

J. T. HALSEY.  
BRAKE.

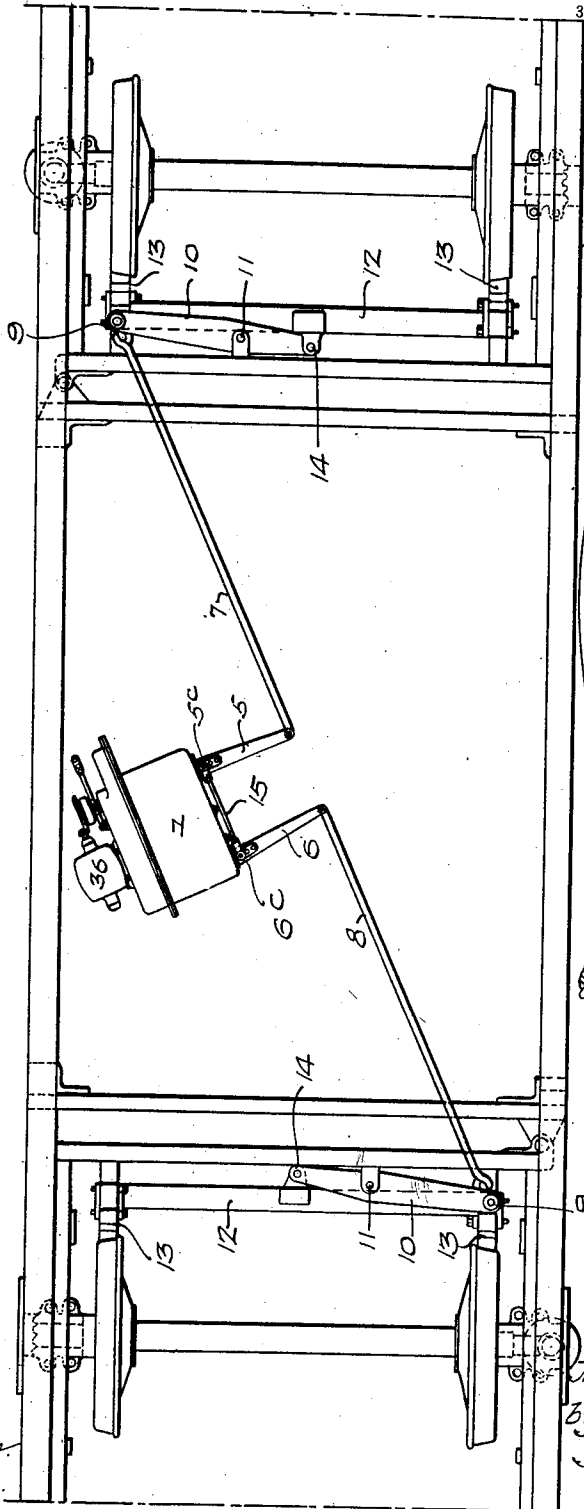
APPLICATION FILED AUG. 15, 1913. RENEWED NOV. 28, 1917.

1,348,106.

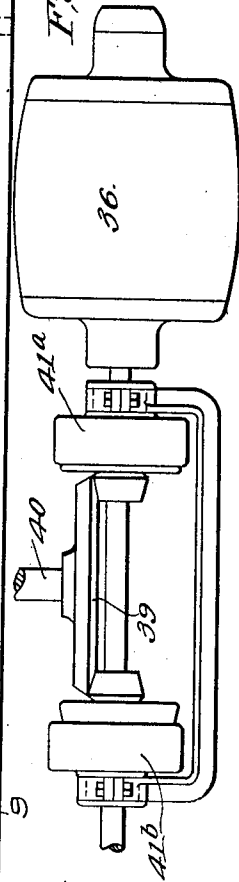
Patented July 27, 1920.

3 SHEETS—SHEET 1.

*Fig. 1*



*Fig. 5.*



*Witnesses—  
Gilbert Burrows  
Hm. E. Skufe.*

*Inventor—  
James T. Halsey  
by his Attorneys  
Howson &  
Howson*

J. T. HALSEY.

BRAKE.

APPLICATION FILED AUG. 15, 1913; RENEWED NOV. 28, 1917.

1,348,106.

Patented July 27, 1920.

3 SHEETS—SHEET 2.

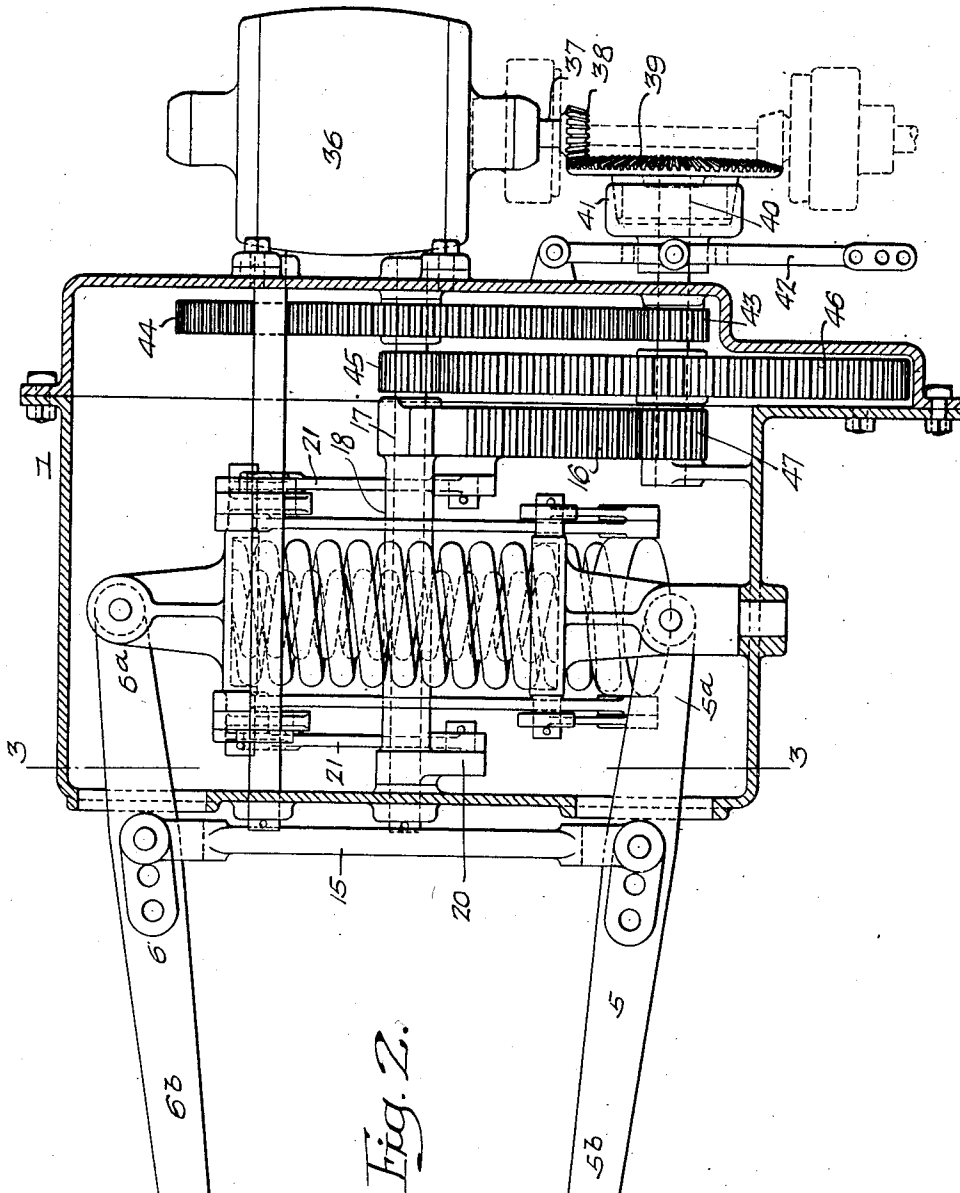


Fig. 2.

Witnesses-

Willet Amos  
Am. C. Shupe.

Inventor-  
James T. Halsey.  
by his Attorneys-  
Houson & Houson

J. T. HALSEY.  
BRAKE.

APPLICATION FILED AUG. 15, 1913. RENEWED NOV. 28, 1917.

1,348,106.

Patented July 27, 1920.

3 SHEETS—SHEET 3.

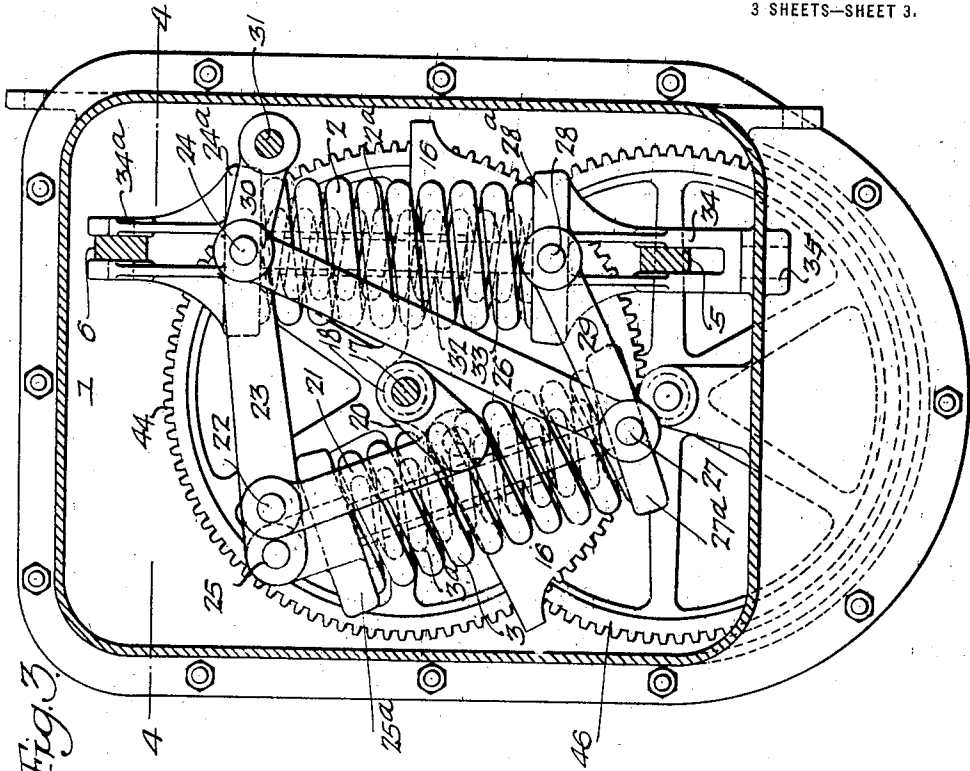


Fig. 3.

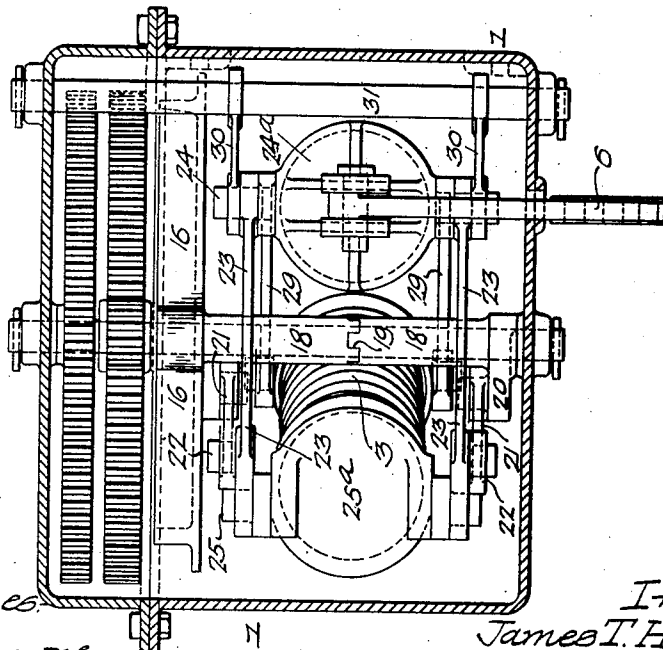


Fig. 4.

Witnesses  
Willard Burrows  
Am. E. Shupe.

Inventor  
James T. Halsey  
by his Attorneys  
Hudson & Hudson

# UNITED STATES PATENT OFFICE.

JAMES T. HALSEY, OF PHILADELPHIA, PENNSYLVANIA; SUE MASON MAURY HALSEY, OF PHILADELPHIA, PENNSYLVANIA, ADMINISTRATRIX OF SAID JAMES T. HALSEY, DECEASED.

## BRAKE.

1,348,106.

Specification of Letters Patent.

Patented July 27, 1920.

Application filed August 15, 1913, Serial No. 784,975. Renewed November 28, 1917. Serial No. 204,476.

*To all whom it may concern:*

Be it known that I, JAMES T. HALSEY, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Brakes, of which the following is a specification.

My invention relates to braking means, more particularly braking means for application to a moving object such as the wheels of railway or railroad vehicles, trolley cars and the like; or to a substantially fixed object from a moving structure as in the case of an elevator or similar device; and the object of my invention is to provide a spring actuated brake, the operation of which may be controlled by hand, or by a small auxiliary motor, electrically driven or otherwise, and to have such brake so controlled or arranged as to be highly sensitive and susceptible of very gradual application, in order that a braking action or effect substantially similar to that produced by a brake controlled by fluid under pressure, may be produced by mechanical means. A further object of my invention is to provide means for quickly applying the brake should occasion demand.

These and other features of my invention will be more fully described hereinafter, reference being had to the accompanying drawings, in which:

Figure 1 is an inverted plan view of the under side of a street car, showing my improved braking mechanism in the operative position with respect to the trucks of the car and the brake beams carrying the usual brakes for engagement with the wheels; such mechanism being actuated by a motor;

Fig. 2, is an enlarged sectional plan view of the brake shoe operating mechanism;

Fig. 3, is a sectional view on the line 3—3, Fig. 2;

Fig. 4, is a sectional view on the line 4—4, Fig. 3; and

Fig. 5, is a view of a detail of my improved construction.

In the drawings herewith, 1 represents a shell or casing, which may be disposed on the under side of a car, containing a series or set of springs designed to apply the brakes to the wheels of such car. These springs are indicated at 2 and 3, (and may be employed with auxiliary or assistant springs 2<sup>a</sup> and 3<sup>a</sup> internally disposed with

respect to the main springs 2 and 3). The springs 2 and 3 are shown as under compression to apply the brakes by their tension through the medium of levers 5 and 6, having their inner ends 5<sup>a</sup> and 6<sup>a</sup> in operative engagement with said springs, while their outer ends 5<sup>b</sup> and 6<sup>b</sup> are connected to links or rods 7 and 8; the latter being connected at 9 to levers 10, pivoted at 11 to the frame of the trucks. Brake beams 12 carrying the usual brake-shoes 13 are connected at 14 to the ends of the levers 10. The levers 5 and 6 may be connected together by a bar 15, pivoted thereto at 5<sup>c</sup> and 6<sup>c</sup>; said bar providing fulcrums for said levers, and the latter being apertured to permit adjustment of said bar with respect thereto.

The tension exerted by these springs is relieved, and they may be further compressed by the action of a gear segment 16 journaled on a shaft or spindle 17, and carrying a sleeve 18, which is in two parts, coupled at 19 for convenience. One portion of said sleeve has an arm 20, while the other portion is connected to the gear segment 16. Connected to said arm 20 and the gear segment 16, being pivotally attached in axial alignment, are links 21, pivotally connected to pins 22 carried by rods or bars 23 in operative engagement with one end of each spring; said bars being pivotally connected with pins 24 and 25, carried by cups or caps 24<sup>a</sup> and 25<sup>a</sup>, respectively, receiving the one end of said springs. In addition links 26 pivotally connected at one end to the pins 24 are connected at their opposite ends to pins 27 carried by a cup or cap 27<sup>a</sup> receiving the opposite end of the spring 3. Pins 28 are carried by the cup or cap 28<sup>a</sup> receiving the opposite end of the spring 2, and these cups or caps are connected together by links 29 carried by said pins. The spring 2 is positioned by arms 30 carried by a shaft or spindle 31 extending across the casing 1; the opposite ends of said arms being pivotally connected to the pins 24 of the cup or cap 24<sup>a</sup>, and it may be guided by internally disposed telescoping members 32 and 33 carried by the cups or caps 24<sup>a</sup> and 28<sup>a</sup>, respectively.

The cup or cap 28<sup>a</sup>, receiving one end of the spring 2 has ears 34 which may be pivotally mounted at 35 in the shell or casing 1, while the cup or cap 24<sup>a</sup> at the opposite

end of said spring has ears 34<sup>a</sup> which are free, and these ears 34 and 34<sup>a</sup> are pivotally attached, respectively, to the ends 5<sup>a</sup> and 6<sup>a</sup> of the levers 5 and 6, which are connected, 5 by the means described, to the brake shoes 14.

When arranged as shown in the drawings therefore, the brakes are set. To release the brakes, I employ a motor 36, which may be mounted exteriorly of the casing, and is provided with an armature shaft 37 carrying a 10 bevel pinion 38 meshing with a bevel gear wheel 39 loose on a shaft 40 and arranged to be operatively connected therewith by means of a clutch 41 under control of a lever 15 42, which latter lever may be connected by any suitable or well known means (not shown) to a hand lever adjacent the motor controller or other mechanism under the control of the motorman on the platform of 20 the car.

The motor is a constantly running structure, and when the clutch is in operative engagement with said gear wheel 39, it will drive the shaft 40, and with it a pinion 43, 25 which meshes with a gear wheel 44 on the shaft or spindle 17, driving a pinion 45, which in turn drives a gear wheel 46, having or driving a pinion 47, which in turn is in engagement with the segment 16 journaled on the shaft or spindle 17, to operate 30 the linkage before described whereby the action of the springs is controlled. When therefore it is desired to release the brake, the clutch is operated to couple the driven 35 wheel 39 to the shaft 40 so that power is transmitted from the motor 36 to the pinion 43, thence through the gear 44, pinion 45, gear 46 and pinion 47, to the toothed segment 16. The turning of this latter with the 40 arm 20, through a relatively small angle in a counter clockwise direction, pulls down on the links 21 and levers 23 so that the latter not only directly compresses the spring 3 but also indirectly through said spring and the 45 links 26, as well as directly through the pins 24 and spring seat 24<sup>a</sup>, act to exert a compressive force on the spring 2 which ultimately draws together the ends 5<sup>a</sup> and 6<sup>a</sup> of the levers 5 and 6. The outer ends of these 50 latter are thereby forced apart and through the links 7 and 8 actuate the brake levers 10 to release the brake shoes from the wheels. When the operator through the hand operated device connected to the lever 42, dis- 55 engages the clutch 41, the two springs 2 and 3 are allowed to expand and restore the parts to their original position, the latter spring forcing apart the inner ends of the levers 5 and 6 and through the links 7 and 8, 60 levers 10 and beams 12, causing the brakes to be applied at a rate regulated by the gearing and controlled by the intermittent closure and release of the clutch 41.

The initial effect of the motor driving the 65 gearing and actuating the segment 16 is to

compress the spring 3 (with its assistant or auxiliary spring 3<sup>a</sup> internally disposed,) through the medium of the several levers and arms comprising the linkage, and the compression of this spring 3 (and its aux- 70 iary spring 3<sup>a</sup>) will not react upon the spring 2 (with its auxiliary or assistant spring 2<sup>a</sup>) until said spring 3 (and 3<sup>a</sup>) has been compressed to a very high degree. For 75 instance, it may be assumed that the power exerted by the spring 2 (and 2<sup>a</sup>) and tending to separate the levers 5 and 6 so as to apply the brakes amounts to ten thousand pounds, and at such pressure the brakes will be held in solid contact with the wheels, se- 80 curely gripping the same and preventing movement of the latter, and this condition will not be overcome until the spring 3 (and 3<sup>a</sup>) has been compressed to such an extent as to cause the levers to react upon said 85 spring 2 (and 2<sup>a</sup>) and effect compression of the same.

When the brake (motor) controller handle is released by the motorman, the clutch 41 is disengaged and the springs, released 90 from the forces tending to compress them, will effect a reversal of the gearing so as to apply the brakes. In case this action is not sufficiently quick, I may employ the arrangement of clutches 41<sup>a</sup> and 41<sup>b</sup> illus- 95 trated in dotted lines, Fig. 2, and in full lines, Fig. 5, so that the motor may be used as a positive means for backing off the gearing when applying the brakes; assisting the action and saving time. 100

When the clutch 41<sup>a</sup> is operatively engaged, as shown in Fig. 5, the motor shaft is driving the gear wheel 39 to compress the springs; such arrangement being the same as that indicated in Fig. 2, with the clutch 105 41 in operative engagement. When the clutch 41<sup>b</sup> is in operative engagement with the motor shaft, the gear wheel 39 is driven in the reverse direction so that the gearing interposed between the driving means and 110 the springs for compressing the latter will be positively backed off, thereby permitting the force of the springs to apply the brakes.

With the constantly running motor 36 employed by applicant and the use of a clutch, 115 the application of the brake by the motorman or operator controlling the clutch which operatively connects the motor with the gearing tending to compress the springs, can be very gradual. With the clutch dis- 120 engaged, the brakes are on under the full force of the springs tending to apply the same. When the clutch 41 is thrown into action, however, the gear wheel 39 will be 125 driven, driving the shaft 40 which in turn operates the other gearing and linkage to compress the springs, and such compression reacting upon the levers 5 and 6 and the links 7 and 8, releases the brakes. By oper- 130 ating the clutch intermittently and for short

periods of the time, the brakes can be held full off, or in such a position as will permit of their gradual application by the force of the springs as the movement of the gearing tending to compress them is released.

It will be understood, of course, that I may employ springs under tension arranged to apply their compressive force to effect the desired braking action, with a motor or other means to increase the tension so as to relieve the brakes, and my claims are intended to cover the use of springs for the purpose described, whether the power of the same is applied under tension or compression.

I claim:

1. The combination of brake shoes for effecting stoppage of a movable member, means for supporting the same in active position, a spring for holding said shoes in braking engagement, a second spring arranged to react upon the first-named spring to render inactive the force of said spring to effect release of the braking engagement of said shoes, means including a train of gearing to effect the action of said second spring, and a motor for operating said gearing.

2. The combination of a brake shoe for application to a moving member, means for supporting the same, a spring for holding said shoe in braking engagement, a second spring arranged to react upon the first-named spring and cause said latter spring to release the braking engagement of said shoe, a motor for operating said second spring gearing operated by said motor, linkage operated by said gearing and interposed between the latter and said second spring, and means for controlling the operation of said motor.

3. The combination of brake shoes for application to a moving member, means for supporting the same, a pair of springs for holding said shoes in braking engagement, one of said springs being arranged to react upon the other, a motor, and means actuated by said motor for rendering the force of the brake applying spring inactive whereby the braking engagement of said shoes may be released.

4. The combination of brake shoes for application to a moving member, means for supporting the same, a spring for holding said shoes in braking engagement, a second spring arranged to react upon the first-named spring to increase the force of the same, means including a train of gearing for causing said springs to release the braking engagement of said shoes, said force being applied through the second spring to the first, a motor for actuating said gearing, and means for controlling the operation of said gearing by the motor.

5. The combination of a brake shoe for application to a movable member, means for supporting the same, a spring for maintaining said shoe in braking engagement with said movable member, a spring arranged to react upon and render inactive the force of said first-named spring whereby the braking engagement of said shoe may be released, a motor, gearing actuated by said motor for operating said second spring, and means for controlling the operation of said gearing by the motor.

6. The combination with a truck and the wheels thereof, of a brake shoe for engagement with one of said wheels, supporting means for said brake shoe, a spring, levers between said spring and the brake shoe and controlled by the spring and normally tending to move the brake into engagement with said wheel, means for relieving the power applied by said spring to the brake whereby the latter may be released from its engagement with the wheel, said means including a second spring, and means including gearing and a motor for driving said gearing for operating said second spring to cause it to react upon the first spring and relieve its brake applying force.

7. The combination with a truck and the wheels thereof, of brake shoes in engagement with said wheels, a spring, levers between said spring and brake shoes whereby said spring may act on said levers to apply the brakes, a second spring arranged to react upon the first-named spring to release its braking force, carriers for said springs, operating links interposed between said carriers for effecting movement of one spring by the other, gearing for operating said links, a motor for operating said gearing, and means for operatively connecting said motor and gearing.

8. The combination with a truck and the wheels thereof, of brake shoes in engagement with said wheels, supporting means for said brake shoes, a plurality of springs, levers and links interposed between said springs and brake shoes, a linkage system operatively connected between said springs and through which the force of said springs with respect to each other is applied or relieved, a motor, gearing interposed between said motor and the linkage for actuating the latter to compress said springs, and means for connecting and disconnecting said gearing and motor.

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

JAMES T. HALSEY.

Witnesses:

MURRAY C. BOYER,

WM. A. BARR.