

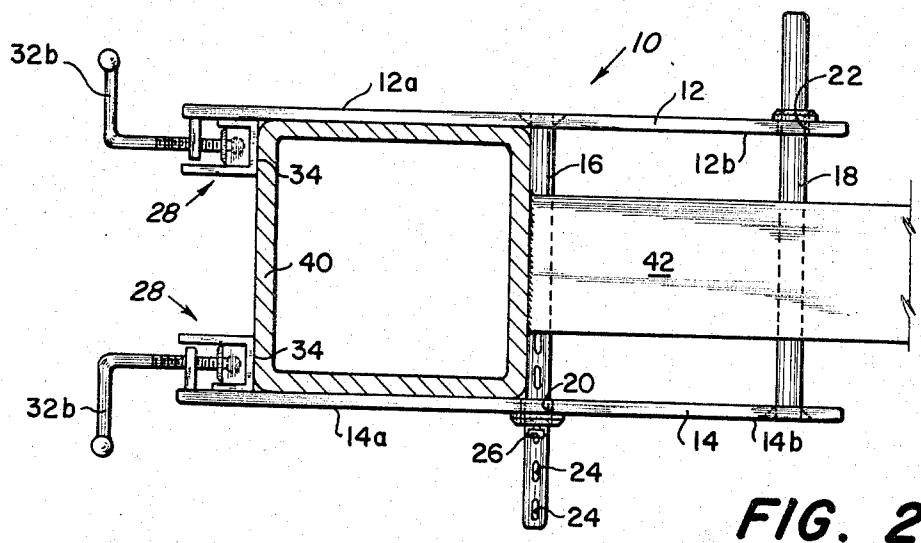
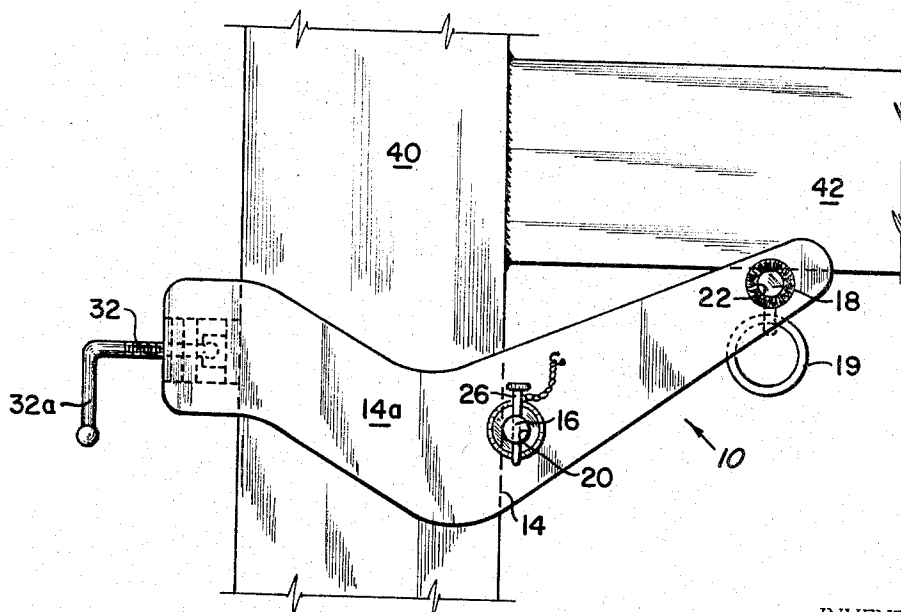
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M. J. McKELVEY
REMOVABLE BEAM SEAT

3,373,988

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2 Sheets-Sheet 1



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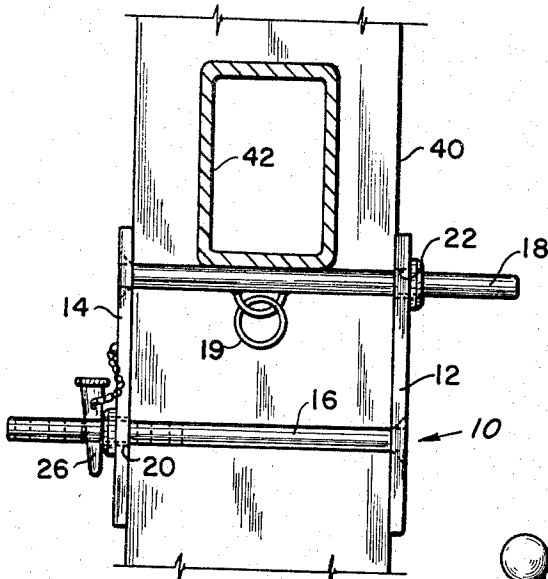


FIG. 3

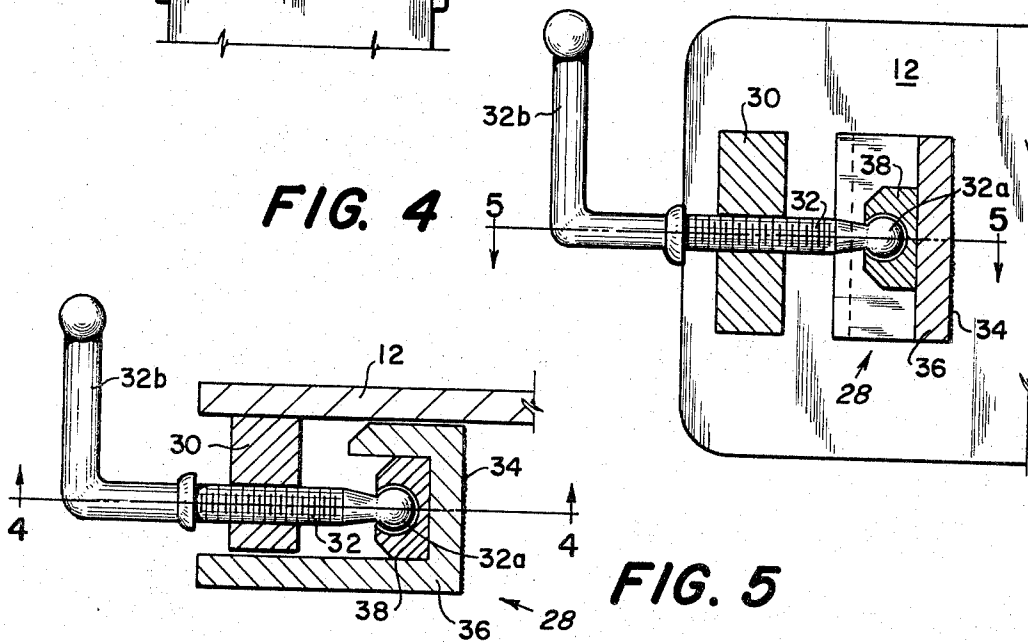


FIG. 5

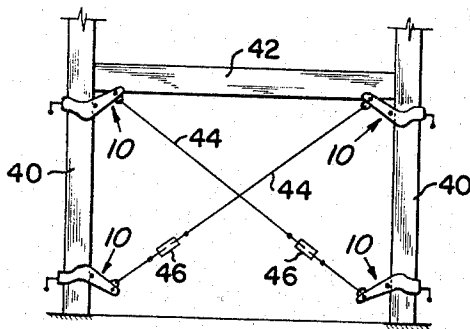


FIG. 6

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REMOVABLE BEAM SEAT

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6 Claims. (Cl. 269-309)

The present invention relates to a removable beam seat and, more particularly, to a removable beam seat which may be temporarily placed upon a vertical column in order to support a horizontal beam while the horizontal beam is being secured to the column.

In modern construction, it has become common practice to use welded joints on the structural iron work rather than using rivets or bolts. When using welded joints, it has further been the practice to provide seat angles on the vertical columns so that the seat angles can support horizontal beams until the beams are welded. The use of seat angles requires that the vertical columns be fabricated in the shop in order to provide the seat angle. Further, seat angles cause additional shipping space to be utilized when shipping the columns since the seat angles project outwardly from the side of the columns. There is also the danger that the seat angles will be bent and misaligned during transit which requires that the seat angles must be straightened and realigned on the job.

The removable beam seat of the present invention is a device which can be secured to a vertical column to provide a temporary seat for a horizontal beam that is to be welded to the vertical column. The present beam seat eliminates the use of seat angles which previously had to be fixed to the vertical columns.

The removable beam seat of the present invention is provided to clamp about the vertical column and is so designed that when the weight of the beam is allowed to rest on the seat, the weight of the beam increases the clamping effect of the seat about the vertical column so that the beam seat more tightly engages the vertical column.

The beam seat of the present invention consists of two halves which clamp about the vertical column and which provide a seat bar for the beam at a spaced horizontal distance from the vertical column. The beam seat of the present invention is designed to be utilized with columns of various sizes, and to be adjustable to various standard sized columns.

With the foregoing considerations in mind, it is a primary object of the present invention to provide a removable beam of supporting horizontal beams relative to vertical columns.

Another object of the present invention is to provide a removable beam seat which may be clamped about a vertical column without having the column adapted in any way to receive a seat.

Another object of the present invention is to provide a beam seat which can be utilized with tubular columns and beams.

Another object of the present invention is to provide a beam seat so constructed that when the weight of the beam is placed upon the seat, the weight of the beam helps to more forcefully clamp the beam seat about the column.

Another object of the present invention is to provide a light-weight beam seat which may be easily positioned on a vertical column.

These and other objects of the present invention will become apparent as this description proceeds in conjunction with the accompanying drawings.

In the drawings:

FIGURE 1 is an elevation of the beam seat of the present invention secured to a vertical column;

FIGURE 2 is a top plan view of the beam seat of FIGURE 1;

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FIGURE 3 is a front elevation of the beam seat of FIGURE 2;

FIGURE 4 is a partial sectional view, taken along line 5-5, to an enlarged scale, of the adjustment means for the beam seat;

FIGURE 5 is a sectional view, taken along line 4-4, to an enlarged scale, of the adjustment means of FIGURE 4;

FIGURE 6 is a semi-schematic view of beam seats of the present invention being utilized to draw two columns together.

Referring to the drawings, and particularly to FIGURES 1, 2 and 3, a beam seat 10 has a first lever 12 and a second lever 14 which are identical to each other in size and shape. The first lever 12 has a fulcrum bar 16 fixed thereto which extends perpendicularly from the first lever 12. The fulcrum bar 16 is fixed to the first lever 12 near the center thereof and divides the first lever into a column arm 12a and a seat arm 12b.

A second lever 14 has a seat bar 18 fixed thereto near the end thereof and extending perpendicularly to the second lever 14. The seat bar 18 may have a cable attaching ring 19 secured thereto for a purpose to be hereinafter described.

A hole 20 is formed through the second lever 14 near the center thereof so that the fulcrum bar 16 may be slidably received therethrough. The hole 20 is located near the center of the second lever 14 and divides the second lever into a column arm 14a and a seat arm 14b.

As best seen in FIGURE 1, the column arm 14a and the seat arm 14b of second lever 14 extend upwardly at an obtuse angle away from the hole 20.

The first lever 12 has a hole 22 formed near the end thereof to receive the seat bar 18 slidably therethrough. When the beam seat is positioned about the column the fulcrum bar 16 which is fixed to the first lever 12 is positioned through the hole 20 of the second lever 14, while the seat bar 18 which is fixed to the second lever 14 is positioned through the hole 22 in first lever 12.

The fulcrum bar 16 has a series of elongated holes 24 formed therein. The holes 24 are adapted to receive a wedge 26 which forces the second lever 14 toward the first lever 12 when the wedge is inserted in a particular elongated hole 24. The elongated holes 24 are so positioned that when the beam seat 10 is positioned on a column of any one of several standard sizes, one of the holes 24 is positioned to receive the wedge 26 and cause the beam seat 10 to be tightened about the column when the wedge is driven into the elongated hole 24.

On the column arms 12a and 14a of the first and second levers, adjustment means 28 are positioned. Adjustment means 28 are identical to each other and one is positioned on the first lever 12 while a second is positioned on the second lever 14. Adjustment means 28 are shown in detail in FIGURES 4 and 5.

The adjustment means 28 includes a threaded wall 30 which is fixed to the respective first or second level and which extends perpendicularly thereto. The threaded wall 30 threadably receives a lead screw 32 that is threaded through wall 30. The lead screw has a ball 32a formed upon one end and a rotating handle 32b formed on the other end.

A column contacting surface 34 is formed upon a hood 36 which surrounds a core 38 that is rotatably received upon the lead screw ball 32a.

As may be seen in FIGURES 1 and 2 when the lead screw 32 is rotated, the column contacting surface 34 is moved toward and away from the fulcrum bar 16, depending upon the direction of rotation of the lead screw. The hood 36 upon which the column contacting surface 34 is formed restricts movement of the column contacting sur-

face 34 about the ball 32a so that the contacting surface 34 is free to rotate in a plane parallel to the planes of levers 12 and 14, but not free to rotate in the other plane. Thus, the column contacting surface 34 adjusts itself to the direction of the column to which the beam seat 10 is fixed.

As shown in the drawings, the removable beam seat 10 is secured to a vertical column 40 in order to support a horizontal beam 42 for attachment to the column. In operation of the beam seat, the levers 12 and 14 are placed upon either side of the vertical column 40. The fulcrum bar 16 extends through the hole 20 of lever 14 and the seat bar 18 extends through the hole 22 of lever 12. The wedge 26 is then placed in an appropriate elongated hole 24 and driven into the hole 24 to wedge the lever 14 toward the lever 12 and clamp them about the vertical column 40. The adjustment means 28 are then utilized to tighten the column contacting surfaces 34 against the column 40 so that the column is snugly clamped between the fulcrum bar 16, the column contacting surface 34, and between levers 12 and 14.

The horizontal beam 42 is then positioned so that it rests upon the seat bar 18 and in contact with column 40. The seat bar supports the beam 42 and by virtue of its position away from column 40, it does not interfere with the welding of beam 42 to the column 40. Further, by virtue of the construction of levers 12 and 14 having the seat arms 12b and 14b extending upwardly and outwardly from the fulcrum bar 16, the seat bar 18 is horizontally above the fulcrum bar 16 and is spaced away from the column 40.

The particular construction of the beam seat utilizes the weight of the beam 42 to help clamp the beam seat into position. When the weight of the beam 42 bears down upon the seat bar 18, the beam seat has a tendency to pivot about fulcrum bar 16 thereby causing the column contacting surfaces 34 to tightly engage the vertical column 40.

After the horizontal beam 42 is in position, and has been welded, the beam seat 10 may be removed from the column 40 simply by driving the wedge 26 out of a fulcrum bar 16 and removing the two halves of the beam seat 10.

FIGURE 6 shows an arrangement whereby the beam seats 10 of the present invention may be utilized with cables 44 and turnbuckles 46 to draw two vertical columns 40 toward each other in order to tightly engage the ends of the horizontal beam 42. In FIGURE 6, two beam seats 10 are positioned to support the respective ends of the horizontal beam 42. Two other beam seats are positioned near the bottom of each respective column 40. A cable 44 and turnbuckles 46 are used to diagonally connect the beam seats 10. Cables 44 are attached to a cable attaching ring 19 secured to the seat bars 18 of the respective beam seats 10.

With the arrangement shown in FIGURE 6, the turnbuckles 46 may be tightened to draw the columns 40 toward each other and tightly against the ends of the horizontal beam 42. The horizontal beam 42 may then be welded in position and the beam seats 10, cables 44, and turnbuckles 46 removed.

According to the provisions of the patent statutes, I have explained the principle, preferred construction and mode of operation of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. A removable beam seat for temporarily supporting a horizontal beam in position relative to a vertical column comprising:

- (a) a first lever;
- (b) a second lever identical in size and shape to said

first lever, said levers adapted to be positioned on either side of said vertical column;

- (c) a fulcrum bar fixed to said first lever near the center thereof and extending perpendicularly thereto;
- (d) a seat bar fixed to said second lever near one end thereof and extending perpendicularly thereto;
- (e) securing means associated with said fulcrum bar and said second lever for clamping said first and second levers to each other securely about said vertical column;
- (f) adjustment means fixed to the end of each of said first and second levers remote from said one end and operable to contact said vertical column and vary the effective distance between the end of each of said levers and said fulcrum bar when said beam seat is clamped upon said vertical column;
- (g) said first and second levers, said fulcrum bar and said adjustment means each being in firm contact with said vertical column and said seat bar being supported horizontally by said levers at a spaced distance from said vertical column when said beam seat is in position on said vertical column.

2. The beam seat of claim 1 wherein said first and second levers each have a column arm and a seat arm extending at an obtuse angle from said fulcrum bar whereby said seat bar is horizontally higher than said fulcrum bar when said beam seat is in position on said vertical column.

3. A removable beam seat for temporarily supporting a horizontal beam in position relative to a vertical column comprising:

- (a) a first lever;
- (b) a second lever identical in size and shape to said first lever, said levers adapted to be positioned on either side of said vertical column;
- (c) a fulcrum bar fixed to said first lever near the center thereof and extending perpendicularly thereto;
- (d) a seat bar fixed to said second lever near one end thereof and extending perpendicularly thereto;
- (e) securing means associated with said fulcrum bar and said second lever for clamping said first and second levers to each other securely about said vertical column;
- (f) adjustment means fixed to the end of each of said first and second levers remote from said one end and operable to contact said vertical column and to vary the effective distance between the end of each of said levers and said fulcrum bar when said beam seat is clamped upon said vertical column, said adjustment means on each lever having a column contacting surface, threaded means to move said column contacting surface toward and away from said fulcrum bar, and ball joint means between said threaded means and said column contacting surface to permit rotation of said column contacting surface in a vertical plane;
- (g) said first and second levers, said fulcrum bar and said adjustment means each being in firm contact with said vertical column and said seat bar being supported horizontally by said levers at a spaced distance from said vertical column when said beam seat is in position on said vertical column.

4. A removable beam seat for temporarily supporting a horizontal beam in position relative to a vertical column comprising:

- (a) a first lever;
- (b) a second lever identical in size and shape to said first lever, said levers adapted to be positioned on either side of said vertical column;
- (c) a fulcrum bar fixed to said first lever near the center thereof and extending perpendicularly thereto;
- (d) a seat bar fixed to said second lever near one end thereof and extending perpendicularly thereto;
- (e) securing means associated with said fulcrum bar and said second lever for clamping said first and second levers to each other securely about said vertical

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column, said securing means comprising a hole formed in said second lever to slidably receive said fulcrum bar, a series of elongated holes formed through said fulcrum bar at spaced distances from each other, and a wedge adapted to be received within said elongated holes and to bear against said second lever to thereby force said second lever toward said first lever and form contact with said column;

(f) adjustment means fixed to the end of each of said first and second levers remote from said one end and operable to contact said vertical column and vary the effective distance between the end of each of said levers and said fulcrum bar when said beam seat is clamped upon said vertical column;

(g) said first and second levers, said fulcrum bar and said adjustment means each being in firm contact with said vertical column and said seat bar being supported horizontally by said levers at a spaced distance from said vertical column when said beam seat is in position on said vertical column.

5. A removable beam seat for temporarily supporting a horizontal beam in position relative to a vertical column comprising:

(a) a first lever;

(b) a second lever identical in size and shape to said first lever, said levers adapted to be positioned on either side of said vertical column;

(c) a fulcrum bar fixed to said first lever near the center thereof and extending perpendicularly thereto;

(d) a seat bar fixed to said second lever near one end thereof and extending perpendicularly thereto;

(e) securing means associated with said fulcrum bar and said second lever for clamping said first and second levers to each other securely about said vertical column, said securing means comprising a hole formed in said second lever to slidably receive said fulcrum bar, a series of elongated holes formed

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through said fulcrum bar at spaced distances from each other, and a wedge adapted to be received within said elongated holes and to bear against said second lever to thereby force said second lever toward said first lever and into firm contact with said column;

(f) adjustment means fixed to the end of each of said first and second levers remote from said one end and operable to contact said vertical column and to vary the effective distance between the end of each of said levers and said fulcrum bar when said beam seat is clamped upon said vertical column, said adjustment means on each lever having a column contacting surface, threaded means to move said column contacting surface toward and away from said fulcrum bar, and ball joint means between said threaded member and said column contacting surface to permit rotation of said column contacting surface in a vertical plane;

(g) said first and second levers, said fulcrum bar and said adjustment means each being in firm contact with said vertical column and said seat bar being supported horizontally by said levers at a spaced distance from said vertical column when said beam seat is in position on said vertical column.

6. The beam seat of claim 5 wherein said fulcrum bar has a cable attaching ring fixed thereto.

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