

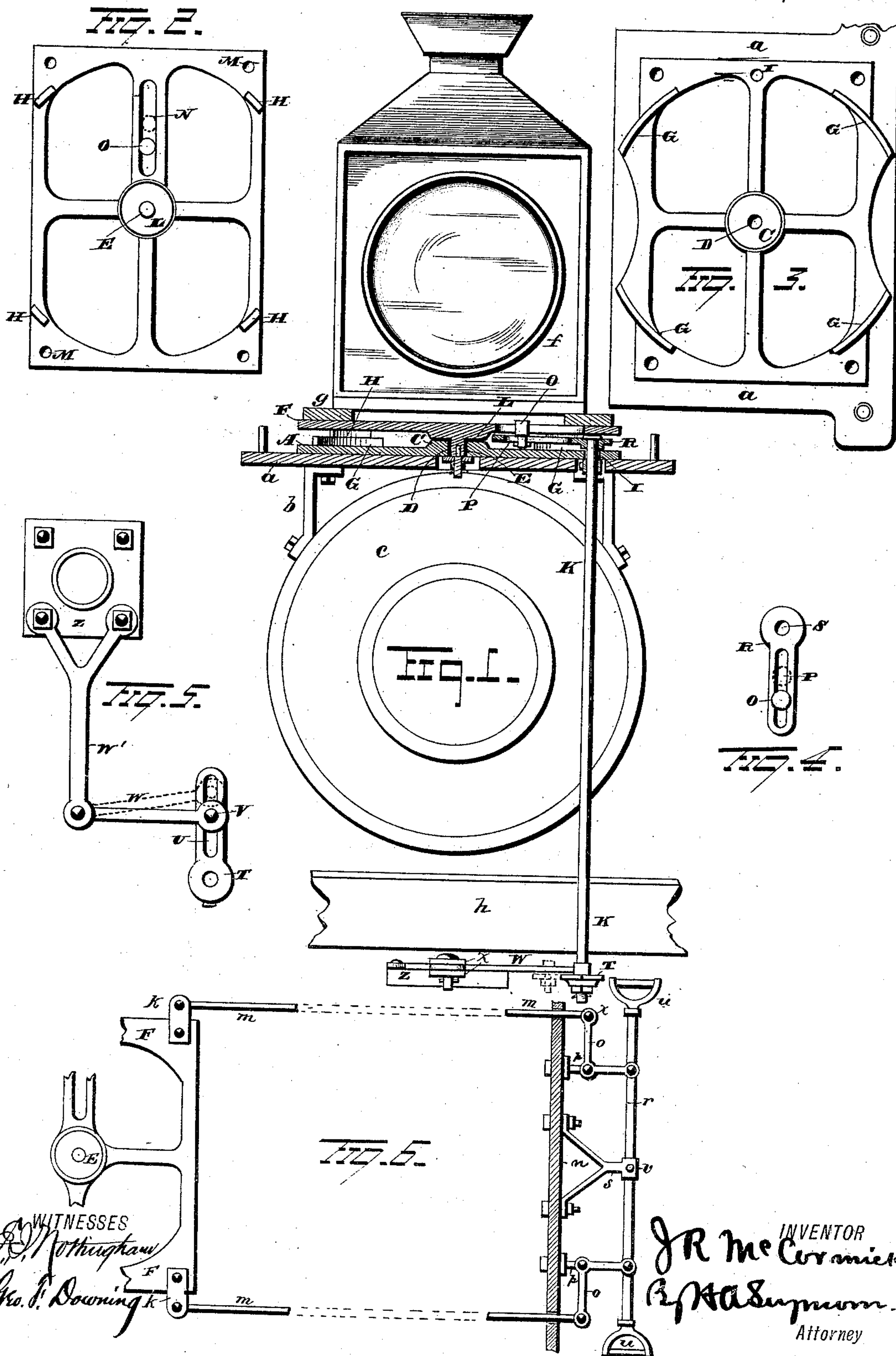
(No Model.)

2 Sheets—Sheet 1.

J. R. McCORMICK.
LOCOMOTIVE HEAD LIGHT.

No. 314,700.

Patented Mar. 31, 1885.



WITNESSES
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(No Model.)

2 Sheets—Sheet 2.

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FIG. 7.

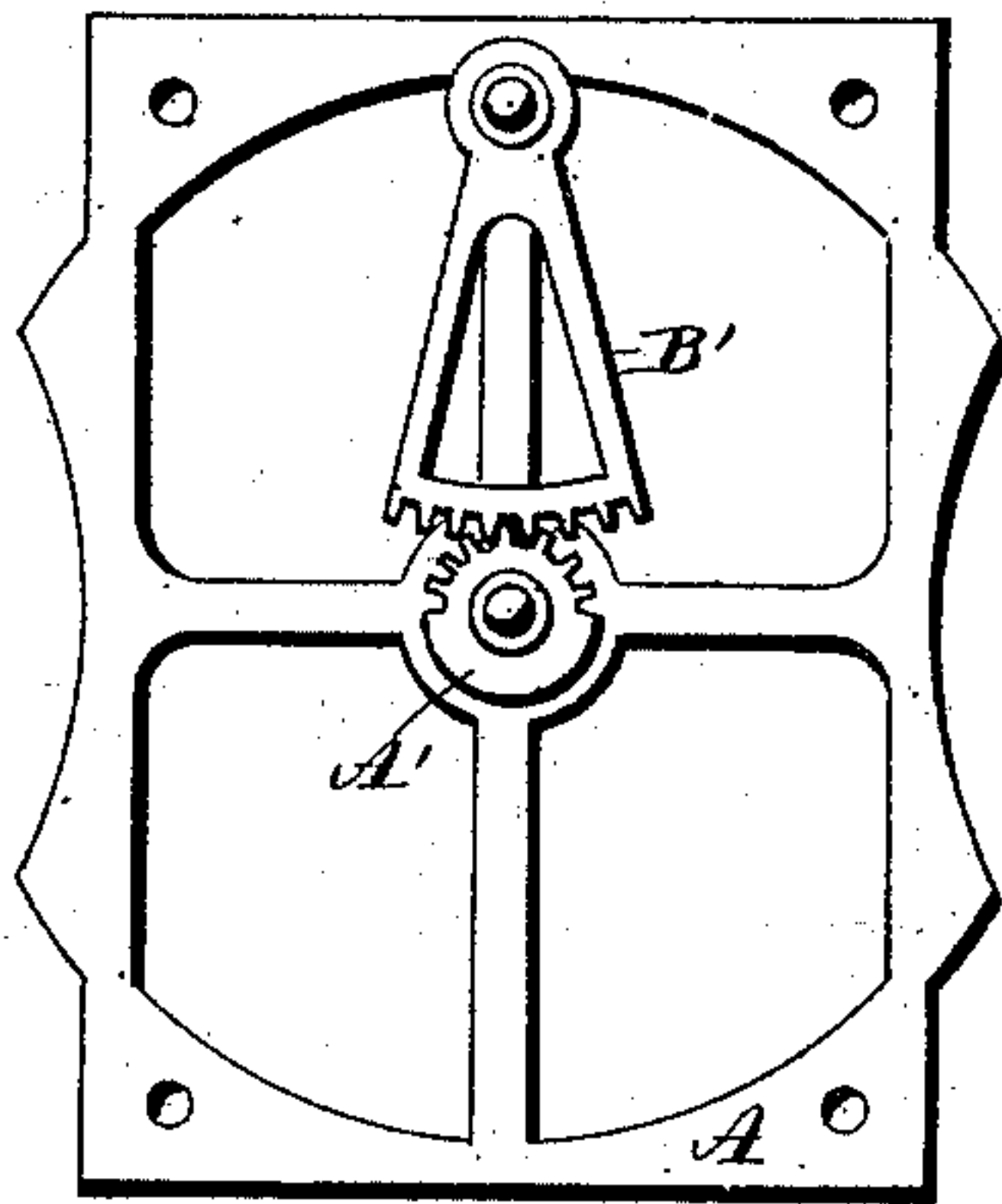
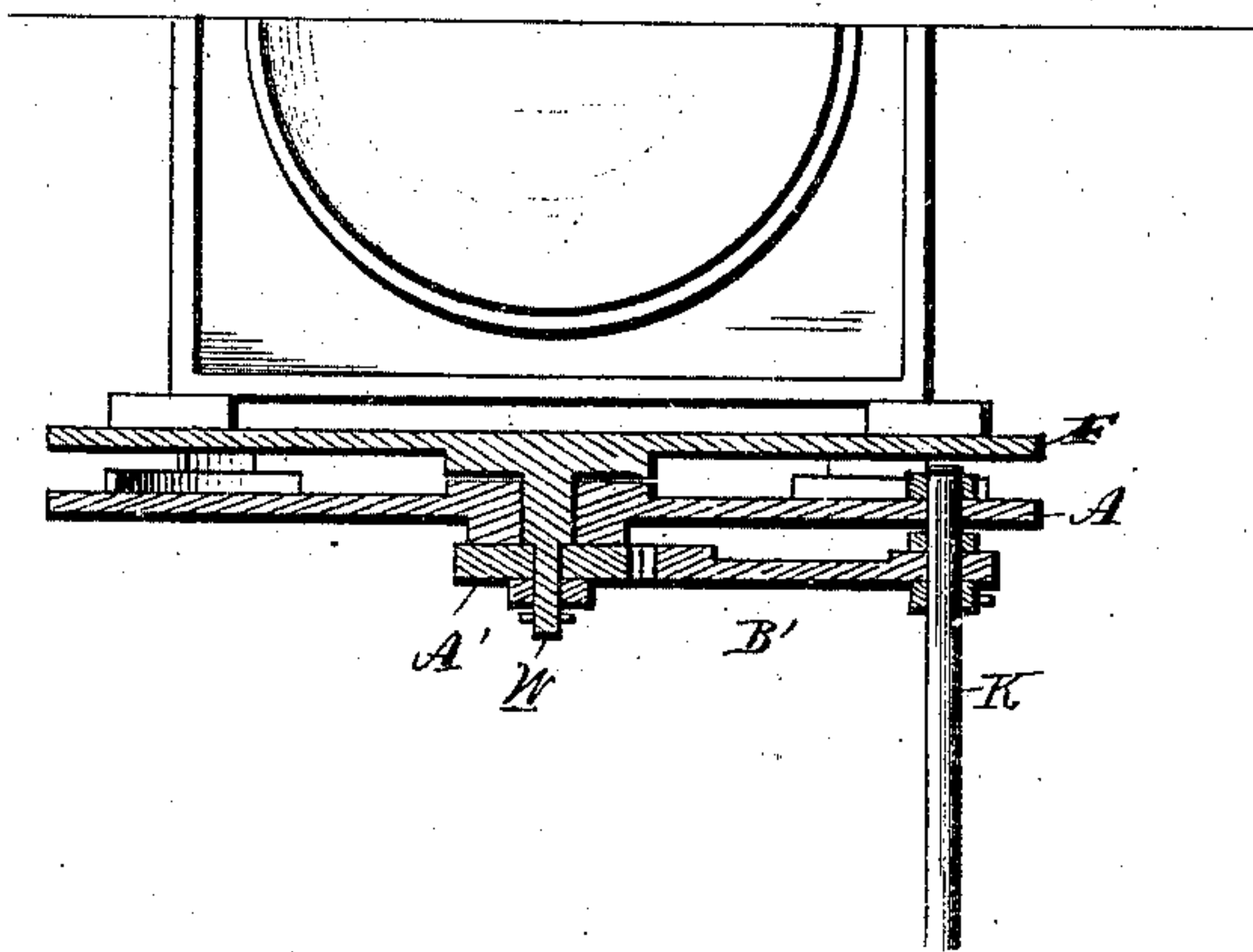


FIG. 8.



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UNITED STATES PATENT OFFICE.

JOHN ROBERT McCORMICK, OF AUSTIN, TEXAS, ASSIGNOR OF ONE-HALF TO
FREDERICK E. RUFFINI, OF SAME PLACE.

LOCOMOTIVE HEAD-LIGHT.

SPECIFICATION forming part of Letters Patent No. 314,700, dated March 31, 1885.

Application filed April 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN ROBERT McCORMICK, of Austin, in the county of Travis and State of Texas, have invented certain new and useful Improvements in Locomotive Head-Lights; 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 relates to an improvement in locomotive head-lights.

Head-lights as now commonly constructed are stationary or rigidly secured to the locomotive, thereby throwing the light in but one direction—in a direct straight line in front of the locomotive and in a line with its longitudinal axis, allowing no variation to either side. This construction and arrangement have been found objectionable in that it is impossible to properly light up a curve before running upon it or while traveling over it, or to light up the straight track ahead while traveling around the curve.

The object of my invention is to provide a head-light for locomotives that shall be movable either automatically by means of levers or gearing connected with the front truck under the locomotive, or adapted to be operated by hand by means of levers or gearing within easy reach of the engineer.

With these ends in view my invention consists in the combination, with a head-light of any suitable construction, of a movable plate to which the head-light is secured, a fixed plate, and suitable levers or gearing connecting said movable plate with the front truck of the locomotive, the moving of which latter in accordance with the curves over which it travels operating to move the plate supporting the light, whereby the light is automatically thrown in the direction required.

My invention further consists in the combination, with a head-light, of a movable plate supporting the same, and a set of levers or gearing secured to the movable plate and extending to or within the cab within easy reach of the engineer, and by which the light may be turned in any direction.

My invention further consists in certain novel features of construction and combina-

tions of parts, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view of my improvement, showing the revolving plate in position on the stationary plate. Fig. 2 is a plan view of the lower face of the upper revolving plate. Fig. 3 is a plan view of the upper face of the lower stationary plate. Fig. 4 is a plan view of the lever and pin which operate the revolving plate. Fig. 5 is a top plan view showing the levers attached to the center plate of the truck and connected with the shaft conveying the motion to the revolving plate. Fig. 6 is a plan view showing the revolving plate connected by rods to the levers within the cab to operate the light by hand. Figs. 7 and 8 show a modification.

A represents the stationary plate, bolted to a plate, *a*, which latter is fastened to the brackets *b*, secured to the boiler *c*.

If desired, instead of bolting the plate A to the plate *a*, it may be rigidly secured to the brackets *b*, thus doing away with the plate *a*. The said plate A is formed with a central hub, C, centrally provided with a hole or perforation, D, for the reception of the pin E, attached to or formed integral with the upper revolving plate, F, which latter is also provided with a hub, L, on its under face, and bearing on the hub C of the plate A.

Near each corner of the plate A, and on its upper face, are formed the upwardly-extending lugs or tracks G, the same being curved as shown in Fig. 3 of the drawings. The plate F has also formed on its under face, and near the corners thereof, the downwardly-projecting lugs H, adapted to bear and move on the trucks G and support the four corners of the upper revolving plate, F.

The head-light *f*, constructed of any desired pattern and dimensions, is rigidly secured to the revolving plate F by means of bolts passing through the blocks *g*, and through the holes M in the plate F, the latter being provided with a slot, N, in which moves the pin O, adjustably secured within the slot P, formed in the crank R. The said crank is provided at one end with a hole, S, through which passes a set-screw adjustably securing said crank to the shaft K, adapted to transmit the motion from the front truck of the locomotive, as will

be hereinafter described. The shaft K passes through the hole I in the plate A to and through the platform h, and is secured to the crank T, the latter being provided with an elongated slot, U, in which is adjustably secured the pin V, formed on the end of the link W, which latter in turn is pivoted to the bar W', secured to the center plate, Z, or other suitable portion of the front truck.

From this construction and arrangement of parts it will be readily seen that when the locomotive enters upon the curve the truck, in changing its position with relation to the boiler, moves the bell-crank W accordingly, which, through the intervention of the crank T and the vertical shaft K and crank R, moves the plate F, supporting the head-light, in a similar direction to the front truck, thereby operating to throw the rays of light in the direction in which the truck is traveling, and as the pins E and V are made adjustable the leverage can be so increased as to throw the light in and within the direction or circle of a curve for a great distance ahead of the locomotive.

Fig. 6 of the drawings shows my improved devices whereby the light may be operated by hand.

When it is desired to employ this device, the connection between the truck and the lamp, for automatically operating the latter, is removed or disconnected, and the plate F, on which the lamp is seated, is provided with the pieces k, to the outer ends of which are loosely secured the rearwardly-extending connecting-rods m, which pass through openings formed in the front wall, n, of the cab.

To the inner side of wall n of the cab is rigidly secured the bracket s, to which is movably secured the longitudinally-sliding rod or lever r, provided at each end with a handle, u. To the inner side of the wall n are also secured the bearings or brackets p, to which are loosely fastened the bell-crank levers o, one end of each of which is rigidly secured to the rod r, the outer end being fastened to the inner ends of the rods m, the lateral arms of said bell-cranks extending in opposite directions. The bracket s, if desired, may be provided with a set-screw, v, adapted to impinge on the rod r and lock the latter when it is desired to secure the head-light in a fixed position. By pulling either handle u on the bar r the latter will slide in the bracket s, and by means of the bell-cranks will move the rods m in opposite directions, and thereby move the head-light supported on the table F and direct the rays to any point desired.

Figs. 7 and 8 show a modification of the devices for moving the head-light, in which A represents the lower face of the lower stationary plate, and F the upper revolving plate, centrally provided with a downwardly-projecting pin, w.

To the lower end of the pin w, below the plate A, is secured the mutilated pinion A', with which meshes the segmental gear B', secured to the shaft K below the plate A. It will

be seen that when the shaft K is turned it will, through the intervention of the said gear and pinion, transmit its motion to the plate F, and thus turn the light secured thereon.

I would have it understood that I do not limit the application of my invention to locomotives, as it might be used with good results on carriages, wagons, and other vehicles.

I am aware that it is not new to connect a locomotive head-light to the front truck by means of a rod having its opposite ends bent at right angles to the main portion thereof, one of said bent ends passing through an eye secured to the head-light, and the other through an eye secured to the truck, and hence I make no broad claim thereto. In this device the bent ends are liable to become wedged in the eyes, and there is no possible way of adjusting the parts to permit the lamp to turn more or less without disarranging the entire apparatus.

In my device the parts are so connected as to insure a positive movement of the lamp without danger of binding, and the parts can be adjusted so as to turn the lamp more or less, as necessity demands.

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

1. The combination, with a head-light pivotally secured to a locomotive, and a bar rigidly secured to the movable truck, of a vertical shaft, a horizontal arm or lever rigidly secured to said shaft and loosely connected with the lamp, and links or arms connecting the lower end of the shaft with the bar on the truck, substantially as set forth.

2. The combination, with a head-light pivotally secured to a locomotive, and a bar rigidly secured to the forward truck of said locomotive, of a vertical shaft, a horizontal arm or lever secured to said shaft, a lug or pin connecting the horizontal arm or lever and the lamp, and links or arms connecting the lower end of said shaft with the bar on the truck.

3. The combination, with a head-light pivotally secured to a locomotive, and a vertical shaft for turning said head-light, of a bar secured to the front truck of the locomotive, and adjustable links or arms connecting the bar and shaft, whereby the angle at which the light is turned may be regulated.

4. The combination, with a revolving plate supporting a head-light, of a lower supporting-plate secured to the locomotive, a lever or crank adjustably secured to the revolving plate, and a vertical shaft adjustably connected with the front truck of the locomotive, whereby the light may be turned at any angle with the locomotive, substantially as set forth.

5. The combination, with a revolving plate supporting a head-light, of a lower supporting-plate, a lever adjustably secured to the revolving plate, a vertical rod or shaft secured to said lever, a bar secured to the front truck of the locomotive, a link, and a lever adjustably connecting the bar with said shaft, substantially as set forth.

6. The combination, with a head-light rigidly secured to a plate, the latter being pivoted to the locomotive and provided with an oblong slot, of a shaft indirectly connected
5 with the front truck of the locomotive, an arm secured to said shaft, and a lug or pin secured to said arm and resting and moving in the slot in said plate.

7. The combination, with a stationary plate,
10 a plate pivoted to said stationary plate, and a head-light secured to said pivoted plate, of the

upright shaft adjustably connected at its lower end to the forward truck of the locomotive, and adjustably connected at its upper end to the pivoted plate.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN ROBERT McCORMICK.

Witnesses:

LEOPOLD F. ENGLER,
JOHN S. STROUD.

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