

Dec. 9, 1924.

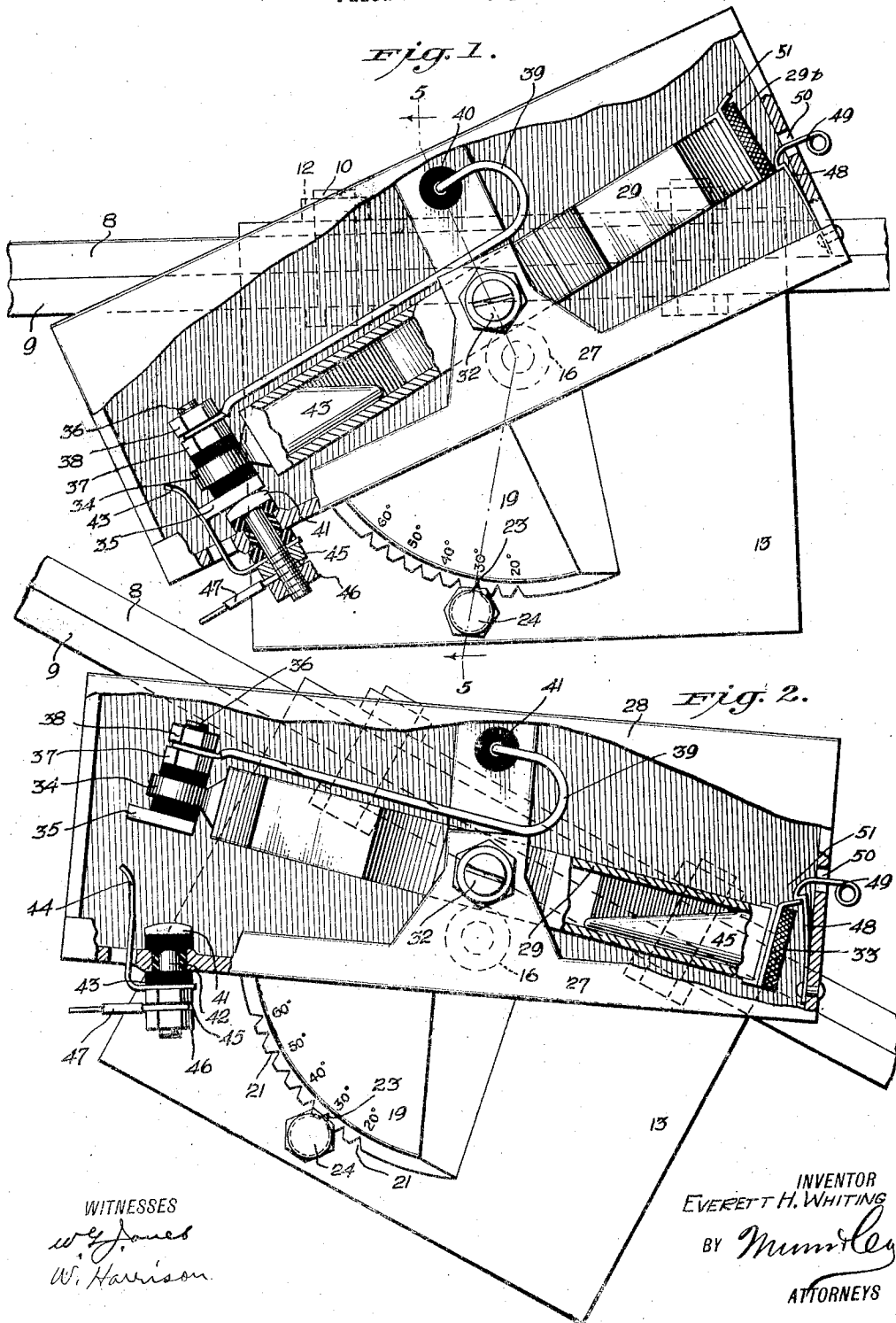
1,519,079

E. H. WHITING

AUTOMATIC SAFETY TRACTOR DEVICE

Filed Nov. 24. 1920

2 Sheets-Sheet 1



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Fig. 3.

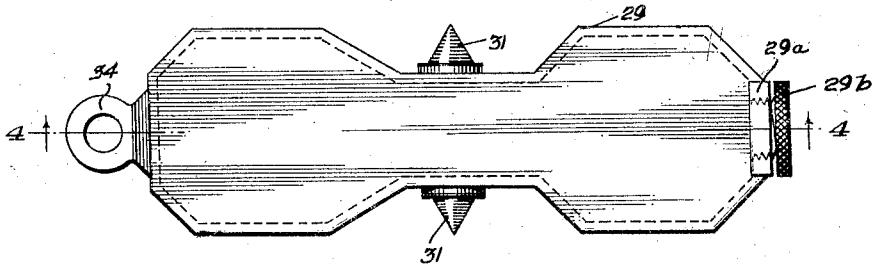


Fig. 4.

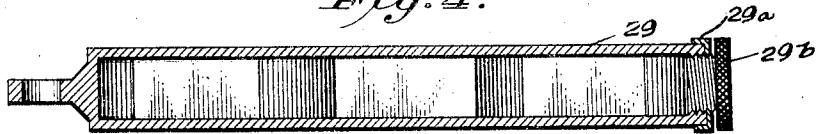
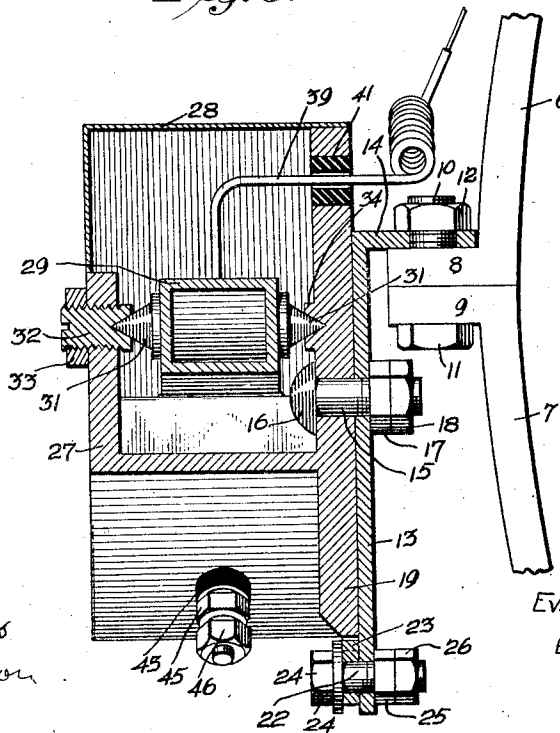


Fig. 5.



WITNESSES

W. E. Jones
W. Harrison

INVENTOR
EVERETT H. WHITING
BY *Thumley*
ATTORNEYS

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UNITED STATES PATENT OFFICE.

EVERETT H. WHITING, OF SANTA ROSA, CALIFORNIA.

AUTOMATIC SAFETY TRACTOR DEVICE.

Application filed November 24, 1920. Serial No. 426,200.

To all whom it may concern:

Be it known that I, EVERETT H. WHITING, a citizen of the United States, and a resident of Santa Rosa, in the county of Sonoma and State of California, have invented a new and Improved Automatic Safety Tractor Device, of which the following is a full, clear, and exact description.

My invention relates to automatic safety tractor devices; that is to devices in the nature of automatic circuit breakers, so constructed and arranged as to break the ignition circuit of the tractor, so as to cut off the power, in the event the tractor is tilted beyond a predetermined angle relative to its normal level.

More particularly stated, I provide the tractor with a circuit breaker containing a volume of free mercury and connected with the ignition circuit of the vehicle in such a manner that the mercury by its flow in one direction, when the vehicle is tilted, breaks the ignition circuit and thus causes the vehicle to come to a full stop.

Reference is made to the accompanying drawings forming a part of this specification, and in which like characters of reference indicate like parts throughout the several figures.

Figure 1 is a side view partly in elevation and partly in section, showing my device with its movable parts arranged in the positions they respectively occupy when the body of the tractor is substantially level.

Fig. 2 is a side view partly in elevation and partly in section showing my device with its movable parts occupying the respective positions they occupy when the vehicle is inclined and the ignition circuit broken.

Fig. 3 is a plan view of my improved circuit breaking lever, which is controllable by gravity and for this purpose is adapted to contain a volume of mercury.

Fig. 4 is a section on the line 4—4 of Fig. 3 looking in the direction indicated by the arrows.

Fig. 5 is a section on the line 5—5 of Fig. 1 looking in the direction indicated by the arrows.

The two members 6, 7 constitute a portion of the engine body and are provided with flanges 8, 9 integral with them. Extending through these flanges are bolts 10 provided with heads 11 and fitted with nuts 12. The purpose of these bolts is two-fold, namely, to hold the flanges 8, 9 together, and to se-

cure upon the engine body an apron plate 13. This apron plate is provided with a flange 14 integral with it and extends laterally as shown in Fig. 5, so that the bolts 10 extend through the flange 14. Thus the apron plate 13 is rigid relatively to the engine body. Extending through the apron plate 13 is a journal bolt 15 provided with a head 16 and with a nut 17 and a nut lock 18. The apron plate 13 carries a sector plate 19 through which the journal bolt 15 extends. The sector plate 19 may be turned upon the journal bolt 15, and thus adjusted in different angular positions relatively to the apron plate 13.

The sector plate 19 is provided with notches 21 disposed upon its peripheral edge; and is further provided with degree marks, in this instance 20°, 30°, 40°, 50°, 60°, as shown in Figs. 1 and 2. Extending through the apron plate 13 is a bolt 22 the form and arrangement of which may be understood from Fig. 5. This bolt carries a detent 23, adapted to fit loosely into the notches 21, one at a time, as the bolt 23 is turned. The bolt 22 is provided with an angular head 24 whereby it may be turned. It is further provided with a nut 25 and a nut lock 26. The operator by turning the bolt head 24 can cause the detent 23 to enter the notches 21, one at a time, so as to turn the sector plate 19 step by step, to a limited extent permitted by the number of notches 21.

The sector plate 19 carries a sector frame 27 having generally the form of a box, as may be understood from Figs. 1, 2 and 5, and provided with a cover 28 which in this instance is made of sheet metal.

The circuit breaking lever is shown in Figs. 3 and 4, and has the form of a box 29, adapted to contain mercury, and conveniently designated as the mercury box. The mercury box is provided with a neck 29^a and with a screw stopple 29^b to enable mercury to be poured into or out of it. The mercury box is provided with trunnions 31. One of these trunnions is engaged by a trunnion screw 32, locked in position by a nut lock 33, as shown in Fig. 5, the other trunnion extending into a bearing 34. The operator by turning the trunnion screw 32 may adjust the mountings for the mercury box, so as to allow the mercury box more or less freedom as required. The mercury box is provided with an eye 34 as indicated more particularly in Figs. 3 and 4. A contact but-

ton 35 is carried by a threaded stem 36 which extends through the eye 34. Engaging the threaded stem 36 are nuts 37, 38; these nuts together with the stem 35 serving the purpose of a binding post. Connected with this binding post is a wire 39 which extends through a bushing 41 of insulating material carried by the sector frame 27. This wire 39 is so mounted as to possess a certain degree of flexibility, in order to allow the mercury box a certain amount of freedom to enable it to rock. A contact button 41 is mounted upon a stem 42, which extends through insulation 43 carried by the sector frame 27. A contact spring 44 is mounted upon the stem 42 and held in position by nuts 45, 46, these nuts and the bolt 42 together forming a binding post. Connected with this binding post is a wire 47. The wire 47 and the wire 39 above described, together with the contact buttons 35 and 41 and parts immediately adjacent thereto, form a part of the ignition circuit of the tractor engine.

When the various movable parts are in their respective normal positions, as indicated in Fig. 1, the ignition circuit is closed, owing to the fact that the contact button 35 is in engagement with the contact button 41 and is also in engagement with the contact spring 44. However, when the various movable parts are in their respective abnormal positions as indicated in Fig. 2, so that the mercury box is tilted as shown in Fig. 2, the ignition circuit is broken.

A quantity of mercury 45 is located within the mercury box 29 and is adapted to flow from one end of the mercury box to the other as may be understood by contrasting Figs. 1 and 2.

The sector frame 27 carries a latch 48 having the general form of a leaf spring and provided with a handle 49 as shown in Figs. 1 and 2. The handle projects through an opening 50 in the sector frame. The operator, by pressing downwardly upon the handle 49 may shift the position of the spring latch 48. The mercury box 29 carries a lip 51 made of metal and adapted to be engaged by the spring latch 48. When the mercury box 29 is tilted into the position indicated for it in Fig. 2 the lip 51 is engaged by the spring latch 48 so that the mercury box is locked relatively to the sector frame 27, in the position indicated in Fig. 2. With the parts in the condition there indicated, the ignition circuit cannot be closed until the operator grasps the handle 49 and detaches the spring latch 48 from the lip 51.

The operation of my device may be readily understood from the foregoing explanation: When the tractor engine is substantially level, as indicated in Fig. 1, the ignition circuit is closed and remains closed

as long as the engine body remains substantially level.

If, however, it happens that the tractor engine body is tilted, as indicated in Fig. 2, the volume of mercury 45 flows from its position which it occupies in Fig. 1, to the position which it occupies in Fig. 2, thereby causing the mercury box to tilt and thus open the ignition circuit.

The operator may from time to time, by turning the bolt 24, as above described, adjust the sector plate 19 into different angular positions relatively to the apron plate 13, and by doing this he may control the sensitiveness of the circuit breaking mechanism.

I do not limit myself to the precise mechanism here shown and described, as variations may be made therefrom without departing from the spirit of my invention.

I claim:

1. In a circuit breaking switch, the combination of an apron plate provided with a flange, means for detachably connecting said flange with the body of a tractor engine or the like, a sector plate journaled upon said apron plate, means controllable at the will of the operator for adjusting said sector plate to different angles relatively to said apron plate, a sector frame carried by said sector plate and having the general form of a box, a contact in the bottom of said box, a switch lever located within said box and mounted to rock, said switch lever being hollow and having the form of a box, a volume of free mercury located within said last mentioned box, a contact on one end of the mercury box and adapted to be engaged with and disengaged from the contact of the sector frame by the tilting movements of said mercury box, and means for enabling the operator to connect said contact mechanism with an ignition circuit.

2. A device of the character described comprising an apron plate, a sector plate journaled relatively to said apron plate and provided with notches, a bolt carried by said apron plate and provided with a detent for entering said notches one at a time in order to hold said sector plate in different positions relatively to said apron plate, a sector frame connected rigidly with said sector plate and having the general form of a box, a circuit breaking switch in the form of a box containing mercury and journaled within said sector frame and adapted to be tilted relatively to said sector frame by the mercury contact mechanism located within said sector frame and controllable by movements of said mercury box therein, and electrical connections to said contact mechanism.

3. A device of the character described comprising an apron plate provided with

a flange, bolts for connecting said flange with the body of a tractor, a journal bolt carried by said apron frame, a sector plate mounted upon said journal bolt, means controllable at the will of the operator for shifting said sector plate into different positions relatively to said apron plate, a sector frame carried by said sector plate and having the general form of a box, a mercury box carried by said sector frame and so journaled relatively thereto that said mercury box may be tilted, means controllable at the will of the operator for adjusting the freedom with which said mercury box can tilt relatively to said sector frame, and contact mechanism carried by said sector

frame and mercury box and controllable by movements of said mercury box for the purpose of breaking an electric circuit.

4. A device of the character described, comprising a pivoted box-like frame having a contact in its bottom, means for adjusting said frame to different angular positions, a mercury box pivoted in the said box-like frame and having a contact at one end and provided at its other end with a lip, wires connected with said contacts, and a latch carried by the box-like frame and adapted to engage the lip of the mercury box to lock the latter against movement.

EVERETT H. WHITING.