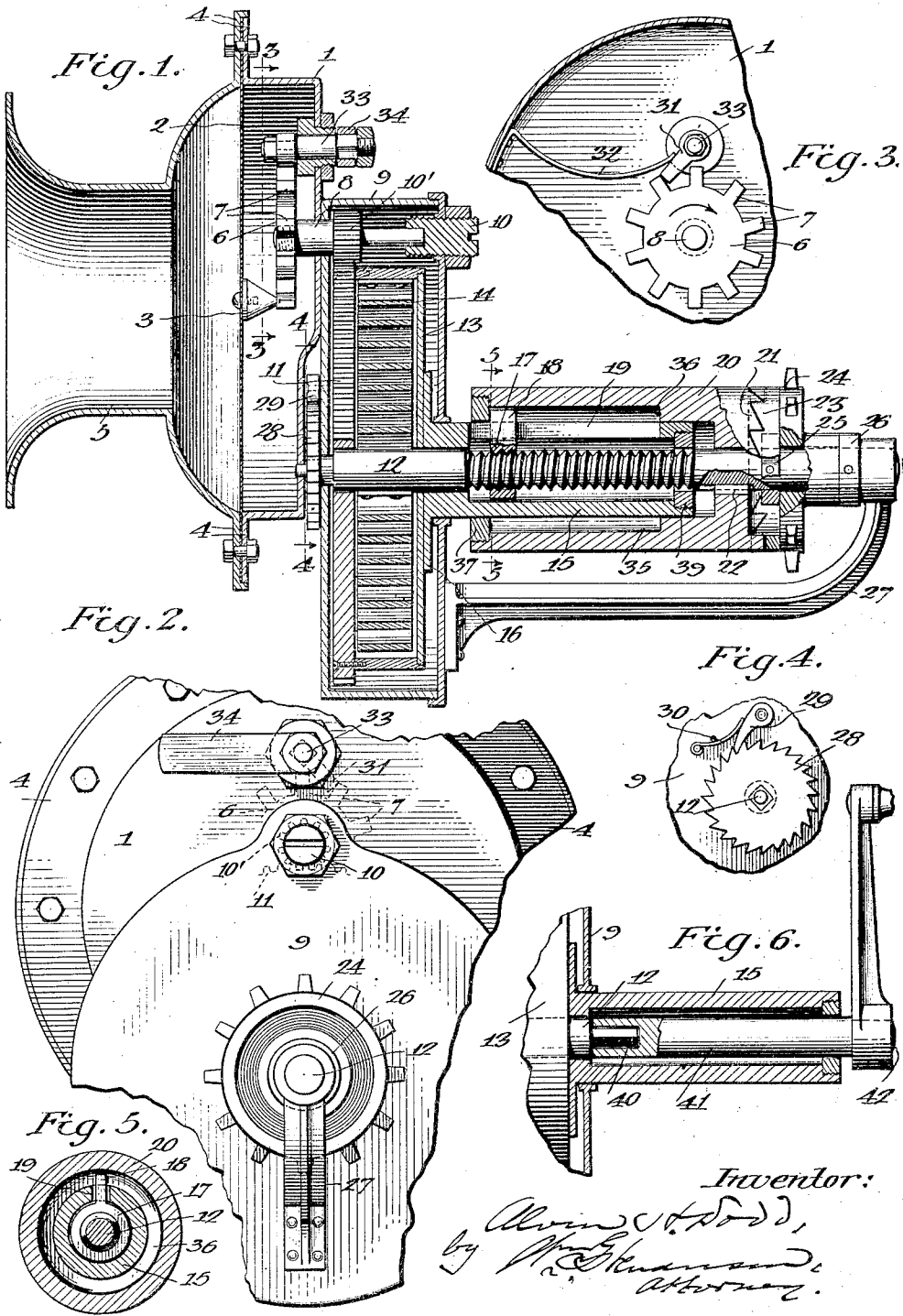


A. H. DODD.
AUDIBLE SIGNAL.
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To all whom it may concern:

Be it known that I, ALVIN H. DODD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Audible Signals; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to alarm or signaling devices designed more particularly for use on automobiles and other traveling or moving bodies to give warning of the presence or approach of the body. It has primarily for its object to provide a device of the character indicated in which the power for operating or giving the signal may be stored-up to be used as and when desired, and to the extent desired so far as period of duration of sounding the alarm is concerned. It has further for its object to provide a construction in which the winding of the spring power propulsion may be automatically effected.

To the accomplishment of the foregoing and such other objects as may hereinafter appear the invention consists in the features hereinafter particularly described and then sought to be clearly defined by the claims reference being had to the accompanying drawing forming a part hereof, and in which—

Figure 1 is a vertical longitudinal section through the automatic winding form of the signal;

Fig. 2 is an end view of Fig. 1 with parts broken away;

Fig. 3 is a section on line 3—3 of Fig 1, with parts broken away;

Fig. 4 is a detail taken on line 4—4 of Fig. 1;

Fig. 5 is a section on line 5—5 of Fig. 1;

Fig. 6 is a sectional detail view of a modification for manual winding of the signal.

In the drawing the numeral 1 designates a casing containing a vibratable diaphragm 2 having a stud or point 3 projecting from one face. The casing is preferably made in two parts with the periphery of the diaphragm clamped between the flanges 4 of the two parts of the casing, and the cas-

ing may be and preferably is provided with a horn 5 for intensifying the sound vibrations generated by vibration of the diaphragm. Within the diaphragm casing is a rotatable member 6 having teeth 7 so disposed as to contact with the stud or projection 3 of the diaphragm in the rotation of the member so as to impart vibrations to the diaphragm for the purpose of setting up wave vibrations of more or less intensity to give audible warning or alarm. The rotatable member 6 is mounted upon a shaft 8 journaled at one end in the wall of the casing 1, or in the wall of another casing 9 in which it partially lies, and at the opposite end journaled in an adjusting member or screw 10 by means of which the toothed member 6 may be adjusted to contact to a greater or less extent with the stud projecting from the vibratable diaphragm so as to regulate the volume and tone of the vibrations set up by the diaphragm. The shaft 8 carries a pinion 10¹ which meshes with a gear 11 mounted, in this instance, loosely upon a shaft 12 and having connected to one face thereof a barrel 13 which incases a coiled spring 14 having one end attached to the barrel and the other end to the shaft 12, both the gear and barrel being free to turn on the shaft. A suitable connection will be provided between the gear or barrel and the shaft 12 so that by rotating the shaft the coiled spring will be wound up or given tension which when released will propel or rotate through the gear 11 and pinion 10 the toothed member 6 which acts as a cam, in its rotation, on the stud or projection of the diaphragm. This may be, and when the spring is to be automatically wound up preferably is effected through the instrumentality of a sleeve 15 connected at one end by a flange 16, or otherwise, to the barrel 13, which sleeve encircles the shaft 12 and which, in the automatic winding form of the invention, is threaded as shown so as to receive a nut 17 which has an extension or ear 18 fitting in a slot 19 formed in the sleeve and extending longitudinally thereof. This nut is moved longitudinally of the shaft and sleeve in the rotation of the shaft and serves to automatically throw into and out of action a clutch which will automatically control the winding up of the power spring. This clutch in the form illustrated consists of a sleeve encircling the sleeve 15 and provided

with a clutch face 21 and splined by a key 22 to the shaft 12 so as to have a rotary movement with the shaft and a sliding longitudinal movement on the sleeve 15. For coaction with the clutch sleeve 20 there is loosely mounted on the shaft 12, so as to freely revolve thereon, a clutch member 23 which is preferably formed as a part of a sprocket or other suitable wheel 24 which will be revolved by a suitable connection with a part of the automobile or other engine (not shown) by a chain or other power transmission means. The clutch member and its attached wheel will be positioned on the shaft 12 by collars 25 and 26, and the outer end of shaft 12 may be supported in a bracket 27 sustained from the casing 9, or otherwise. When the members 20 and 23 of the clutch are in engagement the clutch member 20 and through it the shaft 12 will be revolved and the coiled spring 14 wound up. At the same time the nut 17 is fed along the shaft 12 by reason of its threaded connection with the shaft and when the nut 20 reaches the inner end of the clutch sleeve 20 it contacts with the end thereof and shifts or slides the sleeve 20 so as to disengage its clutch face from the other clutch member 23 whereupon the winding up of the coiled spring ceases although the clutch member 23 and its attached wheel continue to revolve upon the shaft 12. This shaft is held against rotation in one direction, or backward, by a ratchet wheel 28 rigidly secured to one end thereof and a pawl 29 under the pressure of a spring 30 suitably affixed to a fixed part of the casing 1 or 9; and the gear 11 and spring containing barrel 9 are prevented from turning by a dog or stop-pawl 31 held by a spring 32 in engagement with the teeth of the cam or toothed member 6. The shaft 33 of the locking dog or pawl 31 is mounted in the casing 1 and provided with a lever 34 by means of which the dog may be moved out of engagement with the cam or toothed wheel so as to release the gear wheel 11 in order that it and its attached barrel may be rotated by the power of the coiled spring so that the cam wheel may rotate to actuate the diaphragm to sound the alarm, and the sleeve 15 may be turned to feed the nut 17 along the threaded portion of shaft 12 toward the engaging faces of the clutch members 20 and 23. So long as the locking dog or pawl 31 is out of engagement with the teeth of the cam wheel 6 the alarm will continue to be given and the nut 17 will continue to be fed along the shaft 12. When the nut has traveled sufficiently to engage the end abutment of the clutch sleeve 20 it will slide the sleeve so as to move its clutch face into engagement with the clutch member 23 whereupon the sleeve 20 will be rotated and with it the shaft 12 so as to

again wind up the coiled spring for storage of power and operation of the parts as before.

The clutch sleeve member 20 is shown as reamed out at 35 so that the sleeve may revolve around the inner sleeve 15 and the part of the nut which projects through the inner sleeve, and has an abutment 36 at one end for the projecting part of the nut to strike against when at that end, and has the other end closed by a ring 37 screwed into that end of the sleeve. The inner sleeve 15 has one end closed by a ring 39 screwed therein after the nut 17 has been placed on the threaded portion of shaft 12. These details however are not essential features of the invention.

While in the foregoing description an automatic spring winding feature of the invention is given the automatic winding feature may be omitted and other features of the invention retained, and provision made for winding the spring by hand. For illustration, one end of the spring shaft 12 may terminate adjacent to that wall of the casing 9 and have a reduced angular end 40 projecting into the sleeve 15 to which end will be fitted a shaft or arbor 41 having a socket to receive the angular end of shaft 12 and at the other end having an angular portion 42 to receive a crank by which the shaft may be turned to wind up the coiled spring 14.

Under both forms of the invention is embodied the feature of storing up power in the spring which serves as a motor controlled in action by the locking dog 31 and diaphragm actuating cam wheel 6, the spring being released so as to exert its power on the cam wheel by releasing the cam wheel from the restraint afforded by the locking dog. By such feature of the invention power may be stored for repeated operations of the horn under one winding of the spring. When the alarm has been sounded for the period desired the locking dog, by manipulation of its lever, is thrown into position to stop the rotation of the diaphragm actuating cam and the transmission of power from the spring so that the remaining energy contained in the spring is conserved for later utilization in giving other alarms. The construction illustrated is such that it is possible to employ in a relatively small space a spring capable of imparting revolutions sufficient to serve the giving of approximately forty alarms, each of the ordinary duration. Other advantages of the invention are simplicity and durability in the construction, and the production of a horn or audible signal having the desired volume in sound and quality in tone at the minimum of expense.

I have illustrated and described with particularity the preferred details and arrange-

ment of parts but changes can be made in mechanical details without departing from the essential features of the invention.

Having described my invention and set forth its merits what I claim is:

1. An audible signal, comprising a vibratable diaphragm, a rotatable member positioned in parallelism with the flat plane of the diaphragm for vibrating the diaphragm, a spring motor from which the rotatable member derives momentum, and a device acting in opposition to the motor to hold the same under restraint.

2. An audible signal, comprising a vibratable diaphragm, a rotatable member positioned in parallelism with the flat plane of the diaphragm for vibrating the diaphragm, a power storage motor from which the rotatable member derives momentum, and a releasable locking device for controlling the application of the motor power to said rotatable member at successive periods determined by release of the locking device.

3. An audible signal, comprising a vibratable diaphragm, a rotatable member for vibrating the diaphragm, a spring motor from which the rotatable member derives momentum, and means for automatically winding the spring of the motor.

4. An audible signal, comprising a vibratable diaphragm, a rotatable member for vibrating the diaphragm, a spring motor from which the rotatable member derives momentum, a shaft through which the spring of the motor is wound up, a clutch operatively connected with the winding shaft, and means operatively associated with the shaft and clutch to close and open the clutch in effecting the automatic winding of the spring of the motor.

5. An audible signal, comprising a vibratable diaphragm, a rotatable member for vibrating the diaphragm, a spring motor from which the rotatable member derives

momentum, said motor including a gear and attached barrel and coiled spring attached to the barrel, a slotted sleeve connected to the barrel, a winding shaft connected to the barrel and having a threaded portion within the slotted sleeve, a clutch member slidable on the slotted sleeve and rotatable with the winding shaft, a coacting clutch member revoluble on the winding shaft, means for rotating said last mentioned member, and a nut carried by the threaded portion of the winding shaft and having a part entering the slot of the slotted sleeve and coacting with parts of the slidable clutch member to close and open the clutch for the automatic winding of the coiled spring.

6. An audible signal, comprising a vibratable diaphragm, a rotatable member for vibrating the diaphragm, a pinion attached to the shaft of the rotatable member, a power spring and gear meshing with said pinion for transmitting momentum to the rotatable member, a shaft through which said spring is given tension, a releasable locking device holding the rotatable member and transmitting gears in the operation of tensioning the spring and controlling the application of the spring power to the rotatable member at successive periods determined by release of the locking device, a clutch operatively connected with the winding shaft, and means operatively associated with the winding shaft and clutch and movable in one direction to open the clutch when increased tension of the spring has been effected and movable in the other direction under successive reductions in tension of the power spring to close the clutch in the operation of restoring tension to the spring.

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Witnesses:

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