W. KAISLING.

SIGNALING DEVICE.

APPLICATION FILED OCT. 4, 1915.

1,289,804.

Patented Dec. 31, 1918.

2 SHEETS—SHEET 1.

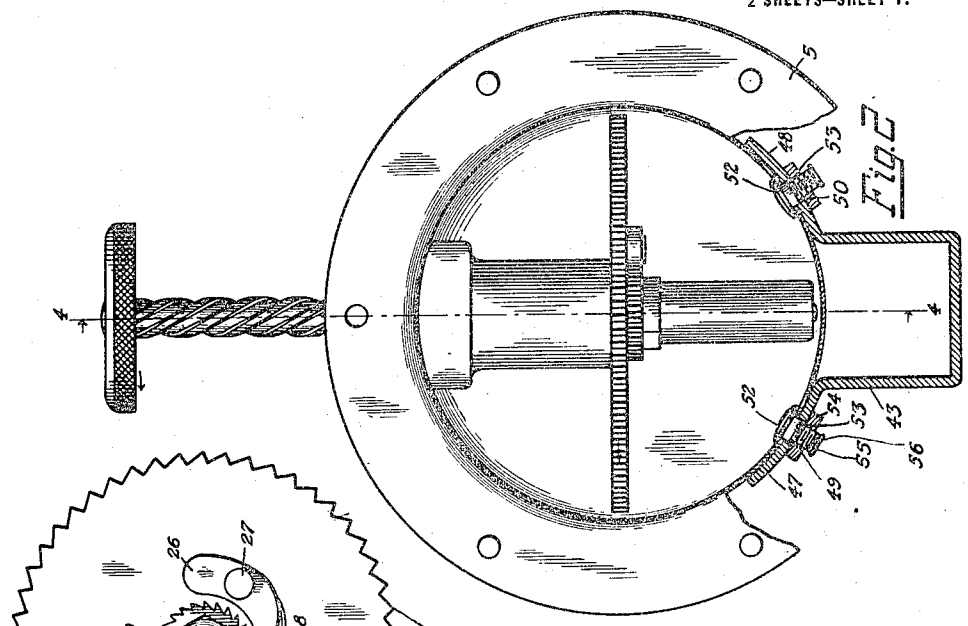

Fig. 2

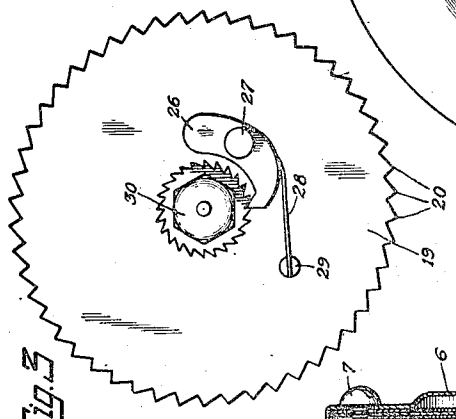

Fig. 3

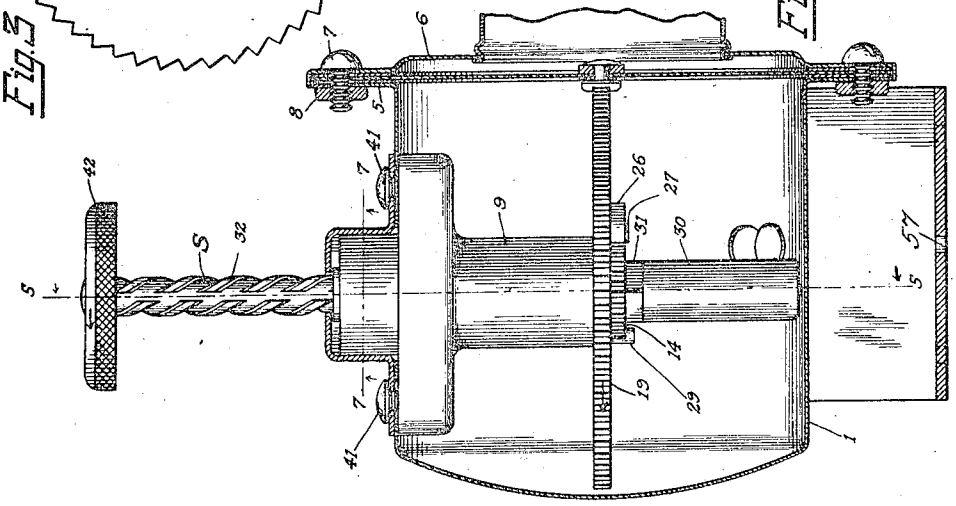

Fig. 1

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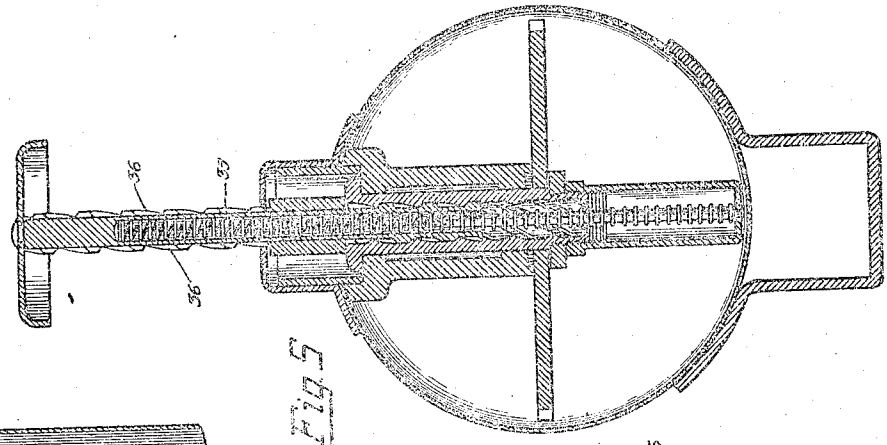

Fig. 5

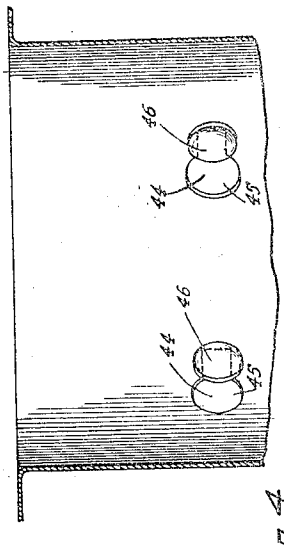

Fig. 6

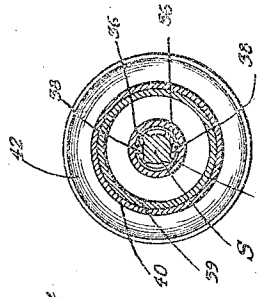

Fig. 7

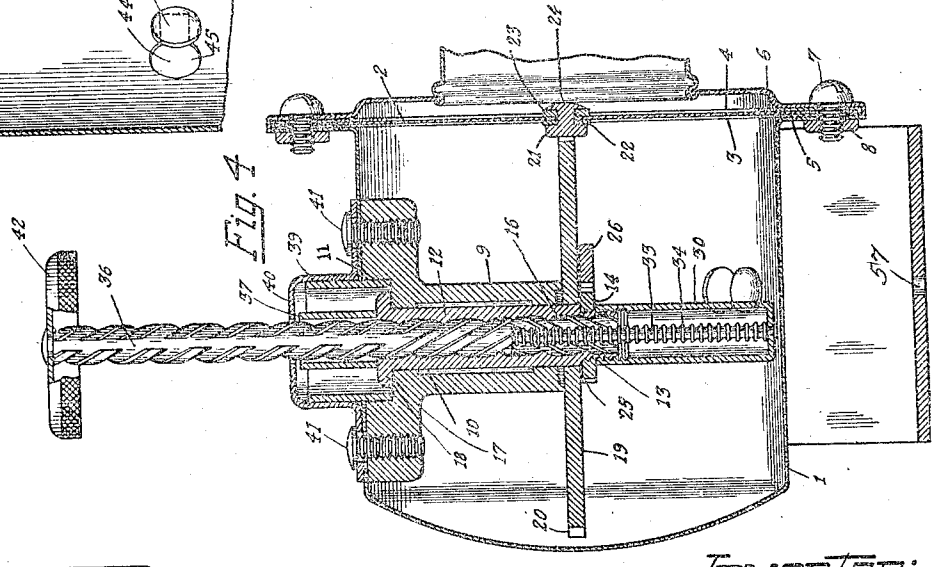

Fig. 4

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UNITED STATES PATENT OFFICE.

WILLIAM KAISLING, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SIGNALING DEVICE.

1,289,804. Specification of Letters Patent. Patented Dec. 31, 1918.

Application filed October 4, 1915. Serial No. 53,992.

To all whom it may concern:

Be it known that I, WILLIAM KAISLING, a citizen of the United States of America, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Signaling Devices, of which the following is a specification.

My invention relates to signaling devices and has to do more particularly with signaling horns such as are commonly employed as warning signals on automobiles and the like, and is more particularly directed to the hand operated type of signaling horn in which a vibratile member such as a diaphragm is operated by means of a toothed wheel set in motion by manual means actuated by an operator. In general the object of my invention is to provide a signaling horn of the class described embodying desirable features of construction in a simple and economical manner. One of the features of my invention is the provision of a signaling device that may be operated in one manner to give a shrill blast and in another manner to give a more moderate blast. Other features will be more particularly pointed out in the ensuing specification.

For a more complete understanding of my invention reference is to be had to the accompanying drawings in which like reference characters denote like parts and in which—

Figure 1 is a side elevation of my improved signaling device with the casing in section;

Fig. 2 is a front elevation of the device with the diaphragm removed;

Fig. 3 is a view of the toothed wheel showing its associated ratchet and pawl;

Fig. 4 is a sectional view on the line 4, 4 of Fig. 2;

Fig. 5 is a sectional view on the line 5, 5 of Fig. 1;

Fig. 6 is a partial view of the casing showing the method of mounting the casing to the fastening bracket, and

Fig. 7 is a sectional view along the line 7, 7 of Fig. 1.

Referring now more in detail to my invention as illustrated in the drawings the device comprises a casing 1, which contains the operating parts of the signaling horn. A diaphragm 2 preferably constructed of thin sheet steel is held between a pair of flexible rings 3 and 4 and clamped between the rim 5 of the casing 1 and a front plate 6 by means of the clamping screws 7. The said clamping screws 7 passing through suitable openings of the front plate 6, ring 4, diaphragm 2, ring 3 and the rim 5 of the casing 1. The screws 7 are of a length to permit them to have screw-threaded engagement with nuts 8 and in this manner the diaphragm 2 is securely clamped between the front plate 6 and the rim 5 of the casing 1.

A T-shaped member 9 is provided which is used as a mounting means for the operating mechanism, as will be more fully described in the ensuing specification. The member 9 is provided with an opening 10, the said opening extending the length of the member 9, and a counterbore 11 is provided which extends into the member 9 a short distance, for purposes as will also be hereinafter set forth. A sleeve 12 is provided and is of a size to fit into the opening 10 in the member 9 and is of a length so as to protrude beyond the member 9. The protruding end 13 of the sleeve 12 is threaded to receive a ratchet 14 and an elongated cup-shaped member 30, the said ratchet 14 and cup 30 acting as a locking means for rotatably securing the said sleeve 12 in the opening 10 of the T-shaped member 9. The sleeve 12 has helical threads 16 cut internally of the said sleeve, the said threads 16 running the length of the sleeve. The counterbore 11 in the member 9 forms a shoulder 17 which acts as a bearing surface for the enlarged portion 18 of the sleeve 12. A toothed wheel 19 is provided having a plurality of teeth 20, the said wheel being mounted loosely upon the sleeve 12 between the member 9 and ratchet 14 which has screw-threaded engagement with the portion 13 of the sleeve 12 and when in position upon the said sleeve the ratchet abuts against the shoulder 25 allowing a slight clearance for the said wheel 19 between the member 9 and ratchet 14, thus permitting rotation of the wheel 19 independent of the sleeve 12.

An anvil 21 is secured to the diaphragm 2 in any suitable manner. As illustrated a washer 22 is placed between the anvil 21 and the diaphragm 2 and another washer 23 is placed between the diaphragm and the upset portion 24 of the anvil 21. The anvil proper protrudes so that when the wheel 19

is rotated the teeth 20 of the said wheel engage the anvil 21 and cause the diaphragm to vibrate to produce a warning signal.

A pawl 26 is pivotally secured to the toothed wheel 19 by means of a pin 27, the said pawl being held in engagement with the ratchet 14 by means of a leaf spring 28 which has one end fastened to a pin 29 staked to the wheel 19, while the other end of the spring bears against the said pawl 26. The elongated cup-shaped member 30 has screw-threaded engagement with the portion 13 of the sleeve 12, and its upper portion is shaped in the form of a hexagonal nut 31, so as to facilitate the threading and fastening of the cup upon the sleeve 12.

A shaft S is provided which has a helical thread 32 cut upon it, the said helical thread 32 and the helical thread 16 of the sleeve 12 coöperating, upon actuation, to bring about the rotation of the toothed wheel 19. A pin 33 is staked inside of the cup 30 and a spring 34 is slipped over the pin 33. One end of the spring 34 extends up into a hollow 35 of the shaft S resting against the top of said hollow, the other end of the said spring 34 resting against the bottom of the cup 30. Slots 36 are cut in the shaft S and extend part way of the length of said shaft S. A sleeve 37 is provided which has two internal projections 38 (see Fig. 7), which fit into the slots 36 of the shaft S, the said sleeve 37 limiting the returned movement of the shaft as will be hereinafter described.

The mechanism as a whole is mounted upon the casing 1 and for the purpose of alining the parts, I provide a sleeve 39 of a size to fit in the counterbore 11 in the member 9. A cap 40 is placed over the sleeve 39 and clamping screws 41 are then extended through suitable openings in the cap 40 and casing 1 and have screw-threaded engagement with the member 9, thus securing the mechanism as a whole to the casing 1. If it is desired the member 9 may be so arranged as to allow for a slight move toward or away from the diaphragm to get the proper adjustment. A large button 42 is staked to the top of the shaft S in any suitable manner and is provided for manipulating the shaft of the signaling device. Having described the apparatus comprising my improved signaling device, I will now describe the mode of operation.

To operate the signaling device to give a shrill blast, a downward pressure is applied to the button 42, which pressure forces the shaft S down against the tension of the spring 33. The helical threads 32 on the shaft S coöperate with the internal helical threads 16 of the sleeve 12 to bring about the rotation of the said sleeve 12 in the direction indicated by the arrow thereon. The ratchet 14 being threaded to the sleeve 12 rotates and transmits power through the medium of the pawl 26 to the toothed wheel 19 which is in engagement with a tooth of the ratchet, due to the tension of the leaf spring 28 against the said pawl. The tension of the spring 28 is such that as the ratchet rotates, the toothed wheel 19 is also rotated in the same direction and on the completion of the downward stroke of the shaft S, the toothed wheel 19, which is of considerable weight has gained sufficient momentum to continue rotating after the sleeve 12 has stopped its rotation, the pawl 26 riding over the teeth of the ratchet. The toothed wheel 19 in rotating causes its teeth 20, cut upon its periphery, to engage successively the anvil 21 mounted upon the diaphragm 2, causing the said diaphragm to vibrate and produce a clear and sharp warning note. Due to the momentum of the rotary actuator 19, the tone is produced for a considerable time after pressure has been released from the shaft S becoming less distinct as the wheel slows down. After the pressure is released the shaft S is returned to normal by the spring 34 and its upper movement is limited by the end of the slots 36 on the shaft S engaging the projections 38 of the sleeve 37, thus preventing the shaft from being forced out of the sleeve 37 upon its return movement. The device may be operated to give a less shrill blast by turning the button 42 in a direction indicated by the arrow thereon thus causing the shaft to rotate, the helical thread 32 coöperating with the helical threads 16 to rotate the sleeve 12 to bring about the rotation of the rotary actuator 19 as above described. Thus in my improved device I may produce a clear, sharp and loud, warning note, when necessary, by applying pressure in a downward direction upon the shaft S, but for all ordinary purposes, by simply turning the button a clear note is emitted which serves all purposes for warning pedestrians when driving about the limits of the city.

In Figs. 2 and 6, I illustrate more clearly the method I employ for fastening the signaling device to a mounting bracket 43. The casing 1 is provided with two openings 44, a portion 45 of the said opening being circular in shape while the other portion 46 is slotted.

The bracket is U-shaped having extending ears 47 and 48 which conform with the outer circumference of the casing 1. The ears 47 and 48 have square openings 49 and 50 of a size to receive the square body portion 52 of the clamping screws 53. Nuts 54 have screw threaded engagement with the threaded portion 55 of the screws 53, the ends 56 of the said screws being upset so as to prevent the nuts 54 from dropping from the said clamping screws.

To place the signaling device upon the bracket the heads of the screws 53 are in-

serted into the openings 45 which openings are of a size to allow the heads of the screws 53 to pass through. The horn is then given a slight turn to the right (see Fig. 2), bringing the square body portion 52 of the screws 53 into the square opening 46 of the casing 1, and when in this position the nuts 54 are threaded down upon the clamping screws thus holding the signaling device as a whole upon the bracket 43. To remove the device from the bracket the nuts 54 are loosened and the signaling device turned to the left until the heads of the screws 53 are in line with the openings 45 and when in this position the horn may be removed from the bracket. Holes 57 are drilled in the bracket so that the bracket may be fastened in any suitable manner.

While I have illustrated a certain arrangement of parts, I do not wish to be limited to the same as many changes and modifications may readily suggest themselves to one, therefore I wish to cover all such changes and modifications as come within the spirit and scope of the appended claims.

Having described my invention, what I claim as new and desire to secure by United States Letters Patent, is:

1. A signaling horn comprising a casing a diaphragm secured to the said casing, a mounting frame secured to said casing carrying a rotary shaft, a wheel loosely mounted upon said shaft and provided with teeth for engaging said diaphragm, a reciprocatable threaded member for rotating said shaft, and manual means for operating said last member to cause a vibratory action of said diaphragm.

2. A signaling horn comprising a casing, a diaphragm firmly secured to said casing, a shaft carried by said casing, a rotatable member loosely mounted upon said shaft and adapted to engage said diaphragm, a slidable member for coöperation with said shaft, means for longitudinally operating said slidable member, and means for rotatingly operating said slidable member whereby said shaft and rotatable member are rotated to cause a vibratory action of said diaphragm.

3. A signaling horn including a casing, a diaphragm secured to said casing, a rotatable shaft provided with internal threads also secured to said casing, a threaded slidable member for coöperating with said rotatable shaft, a rotary actuator carried by said rotatable shaft for vibrating said diaphragm, pawl and ratchet mechanism connecting said rotary actuator to said shaft, and manual means for longitudinally operating said slidable member to transmit rotary motion to said actuator to cause said actuator to vibrate said diaphragm.

4. A signaling horn including a cup-shaped casing, a diaphragm secured to the open end of said casing, a mounting member secured to said casing, a rotary shaft provided with internal threads carried by said mounting member, a rotary actuator loosely connected to said shaft for vibrating said diaphragm, and an operating shaft provided with external threads adapted to transmit a rotary motion to said internally threaded shaft when operated longitudinally, thereby causing said rotary actuator to vibrate said diaphragm.

5. A signaling device including a cup-shaped casing, a diaphragm secured to the open end of said casing, a mounting member adjustably secured to said casing, a rotary sleeve provided with internal threads carried by said member, a rotary wheel carried by said sleeve provided with teeth for vibrating said diaphragm, ratchet and pawl mechanism connecting said sleeve to said rotary wheel, a reciprocatory member provided with external threads adapted to engage with the internal threads of said sleeve member, and means for longitudinally operating said reciprocatory member thereby transmitting a rotary motion to said rotary wheel to cause its teeth to engage and vibrate said diaphragm.

6. A signaling device of the character described including a cup-shaped flanged casing, a diaphragm secured to the flange of said casing, a mounting member adjustably secured to said casing, a rotary sleeve provided with internal threads carried by said mounting member, a rotary actuator loosely connected to said rotary sleeve for vibrating said diaphragm, a reciprocatory shaft provided with external threads for coöperating with the internal threads of said rotary sleeve, manual means for moving said reciprocatory member in one direction thereby transmitting motion to said rotary actuator, and a spring partially secured within said reciprocatory member to return said reciprocatory member to normal.

7. A signaling horn including a cup-shaped casing, a diaphragm secured to the open end of said casing, a mounting member secured to said casing, a rotary sleeve provided with internal threads carried by said mounting member, a rotary actuator loosely connected to said sleeve for vibrating said diaphragm, and an actuating member provided with external threads adapted to engage the internal threads of said sleeve, said actuating member being operated longitudinally to cause a rotary operation of said actuator and also operable rotatably to cause a rotary motion of said actuator.

8. A signaling device including a cylindrical cup-shaped casing, a diaphragm secured to said casing, a T-shaped mounting member carried by said casing, a rotary sleeve provided with internal threads carried

by said mounting member, a rotary actuator for said diaphragm carried by said sleeve, ratchet and pawl mechanism connecting said rotary actuator to said sleeve, a reciprocatory externally threaded actuating member fitted into the internal threads of said rotary sleeve, and manual means for longitudinally operating said actuating member and for rotatably operating said actuating member thereby causing said rotary actuator to vibrate said diaphragm.

9. A signaling horn including a cup-shaped casing, a diaphragm secured to the open end of said casing, a mounting member secured to said casing, a rotary sleeve provided with internal threads carried by said mounting member, a rotary actuator loosely connected to said sleeve for vibrating said diaphragm, and an actuating member provided with external threads adapted to engage the internal threads of said sleeve, said actuating member being reciprocatorily operable to transmit a rotary motion to said actuator to cause the same to vibrate said diaphragm.

10. A signaling horn including a cup-shaped casing, a diaphragm secured to the open end of said casing, a mounting member secured to said casing, a rotary sleeve provided with internal threads carried by said mounting member, a rotary actuator loosely connected to said sleeve for vibrating said diaphragm, and an actuating member provided with external threads adapted to engage the internal threads of said sleeve, said actuating member being reciprocatorily operable to cause a continuous rotary operation of said actuator and also rotatably operable to cause a rotary operation of said actuator.

11. A signaling device of the chaarcter described including a cup-shaped flanged casing, a diaphragm secured to the flange of said casing, a mounting member adjustably secured to said casing, a rotary sleeve provided with internal threads carried by said mounting member, a rotary actuator loosely connected to said rotary sleeve for vibrating said diaphragm, a reciprocatory shaft provided with external threads for coöperating with the internal threads of said rotary sleeve, said reciprocatory shaft being operable manually to cause a continuous rotary operation of said rotary actuator.

12. A signaling device of the charatcer described including a cup-shaped flanged casing, a diaphragm secured to the flange of said casing, a mounting member adjustably secured to said casing, a rotary sleeve provided with internal threads carried by said mounting member, a rotary actuator loosely connected to said rotary sleeve for vibrating said diaphragm, a reciprocatory shaft provided with external threads for coöperating with the internal threads of said rotary sleeve, said reciprocatory shaft being operable rotatably to cause a rotary operation of said rotary actuator.

Signed by me at Chicago, county of Cook and State of Illinois, in the presence of two witnesses.

WILLIAM KAISLING.

Witnesses:
G. A. YANOCHOWSKI,
B. O'BRIEN.