

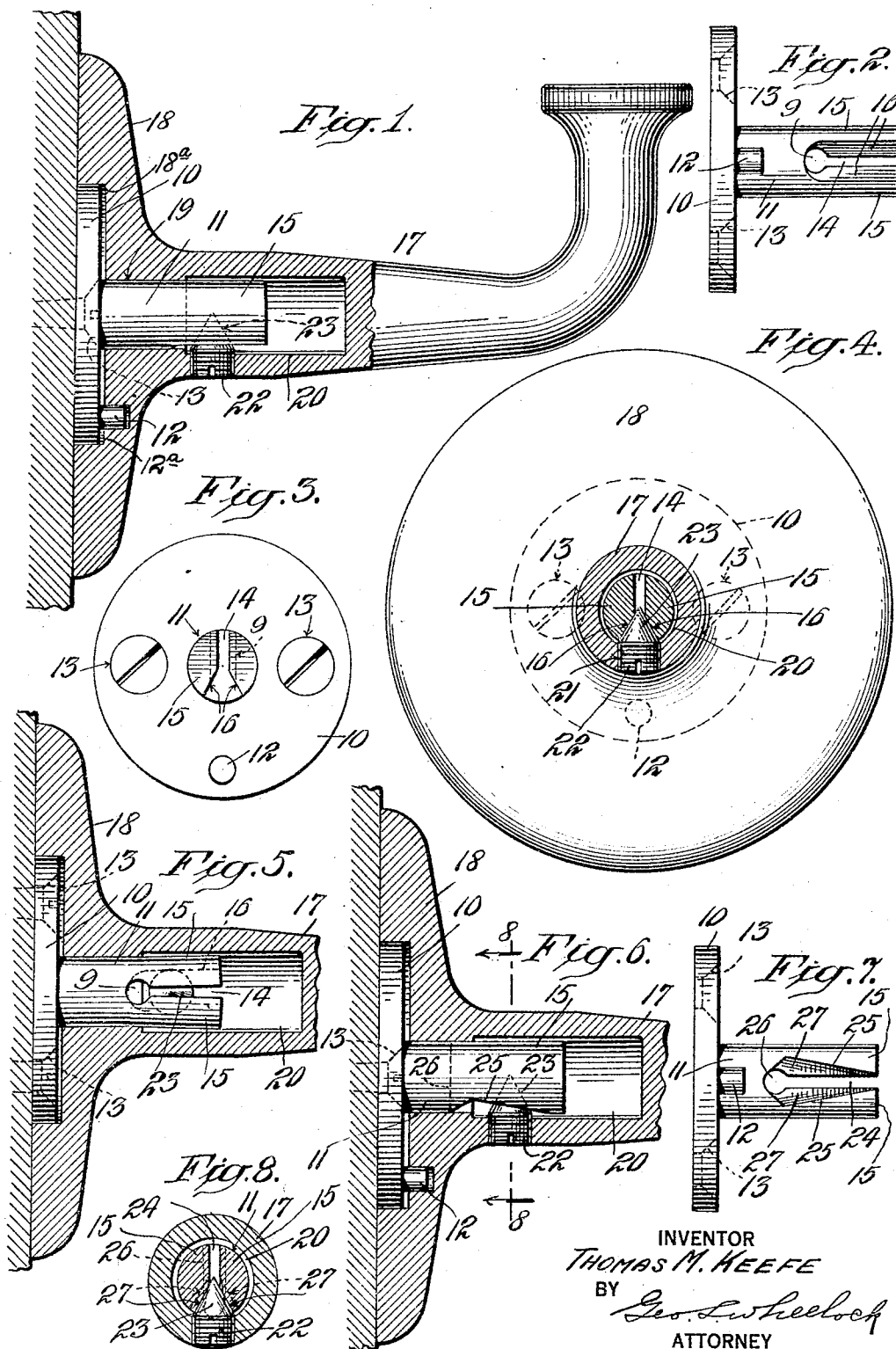
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SUPPORTING DEVICE

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SUPPORTING DEVICE

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The present invention relates to supporting devices of that type which is used for fastening and supporting fixtures, such as hardware, lighting fixtures, and, especially, lavatory and bathroom accessories, to wall surfaces, whether of marble, tile, glass, cement, concrete, brick, plaster or wood. In this type of supporting device the means for fastening and supporting are usually concealed.

The architectural profession and interior decorators, as well as the public, demand fixtures for lavatories and bathrooms and interior decorative purposes, particularly, to have exposed surfaces which are free from crevices, obtrusive screws, etc., which afford lodging places for dirt and bacteria, and which fixtures may be quickly and symmetrically mounted, and which remain rigid and secure in the positions in which they are fixed.

The difficulties with concealed screw attachments now available are many, in some cases more, and in others less; for example, there are prior devices of this type wherein set-screws are employed for the purpose of securing a supported part to a supporting part, in such a way as to conceal the screws which enter the wall or surface to which the entire device is fastened, such set-screws tending to force the stem of the supporting part against the top, or some other point of the socket in the fixture or supported part, and throws out of align the base surface of the flange of the supporting device. Also, the objectionable feature is encountered, in that the holding strain is not evenly distributed in the fixture socket or on the supporting-device stem, but comes mostly on the set-screw.

The present invention aims to overcome such difficulties and to present certain advantages, for example, the following: the supporting device can be quickly fastened to a wall with wood screws, expansion bolts, expansion shields, toggle bolts, or any of the devices commonly used for such purpose; in a few moments the fixture may be assembled with, and fastened to, the supporting device, so that the base of the fixture will be brought in close contact with the wall and there held

immovable and secure by expanding the specially constructed stem of the supporting device into the socket of the supported part or fixture; and the supporting device lines up with the base of the fixture, thereby presenting a symmetrical disposition of the mutually attached parts.

The above being among the many objects and advantages of the present invention, the same consists of certain features of construction and combinations of parts, to be hereinafter described and then claimed with reference to the accompanying drawing illustrating desirable embodiments of the invention, and wherein:

Fig. 1 is a sectional elevation illustrating a preferred embodiment of the invention;

Fig. 2 is a side elevation of the supporting part or member shown in Fig. 1;

Fig. 3 is an elevation of the supporting part, as viewed from the terminal of its stem;

Fig. 4 is a transverse cross-section of the connected supporting and supported parts or members;

Fig. 5 is a fragmentary sectional view of the complete assembled device, the section being taken at right angles to the section in Fig. 1;

Fig. 6 is a sectional elevation of a modified construction;

Fig. 7 is a side elevation of the supporting part or member shown in Fig. 6, the view being taken at right angles to that figure; and

Fig. 8 is a transverse section on the line 8-8, Fig. 6.

Referring to Figs. 1 to 5, inclusive, there is shown the preferred embodiment of the invention in connection with a hook, but of course the assembled device may take any desired exterior form to adapt it for any purpose for which the device is suitable. The base 10, is preferably of disk shape and the stem 11, extends centrally from the base 10, these parts being preferably integral, so as to constitute a one-piece supporting part or member. The base 10, is provided on that face from which the preferably cylindrical stem 11 projects, with a stud 12, parallel with stem 11. The base 10, is also usually provided with two screw-holes 13, 13, one at each

side of the stem 11, so that the said holes and the stem are in line. In the present instance the stud 12, is located on a line with respect to the stem, which line is at right angles to the line of the stem and the screw-holes, and it serves as a positioning-member, as will appear herein.

Stem 11, of the supporting part or member, is provided at its outer end portion with a transverse diametrical slot 14, which constitutes a gap with three open sides, that is to say, the gap is open at diametrically opposite sides of the stud 11, and is also open at the terminal of the stem, whereby the stem is preferably bifurcated, so as to form bifurcations 15, 15. These bifurcations may be pressed apart slightly and, when the pressure is removed, they being resilient will return to their original positions, the stem 11, as well as the other parts of the assembled device being made of metal, such as brass or steel. In order to provide a desirable expansion-action, a diametrical hole 9, is formed in the stem 11, at the points from which the bifurcations 15, 15, emerge, that is to say, at the bases of the bifurcations.

In the circumference of the stem 11, so as to be located at opposite sides of the gap 14, there are formed the bevel surfaces 16, 16, these being so formed at the adjacent edge portions of the bifurcations 15, 15, as to flare outwardly away from the longitudinal axis of the stem, as clearly shown in Fig. 3. It will be seen that the gap 14, bisects the stem 11, and that the bevel surfaces 16, 16, form obtuse angles with the surfaces at opposite sides of the gap 14. It will also be noted that the gap 14, lies preferably in a plane which passes through the stud 12 of the base 10.

The supported member 17, of any suitable form, is provided with an enlarged base 18, which is formed with a recess 18a, which is adapted to snugly receive the base 10, of the supporting part. A preferably cylindrical bore 19, is formed in the supported part 17, 18, which extends longitudinal to the base 18, or at right angles thereto, so as to receive the stem 11. Preferably the bore 19 is considerably longer than the stem, as shown in Fig. 1, and when the parts are fitted together, there will be a very snug fit between that portion of the stem which lies between the base 10, and the bifurcations 15, 15, and that portion of the bore 19, which directly surrounds said portion of the stem.

As shown in Figs. 1 and 4, the bore 19 is enlarged as at 20, this being done by counter-boring. The enlargement 20 is also preferably cylindrical, and its diameter need only be very slightly in excess of the diameter of the stem 11, such excess diameter allowing for the expansion of the stem, that is to say, the spreading apart of the bifurcations 15, 15. In the drawing the enlargement 20, is shown greatly exaggerated from what is

needed in practice, for the sake of making clear this portion of the invention. In practice it has been satisfactorily proven that an expansion of the bifurcations to as low as .0025 is satisfactory, although the degree of permitted expansion may be greater, expansions to as high as .009 having proven entirely satisfactory. However, it is to be clearly understood that within practical requirements there is no limit to the degree of expansion, providing the objects and aims of the present invention are accomplished.

A lateral screw-hole 21, is formed in the shank of the supported part 17, in such position as that, when the stem 11, is properly positioned in the bore 19, the plane in which the gap 14 lies, will bisect the hole 21. This means that when a set-screw 22, having a tapered and pointed portion 23, is screwed into the hole 21, the tapered surface 23, will be in bearing relation to the bevel surfaces 16, 16, of the bifurcations, and that the point of the screw will be entered in the gap 14, as more clearly shown in Fig. 4. It will be observed that when, as indicated in Fig. 5, the screw 22, has been screwed home, the bifurcations 15, 15 are slightly spread apart into the enlargement 20, the transverse hole 9, permitting the desired quality of expansion. This securely locks the assembled parts together. It will be noticed that the screw-hole and the set-screw 22, are located in an unobtrusive position at the bottom of the shank of the supported part or bracket.

It will be apparent that in making practical use of the illustrated and described preferred embodiment of the invention, the supporting part is first attached in any suitable manner to a wall, as by screws having heads which are counter-sunk in the screw-holes 13, 13. When the supporting part is secured in position, its stud 12, will be vertically below the stem 11. The part to be supported is provided with a socket 12a, which is adapted to receive the stud 12. In assembling the parts, care is taken that when the stem 11 is caused to enter the bore 19, the socket 12a will be in position so that the stud 12 will enter it, thereby preventing a twisting movement of the supported part around the base 10 and stem 11. When the parts are so assembled, the bifurcations 15, 15, will extend into the enlargement 20, and the gap 14, together with the bevel surfaces 16, 16, will be in opposed relation to the set-screw 22. At the moment of assembling the parts, the set-screw 22 is preferably slightly out, sufficiently so that the bevel surfaces 16, 16, will easily glide along the tapered surface of the set-screw. The supported part being now in position, the set-screw 22 is turned home so as to cause the point of its taper 23, to enter between the adjacent directly-opposed surfaces of the bifurcations 15, 15, and the tapered surface 23, to bear upon the bevel surfaces 16, 16, there-

by spreading the bifurcations apart into the slight enlargement of the bore 19. Thus the assembled parts will be firmly and positively locked together.

5 The tendency of the expansion-action on the bifurcations not only locks the members together, but it is apparent that this will act in a manner to pull the two assembled parts together, and one axially of the other there-
10 by forming a close and desirable contact of the surface of the base 18, with the wall to which the assembled parts are attached. The action described is obvious when it is borne in mind that the point of first contact
15 between the stem and the supported member, upon expansion of the bifurcations 15 of the stem, is where the expanded bifurcations of the stem is brought into contact with that portion of the supported member where its
20 bore is smaller, so that continued expansion will exert endwise pressure on the supported member in the direction of its base and thus move said member axially of the stem and make close contact with the wall to which the
25 assembled parts are attached, as stated.

In the modification of the invention illustrated in Figs. 6, 7 and 8, the same reference numerals are employed for those features which correspond to similar features in the preferred embodiment of the invention.
30 In the modification, the slot or gap 24, slightly differs from the gap 14. In the modification the gap 24, gradually widens towards the terminal of the stem, due to the fact that
35 the stem is cut away, as at 25, so as to form inclines away from the longitudinal axis of the stem, and outwardly toward its terminal. As will be seen, the cut-out portion at 25 gradually enlarge inwardly (see Fig. 7), to-
40 wards the diametrical hole 26, from which the bifurcations of the stem spring. As shown, the cut-away portions 25 at adjacent edges of the bifurcations, are beveled, as indicated by 27, so that there will be a bevel
45 surface at each side of the taper of the set-screw 22. It will be apparent that the principle of expansion of the stem is substantially the same as in the principal form of the invention, but it will be also clear that by reason
50 of the inclined surfaces at 25, 25, the tapered end of the set-screw will have a somewhat increased tendency to draw the assembled parts together longitudinally of the stem.

55 On referring to Figs. 5 and 7, it will be seen that the transverse hole 9 in the first figure and the transverse hole 26 in the second figure are either partially or wholly within the snug-fitting parts of the supporting
60 and supported members. This demonstrates that the first point of firm contact in expanding the bifurcations is within, and at the end of, the snug-fitting portion of bore 19 and is not within the enlargement of the bore.
65 It is clear that if such transverse hole is with-

in the said snug-fitting portion to a less extent than is shown in Fig. 5, a desirable resistance is afforded at the bases of the bifurcations, it being only necessary to have a small portion of the said transverse hole, or
70 that terminal of the slot, within the snug-fitting bore.

It will be obvious to those skilled in the art, that the illustrated and described invention is susceptible to more or less modification,
75 and to still be within the appended claims.

What I claim as new is:

1. A supporting device comprising a tubular member having at one end a substantially flat base for abutment against a body standing perpendicularly to the axis of the member and having a bore of varying diameter; and a stem having means for attachment to an abutment and formed with a longitudinally extending gap to produce oppositely disposed portions adapted to be spread apart, said tubular member being mounted upon said stem and axially slidable thereon and formed with a screw-threaded hole bisected by the plane in which the gap extends, and a screw fitted in said screw-threaded hole and formed with a tapered terminal positioned to lie within the gap formed in the stem and bear against opposite walls of the separated portions of the stem, and functioning to spread apart said portions within the larger diameter of the bore of the tubular member and also move the tubular member axially of said stem.

2. A supporting device comprising a member formed with a longitudinally extending bore of varying diameter lengthwise of the member, and a stem having means for attachment to an abutment and formed with a longitudinally extending gap to produce oppositely disposed portions adapted to be spread apart, said gap terminating short of one end of the stem to form a part to fit snugly within the smaller diameter of the bore, said tubular member being mounted on said stem and axially slidable thereon and formed with a screw-threaded hole bisected by the plane in which the gap extends, and a screw fitted in said screw-threaded hole and formed with a tapered terminal positioned to lie within the gap formed in the stem and bear against opposite walls of the separated portions of the stem and when screwed-up serving to spread said separated portions in the larger diameter of the bore of the tubular member and also move the tubular member axially of the stem.

3. A supporting device comprising a member formed with a longitudinally extending bore of varying diameter, and a stem formed with a longitudinally extending gap to produce oppositely disposed portions adapted to be spread apart, said gap terminating short of one end of the stem to form a part to fit snugly within the smaller diameter of the

bore of said tubular formed member, and
formed with a hole extending diametrically
of the stem and positioned to fit at least par-
tially within the smaller diameter of the bore
5 of the tubular member; said tubular member
being formed with a screw-threaded hole bi-
sected by the plane in which the gap extends,
and a screw fitted in said screw-threaded hole
and formed with a tapered terminal posi-
10 tioned to lie within the gap formed in the
stem and bear against opposite walls of the
separated portions of the stem and adapted
when screwed-up to spread said separated
portions in the larger diameter of the bore of
15 the tubular member and also expand a por-
tion of the stem fitting in the smaller diame-
ter of the bore of the tubular member and
functioning to move the tubular member
axially of the stem.

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