

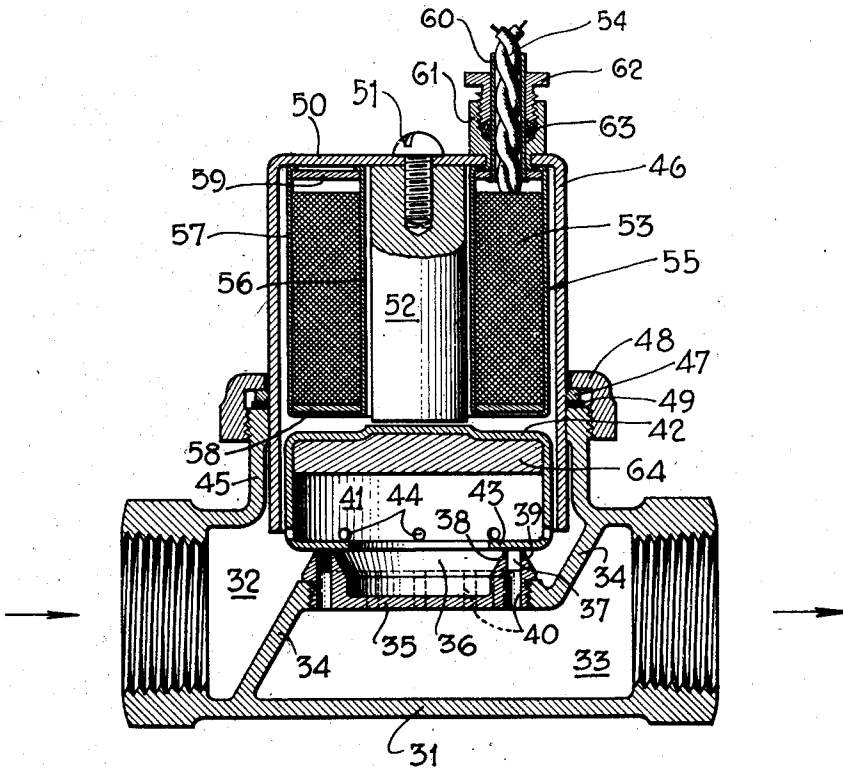
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W. A. RAY

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ELECTROMAGNETIC OPERATOR

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Inventor:
WILLIAM A. RAY,

John H. Rouse,
Attorney.

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ELECTROMAGNETIC OPERATOR

William A. Ray, Los Angeles, Calif., assignor to
General Controls Co., a corporation

Original application November 6, 1939, Serial No.
303,093, now Patent No. 2,303,066, dated Novem-
ber 24, 1942. Divided and this application No-
vember 9, 1942, Serial No. 464,968

1 Claim. (Cl. 175—21)

This invention relates to receptacles for the coil windings of electrically operated valves of the type wherein the winding is so located that normally it is subjected to the fluid controlled by the valve. The present application is a division of my copending application, Serial No. 303,093, filed November 6, 1939; now Patent No. 2,303,066, dated November 24, 1942.

An object of the invention is to provide a receptacle, of the character described, which is so fabricated that it sealingly encompasses the perimeter of the coil winding and thus shields it from the fluid.

Another object is to provide a receptacle, of the character described in the preceding object, having a tubular extension for the leads of the coil winding.

Another object is to provide means whereby the receptacle can readily be removed from, and replaced in, the valve.

Other objects and advantages of the invention will be found in the description, the drawing, and in the claims; and for full understanding of the invention, reference may be had to the following detailed description and accompanying drawing, the single figure of which is a sectional view of a valve embodying my invention.

In the drawing, the numeral 31 indicates a valve casing having an inlet 32 and an outlet 33 separated by a partition 34, wherein is threaded a valve seat member 35. This valve seat member is provided with a central recess 36 and an annular recess 37 to form concentric inner and outer valve seats 38 and 39, respectively. Connecting the recess 37 with the outlet 33 are openings 40.

Cooperable with the valve seats 38 and 39 is a valve member 41 comprising a cylindrical shell of magnetic material having a closed top wall 42 and a marginal bottom wall 43, the latter wall being conveniently so formed by spinning, or in a punch press by the aid of a collapsible die. Openings 44 are provided in the lower portion of the side wall of the shell which permit fluid communication between the inlet 32 and the area adjacent the inner valve seat 38. It will thus be seen that, when the shell is raised by electromagnetic means hereinafter to be described, fluid can flow from the inlet 32, across the inner and outer seats 38 and 39, into the recess 37 and thence through the openings 40 into the outlet 33. The double-seat arrangement permits increased flow through the valve when the lift of the valve member is relatively small, and is the subject of U. S. Patent No. 2,261,562, issued to me November 4, 1941.

An upper extension 45 of the casing provides an opening for the reception of a housing 46, of magnetic material. This housing is secured in

the casing by a ring 47, brazed or welded to the housing, which is clamped to the upper surface of the casing extension by a threaded collar 48. Shims 49 are provided between the ring and the casing whereby the vertical position of the housing with respect to the casing can be adjusted.

The valve member 41 is arranged to be freely slidable in the lower end of the housing and the circumferential surface of the valve member is preferably plated with a durable non-magnetic metal to provide a minute air gap between this surface and the housing. The valve member is biased toward seating position by a weight 64.

Secured to the underside of the top wall 50 of the housing 46, by a screw 51, is a cylindrical core member 52. Surrounding the core member is an annular receptacle 55 for a coil winding 53 having connection leads 54. Upon passage of current through the coil winding, the valve member 41 is attracted into engagement with the core member 52.

The receptacle 55 has an inner 56 and an outer 57 cylindrical side wall, and a bottom 58 and a top 59 end wall, each sealingly secured to the side walls. A tubular member 60, secured in the top wall 59 of the receptacle, and extending through a bushing 61 in wall 50, provides means for mounting the receptacle in the housing. The receptacle is retained in position by a packing nut 62, threaded in the bushing 61, which forces a packing member 63 into firm engagement with the outer surface of the tube 60.

While I have herein shown and described a specific embodiment of my invention, I wish it to be understood that modifications may be made without departing from the spirit of the invention, and that I intend therefore to be limited only by the scope of the appended claim.

I claim as my invention:

40 In a solenoid operator: a tubular housing open at one end and closed at its other end by a wall, said housing being adapted for mounting by said open end on a device to be operated; a hollow coil winding having leads for connection to a source of electrical energy; a receptacle sealingly encompassing said coil winding and insertable through said open end of the housing, said receptacle comprising an inner and an outer spaced tubular portion and cooperating end portions; and means sealingly joined to the inner one of said end portions of the receptacle and extending through an opening in said end wall of the housing for removably mounting the receptacle in the housing, said mounting means comprising a tube communicating with the interior of the receptacle and forming a duct for said coil-winding leads.

WILLIAM A. RAY.