

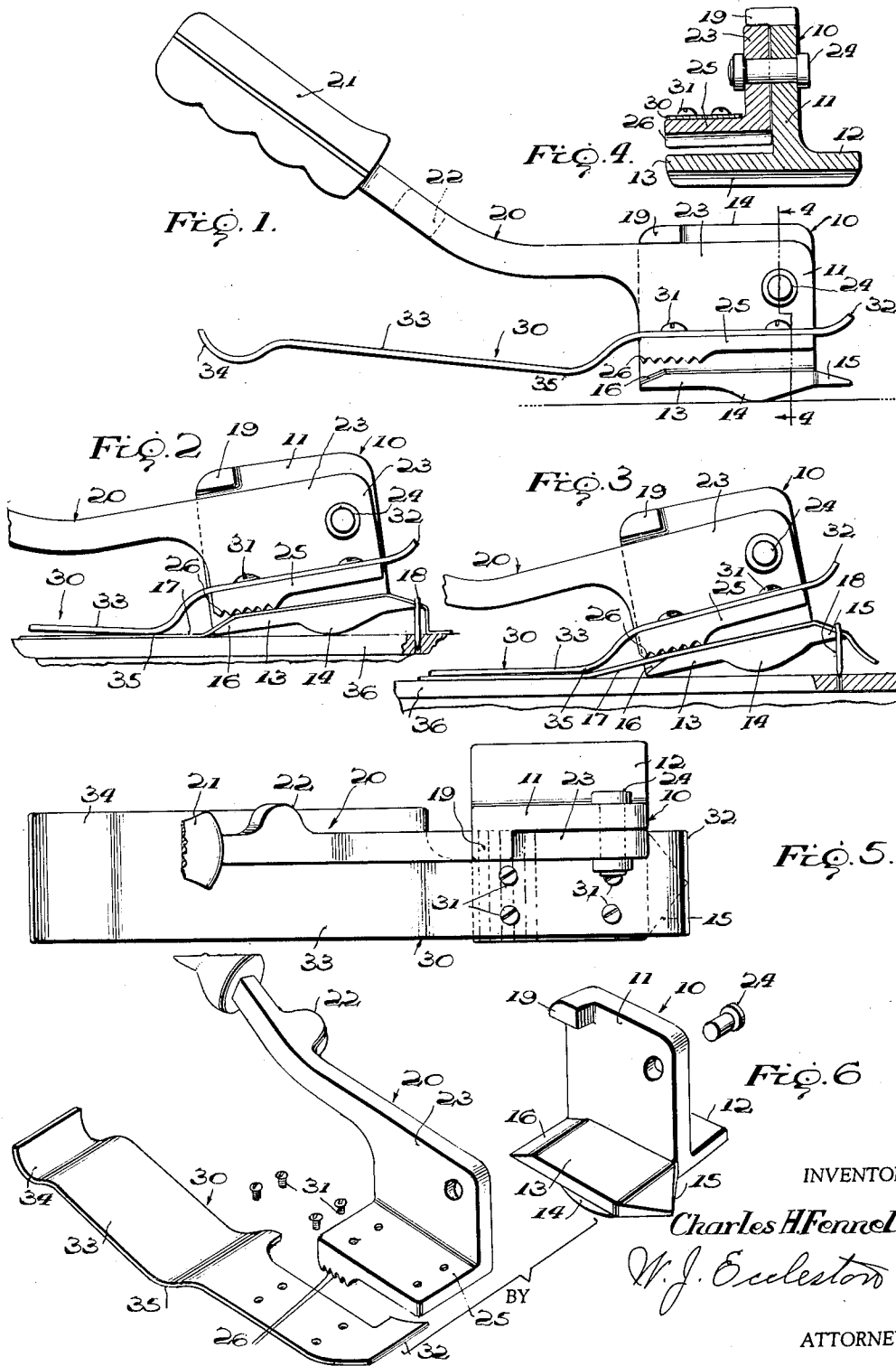
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C. H. FENNELL

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STAPLE REMOVER FOR STRAPPING OR THE LIKE

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INVENTOR

Charles H. Fennell

W. J. Eccleston

ATTORNEY

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STAPLE REMOVER FOR STRAPPING OR THE LIKE

Charles H. Fennell, 99th Engr. Co. (RB), 30 Engr. Bn. (BT), Presidio of San Francisco, Calif.

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(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

The invention relates to tools for removing staples and more particularly to a device for removing staples which secure a steel or other band, a wire or the like from an object encircled by said band. The removal of such staples presents several problems not encountered in the removal of other nails or staples. In the first place, the band or the like is under tension and is tightly held to the object by the staples even after the band has been severed. Thus, the loose ends of the band tend to recoil as each staple is lifted whereby endanger the hands of the person operating the tool. Also, so much force must be applied to lift these staples that they are frequently flipped upwardly by the lifting portion of the tool into the face of the operator.

With the foregoing in view, it is an object of the invention to provide an improved staple lifting or removing tool which not only protects the operator from flying staples but also protects his hands from the recoiling band ends.

A further object is to provide an improved staple lifting tool which includes means which grip the band before the staple is lifted and which maintains its grip until after the lifting of the staple has been completed.

A further object is to provide a staple lifting tool such as that last described which includes also a novel hand guard.

A further object is to provide a novel staple lifting tool such as that last described wherein such hand guard includes a novel band clamping portion.

Other objects and advantages reside in the particular structure of the invention, the structure of the several elements of the same, combinations and sub-combinations of such elements with each other and/or with a staple, a band or an object, all of which will be readily apparent to those skilled in the art upon reference to the attached drawing wherein one species of the invention is disclosed and to the following specification wherein the invention is described and claimed.

In the drawing:

Figure 1 is an elevational view of a tool according to the invention;

Figure 2 is a like view, parts being broken away, showing the first stage of the removal of a staple;

Figure 3 is a view like Figure 2 but showing a second stage in the removal of a staple;

Figure 4 is a transverse, vertical sectional view taken substantially on the plane of the line 4—4 of Figure 1;

Figure 5 is a plan view, a portion of the handle being broken away; and

Figure 6 is an exploded perspective view showing the several elements of the invention, a part of the handle being broken away.

Referring specifically to the drawing, wherein like reference characters designate like parts in all views, 10

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designates generally a base member which comprises a substantially vertical web 11 having an integral bottom flange which includes portions 12 and 13 which extend laterally of said web in both directions. A projection 5 14 depends from said flange and extends transversely thereof to provide a fulcrum for rocking the same. The front end 15 of the flange portion 13 is pointed and beveled to provide a staple lifting portion. Likewise the rear end 16 of the flange portion 13 may be beveled to facilitate the application of such flange portion beneath a band 17, the tool being thereafter moved forwardly until the front end 15 is in proximity to or actually beneath a staple 18, see Figures 2 and 3. A fixed stop 19 may be formed on the web 11 in overlying relation to the flange portion 13 for a purpose to be apparent hereinafter.

To actuate the base member to lift a staple, there has been provided a handle which is generally designated at 20 and which includes any suitable hand grip portion 21 and which may include a thumb rest 22 forwardly of such hand grip portion. Handle 20 includes a flat and vertically disposed front end 23 which is pivotally connected to the web 11 in face-to-face relation by any suitable pivot means 24 extending through aligned holes therethrough.

The lower portion of the front end 23 is laterally directed to provide a ledge 25 which overlies the flange portion 13. The undersurface of the ledge 25 is provided with suitable band clamping means 26 which may comprise a plurality of serrations extending transversely of the ledge rearwardly of said pivot means 24.

The band clamping means 26 overlies the rear portion of the flange portion 13, which provides a limit stop to limit downward movement of the handle relative to such flange portion. In like manner the stop 19 overlies the upper edge of the flat portion 23 to limit relative upward movement of the handle 20.

As so far described, the invention may be applied to a strap 17 by being backed thereunder with the handle 20 elevated so as to dispose such strap between the flange portion 13 and the clamping means 26 of the ledge 25.

Thereafter, the tool is moved forwardly to dispose the staple lifting portion 15 in an operative position below or in proximity to the staple 18. Then the handle is moved downwardly relative to the flange portion 13 until the strap 17 is firmly clamped between the clamping means 26 and such flange portion. Continued downward pressure on the handle 20 will rock the base on its fulcrum 14 whereby to elevate the staple lifting portion 15, the adjacent portion of the band 17 and, of course, the staple 18, all as shown in Figures 2 and 3. It should be noted that throughout the staple lifting action the band 17 is firmly clamped to the flange portion 13.

A further feature of the invention is found in a guard member which is generally designated at 30 and which preferably comprises a relatively broad and generally flat spring member. The guard 30 is disposed longitudinally of the tool and is secured atop the ledge 25 in any suitable manner as by the machine screws 31. The guard 30 includes a front end 32 which projects forwardly of the ledge 25 so as to overlie the staple 18 in the operative position of the device and provide a staple or face guard to prevent the projection of the staple upwardly into the face of the operator. The guard 32 may be slightly upwardly curved as shown to deflect a flying staple forwardly of the tool.

Rearwardly of the ledge 25, the guard 30 is formed with a downwardly offset hand guard portion 33 which overlies the band 17 for a considerable distance. Such portion 33 includes a front corner 35 and may terminate in a further downwardly projecting band clamping portion 34 at its rear end. As seen in Figures 2 and 3, throughout the staple lifting operation, both ends 34 and 35 of the

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hand guard portion 33 resiliently clamp the band 17 against the object 36 which is encircled by the band. Thus, recoil of a freed band end is restricted to areas beyond the hand guard 33 so as to protect the operator's hand from a recoiling band end. It follows, then that the tool provides a safe and rapid implement for accomplishing the objects of the invention, which tool is strong and sturdy in use, may be manufactured at low cost and may be used by unskilled personnel with a minimum of training.

Also, while there has been shown and described what is now thought to be a preferred embodiment of the invention, it is understood that the same is susceptible of other forms and expressions. Therefore, the invention is not considered as being limited to the particular structure shown and described hereinabove but only as hereinafter claimed.

I claim:

1. A tool for lifting a steel band or the like and simultaneously lifting a staple securing such band to an object encircled by the same, comprising a rigid lifting platform adapted to be disposed in an operative position beneath said band rearwardly of a staple, said platform including a forwardly extending staple lifting portion adapted to be forced beneath that portion of said band which is below said staple as said platform is moved toward such staple to an operative position, said platform including a downwardly extending object engaging projection providing a fulcrum operative to elevate said staple lifting portion as said platform is rocked rearwardly on said fulcrum, handle means, a vertical extension of said platform laterally thereof, pivot means carried by said extension and extending transversely of said platform above the same and pivotally connecting said handle thereto for limited movement relative to said platform in a vertical plane, said handle including a band clamping portion overlying said platform and band when said platform is in said operative position, said band clamping portion being movable downwardly with said handle relative to said platform to clamp said band between said band clamping portion and said platform, and continued downward movement of said handle being operative to move said handle and platform as a unit in a direction to elevate said staple lifting portion together with said band and said staple.

2. A tool according to claim 1, there being resilient hand guard means carried by said handle and extending rearwardly of said band clamping portion, said resilient means overlying said band with said platform in said operative position, and said resilient means resiliently pressing portions of said band against said object to supplement the action of said band clamping portion as said band and staple are elevated.

3. A tool according to claim 2, wherein said resilient means includes an integral forward extension disposed to overlie said staple with said platform in said operative position.

4. A tool according to claim 1, wherein said handle includes guard means overlying said staple when said platform is in said operative position.

5. A tool for lifting a staple securing a steel band or the like to an object encircled by such band, comprising a rigid staple lifting portion adapted to be disposed beneath said band rearwardly of and in proximity with said staple, a vertical extension of said portion laterally thereof, a handle, pivot means on said extension pivotally connecting said handle to said extension for movement relative thereto toward and away from said portion, band clamping means on said handle for clamping said band against said portion as said handle is moved relative to said portion in one direction, and said handle and portion being movable as a unit to lift said staple and band upon continued movement of said handle in such direction.

6. A staple lifting tool according to claim 5, there being resilient hand guard means carried by said tool and extending rearwardly of said portion, and said guard means

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resiliently engaging said band rearwardly of said portion during said lifting of said staple.

7. A staple lifting tool according to claim 5, there being a resilient strip comprising a combined staple guard and hand guard carried by said handle in overlying relation to said portion, said strip having a front end projecting forwardly of said portion and disposed to overlie said staple as the same is being lifted, and said strip having a rear end projecting rearwardly of said portion and resiliently engaging said band as said staple is being lifted.

8. A tool for lifting a staple securing a steel band or the like to an object encircled by said band, comprising a substantially vertically disposed web, a bottom flange integral with said web and extending laterally of the same in at least one direction, said flange having a front end formed to provide a staple lifting portion, a projection providing a fulcrum integral with said flange and extending downwardly therefrom transversely thereof, an actuating handle, pivot means pivotally connecting said handle to said web above said flange, said flange being adapted to be inserted beneath said band with said front end in proximity to said staple, said handle being downwardly movable relative to said flange to clamp said band between said handle and flange, and further downward movement of handle being operative to rock said flange on said fulcrum-providing projection and elevate said front end whereby to lift said staple and band.

9. A tool according to claim 8, there being a hand guard comprising a substantially flat spring carried by said handle in overlying relation to said flange, and said spring having a rear end projecting rearwardly of said flange whereby to bear resiliently on said band as said flange is rocked on said projection.

10. A tool for lifting a staple securing a steel band or the like to an object encircled by said band, comprising a substantially vertically disposed web, a bottom flange integral with said web and extending laterally of the same in at least one direction, said flange having a front end formed to provide a staple lifting portion, a projection providing a fulcrum integral with said flange and extending downwardly therefrom transversely thereof, an actuating handle, said handle having a front end including a vertically disposed flat portion and a horizontally disposed ledge disposed in overlying relation to said flange, pivot means pivotally connecting said flat portion to said web, said ledge including depending band clamping means rearwardly of said pivot means, said flange being adapted to be inserted beneath said band with said front end in proximity to said staple, said handle being downwardly movable relative to said flange to clamp said band between said band clamping means and said flange, and further downward movement of handle being operative to rock said flange on said fulcrum-providing projection and elevate said front end whereby to lift said staple and band.

11. A tool for lifting a staple securing a band or the like to an object encircled by said band, comprising a rockable staple lifting portion adapted to be disposed beneath said band in proximity to said staple, a vertical extension of said portion laterally thereof, an actuating handle, means pivotally connecting said handle to said extension above said portion, said handle including means for first clamping said band to said portion and thereafter rocking said portion so as to simultaneously lift said band and said staple, a combined hand guard and staple guard carried by said handle in overlying relation to said band and staple, said guard including front and rear portions respectively projecting forwardly and rearwardly beyond said staple lifting portion, and said rear portion of said guard including a portion projecting rearwardly of said staple lifting portion, and said rearwardly projecting portion engaging said band and clamping the same to said object as said lifting portion is rocked to lift said band and staple.

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12. A tool according to claim 11, wherein said combined guard comprises a single flat spring.

13. A tool for lifting a staple securing a steel band or the like to an object encircled by said band, comprising a substantially vertical web, a bottom flange integral with said web and extending laterally thereof in opposite directions, said flange at one side of said web having a bevelled front end to provide a staple lifting portion, a projection providing a fulcrum integral with said flange and disposed transversely thereof in depending relation thereto, an actuating handle, said handle having a flat and vertically disposed front end and a horizontally disposed ledge, pivot means pivotally connecting said flat front end of said handle to said web in face-to-face relation, said ledge overlying said side of said flange having said staple lifting portion, said ledge including a depending band clamping portion overlying

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said last named side of said flange rearwardly of said pivot means, said side of said flange being insertable beneath said band with said staple lifting portion in proximity to said staple, said handle being downwardly movable relative to said flange to clamp said band between said band gripping means and said flange, further downward movement of said handle being operative to rock said flange on said fulcrum whereby to elevate said staple lifting portion, band and staple, and a combined hand and staple guard integral with said handle and overlying said band and staple.

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