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ALARM OR SIGNALING APPARATUS.

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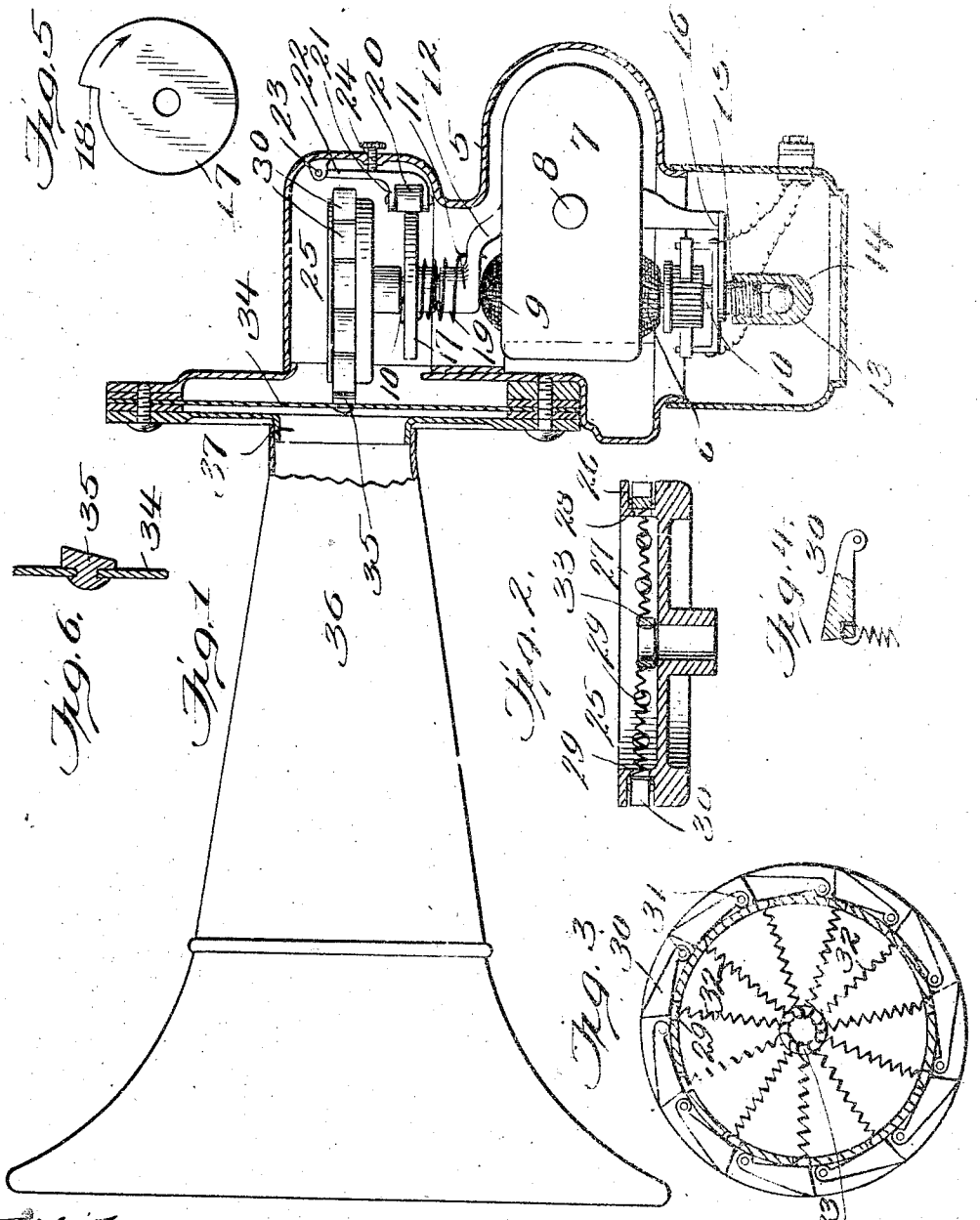

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UNITED STATES PATENT OFFICE.

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ALARM OR SIGNALING APPARATUS.

1,068,939. Specification of Letters Patent. Patented July 29, 1913.

Application filed April 16, 1912. Serial No. 691,258.

To all whom it may concern:

Be it known that I, SALVATORE SCOGNAMILLO, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Alarm or Signaling Apparatus, of which the following is a specification.

This invention relates to a horn, alarm or signal of the mechanically operated type and adapted for use on automobiles, motor boats and the like, and the invention comprehends the production of a sound producing or acoustic apparatus which is effectively operative to give forth a warning signal of great carrying power and of a positive character.

With these and other objects and advantages in view the invention consists in the construction and arrangement of the several parts which will be more fully hereinafter described and claimed.

In the drawing one practical embodiment of the invention is illustrated, and therein:—Figure 1 is a sectional elevation of a horn or signal apparatus embodying the features of the invention. Fig. 2 is a transverse vertical section through a centrifugal agitator which coöperates with the diaphragm and constituting one of the features of the invention. Fig. 3 is a horizontal section of the agitator. Fig. 4 is a detail view of one of the dogs or pawls of the agitator and a portion of the retractile spring therefor. Fig. 5 is a plan view of a cam for controlling the oscillation or movement of the centrifugal agitator toward and away from the diaphragm and also for correspondingly moving the motor. Fig. 6 is a detail horizontal section through a portion of the diaphragm showing the shape of the projection at the center thereof.

The numeral 5 designates a casing formed of suitable sheet metal or cast metal, as may be desired, and of such general shape or contour as to accommodate the mechanism or component parts of the device adapted to be disposed therein. The casing will also be constructed of separable sections jointed at such points as to render the disposition of the parts therein most convenient and so that the mechanism may be readily accessible if at any time it is found necessary to repair the same. A suitable electric motor 6 is mounted in the casing 5 and comprises a supporting frame 7 which is oscillatable or has a rocking movement within the casing through the medium of opposite trunnions 8 engaging suitable portions of said casing. The armature 9 of the motor has a shaft 10 extending any suitable distance above and below the same, the upper portion of the said shaft projecting through a bearing 11 carried by a bracket arm 12 extending from the top of the frame 7, and at the lower end of said shaft is a ball 13 movably disposed in a socket cup or member 14 screwed on a sleeve 15 depending from the horizontal member of the bracket arm 16 secured to or forming part of the lower portion of the motor frame 7. The object in providing the ball 13 and socket member 14 is to allow the shaft 10 freedom of action and to antifrictionally support the same at the lower end, and in practice oil will be introduced in the socket member 14 to lubricate the lower end of the shaft.

The specific form of motor disclosed in the drawing may be modified or any other type of electric motor may be used, but in all forms of motors that may be adopted the rocking or oscillating movement will be imparted thereto during the actuation of the signal or acoustic apparatus.

Loosely mounted on the shaft 10 is a controlling cam 17 of the form shown by Fig. 5 and having a single drop 18. Secured at one terminal to the bracket arm 12 is a spring 19 which surrounds the bearing 11 and the hub of the cam 17 and is attached at its opposite terminal to the said cam. Though the cam 17 is loose on the shaft 10, the tension of the spring 19 exerted thereon is such that a sufficient frictional contact will be set up between the cam and shaft to rotate the said cam and at the same time wind the spring and when the current is cut off the cam will be rotated in a direction reverse to the rotation thereof by the shaft. The cam 17 engages a roller 20 held in the lower forked end 21 of an arm 22 pivoted at its upper end as at 23 for the purpose of adjusting the same, an adjusting screw 24 extending through the rear portion of the casing and engaging the back of the arm or lever 22. By adjusting the arm or lever 22 the throwing or oscillating action of the cam 17 may be regulated at will to take up wear or to modify the sound emitted from the signal or alarm.

On the upper end of the shaft 10 a centrifugal agitator 25 is fixed and is preferably of the form shown by Fig. 2 and has a circumferential channel 26 and an upper chamber or recess 27, the wall 28 between the channel 26 and the chamber or recess being perforated as at 29 at regular intervals for a purpose which will be presently explained. Movably disposed in the channel 26 is a plurality of dogs or pawls 30, each of which is pivoted at one end as at 31 and to the inner portion of the opposite end a spring 32 is attached and extends through the adjacent opening 29 in the wall 28 and connected at its inner end to a ring 33 on the upper end of the shaft 10. The dogs or pawls 30 are all similarly mounted, as shown by Fig. 3, and are preferably of the shape shown or increase in width from their pivotal points toward the extremities to which the springs 32 are attached. When the shaft 10 is rapidly rotated by the motor the dogs or pawls 30 are centrifugally thrown outwardly from the channel 26 against the resistance of the springs 32, the said springs always tending to draw the dogs or pawls inwardly into the channel.

In the front upper portion of the casing a suitable diaphragm 34 is mounted and has a projection 35 at the center thereof, said projection being preferably of wedge shape and so disposed that it will lie horizontally relatively to the centrifugal controller 25 which coacts therewith to set up a rapid vibration of the diaphragm. In advance of the diaphragm a suitable resonator 36 is applied over a sound emitting opening 37 in the front of the casing.

It will be understood that the current for operating the motor may be taken from any suitable generating source and connected up as shown by the lower portion of Fig. 1, as will be readily understood.

From the foregoing the operation of the signal or alarm will be readily understood.

The current entering the motor will set up an actuation of the armature 9 and the shaft 10 and consequently the centrifugal agitator 25 will be rapidly rotated, thereby causing the dogs or pawls 30 to fly outwardly against the resistance of the springs 32 and successively contact with and sweep over the wedge-shaped projection 35 secured to the center of the diaphragm 34. The wedge-shaped projection 35 is so arranged relatively to the direction of rotation of the centrifugal agitator 25 that the narrower portion of each dog or pawl 30 will first come over the reduced extremity of the said projection 35 and the flexing or vibration of the diaphragm by each dog or pawl will be gradual to the maximum projection of each dog or pawl, and the return movement of the diaphragm or its tendency to resume normal condition will ensue immediately after the maximum projecting portion of each dog or pawl has cleared the corresponding projecting portion of the projection 25 on the diaphragm. During this operation of the centrifugal agitator the cam 17 causes the shaft 10, together with the frame 7 and the motor as a whole, to oscillate or rock, the maximum oscillation being effected when the roller 20 bears on the cam periphery adjacent to the shoulder 18, and as soon as the cam reverses its movement through the action of the spring 19 the shaft 10 and frame 7 together with the motor are permitted to oscillate in the opposite direction and at the same time the spring 19 restores the cam to its normal position and ready for effecting an oscillation of the centrifugal agitator toward the diaphragm. By engaging one end of the spring with the non-rotatable part of the device and securing the opposite end of the spring to the cam 17, the rapid rotation of the shaft will set up a winding action relatively to the spring 19 through the cam, which by a slight frictional engagement will be caused to rotate with the shaft of the motor, despite the fact that the said cam is normally loose on the shaft and the winding action of the spring will be increased gradually as the cam rotates when a more firm binding action is set up with the shaft by the cam through the medium of the roller acting as a point of resistance on the radially varying edge in contact with the roller and the shaft is pressed over toward the diaphragm to a degree proportionate to the radial increase of the edge of the cam and until it reaches its maximum pressure point, which will be at a time when the roller reaches the highest part of the cam slightly in rear of the shoulder or drop 18, the roller never passing over behind the shoulder or drop as a release is effected, for instance by the operator breaking the circuit through the ordinary circuit making means or button, and the moment the circuit is broken the movement of the cam is reversed through the action of the wound spring and the cam restored to its normal position. By this means the pressure of the diaphragm displacing means relatively to the diaphragm is gradually modified with material advantage in the tone emitted from the alarm or signaling apparatus. It will be understood that when the cam is released as just explained, the motor and its shaft will move in the opposite direction or the shaft will swing away from the diaphragm through the effort of the motor to seek its equilibrium or normal position. This oscillating movement is regularly carried on and the pressure of the dogs or pawls 30 on the projection 35 of the diaphragm is modified and the sound emitted from the alarm or signal is correspondingly varied. Wear on the dogs or pawls 30 and the projection 35

may be compensated for by adjusting the arm or lever 22 through the medium of the screw 24 or by the same means the sound emitted from the alarm or signal may be intensified or modulated.

The outward movement of the dogs or pawls 30 will be controlled by varying the tension of the springs 32. In other words, in some instances the springs 32 may be of greater resistance than in other structures and as a consequence when the dogs come in contact with the projection 35 on the diaphragm they will more forcefully vibrate the diaphragm.

From the foregoing it will be understood that the essential feature of the invention consists in the oscillation of the motor shaft carrying the means for engaging the diaphragm to vibrate the latter, and while a preferred means for setting up a vibration has been shown, it will be understood that any equivalent device may be adopted. Moreover, the cam 17 coöperating with the roller 20 has been found to be very efficient in oscillating the shaft carrying the diaphragm vibrating means, but it will be understood that this cam and roller might be replaced by any other device or devices having a similar function.

What is claimed is:

1. In an alarm or signaling apparatus, a resonator, and a diaphragm, centrifugally operating movable devices for successively displacing the diaphragm, and means for swinging said centrifugally operating devices toward and from the diaphragm and varying the pressure thereof on the latter.

2. In an alarm or signaling apparatus, a resonator and a diaphragm, in combination with rotary diaphragm displacing means, and an oscillating motor for swinging said displacing means toward and from the diaphragm.

3. In an alarm or signaling apparatus, a resonator and a diaphragm, a rotary shaft having displacing means thereon coöperating with the diaphragm and an oscillating motor for swinging the shaft and displacing means.

4. In an alarm or signaling apparatus, a resonator and a diaphragm therefor, in combination with a motor having a shaft with diaphragm displacing means thereon, and means for oscillating the motor, shaft and diaphragm displacing means.

5. In an alarm or signaling apparatus, a resonator and a diaphragm therefor, in combination with a rotary displacing means for the diaphragm, and an oscillating motor for swinging said rotary displacing means toward and from the diaphragm during the rotation of such displacing means.

6. In an alarm or signaling apparatus, a resonator, a diaphragm, and a swinging rotary diaphragm displacing means comprising individually movable members which successively engage the diaphragm, said displacing means movable toward and away from the diaphragm during the rotation of said means.

7. In an alarm or signaling apparatus, a resonator, a diaphragm, and an oscillatable motor having a similarly movable shaft provided with displacing means for the diaphragm, the oscillation of said displacing means being toward and from the diaphragm.

8. In an alarm or signaling apparatus, a resonator, a diaphragm, and a displacing means having a swinging movement toward and away from the diaphragm and provided with a plurality of spring-actuated individually movable members to engage the diaphragm.

9. In an alarm or signaling apparatus, a resonator, a diaphragm, and a rotary centrifugally operating displacing means comprising a plurality of displacing members to successively engage the diaphragm, and means for alternately oscillating said displacing means toward and from the diaphragm.

10. In an alarm or signaling apparatus, a resonator, a diaphragm, an oscillating shaft, a diaphragm displacing means carried by said shaft and having a plurality of movable members centrifugally actuated to engage the diaphragm and provided with counteracting springs, and means for moving the displacing means toward and away from the diaphragm.

11. In an alarm or signaling apparatus, a resonator, a diaphragm, and swinging diaphragm displacing means and operating mechanism, the displacing means being provided with a plurality of movable members.

12. In an alarm or signaling apparatus, a resonator, a diaphragm, and a displacing means for the diaphragm having operating mechanism which with the said means has oscillating movement, the displacing means having a plurality of spring-controlled movable members.

13. In an alarm or signaling apparatus, a resonator, a diaphragm therefor, a motor having a shaft carrying a diaphragm displacing means, and a cam for oscillating the shaft, motor and displacing means.

14. In an alarm or signaling apparatus, a resonator, a diaphragm therefor, an oscillatable motor having a shaft extending therefrom, a diaphragm displacing means carried by the shaft, a cam coöperating with the shaft to oscillate the latter and the motor, and an adjustable arm carrying a roller for engagement by the cam.

15. In an alarm or signaling apparatus, a swinging shaft, a centrifugal agitator mounted on the shaft and comprising a plurality of spring-controlled dogs periph-

erally projectable therefrom, a resonator, and a diaphragm with which said agitator coöperates.

16. In an alarm or signaling apparatus, a resonator, a diaphragm therefor, an oscillatable motor having a shaft, a diaphragm displacing means carried by the said shaft, a cam loose on the shaft, a spring engaging the cam to set up frictional contact with the shaft and to return the cam to normal position, and means engaged by the cam to cooperate with the latter in effecting the oscillation of the shaft and motor relatively to the diaphragm.

17. In an alarm or signaling apparatus, a resonator, a diaphragm therefor, and a swinging motor having rotatable diaphragm displacing means carried thereby.

18. In an alarm or signaling apparatus, a resonator, a diaphragm having a wedge-shaped projection, and a rotary displacing means for the diaphragm embodying a plurality of individually movable members gradually increasing in width from one end toward the other to engage the projection of the diaphragm and having approaching and receding movements relatively to the diaphragm.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SALVATORE SCOGNAMILLO.

Witnesses:
CHAS. S. HYER,
CHAS. A. ROWE.