July 15, 1952 J. H. COUNTRYMAN ET AL 2,603,035

SOUND PRODUCING ATTACHMENT FOR BICYCLES

Filed March 16, 1949

FIG 1

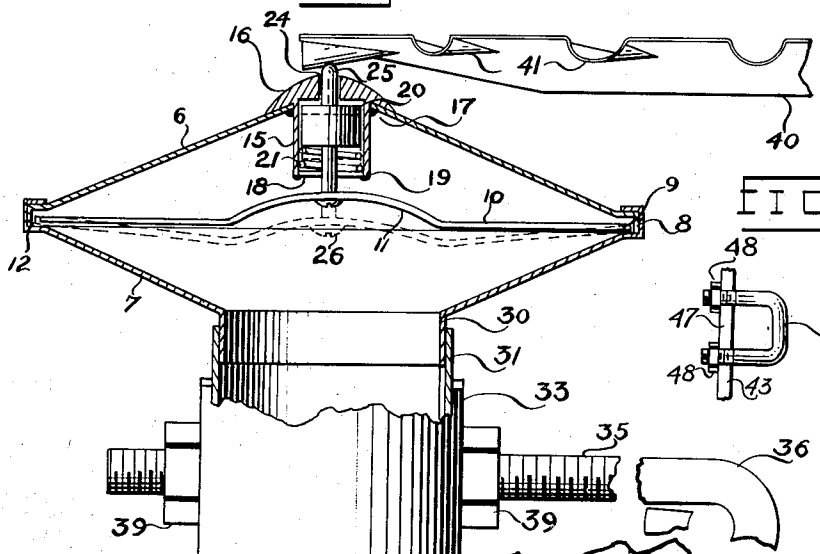
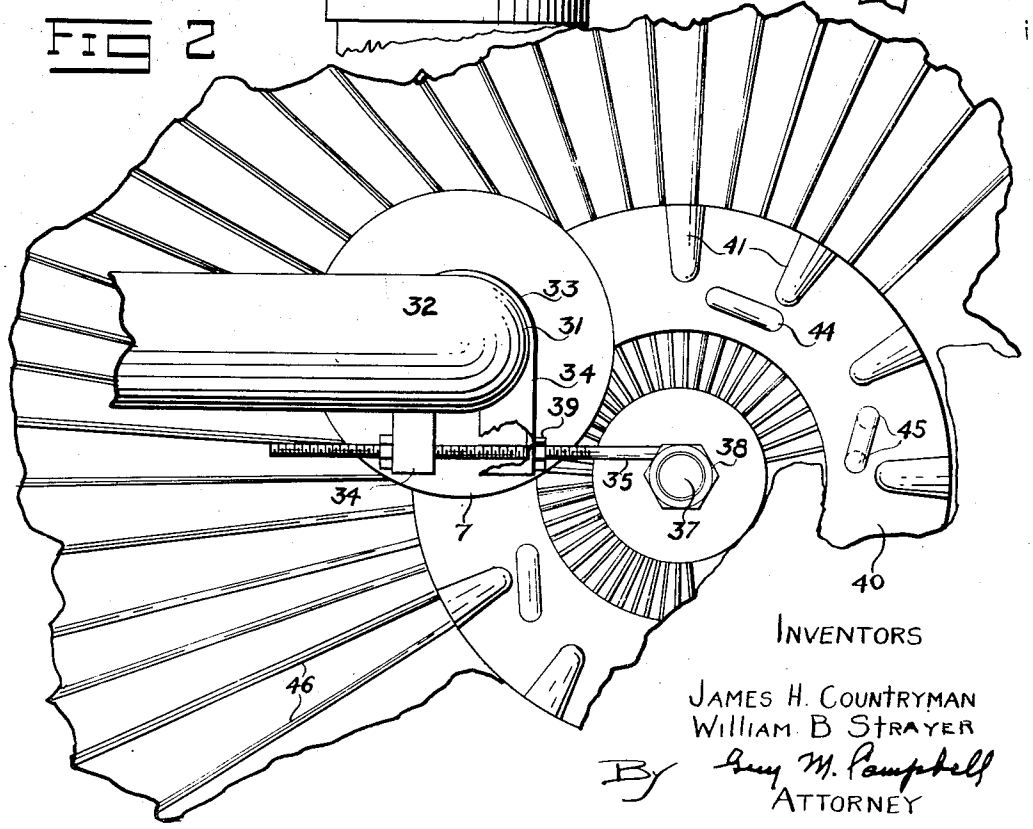


FIG 3

FIG 2



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SOUND PRODUCING ATTACHMENT FOR BICYCLES

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2 Claims. (Cl. 46—175)

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This invention relates to, and has for one of its objects to provide a sound generating attachment for producing a sound simulating the exhaust sounds produced by an explosion motor.

Another object of the invention is to provide a novel form of sound producer in which the sound produced results from distortion of the diaphragm material out of a normal plane such as may be produced by a reciprocal bending action of a highly resilient material.

Another object of this invention is to provide a novel mounting means whereby the device may be readily adapted to various forms of supporting means and be disposed in any desired angular position.

Other objects and features of the invention relate to details of the tone producing element combined with a novel form of actuating mechanism therefor.

Our invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a detail sectional view of the sound producer with a fragmentary view of an actuator.

Fig. 2 is a front elevational view of the apparatus in assembly shown attached to a bicycle wheel and its axle with the wheel being shown fragmentarily, and

Fig. 3 is a detail view of a fastening device.

The sound generating device 5 comprises a casing formed of a pair of frustro-conical members 6 and 7, secured together at their periphery by folding their edges together, as shown at 8, to provide a free space 9 adjacent the peripheries.

A diaphragm 10 of thin resilient metal is provided at its center with a cup portion 11. A clearance space 12 is provided between the edge of the diaphragm 10 and the connected portions of the frustro-conical members 6 and 7 which will permit radial expansion of the diaphragm in response to a pressure in either direction upon the cup 11 to produce a single tone for each displacement of the diaphragm.

Inserted through the apex of the frustro-conical member 6 is a metal thimble 15 provided on its outer end with a button 16 in engagement with the outer surface of the frustro-conical member 6. On its upper end, adjacent the inner surface of the member 6, the thimble is provided with a shoulder 17 for locking it against the inner face of the frustro-conical member 6. In the lower end of the thimble is an apertured disc 18 which is held in place by spinning over the lower end of the thimble 15, as at 19.

A reciprocal cylinder 20 is mounted in the thimble with its lower face in engagement with

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one end of a restoring spring 21, the other end of which spring rests upon the apertured disc 18.

Secured to the cylinder 20, and extending through an opening 24 in the button 16, is a hard fiber plunger member 25. In the lower end of the cylinder 20 is a screw 26 which extends through the apertured disc 18 and is connected with the radial center of the diaphragm 10.

At its lower end, the frustro-conical member 7 is provided with a tubular member 30 to receive a curved extension 31 of a sound conduit 32. Surrounding the extension 31 of the sound conduit 32 is a semi-circular clamp 33 having depending parallel U-shaped flanges 34. Extending through the outer faces of the flanges 34 is a threaded supporting rod 35 which is provided in one end with an eye 36 adapted to fit over the end of a wheel axle 37 and be clamped thereon by a nut 38.

By means of nuts 39 on the threaded rod 35, which engage the outer faces of the U-shaped flanges 34, the clamp 33 may be tightened around the sound conduit to squeeze its adjacent end around the tubular member 30 to secure the sound generator and the conduit together. Since the rod 35 is threaded throughout the major position of its length, the sound generator may be adjusted to various positions radially of a disc actuator.

The movable actuator for the sound generator comprises a disc ring 40, provided in its surfaces with rounded bosses 41, disposed concentrically of the ring 40. The ring 40 is secured to a bicycle wheel concentrically of the hub by U-shaped clips 44, extending through holes 45 in the ring disc 40, and embracing two or more spokes 46 of the bicycle wheel. The inner ends of the U-shaped clips are threaded, and a clamping plate 47 is secured to the clips by nuts 48.

In the use of this attachment, the sound generator will be secured in position by clamping the rod 35 upon the axle 37 in any desired angular position, with the fiber plunger 25 in position to be actuated by engagement with the bosses 41 on the actuator 40.

Since the sound generator is longitudinally adjustable on the supporting rod 35, it is obvious that additional concentric rows of bosses with different spacings may be provided upon the actuator 40 between its outer and inner diameters to produce different frequencies of sound.

The use of the hard fiber plunger 25 not only prolongs the wear life of the parts, but it eliminates metallic clicks between the engaging surfaces.

The whole structure lends itself readily to the production of parts by stamping and punching, and the easy assembly of the parts with a minimum of operations.

The whole structure employs the minimum of moving parts which are sturdy enough to withstand long wear without the necessity of frequent adjustments or replacement of parts.

By this invention we have produced a sturdy structure of few and single parts economical to produce and install, and capable, when in operation, of producing a staccato of sounds which simulate to an amazing degree the sounds produced through the exhaust pipe of an explosion motor.

The simulation may be enhanced by attaching to the vehicle, in position to conceal the mechanism of the sound attachment, a thin sheet of material bearing a pictured profile of an explosion motor such, for example, as shown in our application for a patent on a design for attachment, Serial No. D. 1175, filed March 2, 1949, now abandoned.

We claim:

1. In a sound producing mechanism for bicycles, a sound box comprising a pair of frustro-conical members secured together at their edges, a diaphragm in the sound box, a sound conduit opening into the sound box through the apex of one frustro-conical member, a plunger connected with the diaphragm and extending through the apex of the other frustro-conical member, means for supporting the sound box assembly from the axle of a bicycle wheel, and an actuating member for the plunger comprising a disc member mounted upon the bicycle wheel concentrically of the axle and provided with spaced apart bosses on its surface moved into engagement with the outer end of the plunger in the rotation of the wheel to intermittently displace the diaphragm with perceptible intervals between each displacement.

2. A sound producing attachment for bicycles comprising a radial expanding diaphragm responsive to surface displacements to produce a single tone for each displacement, a sound box for the diaphragm comprising a pair of frustro-conical members secured together at their edges with a clearance space between adjacent faces to receive the periphery of the diaphragm, a plunger connected to the radial center of the diaphragm and extending through the wall of one frustro-conical member, a disc provided with spaced apart bosses on its face mounted to rotate with a wheel of a bicycle, and a support for positioning the sound box for engagement of the disc and plunger comprising a bracket attached at one end to the sound box and its other end to the frame of the bicycle.

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