

No. 607,561.

Patented July 19, 1898.

W. O. ABBOTT.

CAR SIGNAL.

(Application filed Nov. 16, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2.

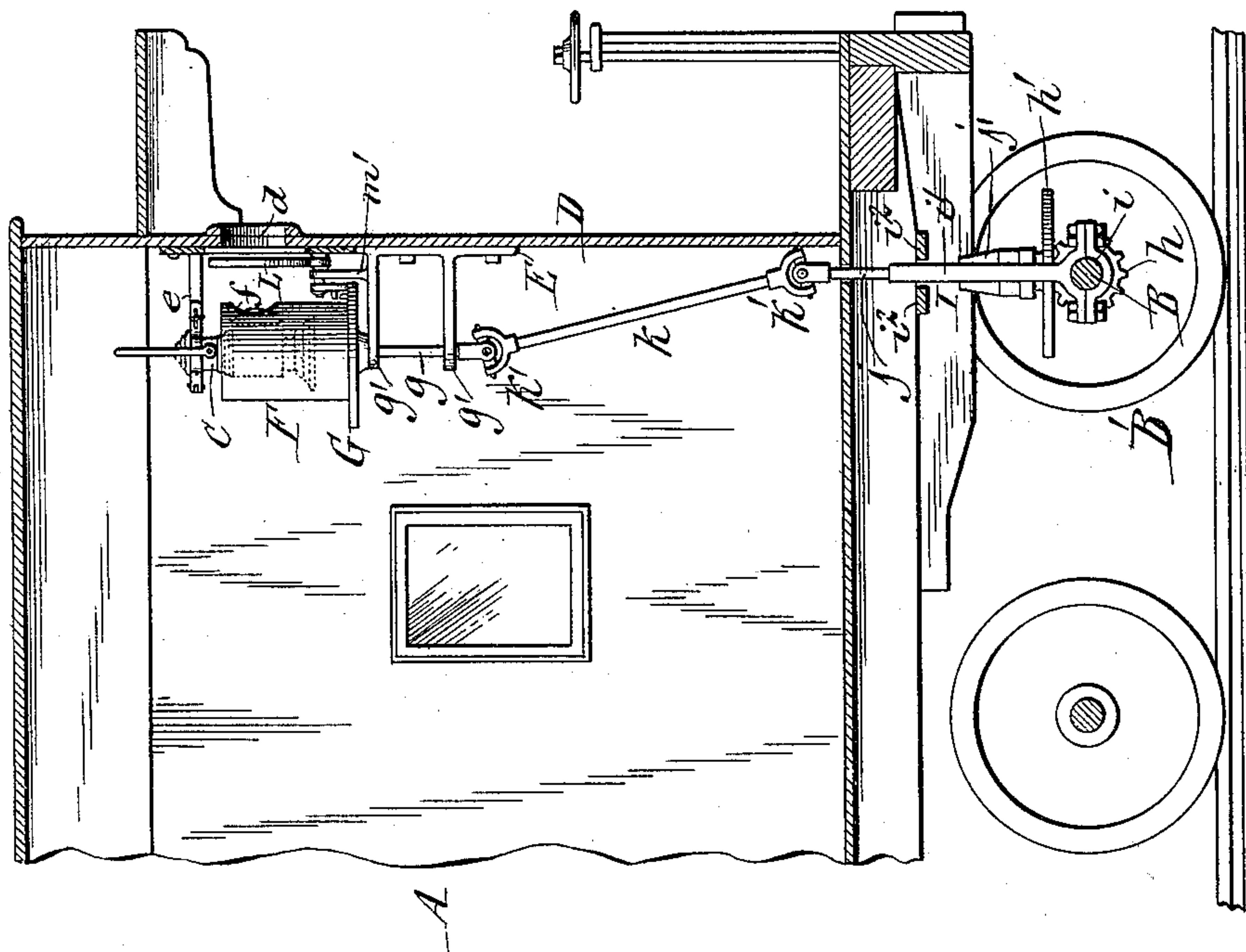
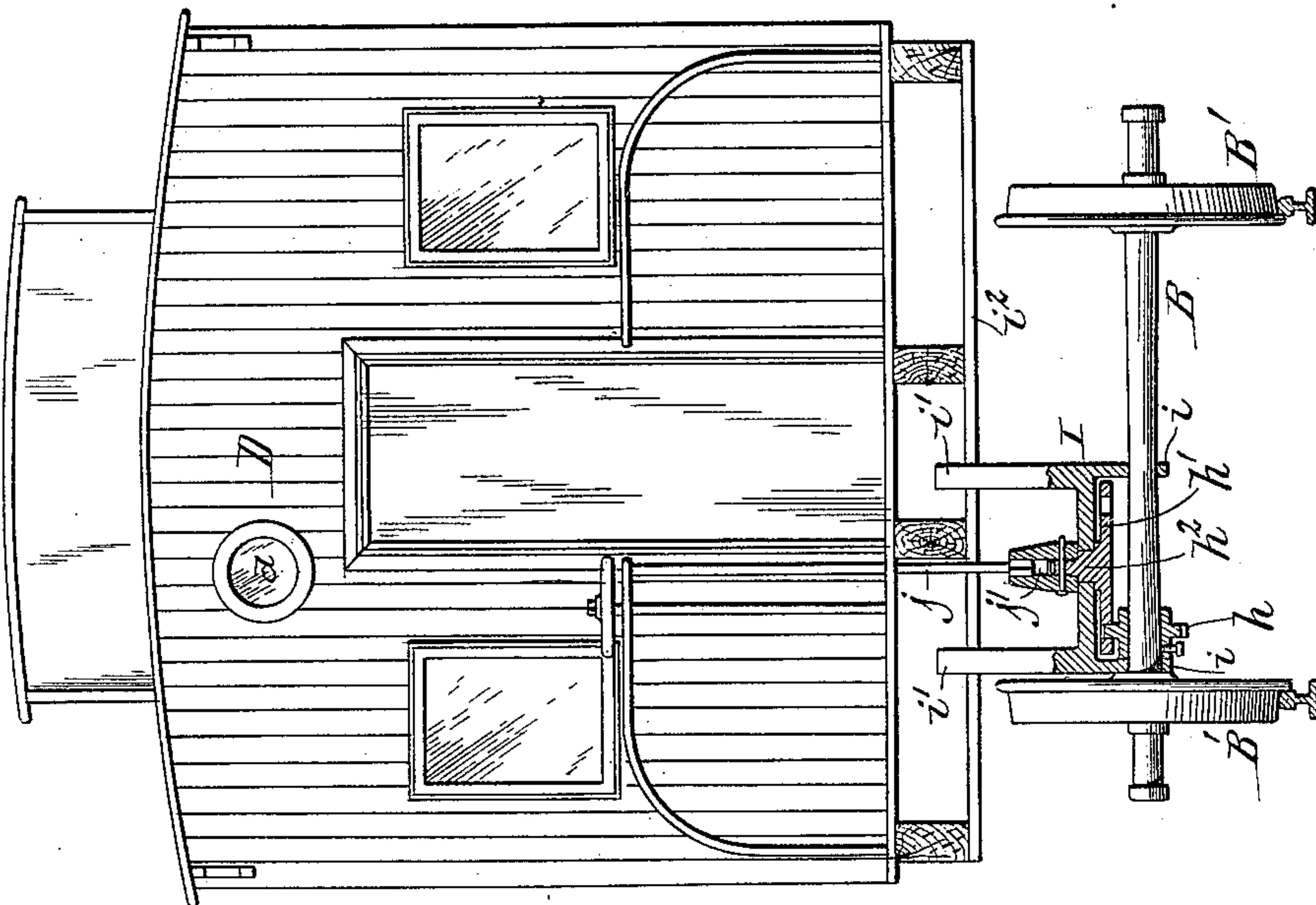


Fig. 1.



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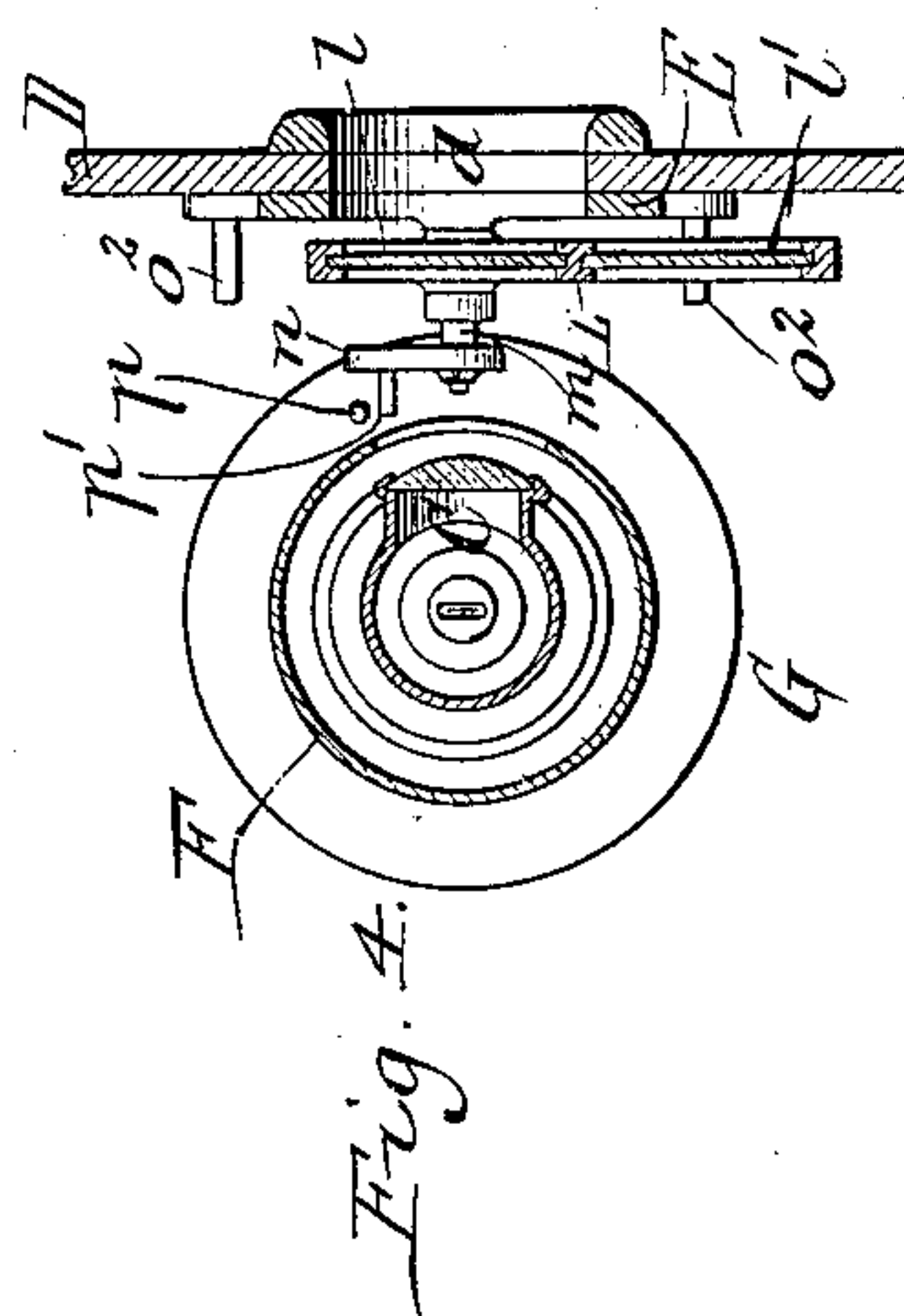
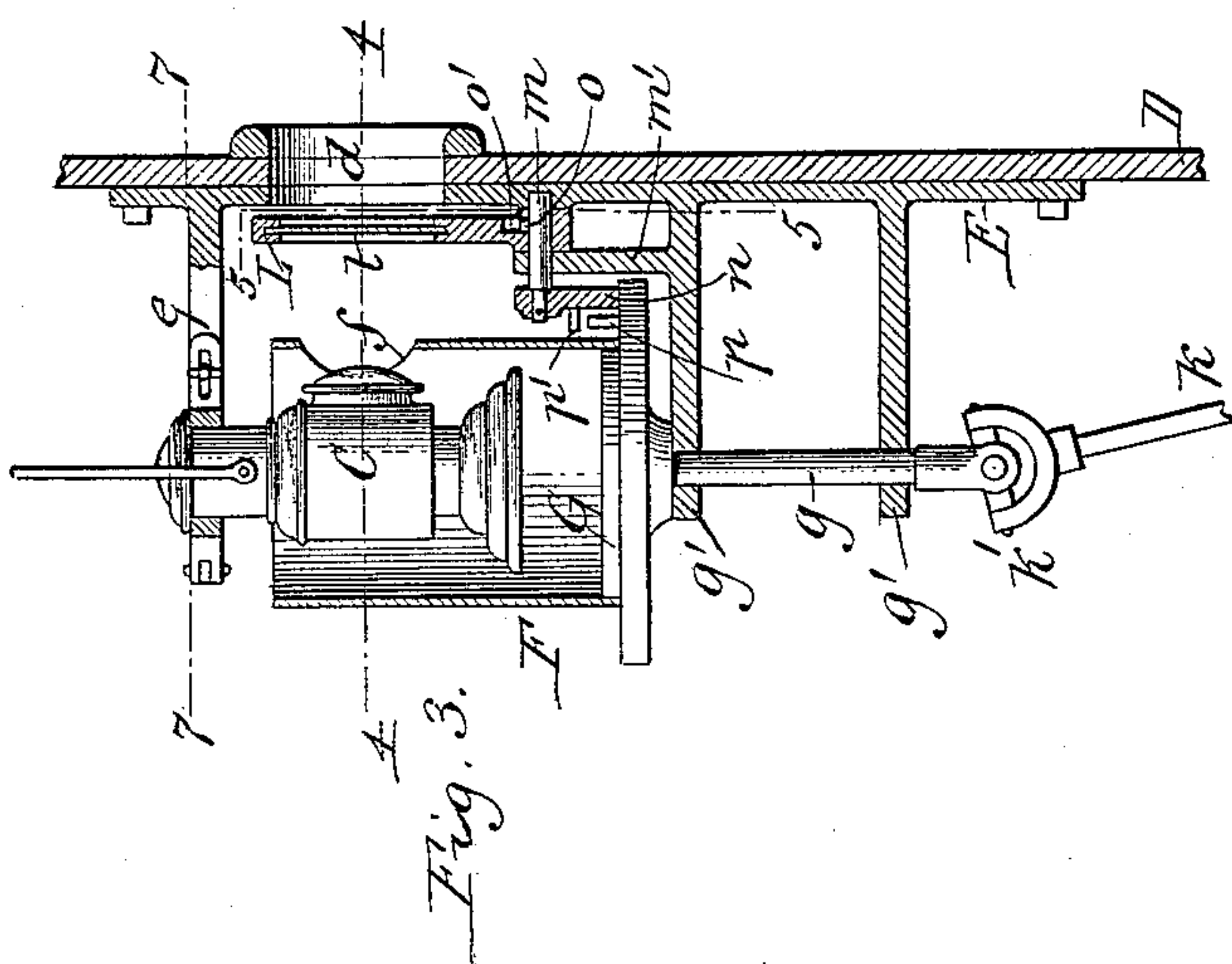
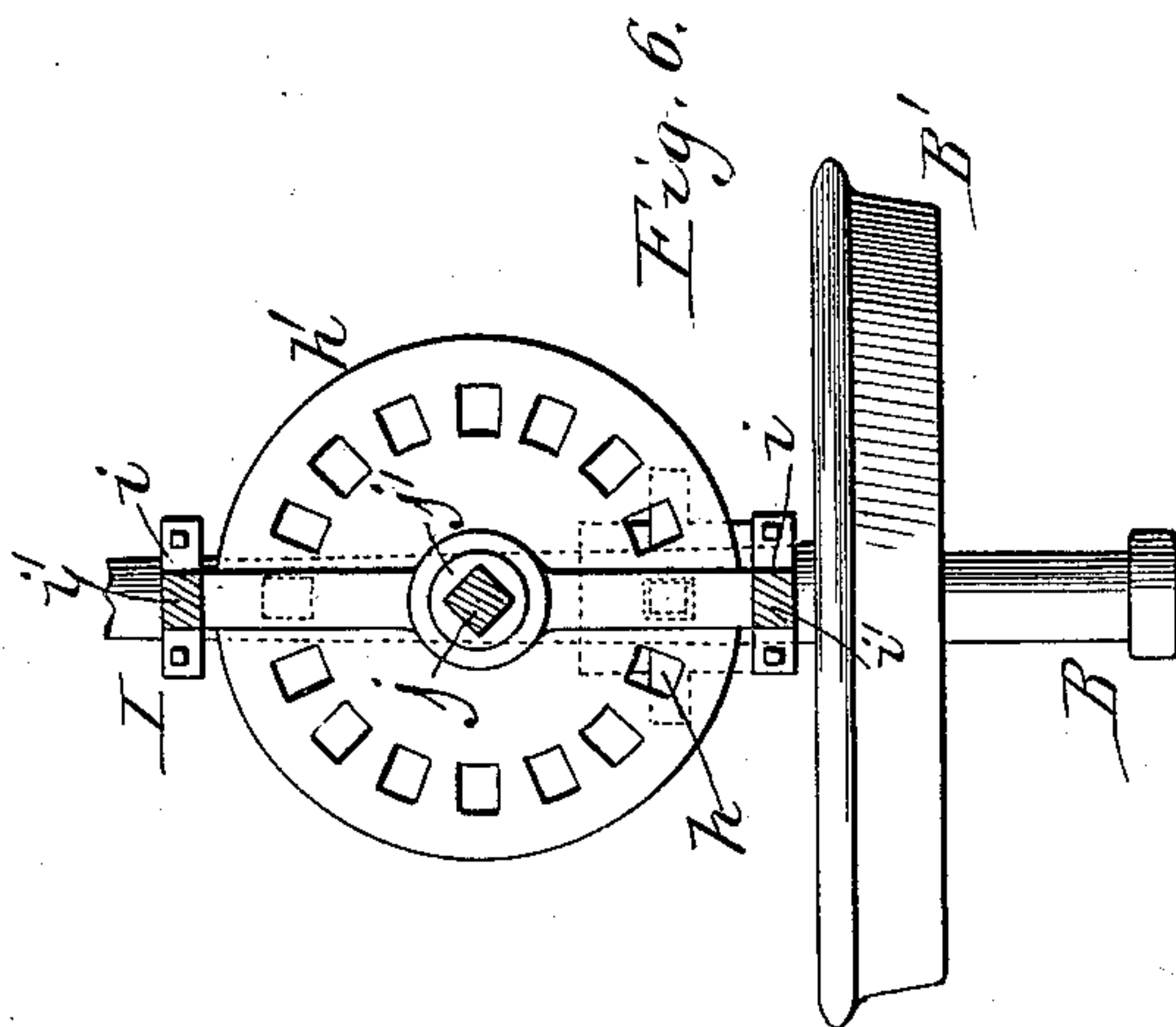
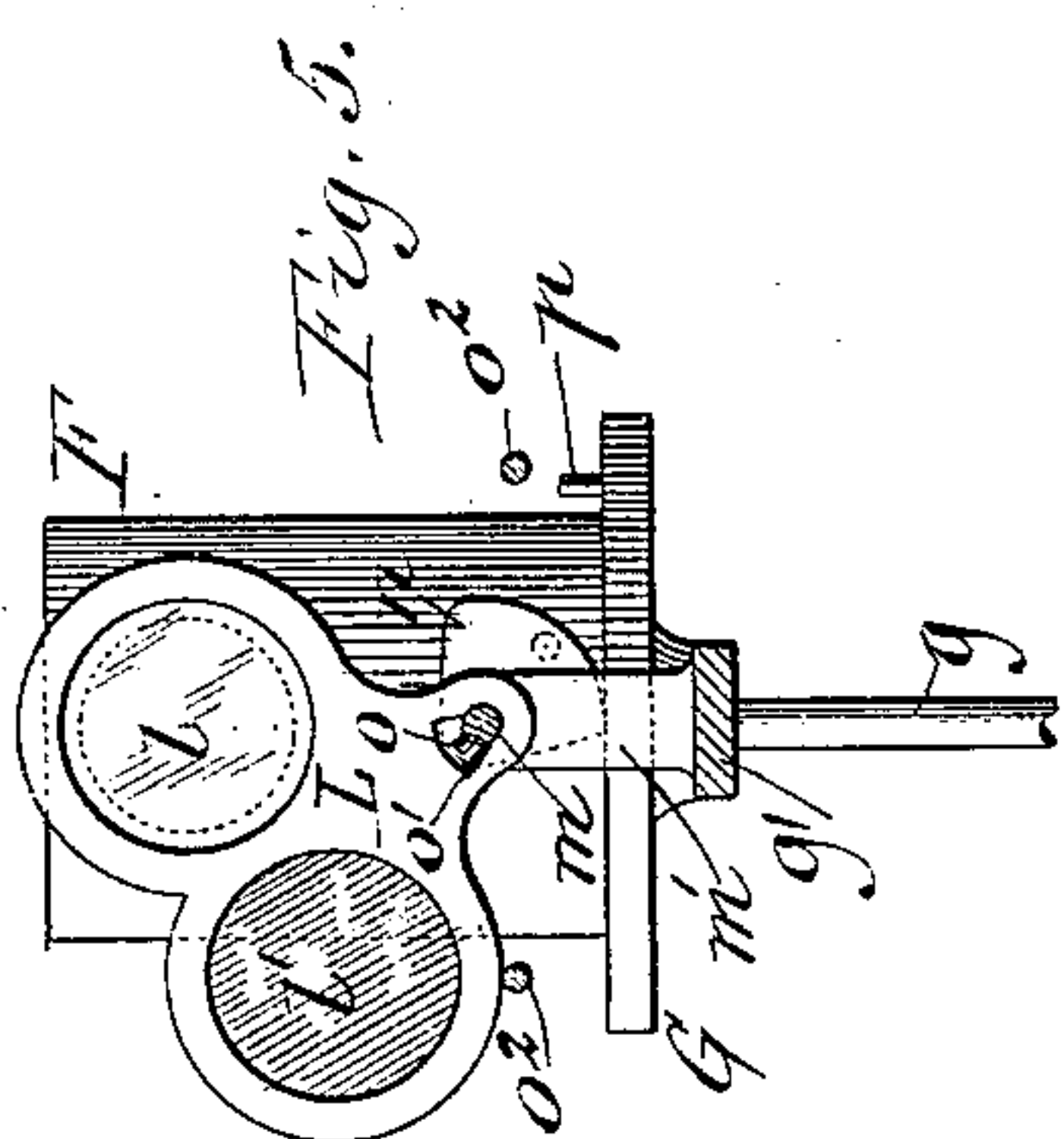
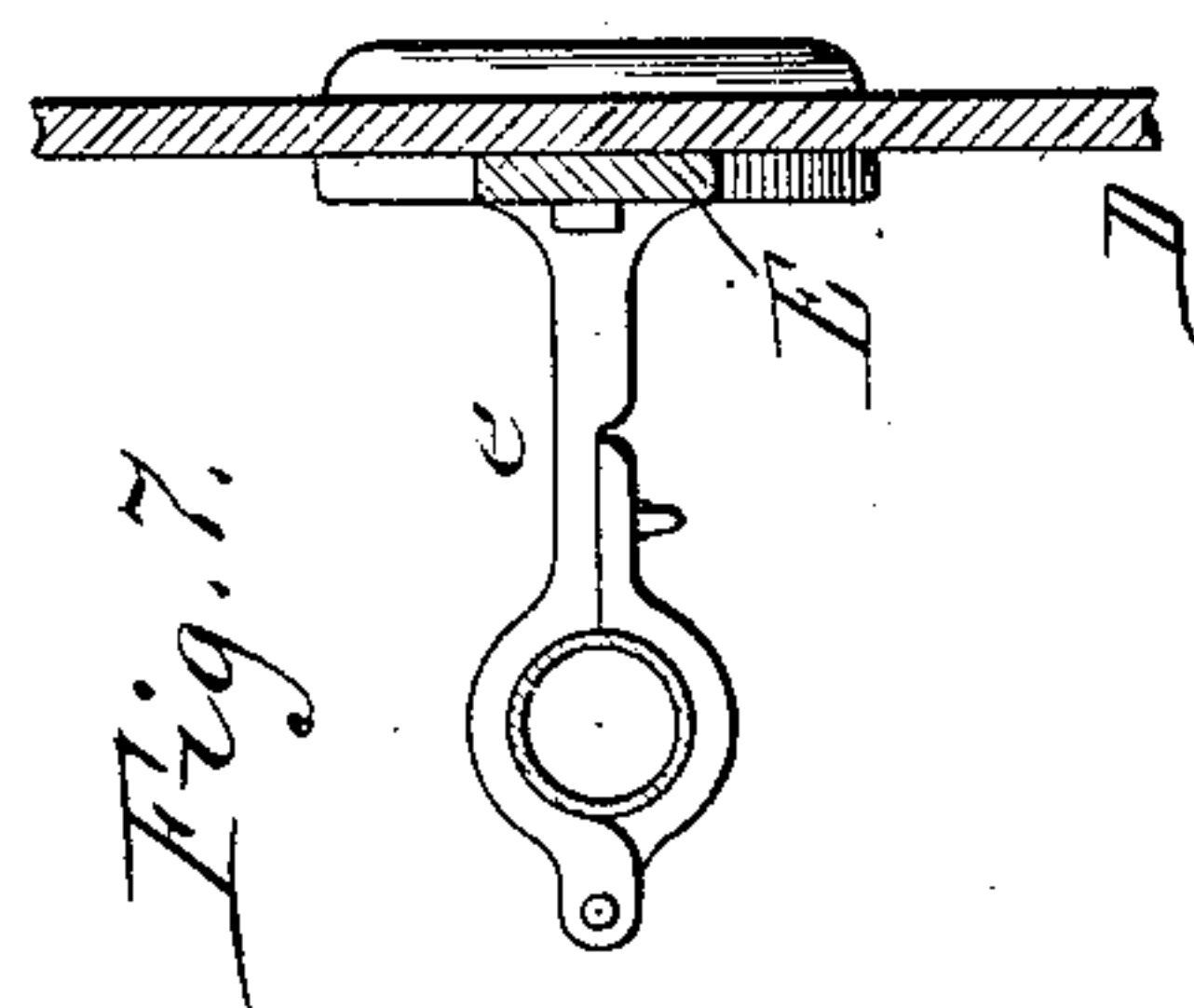
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UNITED STATES PATENT OFFICE.

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TO CLARENCE J. COON, OF SAME PLACE, AND WILLIAM R. ZULICH, OF
CINCINNATI, OHIO.

CAR-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 607,561, dated July 19, 1898.

Application filed November 16, 1897. Serial No. 658,698. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. ABBOTT, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Car-Signals, of which the following is a specification.

This invention relates to the class of car-signals which consist of a signal or flash light mounted on the end of the train and a hood or shutter operated from one of the car-axles which alternately exposes and conceals the light as long as the train remains in motion, so as to produce successive flashes which recur more or less frequently according to the speed of the train, thus indicating to the engineer of an approaching train whether the train ahead is standing still or in motion, and if in motion at what rate of speed it is traveling.

One of the objects of my invention is to simplify and improve the mechanism for driving the hood or shutter from the car-axle.

The invention has the further object to combine with the flash-signal a reliable direction-indicator of simple construction which indicates the direction in which the train is moving and which is shifted or reversed automatically by the change of direction of the train.

In the accompanying drawings, consisting of two sheets, Figure 1 is an end elevation, partly in section, of a railway-car equipped with my improved signal. Fig. 2 is a fragmentary longitudinal section thereof. Fig. 3 is an enlarged sectional elevation of the signaling devices. Fig. 4 is a horizontal section in line 4 4, Fig. 3. Fig. 5 is a vertical section in line 5 5, Fig. 3. Fig. 6 is an enlarged horizontal section of the driving-gear of the shutter. Fig. 7 is a horizontal section in line 7 7, Fig. 3.

Like letters of reference refer to like parts in the several figures.

A is the body of a caboose or car, such as is usually attached to the rear end of a freight train.

B represents one of the car-axles, and B' the wheels mounted thereon.

C is a flash light or signal, preferably ar-

ranged within the caboose behind an opening or window *d* in the end wall D thereof. The flash-light preferably consists of an ordinary signal lamp or lantern having a white lens, although any other suitable light, such as an electric lamp, may be employed, if desired. In the construction shown in the drawings the signal-lamp is removably clamped in an overhanging arm or bracket *e*, projecting from a base-plate E, which is secured to the inner side of the end wall D.

F is a rotary upright shutter or hood inclosing the flash-light and provided in its wall with an aperture *f*, which is located on a level with the car-opening *d* and through which the flash-light is exposed when the aperture arrives in line with the car-opening, the light being covered and hidden from view by the imperforate portion of the hood during the interval that the shutter and car-openings are out of alinement. The hood is preferably cylindrical in form and open at its upper end. It is secured at its lower end to a rotary disk or support G, rigidly mounted on a vertical shaft *g*, which turns in brackets *g'*, projecting from the base-plate E. The shaft *g* is driven from the car-axle B by the following means:

h is a gear-pinion secured to the car-axle and preferably split or divided to permit its ready attachment to the axle.

h' is a horizontal gear-wheel meshing with the pinion *h* and having a stud or axle *h''*, which is journaled in a bearing formed in a frame I. This frame is arranged between the wheels of the axle and connected with the axle by eyes or bearings *i*, which loosely encircle the same, as shown in Figs. 1 and 2. The frame I is provided with upwardly-extending rods or extensions *i'*, which are guided between parallel cross-pieces *i''*, secured to the under side of the car-body. These guides maintain the frame I in its proper position, while allowing the car-body and the axle to move with reference to each other, thereby preventing cramping of the driving mechanism.

j is a lower upright shaft passing through an opening formed in the floor of the car and between the cross-pieces *i''* and having a square or angular lower end which is loosely

seated in a correspondingly-shaped socket j' , rigidly secured to the stud or axle of the gear-wheel h' . By this connection the lower shaft is compelled to turn with the gear-wheel h' , but at the same time permitted to slide in the socket j' in rising and falling with the car-body.

k is an oblique rod or shaft section which transmits motion from the lower shaft j to the upper shaft g and which is connected with these shafts, preferably, by universal joints k' . This oblique arrangement is necessary in cases where the gear-wheel h' is out of alignment with the upper shaft g .

It is obvious that by this connecting-gearing the hood or shutter is rotated from the car-axle as long as the car is in motion, thereby alternately showing and concealing the flash-light and indicating to the engineer of a following train that the train ahead is in motion, and as the speed of the shutter bears a definite ratio to the speed of the car-axle the flashes follow each other with correspondingly greater or less rapidity, indicating the speed of the train and enabling the engineer to avoid a collision.

By arranging the signal-light in the car or other inclosure and providing the inclosure with a single opening in its rear wall the light is flashed rearwardly lengthwise of the track, thus concentrating the light and rendering the signal easily discernible to the engineer of an approaching train.

The direction-indicator consists of a pair of transparent plates l, l' of different colors, such as green and red, which are mounted side by side in a movable frame L , so that one or the other plate may be brought in front of the flash-light for indicating the direction of the train, the green light indicating, for instance, that the train is traveling in the same direction as the approaching train and the red light that it is moving in the opposite direction. In the construction shown in the drawings the frame L is arranged to oscillate on a horizontal rock-shaft or pivot m , supported in bearings formed in the base-plate E , and a standard m' . This frame is shifted in one or the other direction by a friction-segment n , rigidly secured to the rock-shaft m and engaging with its periphery against the upper surface of the rotary shutter-supporting disk G , so that as soon as the train starts the rotation of the disk causes the segment to turn with the disk, and thereby swing the frame toward one side of its center for bringing the proper signal-plate in front of the flash-light. The segment is turned by the disk until its rear or trailing end touches the disk, when the segment remains at rest and the disk slips past it. This rubbing of the disk against the segment is liable to cause the latter to vibrate or tremble, and in order to prevent such trembling from being transmitted to the signal-plates the hub of the rocking frame is mounted loosely on the rock-shaft and the latter is provided with a radial pin o , which is arranged

in a segmental slot o' , formed in said hub and which swings the frame from one position to the other by striking against one or the other end of said slot. When the shaft is rocked, its pin o , coming in contact with the front end of the slot o' , rocks the frame until the latter passes the dead-center, when the frame completes its movement by gravity, the lateral movement of the frame being limited by pins or stops o^2 , arranged on the base-plate E on opposite sides of the rock-shaft. These stops are so arranged that they arrest the movement of the frame before the rear end of its segmental slot strikes the pin o of the rock-shaft. The clearance thus left between the pin and the ends of the slot allows the segment to vibrate without affecting the frame of the signal-plates. This loose connection between the segment and the frame L also permits the segment to remain at all times in contact with the disk G by gravity, so as to be properly acted upon by the disk and reversed for changing the signal-plates when the train is run in the opposite direction. To insure the rocking of the segment in case the same should become bound or considerably worn at its edge, the disk is provided with an upright pin p , which is adapted to strike against a horizontal pin p' on the segment for shifting the latter positively. The pin of the disk is so arranged relatively to the pin of the segment that it does not come in contact therewith in the normal condition and operation of the segment.

In the operation of my improved car-signal when the train is standing still the flash-light is either covered or exposed without variation of its condition, according to the position of the hood at the time the train comes to a standstill, thus indicating that fact to the engineer of a following train. Should the flash-light be hidden from view when the train is at rest, the usual stationary signals or markers on the back of the car will be visible to the engineer. Upon starting the train the hood or shutter F is rotated, whereby the light is alternately shown and concealed, as hereinbefore described, and the rocking frame L of the direction-indicator is at the same time automatically shifted for bringing the proper-colored plate L before the flash-light, this plate remaining in position so long as the train continues in the same direction. When the train is run in the opposite direction, the consequent reversal of the motion of the disk G causes the segment n to shift the frame of the direction-indicator to its opposite position, bringing the other signal-plate before the flash-light and indicating the corresponding direction of movement of the train.

I claim as my invention—

1. The combination with the car-body and a car-axle having a gear-wheel, of a signal-light, a shutter for alternately exposing and concealing the light, a frame attached to the car-axle so as to rise and fall therewith and having an upward extension which is loosely

guided on the car, and an operating-shaft for said shutter having a gear-wheel journaled in and carried by said frame and meshing with the gear-wheel of the car-axle, substantially as set forth.

2. The combination with a car-axle and an upright shaft geared therewith, of a horizontal disk or support mounted upon the upper end of said shaft, a rotary upright hood or shutter mounted on said support so as to turn therewith and having an open upper end and provided in its side with an aperture, a bracket arranged above said hood, and a signal-light arranged in said hood and suspended from said bracket, substantially as set forth.

3. The combination with a signal-light and a rotary hood surrounding the same and having an aperture in its side, of a direction-indicator arranged in front of said light and outside of the line of travel of said hood and consisting of differently-colored signal-plates adapted to be alternately placed in front of the signal-light, and actuating means for reversing the direction-indicator also located outside of the line of travel of said hood, substantially as set forth.

4. The combination with a car-axle, of a signal-light, a rotary hood or shutter for alternately exposing and concealing said light, a friction-disk operated from the car-axle, an oscillating indicator-frame arranged in front of said signal-light and containing differently-colored signal-plates, and a reversing-segment for said indicator-frame arranged to engage frictionally with said rotary disk, said segment being held in either of its positions by contact with said disk, substantially as set forth.

5. The combination with a car-axle, of a signal-light, a rotary hood or shutter for alternately exposing and concealing said light, a rotary horizontal disk operated from the car-

axle, an upright oscillating indicator-frame arranged transversely in front of said signal-light and mounted on a horizontal pivot located above said rotary disk and a depending reversing-segment mounted on said pivot and engaging at its periphery with said rotary disk, substantially as set forth.

6. The combination with a car-axle, of a signal-light, a hood or shutter for alternately exposing and concealing the same, a rotary disk operated from the car-axle, an oscillating indicator-frame carrying signal-plates and having a segmental slot, a rock-shaft having a pin adapted to engage alternately against the ends of said slot, and a segment secured to said rock-shaft and engaging with said disk, substantially as set forth.

7. The combination with a car-axle, of a signal-light, a hood or shutter for alternately exposing and concealing the same, a rotary disk operated from the car-axle, an oscillating indicator-frame carrying signal-plates and having a segmental slot, a rock-shaft having a pin adapted to engage alternately against the ends of said slot, a segment secured to said rock-shaft and engaging with said disk, and stops for limiting the oscillating movement of the frame, substantially as set forth.

8. The combination with a car-axle, of a signal-light, a hood or shutter for alternately exposing and concealing the same, a rotary disk operated from the car-axle and having a pin or projection, an oscillating indicator-frame carrying signal-plates, and a segment for actuating said frame having a pin or projection against which the projection of the disk is adapted to engage, substantially as set forth.

Witness my hand this 21st day of October, 1897.

WILLIAM O. ABBOTT.

Witnesses:

CARL F. GEYER,
KATHRYN ELMORE.