Aug. 18, 1936. G. M. CHRISTIANSON 2,051,199

PLASTER CUTTER

Filed Jan. 18, 1935 2 Sheets-Sheet 1

Fig. 2

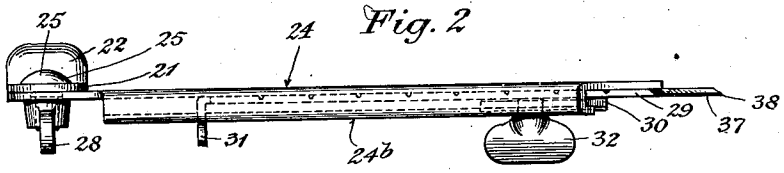


Fig. 1

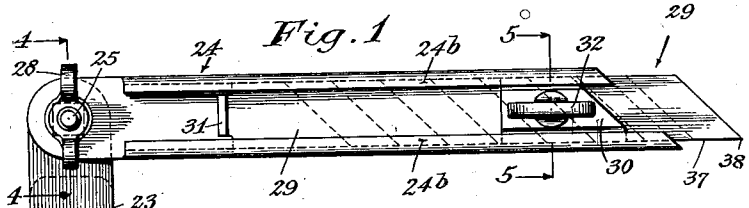
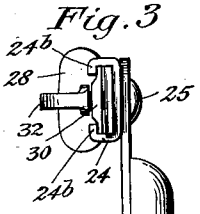


Fig. 3



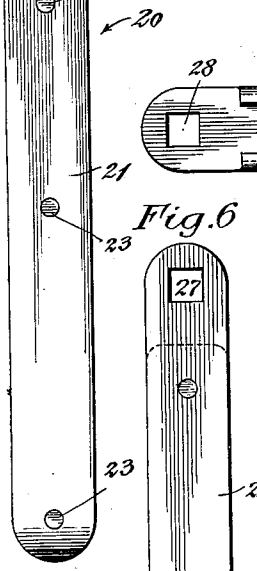
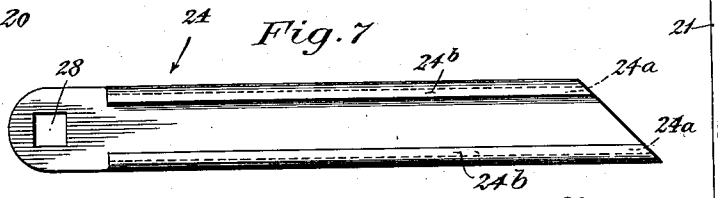


Fig. 7



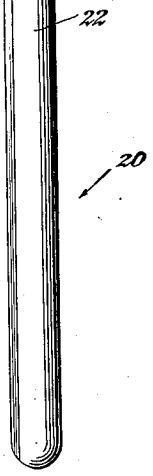


Fig. 6

Fig. 8

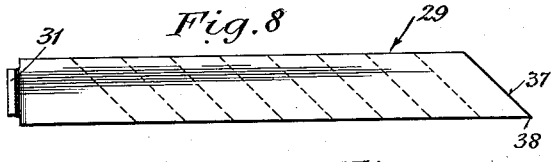


Fig. 4

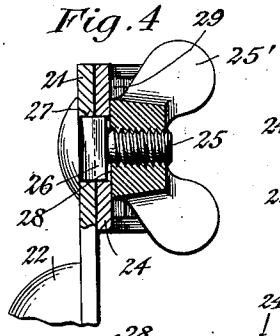


Fig. 5

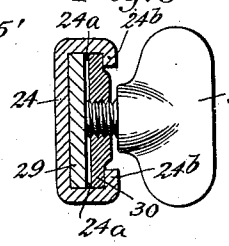


Fig. 10

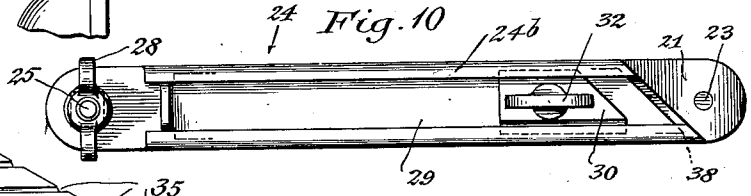
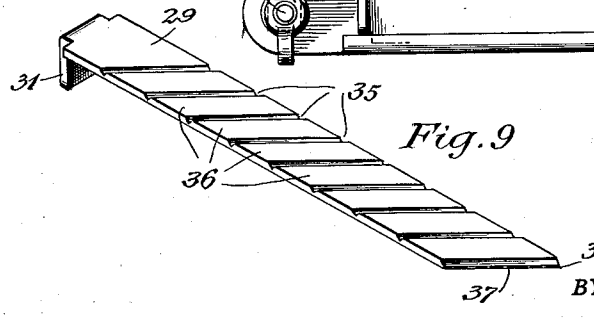


Fig. 9



INVENTOR
George M. Christianson
BY
ATTORNEY

Aug. 18, 1936. G. M. CHRISTIANSON 2,051,199

PLASTER CUTTER

Filed Jan. 18, 1935 2 Sheets-Sheet 2

Fig. 11

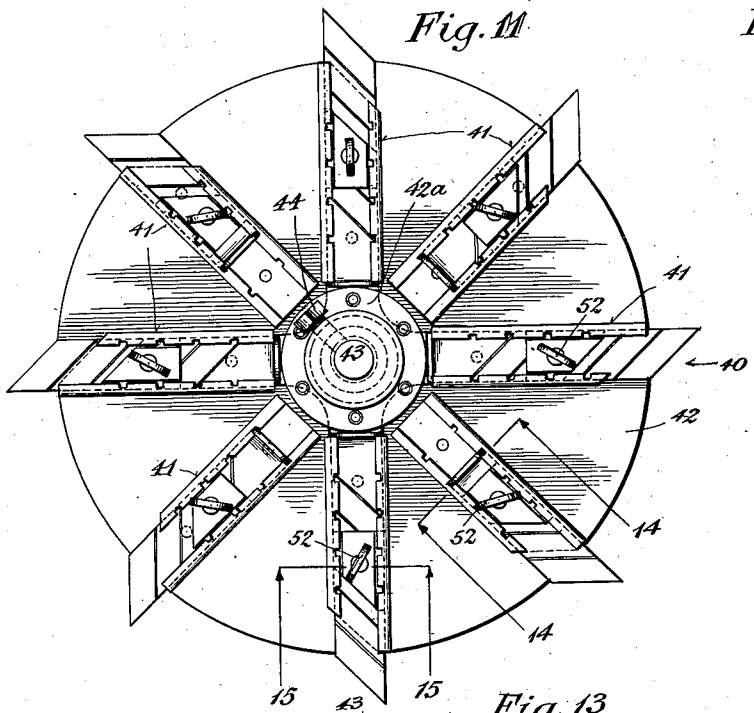


Fig. 12

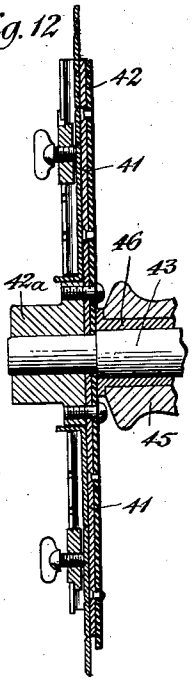


Fig. 13

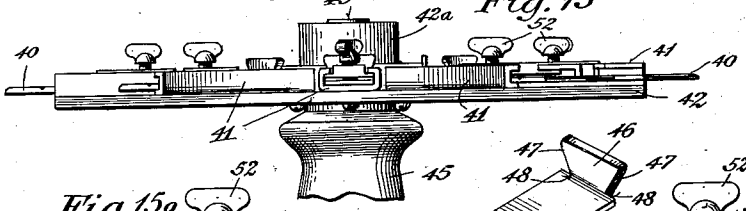


Fig. 15a

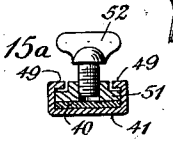


Fig. 16

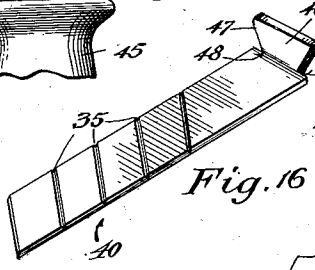


Fig. 15b

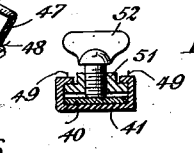


Fig. 17

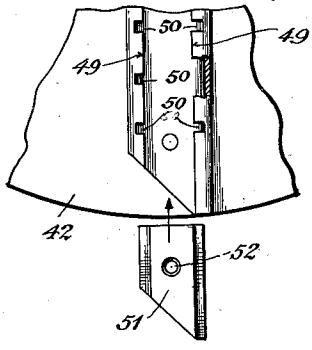


Fig. 18

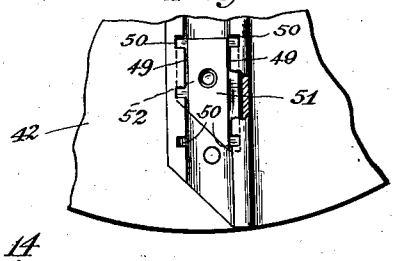
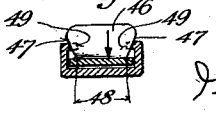


Fig. 14



INVENTOR
George M. Christianson
BY
ATTORNEY

Patented Aug. 18, 1936

2,051,199

UNITED STATES PATENT OFFICE

2,051,199

PLASTER CUTTER

George M. Christianson, Union City, N. J.

Application January 18, 1935, Serial No. 2,375

13 Claims. (Cl. 72—138)

This invention relates to plaster cutters, such as may be used by plasterers and painters when repairing defective plastered ceiling or side walls by cutting out and removing portions thereof, or by opening existing cracks in the plaster sufficiently so that fresh plaster may be applied and levelled off to produce a continuous smooth surface.

An object of the invention is to provide a tool which is especially adapted for the purpose stated, and which will perform its work expeditiously and economically.

Another object of the invention is to provide a tool whose cutting blade may be maintained in proper working condition without the use of a grinder or the like.

A further object of the invention will be found in the improved organization of the blade and its handle so that the tool, as a whole, may be folded to be carried in a pocket, or the blade may be opened angularly to the handle or into extended alignment therewith, the blade and handle becoming securely locked relatively to each other, in either of the conditions named.

Another object of the invention is the provision of a blade whose length is divided by grooves into a series of connected sections, which may be consecutively broken off with a pair of pliers or the like, to present a new cutting edge or point when required.

Other objects and advantages of the invention will hereinafter appear.

In general practice, when repairs in plaster are to be made, requiring either the removal of patches of plaster, or else the opening or enlargement of existing cracks, the workmen are apt to use what is generally called the "broad knife" for breaking through the plaster, this process, however, rendering the broad knife unfit for the use for which it was orginally intended, and therefore it needed resharpening to bring it back into usable condition.

The tool of the present invention has, therefore, been designed for its particular purpose and for its ready and easy reconditioning whenever the cutting edge or the point of the blade becomes dull or unfit for further use.

In the accompanying drawings—

Figure 1 shows my improved cutter, with its blade extending substantially at a right angle to the holder or handle.

Fig. 2 is a top edge view thereof.

Fig. 3 is a side view of the cutter shown in Fig. 1.

Fig. 4 is an enlarged section taken on line 4—4 of Fig. 1.

Fig. 5 is a similar view, taken on line 5—5 of Fig. 1.

Figs. 6, 7 and 8 illustrate the front views of the handle, blade holder and the blade respectively.

Fig. 9 is an obverse perspective view of the blade, per se.

Fig. 10 illustrates the tool as it appears when folded to be carried in a pocket.

Figs. 11 through 18 show a modification in the construction of the tool, which, in these figures, is represented as a power-driven device instead of a hand-tool as shown in the preceding figures. Here, Fig. 11 shows the face view of a multiblade cutter; Fig. 12 is a central vertical section thereof; Fig. 13 represents an edge view of the cutter shown in Fig. 11; Fig. 14 is a cross-section of the blade holder and the blade locked therein, on line 14—14 of Fig. 11. Figs. 15*a*, 15*b* are sections on line 15—15 of Fig. 11—Fig. 15*a* showing the blade free to slide, while in Fig. 15*b* the blade is clamped in place.

Fig. 16 is a perspective view of the blade, per se.

Fig. 17 shows a fraction of the disk, blade-holder and the clamping-plate ready to be placed thereinto, and

Fig. 18 represents the clamping plate in operative position.

Referring first to the embodiment of the invention shown in Figs. 1 to 10 inclusive, my improved cutter comprises a handle **20** consisting preferably of a sheet-metal plate **21** which is stiffened by a wood hand grip **22** riveted thereto, as at **23**. At its upper end the plate **21** has attached to it one end of a blade holder **24**, the connection being established by a bolt **25** (see Fig. 4) which is provided with a square shoulder **26** adapted to fit square perforations **27**, **28** provided therefor in the handle plate **21** and the blade holder **24**, respectively. Hence it will be seen that the blade holder **24** may assume four different positions relative to the handle **20**, viz. as shown in Fig. 1 (extending to the right at a right angle therefrom) or extending to the left therefrom, or beyond the handle (in a straight line therewith) or in line with and covering the body of the handle, as shown in Fig. 10. It will also be understood that, when the handle and blade holder are in any of the positions named, and a nut **25'** is tightened, the handle and blade holder become immovably locked together in those positions, therefore making the device a stiff and strong structure.

Experience has demonstrated that the working-end of the cutter blade is best adapted for its work when it is shaped as illustrated in Figs. 1, 8 and 9 in which the blade **29** is shown made of thin sheet steel adapted to be slid into desired position in the holder **24**, the latter being also made of sheet metal, having its longitudinal edges bent to form channels **24***a* (see Fig. 5) whose margins overlap the edges of the blade and are sufficiently spaced from the main plate of the holder to also overlap the opposite (upper and lower) edges of a clamping plate **30**.

It should be understood that both the blade **29** as well as the clamping plate **30** are normally freely and independently slidable in the channels **24***a* of the holder, the blade **29** preferably having at its inner end a bent-up tab **31** which projects outwardly enough to serve as a finger hold, while the clamping plate **30** has a binder-screw **32** which projects beyond the holder and serves as a finger-piece for moving the clamping plate into the desired position. When, now, the screw **32** is being turned in the plate **30** until its end abuts against the face of the blade, the clamping plate **30** will perforce be pulled outwardly until its upper and lower edges bring up against the inside faces of the channel lips **24***b* (see Fig. 5) and the screw **32** therefore serves for holding both the blade **29** as well as the clamp-plate **31** in fixed positions in the holder **24**.

As above stated, one feature of the present invention is the improved form of the cutter blade which is so constructed that when either the cutting edge or the point becomes dull or broken, the damaged portion of the blade may be broken off, leaving on the main body of the blade a thin and ragged cutting edge which may be used roughly on the plaster or the like without losing its efficiency as a cutter.

In order to accomplish this result, my improved blade is diagonally-grooved across its face, as at **35**, either by milling or indenting, and thus dividing the blade-length into a series of similar connected sections **36**, which may be broken off or severed from each other at the grooves **35**, leaving a sharp ragged edge **37** and an acutely angular and correspondingly-sharp point **38**, as left by the diagonal break—it being understood that the blade and the clamping plate may be relocated in any desired position in the holder to again form a rigid structure.

When not in use, and to adapt the tool to be carried in a pocket, the blade may be slipped back so that it will not project beyond the holder and the latter may be aligned with the handle, as above described, thus leaving no sharp edges or projections which might tear the pocket.

The tool thus far described answers the purpose of a hand tool adapted for use on smaller jobs, and where minor repairs are to be made. For larger jobs which require cutting out larger areas of plaster, I prefer to use a power driven cutting device, such as is incidentally shown in Figs. 11 to 19, inclusive. In that case, I deem it expedient to provide a plurality of cutters, the blades **40** of which are held for individual adjustment and treatment in holders **41**—eight being shown—riveted individually or in a multiple unit on a disk **42**, the central portion of which has a hub **42***a* which may be secured to the driving spindle **43** by a set screw **44**.

Inasmuch as the cutting device as a whole is in the present instance a power driven device, which, however, is to be manipulated or guided by hand, I provide a handle **45** which is preferably made of wood but has a metallic bushing **46** serving as a bearing for the spindle **43**. At its other end the spindle may be connected to a motor, either directly or through the intervention of a flexible shaft (not shown) the latter construction being preferable on account of its lightness in weight and ease of hand-manipulation.

The disk and its cutters partake of the nature of a circular saw, whose teeth (cutters) are adjustable radially, the individual blades **40** being grooved or scored in the same manner as the blades **31** previously described; but, inasmuch as the present device is power driven at a high speed, I deem it expedient to provide means whereby the blades will be locked against outward radial slip movement which might be caused by centrifugal force due to the high velocity of the disk. I provide these means in a very simple manner, preferably by forming at the inner end of each blade a projection or bent-up tab **46** whose sides **47** (see Figs. 14 and 17) are tapered and of such size that the tab-width at its bottom or root **48** is less than the width of the space between the holder lips **49**. Therefore, when the tab **46** is grasped by the fingers and raised until the edges of the upper face of the blade engage the underside of the holder lips **49**, the blade can be slid along longitudinally in its holder without hindrance. On the other hand, when the tab **46** is in a position of alignment with any one set of notches **50** (see Fig. 18) provided in the holder lips **49**, and then released, the tapered sides **47** of the tab will enter those notches until they become interlocked and wedged in place therein, the tightness of this wedging effect depending, of course, upon the action of the clamp plate **51** and binder screw **52** (see Fig. 15*b*) whose functions and construction are identical with those previously designated by **30** and **32**, respectively, the interlock between blade and holder being effective in both directions longitudinally of the holder.

Inasmuch as it is essential to maintain the radial distances of the points of all blades from the axial center of the disk the same, in order that the points may all be equally effective during the operation of the tool, several features are incorporated in my improved device, viz., all holders are notched alike, the distances between the several grooves of the blades, so that the several connected sections of the latter are also all alike, and, when the pointed end-section of any one blade of the series is removed or broken off, it is only necessary to move that particular blade radially outward in its holder until the tab **46** enters the next outward set of notches **50** in the holder, in which position the cutting point will automatically be located at the same radial distance from the disk-axis as before.

In brief: (1) The holders are all radially disposed on the disk, and so that their corresponding sets of notches fall into a series of concentric circles relative to the disk axis; and, (2) all the blades are formed and grooved alike, the distances between the blade-grooves being uniform and equal to the distances between the holder notches, and the distance between the tab **46** and the first and nearest groove **35** of each blade being also the same in all cases; (3) while I prefer to space the eight holders illustrated at equal angles (45°) on the disk, such equal distribution is not essential, provided, however, that the opposite pairs should be in diametral alignment in order to facilitate the balancing of the device to minimize its vibration under high speed.

From the foregoing description, it will be un-

derstood that a power driven tool constructed in accordance with the present invention is capable of doing its work rapidly and cleanly, and that it may be guided to cut along definite lines, leaving the edges clean-cut so that new plaster may be matched in place evenly and smoothly. In order to guide the cutter properly, it is, of course, essential that the cutting operation of the tool be performed without undue or excessive vibration, such as may be caused, for instance, when blades of different lengths are used and will naturally throw the disk out of balance. However, this fault may be remedied by the fact that the clamping plates with their binder-screw may be adjusted longitudinally in the holders to counterbalance each other at opposite sides of the disk center, and therefore minimize, if not entirely eliminate, the vibration, thus providing a smooth-running and non-trembling device.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new and for which it is desired to obtain Letters Patent, is:—

1. A cutting tool comprising a blade having grooves in its surface extended across the blade to form a series of connected sections adapted to be broken off along the groove lines, substantially as and for the purpose described.

2. A cutting tool comprising a blade having diagonal grooves across its face forming a series of connected sections adapted to be severed from each other at the groove lines and leaving at its severing line a diagonal cutting edge, and an acute-angle cutting-point on one of the sections.

3. A cutting tool comprising a holder having channels at its opposite edges, a blade slidably supported in the channels of said holder, a clamping plate also slidably held in said channels, and a binder screw carried by said plate and extending outside of said channels for first sliding said plate into proper position in the channels and subsequently clamping said plate, blade and the holder together and in fixed positions therein.

4. A cutting tool comprising a blade, a holder slidably receiving said blade, said blade being shiftable in said holder in a direction at an angle to the direction of sliding of the blade, means carried by said blade and engaging said holder for locking said blade against sliding movement in the holder, and means for then locking said blade in the holder against such shifting.

5. A cutting tool comprising a holder having spaced notches and a blade having a projection adapted to enter any of said notches to lock the same against movement relative to each other, said blade having grooves similarly spaced in its surface and forming connected sections adapted to be severed at the groove lines to present a new cutting edge and point.

6. A cutting tool comprising a holder having its longitudinal edges bent to form a pair of opposite channels, one of the channel-walls having a series of equally spaced notches, a cutter-blade adapted to be moved longitudinally in said channels and having a tab adapted to enter any one of said notches and to be locked therein, and a device for holding said tab in said notch.

7. A cutting tool comprising a holder having its longitudinal edges bent to form a pair of opposite channels, one of the channel-walls having a series of equally spaced notches, a cutter-blade adapted to be moved longitudinally in said channels and having a tab adapted to enter any one of said notches and to be locked therein, said blade also having equally-spaced grooves in its surface to form a series of equal sections, the central distances of said grooves being equal to the central distances of said notches, and a device for holding said tab in said notch.

8. A cutting tool comprising a handle, a blade-holder attachable thereto, means for positioning and locking said blade-holder on the handle, a blade slidable in said holder, and a device for locking said blade in position in the holder.

9. A cutting tool comprising a blade having V-shaped diagonal grooves across its face forming a series of connected sections the terminal one of which is adapted to be severed from an adjoining section at the line between these two sections to remove the terminal section by splitting the blade material along said line opposite the apex of the V thereby to leave said adjoining section with a cutting edge having a bevel established by a leg of the V, said edge terminating in an acute angle cutting point.

10. A cutting tool comprising a blade having V-shaped grooves in its surface to form connected sections the terminal one of which is adapted to be broken off along one of the groove lines, to leave at the breaking-off line a cutting edge following substantially said groove line and being rough and irregular because established by the breaking of the blade material opposite the point of the V of said line, said edge having a bevel established by a leg of the V.

11. A cutting tool comprising an elongated flat blade having diagonal grooves across its face forming a series of connected sections adapted to be severed from each other at the grooves, and leaving at its severing line a diagonal cutting edge and an acute angle cutting point on one of the sections; a holder for the blade having its longitudinal edges bent to form a pair of opposite channels in which said blade is slidably mounted and having its edge diagonal so as to be parallel with the diagonal grooves of said blade; and means for securing the blade in the holder against casual movement.

12. A cutting tool comprising an elongated flat blade having a finger-piece at one end; a holder for the blade having its longitudinal edges bent to form a pair of opposite channels in which said blade is slidably mounted with the finger-piece in the blade projected through the space between said longitudinal edges for manual engagement to adjust the blade relative to the holder; and means for securing the blade in the holder against casual movement.

13. A cutting tool comprising an elongated flat blade having a finger-piece at one end; a holder for the blade having its longitudinal edges bent to form a pair of opposite channels in which said blade is slidably mounted with the finger-piece in the blade projecting through the space between said longitudinal edges for manual engagement to adjust the blade relative to the holder; a clamping plate having its lateral edges located in said opposite channels and slidable therein relative to the blade and holder; and means on the clamping plate for securing the blade in the holder against casual movement.

GEORGE M. CHRISTIANSON.