No. 679,349. Patented July 30, 1901.

J. TUTEUR.

JOIST HANGER.

(Application filed Dec. 24, 1900.)

(No Model.) 2 Sheets—Sheet 1.

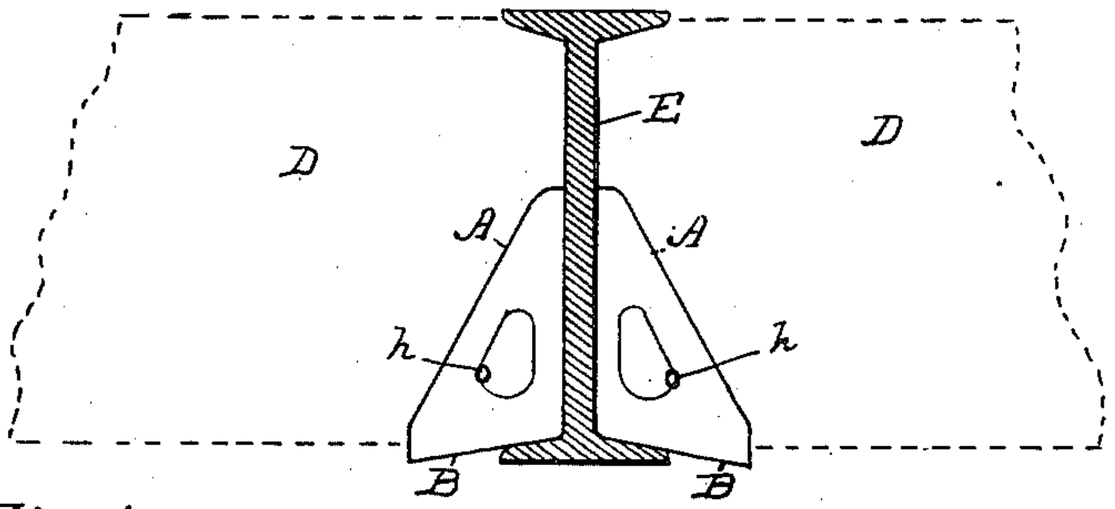


Fig. 1

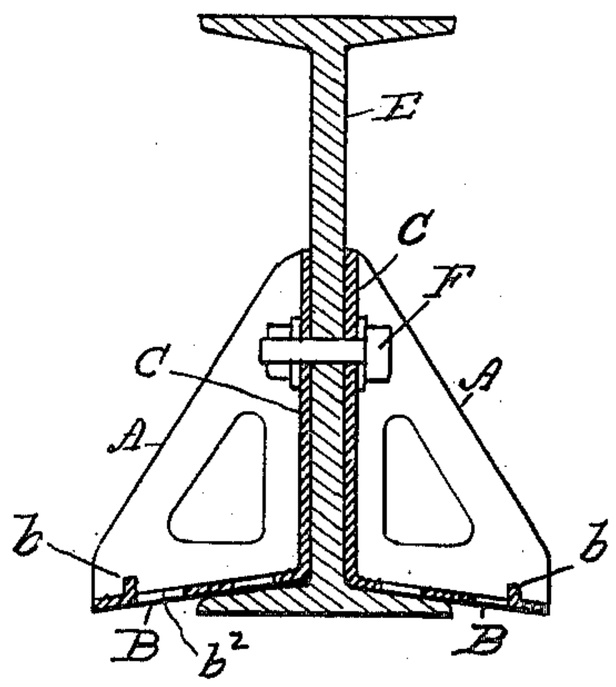


Fig. 2

Fig. 3

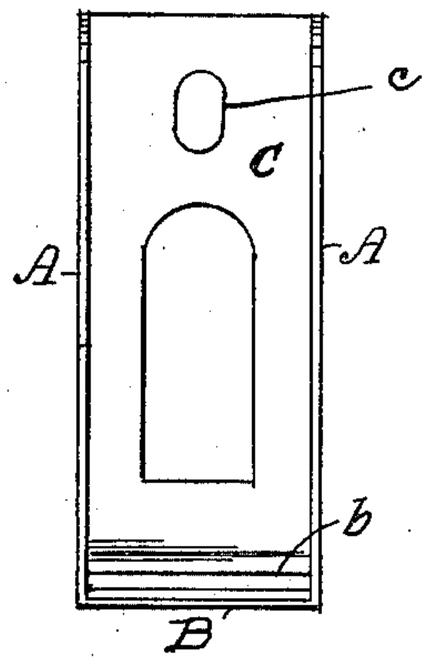
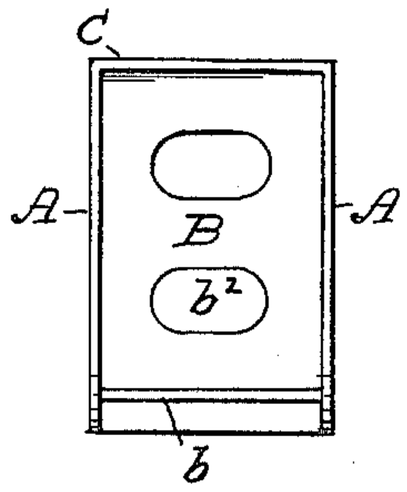


Fig. 4



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JOIST HANGER.

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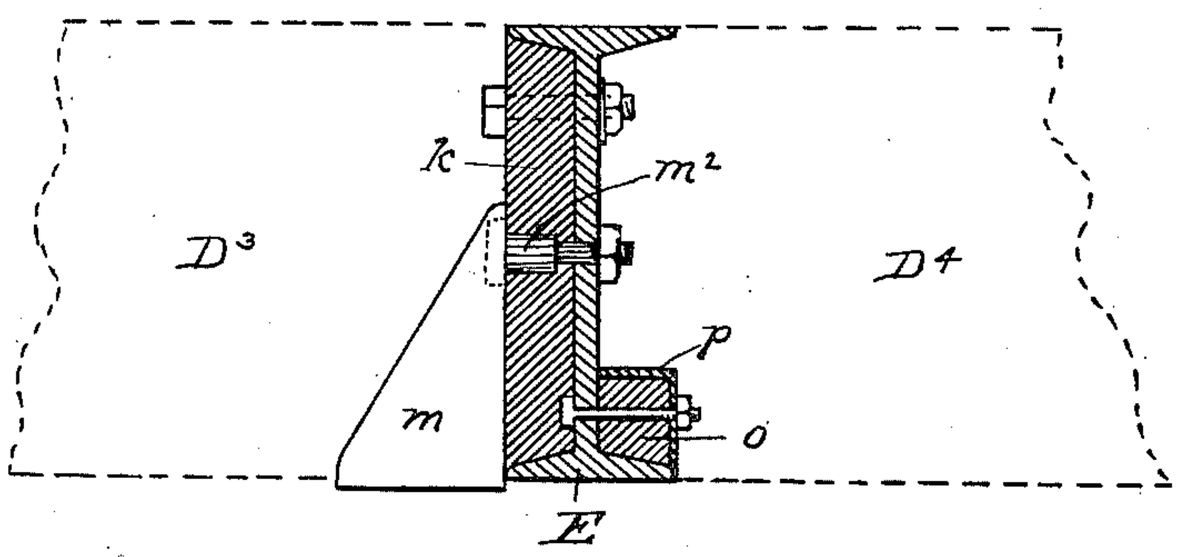
(No Model.) 2 Sheets—Sheet 2.

Fig. 5



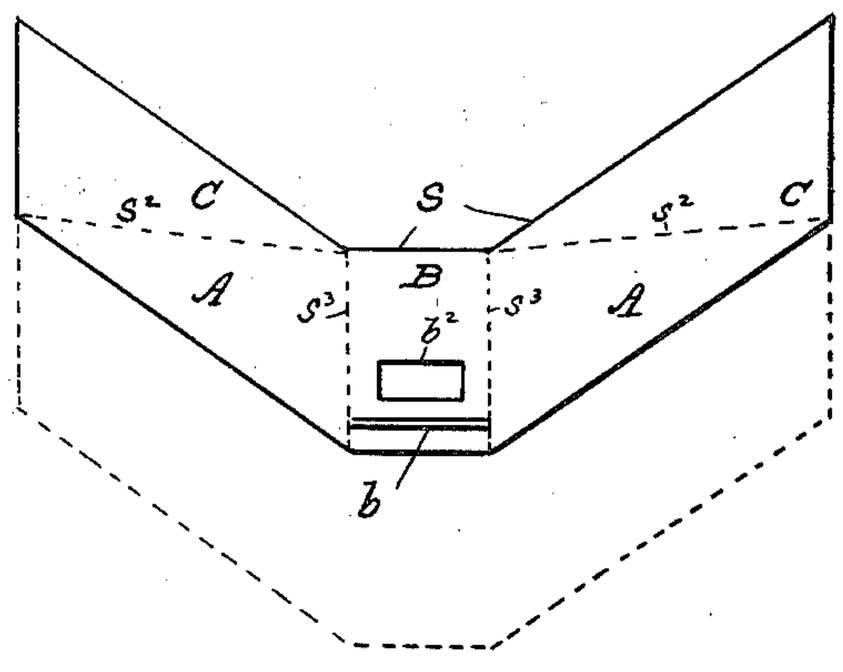
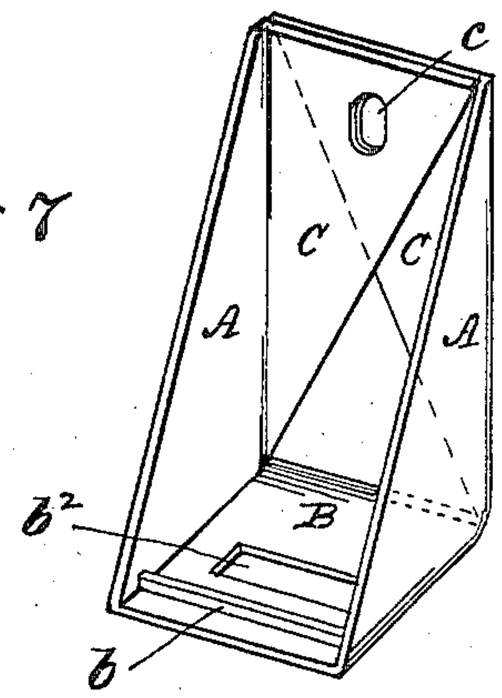


Fig. 6

Fig. 7



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UNITED STATES PATENT OFFICE.

JULIUS TUTEUR, OF CLEVELAND, OHIO.

JOIST-HANGER.

SPECIFICATION forming part of Letters Patent No. 679,349, dated July 30, 1901.

Application filed December 24, 1900. Serial No. 40,841. (No model.)

To all whom it may concern:

Be it known that I, JULIUS TUTEUR, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Joist-Hangers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to joist-hangers designed to be used in the construction of buildings wherein metal beams known as "I-beams" or "channel-beams" are used instead of wooden timbers or beams to support the floor-joists.

The object of the invention is to provide a hanger having all the advantages of those used with wooden beams and at the same time free from the disadvantages of the latter when applied to iron beams, while securing a hanger applicable alike to all forms and sizes of I-beams and channels; also, to secure the combination of increased supporting power and reduced weight in the hanger itself.

In the drawings hereto annexed, Figure 1 is a side view in elevation, showing two of my improved hangers secured to an I-beam, which is shown in section. Fig. 2 represents a central vertical section through the beam and hangers shown in Fig. 1. Fig. 3 is a front view, and Fig. 4 a top plan view, of the cast-metal hanger. Fig. 5 represents methods heretofore employed in supporting wooden joist upon I-beams. Fig. 6 shows the blank from which the wrought-metal hanger is formed, and Fig. 7 is a perspective view of the completed hanger bent up from plate metal.

A represents the side or cheek of the hanger. B is the foot, upon which rests the joist D, (indicated by dotted lines in Fig. 1,) and C is the back, which abuts against the beam E, to which the hanger is rigidly secured by a bolt or bolts F, passed through a slot *c*, formed in the back of the hanger. A single bolt may secure two hangers placed opposite each other, as shown in Fig. 2.

The foot of the hanger makes an obtuse angle with the back and their junction is curved on a short radius, as seen in Figs. 2 and 7, and thus the hanger is adapted to fit any size of I-beam. Across the foot of the hanger, a short distance back from the front thereof, a ridge or web of metal *b* extends from one cheek to the other, and being indented into the under side of the joist serves to lock or tie the joist rigidly to the hanger, and consequently to the beams E. This web is vastly more efficient for this purpose than any means which have before been used, such as teeth struck up from or cast integral with the foot or nails driven into the joist through openings in the hanger, &c. Such teeth bend or break off under comparatively small strain, and nails or spikes when subjected to any considerable strain either bend or draw, allowing the joist to yield. The web *b*, on the contrary, has too broad a connection to the hanger to break off and is, besides, supported by the cheeks. It is, however, easy to drive nails through openings in the cheeks or foot of the hanger, as indicated at *h* in Fig. 1, should it be desired to supplement the strength of the web *b*, which will usually not be necessary. An opening b^2 is preferably provided in the foot B to permit the nailing of laths or furring to the joist.

The slot or opening *c* is placed at such a distance from the foot of the hanger that with the usual sizes of I-beams the bolt-hole through the beam will be at or above the "neutral line" of stress of the beam, (which separates the area of tension from that of compression.) Thus a hanger having the slot *c* seven inches from the foot could be used with either a twelve-inch or fifteen-inch beam. For ordinary purposes the hanger would be made with the slot *c* six inches above the foot, which would adapt it to use with any I-beam from nine-inch to twelve-inch depth.

The hangers heretofore used with I-beams have been supported upon the top flange of the beam and depend below the lower flange, against the edge of which they rest instead of being supported thereon, thus adding a great deal of weight upon the beam and affording only the supporting-strength of the hanger to the beam. Where it has been attempted to use with I-beams the shorter hangers, such as can be used with wooden beams, (of which type of hanger that shown in the patent to W. Reuschel, No. 414,169, dated Oc-

tober 20, 1889, is the most efficient,) it has been found necessary to use supplementary joists bolted to the I-beams, to which supplementary joists the hangers were secured in the manner shown in the left half of Fig. 5, in which *k* represents a supplementary joist bolted to the I-beam E, to which supplementary joist the hangers *m* are secured by seating their projecting portions m^2 in holes formed in the joist *k* and supporting the joist D^3. (Indicated by dotted lines.) This construction is expensive, involves extra weight, more numerous parts, and gives no increased supporting strength beyond that of the hanger itself. Where joists have been supported on the I-beams without hangers, the practice has been, as shown in the right half of Fig. 5, to bolt on a beam or stringer *o* with an angle-iron *p* outside of it, and to then notch the joist upon the angle-iron and stringer, as shown by D^4 in Fig. 5. This construction, however, has the objection of weakening the joist and rendering it liable to split if heavily loaded. For this reason that construction has been practically abandoned, and the use of hangers, as shown in the left half of Fig. 5, or hangers depending from the top flange of the I-beam, are now only employed.

My improved hanger may be made of malleable casting or may be bent up from plate metal. In Fig. 6 is shown the form of the blank stamped from the plate for bending, the dotted lower half of this figure showing the manner in which the blanks are cut from the plate without waste. *s* represents the blank, and s^2 s^3 indicate the lines along which the blank is bent to form the complete hanger. (Shown in Fig. 7.) The slot *c*, the web *b*, and the opening b^2 in the foot of the hanger may be formed in the blank or after the hanger has been bent into shape.

Among the advantages of my improved hanger are these: The foot of the hanger seating closely upon the lower flange of the I-beam the supporting strength of the hanger is thereby increased, the effect being substantially to extend the flange itself beneath the joist; a minimum amount of weight in the hanger is required for an increased supporting strength; the same hanger can be used with any width of joist and with a wide range of depth of beam; the hanger will fit any I-beam or channel and a variation of unevenness in the thickness of the flange does not affect the seating or the bolting of the hanger; no extra or supplementary parts are required to be attached to the beam; the hanger is adapted to be made of malleable casting, which is better, cheaper, and stronger (for equal weight) than stamped or wrought hangers; the tie of the joist to the beam is stronger and the increase of weight on the joist serves to more tightly tie it to the hanger and beam; the number of parts is reduced, one bolt serving for two hangers, and the I-beams can be punched (or drilled) at the mills for the bolt-holes with a certainty of fitting the hangers when the latter are applied.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A joist-hanger having its back and foot meeting at an obtuse angle and rounded on a short radius at the meeting-point, cheeks or sides joining the back and foot, a ridge or web entirely across the foot near the front, and a slot in the upper portion of the back at or above the level of the neutral line of the beam, substantially as described.

2. A joist-hanger having its back and foot flat and meeting at an obtuse angle and rounded on a short radius at the meeting-point, cheeks or sides joining the back and foot, a ridge or web entirely across the foot near the front, and a slot in the upper portion of the back at or above the level of the neutral line of the beam, substantially as described.

3. A joist-hanger having its back and foot meeting at an obtuse angle and rounded on a short radius at the meeting-point, cheeks or sides joining the back and foot, a ridge or web entirely across the foot near the front, an opening in the foot, and a slot in the upper portion of the back at or above the level of the neutral line of the beam, substantially as described.

4. A joist-hanger having its back and foot meeting at an obtuse angle and rounded on a short radius at the meeting-point, cheeks or sides joining the back and foot, a ridge or web entirely across the foot near the front, and a vertically-arranged slot in the upper portion of the back at or above the level of the neutral line of the beam, substantially as described.

In testimony whereof I hereto affix my signature in presence of two witnesses.

JULIUS TUTEUR.

Witnesses:
HATTIE A. STEVENSON,
C. C. LOUES.