom and adapted to press against the drum, a fulcrum upon the side frame for
 120 the lower end of said lever, said fulcrum being adjustable toward and away from said frame, and means for exerting pressure upon the upper end of the said lever.

6. In a hoisting-engine, the combination of
 125 a pair of side frames, a rotary shaft journaled in said frames, a friction member fast on said shaft and a drum loose on said shaft, both between said side frames, an annular cap loose upon the shaft adjacent to the drum
 130

and having antifriction - bearings between itself and the drum, a lever between said drum and the adjacent side frame, disposed transversely of the shaft and apertured to loosely receive the same and engage the said annular cap, a fulcrum upon the last-mentioned side frame for the lower end of the lever and being in vertical line with the engagement of said lever with the annular cap, means for adjusting said fulcrum, and means for exerting pressure upon the upper end of the lever.

7. In a hoisting-engine, the combination of opposite parallel side frames, a rotary shaft journaled in said frames and having fixed upon its ends outside the same a spool, and a nut or collar, respectively, a friction member and a drum upon said shaft between the side frames, the former being fast on the shaft and the latter loose, an annular cap loose upon the shaft adjacent to the end of said drum and having between itself and the drum antifriction-bearings, a lever between said cap and the adjacent side frame apertured to loosely receive the shaft and engage said cap, a fulcrum upon the side frame for the lower end of said lever and being adjustable in a direc-

tion parallel to the shaft, and a screw for exerting pressure upon the upper end of said lever.

8. In a hoisting-engine, the combination of side frames, a rotary shaft journaled at its ends in said frames, a friction member and a drum mounted on said shaft between said frames, the former being fast and the latter slidably and rotatably loose, an upright lever between said drum and its adjacent side frame, adapted to exert pressure on the drum, a fulcrum on the side frame for the lower end of said lever, and a screw working in a threaded bearing in the side frame and adapted to abut at its inner end against a seat on the free upper end of the lever, whereby pressure may be exerted on said lever without impeding free action of the same.

In testimony that we claim the foregoing we have hereunto set our hands this 4th day of October, 1902.

RICHARD BOWLES.
COLIN CAMPBELL.

Witnesses:

CHARLES H. PELL,
C. B. PITNEY.