

No. 737,316.

PATENTED AUG. 25, 1903.

H. D. BARLOW.

LIFT.

APPLICATION FILED AUG. 11, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

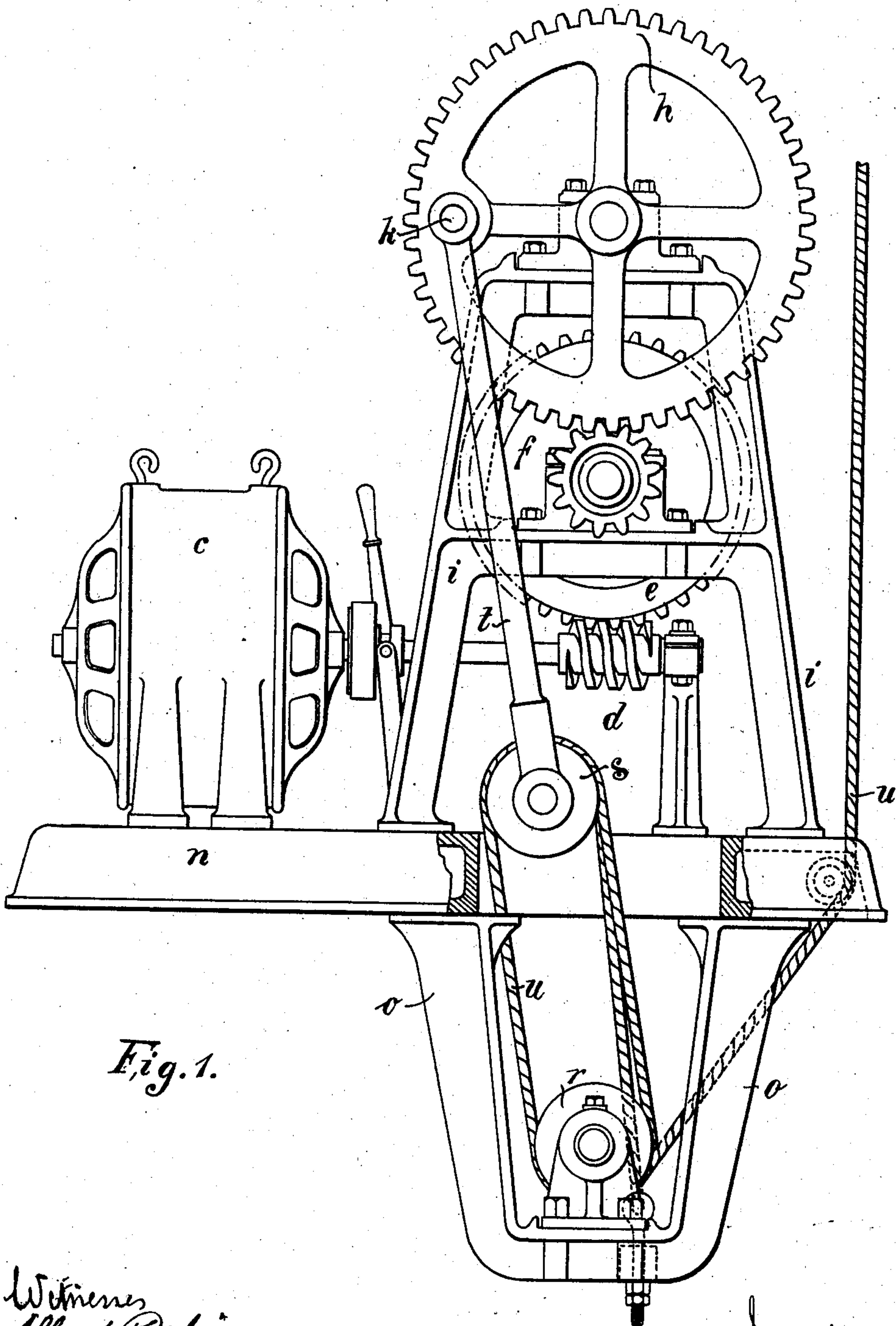


Fig. 1.

Witnesses  
Albert P. Perkins  
Grace P. Breerton

Inventor  
Herbert Dudley Barlow  
by *Sturtevant & Thayer*  
Attorneys

No. 737,316.

PATENTED AUG. 25, 1903.

H. D. BARLOW.

LIFT.

APPLICATION FILED AUG. 11, 1902.

NO MODEL.

2 SHEETS—SHEET 2.

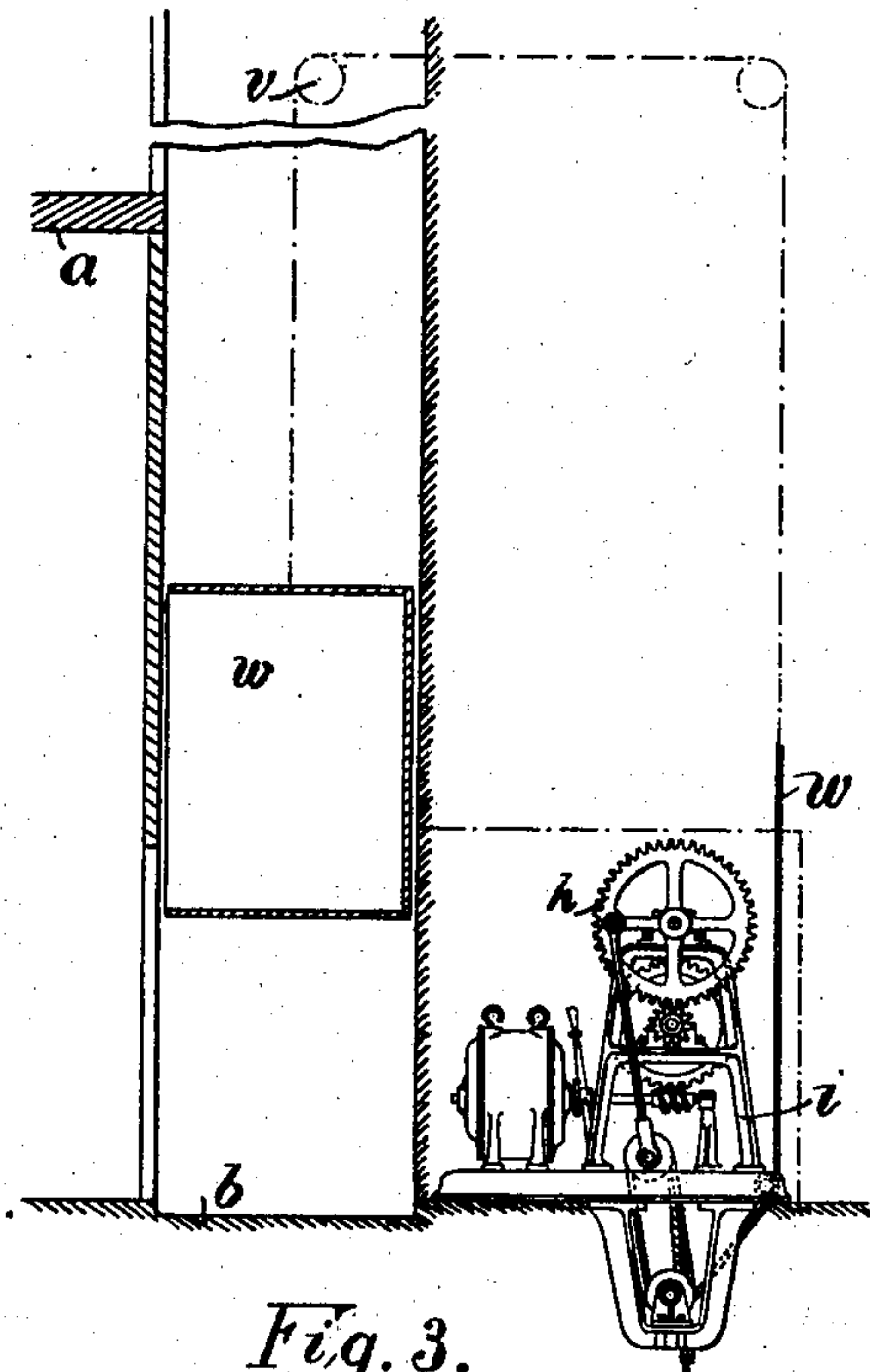


Fig. 3.

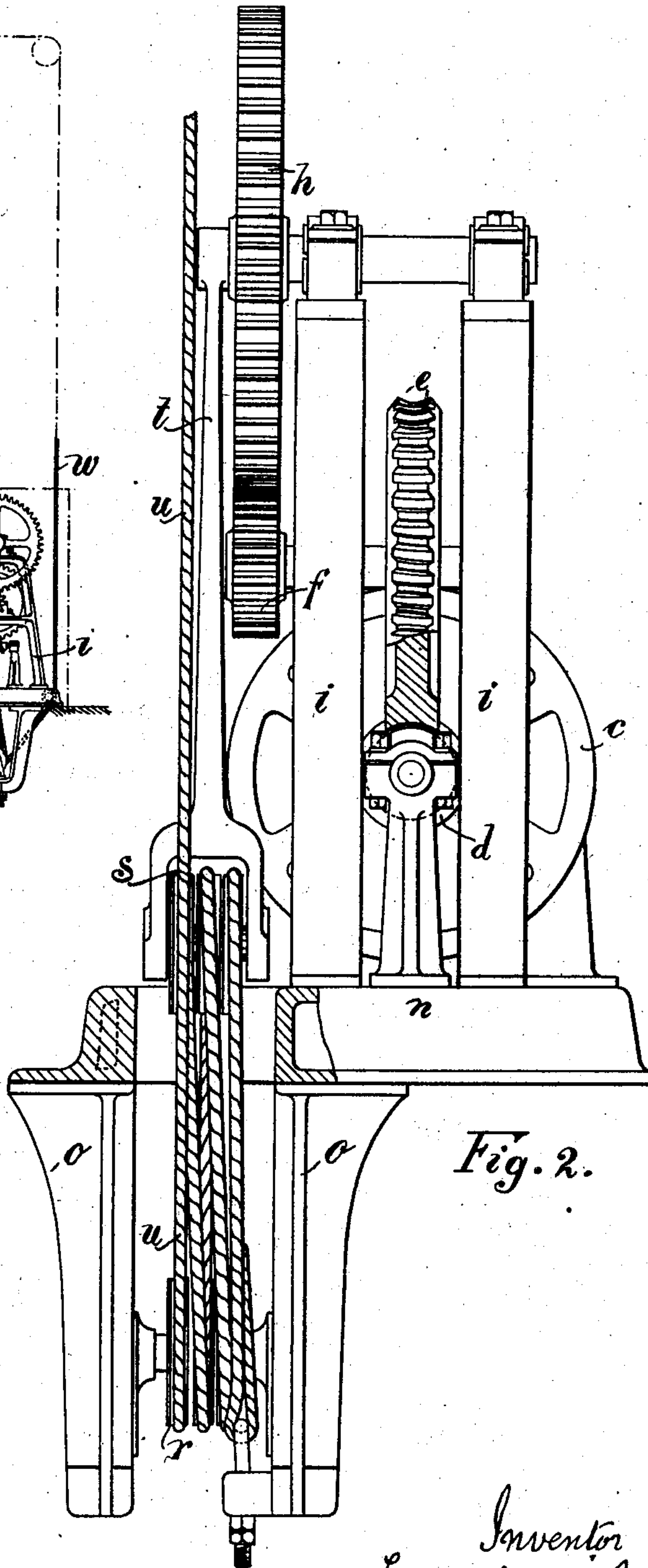


Fig. 2.

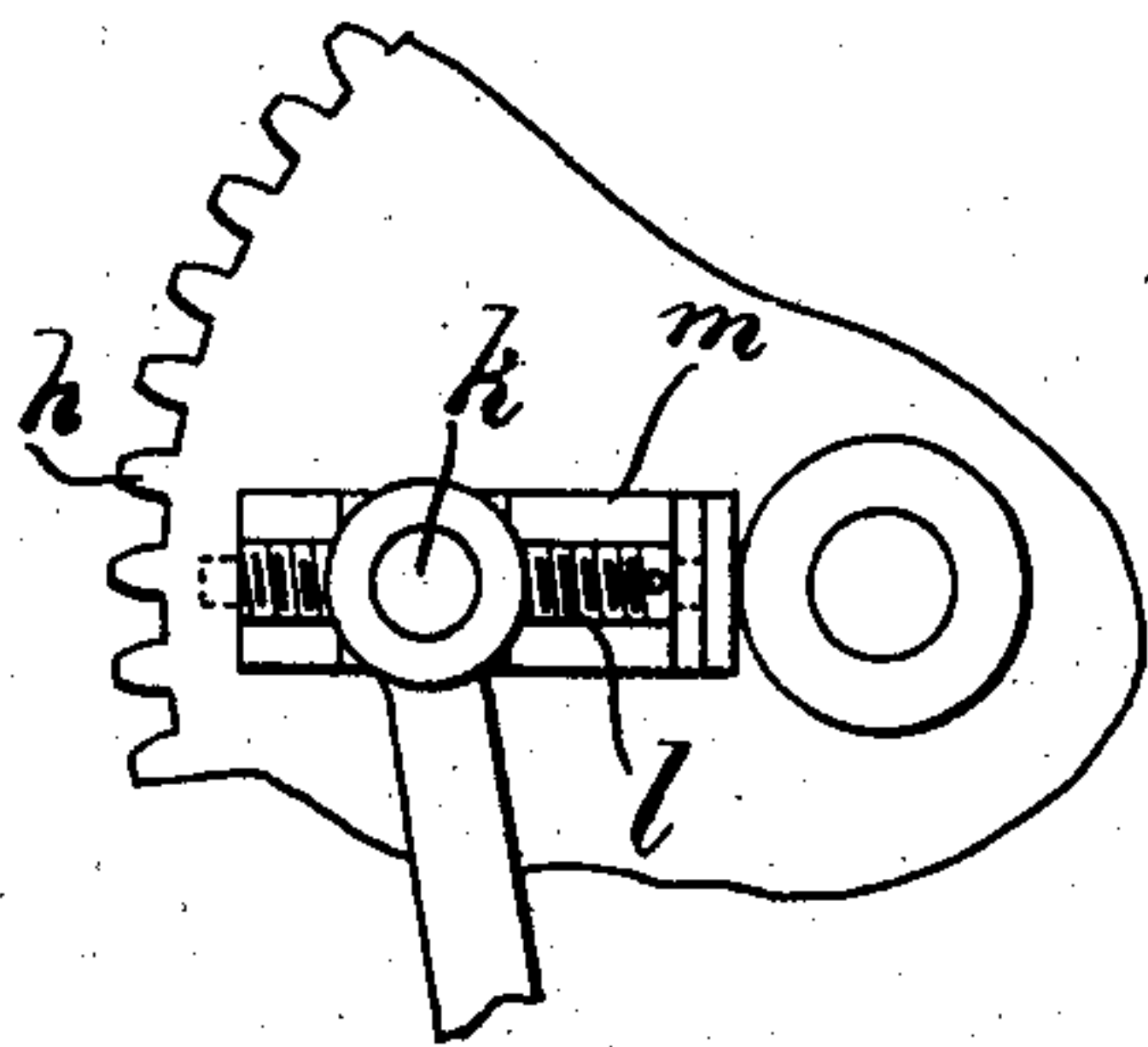


Fig. 4.

Witnesses  
Albert Hopkins  
Grace P. Breerton

Inventor  
Herbert Dudley Barlow  
by Stuart & Greely  
Attorneys



# UNITED STATES PATENT OFFICE.

HERBERT DUDLEY BARLOW, OF LONDON, ENGLAND.

## LIFT.

SPECIFICATION forming part of Letters Patent No. 737,316, dated August 25, 1903.

Application filed August 11, 1902. Serial No. 119,237. (No model.)

*To all whom it may concern:*

Be it known that I, HERBERT DUDLEY BARLOW, a subject of the King of Great Britain and Ireland, and a resident of 237 Shaftesbury avenue, London, W. C., England, have invented certain new and useful Improvements in and Relating to Lifts and the Like, (for which I have made application for Letters Patent in Great Britain, No. 1,352, dated January 17, 1902,) of which the following is a specification.

My invention relates to lifts or hoists, and especially to those which work between two levels only or to hauling appliances which work between definite starting and stopping points and are driven by gearing from an engine, electric motor, or other source of power. In such lifts or hauling appliances the greatest power has to be exerted in starting up with the load on, and this is very severe on the driving engine or motor or on the belt-gear if the operation of the lift or hauling appliance is effected by means of belts and fast and loose pulleys. Again, difficulties arise in the operation of such lifts and hauling appliances in preventing overrunning at both ends and in insuring steady starting from rest and stopping.

My invention has for its object to remove these difficulties and to secure the operation of lifts and hauling appliances of this character in an improved manner, so that the minimum power may be taken from the source at the beginning of the movement, overrunning prevented, and slow starting and stopping secured.

My invention consists, broadly, in applying to a lift or hauling appliance a crank driven by a motor through any suitable gearing to operate a multiplying-gear, either directly or through a connecting-rod, in such a way that each complete traverse of the latter, and therefore of the lift or the wagon propelled, is effected with a simple harmonic motion, which produces slow starting and stopping independently of the rate at which the motor or driving shaft is running.

My invention consists, more specifically, in transmitting power from the motor-shaft through a reducing-gear to a slow-running shaft, on which is mounted a powerful crank, from the pin of which is operated the movable

member of a pair of multiple sheave-blocks, by means of which the throw of the crank is multiplied to give a complete movement of the lift or wagon from one end of its traverse to the other and back again in each revolution. Half a revolution of the crank thus corresponds to a complete movement in one direction. The motor or shaft operating the lift-cage or wagon does not require to be reversed in direction to effect the opposite motions of the lift, and starting and stopping may be effected by simply starting and stopping or connecting and disconnecting the motor. It will thus be seen that the motion being practically simple harmonic, a slow starting and stopping of the lift-cage or of the wagon hauled is secured, and the minimum power is required from the source at starting, as the mechanical advantage of the transmission-gear is then greatest. The device also enables any type of electric motor having a comparatively small starting torque to be employed whether adapted for direct or alternating currents and enables reversing-switches to be dispensed with.

Referring to the accompanying drawings, Figures 1 and 2 show a side and end elevation, respectively, of one form of my invention as applied to a lift. Fig. 3 is a view, on a smaller scale, showing the general arrangement of such an application, while Fig. 4 is a scrap view showing means for altering and adjusting the travel of the lift-cage.

In carrying my invention into effect according to one modification as applied to a lift working between two floors *a b* I provide an ordinary shunt-wound motor *c*, mounted direct on a shaft carrying a worm *d*, gearing with a worm-wheel *e*, mounted on a second motion-shaft, which carries also the small pinion *f* of a second reducing-gear, the large wheel *h* of which is mounted on a third shaft carried on suitable standards *i i*. This large spur-wheel is overhung and is strongly constructed to act as a disk-crank. A crank-pin *k* is secured to the side of the wheel and, as shown in Fig. 4, is preferably adjustable in a radial direction by means of a screw *l*, adapted to traverse a nut forming part of the crank-pin along a radial slot *m* or by any equivalent device, so that the travel of the lift-cage may be altered or adjusted. Pref-



erably supported on the same sole-plate *n* or on rigid attachments thereto, such as the brackets *o o*, I mount the two blocks *r s* of a multiple-sheave multiplying-gear, the block  
 5 *r* remote from the crank being pivotally connected to the sole-plate or its attachments, while the axle of the traversing block *s* is linked up by a connecting-rod *t* to the pin of the disk-crank. The carrying-rope *u* of the  
 10 lift-cage passes over the sheaves of the blocks and finally over the carrying-pulley *v* at the top of the lift-well and is secured to the beam of the cage *w*. I sometimes prefer to mount the block *s* of the multiplying-gear direct on  
 15 the crank-pin and omit the connecting-rod *t*.

The essential feature of a lift constructed in accordance with my invention is that it starts and stops relatively slowly in harmonic time irrespective of the speed of the motor  
 20 or other driving shaft. It will be obvious that the only gear required to control this lift is an ordinary motor-switch, which may be operated, if desired, from the cage and that reversal of the motor is not necessary.  
 25 Further, it will be observed that the exact point of starting and stopping the motor at the extreme limits of the travel of the lift is not of very great importance, as at these points a considerable number of revolutions  
 30 of the motor is required to produce a small movement of the cage or platform.

My invention enables a single belt and a fast and loose pulley to be employed or an electric motor having a small starting torque,  
 35 and it greatly simplifies the controlling-gear.

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

1. A hoisting-gear comprising, a crank, means for operating said crank, multiple  
 40 blocks; and a rope wound around the sheaves of the blocks and connected to the car to be operated; one of the blocks being mounted on a stationary part of the apparatus and the other connected to the crank-pin. 45

2. A hoisting-gear comprising, a crank, means for operating the crank, multiple blocks, a rope wound around the sheaves of the blocks and connected to the car to be operated; one of the blocks being mounted on  
 50 a stationary part of the apparatus, and a link connecting the other block with the said crank.

3. A hoisting-gear comprising, a crank, a motor, reducing-gearing connecting the crank  
 55 to the motor, multiple blocks, a guideway in which one of the blocks is mounted to travel; the other block being mounted on a stationary part of the apparatus, a rope wound around the sheaves in the blocks and connected to  
 60 the car to be operated, and a link connecting the crank with the traveling block.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HERBERT DUDLEY BARLOW.

Witnesses:

MATTHEW ATKINSON ADAM,  
 GEORGE ISAAC BRIDGES.