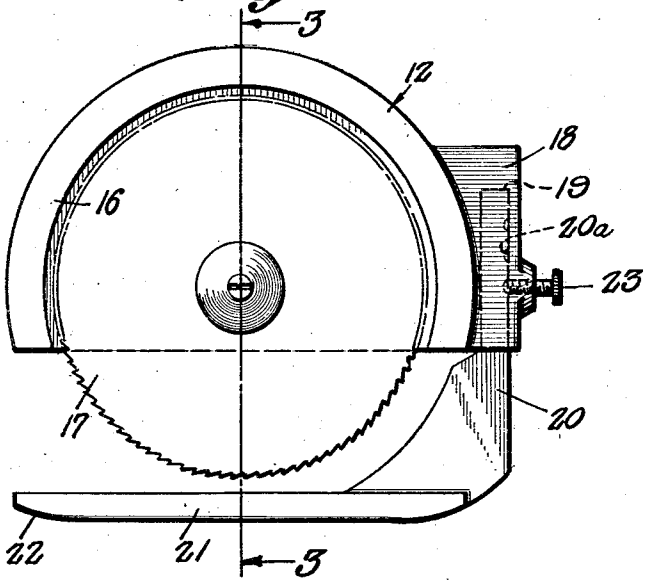
Dec. 9, 1930. B. E. CLARKE ET AL 1,784,337

CAST OR SPLINT REMOVING DEVICE

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Fig. 1.



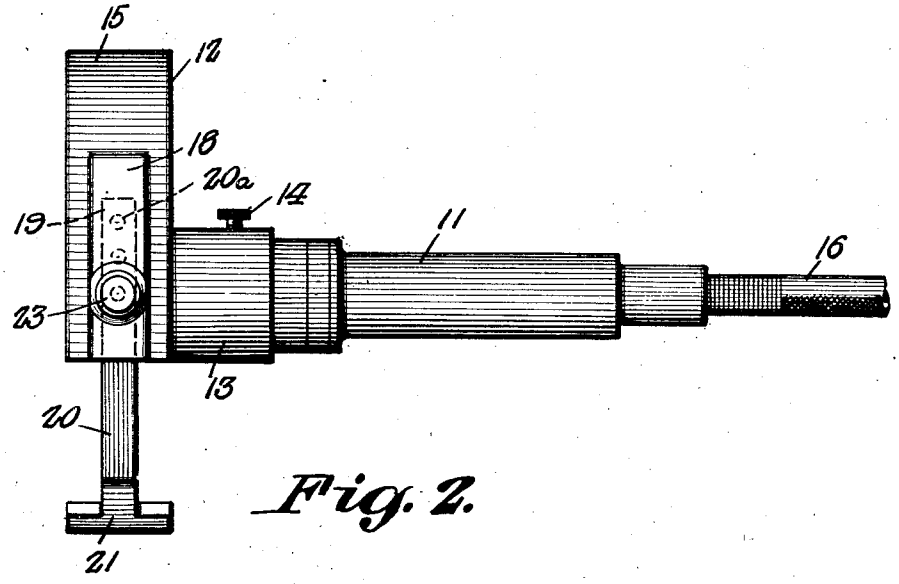


Fig. 2.

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CAST OR SPLINT REMOVING DEVICE

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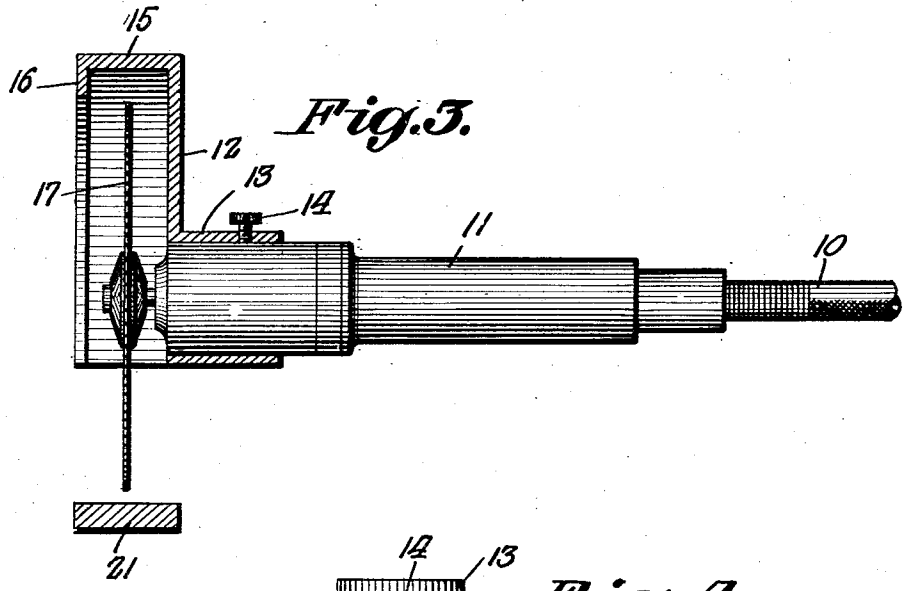


Fig. 3.

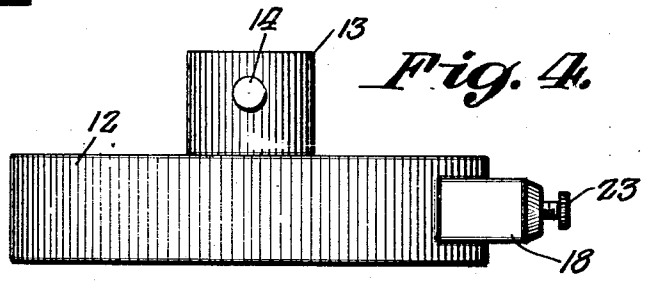


Fig. 4.

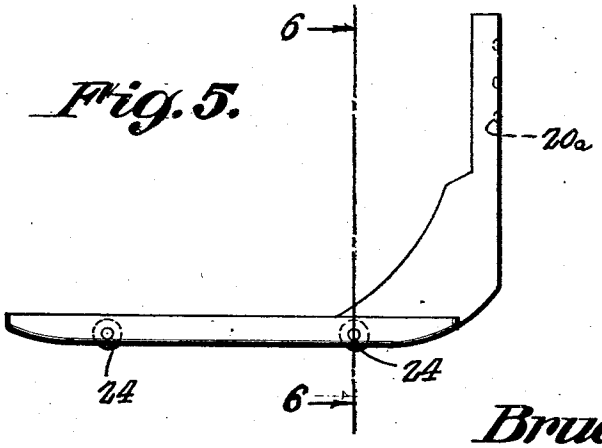


Fig. 5.

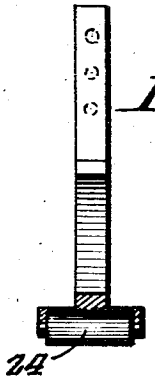


Fig. 6.

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UNITED STATES PATENT OFFICE

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CAST OR SPLINT REMOVING DEVICE

Application filed February 25, 1929. Serial No. 342,620.

This invention relates to surgical devices and has particular relation to a device for severing and cutting away plaster of Paris or other casts, molds, and splints, in a manner which will not annoy or pain the patient.

The present means commonly used in the removal of such casts, molds, or splints, is to chisel, shear, or saw with a hand saw, the material which will be broken up into small and irregular pieces. This sawing, shearing and chiseling is necessarily attended with considerably pain to the patient. Aside from the actual physical pain, there is also a mental agony or anxiety through the fear of cutting or otherwise injuring the sensitive skin tissues beneath such casts or molds. This agony or anxiety is of course extremely detrimental to the patient, and in many cases, it produces serious after effects that frequently delay a rapid return of the patient to normal.

Some of these casts or molds, etc. remain on the afflicted member for varying periods, ranging from a few days to months, and in some severe cases, years. The longer these casts or molds remain, the more sensitive becomes the underlying skin, so that the present methods of removal are exceedingly painful. Even when removal is effected by the use of the best instruments now available, and by skilled operators, the patient frequently suffers intense and often lasting pains.

Time required for the removal of these casts, etc. is also an important factor and it now requires from one-half hour to several hours to remove extensive casts. This fact operates to the disadvantage of the surgeon and his assistants and too much time is at present consumed for this important operation.

The thickness of the ordinary casts or molds varies between one-half inch to one inch (approximately). When such casts or molds have become hardened from months of setting they become very dense and tough so that it is extremely difficult to cut or break them away without severe pain and discomfort. As the toughness increases, the danger of cutting and injuring the skin of the patient multiplies. The cloth bandage (a sort of binding and protective medium used in practically all casts and molds) increases the difficulty of removal to no small degree.

Experiments have proven that a far more effective, time saving and painless manner for the removal of these casts or molds may be readily attained through the use of the present invention. It is therefore one of the objects of the invention to provide a cutting element by means of which the casts or molds may be cut into sections, or if desired, the whole cast or mold may be cut into sections in such manner as to preserve them intact for future reference and comparison with conditions which might develop in the patient at some future period. This would give the surgeon an accurate means for determining any abnormalities which might develop after the removal of a cast or mold.

Another object of the invention is the provision of a device which will eliminate all danger of cutting or injuring the skin of the patient as well as any danger to the operator, and in which bruising and "skin pinching" will also be eliminated.

A further object of the invention is the provision of a device of the above character which is simple in construction and operation and may be readily kept in a sterile condition so as to avoid wound contamination.

Another important object of the invention is the provision of a device as above stated by means of which the casts or molds, regardless of their size and extent, may be removed without rendering it necessary to move the patient.

A further object of the invention is the provision of a device of the above character in which the depth of the cut may be regulated so that the cut may be made in accordance with the thickness of the mold or cast.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claim.

In the drawings:—

Figure 1 is an elevation of the invention.

Figure 2 is a side view of the same.

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

Figure 4 is a plan view of the guard.

Figure 5 is a detail view showing a slightly modified form of depth regulating member.

Figure 6 is a section on the line 6—6 of Figure 5.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the reference character 10 indicates a flexible shaft which may be operated by any suitable source of power and which is provided with a handle 11. Mounted upon this handle is a guard 12 which includes a sleeve 13, the latter receiving the end of the handle 11 and being removably secured thereon by means of a set screw 14. This guard is substantially sem-circular as shown in Figure 1 of the drawings and includes a substantially semi-circular disk having an outwardly disposed circumferential flange 15 extending around its edge, while extending from the outer edge of the flange 15 is a relatively narrow flange 16. This last mentioned flange is spaced from and parallel with the disk so that a channel-shaped guard is provided within which is adapted to operate a cutting element 17. This cutting element is secured to the end of the shaft 10 and may be in the form of a saw as shown or it may consist of a circular knife.

Extending from the guard 12 is an offset 18 having a socket 19 therein and removably positioned within this socket is an arm 20. The arm 20 carries at its outer end a right-angularly disposed plate 21 and this plate forms a combined runner and depth penetrating or regulating member. The under face of the plate 21 is curved upwardly at its opposite ends as shown at 22 so that it may more readily adapt itself to movement beneath the cast or mold. The arm 20 is adjustably held within the socket 19 by means of a set screw 23.

By adjusting the position of the arm 20 with respect to the edge of the saw or cutting element, the depth of the cut may be accurately regulated and the degree of penetration of the saw into the mold or cast accurately controlled. In addition, the plate 21 provides a convenient runner which will not injure the delicate skin of the patient.

If desired, the runner or plate 21 may be provided with spaced rollers 24 as shown in Figures 5 and 6 of the drawings so as to facilitate movement of the plate.

The plate 21 may if desired be made of Monel metal, tool steel, or other suitable metal plain or plated, so that it may be easily and thoroughly sterilized.

It will be apparent from the foregoing description and accompanying drawings that the invention provides an exceedingly simple device which will facilitate cutting away and removal of casts, molds, splints, etc. regardless of their size, extent or thickness, or of the length of time they have been allowed to remain in position. It will be further apparent that the device is of a character which may be used by persons having no particular surgical skill or ability, as well as affording more satisfactory results in the hands of skilled persons. It will be thus apparent that an ordinary hospital attendant or orderly may accomplish quickly and painlessly the complete removal of an extensive cast or mold without the aid of the surgeon. It will be further apparent that the invention provides a device which may be easily handled and controlled and which is free from all side play and jerky movements, the device possessing marked flexibility of control so that any angle of cast or mold may be easily removed.

The device is compact and self contained and will cut its way through the hardest kind of plastic composition in a minimum of time and with the least possible discomfort to the patient.

The arm 20 may be provided with a plurality of spaced sockets or recesses 20*a* to receive the end of the screw 23 so as to provide a positive connection between this arm and the guard.

The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claim.

Having described the invention what is claimed is:

In a device for removing surgical casts, a rotatable cutting element, a guard for said element, an arm extending from the guard, a plate carried by and extending at right angles to the arm adjacent the edge of the cutting element and having its engaging surface rounded at its ends, and rollers journalled in the plate and having portions of their peripheries projecting beyond the engaging surface of the plate, said rollers being located one near each edge of the plate.

In testimony whereof we affix our signatures.

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ARTHUR A. SCHLEW.