This invention relates to a holding and lifting means.

An object of the invention is to provide a holding and lifting means which will firmly clamp an article to be lifted and securely retain this article while being handled.

Another object of the invention is to provide an improved lifting means which may be adjusted easily to adapt it to articles of varying sizes.

Another object of the invention is to provide an improved lifting means which may be used to engage either the inside or outside of an article to be lifted.

Another object of the invention is to provide an improved lifting means which, when clamped to an article, will retain it firmly and not become loosened by vibration.

Another object of the invention is to provide an improved lifting means which may be simply and economically manufactured.

The invention will be better understood from the description of one practical embodiment thereof, illustrated in the accompanying drawings, in which:

Figure 1 is a side elevational view of the clamp, parts being shown therein in central longitudinal section;

Figure 2 is an end elevational view of the parts shown in Figure 1;

Figure 3 is a fragmentary sectional view showing the gripping or article engaging jaw, to an enlarged scale; and

Figure 4 is a side elevational view of the apparatus showing its use when applied to the interior of a ring or other hollow article.

The clamp shown in the drawing consists of a supporting beam or bar 1 to which is centrally secured a hoist-engaging means, shown as a ring 2 rigidly fixed to the bar as by welding.

Adjustably carried by the beam are two slides, each provided with a movable clamping element or jaw.

Each slide consists of a generally rectangular block or carriage 3 having a rectangular perforation 4 which fits slidably over the rectangular bar 1.

Upper and lower shoes 5 and 6, respectively, are secured to the slide body 3 as by welding 7.

The upper part of slide block 3 is perforated, and the perforation threaded for the reception of a locking screw or bolt 8, the lower end of which is turned as indicated at 9 to cylindrical form and the upper end of which is formed into a knurled knob or head 10.

The cylindrical end of the screw 9 is adapted to fit closely within any one of a series of holes 11 drilled along the upper edge of the beam 1, and so to positively locate the slide in position at any one of these holes, as may be desired.

A lock washer 12 is interposed between the head 10 and the upper surface of slide 3 to lock the screw in its innermost position, extending into one of the holes 11.

The lower end of slide 3 is provided with a threaded perforation in which is threaded a clamping screw 13.

This screw may be rotated by a handle 14 pivoted to the end of the screw upon a pin or pivot 15.

The other end of screw 13 is formed into semispherical shape as indicated at 16 and has an annular groove 17.

Slid over the semispherical end of the screw is a clamping jaw 18 having a spherical ended recess fitting over the screw, the jaw being retained by means of a pin 19 extending chordally across within the recess 17 and permitting limited rocking movement of the jaw on the end of the screw.

The outer end of the jaw is provided with a sharp circular contacting edge formed between frusto-conical surfaces 20 and 21 and preferably this end of the jaw is hardened so that this edge will cut or bite slightly into the piece B which is being retained.

The semispherical end of the screw, together with the socket in the jaw and the looseness of the pin 19, permit this jaw to rock as indicated in Figure 3, to adapt itself to rough or inclined surfaces and to cause the circular edge to press evenly upon these surfaces, thus cutting slightly into them and producing a very firm grip which will retain the piece much more effectively than could friction alone.

It will be seen that the distance between shoes 5 and 6 need not be too close a fit to the upper or lower edges of the beam, but that the positive interlocking of screw bolt 9 into recess 11 precludes any sliding of the carriage after it has been locked in position and causes any pressure on its lower end to tilt or rock it, causing it to bind more firmly on the beam edges.
It will also be apparent that the pivoted handles 14 prevent screws 13 from rotating when subjected to vibration, so that there is no danger of unexpected loosening.

In Figure 4, the lifting clamp has been shown as applied on the interior of a large metal ring R and it will be apparent that to arrange it in this manner, it is only necessary to remove the slides from the beam, reverse them, and secure them in the desired position, whereupon the jaws are moved outwardly by screws 13 and will tightly clamp the inside of the recess within the ring, in the same manner as when they are applied to the outside of an article.

The article, of course, can be lifted after the clamp has been applied to it by means of a hoist or other lifting means engaged with the ring 2.

While I have described the illustrated embodiment of my invention in some particularity, obviously many other embodiments, variations, and modifications will readily occur to those skilled in this art, and I do not, therefore, limit myself to the precise details shown and described herein, but claim as my invention all embodiments, modifications and variations coming within the scope of the appended claims.

I claim:

1. A lifting device comprising a rigid unitary beam, two clamping elements adjustable carried by the beam, locking means positively locking said elements in adjusted position upon the beam, each clamping element having mechanical advantage moving means and including an article engaging jaw, and the jaw of each element having a sharp circular edge.

2. A lifting device comprising a unitary rigid beam, two slides movable along said beam, a positive lock carried by each slide locking the slide selectively in any of a plurality of positions upon the beam, each slide having a threaded element threaded therethrough with its axis in general parallel to the beam, a jaw carried by each threaded element having a sharp circular article engaging edge and angularly movable with respect to the axis of the threaded element.

3. A lifting device comprising a unitary rigid beam, hoist engaging means fixed to an intermediate portion of said beam, a slide movable along the portion of the beam to one side of said hoist engaging means, a slide movable along the portion of said beam to the opposite side of said hoist engaging means, positive locking means carried by each slide and engageable with the beam and rotatable with the beam and having a plurality of positions thereon, each slide having a threaded aperture with its axis generally parallel to the beam, a threaded element threaded into each of said apertures, a jaw carried by each threaded element and angularly displaceable with respect to the axis thereof, each jaw having a sharp circular article engaging edge which when lying in a plane normal to the axis of the threaded element is concentric with said axis.

4. A lifting device comprising a rigid rectangular unitary beam, a hoisting ring fixed to the middle of said beam, the beam having a plurality of recesses on one side thereof, a slide movable along the beam to one side of the hoisting ring, a similar slide movable along the beam to the other side of the hoisting ring, each slide including a bolt selectively engageable with the recess in the beam, each slide having a threaded recess generally parallel to the beam and a screw threaded through said recess, each screw having an article engaging head pivotally supported on one end thereof and formed with a sharp circular edge, and each screw having a handle pivoted thereto at the end opposite said article engaging head.

HARRY ADEN GONSER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>307,439</td>
<td>Corbet</td>
<td>Nov. 4, 1884</td>
</tr>
<tr>
<td>615,071</td>
<td>Ledward</td>
<td>Nov. 29, 1888</td>
</tr>
<tr>
<td>661,488</td>
<td>Broadbrooks</td>
<td>Nov. 13, 1900</td>
</tr>
<tr>
<td>1,555,022</td>
<td>Jenkins</td>
<td>Apr. 21, 1925</td>
</tr>
<tr>
<td>2,338,471</td>
<td>Vanerstrom</td>
<td>Jan. 4, 1944</td>
</tr>
<tr>
<td>2,360,366</td>
<td>Renfroe</td>
<td>Oct. 17, 1944</td>
</tr>
</tbody>
</table>

FOREIGN PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Country</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>487,523</td>
<td>Germany</td>
<td>Mar. 24, 1928</td>
</tr>
<tr>
<td>61,994</td>
<td>Switzerland</td>
<td>May 8, 1913</td>
</tr>
</tbody>
</table>