July 8, 1924. 1,500,328

L. C. LESTER

MECHANICAL WARNING SIGNAL

Filed Oct. 3, 1923 2 Sheets-Sheet 1

Fig. 1.

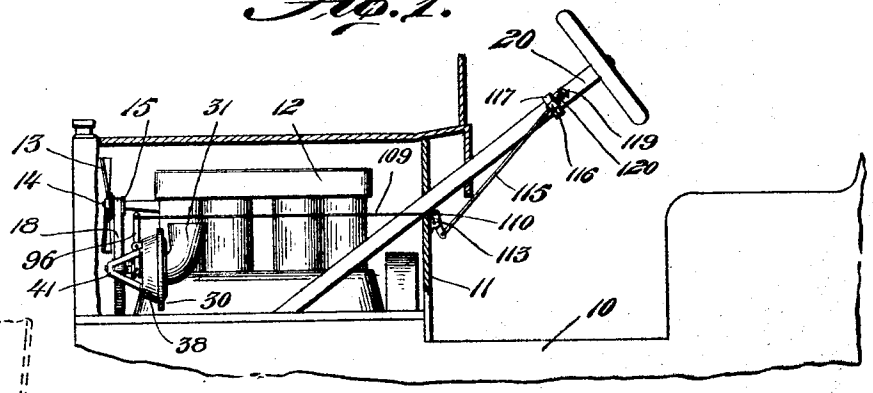
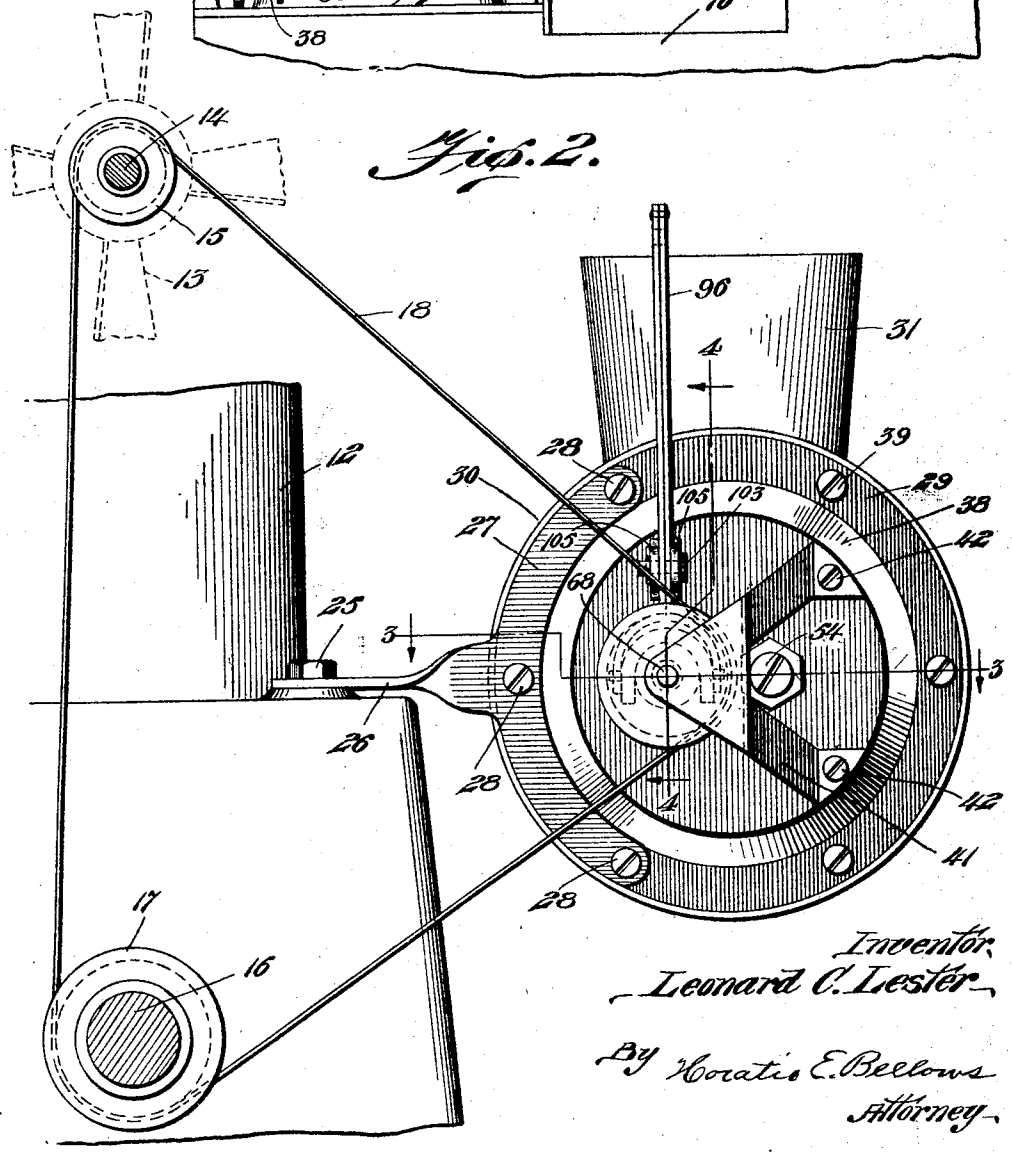


Fig. 2.



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Fig. 3.

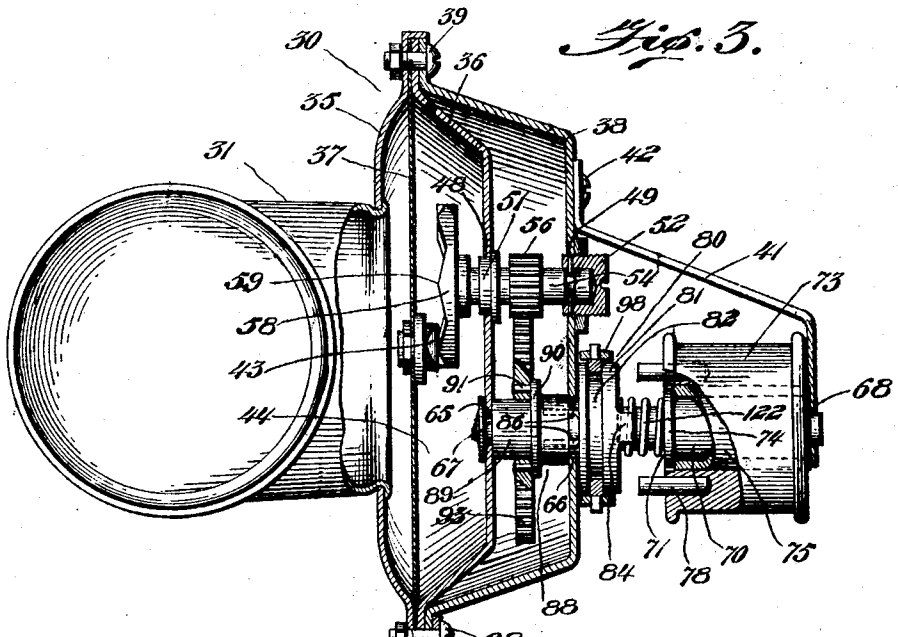


Fig. 4.

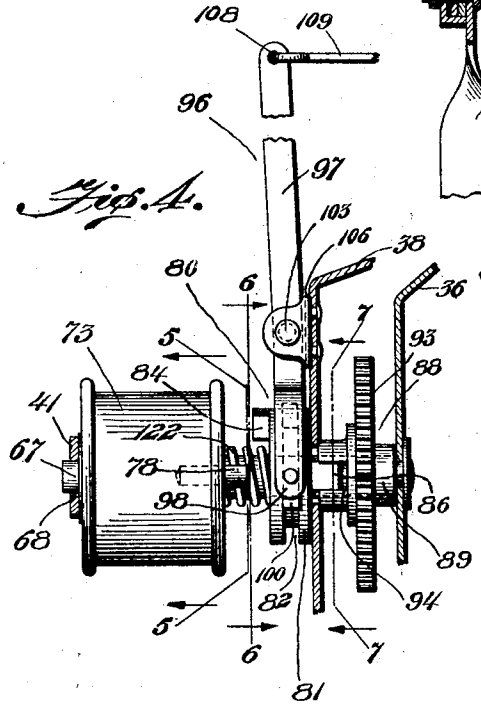


Fig. 5

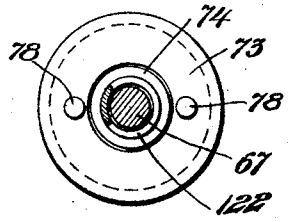


Fig. 7

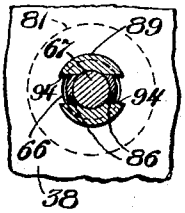
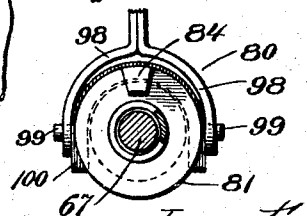


Fig. 6.



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Patented July 8, 1924. 1,500,328

UNITED STATES PATENT OFFICE.

LEONARD C. LESTER, OF CRANSTON, RHODE ISLAND.

MECHANICAL WARNING SIGNAL.

Application filed October 3, 1923. Serial No 666,301.

To all whom it may concern:

Be it known that I, LEONARD C. LESTER, a citizen of the United States, residing at Cranston, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Mechanical Warning Signals, of which the following is a specification.

My invention relates to mechanical warning signals, such as horns of the diaphragm type, adapted for use upon automobiles and other power vehicles.

The essential objects of my invention are to enable the use of the motive power of the vehicle as the operating force of the signal; to facilitate operation and control of the latter; to insure certainty and speed in operation, as well as clearness and volume of sound; and to attain these and other objects, which will hereinafter be apparent, in a structure adapted for inexpensive construction.

To the above and allied ends essentially my invention consists in such parts and in such combinations of parts as fall within the scope of the appended claims.

In the accompanying drawings which form a part of this specification, and wherein is shown merely a preferred form of embodiment of my invention,

Figure 1 is a side elevation of my signal applied to a typical automobile engine.

Figure 2, a front end elevation of the signal with a fragmentary showing of the parts adjacent thereto and the fan in broken lines.

Figures 3 and 4, section on lines 3—3 and 4—4 of Figure 2, and

Figures 5, 6 and 7, section on lines 5—5, 6—6, and 7—7 respectively of Figure 4.

Like reference characters indicate like parts throughout the views.

For the purpose of illustrating my invention I have shown in the drawing a portion 10 of the body, the instrument board 11, the engine casing 12, fan 13, fan shaft 14, shaft pulley 15, crank shaft or cam shaft 16, shaft pulley 17, fan belt 18, and the steering post 20 of a typical automobile operating in the usual manner.

Attached to the engine case 12 by a screw 25 or otherwise is the arm 26 of a bracket 27 fastened by screws 28 to the frame or casing 30 of the horn or signal having the usual flare or sound outlet 31. The frame 30 in this instance includes a dished flare supporting section 35, a clamping section 36, between which and the latter is positioned an acoustic diaphragm 37, and a housing section 38. All the sections being secured together at their margins by bolts 39. The frame is completed by an angular bracket or arm 41 attached by screws 42 to the housing section 38. The diaphragm 37 is provided with the usual button 43 extending into the sounding chamber 44 between the diaphragm 37 and section 36.

In aligned openings 48 and 49 in the sections 36 and 38 are the bearings 51 and 52 of a vibrator shaft or driven shaft 54 fixed to whose intermediate portion is a gear or pinion 56, and fast to whose end is a vibrator 58 having teeth 59 engageable with the button 43. Spaced from the shaft are aligned holes 65 and 66 in the sections 36 and 38 respectively. In hole 65 is fixed one end of a stationary or stub shaft 67 which traverses the hole 66 and projects forwardly of the casing and is supported at its end in a hole 68 in the bracket 41. The two shafts are parallel to each other. The shaft 67 near its outer end is of enlarged diameter, as of 70, forming end shoulders 71. Rotatably mounted on the shaft portion 70 is a pulley or driving member 73 restrained from inward axial movement by a shoulder 74 on one end of the enlarged portion of the shaft. Interposed between the member 73 and the shaft, and fast to the former is a bushing 75 whose end bears against the arm 41. Upon the inner end face of the member 73 are one or more, in this instance two, pins or projections 78. The fan belt 18 engages and drives the member 73.

Rotatably mounted on the shaft 67 between the section 38 and member 73, and having free axial movement upon the shaft, is an intermediate clutch member or neutral element represented generally by 80. In detail this member comprises a disk 81 provided with a peripheral groove 82 and having upon its face confronting the member 73 a lug 84 adapted to project into the path of the pins 78. Upon the opposite face of the disk are axial lugs 86 which extend loosely through the hole 66 of the section 38.

Cooperating with the intermediate member 80 is a driven element constituting a

part of the clutch mechanism, and indicated in a general way by 88. In detail this member comprises a sleeve 89 loose and rotatable on the shaft 67. Fastened to an intermediate flange 90 on this sleeve by pins 91 is a gear 93 meshing with the pinion 56. The ends of the sleeve 89 loosely contact with the sections 36 and 38 whereby axial movement of the sleeve is prevented. One end of the latter is provided with longitudinal slots 94 in which are slidably retained the lugs 86.

The member 80 which is adapted to alternately engage and disengage the driving member 73 may be axially shifted in any convenient manner. The means illustrated consists of a forked lever 96 comprising an arm 97 and fork 98 in which is suspended by pivot members 99, a yoke 100 which slides in the groove 82 of the disk 81. The arm of the shifting lever is intermediate its length pivoted by a pin 103 to ears 105 on a plate or bracket 106 fixed to the section 38. Pivotally attached to the free end of the lever arm 97, as at 108, is a rod 109 pivotally attached at its other end to one end of a lever 110 which in turn is pivoted intermediate its length to a bracket 113 on the dash 11. In the other end of the lever 110 is pivoted the end of a rod 115 sliding in an eye 116 on a collar 117 fast to the post 20 and terminating in a knob 119. A helical spring 120 interposed between the eye 116 and the knob is adapted to take up the play of the rods 109 and 115. Manual pressure on the button through the rod connections serves to force the member 80 into operative relation with the member 73. As soon as the pressure is released the member 80 is returned to original position by spring means located in any convenient position to act upon the member 80 or the lever 96. In this case the spring means consists of a helical spring 122 surrounding the shaft 67 with its ends abutting against the disk 81 and the adjacent shoulder 71 of the shaft.

The operation of my device is as follows. The normal positions of the parts are as shown in Figure 3, all the parts except the member 73, which is constantly in rotation by means of the belt 18, being inactive. Pressure by the operator on the knob 119 forces the member 80, against the tension of spring 122, towards the member 73 which brings the lug 84 into the path of the pins 78, by one of which it is engaged and the member 80 rotated so long as pressure is maintained on the knob. This rotation is imparted by the lugs 86 to the sleeve 89, and gear 93 to the pinion 56, shaft 54, and vibrator 58 whereby the diaphragm is vibrated through the teeth 59 and button 43.

It is to be understood that the invention is not limited to the specific form herein illustrated and described, but may be embodied in other forms without departure from its spirit as defined by the following claims.

I claim:

1. In a signal of the class described, a vibratory diaphragm, a rotatable vibrator in operative engagement with the diaphragm, a fixed shaft adjacent the vibrator, a driven member rotatably mounted on the shaft for actuating the vibrator, a continuously rotating driving member on the shaft, an axially slidable clutch member rotatably mounted on the shaft in slidable engagement with the driven member and movable into and out of engagement with the driving member, and means for sliding the clutch member.

2. In a signal of the class described, a vibratory diaphragm, a rotatable vibrator in operative engagement with the diaphragm, a fixed shaft adjacent the vibrator, an axially stationary driven member rotatably mounted on the shaft for actuating the vibrator, an axially stationary continuously rotating driving member on the shaft, a clutch member rotatably mounted on the shaft in permanent sliding engagement with the driven member and axially movable into and out of engagement with the driving member, and manually operated means for moving the clutch member into engagement with the driving member.

3. In a signal of the class described, a vibratory diaphragm, a rotatable vibrator in operative engagement with the diaphragm, a fixed shaft adjacent the vibrator, an axially stationary driven member rotatably mounted on the shaft for actuating the vibrator, an axially stationary continuously rotating driving member on the shaft, an axially slidable clutch member rotatably mounted on the shaft between the driven member and driving member in slidable engagement with the driven member and movable into and out of engagement with the driving member, manually operated means for moving the clutch member into engagement with the driving member, and resilient means for disengaging the clutch member from the driving member.

4. In a signal of the class described, a vibratory diaphragm, a rotatable vibrator in operative engagement with the diaphragm, a fixed shaft adjacent the vibrator, a driven member rotatably mounted on the shaft for actuating the vibrator, a driving member rotatably mounted on the shaft, an axially slidable clutch member rotatably mounted on the shaft between the driving member and driven member engageable with the driving member and driven member, a spring supported by the shaft interposed between the clutch member and driving member to maintain the clutch member in engagement with the driven member, and manually op-

erated means for moving the clutch member into engagement with the driving member.

5. In a signal of the class described, a vibratory diaphragm, a rotary axially immovable vibrator shaft adjacent the diaphragm, a vibrator on the shaft in operative engagement with the diaphragm, a pinion on the shaft, a fixed shaft adjacent the first shaft, a driving member comprising a pulley loose on the second shaft, and a projection on the pulley, a clutch member comprising a disk rotatably mounted on the second shaft and axially slidably thereon, a lug on the disk engageable with the pin, and axial lugs on the disk, a driven member comprising a rotary axially immovable sleeve on the second shaft provided with slots slidably engageable with the axial lugs, and a gear fast to the sleeve meshing with the pinion, and means for axially sliding the disk.

6. In combination with the body, the engine case, the fan, the fan belt, and the steering post of an automobile, of a bracket on the engine case, a signal comprising a frame supported by the bracket, and a sound outlet, a diaphragm in the frame, a rotatable vibrator supported in the frame in operative engagement with the diaphragm, a shaft fixed in the frame adjacent the vibrator, a driven member rotatably mounted on the fixed shaft for actuating the vibrator, a pulley loosely mounted on the fixed shaft engaging the fan belt, a projection on the face of the pulley, a disk rotatably mounted on the fixed shaft and axially slidable thereon, lugs on the disk engaging the driven member, a shifting lever pivotally supported intermediate its length upon the frame engaging the disk, a lever pivoted to the body, a rod connecting the levers, a collar on the steering post, a rod slidably supported in the collar engaging the second lever, a knob on the slidable rod, and a spring interposed between the knob and the collar.

In testimony whereof I have affixed my signature.

LEONARD C. LESTER.