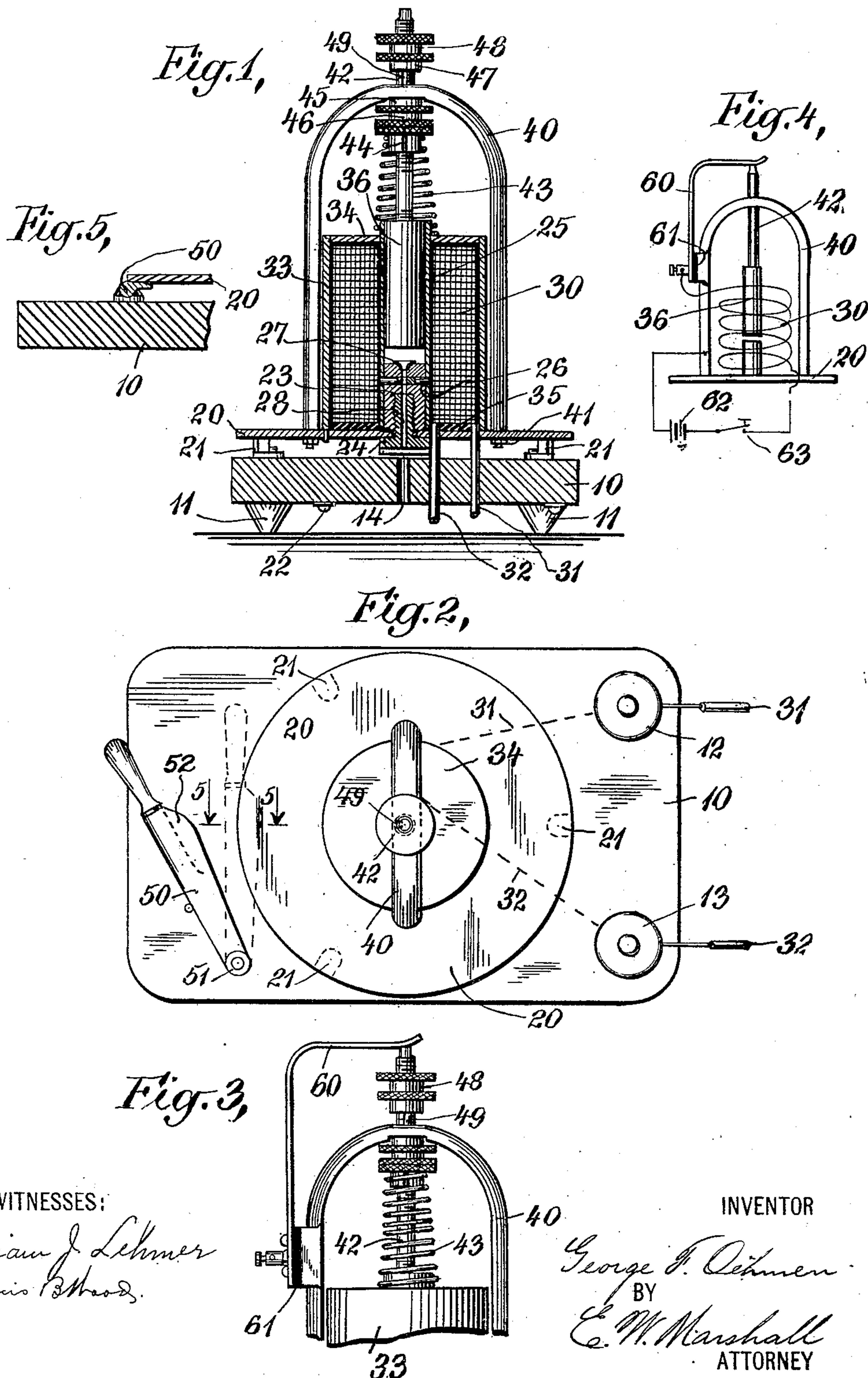


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TELEGRAPH SOUNDER.  
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# UNITED STATES PATENT OFFICE.

GEORGE F. OEHMEN, OF NEW YORK, N. Y.

TELEGRAPH-SOUNDER.

955,676.

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*To all whom it may concern:*

Be it known that I, GEORGE F. OEHMEN, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Telegraph-Sounders, of which the following is a specification.

My invention relates to telegraph sounders and similar devices which are arranged to produce audible sounds by means of electromagnetic impulses and its object is to improve upon apparatus of this character and to provide a simple and efficient structure which shall have advantages over those heretofore known in the art.

To these ends my invention consists in the construction and arrangement of parts which I will describe in the following specification and the novel features of which I will set forth in the appended claims.

Referring to the drawings Figure I is a sectional side elevation of a sounder made according to my invention. Fig. 2 is a plan view of the same device. In Fig. 3 I have shown in end elevation the upper portion of the structure shown in the preceding figures having a spring contact added thereto as it may be done when it is desired to use the device as a buzzer. Fig. 4 is a diagram showing the manner in which the electrical circuits may be made when the device is to be used as a buzzer. Fig. 5 is a sectional side elevation of some of the parts illustrating the manner in which the sound adjusting lever is used.

Like characters of reference designate corresponding parts in all of the figures.

10 designates a base of wood or other suitable material upon which the various parts of the apparatus are mounted.

11 are buttons or feet projecting from the under side of the base.

12 and 13 designate binding posts through which the winding of the solenoid may be connected with desired external circuits.

20 designates a thin metallic plate which is affixed to the base 10 by means of lugs 21 depending from the periphery of the plate and with their ends preferably bent under the plate as shown in the drawings. Screws 22 pass up through the base 10 and into these lugs 21, thus fastening the plate to the base but holding these two parts a fixed distance apart.

23 is a core of soft iron projecting upward from the center of plate 20. This core may

be fastened to the plate by the means of a screw 24, or if desired may be an integral part of the plate itself. A thin brass tube 25 surrounds the core 23 and may be secured thereto by means of a pin 26.

27 is a brass bushing on the upper end of the core and projecting slightly above it. A hole 28 is drilled through the bushing and through the core and the holding screw 24. Directly beneath this hole and in alinement with it a hole 14 of larger diameter is bored through the base 10.

30 designates a solenoid winding which surrounds the brass tube 25 and is held in a vertical position thereby. 31 and 32 are the terminals of this winding which are connected with the binding posts 12 and 13 respectively.

33 is a metallic shell surrounding the winding 30 and 34 is cover piece fitted to this shell and covering the upper end of the winding. 35 is a piece similar in shape but of insulating material such for example as hard rubber, fitting into the lower end of the shell 33 and covering the bottom of the winding. The shell and the cover piece 34 are preferably made of soft iron to improve the magnetic circuit of the solenoid.

36 designates the movable core of the solenoid which core is arranged to move vertically within the tube 25.

40 is a sounding yoke which is preferably constructed of a half round piece of brass bent into a semi-circular loop at the top and having two straight shanks passing down over the shell 33 to the plate 20 to which they are affixed in any desired manner as for example by having their ends reduced in size, threaded and provided with holding nuts 41. In the center of this yoke a hole is provided. A threaded rod 42 passes through this hole and into the upper end of the movable core 36.

43 designates a conical compression spring which surrounds the upper end of the tube 25 and rests upon the cover piece 34. The upper end of this spring engages with the head of a split friction nut 44 upon the rod or stem 42. It may be seen that this spring is arranged to raise the movable core 36 and the parts which are connected therewith, and to oppose the pull of the solenoid upon this core a regulable amount dependent upon the position of the nut 44 upon the stem 42.

The upward movement of the core may be



limited and adjusted by a thumb nut 45 in the threaded stem coming in contact with the under surface of the sounding yoke 40.

46 is a lock nut provided for the purpose of holding the adjusting nut 45 in the desired position. The downward limit of movement of the core 36 and its connected parts may be similarly adjusted by a thumb nut 47 in stem 42 striking against top of yoke 40.

48 is a lock nut for adjusting nut 47. In order that these adjustments may be made easily, some means should be provided for holding the stem 42 against turning. It is for this purpose that I have provided a slot 49 in the upper portion of the stem with a pin or a portion of the yoke itself projecting into this slot.

The sound adjusting lever 50 is pivoted to the base 10 at 51. It is constructed with a wedge like body 52 which when the lever is moved into the position in which it is shown in dotted lines in Fig. 2 will be forced in between the base 10 and the plate 20. The sectional view of these parts in Fig. 5 shows them in this position.

When this device is used as a telegraph sounder an electric current is sent through the solenoid winding 30 which causes the core to be pulled down against the action of the spring 43 until the nut 47 strikes against the yoke 40. The vibration of this blow will be imparted directly to the plate 20 and be augmented thereby. In other words the plate 20 acts as a sounding board to increase the sound. When current is cut off from the solenoid the spring will drive the movable parts upward and cause the nut 45 to strike against the under side of the yoke. The sound of this blow will also be augmented by the sounding plate 20. Thus the down and up strokes of the telegraph code are formed at the same place of contact.

With this apparatus the position of the movable core in relation to the other parts of the magnetic circuit may be changed at will. Its length of travel may also be regulated. The holes 28 and 14 prevent the formation of an air cushion between the fixed core and the movable core. The result is that this device gives a stronger and clearer sound with less battery current than do those hitherto known. But one of the most desirable features of this invention is the fact that the kind and quality of the tone of its strokes may be widely varied. Not only may this be done by the adjustments to which I have above referred, but the movable core may be allowed to strike against the fixed core if desired in which case an entirely different tone effect is produced. The brass bushing 27 will prevent these parts sticking together. Any of the other well known means for performing this function may be employed if desired. Moreover,

the sound may be further varied by the manipulation of the lever 50 in which case very material differences may be produced by moving the lever into or out of engagement with the plate 20 and also by varying the degree of pressure with which it is forced under this plate. Consequently the sound effect of this instrument may be varied to suit the taste of the operator. The advantage of this may be seen in cases where a large number of instruments are working in close proximity to each other, in which case it is desirable to have the sound signals of the various instruments distinguishable from one another.

By adding the contact spring 60 upon an insulating base 61 and arranging the connections as shown in Fig. 4, this device is made into a buzzer. The contact spring is arranged to touch the top of stem 42 only when the latter is up.

62 is a battery and 63 a switch or key. A make and break of the circuit occurs between the contact spring 60 and the stem 42 and the core caused to vibrate up and down rapidly for the purpose of producing sound signals.

The sides and ends of the solenoid winding are protected by suitable insulation from the tube 25, and the metallic shell 33 and the cover piece 34. This apparatus may also be used to record signals upon a strip of paper by printing broken lines thereon or by punching the dots and dashes of the telegraph code through the body of the paper. As the mechanisms for producing these results are well known in the art and as any mechanic skilled in this art will be able to adapt the present device to such mechanisms I have not thought it necessary to illustrate or further describe this feature.

I claim:

1. A signaling apparatus comprising a vertical solenoid, a straight vertical core movably suspended therein, and means directly mounted upon and in axial alinement with said core for producing signals.

2. A signaling apparatus comprising a vertical solenoid, a straight vertical core movably suspended therein, a signal-producing member directly connected with said core, and adjusting devices carried by said member.

3. A signaling apparatus comprising a vertical solenoid, a straight vertical core therein, adjustable means for yieldably suspending the core, and means directly mounted upon and in axial alinement with said core for producing signals.

4. A signaling apparatus, comprising a solenoid, a core movably suspended therein, a stem projecting axially from the core, and adjustable devices carried by the said stem arranged to produce signals upon a movement of said core in either direction.



5. A signaling apparatus comprising a vertical solenoid, a movable core therefor, an adjustable spring for raising said core, a stem projecting from the core, a yoke passing over the solenoid, and adjustable members carried by said stem arranged to engage with said yoke to limit the movement of the core and to produce audible signals upon a movement of said core in either direction.

6. A signaling apparatus comprising a metallic plate, a solenoid mounted thereon, a movable core therefor, an adjustable spring for moving said core in a direction opposite to the pull of the solenoid, a yoke affixed to the metallic plate and extending across one end of the solenoid, a stem projecting axially from the core and passing through said yoke, and adjustable members carried by the stem arranged to engage with the yoke to limit the movement of the core.

7. A signaling apparatus comprising a horizontally disposed metallic plate, a vertical solenoid mounted upon said plate, a movable core suspended therein, a spring for raising the core, a yoke affixed to the metallic plate and extending over the top of the solenoid, a threaded stem projecting axially from the core and passing through said yoke, and adjustable nuts upon said stem arranged to engage with the yoke to limit the movement of the core and to adjust said spring.

8. A signaling apparatus comprising a base, a horizontally disposed metallic plate associated therewith, a vertical solenoid

mounted upon said plate, a movable core suspended therein, a spring for raising the core, a yoke affixed to the metallic plate and extending over the top of the solenoid, a threaded stem projecting axially from the core and passing through said yoke, adjustable nuts upon said stem arranged to engage with the yoke to limit the movement of the core and to adjust said spring, means for preventing said stem from turning, and a sound adjusting lever arranged to be pressed between the base and the metallic plate.

9. A telegraph sounder arranged to produce audible signals, combined with a base, a metallic sounding plate associated therewith upon which said sounder is mounted, and a sound adjusting lever arranged to be pressed between the base and the sounding plate to modify the audible signals.

10. A telegraph sounder comprising a vertical solenoid, a fixed core and a movable core therefor, a yoke extending over one end of the solenoid, a stem projecting axially from the core and extending through the yoke, adjustable members carried by said stem and arranged to engage with the yoke, said yoke and core providing three sounding points for the sounder.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE F. OEHMEN.

Witnesses:

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ERNEST W. MARSHALL.