March 29, 1932. F. G. DICKMAN 1,851,353

SOFFIT HANGER

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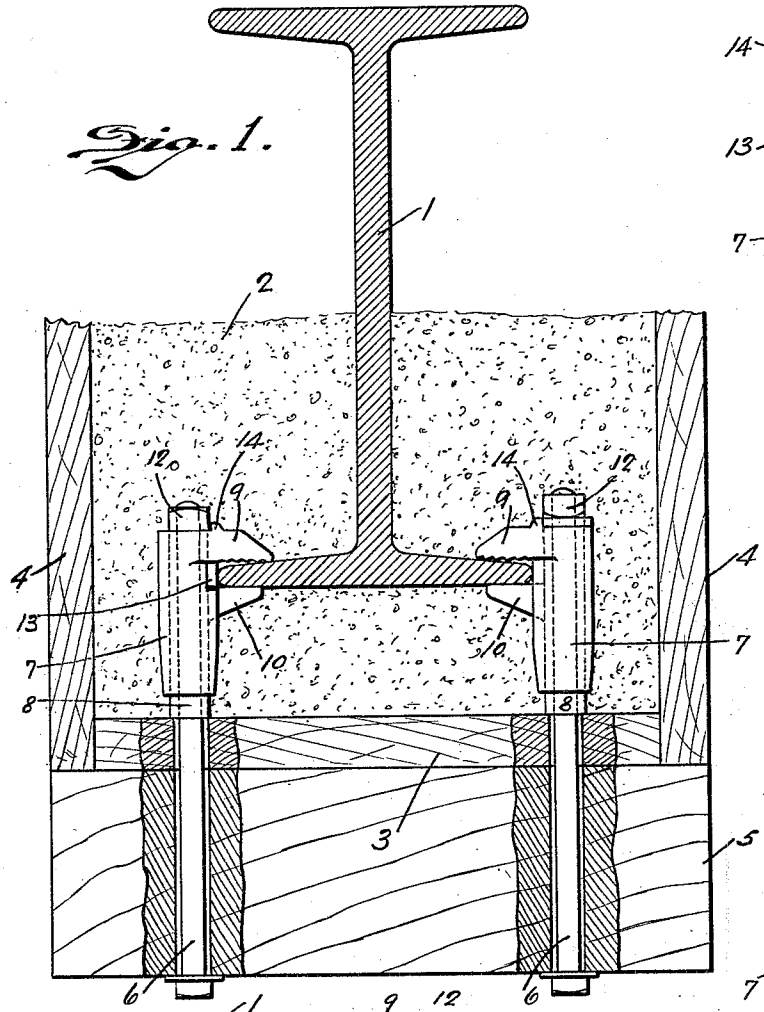
Fig. 1.



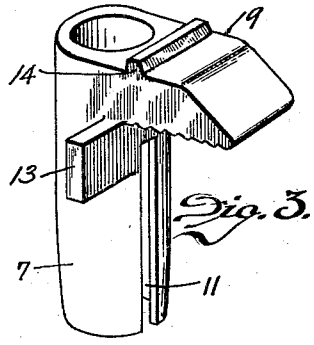


Fig. 3.

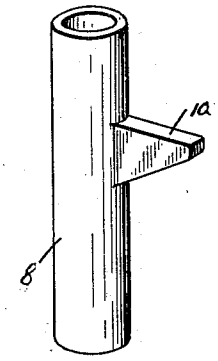


Fig. 4.

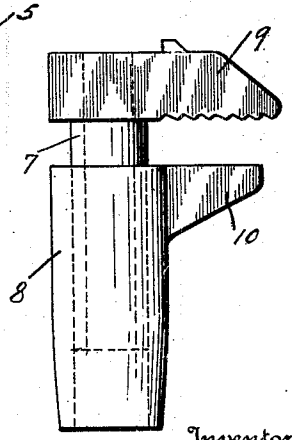


Fig. 5.

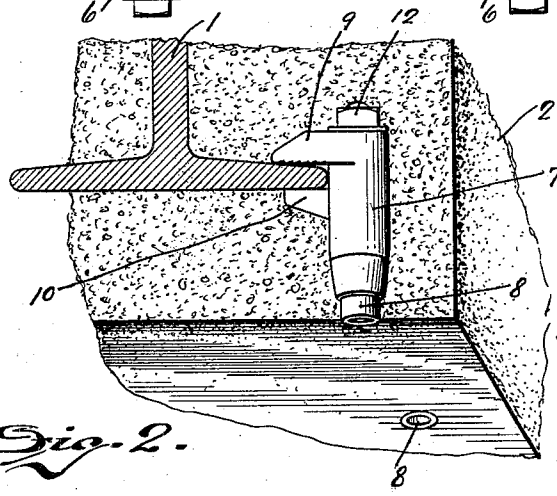


Fig. 2.

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SOFFIT HANGER

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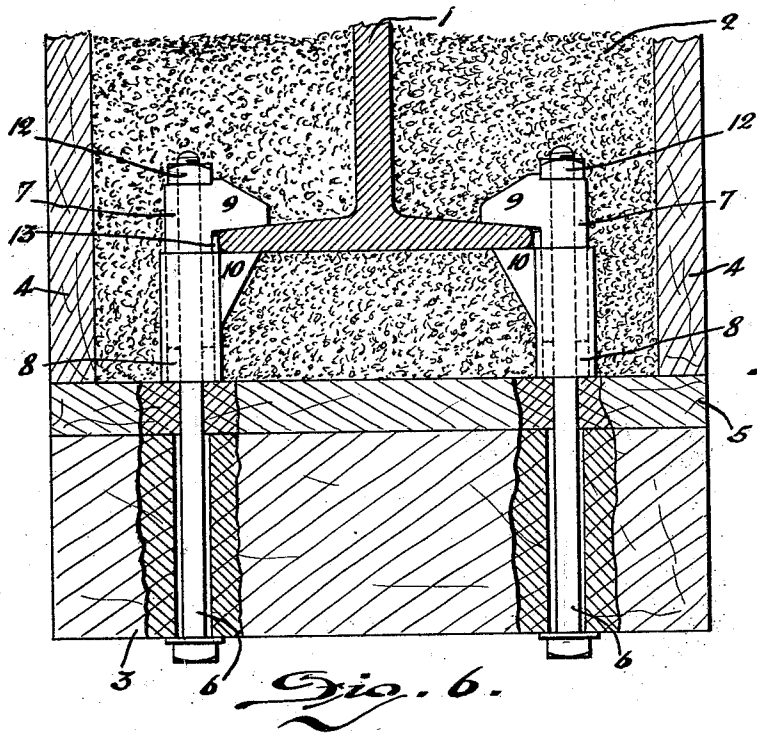

Fig. 6.

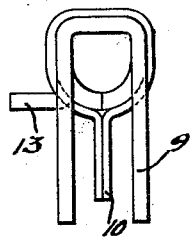

Fig. 8.

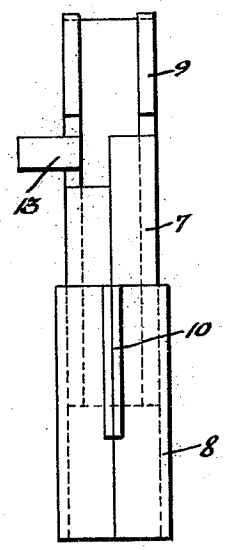

Fig. 9.

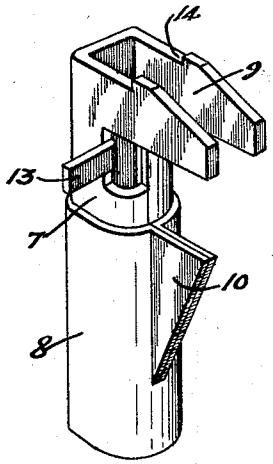

Fig. 7.

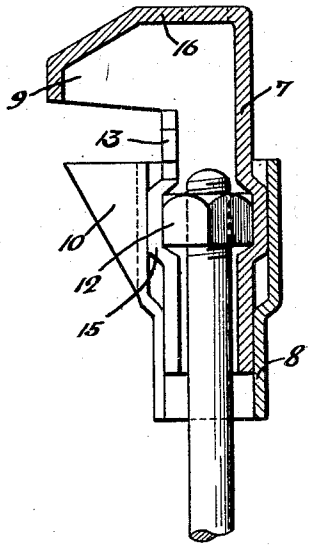

Fig. 10.

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Patented Mar. 29, 1932 1,851,353

UNITED STATES PATENT OFFICE

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SOFFIT HANGER

Application filed April 29, 1929. Serial No. 358,896.

This invention relates to concrete forms and the like and more particularly to a hanger for suspending form portions in predetermined spaced relation beneath a structural beam or other support.

It is quite common practice in building structures at the present time to encase structural steel beams within a body of concrete both for reinforcement and as protection against fire effects. While in most instances the overhead form construction is supported by struts or shores from below, it is not uncommon to hang such overhead form work upon the steel skeleton structure.

The present construction is a further development and amplification of that disclosed in my copending application Serial 325,091 filed December 10, 1928, and consists of a pair of relatively adjustable jaw members mounted upon a hanger bolt for engagement with the flange of a structural steel beam, the jaw engaging the under side of the beam being extended to serve also as a spacer for separating the form portions a predetermined distance from the supporting beam. The several parts are adjusted by the hanger bolt which engages with a nut carried by the upper jaw carrying member. The beam engaging portion and also the hanger bolt nut are permanently embedded in the concrete. The bolt being subsequently removed enables the embedded nut and beam engaging portion to be utilized as an insert for securing overhead structures such as line shafting, hangers, brackets and other structures to the ceiling.

The object of the invention is to simplify the structure as well as the means and mode of operation of such soffit or beam hangers for concrete forms whereby they will not only be cheapened in construction but will be more efficient in use, strong, durable, affording positive engagement with the structural supporting beam, adapted to automatically gauge the thickness of the encasing body of concrete, and unlikely to get out of repair.

A further object of the invention is to provide a soffit hanger or the like having gripper means for fixedly securing such hanger to a structural beam or other support.

A further object of the invention is to provide a soffit hanger which will limit the approach of the concrete form portion to the structural beam from which it is suspended and thereby automatically determine the thickness of the body of concrete beneath such beam.

A further object of the invention is to provide a soffit hanger or the like having parts for permanent embedment within the concrete body which may be subsequently utilized as an attachment insert for securing extraneous bodies to the concrete structure.

A further object of the invention is to provide a soffit hanger wherein a removable hanger bolt is utilized for rigidly and fixedly clamping the hanger to a structural beam and the concrete form in predetermined relation with such beam.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof and the mode of operation or their equivalents as hereinafter described and set forth in the claims.

Referring to the accompanying drawings wherein is shown the preferred but obviously not necessarily the only form of embodiment of the invention, Fig. 1 is an end elevation partially in section of a soffit form supported upon a structural beam by the hanger forming the subject matter hereof. Fig. 2 is a detail perspective view of a soffit or overhead beam comprising a concrete encased structural beam from which the form has been removed.

Fig. 3 is a detail perspective view of one of the gripper members which carries the upper or overhanging jaw.

Fig. 4 is a similar perspective view of the complementary gripper member telescopically engageable within that shown in Fig. 3 and carrying the lower complementary jaw.

Fig. 5 is a side elevation of a modification of these gripper and spacer members.

Fig. 6 is an end elevation similar to Fig. 1 illustrating a further modification wherein the hanger members are formed from sheet metal.

Fig. 7 is a perspective view of the telescopically engaged gripper members formed from sheet material.

Fig. 8 is a top plan view of the assembled hanger parts illustrated in Fig. 5.

Fig. 9 is a front elevation thereof viewed from the right of Fig. 5.

Fig. 10 is a vertical sectional view of the assembled hanger, wherein the hanger bolt nut is embedded within one of the tubular jaw carrying members.

Like parts are indicated by similar characters of reference throughout the several views.

Referring to the accompanying drawings, 1 is a structural beam of the skeleton building structure which is to be encased in concrete as indicated at 2. Enclosing the structural beam 1 is a soffit form comprising the bottom portion 3 and sides 4 which are supported at intervals upon transverse cleats 5.

In order to support this form while the concrete 2 is being deposited therein and until the latter is set or hardened, the form structure is suspended from the structural beam 1. The provision of a suitable hanger for this purpose is the dominant purpose of the present invention. In the present disclosure, hangers for the concrete form are shown engaged with the opposite margins of the supporting beam flange. These hangers may be oppositely disposed relative to each other or may be staggered throughout the length of the form as may be found most suitable, and in accordance with the size and weight of the form and concrete deposit 2.

Each of the form hangers comprises a hanger bolt 6 upon which are slidingly mounted two telescopic tubular members 7 and 8. In the construction shown in Figs. 1 to 4 inclusive, the tubular member 8 is enclosed within the member 7. The member 7 is provided with a laterally extending jaw 9 which overhangs the flange of the beam 1 while the relatively reciprocatory member 8 is provided with a complementary jaw 10 engageable with the under side of the beam 1 and coacting with the jaw 9 to grip such beam flange. The tubular member 7 is longitudinally slotted at 11 to accommodate the jaw 10 of the member 8. The member 8 is of such length as to serve as a spacer or spreader which predetermines the thickness of the deposit of concrete intermediate the underside of the beam 1 and the bottom of the form. This tubular member 8 abuts at its lower end upon the inner face of the bottom of the form 2, while its laterally projecting jaw 10 abuts upon the under side of the beam. A nut 12 for the hanger bolt 6 engages with the upper end of the tubular member 7 and as the bolt 6 is tightened relative to such nut, the parts are drawn into clamping engagement with each other. By tightening the bolt 6 relative to the nut 12, the bottom 2 of the form is drawn upwardly against the spacer member 8, the jaw 10 of which is thus forced against the flange of the beam 1 while at the same time the member 7 is retracted downwardly drawing its jaw 9 into firm gripping engagement with the upper side of the beam flange. Thus the beam flange is securely gripped between the jaws 9 and 10 and the concrete form is firmly clamped in its adjusted relation with the beam 1, its approach to which is limited by the interposed spacer member 8. To prevent the members 7 and 8 from being rotated or twisted out of position during the adjustment of the hanger bolt 6, the member 7 is provided with a laterally extending finger 13 abutting upon the margin of the flange of the supporting beam and resisting rotary motion. After the concrete has been deposited and has set within the form, the latter can be removed by unscrewing the hanger bolts 6 from the nuts 12 which are then embedded in the deposit 2 of concrete along with the hanger members 7 and 8. These parts are permanently embedded and may subsequently be employed for the attachment of extraneous bodies to the concrete structure. The embedded members 7 and 8 not only afford secure anchorage for the nuts 12 but also provide a passage way through the concrete deposit to such nut 12 through which an attachment bolt may be subsequently introduced for attaching a structure such as a line shaft hanger or the like to the building structure.

In Fig. 5 there is shown a modification wherein the relation of the members 7 and 8 is reversed. In this form of device, the tubular member 7′ carrying the jaw 9 is disposed interiorly of the member 8′ which carries the complementary jaw 10. The function and application of the members are the same as before described.

While the form of hanger members illustrated in Figs. 1 to 5 inclusive are especially adapted to be formed as metallic castings, the preferable construction is that illustrated in Figs. 6 to 10 inclusive, wherein such members are formed from sheet metal stampings. For such method of manufacture the spacer member 8 is preferably disposed exteriorly of the member 7 in the manner shown in Fig. 5 and in subsequent figures of the drawing. In such sheet metal or stamped construction, the tubular member 7 is preferably not exactly cylindrical in cross sectional form in order that the exteriorly disposed tubular member 8 telescopically adjustable thereon may not be capable of rotary motion. The overhanging jaw 9 in such construction comprises parallel wings formed integral with the tubular portion of the member 7 and projecting therefrom for overhanging engagement with the flange of the structural beam 1. Such stamped metal jaw portion 9 is preferably though not necessarily formed with indenta-

tions or offsets forming stop shoulders 14 to afford a seat for the hanger bolt 12. The lateral finger 13 which prevents rocking motion of the hanger member relative to the beam is also formed integral with the tubular portion 7 of the member, and is bent laterally therefrom at right angles to the jaw portion 9. The spacer member 8, which in this case is disposed exteriorly of the tubular member 7, is shaped to conform thereto so that such members are incapable of relative rotary motion, thus maintaining the complementary jaw 10, which is formed by bringing together triangular extension of the member 8, in vertical alignment with the jaw portions 9. Instead of leaving the top of the jaw 9 open, as shown in Figs. 7 and 8, the blank from which such member is formed may be shaped to afford sufficient material to bend over the top of such jaw portion and thereby close the intervening space as is illustrated in Fig. 10. In such case the top wall may be provided with an opening, as indicated by dotted lines 15 to enable the projection of the bolt 6 for engagement with the nut 12 resting on top of the member 7.

In Fig. 10 there is shown a further modification wherein during the forming operation of the member 7 from sheet metal, the nut 12 is inserted within the partially formed member and the walls thereof contracted around the nut thereby fixedly embedding the nut within the member 7 at a midheight point. This affords a greater clearance space within the member 7 above the nut 12 from which concrete is excluded by the top wall 16. Such clearance space facilitates the subsequent use of the embedded member and nut as an insert for attachment of other bodies to the concrete structure. The application and operation of the stamped member is as before described. The member 8 is duo-functional, serving both as a spacer and as a gripper member. The adjustment of the bolt 6 relative to the nut 12 axially adjusts the members 7 and 8 to cause their jaws 9 and 10 to forcibly grip the flange of the beam 1 and at the same time the bolt 6 draws the concrete form structure toward the beam 1 until limited by the interposed spacer member 8 where it is clamped by the tightening of such bolt 6.

The present construction not only firmly and securely supports the concrete form, but it insures the proper spacing of the form relative to the structural beam to afford the required stratum of concrete deposit beneath the beam. It enables the form structure to be aligned by unskilled labor and without the necessity of accurate measurement. Moreover, it supports the overhead form structure upon the skeleton frame of the building without the necessity of struts and shores, thus leaving the space below clear for carrying on other building operations. While its function in supporting the form structure is of primary importance, it has the further and none the less desirable function of serving as an insert for the attachment of machinery, hanger brackets or other structures to such concrete structure.

While the hanger has been shown and described more particularly in its application to overhead form work wherein the concrete form is suspended from the skeleton frame of the structure, it is to be understood that it is also applicable to other purposes and to the securing of forms in other positions. For example, it may be employed for securing the side walls of column forms in which case the beam 1 would comprise an upright or standard of the skeleton frame, and the form walls 3 and 4 would be vertically disposed.

The provision of the stop lugs or ribs 14 enables the bolt to be tightened from the bottom without danger of the nut turning relative to the hanger. However, under some conditions it may be desirable to tighten the nut from above in which case if the nut is chamfered, it is merely turned over with the chamfer side toward the hanger. In such position the chamfered corners pass easily over the stop lug or head 14. If, however, the nut does not clear the stop lug, a washer may be inserted beneath the nut to raise the nut sufficiently above the lug to permit its free rotation. The hanger bolts may be inserted from either above or below. When inserted from above, the stop lug or rib 14 engages with the head of the bolt to prevent relative rotation.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific details shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect and the invention is, therefore, claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. In a hanger for concrete forms and the like, a pair of telescopically adjustable tubular members, coacting jaws upon the respective members for clamping engagement with a support, and a hanger bolt extending through the said members and engaging with a suspended form portion with which one of the adjustable members engages, the adjust-

ment of the bolt causing relative adjustment of the form portion and the tubular members to effect clamping engagement of the jaws with the support.

2. In a hanger for concrete forms and the like, a pair of relatively adjustable jaw members slidingly connected one to the other for clamping engagement with a support, a hanger bolt associated with said members and having engagement with a concrete form portion upon which one of the members abuts, said jaw members being drawn into clamping engagement with the support by the adjustment of said bolt, a nut therefor, and a seat formed on one of said members for preventing unison turning of the nut and bolt during adjustment thereof.

3. A soffit hanger for concrete forms, a pair of tubular axially adjustable members, a hanger bolt extending through said members, clamp jaws carried by the respective members for clamping engagement with a support, the jaw of one of said members overhanging such support, the other member being interposed between the form portion and the under side of the support as a spacer, the members being adjusted relative to each other to grip the support therebetween and the form portion being adjusted into predetermined relation with the support as determined by the interposed spacer, by the adjustment of said bolt.

4. In a soffit hanger for concrete forms, a tubular sleeve of such length as to serve as a spacer for a concrete form beneath a structural beam, a laterally projecting jaw upon the sleeve, for engagement with the under side of the beam flange, a second sleeve slidingly adjustable relative to the first sleeve, a laterally projecting jaw upon the second sleeve for engagement with the upper side of the beam flange and cooperating with the first jaw to clamp the beam flange there between, a clamp bolt extending through the inner sleeve and engageable with a concrete form portion below the beam, and a seat formed on top of the second jaw member to receive the bolt nut and adapted to prevent the nut turning while the bolt is being adjusted.

5. In a soffit hanger for concrete forms, a pair of telescopically adjustable sleeves, gripper jaws carried by the respective sleeves, a clamp bolt, and a screw threaded portion interiorly of the inner sleeve with which said bolt engages, said bolt being engageable with a concrete form portion to clamp said form portion in relation with a structural beam the flange of which is engaged by said jaws.

6. As an article of manufacture, a soffit hanger comprising a pair of telescopically adjustable sleeves, laterally extending coacting jaws upon the respective sleeves, a bolt extending thru the sleeves, and a nut supported by one of said sleeves with which the bolt is adjustably engaged.

7. A soffit hanger for concrete forms comprising a pair of telescopically adjustable sleeves, clamp jaws carried by the respective sleeves for gripping engagement with a support, a clamp bolt therefor extending within the inner sleeve and a nut for the clamp bolt fixedly positioned within the inner sleeve.

8. A soffit hanger for concrete forms, comprising a pair of telescopically adjustable sleeves, clamp jaws carried by the respective sleeves for gripping engagement with a support, a clamp bolt therefor extending within the inner sleeve and a nut for the clamp bolt located within the inner sleeve, the sleeve being contracted about said nut to hold the nut from relative rotation.

9. A pair of telescopically adjustable sleeves, clamp jaws carried by the respective sleeves for gripping engagement with a support, a clamp bolt therefor extending within the inner sleeve a nut for the clamp bolt and a stop lug projecting from the top of the uppermost jaw forming beside said lug a seat to receive the nut which is held from rotation by said lug.

10. In a construction of the character described, a pair of telescopically adjustable sleeves, the inner sleeve being closed at one end, clamp jaws carried by the respective sleeves for gripping engagement with a support, and a clamp bolt having screw threaded engagement within the inner sleeve and engageable with a supported structure which bears against the outer sleeve to effect adjustment of said jaws.

In testimony whereof I have hereunto set my hand this 5th day of April, A. D. 1929.

FRANK G. DICKMAN.