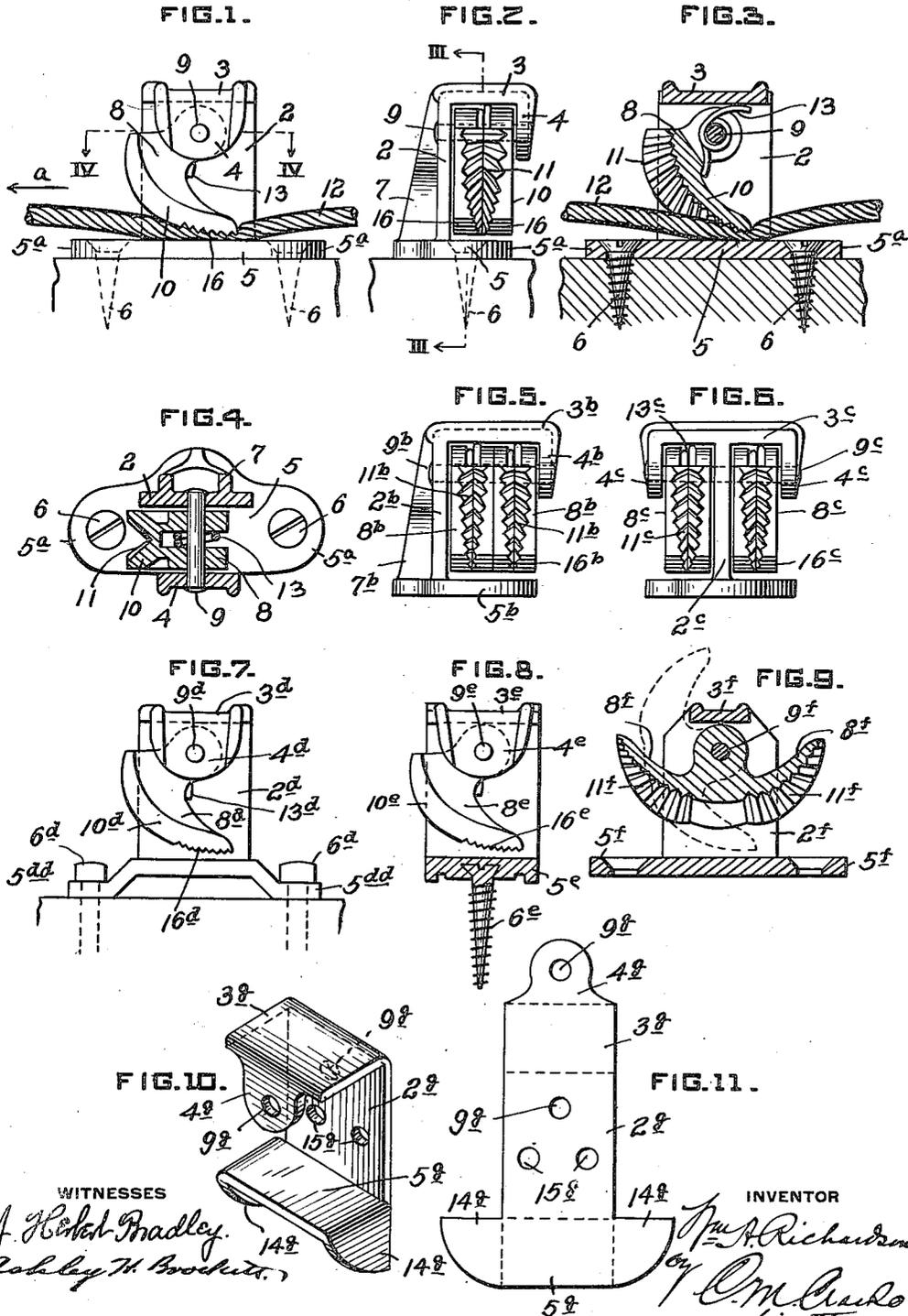


W. A. RICHARDSON.  
CLAMP.  
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1,243,103.

Patented Oct. 16, 1917.



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## CLAMP.

1,243,103.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, WILLIAM A. RICHARDSON, a citizen of the United States, residing at Edwardsville, in the county of Madison and State of Illinois, have invented certain new and useful Improvements in Clamps, of which the following is a specification.

My invention consists in an improvement in clamping devices for holding ropes, cords, straps, etc., fixedly in position against pulling strains, and has in view to provide a simple, effective and economical construction or constructions whereby to adapt the invention to various special uses and functions.

Generally stated, the invention consists of a suitably constructed supporting or carrying frame or housing and one or more pivotally mounted locking dogs, so carried in the frame, that when a rope or strap is inserted between it and the bearing portion of the frame, the dog will bind against and positively hold it against release in one direction, and will freely release it in the opposite direction in the manner of a cam lock.

The particular object of the present invention is to provide a device of this character in which the frame is particularly adapted to special uses and combinations with the flexibly held element, as a rope, and also to provide the face of the movable holding or locking dog with grooved faces of special design adapted to most effectively perform the desired functions.

Preferred forms of the invention are illustrated in the accompanying drawings, in which—

Figure 1 is a view of one form of the device, in side elevation, showing it in clamping engagement with a rope.

Fig. 2 is a view of the construction of Fig. 1, in front or edge elevation.

Fig. 3 is a vertical sectional view, indicated by the line III, III of Fig. 2,

Fig. 4 is a horizontal sectional view, indicated by the line IV, IV of Fig. 1.

Fig. 5 is a view similar to Fig. 2, showing a construction providing for two independently operative locking dogs.

Fig. 6 is a similar view but showing a modified construction of supporting bracket for the dogs.

Fig. 7 is a view similar to Fig. 1, show-

ing a bracket provided with an upwardly extending bearing base.

Fig. 8 is a view similar to Fig. 1, partly in section, showing a modified construction provided with a cast-in attaching screw.

Fig. 9 is a sectional view similar to Fig. 3, showing a double acting dog.

Fig. 10 is a perspective detail view, showing a modified construction, providing a wall bracket, formed of plate metal.

Fig. 11 is a detail plan view of the blank for forming the said bracket.

The supporting frame or base of the device may be made in any suitable or preferred manner, of either cast metal or sheet, plate or pressed wrought metal, as iron, steel or brass and of such design as may be utilized, although in the drawings I have shown various forms of brackets or supporting frames which may be preferably made as castings.

Referring to the construction illustrated in Figs. 1 to 4 inclusive, the holding frame of an integral one-piece casting is so shaped as to provide a main supporting back 2, a top 3, and a backwardly extending pivoting portion 4 parallel to the back 2. An integral base or bearing portion 5 is adapted to be secured by screws 6 to any supporting base by base-extensions 5<sup>a</sup>. The frame is preferably reinforced by one or more ribs 7.

The active locking element of the invention is a locking jaw or dog 8, pivotally mounted by a pin or rivet 9 between the back 2 and the front 4, so as to freely swing thereon. The edge portion 10 of dog 8 is developed around the pivoting center 9 in the form of a compound spiral curve, the radius of which constantly increases, similar to a cam face, and providing a gripping surface which is eccentric to the bearings 9.

The gripping edge of the dog 8 as thus made is preferably recessed centrally of the dog throughout the entire portion, such depression being preferably in the form of a V recess. Each diverging side of the recess is provided with a series of V-shaped teeth 11 converging toward the bottom and also inclined as to their general direction obliquely with relation to the pivoting center 9. The purpose of such arrangement is that when a cord 12 is inserted between the dog 8 and the inner face of base 5, it will

be forced inwardly of the V-shaped grooves, upon tension being applied in the direction of the arrow *a*, and the fiber of the cord or rope will have a tendency to pull inwardly along the inclined V-shaped ridges or projections at each side of the main V groove, thereby tightening the gripping engagement of the dog, as will be readily understood.

For the purpose of thrusting the dog normally toward the base 5, I provide a spring 13, which may conveniently be a coiled wire spring, one terminal acting against the dog and the other against the cross top portion 3 of the bracket, as indicated in Fig. 3. The front portion 4 of the bracket, extending only part way down across the dog, leaves an open space, thereby facilitating the entrance of the rope or cord sidewise underneath the dog, which may be slightly raised by the finger for such insertion. The rope being in place, the dog will set itself and the tension on the cord will tend to grip it tightly in proportion to the tension.

In Fig. 5, the construction and intended operation are the same as above described, except that the bracket is sufficiently wider to provide for the mounting of two independent dogs, the construction otherwise being the same, and the parts being identified by similar numerals, having the exponent "b".

In Fig. 6, I provide for the independent mounting of two dogs on the same bracket, one at each side of a main supporting member 2<sup>c</sup>, the several other parts being otherwise the same and similarly identified by numerals having the exponent "c".

Likewise in Fig. 7, showing a further adaptation of the device, the parts are similarly identified by numerals having the exponent "d", base 5<sup>d</sup> extending upwardly beyond its supporting surface a sufficient distance to provide clearance for the heads 6<sup>d</sup> of securing bolts extending through the downwardly stepped base extensions 5<sup>dd</sup>. By this arrangement a cord, strap, etc., may be laid across the upper surface of base 5<sup>d</sup> and engaged by the dog without the possibility of interference with the bolt heads.

In Fig. 8, the construction is substantially the same as above described, the members corresponding and identified by the same numerals having the exponent "e" but showing a centrally arranged holding screw 6<sup>e</sup> having its head cast in the base 5<sup>e</sup> as indicated, and fixedly mounted therein. By this construction, the bracket may be secured by the single screw to any suitable surface and will be readily held thereon.

In Fig. 9, I show a double dog arrangement in which the construction is otherwise substantially the same as that shown in Fig. 1, the members being indicated by the same numerals having the exponent "f". The

frame is so designed as to provide clearance at its upper portion for each outwardly extending wing 8<sup>f</sup> of the dog member, so that the device may be used in a fixed position to operate against tension in either of two opposite directions.

In Figs. 10 and 11, I show a form of bracket and blank therefor, made of sheet or plate metal, in which the blank is originally cut out in the form shown in Fig. 11. The blank is bent into form, as shown in Fig. 10, providing the back 2<sup>f</sup>, the top 3<sup>f</sup> and the depending front support 4<sup>f</sup>. The blank is bent forwardly, forming the base 5<sup>f</sup>, the ends of which are bent downwardly as indicated at 14<sup>f</sup>, 14<sup>f</sup>. These latter elements provide supporting braces for the base and when the back 2<sup>f</sup> is secured against a wall or other surface by screws passing through holding holes 15<sup>f</sup>, the dog being pivotally mounted by a pin extending through the holes 9<sup>f</sup>, 9<sup>f</sup>, in the front and back respectively, the device will operate in the same manner as above described.

In Fig. 11, the parts corresponding to the final bent form of Fig. 10, are indicated by corresponding numerals.

The device is generally adapted to various uses for the purpose of holding a rope or cord, as in connection with a hitching post or otherwise. It will be observed, that for the purpose of adapting it to use with a flat holding element, as a strap or band, the dog 8 is also provided with a laterally straight surface at each side of the central grooved portion, which is preferably serrated or toothed, as indicated at 16.

Variouly different uses will suggest themselves to any one familiar with the necessity of such a clamping device, and when mounted in the various different ways, using the special brackets best adapting it to the particular purpose in view, the holding dog will operate to fixedly retain the element in position until released.

A special advantage of the device resides in the construction and arrangement of the central groove and its obliquely disposed serrations.

What I claim is:

1. A clamp of the character described comprising a base, a back plate, a top on a plane with said base, a pivoting portion at right angles to said top and on a plane with said back, all of said parts being integral, and a gripping dog pivoted between said back and said pivoting portion, having a peripheral bearing portion of gradually increasing radius, and provided with a V-shaped recess increasing in size toward said decreasing radius, said V-shaped recess having clamping ridges on its surface.

2. A clamp of the character described comprising a base, a back plate, a top on a plane with said base, a pivoting portion at

right angles to said top and on a plane with  
said back, all of said parts being integral,  
and a gripping dog pivoted between said  
back and said pivoting portion, having a pe-  
5 ripheral bearing portion of gradually in-  
creasing radius, and provided with a V-  
shaped recess increasing in size toward said  
decreasing radius, each side of said recess  
being provided with V-shaped teeth con-  
verging toward the bottom and inclined 10  
obliquely with relation to the pivoting center  
of said dog.

In testimony whereof I hereunto affix my  
signature.

WILLIAM A. RICHARDSON.