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SPUD FOR FLUSH TANK LEVERS

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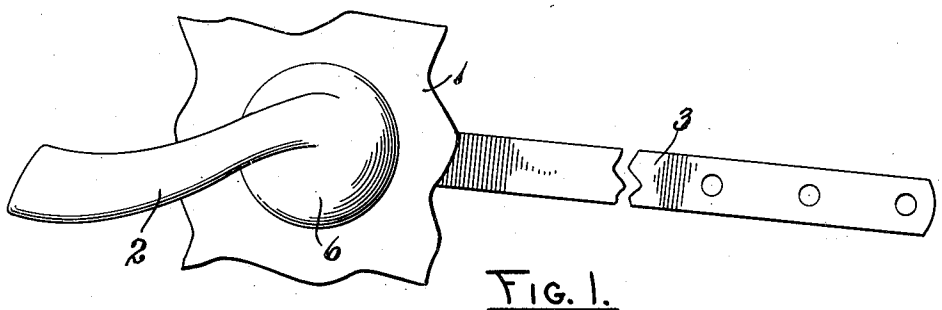


FIG. 1.

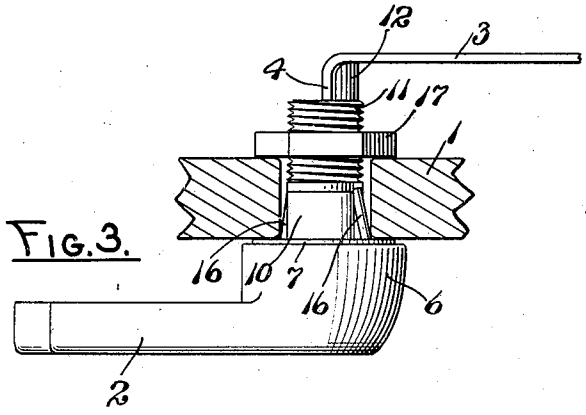


FIG. 3.

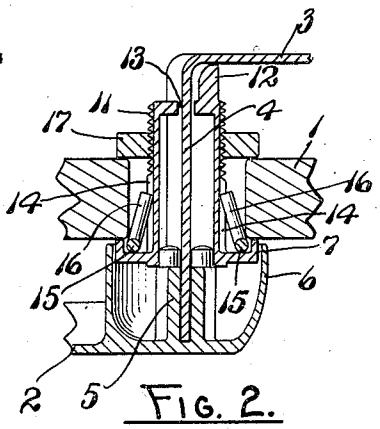


FIG. 2.

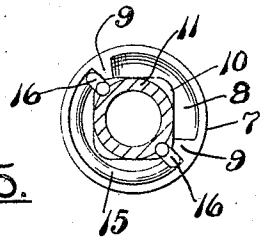


FIG. 5.

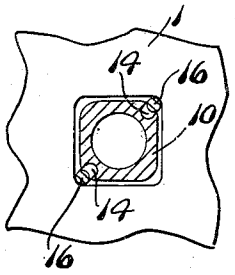


FIG. 4.

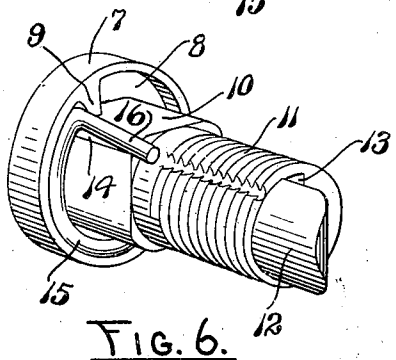


FIG. 6.

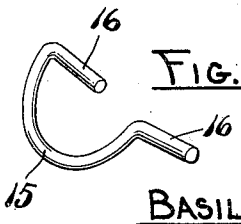


FIG. 7.

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SPUD FOR FLUSH TANK LEVERS

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3 Claims. (Cl. 4—67)

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The present invention relates to a practical and novel improvement in flushing tank wall mounting fixtures or spuds, as they are generally known, used as a part of a flush tank lever assembly.

The front wall of a tank has an opening through it, generally adjacent its upper edge but a short distance below and toward one end of the tank, at which the mounting fixture or spud is detachably secured, said spud extending into said opening from the outer side of the tank and normally passing through the tank wall, provided with a head at its ends to bear against the outer side of the wall and receiving a binding nut for securely clamping the spud in place. The movable lever member of the assembly is mounted on said spud for rocking movement, having a handle at the outer side of the wall and a lift arm with the tank to which the lift wire of the flushing tank assembly is adapted to be connected adjacent the free end of the lift arm.

The opening through the tank wall may vary in cross sectional area and in dimensions from an exact standard dimension, practical considerations requiring that a tolerance which may amount to $\frac{1}{32}$ of an inch or slightly more, both plus and minus from the standard dimensions specified, be permitted because of the material from which the tank is made. And with porcelain tanks which are largely used, the liquid porcelain outer covering material before baking, may enter said opening to a greater or less degree and affect the finished dimensions of said opening. The spud extending into said opening, accordingly, must always be made with minimum dimensions so as readily to enter an opening which may be of the extreme in one direction, that is, the smallest of such finished openings which occurs, resulting in the spud being liable to a slight change in position by a movement thereof about its longitudinal axis. Such movement is undesirable as the effect is multiplied many times in the movement of the outer end portion of the lift arm to which the lift wire is connected. It has been the endeavor to hold the spud against such movement by a sufficient tightening of the clamping nut, but this may result in a fracture of the tank wall, the material of which is brittle, non-elastic and not of a high tensile strength.

The present invention is directed to a simple and novel anchor which is readily assembled with such spud and which in conjunction with the spud, makes a lock or anchor between it and opposite corners of the tank wall opening which in practice is rectangular in cross section and substantially universally of a square cross sectional outline. It is a primary object and purpose to provide a spud which may be thus anchored when secured in place on the tank wall, and which will hold the spud against any rocking or rotative movement about its longitudinal axis, thereby eliminating the need of tightening the binding nut or other securing means used to an extent that it may be dangerous to the tank structure.

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An understanding of the invention may be had from the following description, taken in connection with the accompanying drawings, in which:

Fig. 1 illustrates an elevation of the operating handle and lift arm of the tank lever, and showing a fragmentary portion of the tank wall where the flushing tank lever is mounted.

Fig. 2 is a section through the lever and tank wall at the place of mounting thereof, the plane of the section being diagonally from one corner to another of the tank wall opening.

Fig. 3 is a horizontal section through the tank wall at said opening with the lever shown in plan.

Fig. 4 is a vertical section through the spud mounted in the tank wall opening at a short distance within the head of said spud.

Fig. 5 is a transverse section through the spud substantially midway between its ends, looking toward the head thereof.

Fig. 6 is a somewhat enlarged perspective view of the spud with the anchor assembled therewith, and

Fig. 7 is a perspective view of the anchor element by itself.

Like reference characters refer to like parts in the different figures of the drawings.

The front wall 1 of the tank is normally positioned vertically and has a horizontal opening therethrough substantially square in cross section, as best shown in Fig. 4. The spud may extend through said opening in practice and the operating handle 2 of the flushing tank lever is located at the outer side of the tank wall, as shown in Fig. 1. The lift arm 3 is at the inside of the tank and in the specific disclosures made, has a laterally extending spindle 4 at one end which passes longitudinally through the spud and, after the assembly of the spud thereon is made, is permanently connected with a sleeve 5, entering it at its inner end, which sleeve together with a covering and decorative skirt 6 is cast integrally with the handle. The permanent

attachment of the spindle 4 with the sleeve 5 is in accordance with old practice.

The spud, which is formed as a single casting, has a circular head 7 which at its inner side is provided with an annular groove 8, continuous except that at diametrically opposed points, lugs 9 extending from the outer rim of the head, as shown in Figs. 5 and 6, radially toward the body of said head across the groove. Said lugs are an integral part of the casting. The body of the spud consists of an integrally cast section 10 of a generally square cross section from which a cylindrical exteriorly threaded extension 11 projects, and at the free end of which a finger, as shown at 12, is further extended to one side of a passage or opening 13 made in the inner end of the spud. The spindle is passed through the spud in assembling the spud upon said spindle before the permanent connection of the handle. Said opening 13 is of a size, such that a desired limiting rocking movement of the movable lever member is permitted, for the elevation of the lift arm 3 at its outer end. Said spud at opposite corners of the section 10 of the body is formed with longitudinal grooves 14 which may be extended substantially the full length of the body in practical die casting of the spud.

The anchoring member is formed of a length of spring wire into a substantially half circle 15, from the ends of which legs 16 are turned, as shown in Fig. 7. The curved or semi-circular intermediate portion 15 of the anchor is seated in the groove 8, its ends coming to the lugs 9, and the legs 16 extend therefrom into the grooves 14. The legs 16 are disposed at an acute angle to the longitudinal axis of the spud, and converge toward each other from their points of connection to the curved section 15.

When the assembled movable lever member and spud are mounted on a tank wall, the threaded section 11 is inserted through the tank wall opening from the outer side of the wall and the parts 16, because of their angular positions, are pressed against the corner portions of said wall opening and are forced inwardly by a wedging pressure upon tightening the binding nut 17 on screwing it on to the threaded section 11 until the head 7 comes against the outer side of the wall 1 (Fig. 2).

The spring material of the anchor will yield, thereby permitting the head 7 of the spud to be brought to such position, that the legs 16, seated in the corners of the tank opening, interpose positive stops against rotative or rocking movement of the spud about its longitudinal axis.

It is apparent that the anchor structure described serves its holding functions irrespective of the small variations in dimensions of the tank wall opening. It will properly engage with the largest opening at the corners thereof, and merely yields a little farther in the case that the dimensions are slightly smaller, that is, the amounts of the tolerances from the specified standard dimensions of the tank wall opening.

The anchor is carried by the spud, is very quickly assembled therewith and is economical to manufacture, while the spud itself as to its changed structure over previous spuds, is as quickly and economically produced by die casting as such prior tank wall mountings. The construction is very practical and useful and serves to hold the spud against any undesired movement without dangerous tightening of the nut 17.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In a structure of the class described, a member including a head at the outer end thereof and an inwardly extending body of less transverse dimensions than the head, exteriorly threaded at its inner portion to receive a binding nut and having longitudinal grooves lengthwise thereof adjacent the head, said grooves being disposed diametrically opposite each other, and a member of spring material having an intermediate portion connected with said head at its inner side, and legs extending from the ends of the intermediate portion converging toward each other and seated at their free ends in said grooves.

2. A construction as defined in claim 1, said head being of circular outline and provided with an annular groove at its inner side and having diametrically opposed lugs across said groove, and said member of spring material having a semi-circular portion set in the groove of said head between the lugs, said legs extending from their points of connection to said intermediate portion at said lugs into said grooves in the body.

3. A tank wall mounting fixture or spud comprising, a head and an integral body extending to one side thereof, said head being adapted to be located against the outer side of a tank wall and the body extending through an opening in the wall, and an anchor of yielding material connected with the head at the inner side thereof and having terminal portions at opposite sides of the body extending lengthwise at the exterior thereof for a portion of its length, and converging inwardly toward each other at an angle to the length of said body, said body being recessed at opposite sides to receive the free ends of said legs.

BASIL R. CRAMPTON.

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