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GRATING CLAMP

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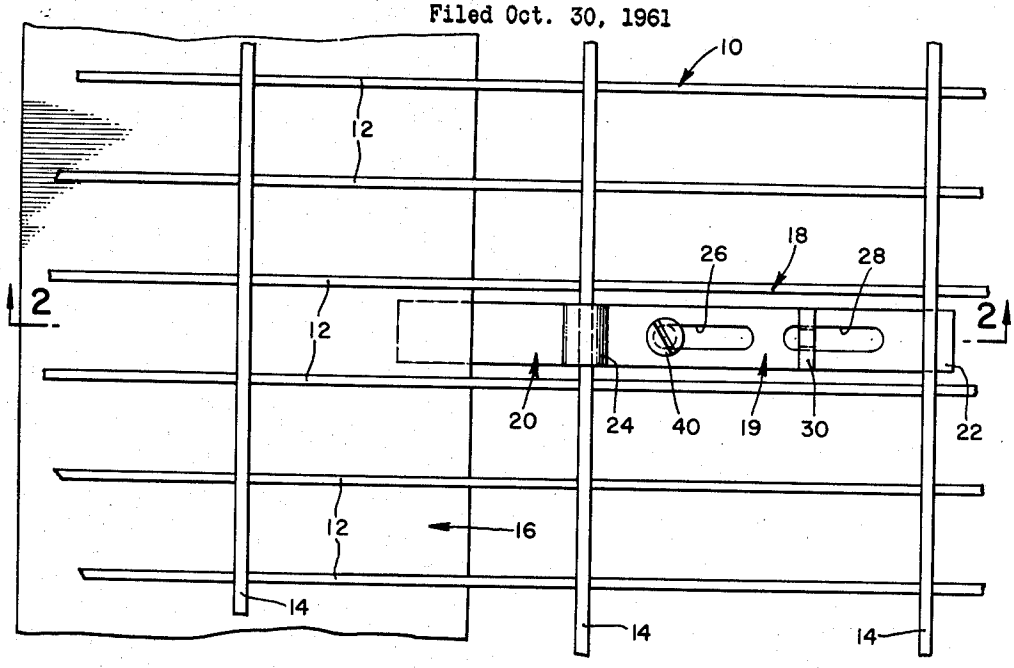


FIG. 1.

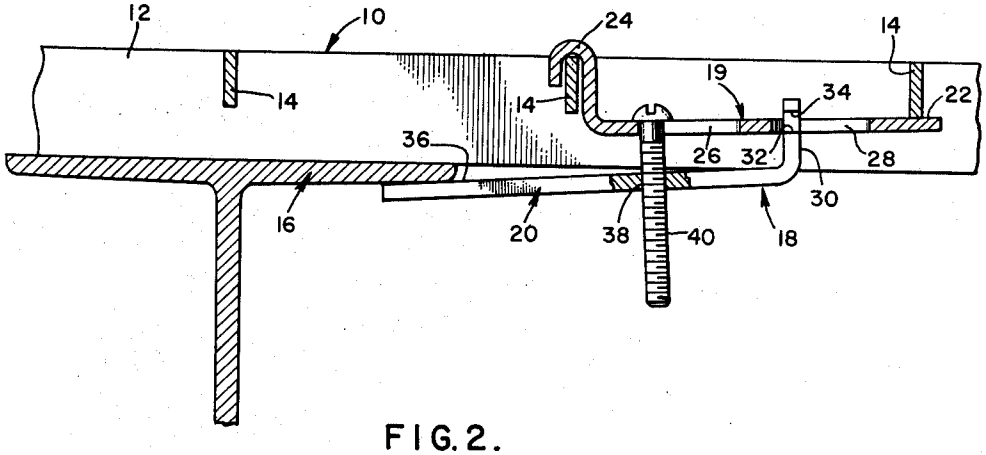


FIG. 2.

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GRATING CLAMP

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8 Claims. (Cl. 189—84)

This invention relates to a clamp for securing a grating to an underlying horizontal support member.

It is the primary object of the invention to provide a grating clamp which can be positioned rapidly from the top side of a grating to secure the grating to an underlying support member.

It is a further object of the invention to construct a grating clamp of two elongated members each of which has a width less than the distance between adjacent longitudinal bearing bars of a grating and a length greater than the distance between adjacent lateral cross-bars of a grating, so that each member may be placed through adjacent lateral cross-bars of the grating and therefore permit the grating to be secured in place by a clamp installed from the top side of the grating.

Another object of the invention is to provide a grating clamp comprised of two elongated members which can be assembled together only when the members are at a right angle to each other and are securely connected together when the two members are longitudinally aligned.

A still further object of the invention is to provide a clamp which can be easily put into position and caused to be tightened to secure a grating to an underlying support by a tool operated from above the grating.

An additional object of the invention is to provide a grating clamp having two resilient elongated members brought together by a screw to clamp a grating to an underlying support with the resiliency of the two members providing a self-locking effect on the screw.

Still another object of the invention is to provide a simple and inexpensive grating clamp which can be quickly and easily installed.

The above and other objects will more fully appear from the following description in connection with the accompanying drawing, wherein:

FIGURE 1 is a plan view of a grating overlying a support member with a clamp in accordance with the invention, securing the two; and

FIG. 2 is a cross-section on line 2—2 of FIG. 1 with the second elongated clamp member being shown only partially in section.

Referring to the drawing in detail, a grating, generally designated at **10**, which is desired to be securely clamped to an underlying support **16** is constructed of a plurality of relatively closely spaced longitudinal bearing bars **12** and more widely spaced lateral cross-bars **14**. The bearing bars **12** of the grating are supported from their undersides by the horizontal member **16** which laterally underlies the entire grating. This support member **16** may be in the form of an I-beam as partially illustrated in the drawing or any other horizontal member which has a bottom surface near the grating against which a portion of the clamp, generally designated at **18**, may abut.

The clamp **18** is constructed of first and second elongated clamping members, **19** and **20**, respectively, both of which have a width less than the distance between adjacent longitudially bearing bars **12** of the grating and a length greater than the distance between adjacent lateral grating cross-bars **14**. By having these dimensions,

the first and second elongated members **19** and **20** may be inserted between the longitudinal bearing bars **12** of the grating into clamping position with their ends abutting against the cross-bars **14** and support member **16** in a manner to be more fully explained.

The first elongated clamp member **19** has at one of its ends an upwardly disposed bearing surface **22** which, when the clamp is in a position to secure the grating, bears against the underside of one of the grating cross-bars **14**. At the other end of the first elongated member **19** is an inverted U-shaped projection **24** which hooks over and is supported by another lateral cross-bar **14**. This projection need not have the exact shape as shown in the drawing but merely must provide a surface which will bear upon the top of a cross-bar **14**. Between the ends of the first elongated member **19** are two longitudinally spaced slots **26** and **28** which will serve a function which will be more clearly understood as the description progresses.

The second elongated clamp member **20** is disposed below and has its main body spaced from the first member **19**. However, at one end of the member **20** there is an upstanding projection **30** which is slidable in slot **28** in the first elongated member **19**. On the projection **30** there are a pair of shoulders **32** and **34** which are wider than the slot **28** and prevent the projections from falling out of the slot. The shoulders **32** and **34** are spaced apart a distance greater than the thickness of the first elongated members **19** which permits the second member **20** to be swingable to some degree in a vertical plane relative to the first member. In other words, this projection and slot arrangement forms a transversely axial pivotal connection between the two elongated clamping members which is necessary for the clamp to function.

That portion of the projection **30** which is between shoulders **32** and **34** and is disposed within the slot **28**, has a cross-sectional thickness less than the width of slot **28** thereby permitting the second elongated member **20** to be swingable in a horizontal plane relative to the first member **19**. In order to assemble the first and second clamp members **19** and **20** together, the second member **20** is merely positioned at a right angle to the first member and projection **30** is inserted into the slot **28** with the shoulders **32** and **34** being positioned on either side of member **19**. Since the portion of the projection between the shoulders **32** and **34** has a thickness less than slot **28**, the second member **20** may be merely swung around into alignment with first member **19**, thereby locking the two members together.

In order to bring the two clamping members **19** and **20** into position to secure the grating **10** to the support member **16**, a screw **40** is provided. The screw is inserted through the slot **26** in member **19**, the slot being of a width less than the diameter of the screw head for retaining the screw in the slot, and is threaded into a screw-threaded hole **38** in the second member **20**.

To apply the clamp **18** to the grating **10** and underlying support member **16**, the two elongated members **19** and **20** are assembled by inserting projection **30** into slot **28** as explained hereinabove. Then the two assembled members are slid between adjacent longitudinal grating bars **12** into a position so that U-shaped projection **24** fits on top of one cross-bar **14** and bearing surface **22** abuts against the underside of an adjacent cross-bar and the free end of the second elongated member having an upwardly disposed bearing surface **36** is positioned

below support member **16**. Next, screw **40** is inserted through slot **26** in the first member **19** into hole **38** in the second member. Being so assembled, the clamp is brought into securing position by merely inserting a screwdriver from the top of the grating through the spaced grating bars into the screw-head slot, and by turning the screw, the second clamp member **20** is caused to be drawn upwardly toward the first clamp member **19**. When the screw **40** is snugly tightened the grating will be secured to support member **16** as shown in FIG. 2, wherein the bearing surface **36** abuts the bottom of support **16**, U-shaped projection **24** bears against the top of one grating cross-bar **14** and the bearing surface **22** on the end member **19** is firmly seated against the bottom of the adjacent cross-bar **14** due to the force exerted on the bottom of member **19** by projection shoulder **32**.

The clamp may also be applied to a grating by assembling the entire clamp, members **19**, **20**, and screw **40**, before inserting the clamp between the longitudinal bearing bars of the grating; or instead, it may even be more convenient to assemble the parts by placing the first element **19** into position and then connecting member **20** to it. In the latter case, it would of course be necessary that the space between adjacent grating bars be great enough to permit a person to insert his hand therethrough, which would be necessary to rotate member **20** in a horizontal plane to lock projection **30** in slot **28** of the first elongated member.

Because the elongated clamp members **19** and **20** are preferably of a metallic material and are relatively thin, they have an inherent resiliency. Due to this property, when the screw **40** is tightened, elongated member **20** will become slightly flexed and consequently provide a self-locking effect on the screw due to its binding against the screw threads.

It can be seen that I have provided a simple and inexpensive clamp which permits the rapid clamping of a grating entirely from the top side thereof.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the following claims.

I claim:

1. A grating clamp comprising a first elongated member having a slot adjacent one of its ends, a second elongated member spaced below said first member having an upstanding projection at one of its ends slidable in said slot, a shoulder on said projection wider than said slot bearing against the underside of said first member, and means between said first and second members for drawing the other of their ends together including a second shoulder on said projection wider than said slot and disposed above said first member, said shoulder being spaced from said first mentioned shoulder a distance greater than the thickness of said first member.

2. A grating clamp comprising a first elongated member having a slot adjacent one of its ends, a second elongated member spaced below said first member having an upstanding projection at one of its ends slidable in said slot, a shoulder on said projection wider than said slot bearing against the underside of said first member, and means between said first and second members for drawing the other of their ends together the portion of said upstanding projection disposed within said slot has a cross-sectional thickness less than the width of said slot thereby permitting said second members to be swingable relative to said first member in a horizontal plane.

3. A grating clamp comprising a first elongated member having a slot adjacent one of its ends, a second elongated member spaced below said first member having an upstanding projection at one of its ends slidable in said slot, a shoulder on said projection wider than said slot bearing against the underside of said first member, and means between said first and second members for drawing the other of their ends together including an upwardly and outwardly extending projection at its other end.

4. A grating clamp comprising a first elongated member having a slot adjacent one of its ends, a second elongated member spaced below said first member having an upstanding projection at one of its ends slidable in said slot, a shoulder on said projection wider than said slot bearing against the underside of said first member, and means between said first and second members for drawing the other of their ends together including an inverted U-shaped projection at its other end.

5. A grating clamp comprising a first elongated member having an inverted U-shaped projection at one end and two longitudinally spaced slots therein, a second elongated member spaced below said first member having an upstanding projection at one of its ends slidable in the slot in said first member adjacent its other end, said projection having a cross-sectional thickness less than the width of said slot, a pair of shoulders on said projection above and below said first member, said shoulders being spaced apart greater than the thickness of said first member, said second member having a screw-threaded hole intermediate its ends and a screw extending through the slot in said first member adjacent said one end into said threaded hole in said second member.

6. A clamp for a grating having relatively closely spaced longitudinal bearing bars and more widely spaced lateral cross-bars and a horizontal support member laterally underlying part of said grating comprising a first elongated member of a width less than the distance between adjacent longitudinal bearing bars and a length greater than the distance between adjacent lateral cross-bars, one end of said first member having an upwardly disposed bearing surface for engaging the underside of a lateral cross-bar, the other end of said first member being disposed above the first mentioned end of said first member and adapted to engage the upper side of an adjacent lateral cross-bar, a second elongated member of less width than the distance between adjacent longitudinal bearing bars and a length greater than the distance between adjacent lateral cross-bars, one end of said second member having an upwardly disposed bearing surface for engaging the underside of a horizontal support member, the other end of said second member being connected to said first member for swinging movement relative thereto in a vertical plane, and an adjustable connector between said first and second members movable to draw said other end of the first member toward said one end of the second member.

7. The combination with a grating having longitudinal bearing bars and lateral cross-bars and a horizontal support member laterally underlying part of said grating, a grating clamp having a first elongated member lying between adjacent longitudinal bearing bars with one end overlying a lateral cross-bar and the other end underlying an adjacent lateral cross-bar, a second elongated member spaced below said first member, means pivotally connecting one end of said second member to said first member, the other end of said second member being positioned beneath said horizontal support member, and means between said first and second members for drawing said members together.

8. In combination with a grating having relatively closely spaced longitudinal bearing bars and more widely spaced lateral cross-bars and a longitudinal support member underlying part of said grating, a grating clamp having a first elongated member of a width less than the distance between adjacent longitudinal bearing bars and a length greater than the distance between adjacent lateral cross-bars, said first member lying between adjacent longitudinal bearing bars with one end overlying a lateral cross-bar and the other end underlying an adjacent lateral cross-bar, a second elongated member of less width than the distance between adjacent longitudinal bearing bars and a length greater than the distance between adjacent lateral cross-bars, said second elongated member being

spaced below said first member, means pivotally connecting one end of said second member to said first member for swinging movement relative to said first member in a vertical plane, the other end of said second member being positioned beneath said horizontal support member, and means between said first and second members for drawing said members together.

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