March 15, 1932. J. C. YINGLING 1,849,816

HOOK GUARD

Filed April 2, 1931

FIG. 1.

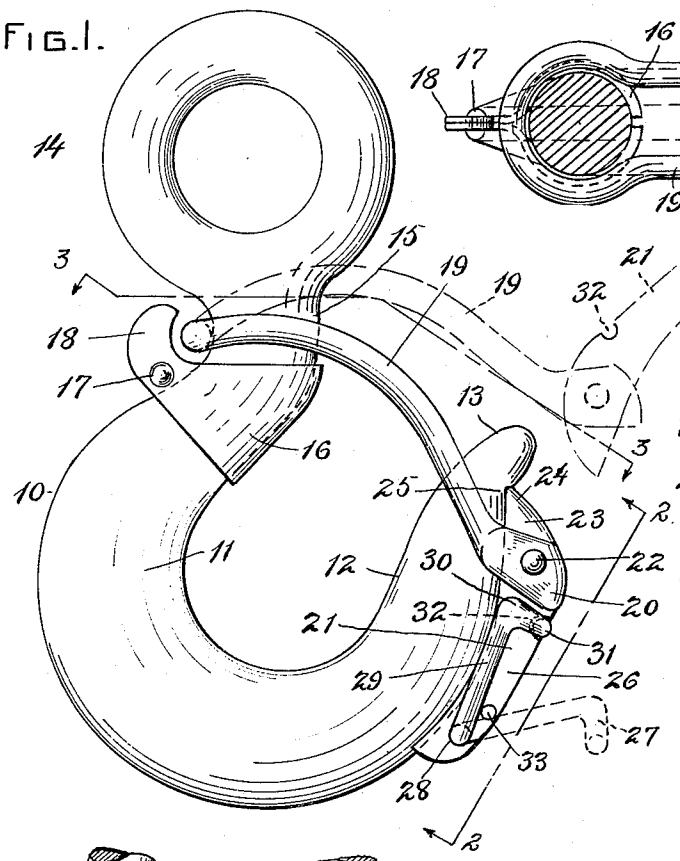


FIG. 3.

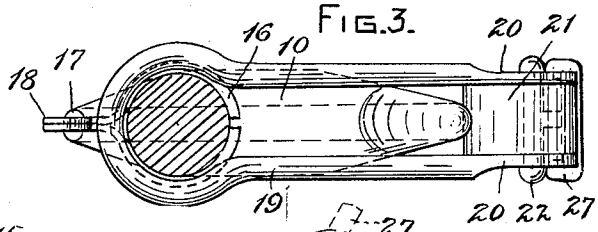


FIG. 2.

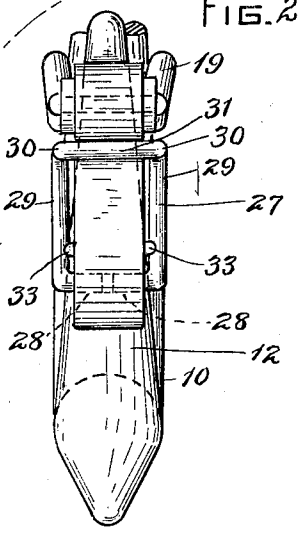


FIG. 4.

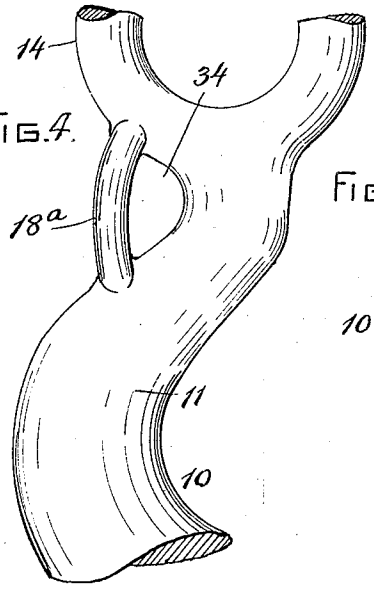


FIG. 5.

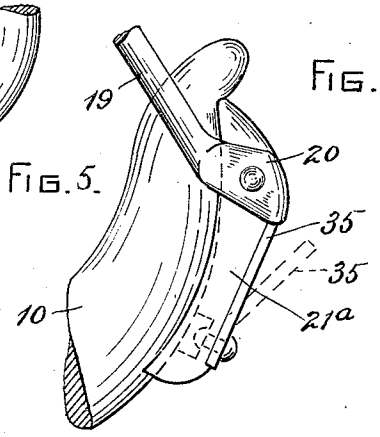
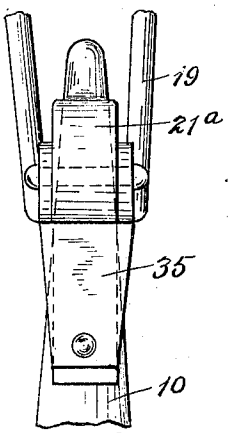


FIG. 6.



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UNITED STATES PATENT OFFICE

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HOOK GUARD

Application filed April 2, 1931. Serial No. 527,089.

This invention relates to guards or mechanical housing devices for closing the throat of a hook.

One of my objects is to provide an improved guard operated by a lever action and applicable to standard hoisting and pulling hooks commonly in use. A further object is to provide a lever-action hook-guard operating with a minimum of sliding friction. Another object is to provide improved lever-retaining means in a device of this type. A still further object is to provide a hook-guard of an improved resilient construction tending to maintain the same yieldingly in its locked condition.

The present invention is an improvement in some respects upon the hook-guard described in my prior Patent No. 1,753,326 of of April 8, 1930, in that it furnishes a better lever action and avoids the excessive sliding friction of the eccentric cam shown in that patent which produces a tendency of the lever to climb the bill of the hook, and further in that it provides a spring-guard of better action and wider application.

Of the accompanying drawings, Fig. 1 is a side elevation showing a standard hook provided with a preferred embodiment of my present invention.

Fig. 2 is a front edge view of the body of the hook and guard looking from the plane 2—2 of Fig. 1.

Fig. 3 is a sectional and plan view from the plane 3—3 of Fig. 1.

Fig. 4 is a partial side elevation showing a modified hook with an integral guard retainer.

Fig. 5 is a partial side elevation showing a modified lever retainer.

Fig. 6 is an edge view of the latter modification.

Referring at first to Figs. 1 to 3, 10 designates generally a standard one-piece hook including a shank portion 11, a bill 12 having an outwardly-turned point or nib 13 and an attaching ring or eye 14 connected with the shank 11 by a neck 15.

To the hook shank 11, just below the neck 15, I attach a suitable guard retainer here shown as a two-piece sheet-metal collar 16 having its parts secured together by a rivet 17 and formed with a hook-like projection 18 spaced from the neck 15 to provide an opening for the reception of the guard 19.

Said guard 19 is in the form of a stout wire loop or link which at its rear end partially encircles the neck of the hook 10 and is adapted to be swung laterally out of the way around said neck to expose the throat of the hook when the guard is free and thus permit the entrance and exit of the part to which the hook is to be coupled, the guard at such times being prevented by the retaining collar 16 from sliding down the shank of the hook. It will be noted that the guard 19 as viewed from the side is bowed outwardly, parallel to the plane of the hook, for the purpose of making it somewhat resilient in order to hold its retaining lever firmly engaged in the locking position.

The arms or prongs of the guard 19 are formed with widened end portions 20 between which is mounted a locking lever 21 pivoted to turn upon a pin 22 which is riveted to said widened portions. The shorter or forward arm 23 of lever 21 is formed with a fulcrum point or pivoting end 24 of the knife-edge type adapted to engage in a shallow seating notch 25 which may be filed at the base of the hook-point 13 on the outer side of the bill 12, although such notch is not always required because the recess provided by the outwardly-curving hook-point sometimes provides a sufficient fulcrum seat for the lever. The longer or rear arm 26 of lever 21 acts as an operating arm and the lever is curved on its inner side to snugly fit the complemental curved outer side of the hook bill.

To the lever arm 26 is pivoted a bail-like retaining member or secondary lock 27 conveniently made of a piece of stiff wire whose ends are bent inwardly to form a pair of trunnions 28 received in a hole transversely drilled in the lever arm 26. Said member further has a pair of parallel arms 29 extending forwardly from the trunnions 28, a pair of outwardly-bent shoulder portions 30 at the forward extremities of these arms for resting adjacent the end portions 20 of the guard 19 when said member 27 is in its lock-

ing position, and a transverse middle portion 31 connecting said shoulder portions and adapted to be received in a notch 32 formed in the lever arm 26 when said member is in its locking position. At such time the elbows at the junction of the side arms 29 and the shoulder portions 30 cannot pass the corners of the widened extremities 20 of the guard should there be an outward swinging force exerted on lever 21. For retaining the member 27 in locking position, the lever arm 26 is provided with a pair of shallow rounded projections 33, which may be formed on the ends of a pin having a force fit in a hole drilled in the arm 26, and are located in the path of the side arms of member 27, said side arms springing apart sufficiently to pass over these projections and lying behind them as shown in Figs. 1 and 2 when member 27 is moved into locking position.

In the operation of this form of my invention, assuming the parts to be in their operative positions as shown in full lines, with the acute-angled fulcrum nose or point 24 of the locking lever in the hook notch 25 and the inner edge of the lever held snugly against the outer edge of the hook bill, the guard may be released by first swinging the secondary locking member 27 outwardly past the projections 33 as shown in broken lines in the lower part of Fig. 1, whereupon said member may be used as a handle to swing the locking lever 21 on its fulcrum point 24. The pivot pin 22, to which the resistance provided by the spring guard 19 has been yieldingly applied to hold the curved inner side of lever 21 snugly against the hook bill 12, is thereby carried over center, across the straight line connecting the fulcrum point 21 with the pivotal point of contact between the inner end of the guard 19 and the neck 15 of the hook, and a continuation of this movement brings the parts into the free position indicated by broken lines in the upper part of Fig. 1, whereupon the guard and lever may be swung laterally around the side of the hook so as to be out of line with its throat. The movement of the guard and lever into their operative or closed position and their retention in that position are effected in an obvious manner by a reversal of the foregoing operations.

In the modification shown in Fig. 4 I provide the hook 10 with a guard-retaining bar 18^a integrally connected at both ends with the shank and eye portions of the hook respectively and adapted to be made during the operation of forging or casting the hook, there being thus provided an opening 34 through which one prong of the guard 19 previously described may be passed in assembling said guard with the hook.

In Figs. 5 and 6 are shown a hook-guard 19 and locking-lever 21^a constructed and operating generally after the manner of the device shown in Figs. 1 to 3 except that in this instance I provide the long arm of the locking lever with a spring retaining plate 35 riveted thereto at one end and having its free end normally resting against the body of the lever below the extremities of the widened portions 20 of the guard to prevent the lever from turning from its locking position, but adapted to be sprung outwardly from its retaining position as shown in broken lines in Fig. 5, so that the unlocking movement of the lever may then be effected. The side edges of this spring plate are flared upwardly and outwardly beyond the sides of the lever 21 as indicated in Fig. 6 to provide projecting portions for engagement by the operator's fingers in manipulating said plate.

It will be understood that the form of embodiment may be modified in further particulars without departing from the scope of my invention as defined in the claims.

I claim:

1. A guard device for hooks comprising a guard member, and a locking lever pivoted thereto and having a pointed extremity to act as a fulcrum.

2. A guard attachment for hooks comprising a guard member formed at one end to embrace the neck of the hook, and a locking lever pivoted at the other end of said member and provided with an acute-angled fulcrum nose.

3. The combination of a hook formed with an outwardly-turned nib and having a notch in its outer edge at the base of said nib, a throat-spanning guard member having one end pivotally embracing the neck of said hook, and a locking lever pivoted at the other end of said member and having a fulcrum nose of the knife-edge type received in said notch.

4. The combination of a hook having a guard retainer in back of its neck portion, a guard pivoting at one end against the back of said neck portion and adapted, when loose, to be held by said retainer against displacement along the hook shank, and a locking lever pivoted at the opposite end of said guard for rocking engagement with the outer edge of the hook bill adjacent the end of the latter.

5. The combination of a hook, a throat-spanning guard pivoting at one end against the back edge of the hook neck and provided with locking means at its other end, and a collar clamped upon the hook shank adjacent the neck thereof and having a guard-retaining member.

6. The combination of a hook having a guard retainer integrally connected at both ends with the hook body and providing a guard-receiving opening in back of the hook neck, a guard loop open at one end and adapted to be assembled with the hook by passing one of its legs through said opening, and a

locking lever pivotally mounted between the legs of said loop.

7. A hook guard comprising a locking lever, and a guard member connected therewith and pivotally movable on the hook by swinging said lever against the hook, said guard member being bowed in the plane of its pivotal movement to provide resiliency for retaining it in locked condition.

8. A hook guard comprising a wire guard loop open at one end and having a bight at the other end for pivoting on the hook, and a locking lever pivoted at the open end of said guard loop between the legs thereof and having a fulcrum end, the legs of said guard loop being bowed in the direction of its unlocking movement to provide longitudinal resiliency.

9. A guard device for hooks comprising a throat-spanning guard, a locking lever pivoted thereto, and secondary locking means for retaining said lever in locking position.

10. A guard device for hooks comprising a throat-spanning guard, a locking lever pivoted thereto and having a fulcrum arm on one side of its pivot and an operating arm on the opposite side, and an adjustable member mounted on said operating arm for coaction with the guard to retain said lever against accidental unlocking movement.

11. A guard device for hooks comprising a throat-spanning guard, a locking lever pivoted thereto, and a secondary lock pivoted to said lever for retaining the latter in locking position and usable as a lever-releasing handle when swung outwardly from its lever-retaining position.

12. A guard device for hooks comprising a throat-spanning guard, a locking lever pivoted thereto, a resilient lever-retaining secondary lock pivoted to said lever, and means on the lever over which said secondary lock may be forced by its pivotal movement for retaining the latter in its lever-locking position.

13. A guard device for hooks comprising a throat-spanning guard, a locking lever pivoted thereto, and a bail-like wire secondary lock having inwardly-turned ends for pivoting it on said lever, side arms extending therefrom and terminating in a pair of lever-retaining abutments carried by inward swinging movement of said secondary lock into a lever-retaining position behind coacting portions of the guard, and a transverse middle portion connecting said abutments.

14. A guard device for hooks comprising a throat-spanning guard, a locking lever pivoted thereto and having an operating arm provided with rounded side projections, and a bail-like secondary lever-retaining lock having inwardly-turned trunnions pivoted to said operating arm and a pair of spring arms carrying said trunnions and adapted to be forced over said projections to retain said secondary lock in its lever-locking position.

15. A guard device for hooks comprising a throat-spanning guard, a locking lever pivoted thereto and having an operating arm, and a spring plate rigidly fastened at one end to said operating arm and coacting at its other end with the guard to hold said lever in its locking position, said plate projecting laterally beyond the sides of said operating arm adjacent the locking end of the plate to provide finger holds for bending the free portion of the plate out of locking position.

In witness whereof I have hereunto set my hand this 31st day of March, 1931.

JOHN C. YINGLING.