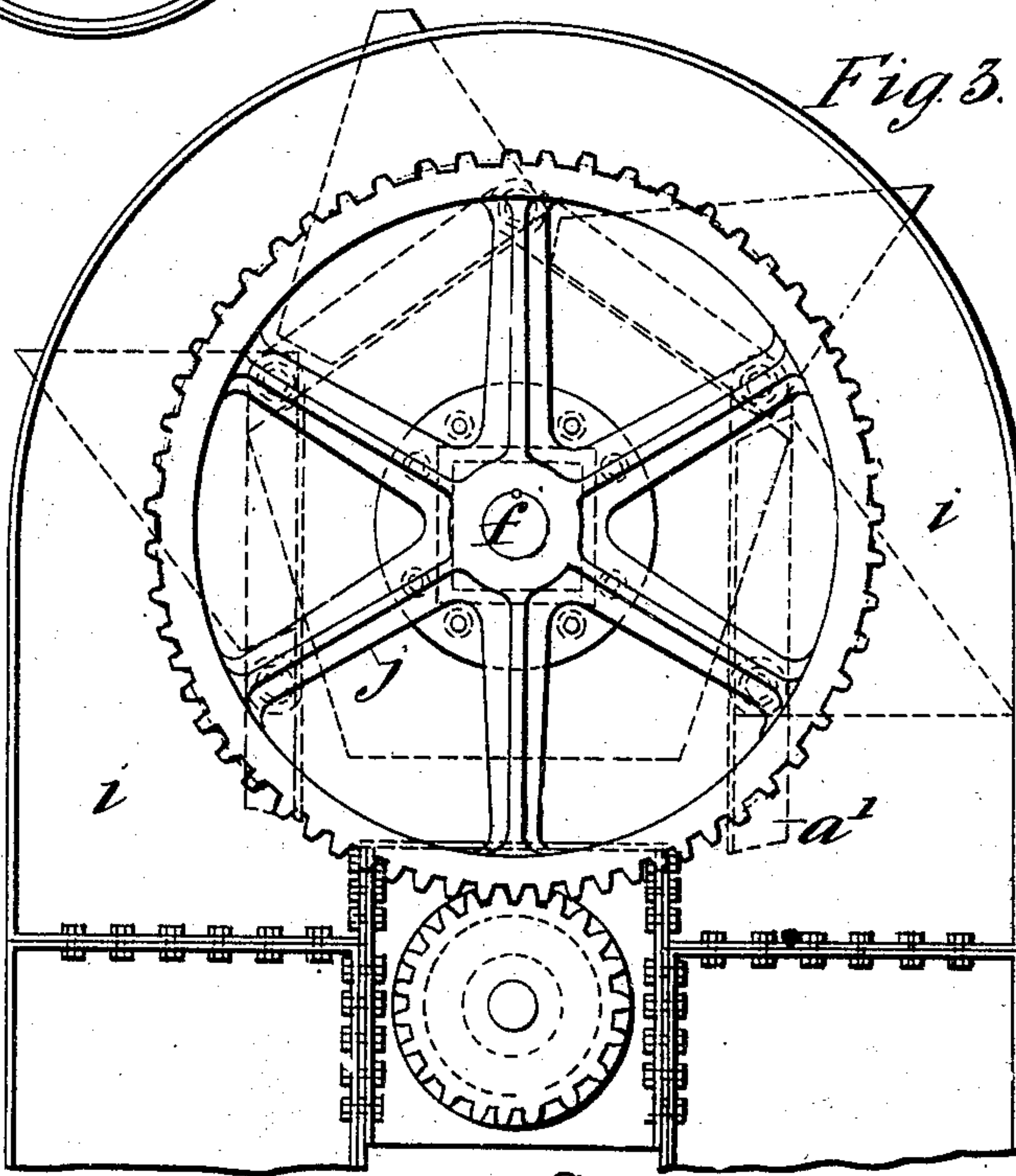
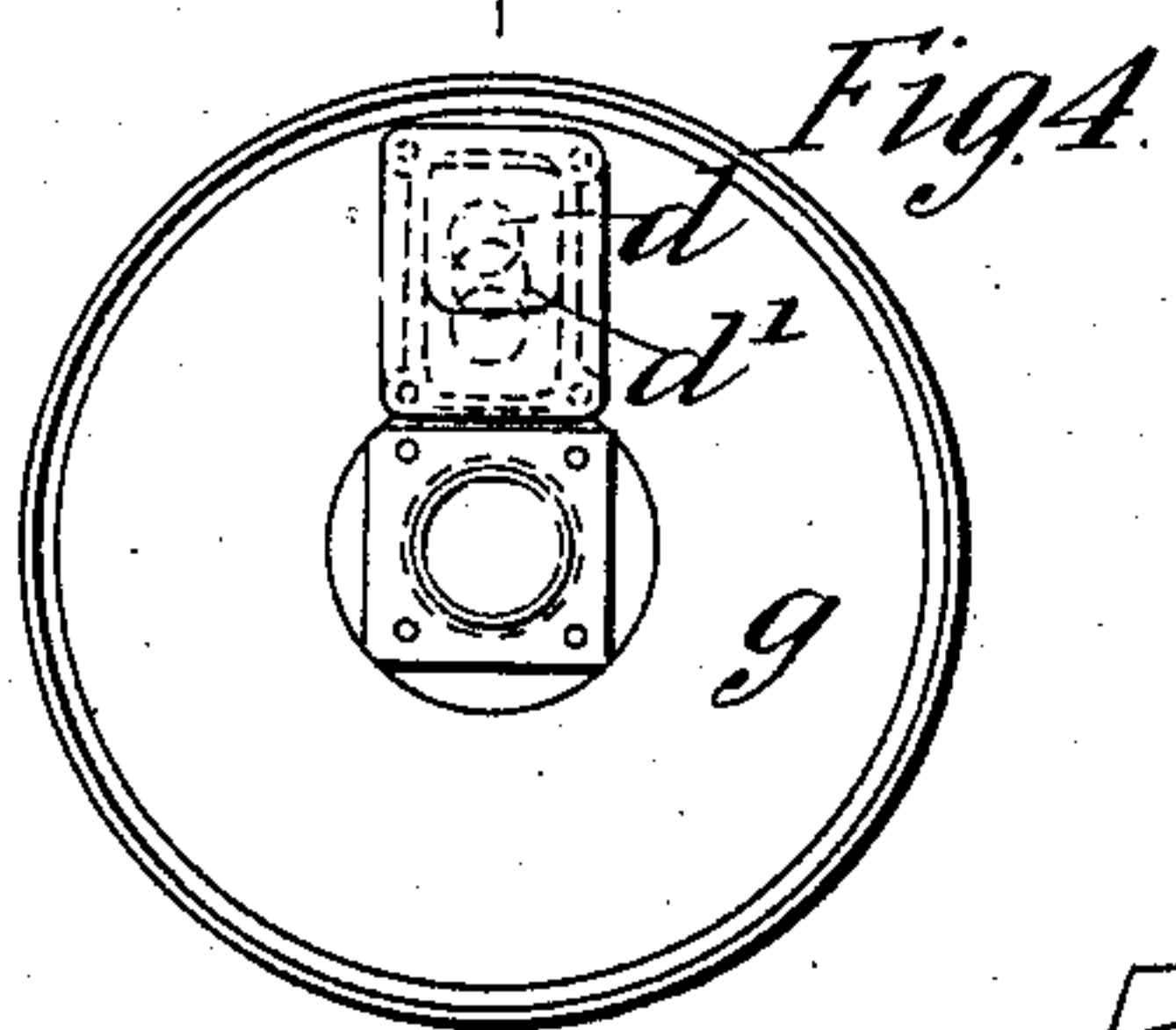
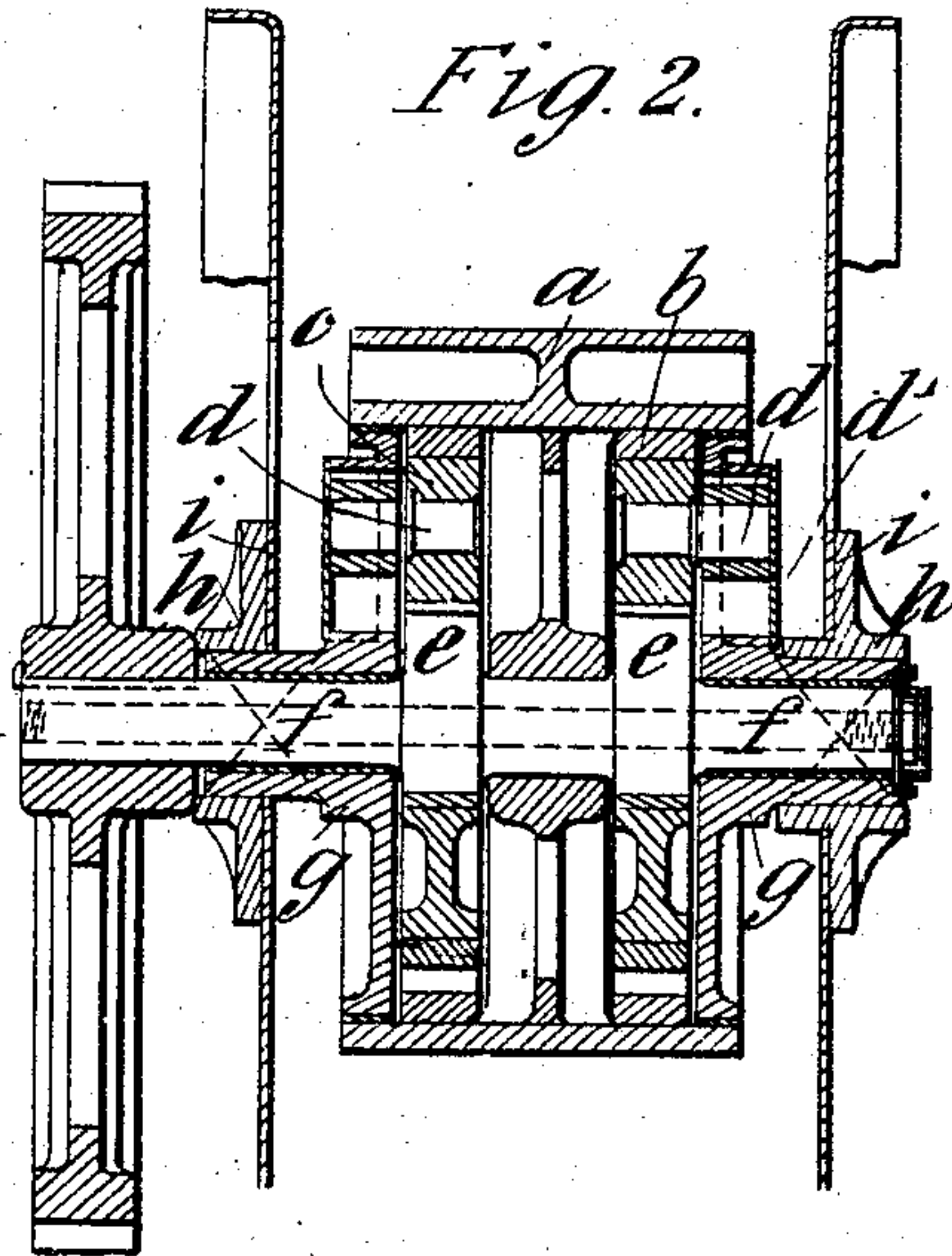
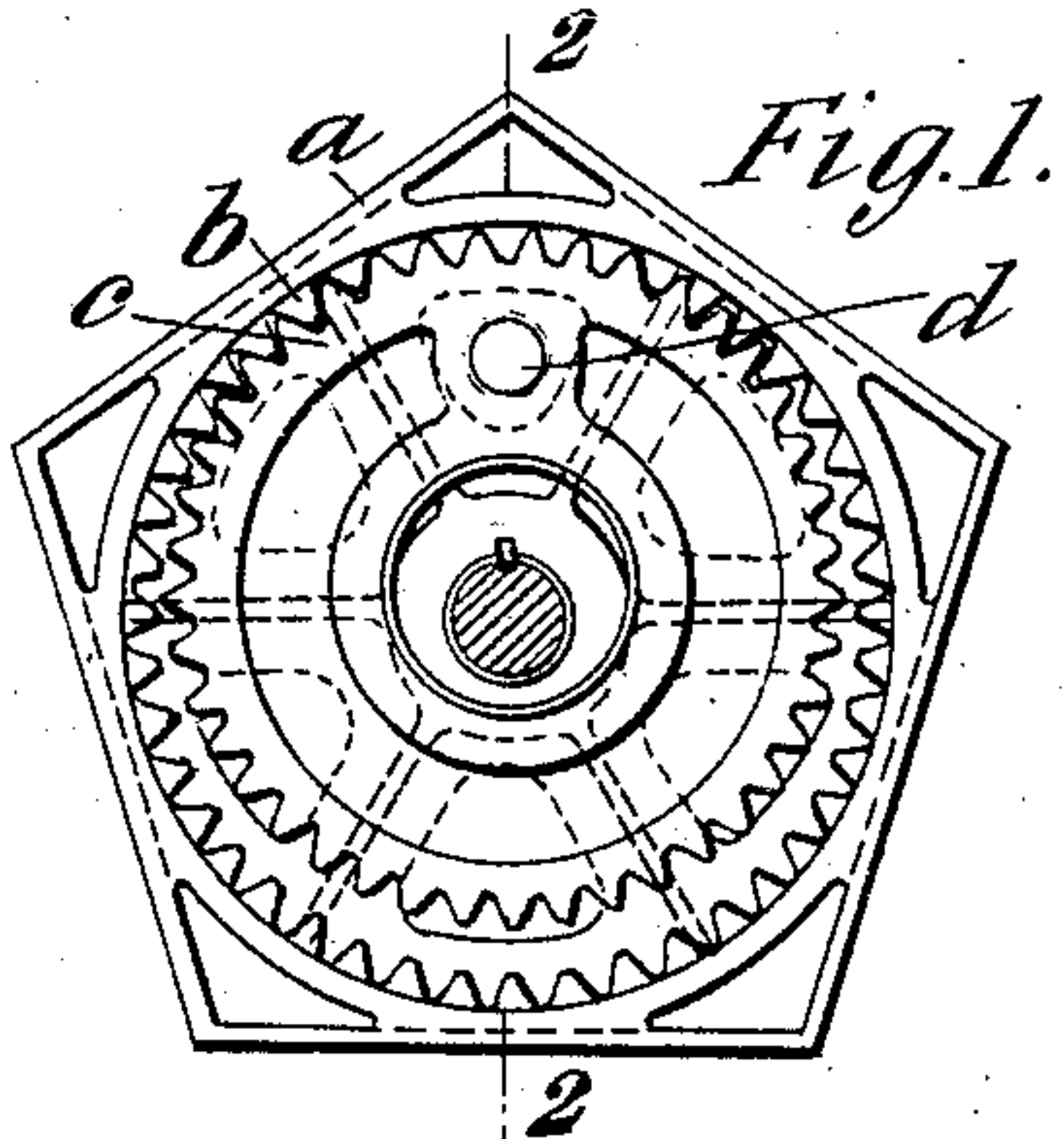


No. 785,552.

PATENTED MAR. 21, 1905.

G. E. HOLLAND & H. JOHNSTON.  
DRIVING GEAR FOR ELEVATING MACHINERY, &c.

APPLICATION FILED JULY 25, 1904.



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Att'y



# UNITED STATES PATENT OFFICE.

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## DRIVING-GEAR FOR ELEVATING MACHINERY, &c.

SPECIFICATION forming part of Letters Patent No. 785,552, dated March 21, 1905.

Application filed July 25, 1904. Serial No. 218,101.

*To all whom it may concern:*

Be it known that we, GERALD EDWARD HOLLAND, C. I. E. D. S. O., commander Royal Indian Marine, and HENRY JOHNSTON, subjects of the King of Great Britain and Ireland, residing at Rangoon, Burma, India, have invented certain new and useful Improvements in Driving-Gear for Elevating Machinery or the Like, of which the following is a specification.

This invention relates to driving-gear for coal-elevators of the kind described in our application for patent filed February 7, 1903, Serial No. 142,416, or the like machinery, and has for its object the provision of powerful dust-proof gear suitable for driving elevating or other machinery which requires great power with low speed.

In the accompanying drawings, Figure 1 is a transverse vertical section through the driving shaft and gear; Fig. 2, a section on line 2 2 of Fig. 1; Fig. 3, an end elevation of the upper end of an elevator, showing the driving-wheel; and Fig. 4, a detail view.

The drum *a*, which carries the endless chain *a'* of the conveyer, is provided on either side along its inner periphery with circular racks *b*, which gear with the toothed pendulum-wheels *c*. These wheels are held in position by the pins *d* and are actuated by eccentrics *e*, which are keyed on the driving-shaft *f*. The drum *a* revolves on the disks *g*, the bosses *h* of which form bearings for the shaft *f* and are squared externally and fitted in square holes in the sides *i* of the machine. The disks *g* are also slotted for the reception of blocks *d'*, in which the ends of the pins *d* are mounted, the slots thus forming guides in which the pins are free to reciprocate. The driving-wheel *j* is keyed on the driving-shaft *f* and may be connected, through suitable gearing, with an electric or other motor.

The rotation of the eccentrics *e* communicates a swinging motion to the oscillating pendulum-wheels *c* about their pivot-pins *d*, by

which the tangent point of the said wheels and the racks *b* is given a circular traverse around the axis of the shaft, the bearing-blocks *d'* at the same time reciprocating in the guide-slots in the non-revoluble disks *g*. It will be seen that the movement imparted to the circular racks *b* by the wheels *c* is not a continuous movement, (although the racks and wheels are in constant engagement,) because, owing to the pins *d* being placed as shown when the upper part of the wheel *c* engages with the rack *b* a short backward movement is given to the drum *a*, and in consequence of this the buckets of the conveyer very efficiently penetrate and take up the coal or other material dealt with.

It will be noticed that the gear is inclosed in a practically dust-proof chamber formed by the chain-drum and the disks on which the drum revolves, the slots *d'* being closed by covers *d''*.

Having thus described the nature of this invention and the best means we know of carrying the same into practical effect, we claim—

1. An inclosed driving mechanism involving a driving-shaft, a fixed frame, non-revoluble disks mounted in bearings attached to said frame, a drum revolving on said disks and provided with internal circular racks, toothed pendulum-pinions carried by said disks and adapted to gear with said racks, and eccentrics keyed to said shaft and operating the pinions.

2. In driving mechanism such as herein described, a driving-shaft, a circular rack revoluble about the axis of the said shaft, an eccentric fixed on the said shaft, a toothed pinion operated by said eccentric to gear with said rack, a pivot-pin supporting the said pinion and mounted to slide in fixed guides, substantially as described.

3. Inclosed driving-gearing comprising a driving-shaft, eccentrics keyed thereon, sliding blocks, pins carried thereby, toothed pendulum-pinions mounted on said pins, non-revoluble disks mounted in suitable bearings, a

drum mounted on non-revoluble disks and  
having internal racks gearing with the said  
toothed pendulum-pinion to give intermittent  
movements of rotation of the drum on the  
5 said non-revoluble disks, substantially as de-  
scribed.

In testimony whereof we have signed our

names to this specification in the presence of  
two subscribing witnesses.

G. E. HOLLAND.  
H. JOHNSTON.

Witnesses:

OLIVER IMRAY,  
JOSEPH MILLARD.