

A. N. PIERMAN.
ALARM SIGNAL:
APPLICATION FILED JULY 1, 1916.

1,276,807.

Patented Aug. 27, 1918.

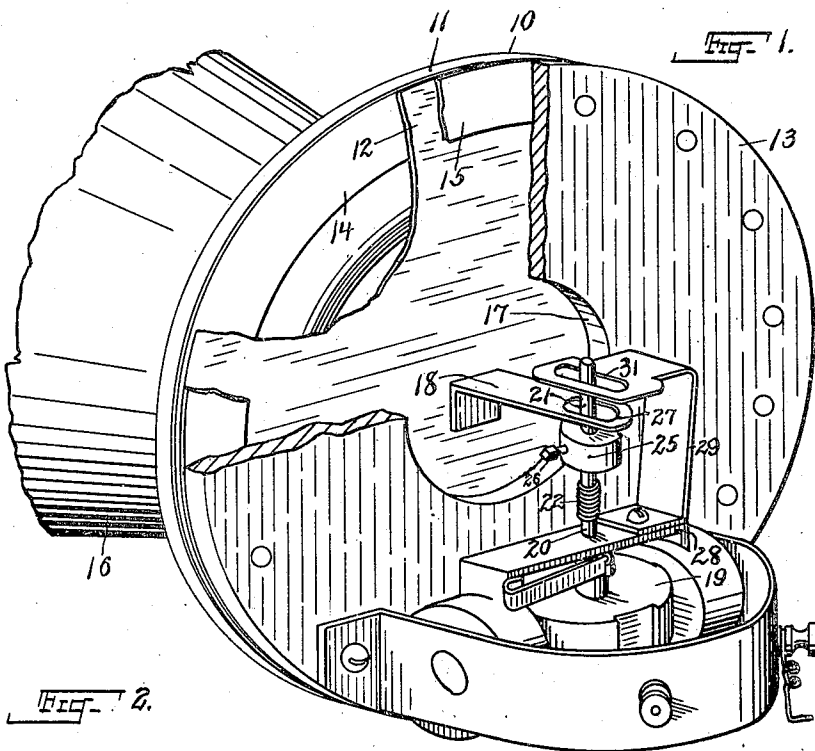
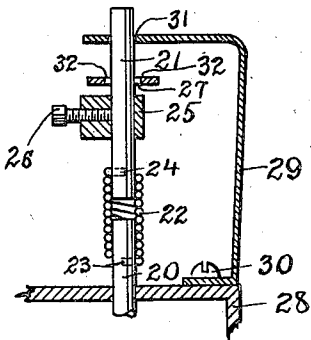


FIG. 2.



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ALARM-SIGNAL.

1,276,807.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALEXANDER N. PIERMAN, a citizen of the United States, and a resident of Long Beach, county of Nassau, and State of New York, have invented certain new and useful Improvements in Alarm-Signals, of which the following is a specification.

My invention relates to alarm signals adapted for various uses, as on vehicles such as automobiles, street cars and so forth, to give warning of the approach thereof, and in which a diaphragm or other vibratory means is caused to vibrate so as to produce a loud sound, a sound amplifier being preferably used for strengthening and directing the sound.

The present invention is an improvement on my prior Patent No. 1,091,533, granted March 31, 1914, and in which there is disclosed and claimed an unbalanced rotary member which oscillates in a plane and delivers hammer blows with respect to a vibratory member, such as a diaphragm.

With the device of the patent referred to, the vibratory member is restrained from movement in lines parallel or substantially parallel to the diaphragm by contact with the sides of a slot in the anvil block, which block is carried on and supported by the diaphragm, and by reason of this fact the hammer blows are not as sharp and clear cut as they preferably should be, because of the fact that the diaphragm action is dampened more or less by the contact of the vibratory member with the side walls of the slot by which it is restrained from sidewise movement.

One object of the present invention is to eliminate the disadvantageous features above referred to and present in the construction of my said patent, and this object is obtained by providing a guide for the lateral movement of the vibratory member which, without interfering with the hammer blows upon the anvil or block, nevertheless holds the vibratory member out of contact with the said anvil block, except at the instant when such hammer blows are struck, and such guide member may be suitably mounted in any part of the instrument so long as it is not attached to the diaphragm.

Another object of the invention is the provision of an improved coil spring universal joint in the vibrator shaft.

With the foregoing and related objects in

view my invention consists in the parts, improvements and combinations herein set forth, and in order that the same may be more fully understood, reference is hereby made to the accompanying drawing forming part of the specification and in which Figure 1 is a fragmentary perspective view of one form of apparatus showing my invention embodied in a motor driven signal or alarm, and Fig. 2 is a fragmentary detail view partly in section.

Reference character 10 is applied to designate the horn generally, and the same may comprise a plate or frame 11 having a diaphragm 12 secured thereto as by means of the rear plate 13. The diaphragm 12 may be held between washers as 14 and 15, and the amplifier 16 may be provided for amplifying and directing the sound. The plate 13 may have a central aperture as 17, and the anvil block 18 is secured to the diaphragm in any convenient manner and preferably extends through the opening 17 in the back plate 13. The construction of the horn and the mounting of the diaphragm, however, may be accomplished in a variety of ways otherwise than shown. In the device illustrated the power is supplied by an electric motor comprising a rotating armature 19 provided with a shaft 20. Any other source of power may be utilized however. In the form shown the shaft 20 is connected to an extension 21 thereof by means of a coil spring 22. For such spring I preferably make use of a section of what is ordinarily known as flexible spring shafting, which is made of spring wire of a high quality, and I preferably secure the coil spring in place by unwinding it somewhat at the ends against the force of the spring, and by inserting the shaft ends therein and permitting the coil spring to wind itself up again a very firm hold is secured. The ends of the coil spring may be inserted into the shafts which it connects for a short distance, as shown at 23, 24, Fig. 2, if desired, in order to assist in the holding action, although ordinarily this is not necessary as the spring, when freed, gets a very firm grip on the shaft ends received therein. 25 designates the unbalanced weight fastened to the shaft in the form shown by a set-screw 26. The anvil block 18 may be of any desired form so long as it is adapted to receive hammer blows from the rotary member or hammer the same approaches toward or recedes from

the diaphragm without having any contact with the diaphragm or other vibrating device at other points in its movement. In the form shown the anvil block 18 has a comparatively wide slot 27 through which the shaft 21 is passed.

The means for guiding the shaft 21 and preventing lateral motion thereof may be of any form so long as the vibrator receives such guiding action from a member or members supported otherwise than from the diaphragm. In the form shown the motor frame 28 has secured thereto, a bracket 29 as by means of a screw 30, and is provided with a comparatively narrow slot 31 in which the shaft 21 is received. Such slot 31 is made of a sufficient length so that the shaft will not come in contact with the walls at the ends thereof, the walls of said slot, however, serving to prevent any substantial lateral movement, that is, movement substantially parallel with the diaphragm, and to keep such shaft out of contact with the side walls 32, 32 of the slot 27 in the anvil block.

One of the important advantages possessed by an alarm signal constructed in accordance with the present invention is that there is substantially no resistance to the rotation of the rotary member until it has gotten up enough speed to vibrate the diaphragm, and this is also true of the device of my Patent No. 1,091,533, on which the present invention is an improvement. This is particularly advantageous when an electrical motor is used for furnishing the driving power since, as there is no starting resistance to the motor such as is produced, for example, by a toothed cam in contact with a wear piece, efficient operation may be obtained with a much cheaper and simpler form of motor than heretofore, and the consumption of electrical current is substantially reduced.

Having thus described an embodiment of my invention, I claim:

1. In an alarm signal, an unbalanced rotary member, means for imparting rotation thereto, a vibratory member, and stationary guiding means for the rotary member supported away from the vibratory member and serving to confine the movement of the unbalanced rotary member to oscillatory movement with respect to the vibratory member, substantially as set forth.

2. In an alarm signal, a vibratory member, means including an oscillatory rotary hammer arranged substantially parallel to the vibratory member and a guide to restrain said hammer from moving in certain directions and to permit the same to oscil-

late in a plane substantially perpendicular to the plane of the vibratory member and means connected with the vibratory member to receive blows from the hammer at rapid intervals and in opposite directions, said guide having a support separate from said vibratory member, and means for rotating said hammer, substantially as set forth.

3. In an alarm signal, a diaphragm, an oscillatory rotary member substantially parallel to the diaphragm, means for rotating the same, means for confining the movement of the same during rotation to oscillatory movement in substantially a plane, said means being supported separately from the diaphragm, and an anvil for receiving blows from said rotary member and transmitting same to said diaphragm, substantially as set forth.

4. In an alarm signal, an unbalanced rotary member, means for driving the same, vibratory means, means connected to said vibratory means for receiving hammer blows from the rotary member and transmitting them to the vibratory means, and a guide for said rotary member supported separately from said vibratory means, substantially as set forth.

5. In an alarm signal, a rotary shaft, an oscillatory extension, a coil spring connecting said extension to said shaft so as to be movable out of alinement therewith, an anvil block which receives the free end of said extension, vibrating means connected to said block, and a guide for said extension shaft supported separately from said vibrating means, substantially as set forth.

6. In an alarm signal, an electric motor, a rotary shaft, an oscillatory extension on said shaft, a coil spring for connecting said shaft and extension, a slotted member which receives the free end of said extension, vibratory means secured to said slotted member, and guide means for said shaft extension supported separately from said vibratory member, substantially as set forth.

7. In an alarm signal, a vibratory member, a rotary hammer arranged substantially parallel thereto, means connected with said vibratory member for imparting alternately oppositely directed hammer blows from said hammer to said vibratory member, means supported separately from the vibratory member for guiding said hammer, and electrically operated means for rotating said hammer, substantially as set forth.

In testimony that I claim the foregoing I hereto set my hand, this 28 day of June, 1916.

ALEXANDER N. PIERMAN.