S. C. LAWLOR.

IMPLEMENT CLAMP.

APPLICATION FILED OCT. 21, 1907. RENEWED AUG. 8, 1908.

916,338. Patented Mar. 23, 1909.

Fig. 1.

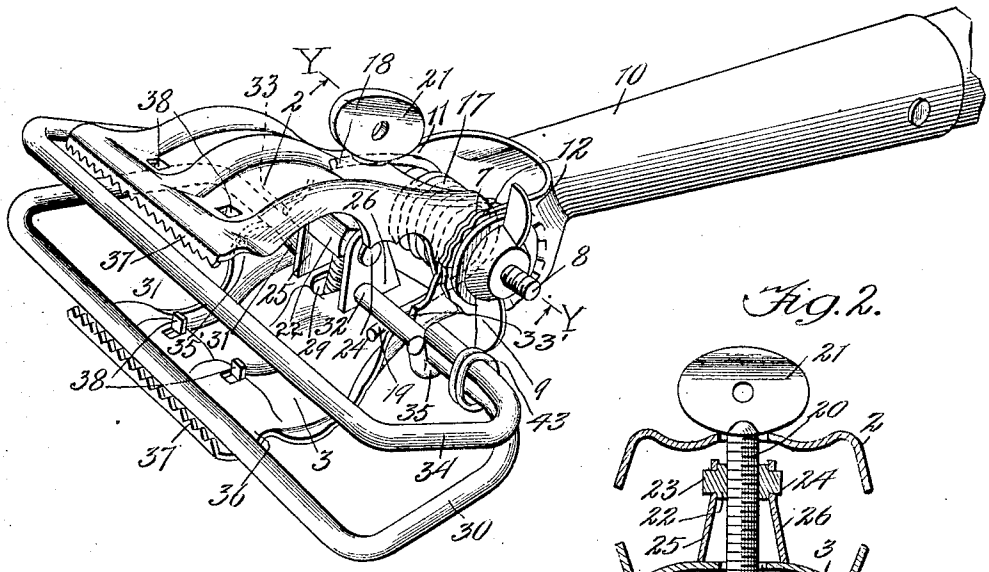


Fig. 2.

Fig. 3.

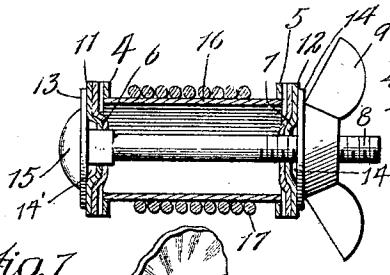


Fig. 4.

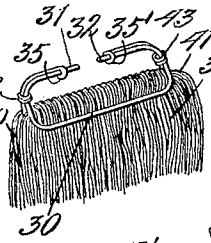


Fig. 5.

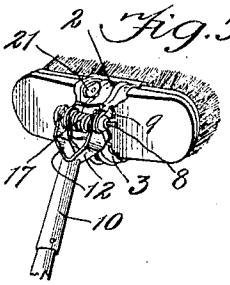


Fig. 7

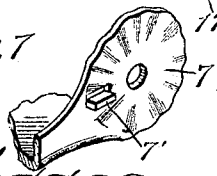


Fig. 6.

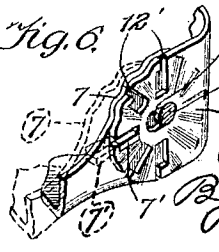
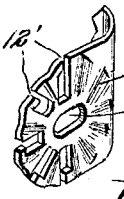


Fig. 8.



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UNITED STATES PATENT OFFICE.

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IMPLEMENT-CLAMP.

No. 916,338. Specification of Letters Patent. Patented March 23, 1909.

Application filed October 21, 1907, Serial No. 398,452. Renewed August 8, 1908. Serial No. 447,592.

To all whom it may concern:

Be it known that I, SIMEON C. LAWLOR, a citizen of the United States, residing at Duluth, St. Louis county, Minnesota, have invented certain new and useful Improvements in Implement-Clamps, of which the following is a specification.

Among the objects in view is the provision in combination with a main clamp adapted to clasp any of a number of different implements, of an auxiliary clamp designed to act independently as a clasp or holder for an implement and particularly adapted to be itself clasped by the main clamp while the auxiliary clamp is holding an implement.

Another object in view is the provision of an improved operating mechanism for the main clamp, whereby the main and auxiliary clamps may be caused to assume various angular relation with respect to the supporting handle thereof.

With these and further objects in view, the invention comprises the novel construction, arrangement and combination of parts hereinafter described in detail, illustrated in the drawing and incorporated in the appended claims.

In the drawing—Figure 1 is a perspective view of a clamping device embodying the features of the present invention, the handle being broken away. Fig. 2 is a cross section through the jaws. Fig. 3 is a section taken on line Y—Y of Fig. 1. Fig. 4 is a perspective view of the auxiliary clamp removed and serving as a mop-holder. Fig. 5 is a perspective view, on a reduced scale, of the implement holder engaging a brush, the auxiliary clamp shown in Figs. 1 and 4 being removed. Fig. 6 is a perspective view showing a modification in the interlocking parts whereby the jaws are angularly adjusted relative to the handle of the tool. Figs. 7 and 8 are perspective views of the Fig. 6 parts, separated.

Referring in detail to the several views, 2 and 3 are, preferably, stamped sheet metal jaws provided with pivot-lugs or ears 4, 5 and 6, 7 through which a bolt 8, having a thumb-nut 9, is inserted. The handle of the tool is inserted in a pocket 10 which has a fork which provides ears 11 and 12 which embrace the series of jaw-ears and are pivoted on the bolt 8. The ears of one of the jaws and the ears of the fork are corrugated and otherwise adapted to engage each other, as will be more fully explained hereinafter, so as to hold said jaw in a fixed position relative to the handle or socket 10, while the other jaw is free, so far as its pivot parts, or ears, are concerned.

In Figs. 1 and 3 the arrangement of all of the ears is shown as follows: The ears 11 and 12 of the shank or socket portion 10 are outermost. The ears 6 and 7 lie next to and engage the ears of the handle or its socket, while the ears 4 and 5 of the loose jaw are innermost and free of the other ears. Washers 13 and 14 are interposed between, respectively, the head 15 of the bolt 8 and the handle ear 11, and the nut 9 and the opposite handle ear 12.

In the employment heretofore of corrugated ears clamped together for the purpose of interlocking jaws and handle against relative angular movement it has been found that the pressure of the nut and head of the bolt has caused the outer edges of the ears, or the divergent ends of the radial corrugations, to "spring" and thereby produce an imperfect contact where the most effective mutual hold of the parts should otherwise take place, the leverage of the outer ends of the corrugations, of course, being greater than their inner ends near the pivot or bolt 8. I provide for a firm engagement by either dishing the centers of the disks, as shown at 14′, inwardly so as to bring all of the pressure of the head and nut of the bolt and the washers 13 and 14, upon the outer circles of engagement and relieve the central portions of all pressure, or by providing the ears 6, 7 and 11, 12 with notches and lugs as shown in Figs. 6, 7 and 8. In these figures the arrangement of one pair of coöperating ears is shown (the other pair being identical) as providing the ear 7 of the stationary lug with a struck-out lug 7′, and providing the handle ear 12 with notches 12′ which are undercut as shown. The ear 12 is also provided with an oblong opening or hole 8′ for the bolt 8. The lug 7′ on each side is disengaged from one notch and engaged with another by a slight pull or push, as the case may be, of the fork ears from or toward the jaws, as indicated by dotted lines in Fig. 6, where the ears 7 and 12 are in full lines shown in engagement against relative movement. This engagement is released by loosening the nut 9, rotating the lug 7′ out of the undercut portion of the notch 12′ in

which it is shown in Fig. 6, then drawing the lug out of the slot by pulling the ears 7 and 12 in opposite direction, or sliding the bolt 8 into the forward end of the slot 8′. This brings the lug 7′ to the position in which it is shown in dotted lines, or free of the handle ear 12, when the ears 7 and 12 may be relatively rotated on the pivot 8 and the lug 7′ engaged with either of the other notches 12′, then pushed inwardly by reversing the releasing movement and rotated into the undercut which provides a shoulder or stop for the lug that prevents its accidental movement so long as the disks are clamped together against relative rotary movement. The ears of the free or loose jaw are pivoted upon a sleeve 16 which surrounds the bolt 8. The ends of the sleeve 16 bear against the inner surfaces of the ears 6 and 7 of the fixed jaw and thus support the ears of the latter and the ears of the handle against the compressive force of the head and nut of the bolt 8. As shown in Fig. 3, the sleeve is made large enough in diameter to bring its support upon the outer circles of the contacting surfaces, for the purpose referred to in the foregoing explanation of the function of the dished, or concavo-convex, central portions of the ears of the handle and adjustably fixed jaw.

A spring 17 is arranged to exert pressure upon the loose jaw which tends to keep the latter away from the fixed jaw. In Figs. 1 and 3 this spring is shown as coiled around the sleeve or drum 16 with one of its ends, 18, tensioned against the inner face of the jaw 2, and its opposite end 19 tensioned against the jaw 3, whereby the spring exerts a force which tends to force the jaws apart or hold them open.

My improved means for clamping the jaws upon any object to be held therein, or, in other words, for imparting a closing movement of the jaws relatively to each other against the tension of the spring 17, consists of a bolt 20 which is provided with a thumb-head 21 which engages the jaw 2. The bolt 20 has threaded engagement with a nut 22 formed with pivot portions 23 and 24 mounted in bearings 25 and 26. The latter are apertured plates which project from the inner face of the jaw 3 and are secured to said jaw by means of lugs 27 and 28 which pass through the jaw and are bent over or clenched against its outer face, as plainly shown in Fig. 2. When the jaws are entirely closed the nut 22 nearly or quite touches the jaw 2 although anchored to the jaw 3. The jaws are arched away from each other as shown, leaving a substantial space between them when closed; and the space between the nut and the jaw to which it is anchored, is provided for housing part of the bolt extending through the nut when the jaws are closed. In former constructions, when the jaws were nearly closed, or holding some thin or narrow implement, the outward projection of the bolt would be considerable and this projection has been found to be very objectionable in that the end of the bolt would come into contact with, and scratch or mar, the surface upon which a brush, mop, squeegee, or the like, was used. By reference to Fig. 2 it will be seen that more than one-third of the working threads of the bolt 20 are between the nut and the jaw 3 to which said nut is anchored, and said portion of the threads represent the extent of my shortening of the projection as compared with a bolt having threaded engagement with the jaw 3, or with a nut lying against its face.

As shown in Figs. 1 and 2, the jaw 3 has an opening 29 through which the free end of the bolt moves, and as the jaws are ordinarily spaced apart in holding the usual cleaning devices the free end of the bolt will be substantially at the opening 29 and therefore out of the way. Another advantage derived from the confinement of the threads mostly between the jaws is their protection against damage which would make them work hard in the nut.

In Fig. 5 the auxiliary clamp and holder, shown in Fig. 4, has been removed. The auxiliary clamp is shown in position in Fig. 1, to be clasped between and operated by the jaws 2 and 3 of the main clamp. As shown in Fig. 4 the auxiliary clamp serves as a holder for a mop when the mop is not in use, and said auxiliary clamp consists of two heavy pieces of wire bent four times substantially at right angles. The clamp member labeled 30 has two journal portions 31 and 32 which are mounted in two identical pockets or recesses 33 and 33′, the latter being shown plainly on the near side in Fig. 1. These recesses are formed in upturned edges of the jaw 3, as shown. The other member, 34, of said clamp has its ends looped about the journal ends 32 and 33, as shown at 35. The two parts of the clamp may be hinged together in any other suitable manner, but the construction shown is preferred on account of its simplicity and inexpensiveness. The essential feature in the auxiliary clamp is its formation with jaws suitable for clasping a mop or other like implement and retaining the same in position for being readily introduced between the jaws of the main clamp and as readily removed therefrom and stored or hung up to dry.

By reference to Fig. 4 it will be seen that the formation of the auxiliary clamp, the ends of which form jaws at right angles to the jaws proper, permits the mop 39 to swell out beyond the ends of the clamp and prevent said ends from coming in contact with, or scratching, the walls of a room when the mop is used upon the floor near the walls. The auxiliary clamp is thus particularly adapted

for the purpose of holding a mop, and being a separate part, removable from the jaws 2 and 3 and not confined to the usually required width of such jaws, it can be made full mop-width. In other words, the usual compromise arrangement of making the jaws 2 and 3 excessively wide and clumsy for the purpose of adapting them to serve as mop heads, is obviated. Thus the jaws 2 and 3 may be made of correct proportions for the specific purpose of holding a brush such as shown in Fig. 5, a window squeegee, or other similar device for which mop-head proportions are too unwieldy, bulky or inconvenient. When the mop is not to be used the clamp is simply lifted out of the recesses 33 and 33′ and the mop is left undisturbed in its clamp, which then serves as a holder upon which the mop is hung up to dry. In the outer edges of the jaws 2 and 3 are trough-like recesses 35′ and 36 which are adapted to contain the mop-gripping portions of the mop-clamp. The extreme edges of the jaws 2 and 3 are preferably serrated or toothed as at 37, 37 to increase their effective hold upon certain kinds of cleaning devices. These jaws are also provided with punched out lugs 38 which serve as stops for one side of the back of a brush such as the one shown in Fig. 5, for instance.

As shown in Fig. 4, the auxiliary clamp when used to clasp a mop does not require doubling of the mop-fiber in the usual manner where said fiber is hung over a wire, but is adapted to grip the end instead of the middle of the mop. A doubled mop worn too short for further use may therefore be made substantially a full-length mop in the form of clamp herein described.

When the auxiliary clamp is removed from the jaws 2 and 3 and made to serve as a holder its members are clamped together, independently of said jaws 2 and 3, upon the mop by means of a pair of rings 42 and 43 which normally rest upon the hinge-portions, as in Fig. 1, and are slidable over the end portions, as in Fig. 4, to force said portions (which move angularly relative to each other) toward each other and thereby securely clamp the mop. Of course these rings need not be disturbed, or moved from the positions in which they appear in Fig. 4, except when the mop is to be renewed.

What I claim as new and desire to secure by Letters Patent, is—

1. In a device of the class described, the combination with a pair of jaws, of an auxiliary clamp removably held and closed by said jaws, said auxiliary clamp having means thereupon, independent of the jaws, for clamping the members of said auxiliary clamp together upon an implement.

2. In a device of the class described, the combination with a pair of jaws and a handle to which said jaws are adjustably secured, of an auxiliary clamp adapted to hold an implement, said jaws being recessed for the reception of said auxiliary clamp therebetween, whereby said jaws serve to tighten said auxiliary clamp upon an implement, said auxiliary clamp having additional means for clamping an implement, and said auxiliary clamp being removable from said jaws whereby the latter are operable independently of the auxiliary clamp.

3. In a device of the class described, the combination with a forked handle portion of two jaws pivotally secured to the tines of said forked portion, locking means adapted to secure one of said jaws at a predetermined angle to said handle portion, a bolt having a head which engages one of said jaws, a nut therefor and spaced apart from the head in between said jaws, and means connecting said nut with the opposite jaw from that engaged by the head of said bolt.

4. In a device of the class described, the combination of a pair of pivotally connected jaws, a bolt engaging one of the jaws and extending through the other jaw, and a nut connected to the second jaw, arranged between the jaws and engaging said bolt.

5. In a device of the class described, the combination of a pair of pivotally connected jaws, a bolt engaging one of the jaws, the other jaw being formed with a slot through which said bolt extends, and a nut connected to the slotted jaw, disposed between the jaws and engaging said bolt.

6. In a device of the class described, the combination with a forked handle portion and a pair of jaws pivotally connected therewith, of coöperating ears formed on one of said jaws and on said forked portion, and means for causing said ears to engage each other most firmly at the outer portions of the contacting surfaces of said ears.

7. In a device of the class described, the combination with a forked handle portion and a pair of jaws pivotally connected thereto, of coöperating ears formed on one of said jaws and on said forked portion, a bolt engaging the ears for drawing the same into intimate contact, said ears being dished centrally for causing said ears to engage each other most firmly at the outer portions of the contacting surfaces of said ears.

8. In a device of the class described, the combination with a pair of pivotally connected jaws, of an auxiliary clamp adapted to independently clasp an implement and support the same, said auxiliary clamp being adapted itself to be clamped, while retaining an implement, between said pivotally connected jaws.

9. In a device of the class described, the combination of a main clamp, and an auxiliary clamp comprising a pair of jaws and means for drawing the jaws toward each other for causing the jaws to clamp an im-

plement, the said auxiliary clamp being adapted to be detachably clasped by the main clamp.

10. In a device of the class described, the combination of a pair of pivotally connected jaws forming a main clamp, and an auxiliary clamp comprising pivotally connected jaws, and means on one of the jaws of the auxiliary clamp for pivotally connecting the same with one of the jaws of the main clamp between the jaws of the main clamp.

11. In a device of the class described, the combination of a pair of pivotally connected jaws forming a main clamp, and a pair of pivotally connected jaws forming an auxiliary clamp, the jaws of the auxiliary clamp being constructed to be adapted for being disposed between and clasped by the jaws of the main clamp, and being designed for being removed from between the main clamp's jaws for leaving the jaws of the main clamp free to directly engage an implement.

12. In a device of the class described, the combination of a pair of pivotally connected jaws, means for drawing the jaws toward each other, and a stop projecting from one of the jaws into the path of movement of an implement being inserted between the jaws.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SIMEON C. LAWLOR.

Witnesses:
J. W. BECKSTROM,
M. C. ALLEN.