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W. DRYPOLCHER

1,989,918

STAPLE REMOVER

Filed April 28, 1933

Fig. 2.



Fig. 3.



Fig. 4.

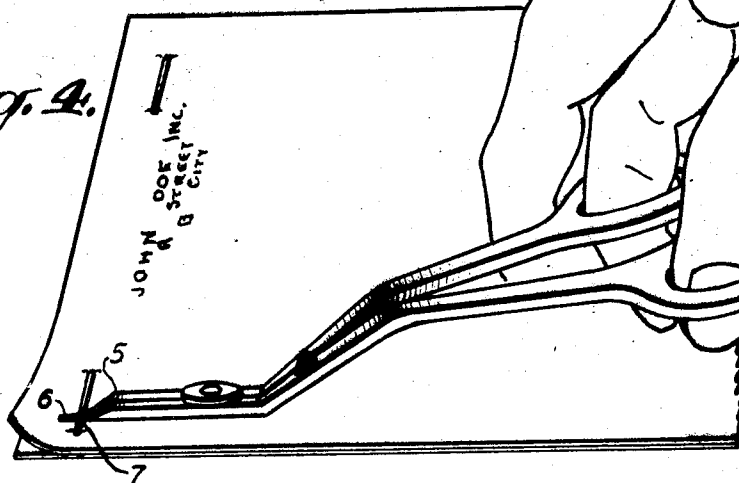


Fig. 5.

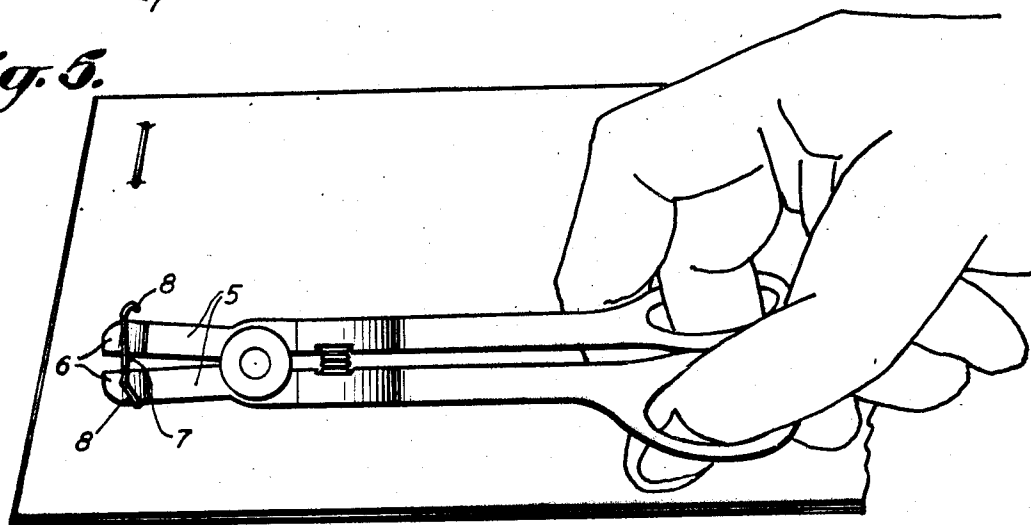
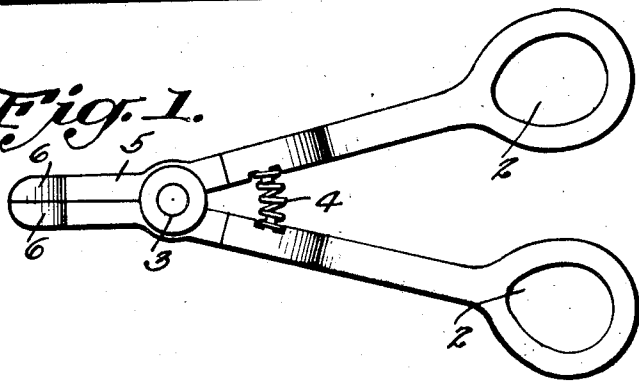


Fig. 1.



INVENTOR

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UNITED STATES PATENT OFFICE

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STAPLE REMOVER

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12 Claims. (Cl. 254—28)

There have been in use for many years machines which drive a wire staple through material and then clinch the staple by bending the legs inwardly toward each other and then substantially flat against the under surface of the material which has been stapled. At times, it becomes necessary or desirable to remove these so-called clinched staples from the material without damaging said material. In the past, this has been accomplished at times by first trying to lift up the clinched ends of the staple with finger nails and then, still using the finger nails, pull the staple through from the other side. Needless to say, this has resulted not only in broken finger nails, but occasionally in personal injury.

Recent developments for removing staples have embodied the use of a wedge which is inserted under the cross-bar of the staple. This is not always satisfactory, as a wedge frequently rips the material.

Other devices comprise pliers of various types which operate by first inserting a form attached to the pliers under the cross-bar of the staple and then having auxiliary means, also attached to the pliers, which raise or slide the staple over the form depending on the side edges of the form to straighten out the legs of the staple so that the auxiliary means may proceed further, lifting the now-opened staple out of the material.

It has been found that if a device somewhat similar to an ordinary pair of scissors is inserted under the cross-bar of the staple and the blades then separated, as soon as the sides of the blades hit the legs of the staple the outward pressure exerted tends to straighten out the legs of the staple sufficiently so that continued spreading motion detaches the staple from the material. Furthermore, if one of the legs of the staple should straighten out before the other, the continued spreading motion nevertheless results in the other leg also being drawn out. This is not always the case with some types of staple removers on the market because if a device is used at a slight angle, one leg is sometimes drawn out without trouble, but the other leg remains embedded in the material with the result that the operation must be repeated to completely remove the staple.

Some type of staple removers are merely pliers with attachments added to them to perform separate functions. The shape of the plier handles on these machines is generally such that the hand gripping these handles scrapes the material during the operation of the device. This is not

only inconvenient, but rumples the material, particularly if it happens to be thin paper.

It is a purpose of this invention to provide a new and improved method of removing staples from material which has been fastened together by this means.

It is a further object of this invention to provide an arrangement of the type described which has been simplified and which is inexpensive to manufacture.

A still further object is to provide a device which has been designed for the specific purpose described and does not therefore consist merely of plier handles with attachments fastened to them.

Additional advantages of this invention will be clearly apparent from the following description together with the accompanying drawing which forms a part of this application.

One form of the invention is illustrated in the accompanying drawing of which

Figure I is a plan view of the device. It is essentially a simplified plier arrangement in which the two main pieces forming the plier are pivoted to each other but do not cross each other.

Figure II is an open staple.

Figure III is a clinched staple.

Figures IV and V are views showing the device in operation.

In Figure I, both of the handles 1, are substantially alike. Both of these handles 1, have openings 2, for the fingers for convenience in handling the device. They are pivoted at 3, and the handle section held apart by a spring 4, so that the device is always kept ready to use. Whereas the handles 1, are on one side of the pivot arrangement 3, the working part of the device is on the opposite side of the pivot 3. This working part we shall indicate as the split tongue 5, and each of the side pieces composing the split tongue 5, we shall call the prongs 6. The forward end of the split tongue 5, is shaped so that the entire forward section is thinned down. This is the part which is intended to be inserted under the cross-bar 7, of the staple. It will also be noted that the outside edges of each of the prongs 6, particularly at the forward part, are rounded off so as to provide for easy insertion under the cross-bar 7. On the other hand, this inserted edge should not be so sharp as to possibly cause injury. In Figures IV and V, we see the prongs 6, of the split tongue 5, underneath the cross-bar 7, pressing against the side legs 8, of the staple and partially straightening them out and on the point of completely extracting the staple from the material.

It will be understood that there may be slight changes made in the construction and the details of my invention without departing from the field and the scope of the same, and I intend to include all such variations as fall within the scope of the appended claims of this application in which the preferred forms only of my invention are discussed.

I claim:

1. A staple remover comprising two pivoting arms assembled together so that one end of the assembled arrangement acts as a pair of handles, the other end as a pair of prongs, the vertical edges of said prongs being substantially parallel when prongs are adjacent to each other but converging toward the pivoting point of the arms when said prongs are separated.

2. A staple remover comprising two pivoting arms assembled together so that one end of the assembled arrangement acts as a pair of handles, the other end as a pair of prongs, the vertical edges of said prongs being substantially parallel when prongs are adjacent to each other but converging toward the pivoting point of the arms when said prongs are separated; said prongs being insertable under the cross-bar of the clinched staple, the clinched legs of the staple being at least partially opened by the spreading apart, when pressure is applied on the handles of the plier, of that part of the plier which is inserted underneath the cross-bar of the staple.

3. A staple remover comprising two pivoting arms assembled together so that one end of the assembled arrangement acts as a pair of handles, the other end as a pair of prongs, the vertical edges of said prongs being substantially parallel when prongs are adjacent to each other but converging toward the pivoting point of the arms when said prongs are separated, said prongs being insertable underneath the cross-bar of a staple clinched through material and removing clinched staple from the material by the divergent action of the prongs which spread apart from each other with a motion substantially parallel to the surface of the material.

4. A staple remover comprising two pivoting arms assembled together so that one end of the arrangement acts as a pair of handles, the other end as a pair of prongs, the vertical edges of said prongs being substantially parallel when prongs are adjacent to each other but converging toward the pivoting point of the arms when said prongs are separated, said prongs having thin leading edges to provide for easy insertion beneath the cross bar of a staple.

5. A staple remover comprising two pivoting arms assembled together so that one end of the arrangement acts as a pair of handles, the other end as a pair of prongs, the vertical edges of said prongs being substantially parallel when prongs are adjacent to each other but converging toward the pivoting point of the arms when said prongs are separated, said prongs having substantially parallel top and bottom surfaces so as to provide for effective positioning of the prongs beneath the staple crown prior to removing the staple from its clinched position.

6. A staple remover comprising two pivoting arms assembled together so that one end of the arrangement acts as a pair of handles, the other end as a pair of prongs, the vertical edges of said prongs being substantially parallel when prongs are adjacent to each other but converging toward the pivoting point of the arms when said prongs are separated, said prongs having means

to act as a stop for the staple crown during positioning of the prongs, this means being intended to maintain the staple at an effective distance from the pivoting point to provide for easy removal of the staple.

7. A staple remover comprising two pivoting arms assembled together so that one end of the arrangement acts as a pair of handles, the other end as a pair of prongs, the vertical edges of said prongs being substantially parallel when prongs are adjacent to each other but converging toward the pivoting point of the arms when said prongs are separated, said prongs having substantially parallel top and bottom surfaces extending backwards to a definite point at which a portion of the upper surface is raised abruptly to act as a stop for the staple crown during insertion of the prongs so as to maintain the staple at an effective distance from the pivoting point to provide for easy removal of the staple.

8. A staple remover in which two arms are pivoted to each other, one end of the arrangement acting as a pair of handles, the other end acting as a tongue, said tongue having a top surface which is substantially parallel to the cross bar of the staple and to the top surface of the material as well as to the bottom surface of the tongue, said tongue being insertible under the cross bar of a clinched staple to remove said staple by the action of the tongue against the side legs of the staple, the vertical edges of said tongue being substantially parallel when closed in position but converging toward the pivot point when the handles move toward each other.

9. A staple remover in which two arms are pivoted to each other, one end of the arrangement acting as a pair of handles, the other end acting as a tongue which is insertible under the cross bar of a clinched staple to remove said staple by the action of the tongue against the side legs of the staple, the motion of the tongue being in a plane parallel to the cross bar of the staple and in or parallel to the plane including the cross bar and the legs of the staple, the vertical edges of said tongue being substantially parallel when closed in position but converging toward the pivot point when the handles move toward each other.

10. A staple remover in which two arms are pivoted to each other, one end of the arrangement acting as a pair of handles, the other end acting as a tongue, said tongue being insertible under the cross bar of the staple and being made to act against the side legs during which action the motion of the tongue is parallel in direction to the surface of the material into which the staple is driven, said action thereby removing the staple from the material into which it has been clinched, the vertical edges of said tongue being substantially parallel when closed in position but converging toward the pivot point when the handles move toward each other.

11. A staple remover in which two arms are pivoted to each other, one end of the arrangement acting as a pair of handles, the other end acting as a tongue which is insertible under the cross bar of a clinched staple to remove said staple by the action of the tongue against the side legs of the staple, the motion of the tongue being substantially parallel in direction to the length of the cross bar of the staple, the vertical edges of said tongue being substantially parallel when closed in position but converging toward the pivot point when the handles move toward each other.

12. A staple remover in which two arms are pivoted to each other, one end of the arrangement

5 acting as a pair of handles, the other end acting as a pair of prongs which is insertible under the cross bar of a clinched staple to remove said staple by the action of the prongs against the side legs of the staple, the motion of the prongs being in opposite directions away from each other and in

a plane parallel to the surface of the material, the vertical edges of said prongs being substantially parallel when closed in position but converging toward the pivot point when the handles move toward each other.

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