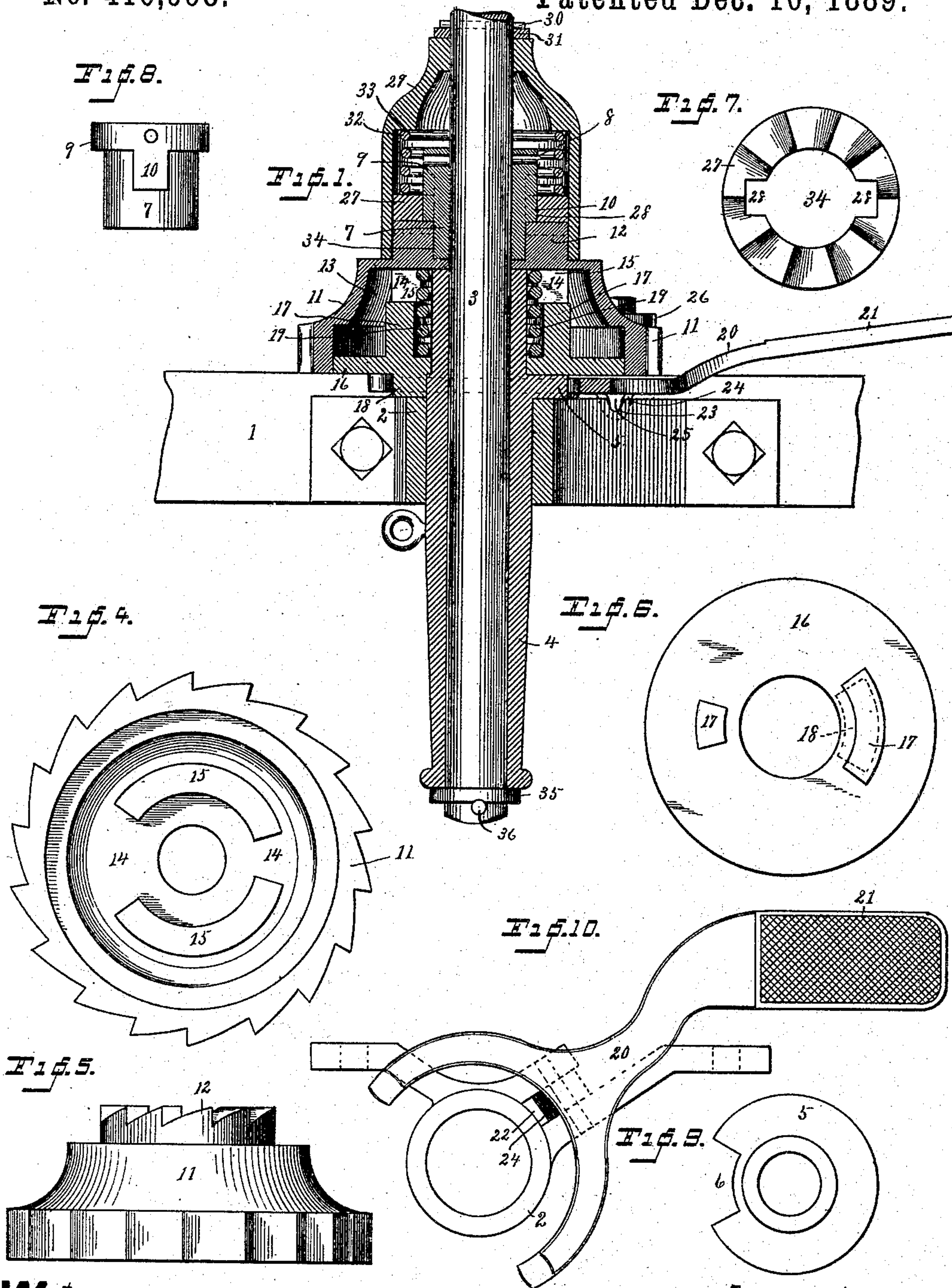


C. A. COOK.  
CAR BRAKE.

No. 416,998.

Patented Dec. 10, 1889.



**WITNESSES**

C. M. Newman,  
Arley S. Munson.

**INVENTOR**

Charles A. Cook  
By A. W. Wooster  
Att'y.



(No Model.)

2 Sheets—Sheet 2.

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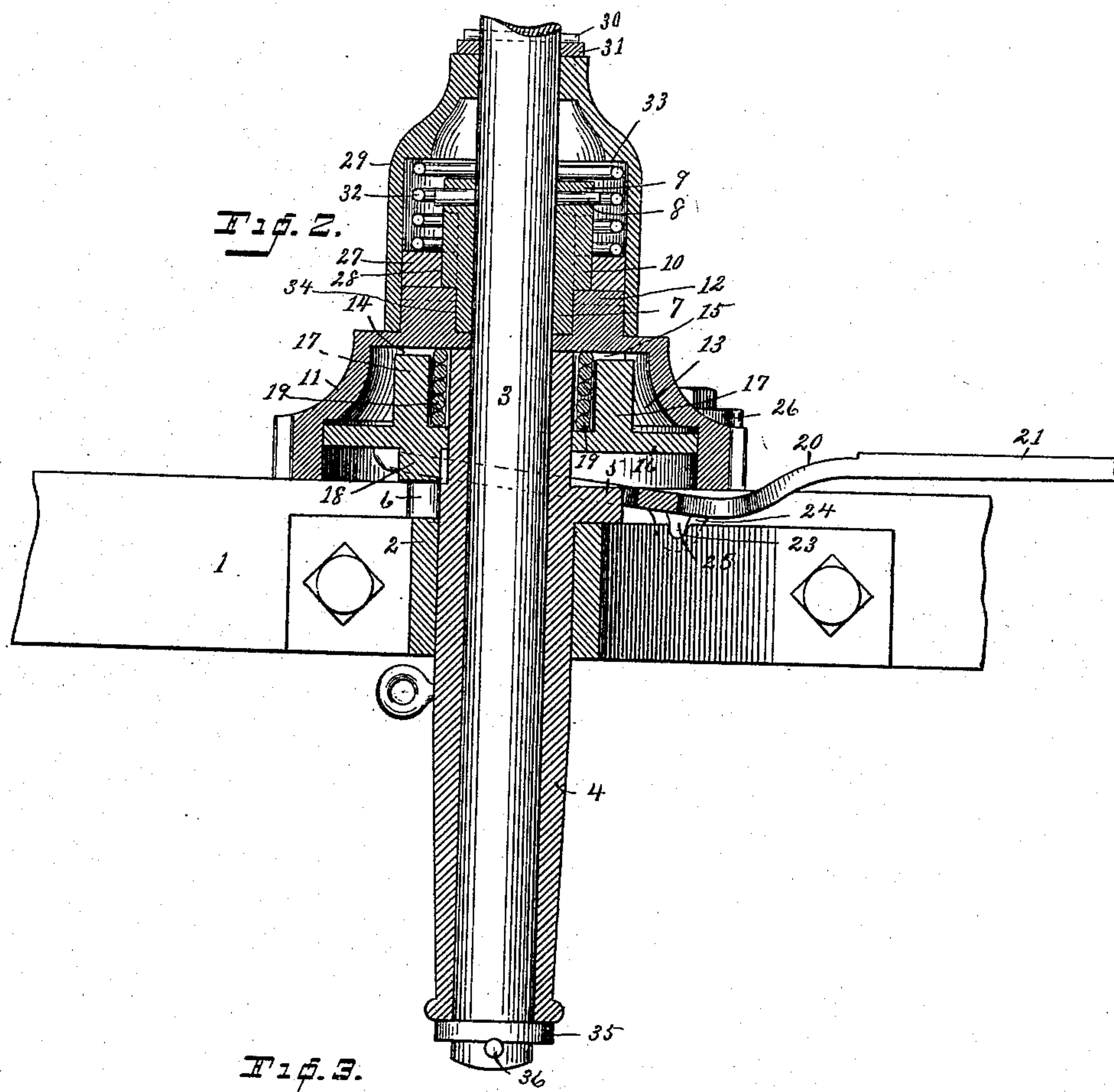
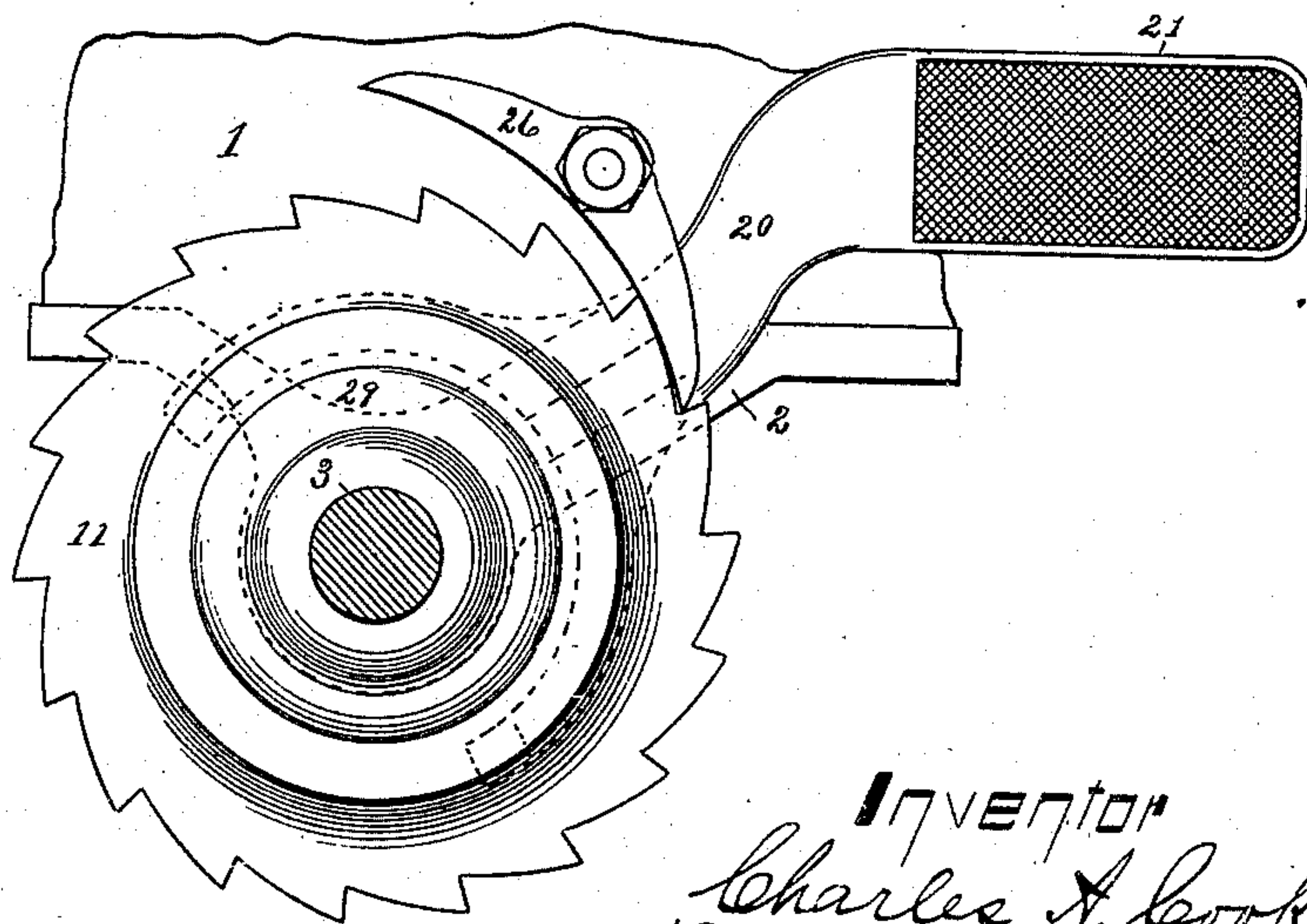


Fig. 3.



**WITNESSES**

C. M. Newman,  
Asley S. Munson.

**INVENTOR**

Charles A. Cook  
By A. M. Broster,  
Att.



# UNITED STATES PATENT OFFICE.

CHARLES A. COOK, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE  
BURNS, SILVER & COMPANY, OF SAME PLACE.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 416,998, dated December 10, 1889.

Application filed July 23, 1889. Serial No. 318,429. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. COOK, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Car-Brakes; 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 brakes generally, being especially adapted for use upon street-railway cars, and has for its object a simple, compact, and durable mechanism for adjusting the brake-staff and for releasing the brake.

With these ends in view I have devised the simple and novel construction which I will now describe, referring by numbers to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a section of my novel mechanism complete, the parts being in the locked or locking position, the portion of the car to which the brake is attached being indicated in end elevation; Fig. 2, a similar view, the parts being in the unlocked position; Fig. 3, a plan view, the staff being in section; Fig. 4, an inverted plan view of the ratchet; Fig. 5, an elevation of the ratchet; Fig. 6, an inverted plan view of the locking-plate; Fig. 7, an inverted plan view of the upper member of the clutch detached; Fig. 8, an elevation of the sleeve detached; Fig. 9, a plan view of the winding-sleeve detached; and Fig. 10 is a plan view of the holder and foot-lever detached.

1 denotes a portion of the car—for example, a platform—to which my novel mechanism is secured; 2, a holder which carries the mechanism and which is bolted or otherwise rigidly secured to the car; 3, the brake-staff, and 4 the winding-sleeve which extends above the platform through the holder and some distance below the platform, and which is provided with a flange 5, which rests on the top of the holder. This flange is provided with an opening or notch 6, the purpose of which will presently be fully explained.

7 denotes a sleeve on the staff, which may

be drop-forged thereon or secured thereto by a pin 8, as shown in the drawings. This sleeve is provided at its upper end with a flange 9, and on opposite sides with lugs or projections 10.

11 is the ratchet, which is provided on its upper side with a clutch member denoted by 12, and in its under side with a recess 13. In the under side of the ratchet and forming part of the recess are sockets 14. These sockets in the present instance are shown as openings in a circular flange 15 in the recess.

16 denotes a locking-plate lying in the recess, and having upon its upper side lugs or projections 17, adapted to engage sockets 14, and on its under side one or more lugs 18, one being shown, which in its normal position engages the notch or opening 6 in the flange upon the winding-sleeve. I have found in practice that this locking-plate operates perfectly by gravity alone, although in practice I ordinarily provide a spring 19 to assist the action of gravity. This spring surrounds the upper portion of the winding-sleeve lying within flange 15 and ratchet and lugs 17 on the locking-plate, its upper end bearing against the top of the recess in the ratchet, and its lower end bearing upon the top of the locking-plate, as is clearly shown in Figs. 1 and 2, its action being to hold the locking-plate at its normal position and to assist gravity in returning it to that position when it has been lifted therefrom.

20 is a foot-lever having the usual foot-plate 21 for convenience in operation, the forward end of which is bifurcated, as clearly shown in Figs. 3 and 10, so that the arms may extend on opposite sides of the holder and bear upon the locking-plate to raise the same when the foot of the operator is placed upon the foot-plate. The holder is preferably provided with a slot 22 and in its upper side with depressions 23, and the under side of the foot-lever is provided with a plate 24, which engages the slot, and with a cross-lug 25, engaging the depressions, the lever rocking easily upon the cross-lug and being braced and strengthened by the plate engaging the slot.

26 denotes the usual foot-dog, which is piv-



oted to the platform and engages the ratchet to hold the brake in the locked position.

I have not shown the chain and the brake mechanism under the car, as it forms no portion of my present invention, and may be of the ordinary or any preferred construction. It is sufficient to say that the chain is connected to the winding-sleeve in any suitable manner, the usual eye being shown, and in locking the brake is wound on said sleeve in the ordinary manner. For convenience in illustration I have also omitted the operating-handle at the upper end of the brake-staff, it being understood that it is simply necessary to rotate the staff in the ordinary manner.

27 denotes the upper clutch member, which is provided with a central opening and with sockets 28 on opposite sides thereof, which are engaged by lugs 10 on sleeve 7. The under side of this clutch member is provided with clutch-teeth of ordinary construction, which are adapted to engage similar teeth upon the lower clutch member—i. e., upon the top of the ratchet.

29 is a housing, through which the staff passes, and which rests upon the top of the ratchet, outside of the clutch-teeth thereon, as is clearly shown in Figs. 1 and 2. This housing is held against vertical movement on the staff in any suitable manner, as by a pin 30 passing through the staff, a washer 31 being placed between the pin and the top of the housing. I have found in practice that gravity alone will keep the upper clutch member in engagement with the lower member. In order to avoid the possibility, however, of a failure to engage, I ordinarily place a spring 32 within the housing, the upper end of which bears against a shoulder 33 in the under side of the housing and the lower end on the top of the upper clutch member. The lower end of sleeve 7 on the staff passes into a central opening 34 in the upper clutch member. It will of course be understood that the brake-staff passes down through the housing, sleeve 7, the two clutch members, the ratchet, the locking-plate, and the winding-sleeve, sleeve 7 being the only member rigidly secured to the staff, the upper clutch member, however, rotating therewith at all times and being adapted to slide vertically on lugs 10 when the staff is turned backward, thereby disengaging the two clutch members, so that the ratchet, locking-plate, and winding-sleeve are not affected by backward movement of the staff. The staff is held against upward movement by a washer 35 and pin 36 at the bottom of the staff.

The operation is as follows: Supposing the brake mechanism to be in the unlocked position and that it is desired to set or lock the brake, the staff is turned forward in the usual manner. Sleeve 7 upon the staff carries the upper clutch member, which is in engagement with the lower clutch member upon the ratchet, carrying the latter forward. The

locking-plate being in engagement with the winding-sleeve and being carried by the ratchet, it follows that the winding-sleeve will be turned forward and the brake-chain (not shown) wound thereon. To release or unlock the brake, the operator simply places his foot upon the plate of the foot-lever, bearing down with sufficient force to tilt said lever in its bearings in the holder, raising the forward end thereof, and with it the locking-plate, and withdrawing lugs 18 from notch 6 in the flange upon the winding-sleeve. This leaves the winding-sleeve wholly disengaged from the other mechanism, permitting the latter to turn backward instantly, thereby releasing the brake. It will of course be understood that in setting or locking the brake the foot-dog 26 is used in the ordinary manner to hold the ratchet at the locked position. The releasing action, however, is caused to take place wholly independently of this foot-dog, the latter being never used except to lock the ratchet in setting the brake. The operator is therefore relieved from the great exertion of turning the staff forward from its locked position sufficiently to enable the foot-dog to be disengaged and from the necessity of kicking the latter out of engagement with the ratchet. Supposing that for any reason it is desired to change the position of the brake-handle so as to avoid waste of power, or so that when the greatest power is required it may be applied with the handle in convenient position, or that from any reason whatever it is not convenient to set or lock the brake by continuous rotary movement of the handle, an oscillatory movement may be given to the handle to lock the brake, or the handle may be placed at any desired position by simply turning the staff backward. When the latter movement is made, the teeth of the upper clutch member ride over the teeth of the lower clutch member, raising the upper clutch member against the power of spring 32, the upper clutch member springing back to place each time a tooth is passed, but the movement having no effect whatever upon the ratchet and other parts carried thereby. The flange 9 upon sleeve 7 serves to limit the upward movement of the upper clutch member and prevents its disengagement from lugs 10 without regard to whether a spring is used or not. It will be seen that the upper clutch member is carried at all times by the sleeve, but has vertical movement thereon in resetting the staff—that is, when the latter is turned backward—and that the locking-plate is carried at all times by the ratchet, but has vertical movement within the ratchet when it is desired to disconnect the latter from the winding-sleeve in unlocking.

It will of course be understood that various changes in the details of construction may be made without departing from the principles of my invention.

I do not claim in this application subject-



matter covered by the claims of my pending applications, Serial Nos. 318,427 and 318,428, filed of even date herewith.

I claim—

5 1. A brake-staff and a winding-sleeve adapted to turn thereon, in combination with a ratchet having an opening in its under side, and a locking-plate within said opening, which is adapted to engage the winding-sleeve in its  
10 normal position, said plate being carried by the ratchet and adapted to be moved vertically to disconnect it from the winding-sleeve without movement of the staff.

15 2. In a brake, a ratchet, a staff adapted to turn independently thereof, and suitable connections whereby the ratchet is normally connected to the staff, in combination with a winding-sleeve adapted to turn on the staff, a locking-plate adapted to engage the winding-sleeve in its normal position, and a foot-  
20 lever adapted to engage the locking-plate, whereby the latter may be raised to disconnect it from the winding-sleeve.

25 3. A brake-staff, a sleeve secured thereto and having lugs 10, and a winding-sleeve loose on the staff, in combination with a ratchet carried by the sleeve, and a locking-plate carried by the ratchet, which is adapted to engage the winding-sleeve in its normal  
30 position and to be lifted out of engagement therewith, as and for the purpose set forth.

35 4. A brake-staff, a sleeve secured thereto and having lugs 10, and a winding-sleeve adapted to turn upon the staff, in combination with a ratchet carried by said sleeve and having a recess in its under side and sockets  
14, a locking-plate lying in said recess and engaging said sockets and which in its normal position engages the winding-sleeve, and  
40 a bifurcated foot-lever engaging the under side of the locking-plate, whereby the latter may be disconnected from the winding-sleeve.

45 5. The staff having a sleeve with lugs 10, the winding-sleeve and the locking-plate adapted to engage the winding-sleeve and to be disconnected therefrom, in combination with the ratchet having clutch member 12 upon its upper side, and clutch member 27, adapted to engage therewith and which is engaged by  
50 lugs 10, whereby when the staff is turned backward the clutch members will not engage and the staff may be set at any desired adjustment, and when the staff is turned forward the ratchet, winding-sleeve, &c., are carried thereby to set the brake.

55 6. The combination, with the staff, a winding-sleeve turning thereon, and a ratchet carried by the staff and having an opening in its under side, of a locking-plate within said opening adapted to engage the winding-sleeve, said locking-plate being carried by the ratchet and having a vertical movement whereby it may be disconnected from the winding-sleeve, and a spring 19, acting to  
60 hold it in engagement therewith, so that when

the staff is turned forward the brake is set, and when the winding-sleeve is raised the brake is released without movement of the staff.

7. The staff having a sleeve with lugs 10, 70 the winding-sleeve adapted to turn on the staff, and the ratchet having clutch member 12 on its upper side and a recess in its under side, in combination with a locking-plate in said recess adapted to engage the winding-  
75 sleeve, and clutch member 27, engaged by the lugs and adapted to engage clutch member 12.

8. The staff having a sleeve with lugs 10, the winding-sleeve adapted to turn on the staff, and the ratchet having clutch member 12 on its upper side and a recess in its under side, in combination with a locking-plate in said recess adapted to engage the winding-sleeve and to be disengaged therefrom, a  
80 clutch member 27, engaged by the lugs and adapted to engage clutch member 12, and a spring 32, acting to hold the clutch members in engagement. 85

9. The staff having a sleeve, the winding-sleeve adapted to turn on the staff, and the  
90 ratchet having clutch member 12 upon its upper side, in combination with a locking-plate carried by the ratchet and adapted to engage the winding-sleeve, clutch member 27, carried by the sleeve, and springs 19 and 32, 95 as and for the purpose set forth.

10. The brake-staff having sleeve 7, the winding-sleeve adapted to turn thereon, and the ratchet having clutch member 12 on its upper side and a recess in its under side, in  
100 combination with a locking-plate in said recess carried by the ratchet and adapted to engage the winding-sleeve and to be disengaged therefrom, clutch member 27, carried by the sleeve and adapted to engage clutch  
105 member 12, and a housing adapted to inclose the clutch members, substantially as described.

11. The brake-staff having sleeve 7, the winding-sleeve adapted to turn thereon, and  
110 the ratchet having clutch member 12 on its upper side and a recess in its under side, in combination with a locking-plate in said recess, carried by the ratchet and adapted to engage the winding-sleeve and be disengaged  
115 therefrom, clutch member 27, carried by the sleeve and adapted to engage clutch member 12, a housing adapted to inclose the clutch members, spring 19 within said recess, acting to hold the locking-plate in the engaged position, and spring 32 in the housing, which acts  
120 to hold the clutch members in the engaged position.

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

CHARLES A. COOK.

Witnesses:

A. M. WOOSTER,

ARLEY I. MUNSON.