No. 676,263. Patented June 11, 1901.

I. KITSEE.

AUTOMOBILE.

(Application filed Mar. 29, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

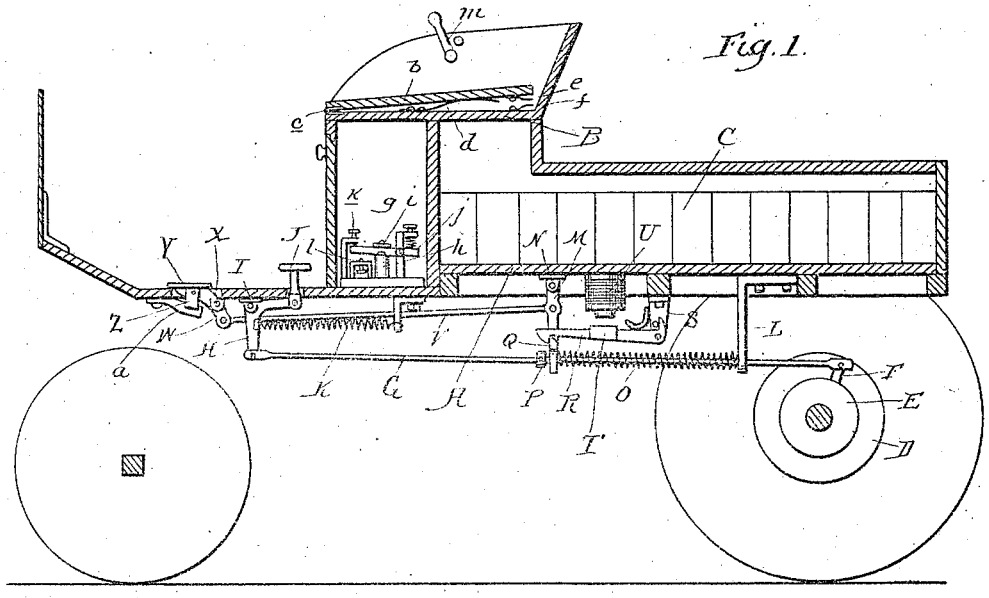
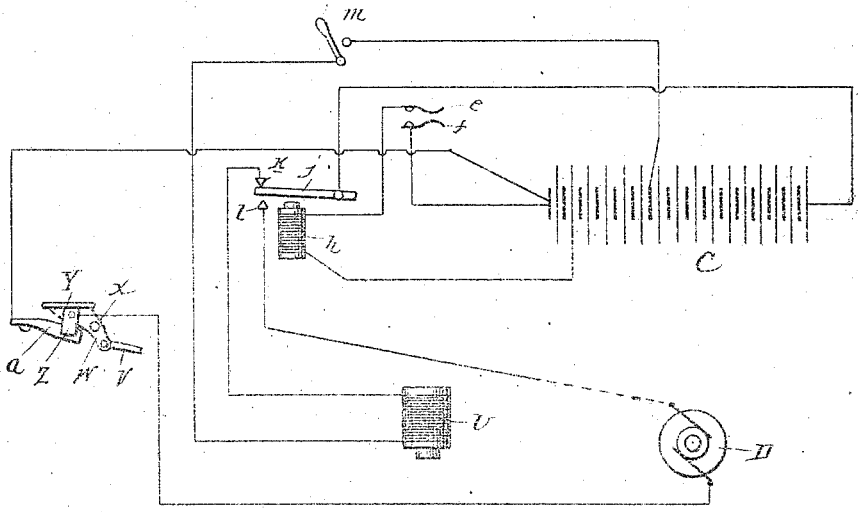


Fig. 2.



Witnesses:
H. B. Hallock
E. C. Stilley

Inventor.
Isaac Kitsee

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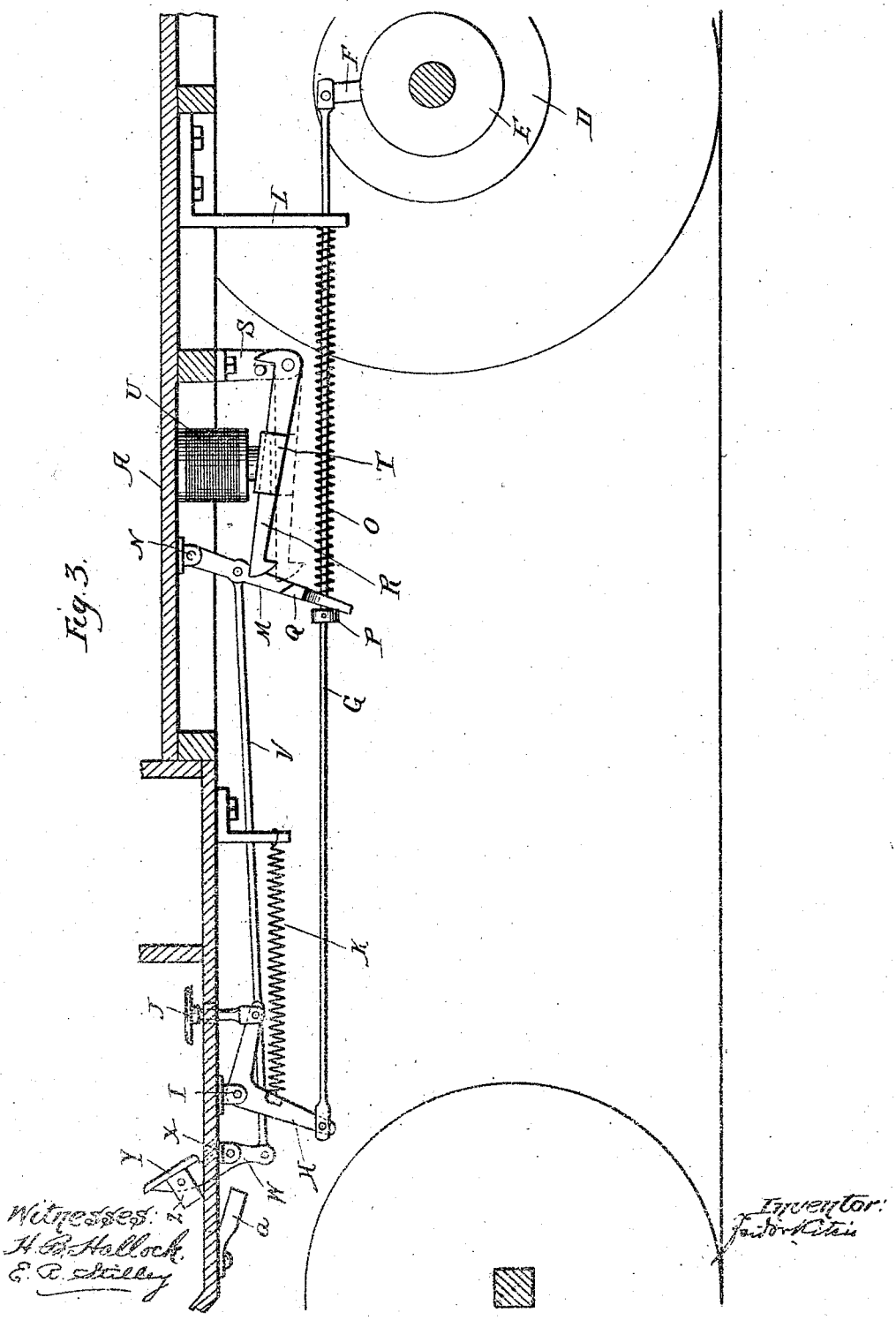

Fig. 3.

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UNITED STATES PATENT OFFICE.

ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA.

AUTOMOBILE.

SPECIFICATION forming part of Letters Patent No. 676,263, dated June 11, 1901.

Application filed March 29, 1901. Serial No. 53,447. (No model.)

To all whom it may concern:

Be it known that I, ISIDOR KITSEE, of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Automobiles, of which the following is a specification.

My invention relates to an improvement in automobiles.

The object of my invention is to provide means for stopping the carriage automatically or at the will of the person using the carriage.

It is unnecessary for me to point out the necessity of safeguards in the use of electric vehicles. The frequency of runaways points strongly to the need of contrivances capable of bringing automatically the vehicle to a standstill, no matter if the driver or passenger has lost control of the circuit-lever or not. An automatic safeguard has to embrace the following points: The device must, under all circumstances, work by such an involuntary movement of the occupant of the vehicle as is usually the case when accident threatens. It is not enough that the device be actuated by pressing a lever with the hand or foot, because this safeguard is just then needed when the occupant, through threatened accident, loses his presence of mind. For this reason the safety device should be actuated by the pressure on the seat; for no matter how excited the occupant the first involuntary impulse is always to jump from the seat, and the occupant will do this more readily if he knows that through this movement the accident will be prevented. Taking now for granted that it is necessary that the safety device should be actuated by an involuntary movement—such, for instance, as rising from the seat or moving away part of the body from the position it usually occupies—the great difficulty arises that if an involuntary movement in one direction actuates the safety device in a manner so as to stop the vehicle then the same movement in the opposite direction will cause the moving of the vehicle when least desired. To make the point more clear, it is supposed that the safety-brake is actuated by the seat or seat-switch in such a manner that if the person in the vehicle occupies the seat the motor-circuit is established; but if he rises from the seat the circuit controlling the brake is established. It then follows that when through a threatened accident the occupant jumps from the seat and, either voluntarily or involuntarily, falls back again, the vehicle, having once stopped, will start again just at a moment when such starting may mean injury or death to the occupant.

In my experiments with a full-sized brake of the description as illustrated in the drawings this point was strongly brought out, and it is therefore necessary for such devices to include the following: First, a safety device once actuated by an involuntary movement so as to stop the vehicle shall not be brought again to its former position till the occupant has reset part of the device, and this resetting to require a definite and voluntary motion in contradistinction to the previous involuntary movement, and, second, the setting of the brake through the safety device may often be necessary when the vehicle is at its greatest speed—that is, when the current is put on in full force. If after the danger of accident is over the occupant resumes his seat before resetting that part of the device which again actuates the motor, it is more than probable that the great flow of current will heat the coils of the motor in such a degree that they may even be burned out, and means have to be provided that the current shall not flow through the motor-circuit till this resetting is accomplished. A safety arrangement, therefore, must contain, to be in reality what it claims to be, devices as follows: first, a device actuated by an involuntary movement of the occupant to break the motor-circuit and to set the brake; second, a device actuated by the voluntary and judicious movement of the occupant to release the brake and to reëstablish the motor-circuit, and, third, a device preventing the establishment of the motor-circuit before the brake is released. To accomplish all these purposes set forth is the aim of my invention.

Referring now to the drawings, Figure 1 is a longitudinal section of an automobile, showing the brake mechanism in its normal position. Fig. 2 is a diagrammatic view of the wiring of my invention. Fig. 3 is a longitudinal sectional view of the automobile-bed, showing the position of the brake mechanism after the brake-magnet has been energized and the brake set.

A is the automobile-bed.

B is the seat proper; C, the battery; D, the motor; E, the brake-casing; F, the brake-lever; G, the brake-rod; H, a bell-crank lever which is pivoted to the bottom of the bed at the point I.

J is the foot-plate for the purpose of rocking the bell-crank lever H.

K is a spring for the purpose of returning the brake mechanism to its normal position.

L is an angle-iron secured to the automobile-bed, through the lower end of which the brake-rod G passes.

M is a lever which is pivoted at the point N to the bed, the rod G passing through the lower end of this lever.

O is a spring which is interposed between the angle-iron L and the lever M.

P is a collar secured to the brake-rod G.

Q is a projection formed upon the under side of the lever M. This projection is beveled upon its upper surface.

R is a latch which is pivoted to the hanger S. The nose of this latch is adapted to engage the projection Q. T is an armature secured to the latch R.

U is an electromagnet which when energized is adapted to attract the armature T.

V is a link pivoted to the lever M at one end and at the other end to the foot-lever W, which foot-lever is pivoted to the bed of the automobile at the point X. Y is the foot-plate of this foot-lever W.

Z is one member of a switch, connected to the foot-lever W, and *a* is the other member of the switch, secured to the bed of the automobile.

b is a seat-board pivoted at *c* to the seat proper and adapted to be held upward by the spring *d*.

e is a metallic contact secured to the seat-board *b*. *f* is another metallic contact secured to the seat proper.

g is an electromagnetic device which is adapted to be placed beneath the seat. *h* is the electromagnet of this device.

i is the armature which is secured to the lever *j*.

k is a contact-point the lever *j* is adapted to make contact with when in its raised position, and *l* is a contact the lever *j* is adapted to make contact with when pulled down by the magnet *h*.

m is a switch for the purpose of throwing the brake-magnet out of operation.

I have not illustrated in the drawings the mechanism of the controller and the lever of said controller for the reason that persons versed in the art well understand the construction of same and for the further reason that this construction does not form any part of my invention. The controller, with its mechanism, may be placed between the motor and the contact *l* in the space indicated by dotted lines.

The *modus operandi* of my invention is as follows: When the vehicle is not in use, stored away, the switch *m* is left open, and as the controller of the vehicle is then in such a position as to break the circuit between the motor and contact *l* all the circuits of the battery C are open. If the vehicle is to be brought into use, the switch *m* is first closed. The occupant in taking his seat presses together the springs *e* and *f*, thereby establishing a circuit including the electromagnet *h*. The lever *j* of this magnet is pulled downward and brought in connection with the contact *l*. A circuit is thereby established from the positive pole of the battery C through lever *j*, contact *l*, controller, and its resistance, (designated in the drawings by dotted lines,) motor D, contacts *a* and Z back to the negative pole of the battery. The driver actuates then the controller in the usual manner. As long as the driver occupies the seat the vehicle is driven as if no safety device would have been applied thereto. Should now an accident threaten and the occupant jump involuntarily from the seat, then the contacts between the springs *e* and *f* will be broken. This will demagnetize the electromagnet *h*, will release the lever *j*, and will bring the same in connection with the contact *k*. Through this manipulation the circuit containing the motor will be broken and the circuit will be established from the positive pole of the battery C through the lever *j*, contact *k*, electromagnet U, closed switch *m*, back to the negative pole of the battery. The armature T, secured to the latch R, will be drawn toward the core of this electromagnet, and the latch R will thereby release its hold on the projection Q of the lever M. The auxiliary spring O, the action of which is controlled by the lever M, will now exert its pressure on the rod G and will set the brake independent of the spring K, with its foot-lever J. At the same time the link V will be pushed forward and will bring the foot-lever W, with its foot-plate Y, in a position as illustrated in Fig. 3, thereby severing the connection between contact-plate Z and contact-brush *a*. If now after the setting of the brake the occupant, either by accident or design, again resumes the seat, the motor-circuit will not be established and the brake will not be released. To release the brake, it is necessary to push back in its former position the foot-plate Y, and to make complete the motor-circuit it is also necessary to bring in contact the plates Z and *a*, which can only be done through the operation of this foot-plate. No matter, therefore, if the lever J is pulled down to the contact *l*, when the occupant has resumed his former place the motor-circuit will remain broken as long as the foot-plate is not reset. When the occupant ascertains that all threatened danger is over, he presses his foot against the plate Y, thereby releasing the brake and establishing the circuit containing the motor D. The

vehicle is again placed, as far as its motive power is concerned, at the disposal of the driver.

The device, as illustrated in the drawings, was carefully tested by me in practice and found not only to be efficient, but to embody all the necessary points above enumerated, which should be embodied in a device deserving the designation of a "safety-brake."

I do not think it necessary to describe more in detail the function of the mechanical parts of the brake, as a perusal of the drawings and description of same will clearly indicate to a person versed in the art the function of each part of it.

While in this specification and in the claims following this specification I make use of the words "brake-circuit," I understand under them the circuit including the electromagnetic device designed to actuate either directly or indirectly the brake.

Persons versed in the art will readily find the sort of coils required for the electromagnets necessary to be used in the device described, but after careful trials and experiments I find that if the coil of the electromagnet *h* is wound to about fifty ohms it is best suited for the purpose. A pressure of four volts will do for this coil, and the electromagnet will then take about .05 A, circuit included. The coil of electromagnet U was wound by me with No. 15 wire and took six volts for each ampere flowing. This coil worked effectually with a pressure of nine volts and one and one-half amperes; but I have illustrated in the drawings the circuit of the coil as being connected with eleven secondary batteries to show that the flow of a large current would not injure the coil in the least, as it is possible that undue resistance between the latch R and projection Q may necessitate a larger current.

I have found the use of an electromagnetic device interposed between the motor-circuit and the seat-switch a necessity for the reason that, as my experiments have sufficiently demonstrated, the sparking between the two contacts on the seat-switch is often such that the burning of the seat proper is not entirely excluded, besides the appearance of large sparks may easily scare the occupant; but with the intervention of the electromagnetic device as described and illustrated the seat-switch only makes and breaks the contact of the circuit carrying such small amperage as to exclude sparking of any consequence.

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

1. In an electrically-propelled vehicle, the combination with a switch adapted to automatically open a circuit containing the source of current and the motor propelling the vehicle, and to simultaneously close a circuit containing an electromagnetic device controlling the brake of the vehicle, of means controlled by said switch for applying the brake, and additional means independent of said switch for controlling the motor-circuit to prevent operation of the motor until the brake is released.

2. A safety device for power-propelled vehicles consisting of the following instrumentalities: a switch controlled by the weight of the occupant of the vehicle, an electromagnetic device operated by said switch, a motor-circuit controlled by said electromagnetic device, a second circuit containing an electromagnet controlling the brake of said vehicle, mechanical means to keep said brake-circuit closed and mechanical means to open said brake-circuit.

3. In a device such as described, an electromagnet operated by a switch controlled by the weight of the occupant of the vehicle, said electromagnet controlling a motor-circuit and a brake-circuit, in combination with a switch controlled by the mechanism of the brake to open or close the motor-circuit.

4. A safety device for vehicles provided with means controlled by the weight of the occupant of the vehicle to simultaneously open the motor-circuit and close the brake-circuit, and further provided with means controlled by the mechanical movement of parts of the brake device to keep closed said brake-circuit and keep open the motor-circuit independently of the weight of the occupant.

5. In a safety device for electric vehicles, a motor-circuit provided with two switches, one switch adapted to be closed through the weight of the occupant of the vehicle, and adapted to be opened if said weight is removed, the second switch adapted to be opened independently of the weight of the occupant through the movement of parts of the brake mechanism.

6. In a motor-vehicle, the combination with a motor, and a brake, of means for controlling the operation of the motor and brake, and auxiliary means for preventing operation of the motor until the brake has been released.

7. In a motor-vehicle, the combination with a motor, and a brake, of means for controlling the operation of the motor and brake, and auxiliary means for preventing operation of the motor until the brake has been released, said auxiliary means being normally restrained from actuation through the medium of the brake mechanism.

8. In a motor-vehicle, the combination with a motor, and a brake, of means operatively related to a movable portion of the vehicle for controlling the operation of the motor and brake, and auxiliary means for preventing operation of the motor until the brake has been released.

9. In a motor-vehicle, the combination with a motor, a source of power, and a brake, of devices for transmitting the power to the motor and brake mechanism, a device for con-

trolling the transmission of the power thereto, and an auxiliary device for preventing transmission of the power to the motor after the brake has been set.

10. In a motor-vehicle, the combination with a motor, a source of power, and a brake, of means interposed between the motor and the source of power for controlling the operation of the motor and brake, and auxiliary means also interposed between the motor and source of power for preventing operation of the motor until the brake has been released.

In testimony whereof I hereby sign my name, in the presence of two subscribing witnesses, this 26th day of March, A. D. 1901.

ISIDOR KITSEE.

Witnesses:
EDITH R. STILLEY,
CHAS. KRESSENBUCH.