March 8, 1932. P. C. KELLER 1,848,485

COMB FRAME HANDLER

Filed May 9, 1929

Fig. 1

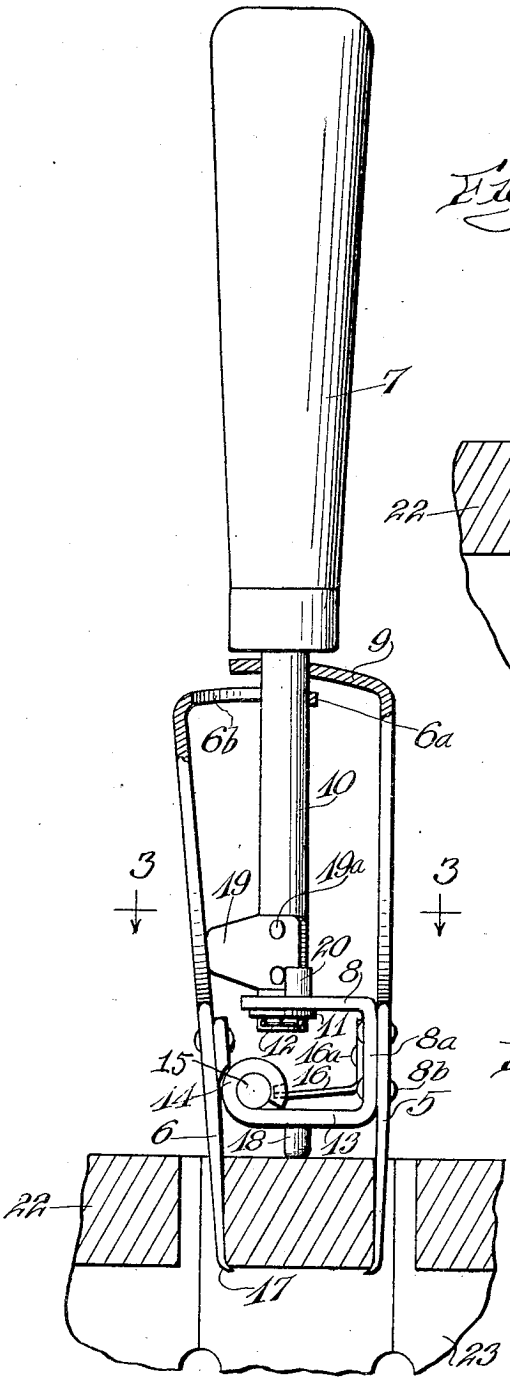


Fig. 2

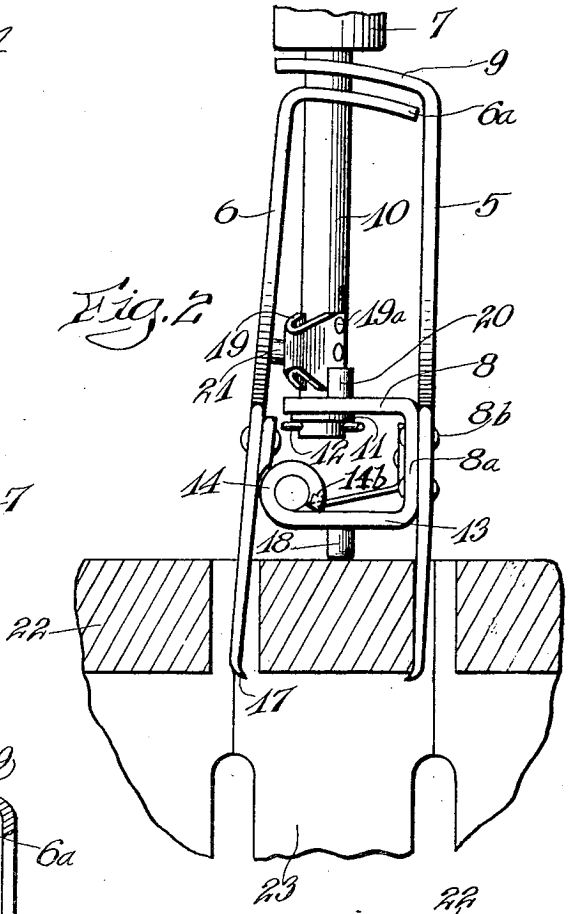
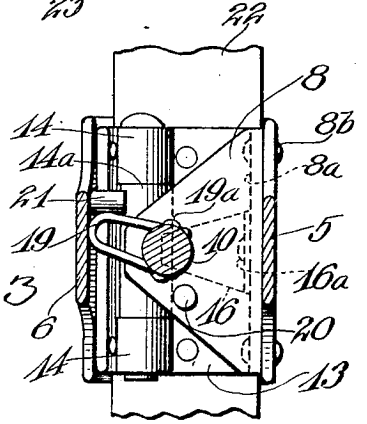


Fig. 3



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UNITED STATES PATENT OFFICE

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COMB FRAME HANDLER

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My invention relates to devices for lifting comb frames used in beehives, etc.

The invention has for its main object to provide a device which secures a firm grip upon the comb frame and retains the latter from falling.

A further object of the invention is to provide means whereby the grip applied to the frame is locked to maintain its engaged position until released.

A still further object of the invention is to so design the locking device for the appliance that it cannot of itself become released, but requires the efforts of the attendant for that purpose.

Another object of the invention is to provide the novel appliance with guard stops to prevent the crushing of bees as the appliance is set in place for the engagement of the frame.

A significant object of the invention is to mount the same with a single handle for both the holding and the operation thereof, such handle facilitating the turning of the frame as well as the lifting thereof.

An additional object of the invention is to render the grip of the device firm yet devoid of cutting or impressing influences, leaving the frame normal and unmarred.

A final but nevertheless important object of the invention is to construct the novel appliance with few and simple parts of sturdy design for efficient operation and durability.

With the above objects in view and any others that may suggest themselves from the specification and claims to follow, a better understanding of the invention may be gained by reference to the accompanying drawings, in which

Fig. 1 is an elevation of the novel appliance in the act of gripping the top piece of a conventional comb frame, parts being shown in section;

Fig. 2 is a view similar to Figure 1, partly broken away, showing the appliance in disengaged position; and

Fig. 3 is a section on the line 3—3 of Figure 1.

The general configuration of the novel appliance is suggestive of the typical monkey-wrench, the forward portion of the appliance having a set of jaws 5 and 6 and the rear portion thereof being in the form of a round handle 7, whereby to provide terminal bearings for the free rotation of the stem. The jaw 5 is a stationary one and is mounted with cross flanges 8 and 9 upon a round stem 10 extending from the handle 7. Beyond the flange 8, the stem receives a washer 11 and a cotter pin 12 to maintain the engagement of the jaw with the stem.

The flange 8 is formed with a forwardly directed base 8*a*, which is riveted at 8*b* or otherwise rigidly secured to the jaw 5; and the base 8*a* is extended with a cross head 13 in parallelism to the flange 8, the cross head terminating in a set of hinge ears 14 in spaced relation. The jaw 6 is generally of the same design as the jaw 5 and is rockably disposed with relation to the latter by being made with an inward hinge ear 14*a*, disposed between the hinge ears 14 and receiving a common pintle 15. The hinge ear 14*a* is slotted as indicated at 14*b* to receive one end of an L-shaped tension spring 16, the foot of the latter being riveted to the base 8*a* as indicated at 16*a*. The function of the spring 16 is to exert forward tension upon the hinge 14*a* whereby to keep the front ends of the jaws open under normal conditions.

The rear portion of the jaw 6 is formed with a bend 6*a* directed toward the other jaw and cut with a slot 6*b* to clear and receive the guidance of the handle stem 10. Also, the closing of the jaws is limited by the length of the bend 6*a*.

The front ends of the jaws are formed with inwardly directed lips 17, which taper to an edge. Also, the cross head 13 is formed with spaced and forwardly directed studs 18.

The handle stem 10 receives a U-shaped lug 19 in proximity to the flange 8, this lug being riveted at 19*a*, as shown or made integral with the stem. When the jaws are in the normal or separated positions, the lug 19 finds a rest between a stud 20 of the flange 8 and the jaw 6, having a limited amount of play between these parts. However, when the handle 7 is given a twist in a direction remote from the stud 20, the lug 19—which

is round-nosed—will impinge upon the rear or tail portion of the jaw 6 with the effect of separating such portion from the jaw 5 and thus compressing the forward portion of the said jaw toward the jaw 5. The prominence of the lug 19 causes it to exert friction against the movable jaw 6 as the maximum radial height of the lug affects the latter by the turning effect of the handle; and shortly beyond the high effective point, the lug meets an abutment stud 21 and comes to a rest. Having passed the point of maximum friction with the tensioned jaw 6, the lug may be said to be locked against self-return, and only by effort on the reverse operation of the handle can the lug be made to recede from the locked position.

When the appliance is put into use, as illustrated, whereby to grip a typical top piece 22 of a comb frame 23, it will be seen that a firm grip may be exerted upon the said top piece by the operation described, and the release of the same effected by the reverse control of the handle. In advancing the appliance upon the top piece 22, its cross head 13 stops in spaced relation to the cross piece by the interposed presence of the studs 18, so that whatever bees may be lingering upon the cross piece at the particular site will not be crushed by the full advance of the cross head 13. Also, the spacing of the tool jaws when open is just sufficient to comfortably clear the sides of the top piece, so that accumulations of wax on such sides will yield to the advance of the tool and become removed by the single movement of its application.

It will be apparent that in the use of the novel appliance that but one hand need be employed, that is, to hold the handle 7. After the jaws have been applied to the top piece of the frame, a right-hand twist of the handle securely grips the frame and locks the jaws as previously described, after which it is an easy matter to lift the frame out by the use of the same hand. Further, once the frame has been lifted out of the set, it may be swung in one or the other direction for inspection without danger of loosening from the lifting appliance, since the latter is very firmly locked to the frame. Thus, the use of the appliance does not entail special manipulation or attention, since the only efforts necessary are those of engaging the frame and twisting the handle of the appliance, for the latter is virtually as one with the frame until laid in place and ready to be disengaged.

In conclusion, it may be said that the novel appliance is built very strongly, its material being steel or other suitable metal, except for the handle which is preferably of wood. The actions involved in the appliance are of a very simple nature and the latter may be used for long periods without any repair or particular attention.

I claim:—

1. A comb frame handler comprising a handle, a stationary jaw carried by the same, a companion jaw pivotable toward and from the stationary jaw, and means to operate the pivotable jaw by twisting the handle.

2. A comb frame handler comprising a handle, a stationary jaw carried by the same, a companion jaw movable toward and from the stationary jaw, and cam means impressed upon the movable jaw by a twisting movement of the handle to bring such movable jaw toward the stationary jaw.

3. A comb frame handler comprising a handle, a stationary jaw carried by the same, a stem extended from the handle alongside the jaw, a bearing from the latter for the remote portion of the stem to permit a twisting motion of the stem relative to the jaw, a movable jaw opposite the latter, and means carried by the stem and effective by a twist of the handle to close the movable jaw toward the stationary one.

4. A comb frame handler comprising a handle, a stationary jaw carried by the same, a stem extended from the handle alongside the jaw, a bearing from the latter for the remote portion of the stem to permit a twisting motion of the stem relative to the jaw, a movable jaw pivoted relative to the latter, and means carried by the stem and effective by a twist of the handle to swing the movable jaw toward the stationary one.

5. A comb frame handler comprising a handle, a stationary jaw carried by the same, a pivot bearing extended laterally from the jaw, a companion jaw pivotally mounted in said bearing, a stem extended from the handle between the jaws terminating between said handle and the pivot point of said companion jaw, and means carried by the stem to crowd the adjacent portion of the companion jaw outwardly by a twist of the handle with the effect of swinging the remote portion of the companion jaw to close toward the stationary jaw.

6. The structure of claim 5, said means comprising a radial cam lug carried by the stem.

7. The structure of claim 5, in which said means comprises a radial cam lug carried by the stem and a stop carried by said adjacent portion of the companion jaw to receive the cam lug beyond the highest pressure point and lock the companion jaw in closing position.

8. The structure of claim 5, in which said means comprises a radial cam lug carried by the stem and a back stop for the cam lug when in idle position.

9. A comb frame handler comprising a handle, a stem extended therefrom, a stationary jaw carried by the stem at one side, a U-member carried by the stationary jaw and having one arm serve as a bearing for the stem, the other arm of the U-member embodying a hinge, a companion jaw pivoted on the

latter, and means to operate the companion jaw relative to the stationary jaw.

10. The structure of claim 9, and a spring within the U-member urging the companion jaw to maintain a normally spread position from the stationary jaw.

11. A comb frame handler comprising a handle, a stem extended from the latter, a stationary jaw carried by the stem, a companion jaw movable to and from the stationary jaw, and a slotted extension of the movable jaw receiving the stem as a stop to limit the movement of the movable jaw.

12. A comb frame handler comprising a handle, a stem extended from the latter, a member laterally of the stem and extended with branches journaling the end portions of the stem, a stationary jaw extended from said member, a movable jaw carried by the outer one of said branches, and means actuated by the motion of the stem in said branches to operate the movable jaw.

In testimony whereof I affix my signature.

PETER C. KELLER.