

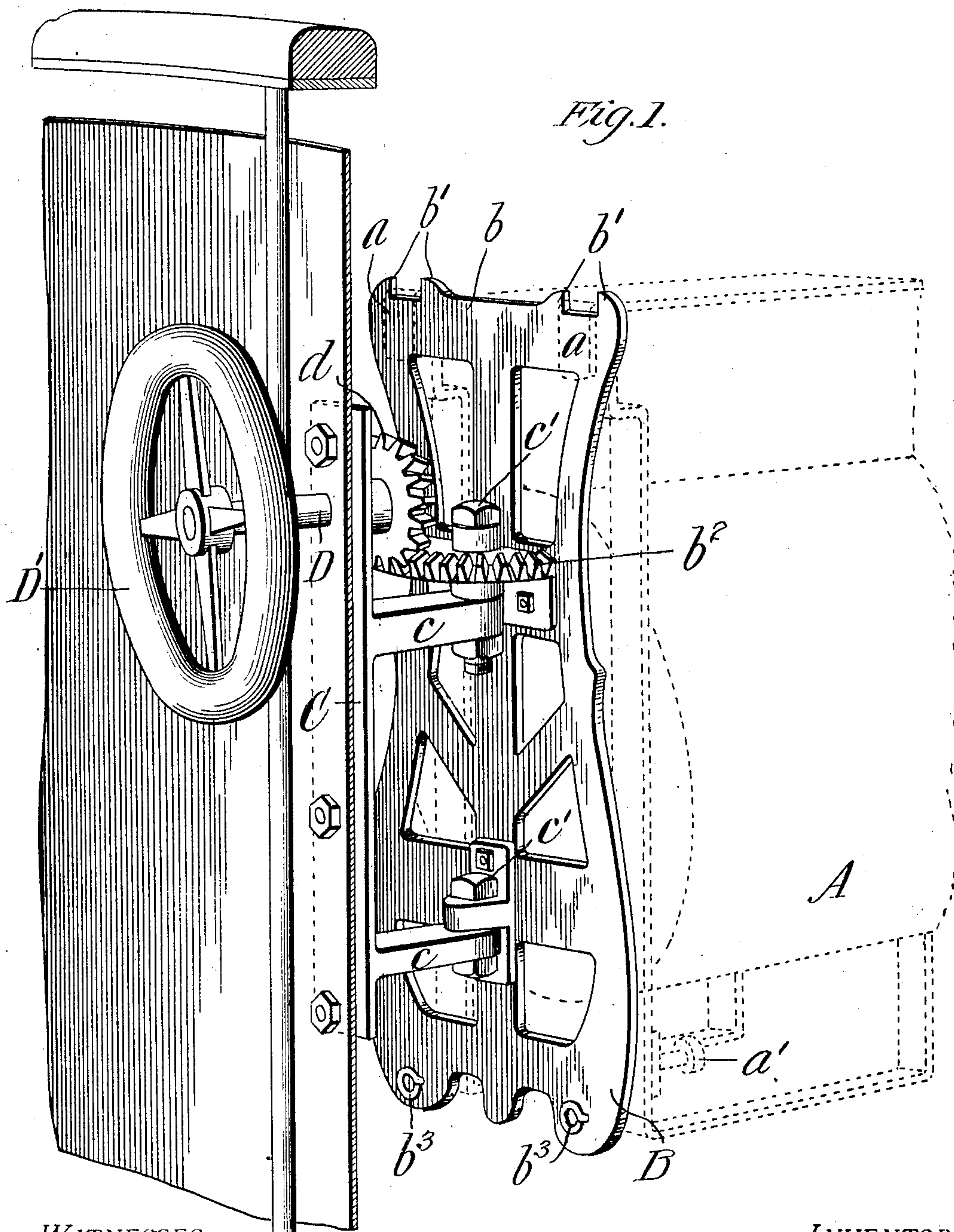
No. 869,549.

PATENTED OCT. 29, 1907.

F. P. COBHAM.  
HEADLIGHT ADJUSTING DEVICE.

APPLICATION FILED JAN. 3, 1907.

4 SHEETS—SHEET 1.



WITNESSES:

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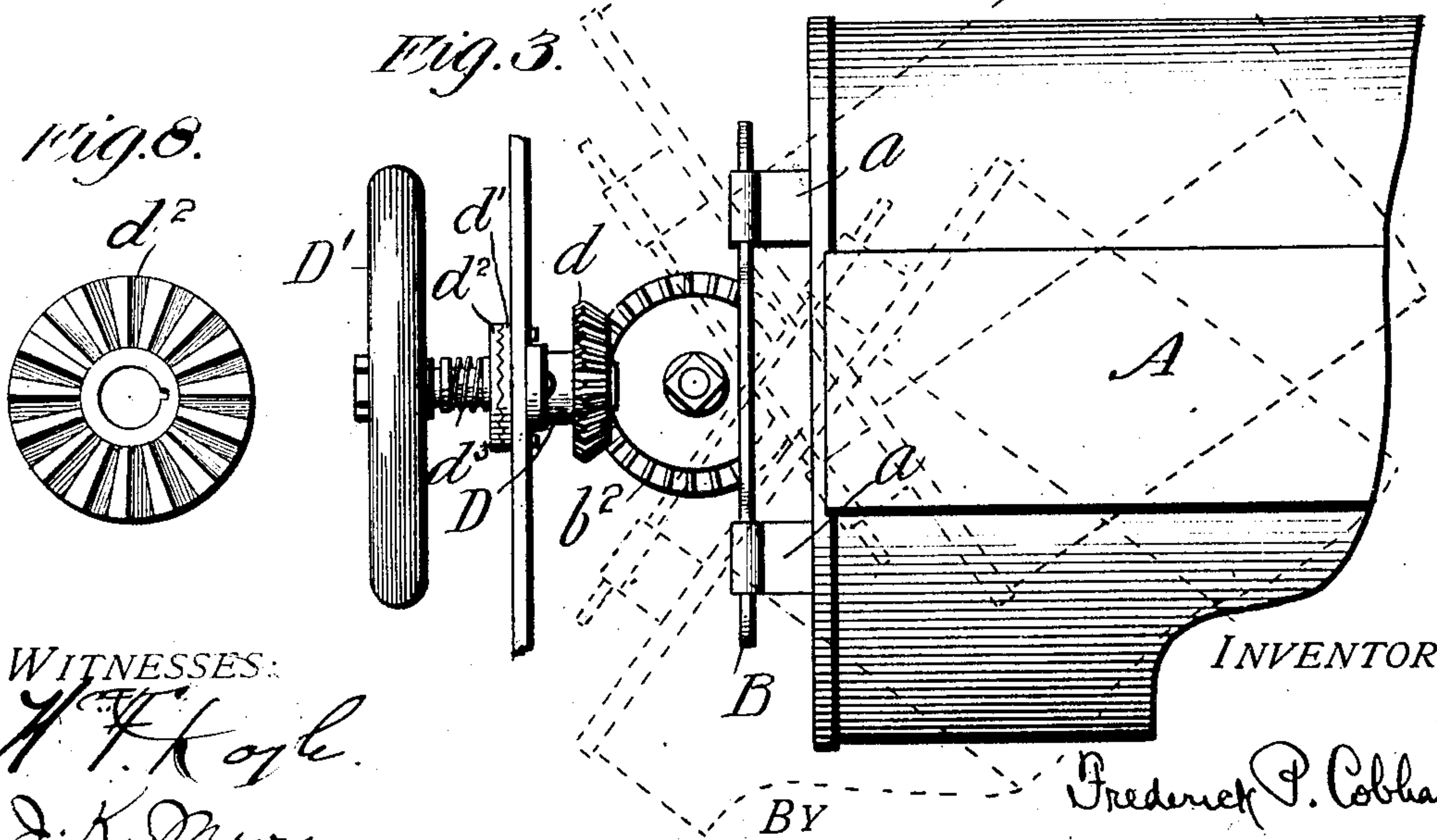
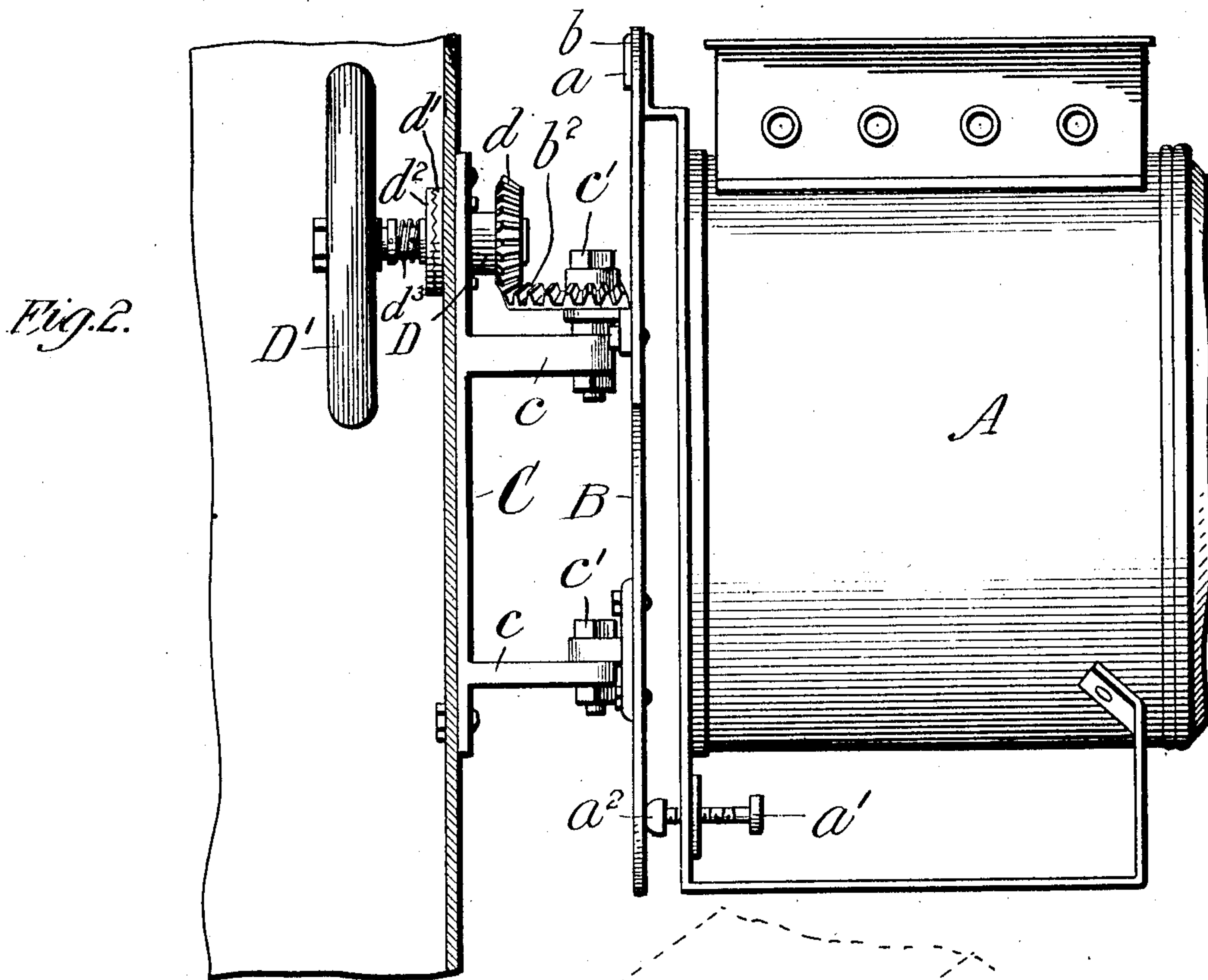
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4 SHEETS—SHEET 2.



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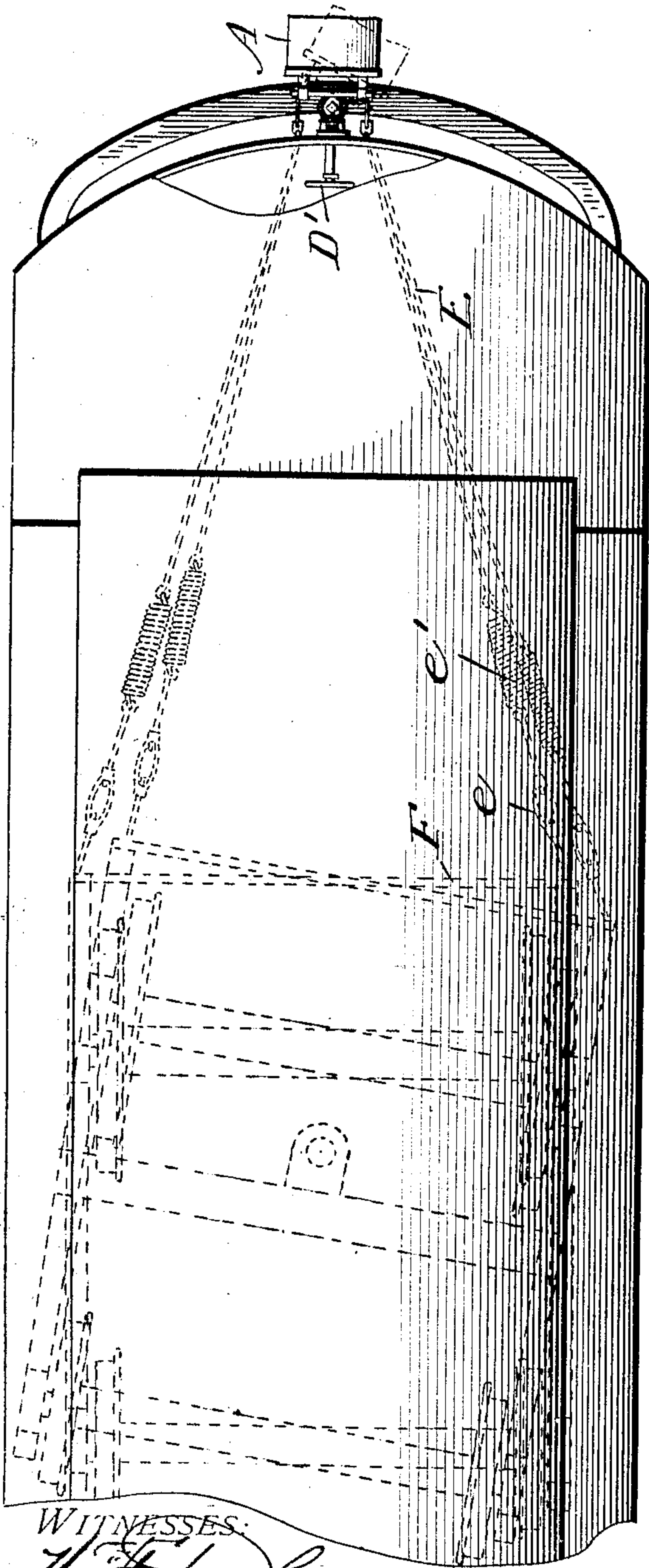
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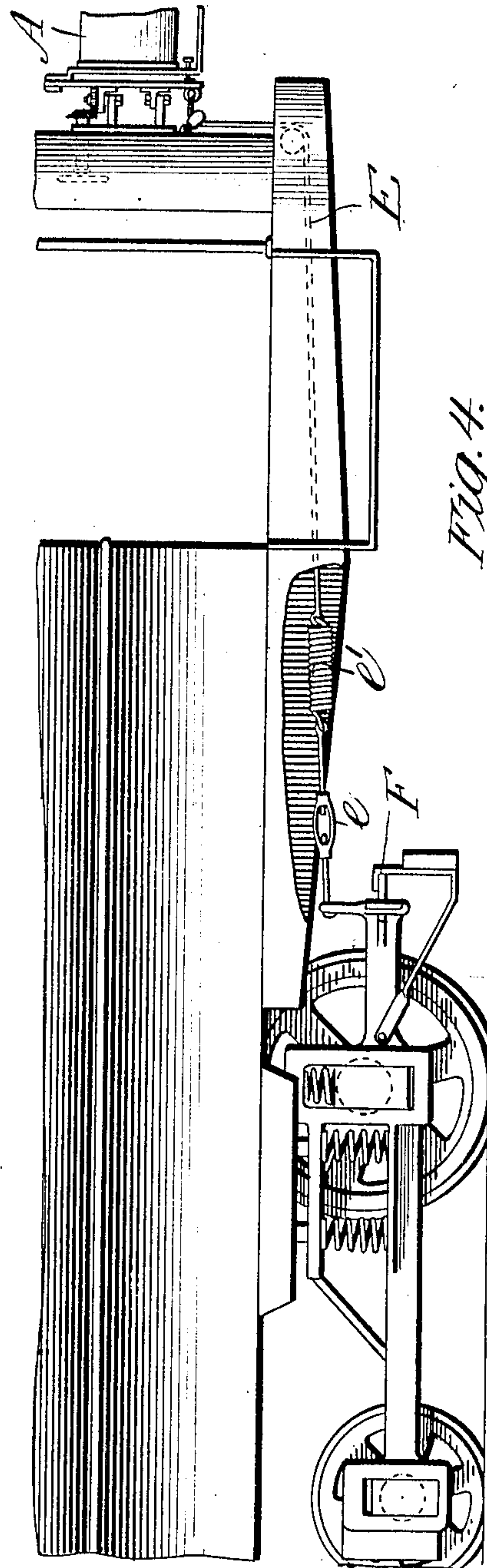
4 SHEETS—SHEET 3.



WITNESSES:

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*Fig. 5.*



*Fig. 4.*

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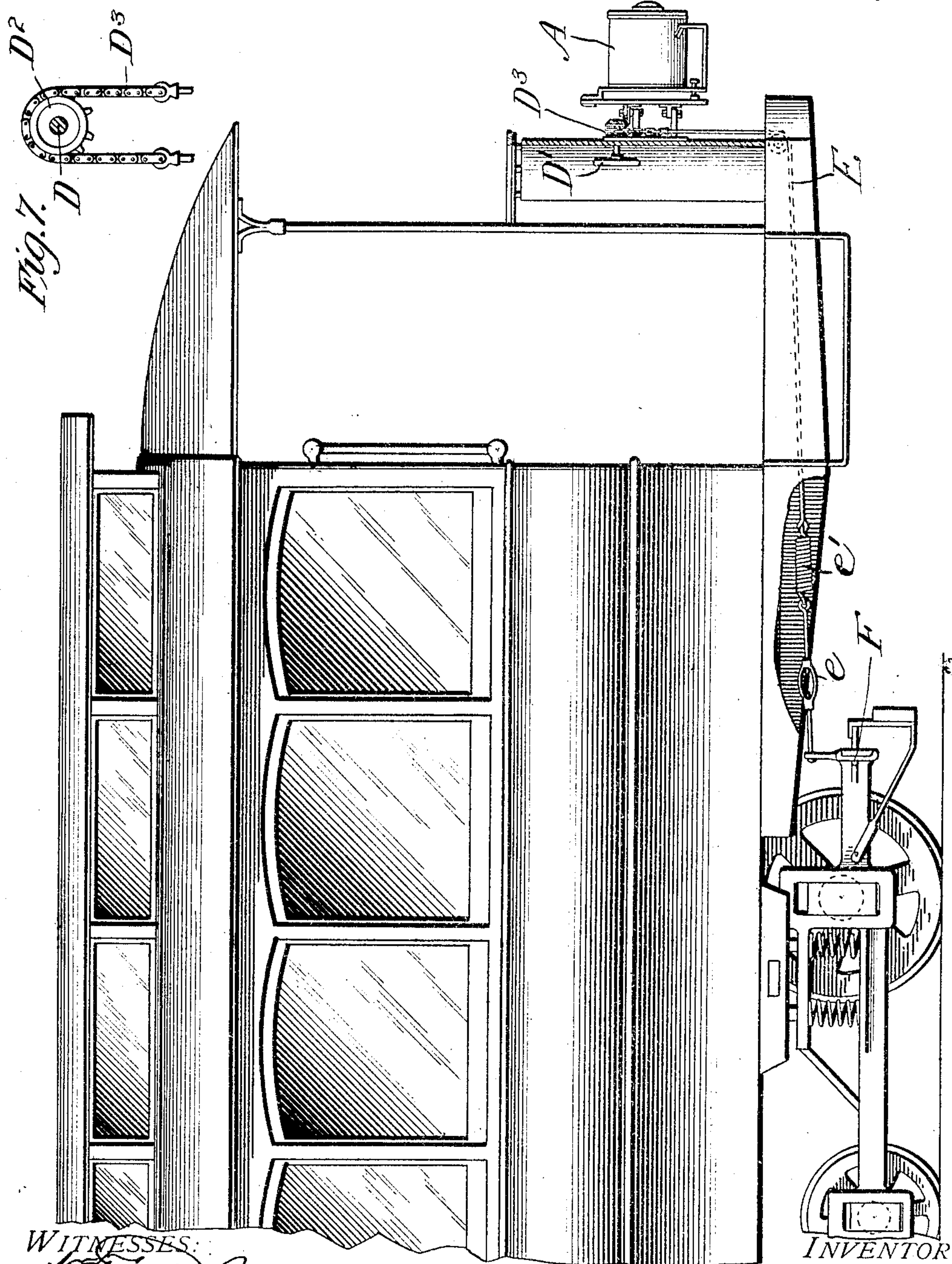
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4 SHEETS—SHEET 4.



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*Fig. 6.*

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# UNITED STATES PATENT OFFICE.

FREDERICK P. COBHAM, OF JAMESTOWN, NEW YORK, ASSIGNOR OF ONE-HALF TO  
FREDERICK E. WINDSOR AND ONE-HALF TO LEWIS SCHMUTZ, OF WARREN,  
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## HEADLIGHT-ADJUSTING DEVICE.

No. 869,549.

Specification of Letter's Patent.

Patented Oct. 29, 1907.

Application filed January 3, 1907. Serial No. 350,651.

To all whom it may concern:

Be it known that I, FREDERICK P. COBHAM, a citizen of the United States, residing at Jamestown, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Headlight-Adjusting Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in the novel features hereinafter described, reference being had to the accompanying drawings which illustrate several forms in which I have contemplated embodying my invention and said invention is fully disclosed in the following description and claims.

In the said drawings, Figure 1 is a perspective view of a portion of the dash board or front wall of a car, such as an electric trolley car, (the dash board being shown partly in section) and showing one form of my invention applied thereto, the headlight or lantern being indicated in dotted lines. Fig. 2 is a side elevation of the lantern or headlight and adjusting mechanism applied to a car and drawn to a smaller scale, the dash board or front wall of the car being shown in section. Fig. 3 is a top plan view of the parts shown in Fig. 1, different positions of the lantern or head light being indicated in dotted lines. Fig. 4 is a partial view of a car, showing my improved devices attached to the car and connected with the truck. Fig. 5 is a plan view of a portion of a car showing my improved devices attached and connected with the truck, different positions of the truck and the movement of the head light produced thereby being illustrated by dotted lines. Fig. 6 is a side elevation of a portion of a car showing my devices applied thereto, and illustrating a modified construction for connecting the head light support or hanger to the front truck. Fig. 7 is a detail view of a part of the automatic adjusting mechanism shown in Fig. 8. Fig. 8 is a detail of one of the locking plates shown in Fig. 3.

In the operation of trolley cars, it has been proposed to mount the headlight upon a pivotal connection and connect it with the front truck of the car so that the headlight will be swung laterally by the movements of the truck in following the tracks. While this automatic control of the headlight is advantageous, there are many occasions when it is highly desirable and important that the operator or motorman may be able to direct the rays from the headlight upon particular points or in particular directions, and my invention contemplates the combining with the automatic controlling means for the headlight, of independent hand operated devices by means of which the operator may at any time remove the headlight from the control of the automatic devices and operate it in either direction by

hand. For example, in passing around a curve the headlight when controlled by the automatic devices will be caused to direct its light entirely outside of the curve, so that none of the road bed is illuminated except for a few feet in front of the car, and in such case, when my present invention is employed, the operator may by means of the hand operated devices, instantly throw the light laterally across the curve and upon it, so as to light any and all portions of it, and in other ways it is found to be both necessary and desirable to have the headlight under manual control.

In carrying out my invention I mount the head light or lantern A (which may be of any desired type, but which is preferably an electric arc head light), upon vertically disposed pivots so that it may be swung either to the right or left. I prefer to provide a lamp support or hanger B, which is preferably made harp shape as shown in Fig. 1, having a horizontal top bar *b*, for receiving hook shaped projections *a* on the frame of the head light or lantern, the said top bar being provided with means for preventing the lateral displacement of the said projections *a*. In this instance the top bar of the hangers is provided with two pairs of projections *b'* *b'* between which the projections *a* lie.

C represents a bracket which is bolted or otherwise secured to the front wall or dash board of the car, and has two (or more) arms *c* extending forwardly and hinged by vertically disposed pivot pins or bolts *c'* to lugs *b<sup>2</sup>* on the rear of the hanger B.

The lantern A is secured in position to the hanger B by dropping its hooks *a a* over bar *b* between the projections *b'* *b'*, and the lower part of the lantern frame is provided with a pair of adjustable projections formed by screws *a'* *a'* (see Fig. 2) which rest against the front wall of the hanger B and maintain the lantern in vertical position, the ends of the screws *a'* *a'* being rubber tipped as indicated at *a<sup>2</sup>*. A miter gear or segment is preferably secured to the rear face of the hanger B', and its teeth mesh with a miter gear *d* on a shaft D, extending through a bearing in the bracket C, and through the wall of the car, where it is provided with a hand wheel D' or other operating device. See Figs. 1, 2 and 3.

This is the simplest form of the device and with this mechanism, it is obvious that the motorman who is operating the car can by simply turning the hand wheel to right or left, throw the rays from the head light laterally as desired. Thus in rounding a curve he can throw the light so as to sweep practically the entire curve, under ordinary conditions, whereas with a stationary head light the light will be directed away from the curve while the car is passing around the same.

I prefer to provide means for normally maintaining the median position of the hanger and head light, and



for automatically turning it to the right or left, according as the car is rounding a curve to the right or left. To this end the harp or hanger B is provided (as shown in Fig. 1) with attaching devices  $b^3$  on opposite sides of its pivotal connection, in this instance, loops or eyes as shown, to which are connected flexible connections such as wire ropes E (see Figs. 4 and 5) connected at their rear ends to the truck of the car, indicated at F. Each of these wire ropes E is preferably provided with a turn buckle  $e$  and a section of spiral spring  $e'$ , or other yielding device, and extends over suitable pulleys to one of the eyes  $b^3$  of the hanger B. With this construction, if the car moves around a curve in either direction the deflection of the truck caused by the rails of the curve will through the wire ropes or connections E cause the head light to turn in the same direction and keep the light on the road bed of the curve, and when the car again enters a straight section of track the head light will be automatically positioned to throw the light straight ahead.

I wish it to be understood that the devices for the hand manipulation of the lantern support or hanger, and the automatic devices may be used separately, and that they may also be used advantageously in connection with each other. Thus if the hanger B, shown in Fig. 1 (in which figure the hand adjustment only is illustrated) have its eyes  $b^3$   $b^3$  connected with the truck in the manner illustrated in Figs. 4 and 5 the movements of the truck will automatically position or adjust the hanger and head light, and at the same time the yielding sections or springs  $e'$  in the connections E will permit the motorman to instantly operate the lantern by hand wheel D' in any desired direction. As soon as the motorman releases the hand wheel the lantern will automatically respond to the movements of the truck as before described. Thus in case the car is moving straight ahead and the motorman operates the hand wheel D' to throw the light to one side or the other, on his releasing the wheel, the light will be brought at once to its median position. The springs  $e'$  will also compensate for the jolting of the car and truck, and in case of derailment will expand and prevent injury to the hanger B, and connections E.

In Figs. 6 and 7 I have illustrated a construction for the combined automatic and hand adjustment or control of the hanger B, in which the shaft D is provided with a sprocket wheel D<sup>2</sup>, over which a short section D<sup>3</sup> of sprocket chain is placed the ends of which are connected with the flexible connections E as shown, so that the oscillations of the truck F will cause the shaft D to rotate and thus move the lantern into the desired position.

In cases where the hand adjusting devices are used alone as shown in Figs. 1, 2 and 3 I prefer to provide the mechanism with means for automatically retaining or holding the hanger B and the lantern in any position to which they may be adjusted and to prevent the lantern from swinging by the jolting of the car. For this purpose I prefer to employ a pair of interlocking disks  $d'$   $d^2$ , one of which is shown in detail Fig. 8, and which have faces provided with radial V-shaped projections. One of these disks  $d'$  is secured to the car wall (see Fig. 3) and the other  $d^2$  is keyed on the shaft D, so as to be movable longitudinally thereon and is provided

with a coiled spring which holds said plates or disks together. It will thus be seen that the described retaining device will hold the headlight support and the headlight in any position to which it may be adjusted, but the operator can move the headlight and support in either direction and at any time by means of the hand operated device. This retaining device may be omitted, however, when the automatic connection with the truck is employed. It will also be understood that in the forms of my invention shown in Figs. 4, 5 and 6, the hand wheels may be omitted and the position of the hanger and headlight controlled entirely from the trucks if desired, although I prefer to provide for both a manual and automatic control, as therein illustrated. What I claim and desire to secure by Letters Patent is:—

1. The combination with a vehicle, of a pivoted headlight support mounted thereon, automatic positioning devices, including connections extending to said pivoted support, for automatically moving said pivoted support to conform to changes of direction of said vehicle, and a hand operated device, for independently adjusting said headlight support, said connections being constructed to permit said hand operated devices to temporarily take the headlight support from the control of said automatic devices, and to return it to the control thereof, substantially as described.

2. The combination with means for pivotally supporting a headlight, of automatic positioning devices, connected with said supporting means and controlled by the position of the front truck of the vehicle, and including yielding devices, and a hand operated device connected with said supporting means for taking them temporarily out of the control of the automatic devices, substantially as described.

3. The combination with means for pivotally supporting a headlight, of connections from said supporting means to the truck of the vehicle, for automatically positioning said headlight, springs interposed in each of said connections and an independent hand operated device connected with said supporting means, substantially as described.

4. The combination with a pivotally mounted supporting frame for a headlight, of connections between said frame and the front truck of the vehicle, for swinging the said support laterally upon its pivotal connection, said connections being provided with yielding devices therein, a hand wheel located in the vehicle and gearing connecting said hand wheel with the said supporting frame, for independently adjusting said frame without regard to the automatic devices, substantially as described.

5. The combination with a pivotally mounted supporting frame for a headlight, of a shaft provided with a hand operating device, gearing connecting said shaft with said frame, flexible connections between said shaft and the front truck of the vehicle for automatically controlling the position of said frame and springs located in said flexible connections, to permit of the independent operation of said hand operated shaft, substantially as described.

6. The combination with a pivoted support for a headlight, of hand operated devices therefor including a shaft, a retaining device, for said shaft comprising a pair of disks provided with interlocking V-shaped projections, one of said disks being stationary and the other secured to said shaft, but movable longitudinally thereof, and a spring engaging said movable disk and holding it in engagement with the stationary disk, whereby said support will be retained in its adjusted positions against accidental displacement, but may be moved in either direction by said hand operated device, substantially as described.

In testimony whereof I affix my signature, in the presence of two witnesses.

FREDERICK P. COBHAM.

Witnesses:

M. LAVERN CLAPP;  
G. H. WADE.