

No. 707,542.

Patented Aug. 26, 1902.

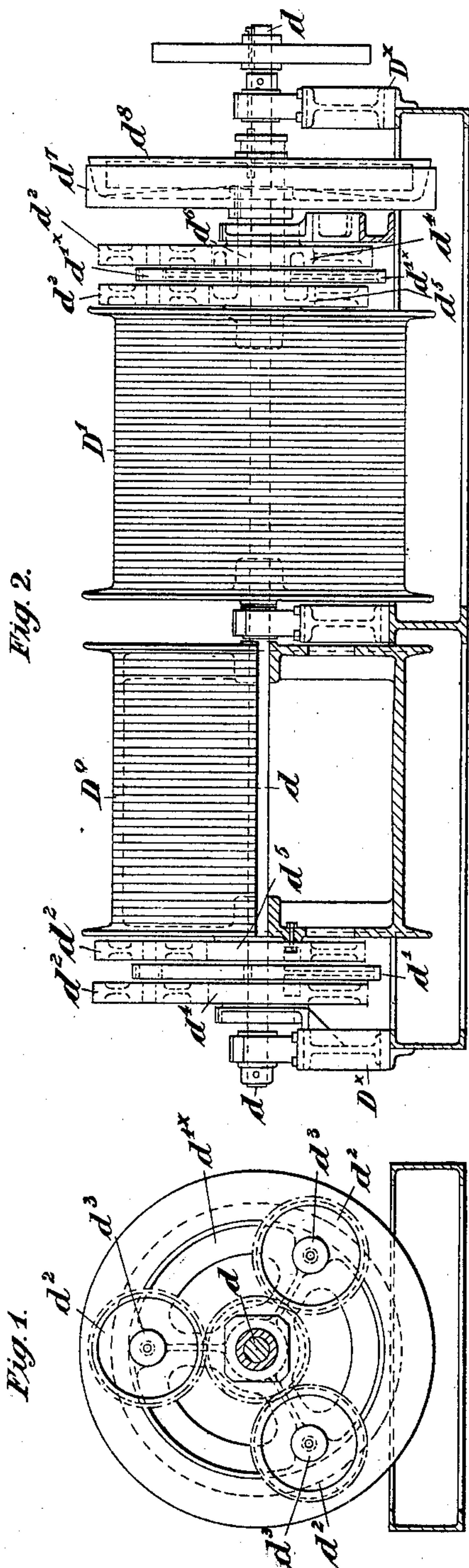
H. A. L. BARRY.

MEANS FOR RAISING OR LOWERING MATERIALS.

(Application filed Nov. 30, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

C. R. Wood.

N. S. B. Jones.

Inventor:

Herbert A. L. Barry.

Per *H. W. Waringham*.

Attorney.

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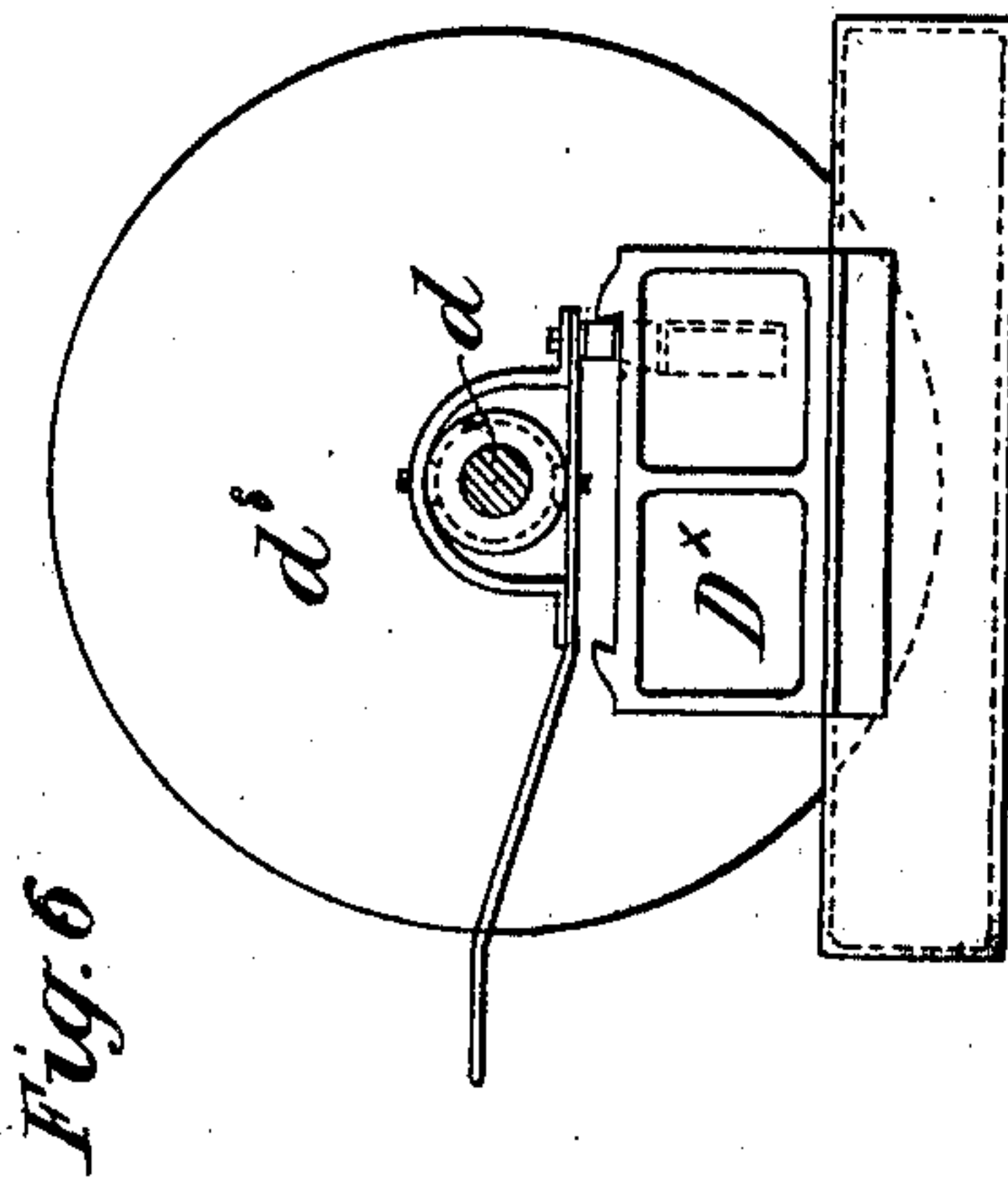
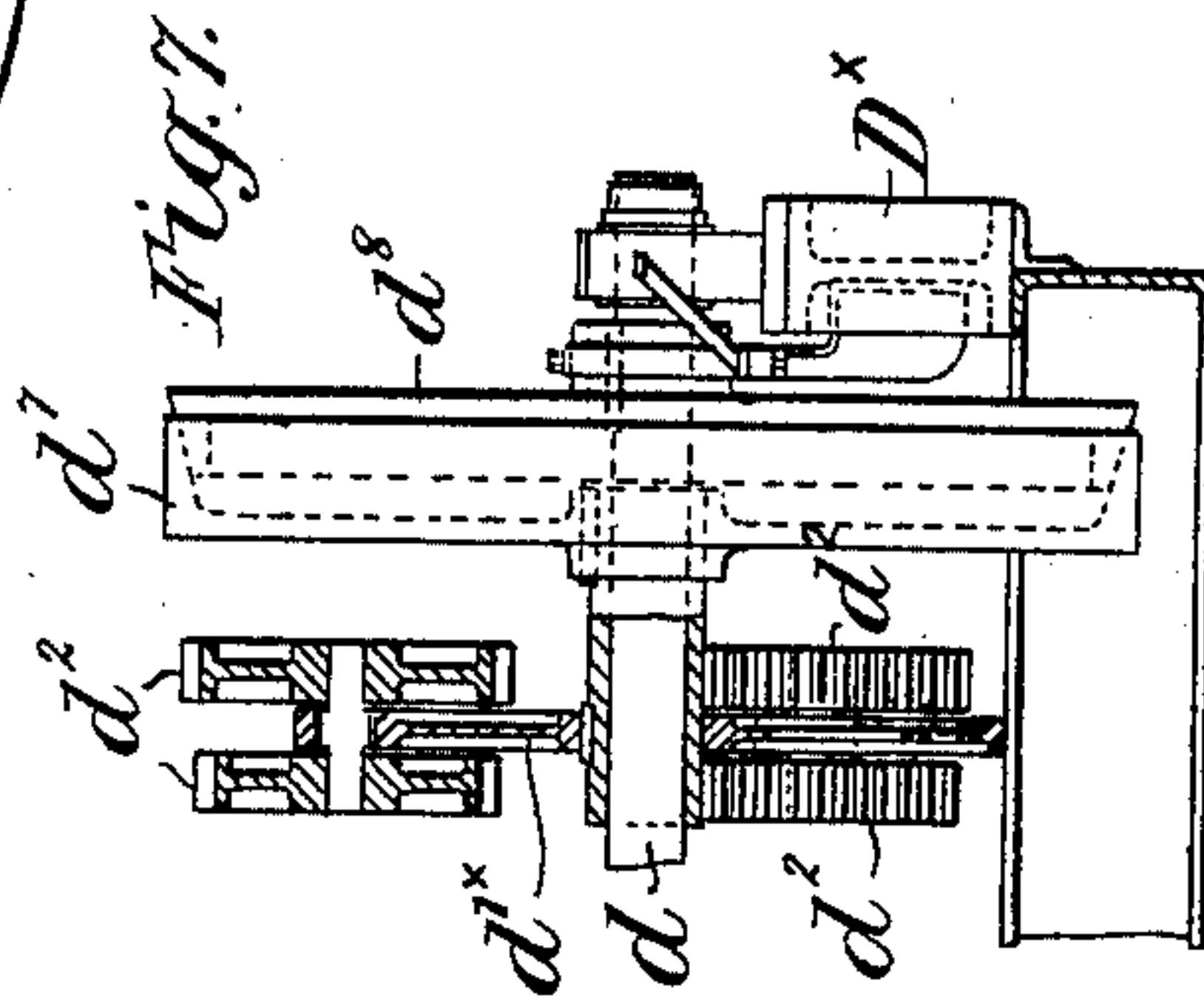
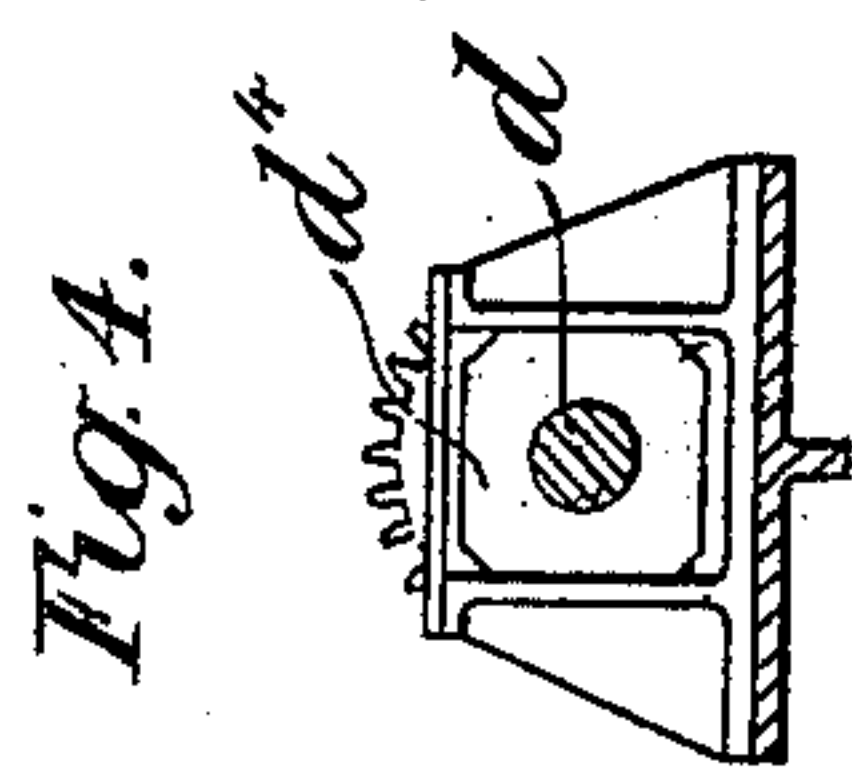
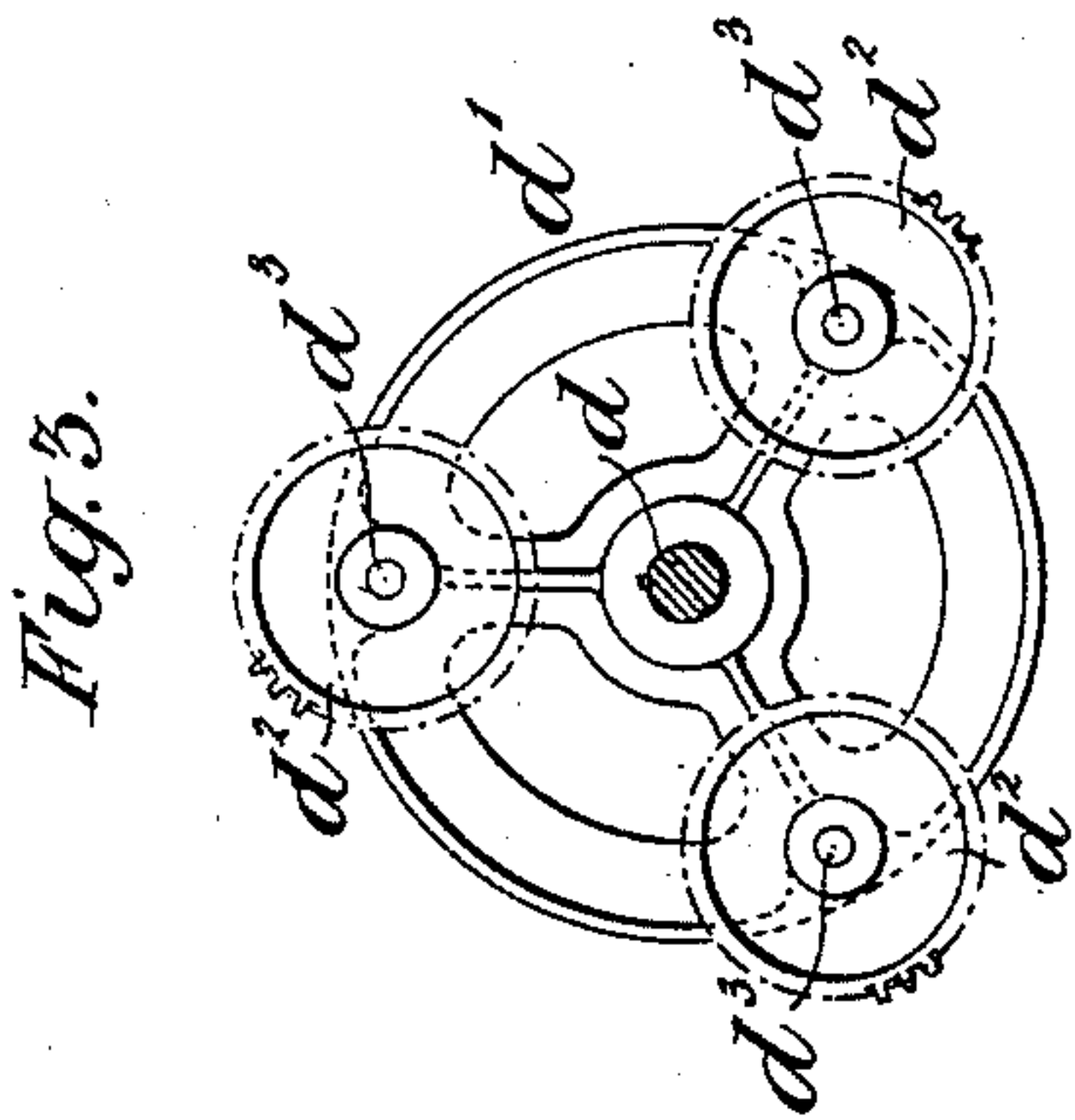
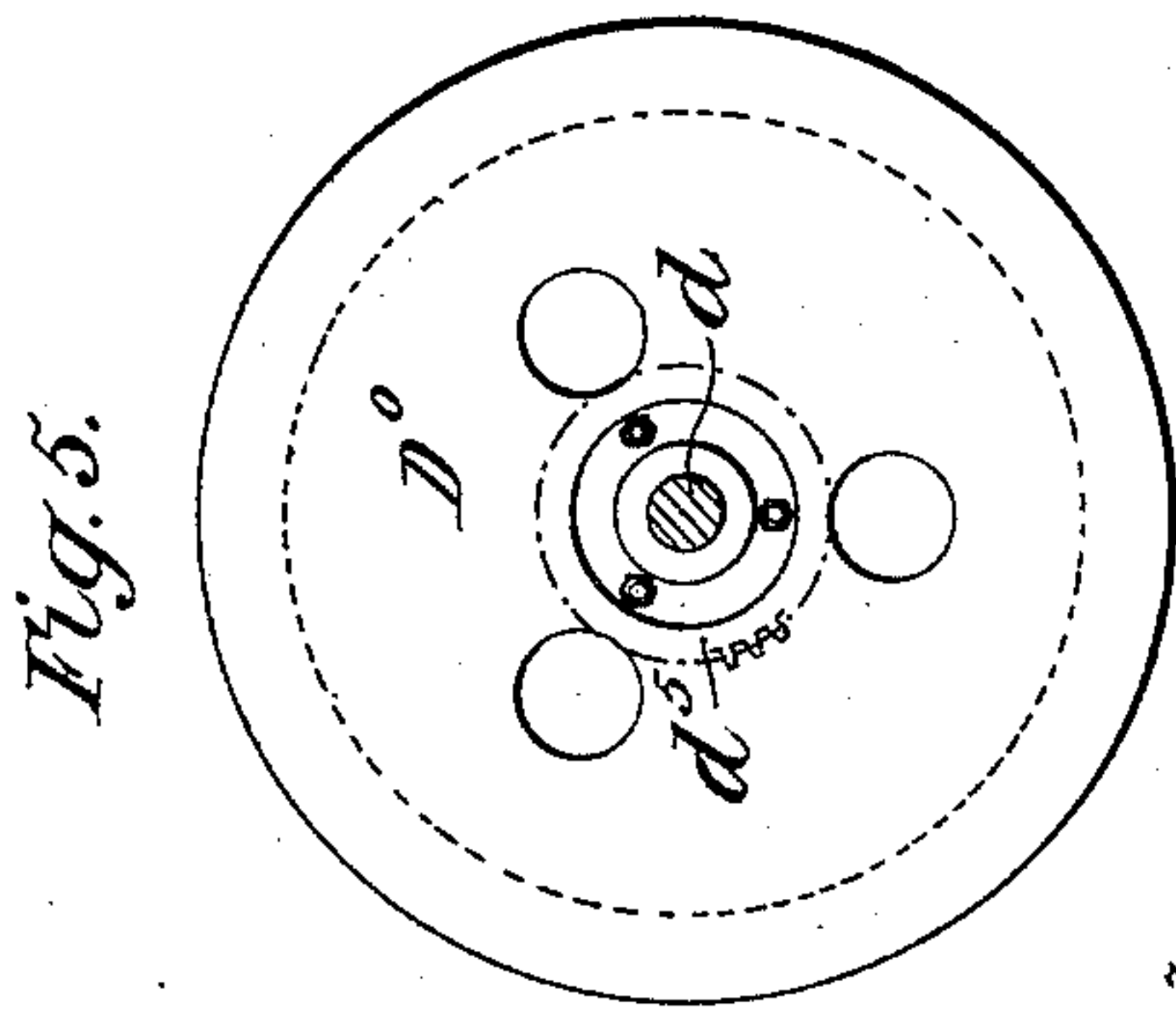
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(Application filed Nov. 30, 1900.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

W. F. Cain.

C. J. Ashdown.

INVENTOR:

Herbert Alfred Lucas Barry,  
per H. M. Hardingham,  
Attorney.



# UNITED STATES PATENT OFFICE.

HERBERT ALFRED LUCAS BARRY, OF WESTMINSTER, ENGLAND.

## MEANS FOR RAISING OR LOWERING MATERIALS.

SPECIFICATION forming part of Letters Patent No. 707,542, dated August 26, 1902.

Original application filed May 7, 1900, Serial No. 15,787. Divided and this application filed November 30, 1900. Serial No. 38,284. (No model.)

*To all whom it may concern:*

Be it known that I, HERBERT ALFRED LUCAS BARRY, a subject of the Queen of Great Britain and Ireland, residing at 15 Great George street, in the city of Westminster, England, have invented new and useful Improved Means Applicable for Use in Raising or Lowering Materials, (in respect whereof I have applied for Letters Patent in Great Britain, to bear date October 14, 1899, No. 20,606,) of which the following is a specification.

This invention—a division of my application for Letters Patent filed May 7, 1900, Serial No. 15,787—relates to means applicable for use in raising and lowering materials of all kinds; and it consists of an improved construction of winch capable of being driven in either direction at will, but at the same time incapable of self-action owing to the part driven being under strain.

The improved winch comprises a form of differential gear whereby the action of the load on the driven part cannot effect the rotation of the latter, and it will be obvious that the winch may be applied to any use where it is required to prevent the load running down by its own weight during the temporary disconnection of the source of power.

In the accompanying drawings, Figure 1 is an end elevation, and Fig. 2 a side elevation, of a winch constructed according to my improved method and adapted for use in working a transporter of the kind described in the specification to my aforesaid application of concurrent date, Serial No. 15,787. Fig. 3 is a view of the carrier, on each side of which are mounted epicyclic toothed pinions. Fig. 4 is a view showing the method of mounting the stationary gear-wheel which gears with the toothed pinions on the one side of the carrier, Fig. 5 being an end view of a winding-drum, showing the method of attaching the stationary gear-wheel which meshes with the pinions on the other side of the carrier. Figs. 6 and 7 are views illustrating means for actuating the friction-clutch, the views being, respectively, an end and a side view.

In applying my improved construction of winch to a transporter of the kind above referred to and wherein the carriage and load

are operated by means of two ropes I arrange the parts of the winch in duplicate, so that each rope may be dealt with at will.

Upon a shaft  $d$ , mounted in a suitable frame  $D^*$  apart from the beam or track, is keyed a disk or carrier  $d'$ . This carrier has mounted upon each face one or more epicyclic toothed pinions  $d^2$ , those upon the one side being immediately behind those upon the other. Each pair of pinions thus arranged is keyed on an axle  $d^3$ , which rotates in bearings in the carrier  $d'$ . Concentric with the shaft and in gear with one set of epicyclic pinions is a stationary toothed wheel  $d^4$ , and upon the drum  $D^0$ , which, it is assumed in the present instance, receives the rope pertaining to the load, is secured the other concentric toothed wheel  $d^5$ . The stationary toothed wheel  $d^4$  may be secured to the frame. The shaft  $d$  revolves freely within the drum  $D^0$  and the concentric wheels  $d^4$   $d^5$ . The drum  $D^0$ , whereon the hauling-rope is wound, is operated by a duplicate arrangement of the gear just described; but the carrier  $d'^x$  is mounted upon a sleeve  $d^6$ , which carries one part  $d^7$  of a friction-clutch, the other part  $d^8$  being movable on the shaft by means of a feather and feather-way. The clutch may be operated by any suitable means, such as a lever, as shown in Figs. 6 and 7. The ropes are wound in opposite directions upon their respective drums  $D^0$  and  $D'$ . The relative proportions of the epicyclic pinions  $d^2$  and the concentric toothed wheels  $d^4$  and  $d^5$  may be varied as occasion may require.

Assuming the part  $d^8$  of the clutch to be held out of engagement with the part  $d^7$ , the engine (not shown) is started. The carrier  $d'$  on the shaft thereupon revolves and effects the rotation of the drum  $D^0$ , winding in the rope pertaining thereto and raising the load, the rope pertaining to the drum  $D'$  meanwhile remaining stationary. Having raised the load to the required level, the part  $d^8$  of the clutch is brought into engagement with the part  $d^7$ , thus operating the carrier  $d'^x$  and drum  $D'$ . Both drums  $D^0$  and  $D'$  now revolve in the same direction, and owing to the ropes being oppositely wound thereon and the drums being of the same diameter the rope pertaining to the load is wound in upon



the drum  $D^0$ , while the hauling-rope is paid out from the drum  $D'$  at an equal pace. By these means the load may be caused to travel in the direction of a beam or track while the load remains at the elevation to which it was raised. Having brought the load to the required point, the engine is stopped, the part  $d^8$  of the clutch disengaged, and the engine restarted in the reverse direction. The drum  $D'$  is again rendered stationary by disconnecting the clutch and the rope thereon inactive owing to the gearing holding the drum against rotation. The other rope is, however, paid out and the load lowered. The engine having been again reversed and the load discharged, the rope pertaining to the drum  $D^0$  is wound in to the required extent, when the engine is stopped, the parts  $d^7$  and  $d^8$  of the clutch engaged, and the engine restarted in the former direction. This has the effect of paying out the rope from the drum  $D^0$  and of winding in the rope upon the drum  $D'$ , the carriage and bucket retraversing the track to the loading-point. The clutch having been disengaged, the drum  $D'$  is locked or held against rotation, as before explained, while the drum  $D^0$  pays out its rope, the carriage stopping in its travel and the bucket descending to the starting-point.

It will be understood that the operations of picking up, transporting, lowering, and discharging the load may be effected at any desired point, these operations being effected by means of the lever actuating the clutch and the reversing-lever of the engine.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The improved winch constructed or operating substantially as herein described and comprising a shaft, two drums arranged axially but loosely thereon, two carriers, the one

fast and the other loose on the said shaft, one or pairs of epicyclic toothed pinions mounted on each carrier, two stationary toothed wheels and a toothed wheel secured to each winding-drum; one wheel of each pair of toothed pinions meshing with one of the stationary toothed wheels and the other wheel of each pair of toothed pinions meshing with one of the toothed wheels respectively secured to the winding-drums.

2. The improved winch constructed or operating substantially as herein described and comprising a shaft, a drum on said shaft, a carrier keyed to a sleeve in which the shaft rotates, two sets of epicyclic toothed pinions mounted on said carrier, a stationary toothed wheel wherewith one set of toothed pinions meshes, a toothed wheel secured to the winding-drum wherewith the other set of toothed pinions meshes, a friction-clutch whereof one part is keyed on the sleeve while the other or movable part is carried by the shaft and means for operating the said clutch.

3. In apparatus for raising and lowering materials, the combination with the framing of the drums  $D^0$ ,  $D'$ , carriers  $d'$ ,  $d'^x$ , epicyclic pinions  $d^2$ ,  $d^2$  on said carriers, central toothed wheels  $d^4$ ,  $d^5$  respectively carried by the framing and the drums and meshing with the epicyclic pinions mounted on each side of the respective carriers, sleeve  $d^6$ , clutch  $d^7$   $d^8$  and means for operating the clutch, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT ALFRED LUCAS BARRY.

Witnesses:

WALTER DOEL WILLIAMS,  
HENRY PARKHURST.