

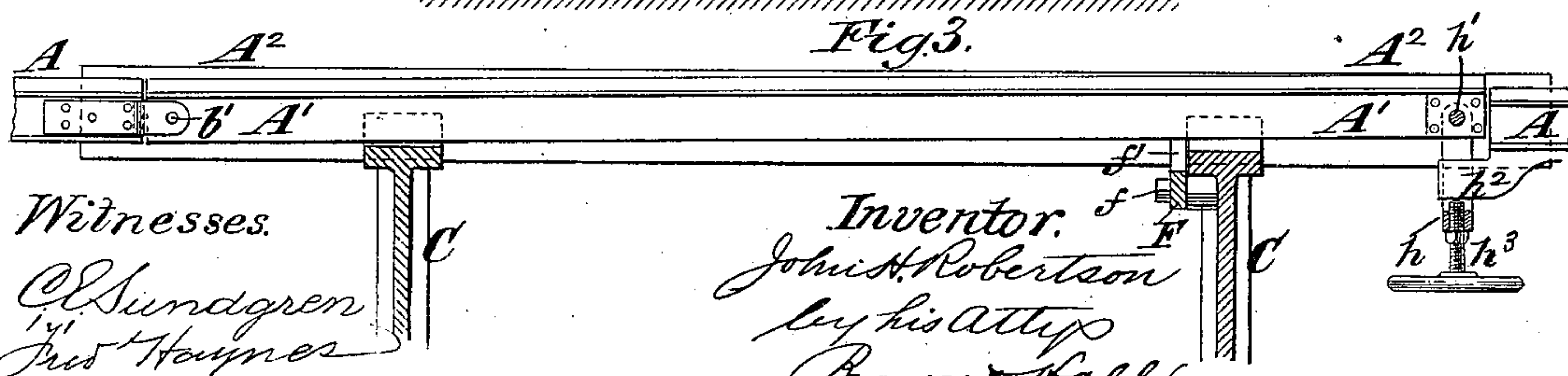
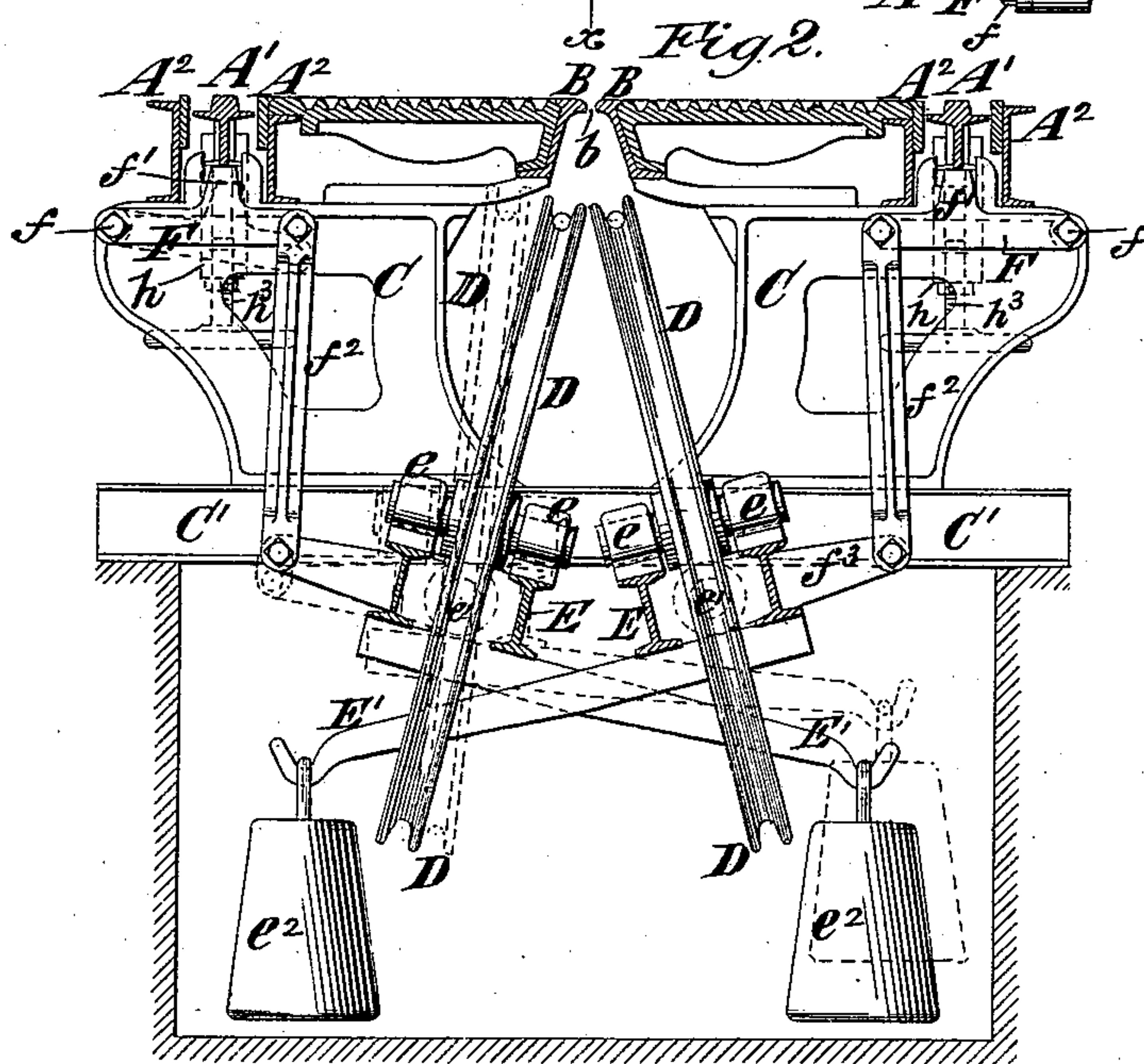
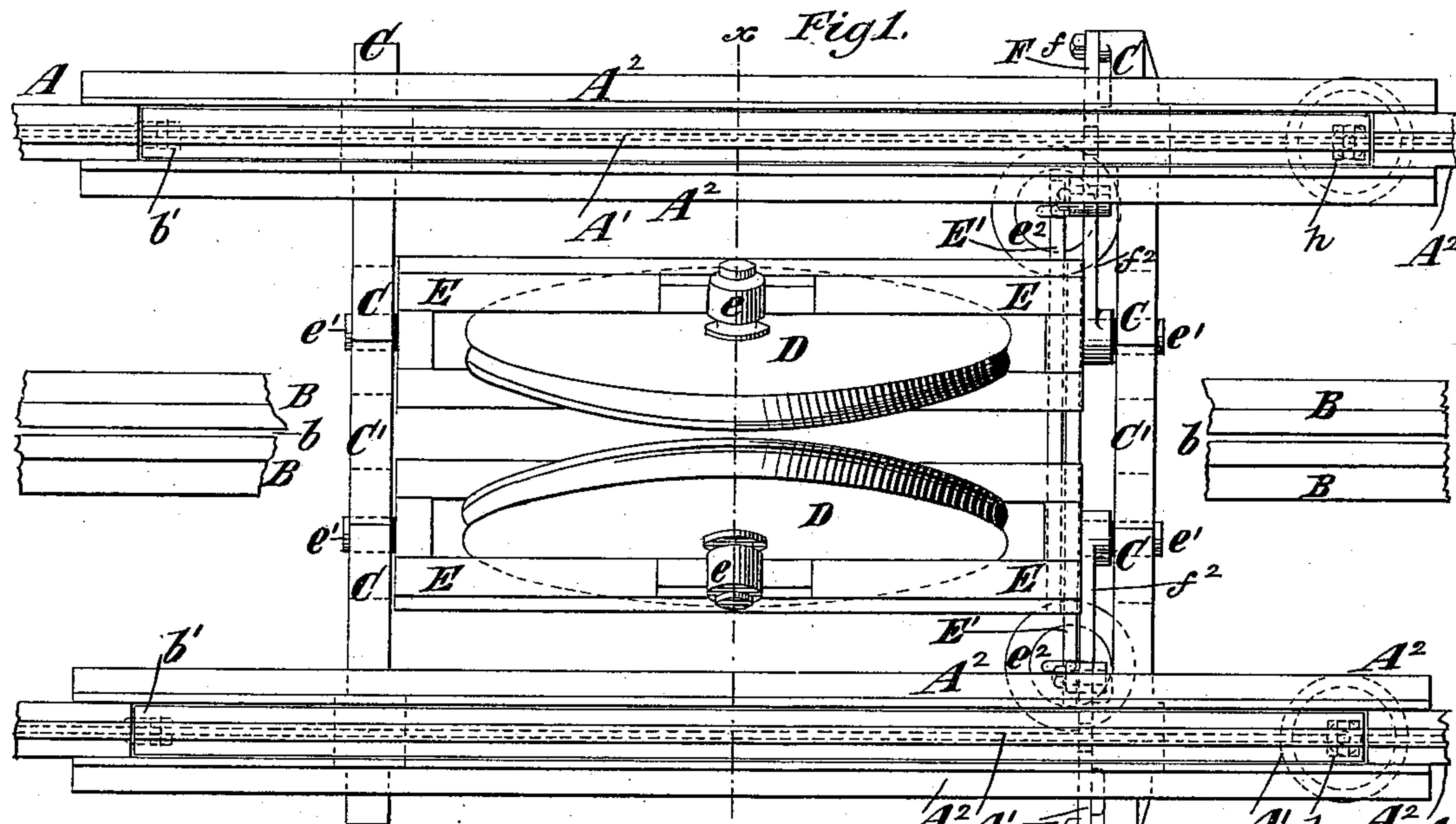
(No Model.)

J. H. ROBERTSON.

MECHANISM FOR OPERATING CABLE SUPPORTING SHEAVES.

No. 353,005.

Patented Nov. 23, 1886.



Witnesses.

C. Sundgren  
J. H. Haynes

Inventor.  
John H. Robertson  
by his atty  
Brown & Hall.



# UNITED STATES PATENT OFFICE.

JOHN H. ROBERTSON, OF NEW YORK, N. Y.

## MECHANISM FOR OPERATING CABLE-SUPPORTING SHEAVES.

SPECIFICATION forming part of Letters Patent No. 353,005, dated November 23, 1886.

Application filed August 14, 1886. Serial No. 210,880. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. ROBERTSON, of the city and county of New York, in the State of New York, have invented a new and  
5 useful Improvement in Mechanism for Operating Cable-Supporting Sheaves, of which the following is a specification.

In cable railways in which the operating cable or cables pass through a tunnel in the street,  
10 which tunnel communicates by a narrow slot with the surface, the grip mechanism on the car serves to lift the cable from the ordinary sheaves as it passes along, but at the termini of the route larger cable-supporting sheaves  
15 are provided, over which the cable or cables pass at an elevation, which provides for the engagement with them of the grip mechanism on the car; and the sheave or sheaves are moved out of the path of such grip mechanism  
20 to enable the car to pass along, and in their return movement one or other of the cables is carried into the grip and engaged thereby.

One construction and arrangement which has been heretofore employed in connection  
25 with two cable-supporting sheaves comprises two sheaves which are journaled in frames pivoted so as to swing in a plane parallel with the axes of the sheaves; and weights have been attached to said frames, whereby they are act-  
30 uated to bring the sheaves into oblique positions diverging from their upper portions downward at opposite angles. With such an arrangement the sheave supporting that cable  
35 which is at any time not in use is swung out of the way of the grip mechanism on the car, and is there temporarily secured. In addition to the obliquely-arranged sheaves and their pivoted weighted frames, devices are commonly employed through which a roller or portion of  
40 the grip-frame of the car acts to move the sheave supporting the cable which is at any time in use out of the way, so that the grip mechanism may pass it.

The object of my invention is to relieve the  
45 grip mechanism of the labor of moving the cable-supporting sheaves so that it may pass them, and to provide for such motion or adjustment being effected by the weight of the car as it passes over a portion of track adjacent to the sheaves.  
50

The invention consists, essentially, in the

combination, with a cable-supporting sheave, and a frame wherein it is journaled, and which is movable to carry the sheave out of the path of the grip mechanism carried by a car, of a  
55 vertically-movable rail-section connected with the movable sheave-frame, and serving to move said frame and sheave when depressed by the weight of a passing car. In the above combination the cable-supporting sheave is  
60 preferably returned to its normal position after the car has passed, and has ceased to act to hold it out of normal position, by a suitable weight or weights; and the connections or devices through which the movable rail-section  
65 acts upon the pivoted frame of a sheave may consist of a lever on which the movable rail-section bears, and which is connected by a rod with an arm projecting from the pivoted frame.

In the accompanying drawings, Figure 1  
70 represents a plan of mechanism and a portion of the car-track embodying my invention. Fig. 2 is a transverse section of the same upon about the plane of the dotted line *x x*, Fig. 1; and Fig. 3 represents a side view of a movable  
75 rail-section, with suitable supports on which the movable rail-section acts to move the sheave.

Similar letters of reference designate corresponding parts in the several figures. 80

A A designate the ordinary supporting or track rails, and B B designate slot-rails or slot-bars, which extend between the track-rails A, and form between them a narrow slot, *b*,  
85 through which the tunnel beneath communicates with the surface, and which receive the vertical plates or bars supporting the grip-frame from the car-body, as is usual in cable-railway cars. As here represented, the track-rails, and also the slot-rails, are supported by  
90 means of frames or yokes arranged transversely of the track at suitable distance in its length, and which may be made of cast-metal stands C, secured in pairs upon transverse I-beams C'. 95

D D designate sheaves, which are ordinarily of considerable size, and by which two cables may be supported at the terminus of the route. The axles or journals of these sheaves are fitted to bearings *e* in frames E, which may be  
100 made of I-beams, or in any other suitable way, and which are hung or supported at the ends



by pivots  $e'$ , as best shown in Fig. 1. These pivots are fitted to bearings which may be formed upon or secured to the under side of the transverse yokes or frames  $C C'$ , and provide for swinging the frames  $E$  and the sheaves  $D$ , which they support, in planes transverse to the length of the frames  $E$ , and parallel with the axes of the sheaves  $D$ . By such swinging motion or turning of the frame  $E$  upon its pivots  $e'$  the sheave  $D$ , which it supports, is swung outward away from the path traversed by the grip mechanism on the car, and as soon as the car has passed such sheave is returned to its normal position, as shown in Fig. 2.

As here represented, the frames  $E$  have secured to them levers or arms  $E'$ , on which are hung weights  $e^2$ , and these weighted arms serve to return the sheaves automatically to the position shown in Fig. 2.

Ordinarily the movement of the sheaves away from the path of the grip has been performed by a roller or projecting portion of the grip-frame of the car, operating through suitable connections arranged in the tunnel to overcome the force of the weights  $e^2$ .

According to my invention I entirely relieve the grip mechanism or grip-frame of the car from this labor of moving the sheaves  $D$  and the frames  $E$ , and I provide in the line of the track-rails  $A$  vertically-movable rail-sections  $A'$ , which may be hinged or pivoted at one end, as shown at  $b'$ . These vertically-movable rail-sections  $A'$  are fitted between two guiding-bars or guard-rails,  $A^2$ , which permit them to rise and fall freely, but hold them against displacement in any direction.

It will be understood that when the mechanism is arranged for operation only one of the sheaves  $D$  is in the position shown by full lines in Fig. 2, and the other sheave  $D$ , which supports the cable which is not in use, and which may be supposed to be the left-hand sheave in Fig. 2, is swung away out of the path of the grip mechanism into the position shown by dotted lines in Fig. 2, and is there held by any suitable locking device. As here represented, each rail-section  $A'$  has connected with its movable end, by a pivot,  $h'$ , a shackle or loop,  $h$ , which may be swung under a tongue,  $h^2$ , projecting from the fixed rail portion  $A$ , and is provided with a screw,  $h^3$ , as shown in Fig. 3. By tightening the screw  $h^3$  of the lock pertaining to one or other of the movable rail-sections  $A'$  that section may be held permanently depressed. When a car approaches the portion of the track beneath which the sheaves  $D$  are arranged, the sheave supporting the cable which is then in use (the right-hand sheave  $D$  in Fig. 2) is swung out of the way by the weight of the car depressing the rail-section  $A'$ , which controls it, and as the grip mechanism passes beyond said sheave the

sheave is returned by its weight and carries the cable which it supports into the grip.

The mechanism through which the vertically-movable rail-sections  $A'$  act to move the frames  $E$  and the sheaves  $D$  may be of any suitable character. As here represented, a lever,  $F$ , is pivoted at  $f$  below each of the movable rail-sections  $A'$ , and has an upward projection or toe,  $f'$ , which bears directly upon the movable rail-section. Each lever  $F$  is connected by a rod,  $f^2$ , with an arm,  $f^3$ , secured to the end of the frame  $E$ , as best shown in Fig. 2, and by the passing of the car along the track and along the vertically-movable rail section  $A'$  the weight of the car depresses the rail-section  $A'$  which is left free and causes it to act upon the lever  $F$ , and thereby, through the rod  $f^2$  and the arm  $f^3$ , to turn the frame  $E$  upon its pivots  $e'$ , and to swing the upper portion of the sheave  $D$  out of the way.

It will be seen from the above description that by my invention I dispense entirely with the attachments that are ordinarily employed upon the grip-frame for moving the cable-supporting sheaves, and I enable such result to be effected by means of the weight of the car acting upon the movable rail section or sections.

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

1. The combination, with a cable-supporting sheave and a frame wherein it is journaled, and which is movable to carry the sheave out of the path of the grip mechanism carried by a car, of a vertically-movable rail-section connected with said movable frame, and serving to move it when depressed by the weight of a passing car, substantially as herein described.

2. The combination, with a cable-supporting sheave and a frame in which it is journaled, and which is pivoted to swing in a vertical plane parallel with the axis of the sheave, of a vertically-movable rail-section connected with said movable frame, and serving when depressed by the weight of a passing car to move the sheave out of the path of the grip mechanism carried by the car, and a weight for returning the sheave and sheave-frame after such movement by the movable rail-section, substantially as herein described.

3. The combination, with the sheaves  $D$  and their frames  $E$ , pivoted at the ends and weighted to bring the sheaves into oblique positions and near together at the top, of the vertically-movable rail-sections  $A'$ , and lever and rod connections for moving the sheave-frames when the said rail-sections are depressed by the weight of a passing car, substantially as herein described.

JOHN H. ROBERTSON.

Witnesses:

C. HALL,

MINERT LINDEMAN.