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Matson

[11] **3,915,436**

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[54] **SELF-CLAMPING AUTOMATIC AIR CONNECTION VIBRATOR MOUNT**

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[52] **U.S. Cl.**..... **259/1 R;** 259/DIG. 43; 269/22; 269/25

[51] **Int. Cl.**[2]..... **B06B 1/18;** B01F 11/00

[58] **Field of Search**..... 259/1 R, 72, DIG. 43; 269/20, 22, 25; 248/14, 15, 361 R

[56] **References Cited**

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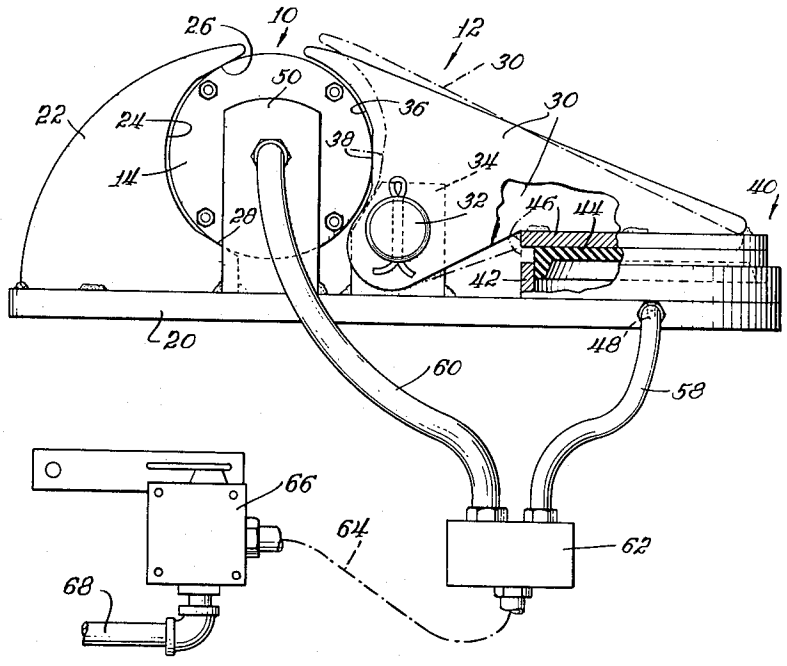
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Attorney, Agent, or Firm—Johnson, Dienner, Emrich & Wagner

[57] **ABSTRACT**

Fixed clamp jaw means and movable clamp jaw means movable by piston and cylinder means receive a pneumatic vibrator therebetween, and a fixed connector member has a bore which slidably receives the air inlet nose portion of the vibrator. The piston and cylinder means and the bore are connectible to a common source of air under pressure whereby the piston and cylinder means are actuated for clamping the vibrator and air under pressure is transmitted to the vibrator for actuating the latter.

5 Claims, 2 Drawing Figures



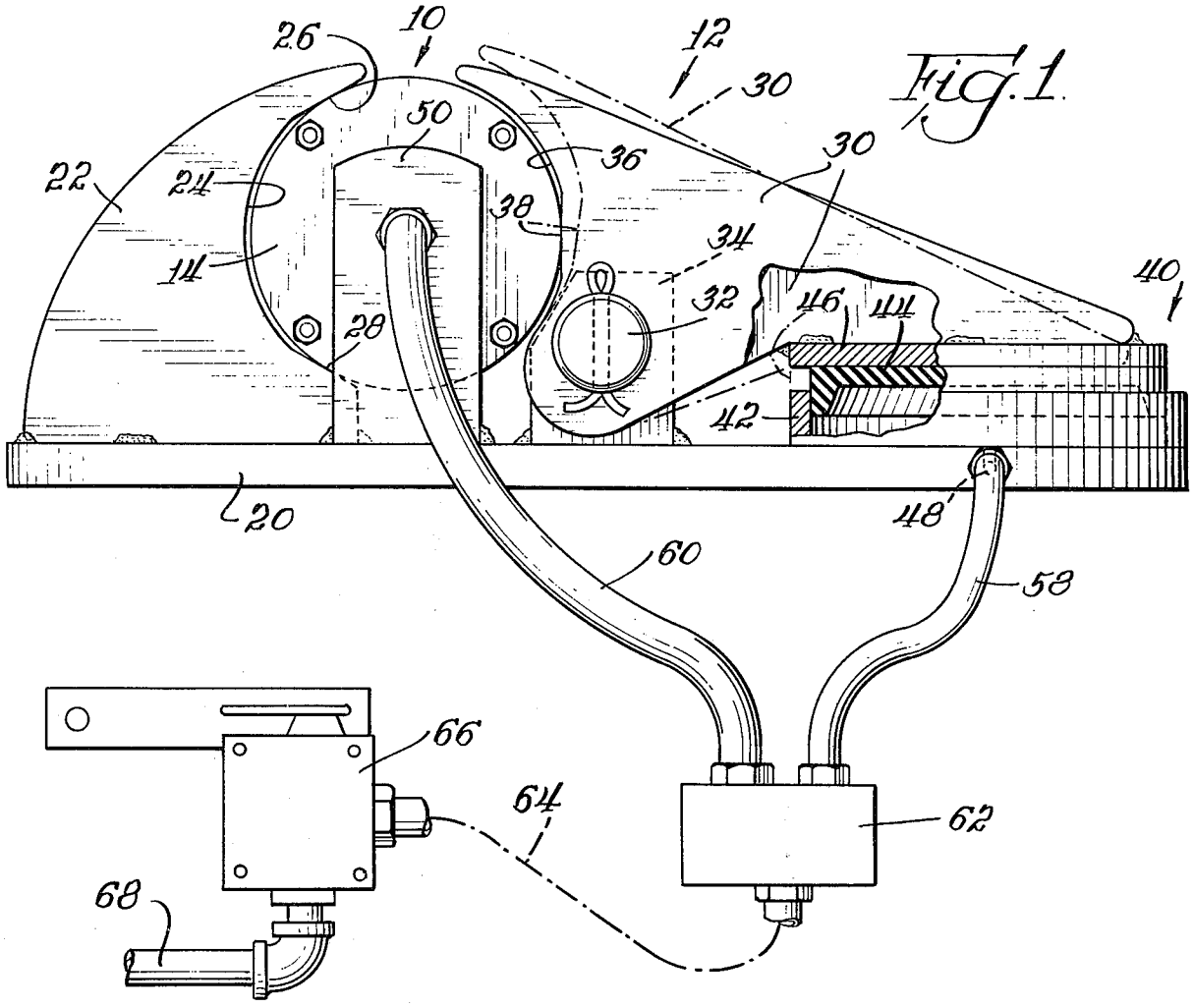

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Fig. 1.

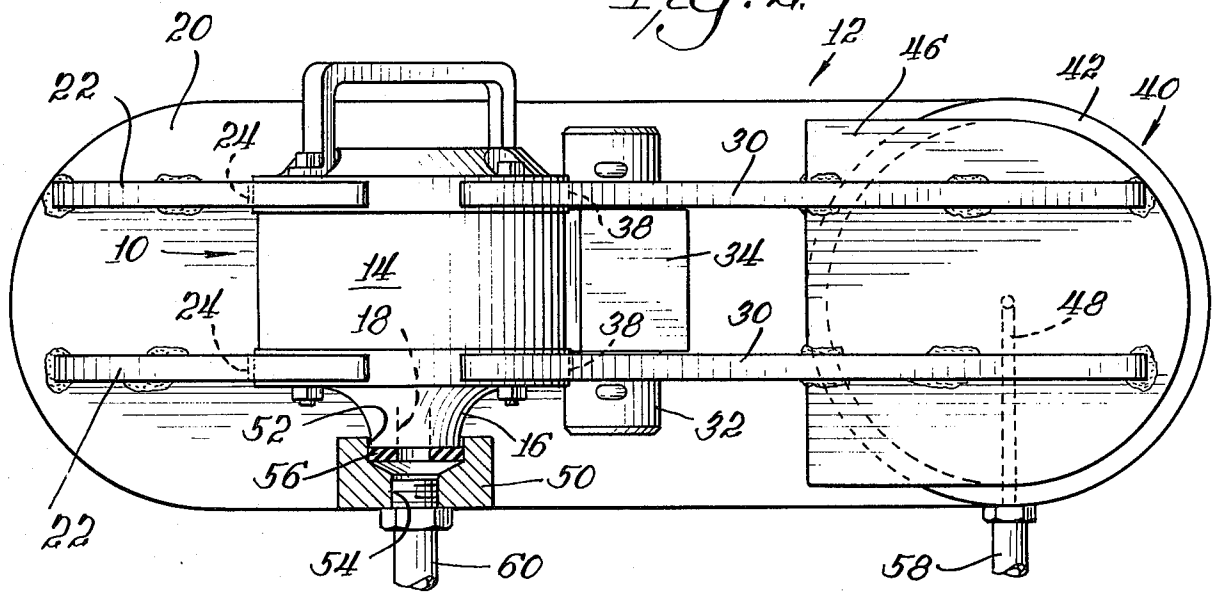

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Fig. 2.

SELF-CLAMPING AUTOMATIC AIR CONNECTION VIBRATOR MOUNT

BACKGROUND OF THE INVENTION

Pneumatic vibrators are commonly used, for example, to shake concrete molds for consolidating concrete, and to shake hoppers and the like for loosening material therein. Heretofore, vibrator mounts have been secured to the molds or hoppers, and a pneumatic vibrator with a short length of hose has been moved from one mount to another as required. Conventionally at each location, the vibrator is manually attached and secured to the mount by bolts, wedges, cams or the like, and the hose is manually connected to air conducting means leading to a source of air under pressure. After the vibrator has served its purpose, it is manually unsecured from the mount, and the hose is manually disconnected from the air conducting means. These various operations require tools and manual effort, and are time consuming.

SUMMARY OF THE INVENTION

The vibrator mount of the present invention comprises a base, fixed clamp jaw means secured to the base and engageable with one side of a vibrator, and movable clamp jaw means mounted on the base and engageable with the other side of the vibrator. Piston and cylinder means are carried by the base for effecting movement of the movable clamp jaw means. A connector member is secured to the base and has a bore for slidably receiving the air inlet nose portion of the vibrator.

When the piston and cylinder means and the bore are connected to a common source of air under pressure, the piston and cylinder means are actuated for clamping the vibrator between the fixed and movable clamp jaw means, and air under pressure is transmitted to the vibrator for actuating the latter. The vibrator is fully released upon interruption of air pressure.

Prior to air actuation the vibrator is simply placed in the mount, and after air actuation the vibrator can be simply removed without restraint from the mount. Clamping and unclamping of the vibrator, and air connection and disconnection therewith, are automatic and almost instantaneous; no tools or manual effort are required to secure the vibrator in the mount, to unsecure the vibrator from the mount, to connect the vibrator to air conducting means, or to disconnect the vibrator from such means.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a bottom view of a pneumatic vibrator and the mount therefor of the present invention; and

FIG. 2 is a front view of the vibrator and mount of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing, there is indicated generally by the reference numeral **10** a conventional pneumatic vibrator, and by the reference numeral **12** a self-clamping automatic air connection vibrator mount embodying the principles of the present invention.

The vibrator **10** comprises a generally cylindrical housing **14** with an axial nose portion **16** in which is formed an air inlet passageway **18.** In a manner well known in the art, the introduction of air under pressure into the passageway **10** serves to induce vibration of the vibrator **10.**

The vibrator mount **12** comprises a base plate **20** to which are secured a pair of fixed clamp jaws **22** each presenting an arcuate face **24** formed with a pair of radially inwardly directed contact projections **26** and **28.** Also mounted on the base plate **20** are a pair of movable clamp jaws in the form of levers **30.** The levers **30** are pivotally mounted on a pin member **32** carried by a support block **34** secured to the base plate **20.** The one end of each lever **30** presents an arcuate face **36** formed with a radially inwardly directed contact projection **38.**

The pair of fixed clamp jaws **22** define fixed clamp jaw means; the pair of levers **30** define movable clamp jaw means or lever means; the pairs of arcuate faces **24** and **36** define generally arcuate face means; and the three pairs of contact projections **26, 28** and **38,** which are circumferentially spaced approximately 120° apart, define contact projection means engageable with the opposed sides of the vibrator housing **14.**

Arranged between the base plate **20** and the other ends of the levers **30** are piston and cylinder means **40** for effecting pivotal movement of the levers **30.** The piston and cylinder means **40** comprises a sleeve or cylinder **42** secured to the base plate **20,** and a resilient cup or piston **44** slidable in the cylinder **42.** The piston **44** is affixed to a web member **46** secured across the other ends of the levers **30.** A passageway **48** is formed in the base plate **20** for conducting air under pressure to the interior of the cylinder **42.**

Also secured to the base plate **20** is a connector member **50** which is formed with a bore **52** and a communicating aperture **54.** The bore **52** has disposed therein a seal ring **56** defining seal means, and serves to axially slidably receive the nose portion **16** of the vibrator **10** with the air inlet passageway **18** of the vibrator **10** thereby placed in communication with the bore **52.**

Conduits **58** and **60** connect the passageway **48** and the aperture **54** to a flow divider **62,** a conduit **64** connects the flow divider **62** to a control valve **66,** and a conduit **68** connects the control valve **66** to a source of air under pressure. Through these enumerated air conducting means the piston and cylinder means **40** and the bore **52** are connectible to a common source of air under pressure.

Operationally, the base plate **20** is suitably secured to the side of a mold or hopper to be vibrated. With the control valve **66** closed, there is no air pressure in the conduits **58** and **60,** and the movable clamp jaws **30** are free to pivot toward the position shown in dotted lines in FIG. **1.** The vibrator **10** is then simply lowered between the fixed and movable clamp jaws **22** and **30** to the position shown in FIG. **2** whereupon the nose portion **16** enters the bore **52** and partially compresses the seal ring **56.**

When the control valve **66** is opened, air under pressure is conducted to the piston and cylinder means **40** for actuating the latter, and to the bore **52** for actuating the vibrator **10.** More specifically, the air pressure entering the cylinder **42** urges the piston **44** outwardly causing the movable clamp jaws **30** to pivot to the solid line position shown in FIG. **1** whereupon the contact projections **26, 28** and **38** securely engage and clamp the vibrator **10** in position. At the same time, air pres-

sure in the bore **52** further compresses the seal ring **56** for establishing an air tight seal between the nose portion **16** and the bore **52,** and air under pressure in the bore **52** is also transmitted to the air inlet passageway **18** for actuating the vibrator **10.** Thus, clamping of the vibrator **10** and air connection therewith are automatic. Vibrations of the vibrator **10** are transmitted through the mount **12** to the associated mold or hopper.

After the vibrator **10** has served its purpose, the control valve **66** is closed, air pressure is thereupon relieved in the conduits **58** and **60,** and the movable clamp jaws are thereby released from their clamping position. Unclamping of the vibrator **10** is thus automatic. The vibrator **10** may then be removed from the mount **12** by simply raising it therefrom, at which time the nose portion **16** is withdrawn from engagement with the seal ring **56** thereby effecting automatic air disconnection.

While there has been shown and described a preferred embodiment of the present invention, it will be understood by those skilled in the art that various rearrangements and modifications may be made therein without departing from the spirit and scope of the invention.

The invention claimed is:

1. For use with a pneumatic vibrator having a generally cylindrical housing with an axial nose portion in which is formed an air inlet passageway, a self-clamping automatic air connection vibrator mount comprising a base, fixed clamp jaw means secured to said base and engageable with one side of the vibrator housing, movable clamp jaw means mounted on said base and engageable with the other side of the vibrator housing, piston and cylinder means carried by said base for effecting movement of said movable clamp jaw means, a connector member secured to said base and having a bore for axially slidably receiving the nose portion of the vibrator with the air inlet passageway of the vibrator communicating with said bore, and said piston and cylinder means and said bore being connectible to a common source of air under pressure whereby said piston and cylinder means are actuated for clamping the vibrator housing between said fixed and movable clamp jaw means and air under pressure is transmitted to the air inlet passageway of the vibrator for actuating the latter.

2. The vibrator mount of claim **1** wherein said movable clamp jaw is in the form of at least one lever, said lever is pivotally mounted relative to said base, one end of said lever is engageable with the other side of the vibrator housing, and said piston and cylinder means is arranged between said base and the other end of said lever.

3. The vibrator mount of claim **2** wherein said fixed clamp jaw means and said one end of said lever present generally arcuate face means at least portions of which are engageable with the vibrator housing.

4. The vibrator mount of claim **3** wherein said arcuate face means are formed with radially inwardly directed contact projection means which are circumferentially spaced approximately 120° apart and which are engageable with the vibrator housing.

5. The vibrator mount of claim **4** including seal means in said bore for establishing an air tight seal between the nose portion of the vibrator and said bore.

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