No. 850,097. PATENTED APR. 9, 1907.

A. J. PERKINS.

HANGER SUPPORT FOR CONCRETE CEILINGS.

APPLICATION FILED SEPT. 19, 1906.

Fig. 1.

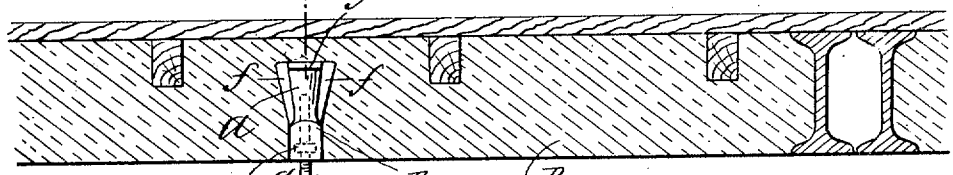


Fig. 2.

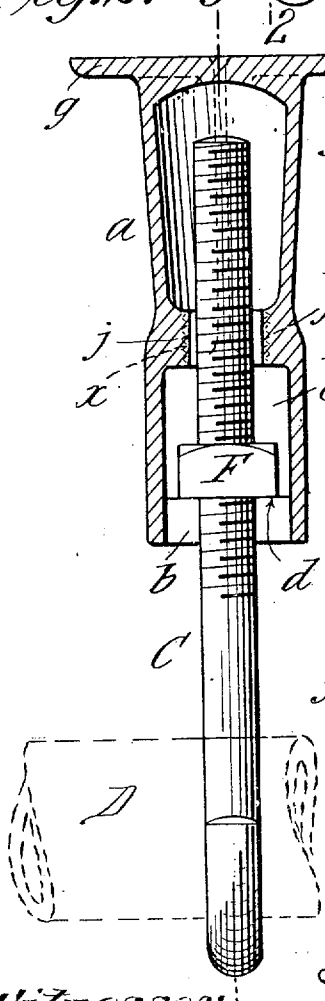


Fig. 3.

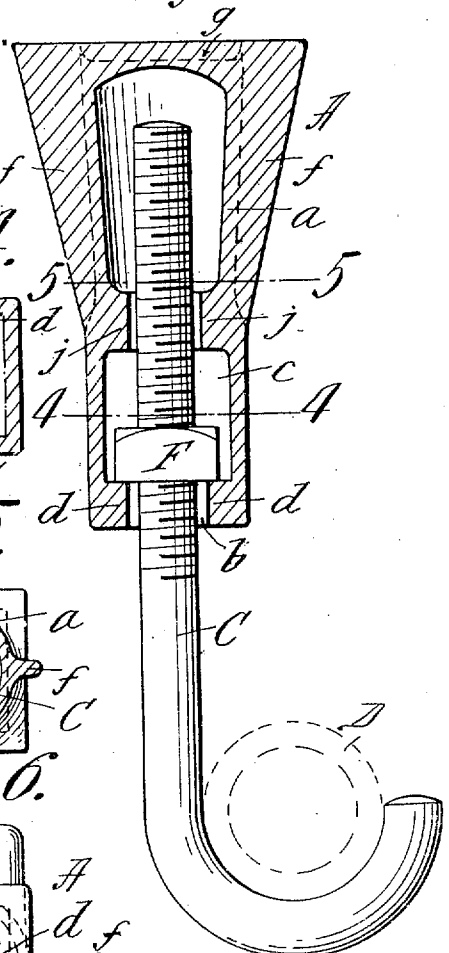


Fig. 4.

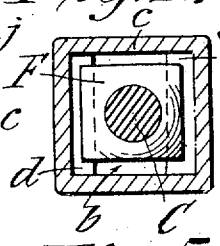


Fig. 5.

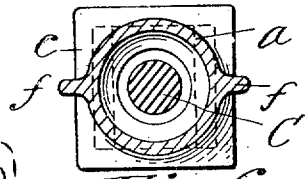
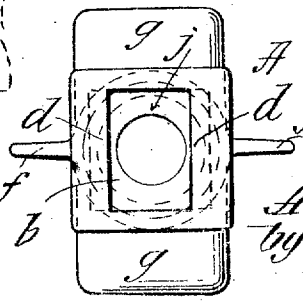


Fig. 6.



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UNITED STATES PATENT OFFICE.

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HANGER-SUPPORT FOR CONCRETE CEILINGS.

.No. 850,097. Specification of Letters Patent. Patented April 9, 1907.

Application filed September 19, 1906. Serial No. 335,229.

To all whom it may concern:

Be it known that I, ARTHUR J. PERKINS, a citizen of the United States of America, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Hanger-Supports for Concrete Ceilings, of which the following is a full, clear, and exact description.

This invention resides in a hanger-support, preferably made as a casting, to be embedded in a vertical position in a concrete ceiling and consisting of a hollow body having at the lower portion thereof a vertical downwardly-leading opening with ledges at opposite sides of such opening, said opening having a dimension in one direction greater than in the other, whereby a hanger-nut may be inserted in said opening and be positioned within the support to rest on said ledges.

The invention furthermore consists in subordinate features or formations and provisions for advantages hereinafter rendered apparent.

The improved hanger-support is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view through a concrete ceiling, showing a hanger-support embedded therein and interlocked therewith, the said support having combined therewith a hanger for a pipe. Fig. 2 is a vertical section, on a larger scale, through the support and hanger as taken on the line 2 2, Fig. 1. Fig. 3 is a similar sectional view, but as taken on the plane at right angles thereto, indicated by line 3 3, Fig. 2. Figs. 4 and 5 are horizontal cross-sections taken on lines 4 4 and 5 5, Fig. 3. Fig. 6 is an end view of the support as seen at the bottom thereof.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the hanger-support, B in Fig. 1 representing a concrete ceiling, in which the support is embedded, and C represents one form of a hanger which may be engaged with and suspended from said support, such hanger being of hook form, as suitable for supporting piping, as indicated at D.

The hanger-support consists of a hollow body *a*, having a downwardly-leading opening *b* through the lower end portion thereof with ledges *d d* at opposite sides of said opening, the said opening, as clearly seen in Fig. 6, having a dimension in one direction greater than in the other.

The lowered chambered portion *c* of the cast-iron or otherwise constituted hanger-support is shown as rectangular in form, while between such rectangular portion and its upper end the casting is cross-sectionally circular, is downwardly tapered, is made with sidewise extended webs or flanges *f f*, and has transversely-extended flanges *g g* at its upper end, such formation and flanges providing for an efficient interlocking of the hanger-support in the concrete, preventing displacement in a downward direction or under any force tending to turn or twist it from its given set position.

It will be observed that the flanges *f f* are substantially diametrically opposed and that the flanges *g g* are similarly related and that the two sets of flanges are, roughly speaking, arranged in quadrature. Moreover, the flanges *f f* and *g g* both project beyond the outer contour of the body of the hanger-support, the flanges *g g* projecting widely from the body, and the flanges *f f* are set free of the overhang of the flanges *g g*. From this arrangement flows a very important advantage as follows: As to downward strain, the horizontal flanges *g g* bear upon underlying bodies of concrete, which are not broken up or divided by the vertical flanges *f f*, while, as to a rotative force, these latter flanges are resisted by portions of the concrete structure which are not subjected to the downward compression of the flanges *g g*. The result is a very strong embedding of the hanger-support in the surrounding material.

F represents a nut, which in the present instance is shown as of a rectangular form having a distance from side to side greater than the width of the opening *b*, but not quite so great as the length of said opening, and the thickness of the nut is less than the width of said opening *b*, and it is to be understood that in the construction of a building having concrete ceilings the hanger-supports are embedded in suitable arrangement in the concrete ceiling, with their lower ends flush, or substantially so, with the under surface of the concrete which makes the ceiling, and when it is desired to mount a hanger the nut is inserted edgewise through the opening *b* within the chamber above the ledges *d d* and

then turned flatwise to rest on the ledges, as represented in Figs. 3 and 4, whereupon the hanger, having a screw-threaded or bolt-like shank, may be inserted through the opening *b* and engaged with and screwed through the threads of the nut more or less far, as desired, for acquiring a reliable supporting of the hanger and the proper adjustment thereof.

It will be perceived that the walls of the rectangular portion *c* of the hanger-body will engage with or be engaged by the nut, so that the latter will be prevented from rotating while the threaded shank of the hanger is screwing therethrough.

It is to be noted that the interior of the lower chambered portion *c* of the hanger is restricted in extent as to both lateral dimensions. Preferably these two dimensions are substantially equal, so that the chamber will be but little larger horizontally than an ordinary rectangular nut of the proper size. This construction insures that not only will the nut be locked against rotation while the bolt is being screwed therein, but the nut will be prevented from sliding sidewise in either direction to a material extent. This is also insured by limiting the length of the slot or opening *b*.

The chambered body has at an intermediate portion of its height an internal flange *j*, inclosing an opening permitting the free passage therethrough in an upward direction of the hanger-shank.

The flange *j* constitutes a seat against which the nut F abuts when the bolt is forced upward and rotated to cause its threads to engage with the tapped portion of the nut. It will be recognized that i is important to provide some such stop or abutment for the nut, else the latter would have to be forced clear to the top of the interior of the hanger before the threads of the bolt could secure a purchase. It will be obvious, however, that a flange is not necessary for the provision of such a seat, as any suitable form of stop or constriction in the bore of the hanger a short distance above the opening *b* would serve the purpose. This flange is a provision of possible utility to become available in cases, for instance, where the ledges might become broken away to lose the nut-support or in cases where some special hangers having larger shanks might be desirably used, and it is evident that by inserting a tap or thread cutting tool upwardly through the opening *b* a thread, as indicated at *x* by dotted lines in Fig. 2, may be formed in the inner edge of the flange *j* to receive screw engagement therewith of the threaded shank of the hanger of properly large diameter.

For the purpose just mentioned it follows that the circular aperture through the flange *j* would have to have a smaller diameter than the width of the opening *b* in order that it might fit closely the bolt which passes loosely through the latter. If the flange serves merely as a seat for the nut, it is apparent that such relation between the diameter of the flange-aperture and the width of the terminal opening need not exist.

Hangers having otherwise than hook formations at their lower portions will be provided for the supporting of various objects from the ceiling.

Various changes may be made in the design and shape of the parts without departing from this invention or sacrificing any of the advantages thereof, and it is manifest that the castings may be employed in horizontal positions in the side walls of buildings, as well as in ceilings.

I claim—

1. A hanger-support consisting of a body designed to be embedded in structural material and provided in its exposed face with a slotted opening and communicating with said opening with a chamber substantially square in cross-section and formed to prevent lateral movement of a contained hanger in any direction, the portions of the body at either side of the opening constituting internal bearing-ledges.

2. An elongated hanger-support consisting of a hollow body provided in one end with a longitudinally leading slotted opening and with internal bearing-ledges at either side of said opening, in combination with a hanger having an enlarged head resting upon said ledges and contained within a restricted chamber whereby said head is confined against lateral movement in either direction.

3. In combination, a hanger-support consisting of a hollow body designed to be embedded in structural material and having its exposed face provided with a slotted opening communicating with the interior, said body being provided also with internal bearing-ledges at either side of said opening, a nut constructed to be slipped through said slotted opening and to be turned to rest upon the ledges, and a bolt or threaded hanger constructed to take into said nut, said slotted opening being of but slightly greater length than the width of said nut and of less width than said nut.

4. A hanger-support consisting of a long narrow hollow body provided in one end with a longitudinally leading slotted opening and with internal ledges at either side thereof, the portion of the interior of the hanger immediately in communication with said opening being substantially square in cross-section, whereby a contained nut is held against rotation, and lateral movement.

5. A hanger-support consisting of a hollow body provided with a slotted opening and with internal bearing-ledges at either side thereof, the portion of the interior of the hanger immediately in communication with said opening being constructed to prevent

rotation of a contained nut, and said interior being provided at an intermediate point beyond said portion with a seat or stop to limit upward movement of a contained nut.

6. An elongated hanger-support consisting of a hollow body provided in one end with a longitudinally leading slotted opening and with internal bearing-ledges at either side thereof, the chambered interior of the body being constricted intermediate its length to arrest upward movement of a nut supported on said ledges and to permit passage through such constriction of a bolt threaded into the nut, the portion of said chambered interior between said ledges and said constriction being constructed to prevent rotation of the nut.

7. An elongated hanger-support consisting of a hollow body provided in one end with a longitudinally leading slotted opening and with internal bearing-ledges at either side thereof and internally intermediate its length with a flange having a circular aperture less in diameter than the width of said opening.

8. A hanger-support consisting of a hollow body having at the lower portion thereof a downwardly-leading opening with ledges at opposite sides thereof, the length of said opening in one direction being greater than the distance in another direction between the inner edges of said ledges, and said chambered body having at an intermediate portion of its height an internal flange surrounding an opening diametrically smaller than the width of the said lower opening.

9. An elongated hanger-support consisting of a hollow body open at one end for the reception of a hanger and having in the region of its opposite end transversely-disposed opposed flanges projecting widely beyond the outer contour of the body and in quadrature therewith longitudinally-disposed opposed flanges also projecting beyond the outer contour of the body and set clear of the overhang of said other flanges.

Signed by me at Springfield, Massachusetts, in presence of two subscribing witnesses.

ARTHUR J. PERKINS.

Witnesses:
WM. S. BELLOWS,
G. R. DRISCOLL.