

(No Model.)

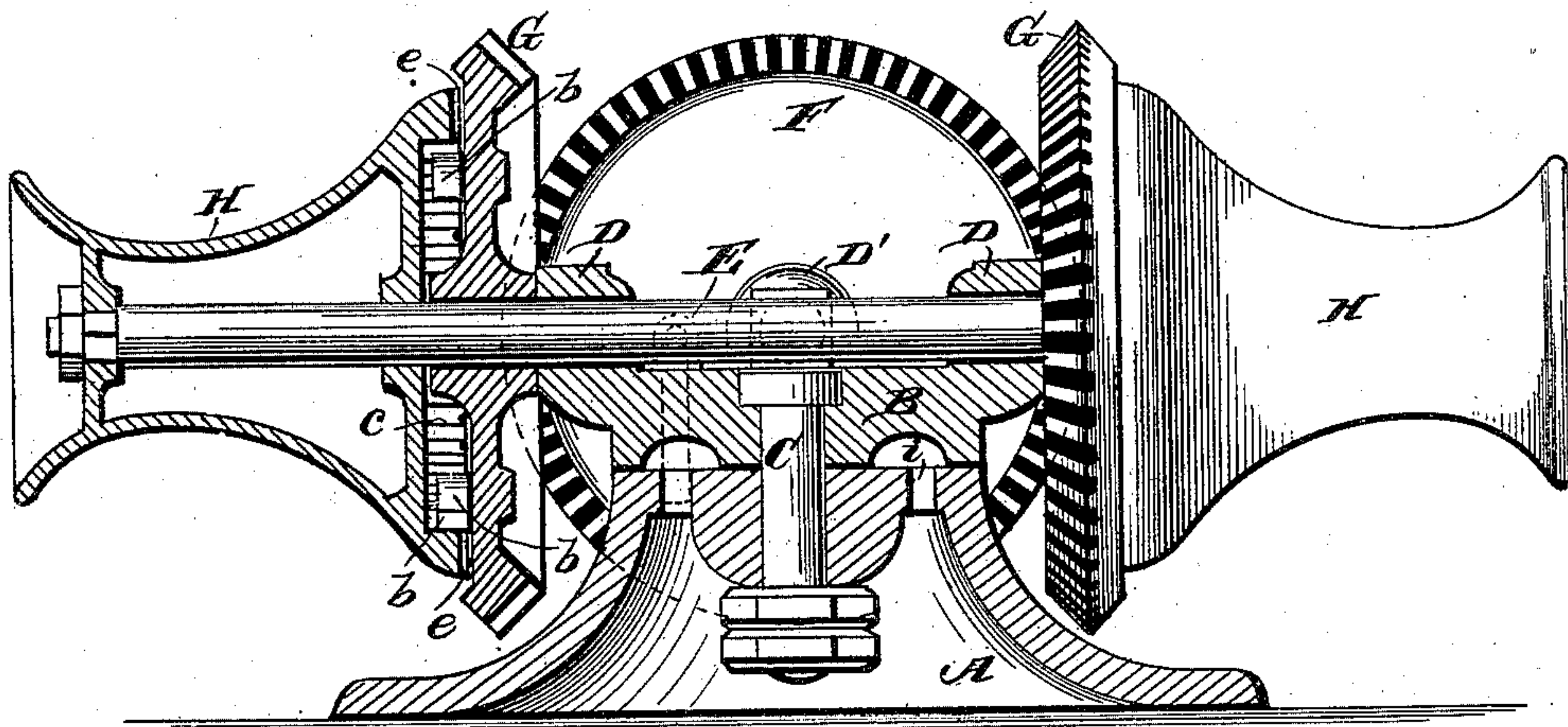
S. T. RICHARDSON.

WINDLASS.

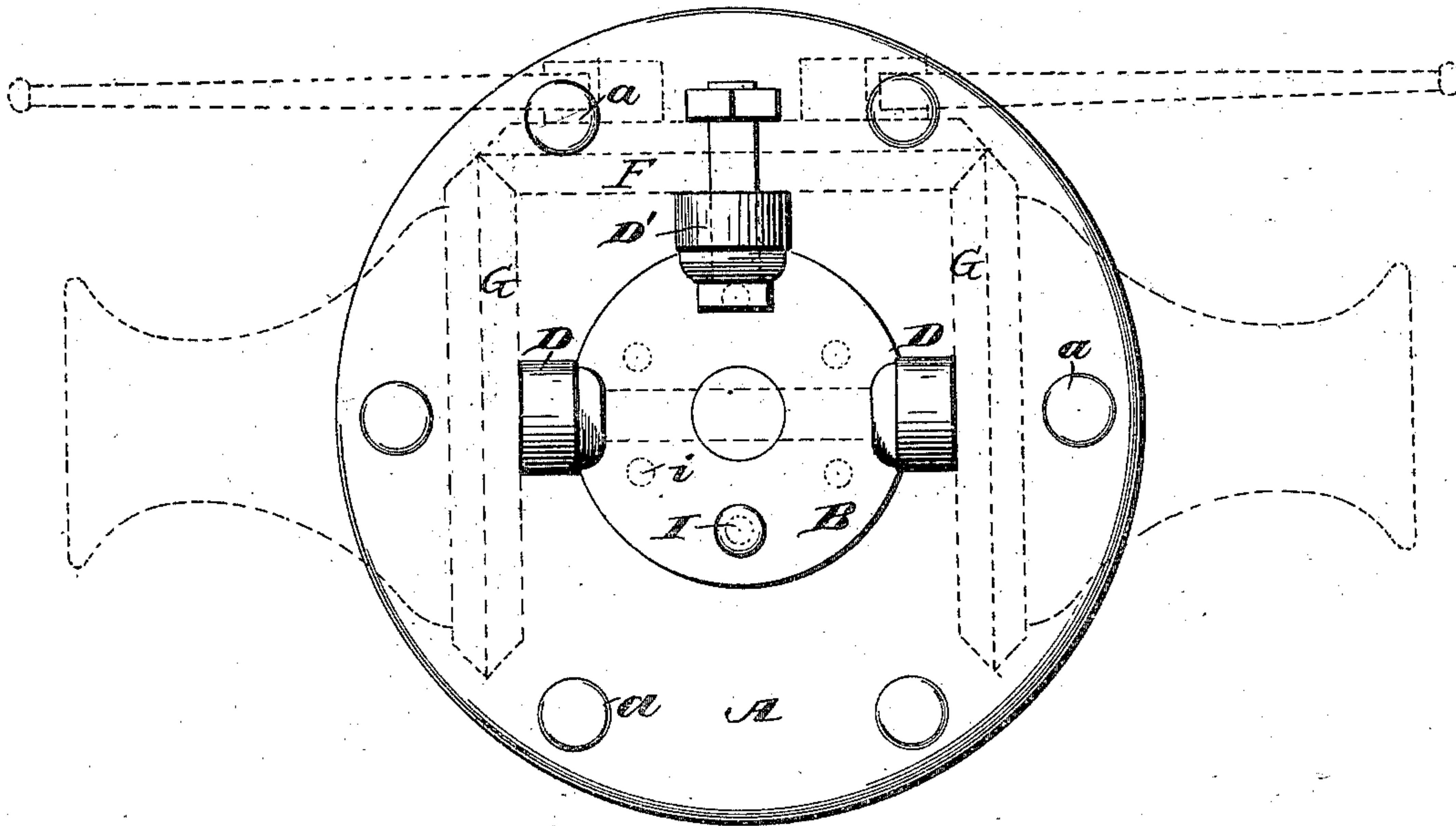
No. 311,371.

Patented Jan. 27, 1885.

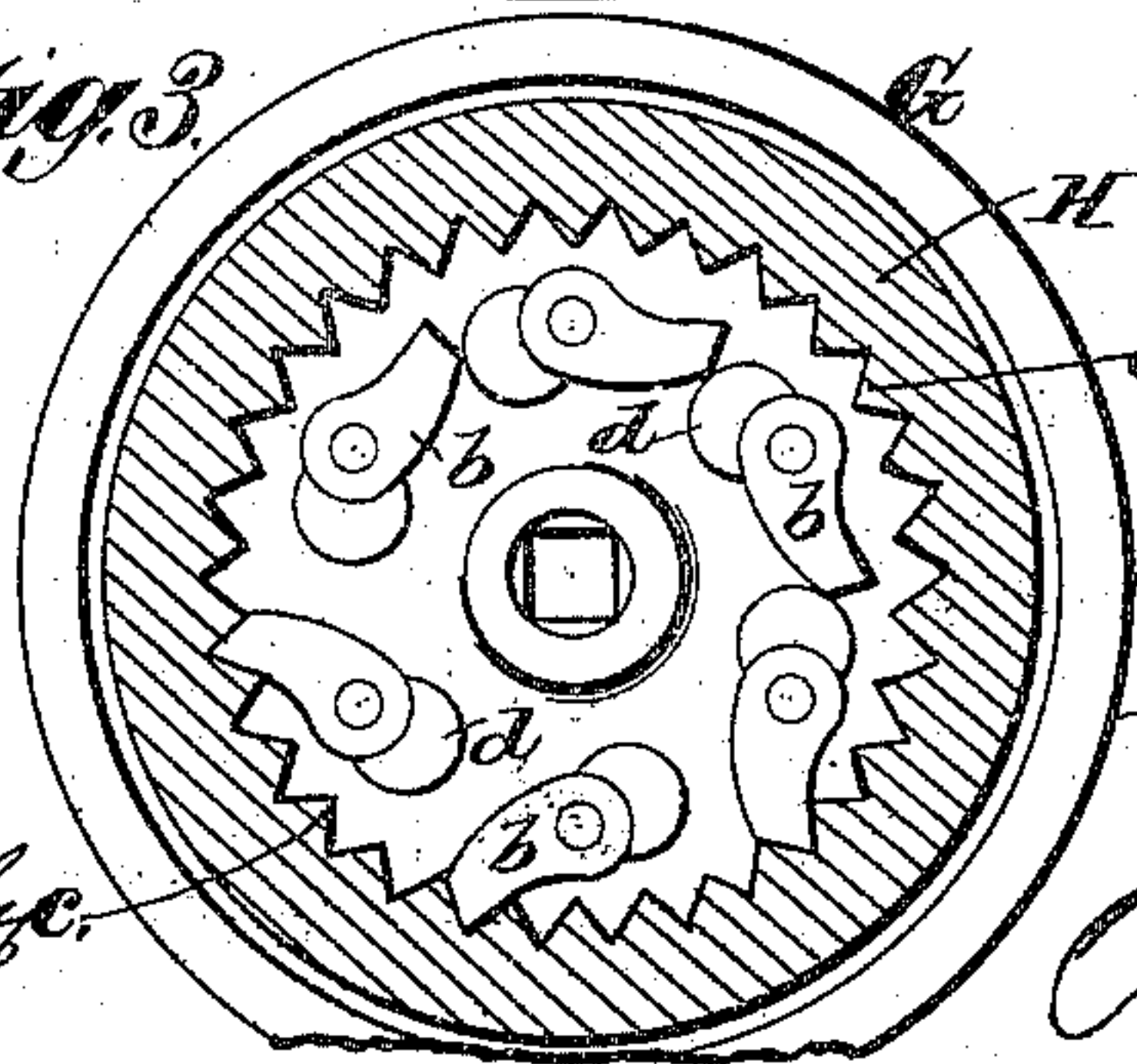
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses.

*Robert Everett.*

*Dennis Lumby.*

Inventor.

*Samuel T. Richardson.*

By

*James L. Norris.*  
Atty.



# UNITED STATES PATENT OFFICE.

SAMUEL T. RICHARDSON, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE  
RICHARDSON MANUFACTURING COMPANY, OF SAME PLACE.

## WINDLASS.

SPECIFICATION forming part of Letters Patent No. 311,371, dated January 27, 1885.

Application filed June 24, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL T. RICHARDSON, a citizen of the United States, residing at Baltimore, Maryland, have invented new and useful Improvements in Windlasses, of which the following is a specification.

This invention relates to a lever-power windlass mounted upon a turn-table in order that it may be readily turned to any desired position.

My invention consists in the combination, with a rotary shaft mounted upon a turn-table, and carrying at each end a windlass-barrel the inner end of which is provided with an internal ratchet-gear, of a pair of loosely-mounted bevel-gears arranged on the shaft at the inner ends of the windlass-barrels, and having a number of pivoted pawls adapted to engage by gravity with the ratcheted ends of the windlasses, an intermediate gear being mounted on the turn-table in a plane at right angles with the pawl-gears and meshing therewith, for the purpose of actuating the windlass-barrels with a continuous rotary movement.

In the annexed drawings, illustrating the invention, Figure 1 is a side elevation of my improved windlass, partly in section. Fig. 2 is a top view of the supporting standard or frame with turn-table. Fig. 3 is an inner face view of one of the windlass-barrels, with internal ratchet-teeth in section, showing also the manner of arranging the pawls on the loose bevel-gears.

A is a truncated base or circular supporting-frame, that may be firmly secured to the deck or floor by means of bolts *a a*, or in any other manner. The upper horizontal surface of this base or standard forms a bed for the turn-table B, that is connected thereto by a central bolt or pivot, C, Fig. 1.

The turn-table B is provided with journal-boxes D D for the windlass-shaft E, and at a right angle to these is a journal-box, D', for the shaft or pivot of a bevel-gear, F, that meshes with a pair of bevel-gears, G G, mounted loosely on the windlass-shaft.

On the outer faces of the bevel-gears G G are pivoted several gravity-pawls, *b b*, for engaging ratchet-teeth *c c* on the inner ends of a

pair of windlass-barrels, H H, that are firmly secured to the ends of the shaft E in any convenient manner.

The manner of arranging the pawls *b b* and the ratchet-teeth *c c* is shown in Fig. 3. The pawls are pivoted in a circle to the outer faces of the gears G G in such a manner as to engage by gravity with the internal ratchet-teeth, *c*, that are arranged in annular form in the inner recessed end of each windlass-barrel. These pawls are each arranged in contact with a crescent-shaped lug, *d*, formed on the face of the bevel-gear G, the pawl being pivoted in or against the concaved edge of the crescent. It will be seen that the pawls *b b* while in engagement with the ratchet-teeth *c* are braced by the lugs *d* in such a manner as to take the strain off of the pawl-pivots, thus obviating liability of breakage under any unusual strain. Besides supporting and bracing the heel of the pawl against which it is placed, each lug *d* also serves at intervals to support the point or toe of the pawl next in its rear when the gear has been turned sufficiently to disengage some of the pawls from the ratchet, as shown in Fig. 3. By this construction the pawls when disengaged from the ratchets are prevented from falling back against the hub of the gear to which they are pivoted, and as a number of pawls are pivoted to each gear, sufficient to form a complete circle, as shown, it is obvious that two or more pawls will always be in engagement with the ratchets without regard to the position in which the gears may happen to be left. The inner recessed ends of the windlass-barrels are preferably perforated, as shown at *e*, Fig. 1, in several places, to permit the escape of any moisture that might gain access to the ratchets during rainy weather.

In operating the windlass the intermediate bevel-gear, F, can be oscillated by means of hand-levers. (Shown by dotted lines in Fig. 2.) A corresponding oscillation is thus imparted to the loose bevel-gears G G, one of said gears turning forward as the other turns back. Each gear G in moving forward brings its pawls *b* consecutively into engagement with the ratchet-teeth *c* on the adjacent windlass-barrel, thus



urging the same forward, together with the shaft E, to which both barrels are keyed or otherwise firmly secured. As each gear G moves back under the oscillations of the intermediate gear, F, the other gear G goes forward, its pawls in like manner engaging consecutively with the adjacent ratchets, and thereby continuing the forward motion of the barrels. During these oscillatory movements of the gears F and G only the lowermost pawls on each side come in contact with the ratchets, those on one gear moving forward to rotate the barrels, while those on the other gear are moved back for a fresh hold, in which movement they slip over the ratchet-teeth without obstruction. In case, however, the intermediate gear, F, should be rotated instead of oscillated, the power would be exerted altogether on one barrel, though both, of course, would move by reason of their connection to the shaft. When operated in this manner, the pawls on the backward-moving gear would simply slip back over the adjacent ratchet-teeth without facilitating or obstructing the movement of the barrel.

Although the machine as illustrated is thus capable of being worked under a continuous rotation of the gear F, it is preferable to oscillate the gears, so as to apply the power alternately to the opposite barrels H H, thereby economizing power and distributing the working-strain.

By mounting the windlass upon a turn-table, as shown, it can be readily turned in any desired direction, and when brought into the required position it can be secured by a bolt or pin, I, dropped through any one of several openings, *i*, formed in the turn-table and the supporting base or stand.

Several of the devices herein shown are specifically claimed in my application for patent filed June 24, 1884, Serial No. 135,917, and I therefore enter a disclaimer of the devices claimed in such other application.

Having thus described my invention, what I claim is—

1. In a windlass, the combination, with a shaft mounted in suitable bearings, of a pair of windlass-barrels secured to opposite ends of said shaft, and provided at their inner ends with internal ratchet-teeth, *c*, the bevel-gears G G, loosely mounted on the shaft at the inner ends of said barrels, and provided with a number of gravity-pawls, *b b*, and the intermediate gear, F, substantially as described.

2. In a windlass, the combination of a pair of windlass-barrels rigidly secured to a common axis or shaft, and provided at their inner recessed ends with internal ratchet-teeth, a pair of bevel-gears mounted loosely on the shaft, and each having a number of gravity-pawls for engaging the ratchets, and an intermediate bevel-gear arranged in a plane at right angles to the pawl-gears, substantially as described.

3. In a windlass, the combination of the shaft E, windlass-barrels H H, rigidly secured, and having internal ratchet-teeth, *c c*, the bevel-gears G G, each having a number of gravity-pawls, *b b*, pivoted in contact with bearing-lugs *d d*, and the intermediate gear, F, substantially as described.

4. In a windlass, the combination of a turntable, a rotary shaft mounted thereon, a pair of windlass-barrels rigidly secured to said shaft and carrying at their inner ends a series of bevel-gears mounted loosely on the shaft, and having gravity-pawls for engaging the ratchets, and an intermediate bevel-gear journaled on the turn-table in a plane at right angles to the pawl-gears and meshing therewith, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SAMUEL T. RICHARDSON.

Witnesses:

JAMES L. NORRIS,  
JOS. L. COOMBS.