July 22, 1952 W. A. RICE 2,603,866

CARPET CUTTER

Filed May 11, 1950 2 SHEETS—SHEET 1

FIG. 2

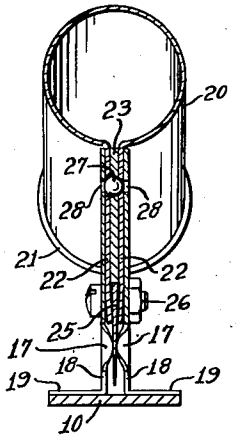


FIG. 1

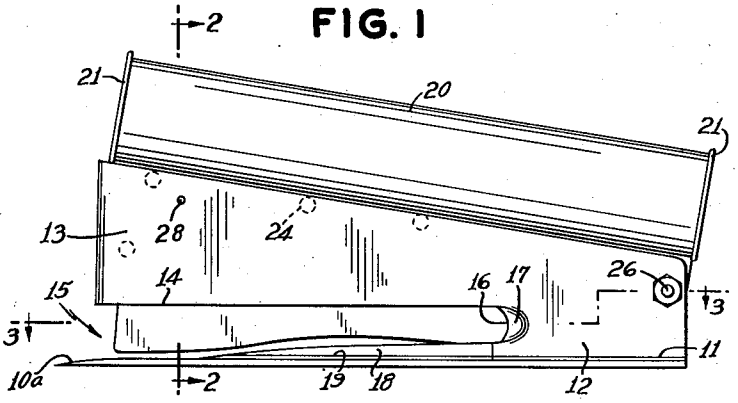


FIG. 3

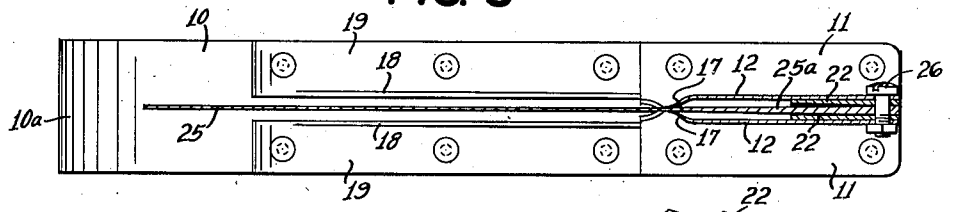
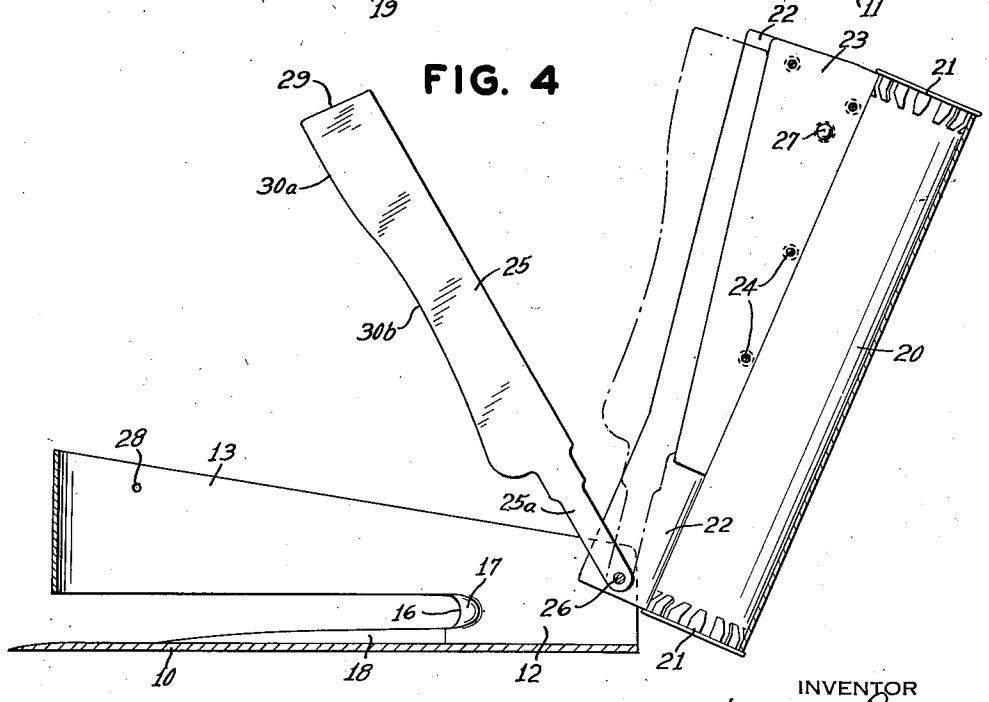


FIG. 4



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CARPET CUTTER

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FIG. 6

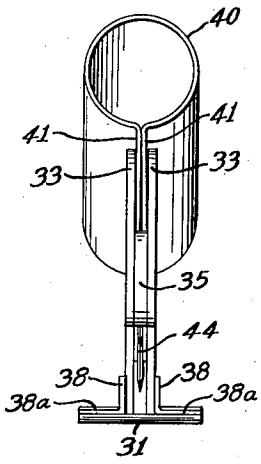


FIG. 5

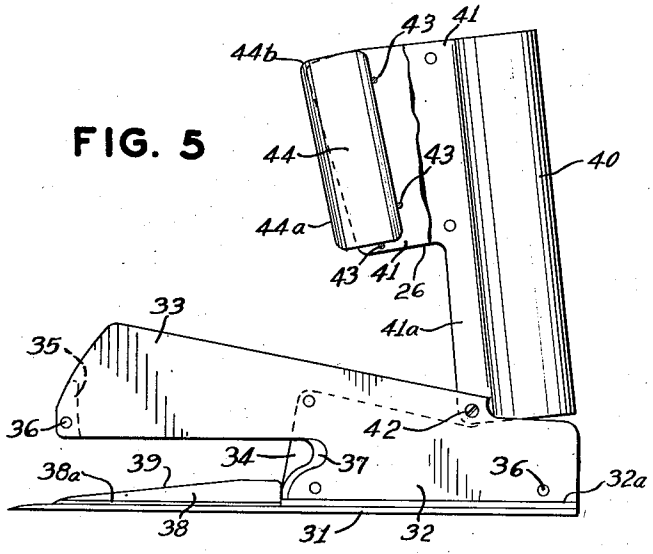


FIG. 7

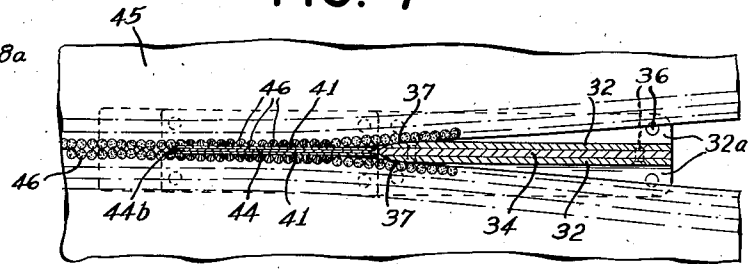


FIG. 8

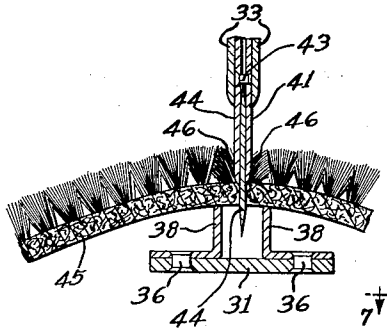
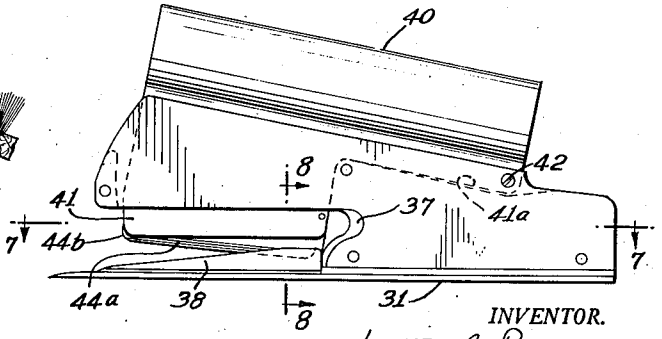


FIG. 9



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UNITED STATES PATENT OFFICE

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CARPET CUTTER

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Application May 11, 1950, Serial No. 161,408

6 Claims. (Cl. 30—294)

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This invention relates to devices for cutting pile fabrics, such as carpets and rugs, in which the pile is usually formed of either tufts or loops of heavy wool yarn. More particularly, the invention is concerned with a novel device, which may be employed for cutting pile fabrics lying face up on a surface.

Pile fabrics of the type employed for floor coverings and having a heavy wool yarn pile have heretofore commonly been cut back up by means of a knife or heavy shears. In such a cutting operation, the fine chain binder warps and the filling yarns serve as guides and, by their use, a skilful person can make an acceptable cut between adjacent longitudinal or transverse rows of pile elements. Cutting such a fabric face up presents greater difficulties because the lines between adjacent rows of pile elements are usually obscured to a greater or less degree.

The present invention is directed to the provision of a pile fabric cutter, which can be successfully employed in cutting such fabrics face up along lines lying between rows of tufts or loops. In the new cutter, the cutting is done by a blade which is held rigidly in place in a frame and cannot shift its position during cutting. The blade is so mounted that its effective cutting edge extends lengthwise of the line of cut at a low angle to the horizontal and the blunt forward edge of the blade passes between rows of pile elements of the fabric, as the cutting proceeds, and serves as a guide. Beneath the blade, means are provided for elevating the fabric along a flat slope toward the rear end of the cutting edge of the blade and, as the cutter is advanced through the fabric, the backing of the fabric is severed gradually during the relative movement of the fabric and blade.

For a better understanding of the invention, reference may be made to the accompanying drawing, in which

Fig. 1 is a side elevational view on a slightly reduced scale of one form of the new cutter;

Figs. 2 and 3 are full scale sectional views of the new cutter on the lines 2—2 and 3—3, respectively, of Fig. 1;

Fig. 4 is a side elevational view on a slightly reduced scale of the cutter with the handle and knife retracted and parts broken away;

Fig. 5 is a side elevational view on a slightly reduced scale of a second form of the new cutter with the handle retracted and parts broken away;

Fig. 6 is a full scale view in front elevation of the second form of the cutter;

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Figs. 7 and 8 are sectional views on the lines 7—7 and 8—8, respectively, of Fig. 9; and

Fig. 9 is a side elevational view on a slightly reduced scale of the second form of the cutter in working condition.

The cutter in the form shown in Figs. 1–4, inclusive comprises a frame made up of a base 10 and a pair of spaced sides having flanges 11 secured to the top of the base near the rear end thereof. Each of the sides has a part 12 rising vertically from its flange and another part 13 extending forwardly from part 12 and overhanging the base. The lower edges 14 of the parts 13 of the sides lie spaced above and parallel to the base to form a slot having an entrance 15 near the forward end of the base. At their forward ends, the parts 13 are bent toward one another and united and, if desired, the sides, including parts 12 and 13 and flanges 11, may be made of a single piece of metal. At the rear end of the slot, the forward edges of parts 12 of the sides are cut back and bent toward each other to meet and form a separating edge 16 and the bevelled surfaces 17 to the rear of edge 16 act to spread apart the pieces of carpet divided by the cut.

A pair of spaced walls 18 are attached to the top of base 10 by integral flanges 19, the walls being spaced about the same distance as parts 12 and 13 of the sides of the frame. The walls terminate close to the forward ends of parts 12 and their rear ends lie flush with the sides of parts 12 below the separating edge 17. The walls decrease in height in the forward direction to merge with the tops of their flanges 19 inward from the forward ends of the flanges.

The cutter is provided with a handle formed of a tubular section 20 closed by caps 21 and having generally radial plates 22, portions of which extend into the space between parts 12 of the sides at the rear ends thereof. A separator plate 23 is mounted between plates 22 and is held in place adjacent section 20 by rivets 24. A knife 25 having a thickness approximately equal to the space between plates 22 has a shank 25a extending between the portions of plates 22 lying between parts 12 of the sides, and a bolt 26 is passed through openings in parts 12, plates 22, and the shank 25a to pivot the knife and handle on the sides of the frame. The knife 25 may be swung on the bolt 26 to enter the space between plates 22 and abut plate 23 and, when the knife is in that position, the portion of the knife provided with a cutting edge is exposed beyond the edges of plates 22. The handle may then

be swung down to cause plates 22 to enter the space between sides 13. A ball 27 is mounted in a hole in plate 23 and projects through openings in plates 22. When the handle has been swung down between the sides of the frame, the projecting portions of the ball enter openings 28 in parts 13 of the sides to hold the handle and knife in proper operating condition. The lower edge of the knife then projects into the slot with the rear end of the edge lying between the rear ends of walls 18.

The front end 29 of the knife is blunt and the lower edge of the knife is so formed that, when the handle and knife are in operative position, as shown in Fig. 1, the forward end section 30*a* of the edge, which is blunt, lies parallel to base 10. To the rear of section 30*a*, the edge of the blade is curved upwardly and then downwardly, as at 30*b*, the curved portion of the edge being sharp and extending into the space between walls 18 at the high rear ends thereof.

In the use of the cutter, the end 10*a* of the base 10 is inserted under the bottom of the carpet and the cutter is advanced, with the blunt front end 29 and section 30*a* of the knife passing between adjacent rows of tufts and serving as a guide during the cutting. During the forward movement of the cutter, the backing rises on the tops of walls 18 and is forced against the sharp section 30*b* of the edge of the knife. The backing is thus cut through gradually and the cutting is completed just ahead of the rear ends of walls 18. The separating edge 17 spreads apart the two pieces of carpet formed by the cut, so that the cut edges do not bear against the surfaces of parts 12 of the sides and thus retard the forward movement of the cutter.

The second form of the new cutter shown in Figs. 6–9, inclusive, is generally similar to the first form but is adapted for use with a thin flexible blade of the safety razor type. The second form of the cutter comprises a base 31 from the rear end of which rises a frame made of sides 32 provided with flanges 32*a* secured to the top of the base. Each side has forwardly extending portions 33, which overhang and are spaced from the base at its forward end, and the sides are kept separated by filler plates 34 and 35 lying, respectively, between the vertical portions of the sides and the free ends thereof and held in place by rivets 36. The edges of the sides adjacent the forward edge of the filler plate 34 are cut away and bevelled as indicated at 37, these surfaces serving to spread apart the cut edges of the carpet.

A pair of walls 38 are mounted in spaced relation on the base forward of the sides and extend lengthwise of the base, the walls having flanges 38*a* secured to the top of the base. The top surfaces 39 of the walls are highest at the rear end and the walls gradually decrease in height toward the forward end thereof.

The cutter is provided with a handle in the form of a sheet of metal bent to form a tube 40 having generally radial extensions 41 therefrom and, at one end, the extensions are narrow and lie between the sides 32 and are pivoted thereto near their free ends by a screw 42. The extensions 41 are provided with three pins 43, which provide a seat for a thin flexible blade 44 inserted between the free ends of the extensions 41, and when the blade rests against pins 43, one edge of the blade projects beyond the ends of the extensions and lies at an angle thereto.

When the cutter is to be used, the handle is swung down, until the free ends of the extensions 41 pass between the portions 33 of the sides and the edges of the narrow portions 41*a* of the extensions bears upon the upper edge of the filler block 34. With the parts in this position, the sharp lower edge 44*a* of the blade projects beyond the ends of extensions 41 at an angle, with the rear end of the edge lying close to the top of the base and between the high portions of walls 38. The front end edge and corner 44*b* of the blade are blunt and these parts of the blade, together with the forward vertical edges of extensions 41, act as a guide which passes between adjacent rows of tufts during the cutting operation.

In the use of the cutter, the front end of the base is inserted beneath the bottom of the carpet 45 and, as the cutter is advanced, it is guided between the rows of tufts 46 by the means referred to. The backing of the carpet rises along the tops of walls 11 as the cutter is moved, and the backing is gradually forced against and along the sharp edge 44 of the blade and cut through. The two pieces of carpet formed by the cut then pass on either side of the exposed portion of the filler block 34 and along the bevelled edges 37 of the sides. During the cutting, the thin flexible blade is held rigidly in place and prevented from flexing, because almost the entire area of the blade lies between the extensions 41 and the assembly of the extensions and the blade fits tightly into the space between the overhanging portions 33 of the sides of the frame. The contact of the blade with the fabric tends to force the blade more firmly against its seat formed by pins 43. When the blade becomes dull, the handle is swung to the position shown in Fig. 5, whereupon the blade may be readily removed and reversed, if a double edge blade is used, or a new blade may be placed in position if necessary.

When the knife in the first form of the cutter becomes dull, the handle and knife may be swung to the positions shown in Fig. 4 and the edge of the knife then sharpened by a stone. If, for any reason, replacement of the knife is required, the bolt 26 may be removed and a new knife inserted in position.

I claim:

1. A pile fabric cutter, which comprises a base, spaced parallel sides attached to and rising from the base near its rear end and having forwardly-extending portions overhanging the base, said forwardly-extending portions having lower edges lying above the base and with the latter defining a slot into which the fabric to be cut may be inserted, a handle pivotally attached to the sides and including a handle element and a pair of spaced parallel plates projecting from the handle element into the space between said forwardly-extending portions, a cutting element mounted between said plates with a part of its front end and its cutting edge exposed below the free edges of said plates and the lower edges of the forwardly-extending portions of the sides, the front end of the cutting element being blunt and operable as a guide for the fabric, and a pair of walls rising from the base and extending lengthwise thereof at opposite sides of the plane of the cutting element, the top surfaces of the forward ends of the walls lying below the level of the top of the slot and below the level of the forward portion of the cutting edge of the cutting element, said top surfaces of the walls sloping upwardly toward the rear ends of the walls to a position above the level of the cutting edge of the cutting element

at the rear end thereof, and said plates being movable from between the sides by swinging movement of the handle.

2. A pile fabric cutter as defined in claim 1 in which the cutting element is pivotally attached to the sides near the rear ends thereof.

3. A pile fabric cutter as defined in claim 1 in which a stop is positioned between the plates and the cutting element engages the stop.

4. A pile fabric cutter as defined in claim 1 in which the forward portion of the cutting element lies forwardly of the forward ends of the walls, the forward portion of the lower edge of the cutting element is blunt, and the cutting edge of the cutting element rearwardly of the blunt front edge portion is concave.

5. A pile fabric cutter which comprises a base, spaced parallel sides attached to and rising from the base near its rear end and having forwardly-extending portions overhanging the base, said forwardly-extending portions having lower edges lying above the base and with the latter defining a slot into which the fabric to be cut may be inserted, a handle pivotally attached to the sides and including a handle element and a pair of spaced parallel plates projecting from the handle element into the space between said forwardly-extending portions, a cutting element mounted between said plates with at least a part of its cutting edge exposed below the free edges of said plates and the lower edges of the forwardly-extending portions, the cutting edge of the cutting element and portions of the base defining a free

space in the slot below the cutting edge of the cutting element which converges to and terminates at an apex on the cutting edge of the cutting element, whereby when a pile fabric is inserted into the slot and moved to the rear thereof, it will be brought into engagement with the cutting edge, said plates being movable from between the sides by swinging movement of the handle.

6. A pile fabric cutter as defined in claim 5 in which said portions of the base comprises a pair of walls rising from the base and extending lengthwise thereof at opposite sides of the plane of the cutting element, the top surfaces of the forward ends of the walls lying below the level of the top of the slot and below the level of the forward portion of the cutting edge of the cutting element, said top surfaces of the walls sloping upwardly toward the rear ends of the walls to a position above the level of the cutting edge of the cutting element at the rear end thereof.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
443,773	Laufer	Dec. 30, 1890
1,575,127	Podhradsky	Mar. 2, 1926
2,238,678	Cook	Apr. 15, 1941
2,265,775	McNamara	Dec. 9, 1941