June 11, 1946. E. O. BLANCHETTE 2,401,901

SIGNALING DEVICE

Filed July 2, 1943 2 Sheets-Sheet 1

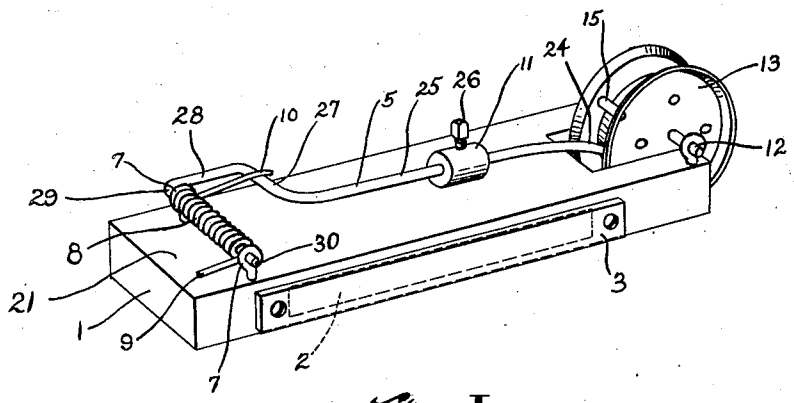


Fig. I

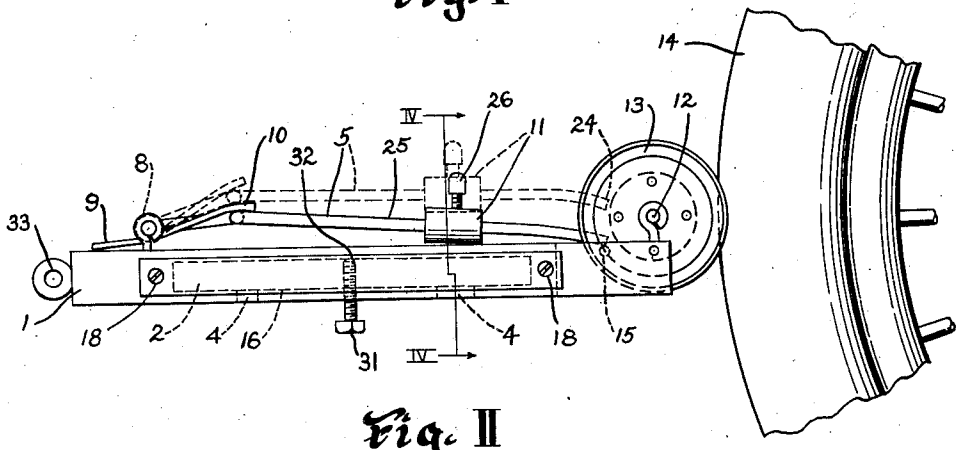


Fig. II

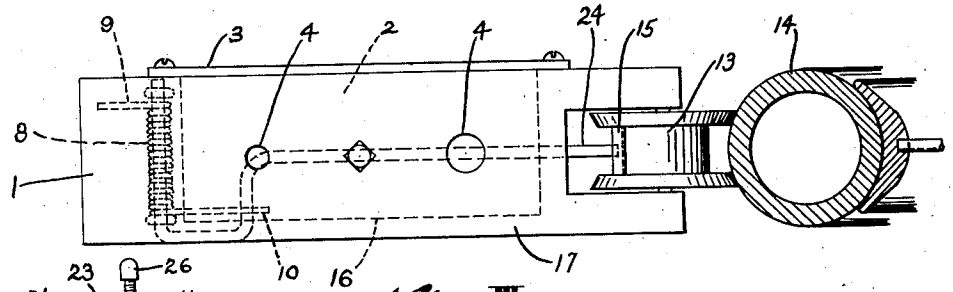


Fig. III

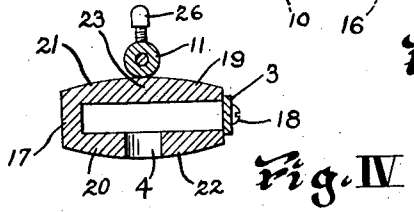


Fig. IV

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SIGNALING DEVICE

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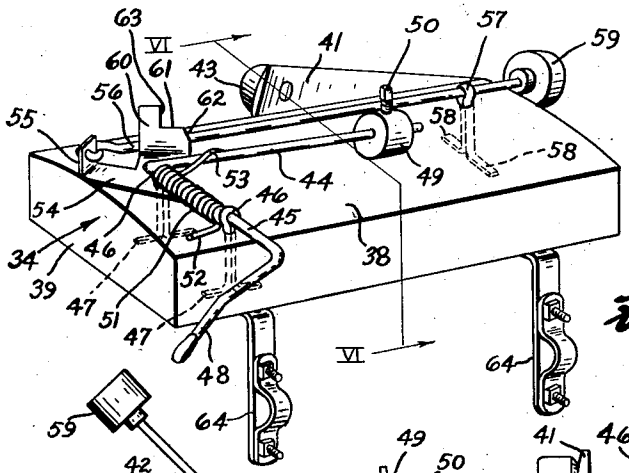


Fig. V

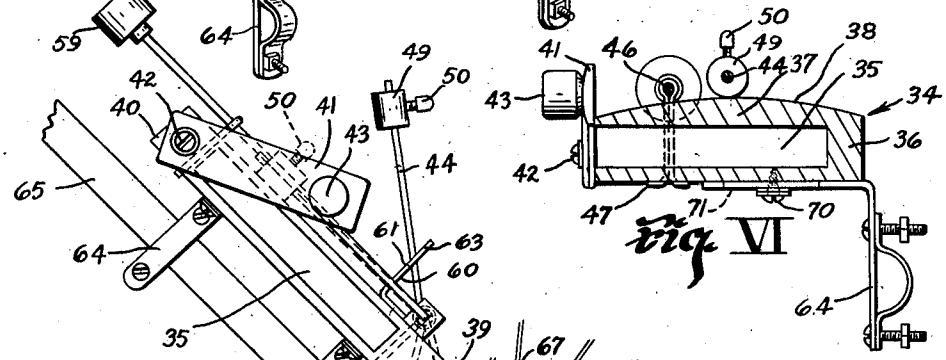


Fig. VI

Fig. VII

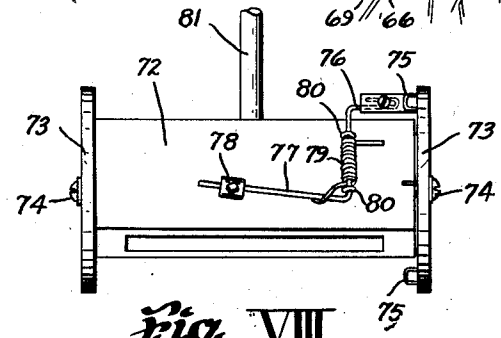


Fig. VIII

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UNITED STATES PATENT OFFICE

2,401,901

SIGNALING DEVICE

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Application July 2, 1943, Serial No. 493,203

4 Claims. (Cl. 116—56)

1

This invention relates to sound producing means of the type adapted to be operated by the rotary action of the wheel of a vehicle and method of making the same.

One of the principal objects of the invention is to provide a sound producing device of the above nature and method of making the same, particularly adaptable for use with bicycles or other light running vehicles and which is adapted to be operated by the rotary action of a wheel of such vehicles.

Another object is to provide a loud sounding, simple and inexpensive alarm attachment for bicycles which may be readily controlled by the rider so as to be operated by the wheel of the vehicle in order to notify pedestrians as to the approach of the vehicle and which, when in operation, will imitate the exhaust of a motorcycle.

Another object is to provide a device of the character described with a resonance chamber hollowed out of a single piece of material so as to obtain the resonance qualities desired.

Another object is to provide novel means and method of controlling the sound and volume of a device of the character described.

Other objects and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings and it will be apparent that many changes may be made in the details of construction and arrangement of parts and method shown and described without departing from the spirit of the invention as expressed in the accompanying claims. I, therefore, do not wish to be limited to the exact details of construction, arrangement of parts and method shown and described as the preferred form only has been given by way of illustration.

Referring to the drawings:

Fig. I is a perspective view of a device embodying the invention;

Fig. II is a side elevation of the device illustrated in Fig. I diagrammatically illustrating the position of the operating portion thereof in engagement with a wheel of a vehicle;

Fig. III is a bottom plan view of said device;

Fig. IV is a fragmentary sectional view taken as on line IV—IV of Fig. II and looking in the direction indicated by the arrow;

Fig. V is a view generally similar to Fig. I of a modified form of the invention;

Fig. VI is a sectional view taken as on line VI—VI of Fig. V and looking in the direction indicated by the arrows;

Fig. VII is a fragmentary side elevational view

2

showing the device of Fig. V in a position of use on a bicycle; and

Fig. VIII is a front view of a modified form of the invention.

Referring more particularly to the drawings wherein like characters of reference designate like parts throughout the several views the invention comprises broadly a block of wood 1 which has its center portion hollowed out as illustrated by the dash lines 16 in Figs. II and III. The hollowed out block 1, as illustrated in Figs. III and IV, has an integral solid wall 17 on one of the longitudinal sides thereof with the other longitudinal side opened and covered by plate-like means 3 which is attached to the block by screws or the like 18. The upper and lower walls 19 and 20 of the block are relatively thin and have outer surfaces 21 and 22 which are curved outwardly in a direction crossways of the block as illustrated in Fig. IV. This causes the central area of the walls 21 and 22, as illustrated at 23, to be of a greater thickness than the longitudinal sides of said walls. The bottom wall 20 is provided with openings 4 communicating with the hollow chamber 2, as illustrated in Figs. II, III and IV, to impart and control the tone reproduced by said hollow block as will be described more in detail hereinafter. A lever 5 preferably formed of a bent wire or bar material is pivotally attached at 6 to suitable screw eyes or the like 7 carried by the block 1. The lever 5 has a slightly deflected end portion 24 adjacent the free end thereof and a relatively straight intermediate portion 25 on which is slidably mounted a weight 11. The weight 11 is secured in adjusted position by means of a set screw or the like 26. The lever 5 has an outwardly bent portion 27 which blends into a deflected portion 28 lying substantially in the direction of the intermediate portion 25. The portion 28, in turn, is bent inwardly as illustrated at 29 to provide a portion 30, lying substantially parallel with the portion 27. The portion 30 fits within the spaced screw eyes 7 or other suitable bearing means as illustrated in Figs. I to III inclusive. The lever 5 is normally urged towards the block 1 by means of a coil spring 8 or the like which fits over the portion 30 between the screw eyes or bearing members 7. The said coil spring 8 has an end portion 9 engaging the upper surface 21 of the block and another end portion 10 engaging the section 27 of the lever 5 as illustrated in Figs. I, II and III. The weight 11 forms a hammer like member which is adapted to be forced into engagement with the wall 23

of the block 1 when the said lever is moved away from the block and thereafter released so that the spring will snap said lever toward said block. The weight 11 is movable longitudinally of the intermediate portion 25 to shift the position of contact thereof with the wall 23. Adjacent the other end of the block 1 there is pivotally supported, as illustrated at 12, a wheel 13 which is adapted to engage the tire 14 on the vehicle or bicycle as illustrated in Figs. II and III. This wheel is provided with a pin 15 which is adapted to be moved into engagement with the end 24 of the lever 5 when the wheel is rotated by the tire during the use of the bicycle or vehicle. As the wheel rotates the pin 15 engages the end 24 of the lever 5 and raises the lever as illustrated by the dash lines in Fig. II, whereupon the end of the lever will slide off of the pin 15 and allow the resilient means 8 to cause the weight of the hammer block 11 to strike a blow on the wall 23 of the hollow chamber 22 thereby causing a sound to be emitted through the openings 4. This sound simulates the sound of the exhaust of a motorcycle and is produced by the particular hollow design of block. In forming the block the said sound chamber is hollowed out of a single piece of blocking material and the open edge thereof is covered by a plate 3. The size of openings 4 is controlled in such a manner as to produce the sound desired. In order to vary the tone and intensity of sound a suitable adjustable screw or the like 31 is threaded into the lower wall 20 and has an inner end 32 which is adapted to be positioned adjacent the inner surface of the wall 23, see Fig. II. It is particularly pointed out that different positions of adjustment of the screws or location of the end 21 with respect to the inner surface of the wall 23 will produce the results desired; namely, that of altering the tone and intensity of the tone.

The device is attached to the bicycle or vehicle by any suitable means by which the wheel 13 may be voluntarily moved into and out of engagement with the tire 14 of the vehicle. This can be accomplished by providing a pivotal connection at 33 adjacent the end thereof opposite the wheel, which pivotal connection could be secured to a suitable bracket or clamp secured to a part of the framework of the bicycle, and suitable means, such as a cord or the like, attached to the device and connected to manually operable means adjacent the handle bars could be used for moving the device about the pivotal connection 33 in order to move the wheel 13 into and out of engagement with the tire 14.

Although the tone chamber is described as being formed from a block of wood it is to be understood that it may be integrally molded of material such as suitable plastics, Bakelite or other materials or it might be formed of a synthetic resin or any other desirable material. The essential feature is that the tone chamber be of an integral hollow piece in order to produce the tone qualities desired. It is also of importance that the outer surfaces be slightly curved as illustrated in Fig. IV with the central area 23 of the upper and lower walls thicker than the longitudinal edge portions thereof as this produces the sound effect desired.

In Figs. V through VII there is illustrated a further modification of the invention which embodies a block 34 having its central area hollowed out, as illustrated at 35, to produce a solid side wall 36 longitudinally thereof and an upper wall 37 having a central thickness greater than

the thickness thereof adjacent the longitudinal sides of the block. The upper surface 38 is curved in a manner similar to the upper surface 21 of the block 1. The block 36 adjacent the opposed ends thereof has solid end walls 39 and 40 with an opening extending longitudinally of the chamber throughout the longitudinal edge of the block opposed to the side wall 36. A closure member 41 is pivotally attached to the end wall 40 by means of a screw or the like 42 and is provided with a hand engagement member 43 by means of which the said closure member 41 may be moved to a position to overlie the mouth of the chamber 35 throughout the length of the closure member 41 or throughout a portion of the member depending upon its position of adjustment. It is particularly pointed out that the closure member 41 is of a length less than the length of the mouth of the opening. This closure member is for the purpose of varying the tone produced by the chamber. A lever member 44 preferably formed of wire has an integral normally disposed portion 45 pivotally attached to the upper surface of the block 34 by suitable cotter pins or the like 46. The cotter pins 46 extend through spaced openings formed in the block 34 and have their protruding ends 47 bent in a sidewise direction to overlie the bottom wall of the chamber 36. This is best shown in Figs. V and VI. The eye of the cotter pins 46 form bearing means to which the normally disposed portion 45 of the lever 44 are pivotally attached. The normally disposed portion 45 is provided with an angularly disposed contact portion 48 adjacent the end thereof opposed to the lever member 44. The lever member 44 is provided with a weight 49 adjustably secured thereto by means of a set screw or the like 50. The said weight functions as a hammer member for engaging the upper wall 37 of the chamber 36 and is resiliently urged into engagement with said wall 37 by means of a coil spring or the like 51. The said coil spring 51 has an end 52 which engages the upper surface 38 of the wall 37 adjacent one end of said coil spring and has its opposed end 53 engaging the lever member 44. This is best seen in Fig. V. The end 53 is preferably formed to a hook shape so as to hook over the lever member 44. The cotter pin 46 adjacent the lever member 44 has a plate 54 pivoted thereto. The said plate 54 is provided with an angularly disposed portion 55 to which a rod 56 is connected. The rod 56 extends through a cotter pin 57 which, in turn, extends through an opening in the block 34 and has its ends 58 bent in a sidewise direction to anchor the said pin to the block. The end of the rod 56, opposed to the portion 55, is provided with a hand grip member 59 by means of which the plate 54 may be rocked upon its pivotal connection with the cotter pin 46. The said plate 54 is provided with an angularly disposed portion 60 simulating the portion 55. The said portion 60 has an edge 61 spaced upwardly of the plane of the plate 54 adapted to form a shelf to underlie the lever member 44, as shown best in Fig. VII. The edge 60 is adapted to be moved beneath the lever 44 by pulling the hand engagement member 59 thereby causing the plate 54 to rock upon its pivotal connection with the cotter pin 46 and to move the said edge 60 beneath the lever member. This is easily accomplished when the device is in operation. An angularly disposed edge 62 is formed on the member 60 adjacent the edge 61 to aid in guiding the portion 60 beneath the

lever member 44. The said member 66 is provided with an upright portion 62 which is adapted to limit the inward movement of the edge 60 beneath the lever member 44. This is to render the device inoperative when desired.

The portion 60 may be moved from beneath the lever 44 by applying a downward pressure on the hand engagement member 59. The block 36 is provided with spaced clamp members 64 by means of which the said block may be attached to the frame 65 of the bicycle. The wheel of the bicycle or vehicle to which the device is attached is provided with a plurality of engagement members 66 which are preferably secured to the spokes 67 of the wheel by suitable clamp means 68. The said engagement members may be of any desired type having ends 69 which are adapted to engage the end of the engagement lever 48 as the wheel is rotated in progressive and successive sequence and cause the hammer-like weight member 49 to impart successive blows on the curved upper surface 38 of the wall 37. This causes the hollow block to produce the desired tone which may be varied by adjustment of the closure member 41. The brackets 64 are attached to the base of the block 34 by screws or the like 70 and are each provided with a longitudinal slot 71 by means of which the block may be adjusted to a position whereby the engagement lever 48 will be contacted by the engagement members 66. As the wheel is rotated the engagement members 66 intermittently engage the lever 48 causing the weight 49 to be raised and upon disengagement with the lever 48 the resilient means 51 will cause the weight to be snapped into engagement with the wall 37.

In Fig. VIII there is illustrated a modified form of the invention which embodies a hollowed block 72 similar to the block 34. In this instance, the block 72 is provided adjacent its opposed ends with wheels 73 pivotally attached to the block by screws or the like 74. One of the wheels 73 is provided with protrusions 75 which function in a manner similar to the engagement members 66. The said protrusions 75 are preferably three in number disposed in substantially equally spaced relation adjacent the periphery of the wheel 73. The said protrusions 75 are adapted to engage an angularly deflected contact member 66 formed on a lever member 77 simulating the lever 44. The lever member 77 is provided with an adjustable weight 78 urged toward the upper wall of the member 72 by resilient means 79. The lever member 77 is pivotally attached to the block 72 by suitable means, such as cotter pins or the like 80, in a manner generally similar to the construction illustrated in Figs. V through VII. The block 72 is provided with a handle 81 by means of which the said device may be drawn or pushed to cause the wheels 73 to rotate. As the wheels 73 are rotated the protrusions 75 will successively engage the angularly disposed portion 76 of the lever 77 and will cause the weight 78 to hit successive blows on the upper wall of the member 72 causing the hollow chamber to produce a tone.

It is particularly pointed out that the block members 34 and 72 have a hollowed out central area producing the tone chamber having integrally related upper and lower and side walls with one of the longitudinal walls being open to communicate with the hollow central chamber. The upper surface of the member 72 is preferably curved in a manner similar to the upper surface 38 shown in Fig. VI. The said

member 72 may be provided with a closure member similar to the closure member 41, if desired, to vary the tone produced by said chamber.

From the foregoing description it will be seen that simple, efficient and economical means and method have been provided for accomplishing all of the objects and advantages of the invention.

Having described my invention, I claim:

1. A device of the character described for use with a vehicle having rotating wheels, said device comprising a unitary piece of non-metallic material hollowed out to form a chamber having side, end and edge walls in integral relation with each other with one of said edge walls having a longitudinal opening therein and with the outer surface of one of said side walls being convexly curved in a direction transversely of the longitudinal axis thereof, spaced pivot bearings anchored in the material of said side wall having the curved outer surface adjacent one end of the chamber, a lever having a portion extending in a direction longitudinally of the chamber and having a bent end portion disposed in substantially normal relation with the portion extending longitudinally of the chamber and pivotally mounted in the spaced pivot bearings, said lever having an engagement portion, a coil spring fitting over the angularly disposed portion intermediate the bearings and having one end thereof overlying the lever and having its opposed end engaging the adjacent surface of the chamber for normally urging said lever toward said chamber, said lever having a hammer member thereon, said hammer member having an engagement surface which is convexly curved in a direction transversely of the chamber so as to function cooperatively with the adjacent curved surface of the chamber to contact only a relatively small area of said wall, said hammer member being so dimensioned as to hold the lever out of engagement with the wall, said engagement portion of the lever being operated through the rotation of a wheel of the vehicle for raising the hammer portion against the action of the resilient means and means for causing said hammer portion, under the resiliency of the coil spring to strike successive blows on the wall of the chamber during the rotation of the wheel.

2. A device of the character described for use with a vehicle having rotating wheels, said device comprising a unitary piece of non-metallic material hollowed out to form a chamber having side, end and edge walls in integral relation with each other with one of said edge walls having a longitudinal opening therein and with the outer surface of one of said side walls being convexly curved in a direction transversely of the longitudinal axis thereof, spaced pivot bearings anchored in the material of said side wall having the curved outer surface adjacent one end of the chamber, a lever having a portion extending in a direction longitudinally of the chamber and having a bent end portion disposed in substantially normal relation with the portion extending longitudinally of the chamber and pivotally mounted in the spaced pivot bearings, said lever having an engagement portion, a coil spring fitting over the angularly disposed portion intermediate the bearings and having one end thereof overlying the lever and having its opposed end engaging the adjacent surface of the chamber for normally urging said lever toward said chamber, said lever having a hammer member thereon, said hammer member having an engagement surface which is convexly curved in a direction

transversely of the chamber so as to function cooperatively with the adjacent curved surface of the chamber to contact only a relatively small area of said wall, said hammer member being so dimensioned as to hold the lever out of engagement with the wall, said engagement portion of the lever being operated through the rotation of a wheel of the vehicle for raising the hammer portion against the action of the resilient means and means for causing said hammer portion, under the resiliency of the coil spring to strike successive blows on the wall of the chamber during the rotation of the wheel, said chamber having a plate-like portion pivotally secured thereto adjacent one end of the longitudinal opening and having a portion movable to overlie different areas of said longitudinal opening to control the tone emitted by said chamber.

3. A device of the character described for use with a vehicle having rotating wheels, said device comprising a unitary piece of non-metallic material hollowed out to form a chamber having side, end and edge walls in integral relation with each other with one of said edge walls having a longitudinal opening therein and with the outer surface of one of said side walls being convexly curved in a direction transversely of the longitudinal axis thereof, spaced pivot bearings anchored in the material of said side wall having the curved outer surface adjacent one end of the chamber, a lever having a portion extending in a direction longitudinally of the chamber and having a bent end portion disposed in substantially normal relation with the portion extending longitudinally of the chamber and pivotally mounted in the spaced pivot bearings, said lever having an engagement portion, a coil spring fitting over the angularly disposed portion intermediate the bearings and having one end thereof overlying the lever and having its opposed end engaging the adjacent surface of the chamber for normally urging said lever toward said chamber, said lever having a hammer member thereon, said hammer member having an engagement surface which is convexly curved in a direction transversely of the chamber so as to function cooperatively with the adjacent curved surface of the chamber to contact only a relatively small area of said wall, said hammer member being so dimensioned as to hold the lever out of engagement with the wall, said engagement portion of the lever being operated through the rotation of a wheel of the vehicle for raising the hammer portion against the action of the resilient means and means for causing said hammer portion, under the resiliency of the coil spring to strike successive blows on the wall of the chamber during the rotation of the wheel, a member pivotally connected with said wall to which the lever is connected having a portion movable beneath the lever when said lever is in raised position and movable from beneath said lever in another position of adjustment and remote control means for moving said member to said positions.

4. A device of the character described for use with a vehicle having rotating wheels, said device comprising a unitary block of wood hollowed out to form a chamber having side, end and edge walls in integral relation with each other and with the inner surfaces of the respective walls being flat, one of said edge walls having a longitudinal opening therein and the outer surface of one of said side walls being convexly curved in a direction transversely of the longitudinal axis of the chamber, spaced pivot bearings anchored in the material of said side wall having the curved outer surface and being located adjacent one end of the chamber, a lever having a portion extending in a direction longitudinally of the chamber and having a bent end portion disposed in substantially normal relation with the portion extending longitudinally of the chamber pivotally mounted in the spaced pivot bearings, a coil spring fitting over the angularly disposed portion intermediate the bearings and having one end thereof overlying the lever and having its opposed end engaging the adjacent surface of the chamber for normally urging said lever toward said chamber, said lever having a hammer member thereon, said hammer member having an engagement surface which is convexly curved in a direction transversely of the chamber so as to function cooperatively with the adjacent curved surface of the chamber to contact only a relatively small area of said wall, said lever having a portion projecting outwardly of the hammer member on the side thereof opposed to the pivoted end of the lever to provide engagement means, a wheel rotatably supported by the end of the chamber opposed to the pivot bearings for the lever and said wheel having a plurality of contact members arranged to successively engage the engagement means for raising the lever and for causing the coil spring to force the hammer member into engagement with the side wall of the chamber when the said wheel is rotated by a wheel of the vehicle.

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