Dec. 24, 1935. S. BULLUM 2,025,332

ROD CLAMP

Filed Aug. 31, 1933 4 Sheets-Sheet 1

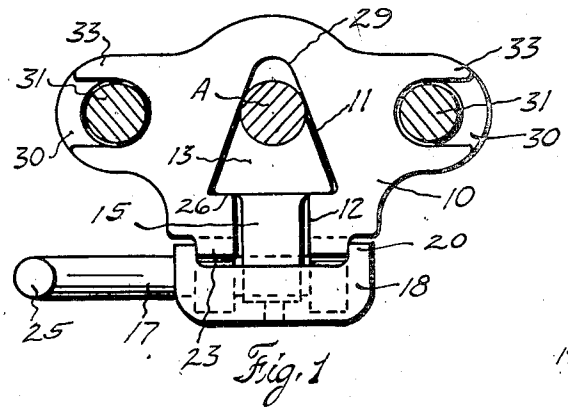


Fig. 1

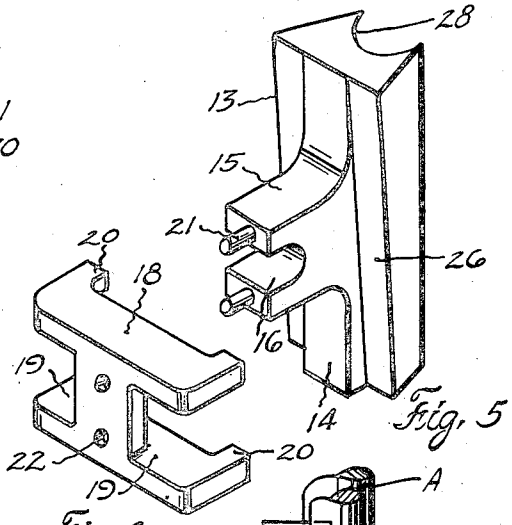


Fig. 5

Fig. 6

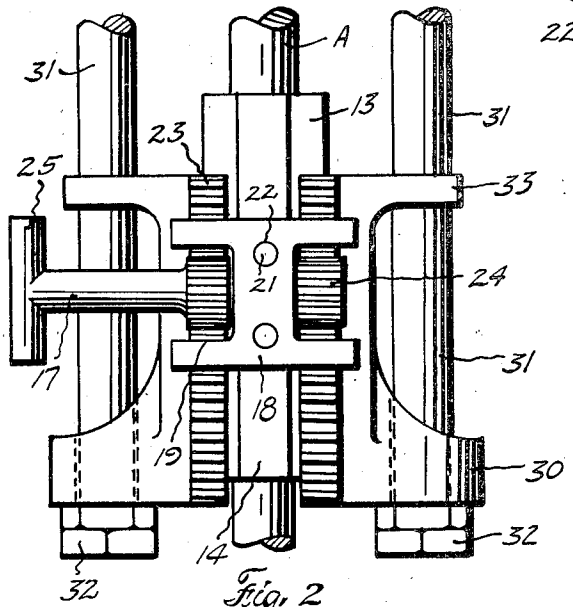


Fig. 2

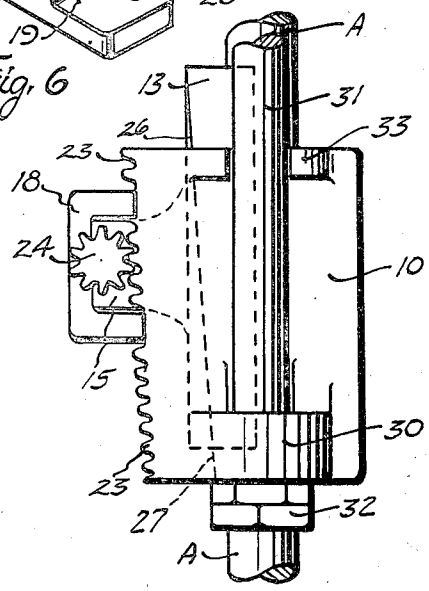


Fig. 3

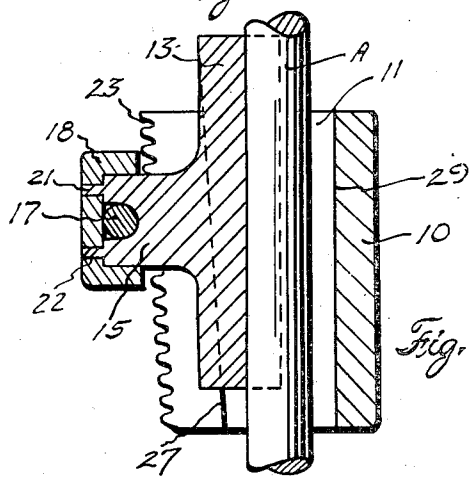


Fig. 4

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Dec. 24, 1935. S. BULLUM 2,025,332

ROD CLAMP

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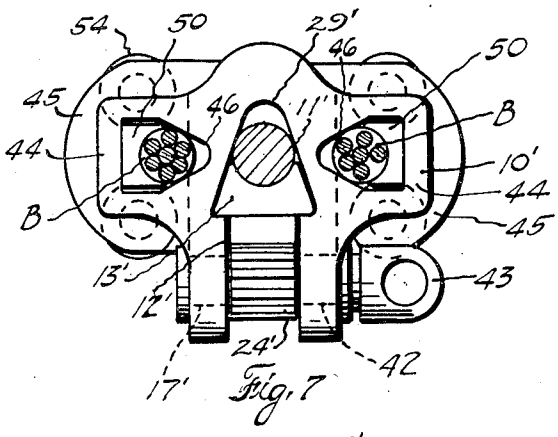


Fig. 7

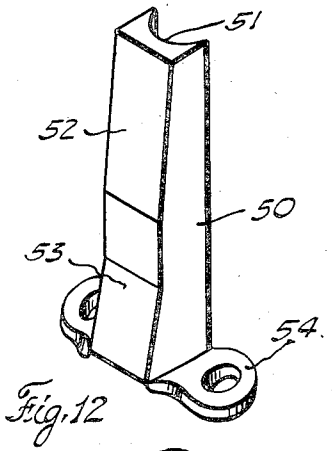


Fig. 12

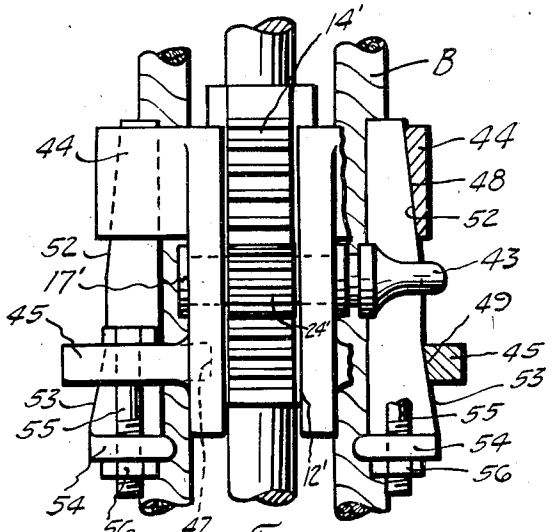


Fig. 8

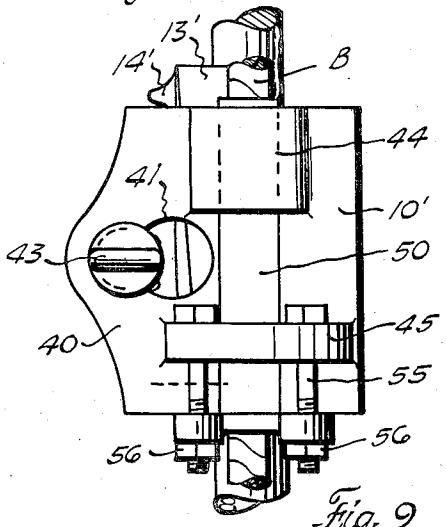


Fig. 9

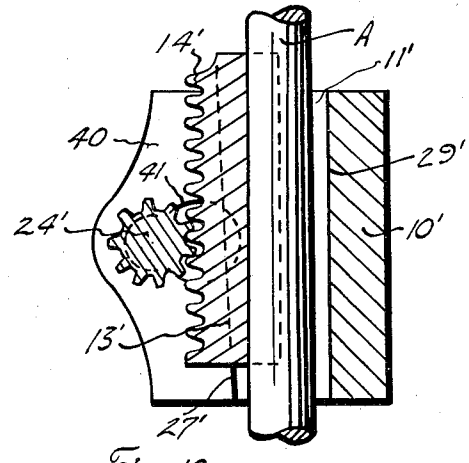


Fig. 10

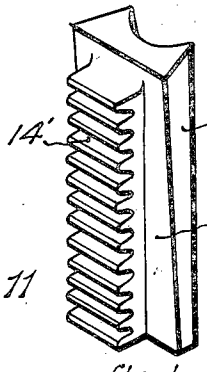


Fig. 11

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ROD CLAMP

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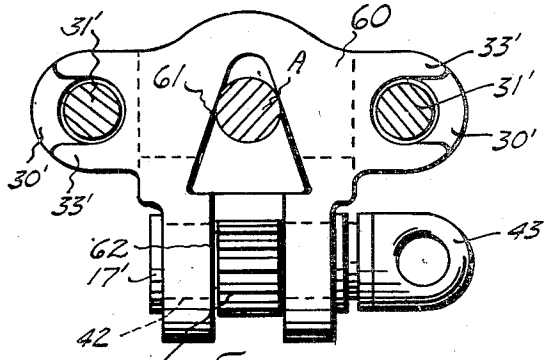


Fig. 13

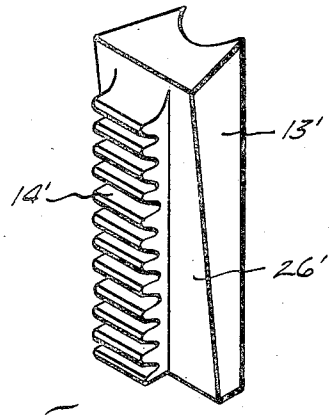


Fig. 17

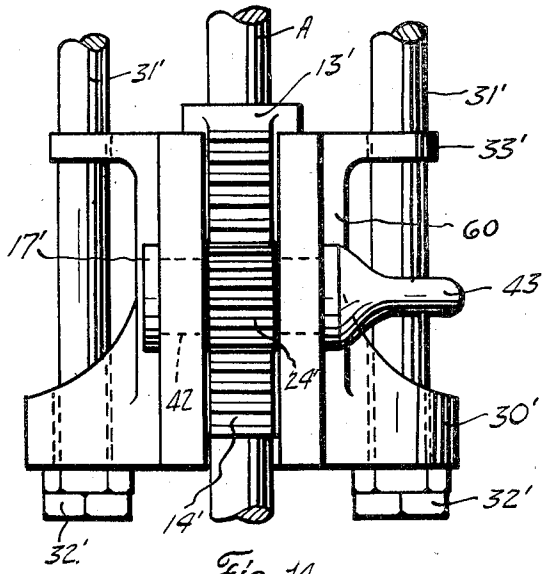


Fig. 14

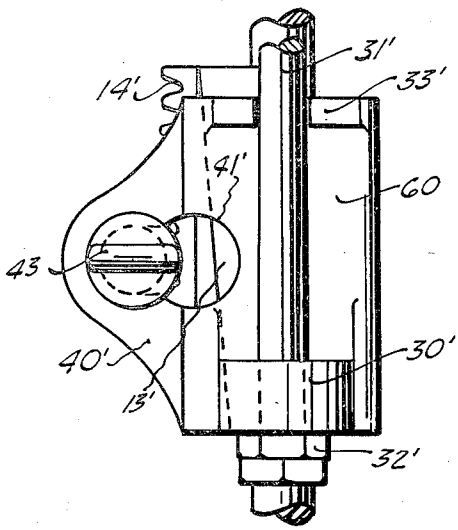


Fig. 15

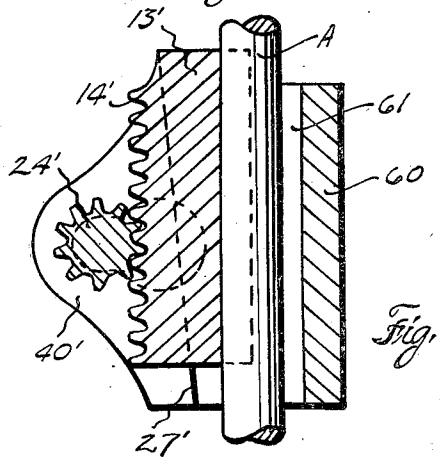


Fig. 16

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Dec. 24, 1935. S. BULLUM 2,025,332

ROD CLAMP

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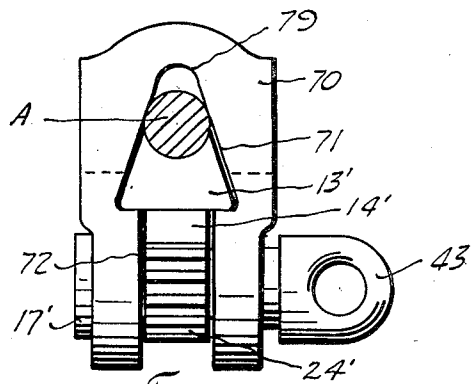


Fig. 18

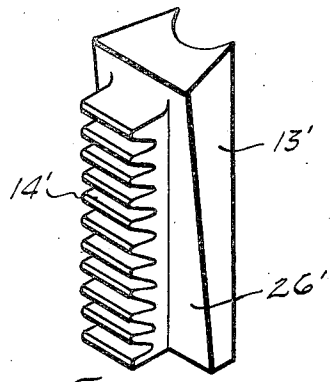


Fig. 22

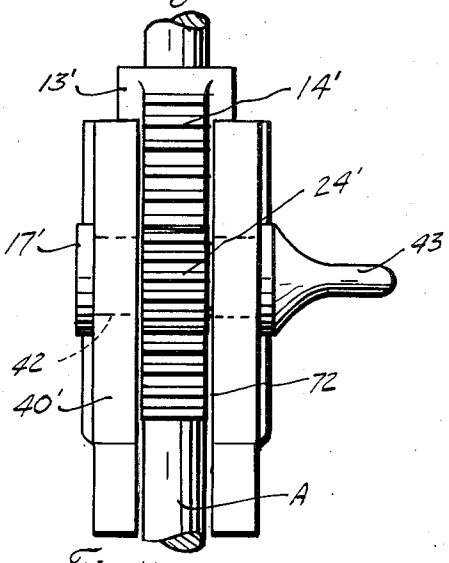


Fig. 19

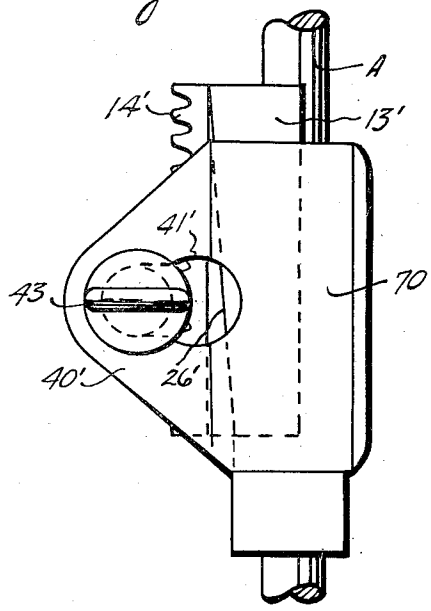


Fig. 20

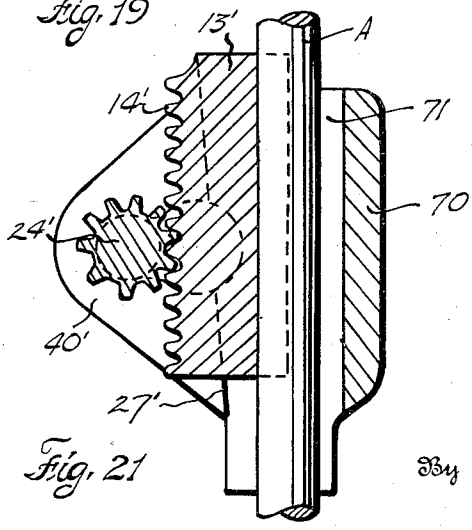


Fig. 21

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Patented Dec. 24, 1935 2,025,332

UNITED STATES PATENT OFFICE

2,025,332

ROD CLAMP

Stephen Bullum, Overton, Tex., assignor of three-fourths to A. D. Gaston, Austin, Tex., and one-fourth to Bullum, Incorporated, Austin, Tex.

Application August 31, 1933, Serial No. 687,576

5 Claims. (Cl. 24—136)

This invention relates to new and useful improvements in rod clamps.

One object of the invention is to provide a rod clamp having improved means for securing a rod therein in a positive and substantial manner.

An important object of the invention is to provide a rod clamp having a longitudinal rigid clamping crotch for receiving the rod and a gear-operated wedge-shaped clamping key for clamping the rod in the crotch, whereby the rod is securely fastened and variations in the diameter compensated.

A further object of the invention is to provide a rod clamp having a clamping wedge key provided with a gear rack and a gear engaging said rack and moving said key into and out of clamping position and whereby an upward pull upon the clamp body tends to tighten the clamp by rolling the gear up the inclined rack of the wedge key.

Another object of the invention is to provide a clamp for mounting on supporting rods so as to permit said rods to slide downwardly through the clamp when the clamped rod is held against movement.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings in which an example of the invention is shown, and wherein:

Figure 1 is a plan view of a clamp constructed in accordance with the invention,

Figure 2 is a front elevation of the same,

Figure 3 is a transverse vertical sectional view,

Figure 4 is a side elevation,

Figure 5 is a perspective view of the clamping key,

Figure 6 is a perspective view of the keeper,

Figure 7 is a plan view of a wire line rod clamp constructed in accordance with the invention,

Figure 8 is a front elevation of the same,

Figure 9 is a side elevation of the same,

Figure 10 is a transverse vertical sectional view of the same,

Figure 11 is a perspective view of the clamping key,

Figure 12 is a perspective view of one of the wire line keys,

Figure 13 is a plan view of another form of clamp,

Figure 14 is a front elevation of the same,

Figure 15 is a side elevation,

Figure 16 is a transverse vertical sectional view,

Figure 17 is a perspective view of the clamping key,

Figure 18 is a plan view of still another form of clamp,

Figure 19 is a front elevation of the same,

Figure 20 is a side elevation,

Figure 21 is a transverse vertical sectional view, and

Figure 22 is a perspective view of the clamping key.

In the drawings (Figures 1 to 6) the numeral 10 designates a clamp body or support. A longitudinal opening or channel 11 extends vertically through the body at the central portion thereof. This channel is triangular in cross-section and has a guideway 12 extending forwardly therefrom. A wedge-shaped key 13 is mounted to slide vertically in the channel and has a central longitudinal guide 14 on its front side engaging in the guideway.

The guide has a forwardly projecting boss 15 located centrally between its ends. This boss extends from the guideway and has a bearing recess 16 receiving a transverse shaft 17. The shaft is confined by a keeper 18. The keeper has a recess 19 at each side and fingers 20 at the side of its back. Pins 21 on the boss engage in apertures 22 in the keeper and by upsetting the ends of these pins the keeper is fastened to the boss.

Vertical gear racks 23 are formed on the front of the body and extend longitudinally along each side of the guideway. Gears 24 fastened on the shaft 17 are confined in the recesses 19 on each side of the boss 15 and engage the racks. The shaft extends to one side and has a handle 25 on its end. The fingers 20 overhang the outer sides of the racks and guide the keeper. When the shaft is rotated the gears are caused to travel up and down the racks, whereby the boss 15 and the key 13 are vertically adjusted.

It will be noted that on each side of the guide 14 the front faces 26 of the key 13 are inclined downwardly and rearwardly. Within the channel 11 complementary inclines 27 are provided on each side of the guideway. When the key is moved downwardly by the gears it is also moved rearwardly in the channel. The key 13 has a general triangular shape to conform to the channel and is provided with a vertical concaved seat 28 in its rear side. The rear portion of the channel forms a crotch 29 for receiving the rod A. As the key 13 is moved downwardly and rear-

wardly it crowds the rod into the crotch and thus clamps it. Owing to the V-shape of the crotch, various sizes of rods may be clamped and also the rod is wedged in the crotch.

If the clamp body 10 is supported and the rod A is pulled downwardly the key 13 will tend to move downwardly, the gears 24 rolling on the racks 23. Conversely, if the rod is held and the body is moved upwardly the tendency of the key will be to remain with the rod, so that the clamping action will be increased in either case. The gears and racks give a positive movement of the key both in clamping and unclamping.

The clamp body 10 may have ears 30 on each side of the channel 11 at the bottom. Hanger rods 31 pass loosely through said ears and have nuts 32 on their lower ends on which the ears rest and whereby the body is supported. Yokes 33 on each side of the top of the body receive the rods and aline the body therebetween. Sufficient clearances in the ears and yokes are provided to permit the rods to slide freely therethrough in case the body is held against movement and the rods are attached to a moving part, as a pump beam (not shown).

In Figures 7 to 11 inclusive, I have shown another structure involving the invention and particularly advantageous for use as a wire line polish rod clamp. A body 10' similar to the body 10 is employed and this body has a channel 11', a guideway 12', a key 13' and a crotch 29', all similar to the corresponding parts of the body 10. The key has inclined guide faces 26' co-acting with complementary inclined faces 27' in the front of the channel.

In place of the guide 14 the key has a gear rack 14'. Guide flanges 40 are provided on each side of the guideway and each has a key-hole slot 41 at its enlarged central portion. A shaft 17' has a gear 24' fastened thereon. When the key 13' is removed the shaft and gear may be passed through the large end of the slot. The shaft has reduced portions 42, whereby the shaft may be slid forwardly into the smaller end of the slot. By inserting the key and engaging its rack with the gear, the shaft is held in place. An eye 43 is provided on one end of the shaft and a suitable tool inserted in said eye may be used to rotate the gear and move the key into clamping position.

In order to secure the body 10' on the wire lines B, the body has ears 44 at its top and loops 45 at its bottom on each side of the channel 11'. The ears have crotches 46 vertically alined with crotches 47 in the loops. Opposite its crotch each ear has an opening provided with an inclined face 48 and each loop has an inclined face 49 opposite its crotch. Keys or wedges 50 are each formed with a vertical concaved seat 51 for gripping the wire lines B and crowding the same into the crotches.

Each key 50 has inclines 52 for engaging the faces 48 and inclines 53 for engaging the faces 49. The lower incline 53 and its complementary face 49 have a greater pitch or inclination than the upper incline 52 and its face 48, and the lower incline and its face are much shorter than the upper incline and its face. This has been found to give a more secure clamping action. Each key 50 has eyes 54 on each side receiving bolts 55 carried by the loops and resting upon nuts 56 on said bolts. By screwing the nuts upwardly on the bolts the keys 50 are moved upwardly and the wire lines B are thus clamped in the crotches 46 and 47.

A combination of the two forms previously described is set forth in Figures 13 to 17, inclusive. A body 60 very similar to the body 10 has yokes 33' and ears 30' for receiving rods 31', the same as in Figure 2. The rods receive nuts 32', whereby the body is supported. The body has a channel 61 therethrough like the channel 11, and a guideway 62 extends forwardly from the channel 61, like the guideway 12'. Flanges 40' like the flanges 40 (Figures 8 and 9), have key-hole slots 41'. As substantially the same shaft 17', reduced portion 42, gear 24', eye 43, rack 14', key 13' and inclined faces 26' and 27' are used, the same numerals have been applied to these parts in Figures 13 to 16.

A very simple form of the invention is shown in Figures 18 to 21, inclusive. A body 70 has a channel 71 and a guideway 72 extending therefrom. The channel has a crotch 79 like the crotch 29. As the same key, shaft and gear are used as in Figures 7 to 17, the parts have been designated by the same numerals and further description is considered unnecessary.

In all of the forms, a wedge key is employed and this key is actuated along inclined guide faces in a guideway by a gear and gear rack. The rod which is clamped is crowded into a crotch by the key and a positive clamping action is had.

The description which has been given recites more or less detail of a particular embodiment of the invention, which is set forth as new and useful, however, I desire it understood that the invention is not limited to such exact details of construction, because it is manifest that changes and modifications may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent, is:

1. A rod clamp comprising, an upright body adapted to be moved longitudinally of the member to be clamped and having a vertical channel extending therethrough, said channel having a vertical rigid crotch at its rear and a vertical guideway at its front extending entirely through the front wall of the body, said channel having upwardly inclined guide faces on each side of said guideway, an upright key movable vertically in said channel and having inclined guide faces engaging the guide faces of the channel and a seat for engaging the member to be clamped to force it into clamping engagement with the crotch, a vertical projection on the front of the key engaging in the guideway of the body, and a gear and rack carried by the body and the projection of the key for moving said key vertically whereby the body is shifted with relation to the member to be clamped and is drawn into clamping engagement with said member.

2. A rod clamp comprising, an upright body adapted to be moved longitudinally of the member to be clamped and having a vertical channel extending therethrough, said channel having vertical rigid inclined faces at its rear and a vertical guideway at its front extending entirely through the front wall of the body, said channel having upwardly inclined guide faces on each side of said guideway, an upright key movable vertically in said channel and having inclined guide faces engaging the guide faces of the channel and a seat for engaging the member to be clamped to force it into clamping engagement with the inclined faces, whereby the member is gripped at two points and is wedged therebetween, a vertical pro-

jection on the front of the key engaging in the guideway of the body, and a gear and a rack carried by the body and the projection of the key for moving said key vertically, whereby the body is shifted with relation to the member to be clamped and is drawn into clamping engagement with said member.

3. A rod clamp comprising, an upright body adapted to be moved longitudinally of the member to be clamped and having a vertical channel extending therethrough, said channel having a vertical rigid crotch at its rear and a vertical guideway at its front extending entirely through the front wall of the body, said channel having upwardly inclined guide faces on each side of said guideway, an upright key movable vertically in said channel and having inclined guide faces engaging the guide faces of the channel and a seat for engaging the member to be clamped to force it into clamping engagement with the crotch, a vertical projection on the front of the key engaging in the guideway of the body, a gear rack carried by the projection of the key, a gear journaled on the body and engaging the rack, and means for rotating the gear to adjust said key vertically, whereby the body is shifted with relation to the member to be clamped and is drawn into clamping engagement with said member.

4. A rod clamp comprising, an upright body adapted to be moved longitudinally of the member to be clamped and having a vertical channel extending therethrough, said channel having a vertical rigid crotch at its rear and a vertical guideway at its front extending entirely through the front wall of the body, said channel having upwardly inclined guide faces on each side of said guideway, an upright key movable vertically in said channel and having inclined guide faces engaging the guide faces of the channel and a seat for engaging the member to be clamped to force it into clamping engagement with the crotch, flanges on each side of the guideway, a vertical projection on the front of the key engaging in the guideway of the body, and a gear and rack carried by the flanges and the projection of the key for moving said key vertically, whereby the body is shifted with relation to the member to be clamped and is drawn into clamping engagement with said member, the flanges having keyhole slots for mounting and supporting the gear.

5. A rod clamp comprising, an upright body adapted to be moved longitudinally of the member to be clamped and having a vertical channel extending therethrough, said channel having vertical rigid inclined faces at its rear and a vertical guideway at its front extending entirely through the front wall of the body, said channel having upwardly inclined guide faces on each side of said guideway, an upright key movable vertically in said channel and having inclined guide faces engaging the guide faces of the channel and a seat for engaging the member to be clamped to force it into clamping engagement with the inclined faces, whereby the member is gripped at two points and is wedged therebetween, flanges on each side of the guideway of the body, a vertical projection on the front of the key engaging in the guideway, and a gear and rack carried by the flanges and the projection of the key for moving said key vertically, whereby the body is shifted with relation to the member to be clamped and is drawn into clamping engagement with said member, the flanges having key-hole slots for mounting and supporting the gear.

STEPHEN BULLUM.