Nov. 17, 1970 E. W. DUFFY 3,540,104

WALL PAPER SEAM ROLLER

Filed Dec. 30, 1968

FIG. 1

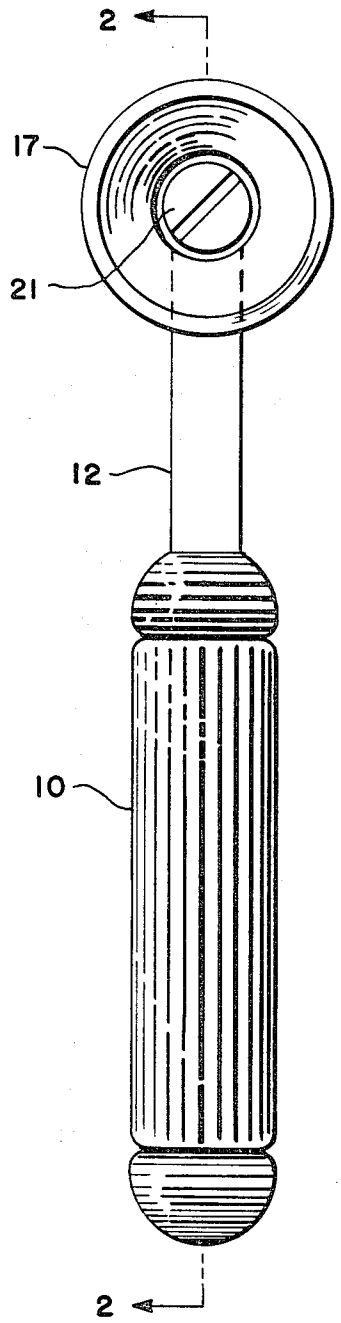
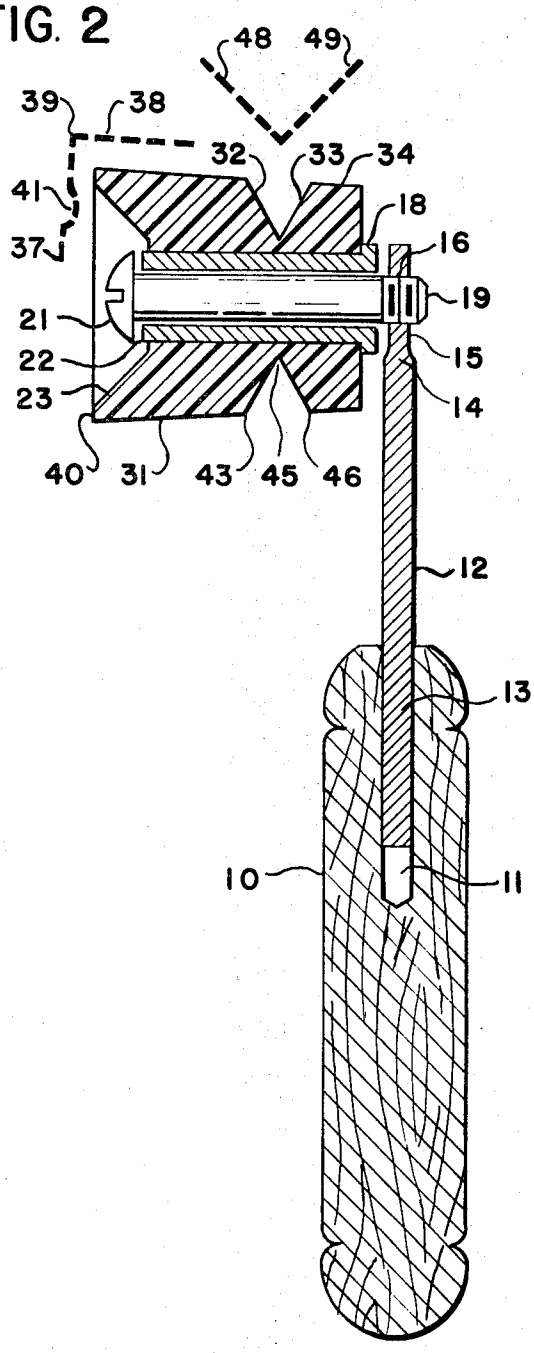



FIG. 2




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# WALL PAPER SEAM ROLLER

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## ABSTRACT OF THE DISCLOSURE

An improvement on the paper-hanger's seam roller of Brader Pat. 1,510,034 is disclosed. The improvements comprise offsetting the handle from the center of the roller, and modifying the rolling surfaces **31**, **32**, **33**, and **34** to form a plurality of coacting conical surfaces arranged so that the roller may press seams at both "inside" and "outside" corners as well as flat portions of a wall. Inside corners are pressed by the surface **31** at the edge **40**, while the groove comprising conical surfaces **32** and **33** presses outside corners.

This invention relates to wall paper rollers such as are used in pressing the seams of wall paper; and the particular object of the invention is to provide a wall paper roller which can be used to roll seams in both external and internal corners.

Rollers of this general type have been in general use since the invention of the tool by Brader (Pat. 1,510,034). Although convenient and widely used, the Brader tool has shortcomings which are overcome by the present invention.

It was a stated object of the Brader invention to provide a roller which can be used "very closely adjacent" the side wall "in case the paper comes to this point." By modifications of the Brader design disclosed hereinafter, the roller may be used not only "very closely adjacent" a side wall; but also completely into such an "inside corner." With the Brader roller, a so-called "outside corner" must be rolled in steps. The present invention provides for the neat and efficient rolling of an outside corner in a single operation.

A feature by which the above objects are achieved is the off-setting of the handle. A second feature to attain the objects is the modification of the rolling surface from the cylindrical form of Brader to a truncated cone modified with an almost-right-angled groove.

Other objects and features of the invention will, in part be obvious, and in part will be apprehended from the following specification and accompanying drawings wherein:

FIG. 1 is a side elevation of the roller constructed in accordance with the invention; and

FIG. 2 is a sectional view thereof taken as indicated 2—2.

Since the present invention is an improvement by way of modification of the prior-art represented by the Brader patent, the similarities and differences from the prior art will be more clearly brought out by using the same views and reference characters as are employed in Brader for corresponding parts.

Referring to these drawings, a handle **10** is provided with a bore **11**. A shank **12** has a tang **13** which extends down into the bore **11** and is held snugly therein. The shank extends out of the handle with a transition portion **14** and a flattened portion **15**, both of which lie generally along the axis of the handle **10**. The extremity of the flattened portion provides a smooth bearing face which is pierced with a threaded hole **16** perpendicular to the bearing face, and also, therefore, substantially perpendicular and transverse to the axis of the handle **10**.



The roller **17**, which may be made of wood, composition, or other suitable material, is mounted upon a bearing sleeve, or bushing **18** which has rotatable engagement with a shoulder bolt **19** which serves as a stub axle for the roller **17**. This bolt **19** is screw-threaded at its proximal end for insertion in the threaded hole **16** in the shank portion **15**, and at its distal end is provided with a slotted oversized head **21**, which engages in bearing relation with the end **22** of the bushing **18**. The larger-diameter, distal end of the roller **17** is countersunk as at **23** to receive this head.

In distinction from the Brader roller, the rolling surfaces **31**, **32**, **33**, and **34**, of the roller **17** are not cylindrical, but rather conical. Recalling that a conical surface may be generated by sweeping a straight line, termed a generatrix about a second straight line, termed the axis, with which it intersects, the angle between the generatrix and the axis is half the apex angle of the included cone. The dotted lines **37** and **38** intersecting at the corner **39** represents the lines of the intersecting walls and the application of the roller to an "intake corner." The apex angle of the conical surface **31** is preferably small, only about five degrees, yet this is sufficient to allow the base edge **40** at the distal end of the roller to fit into the corner **39** in spite of a typical slight irregularity **41** in the side wall **37**, thereby providing an inside-corner-rolling edge. To provide a flat-seam-rolling band, the portion **31** of the conical surface extends inward from the base edge **40** a distance of about three-quarters of an inch (¾") to an intersection at **43** with the portion **32** of a conical surface having an apex angle of about 110 degrees and intersecting the portion **31** at an angle of about 120 degrees. The portion **32** meets the portion **33** of another conical surface at the bottom **45** of the outside-corner-rolling groove formed by the side surfaces **32** and **33** meeting at somewhat less than a right angle, preferably about 60 degrees, and extending for slant heights of about one-quarter inch (¼") on each side. The surface **33** crests at its intersection **46** with the surface portion **34**. The intersection **46** is a circle lying in the same conical surface as does the portion **31**; and the remaining rolling portion **34** is preferably about one-quarter inch (¼") wide and a continuation of the same conical surface of the first portion **31**. This last portion **34** may, alternatively, have an apex angle which is somewhat greater, or it may be doubly curved, since this portion merely helps to steady the roller when the flat seams are rolled by the first portion **31**.

Dotted lines **48** and **49** intersecting in the groove represent walls forming a so-called "outside corner" as the roller is applied to such a corner. With the groove angle somewhat less than a right angle, the roller is tilted slightly to work one or the other side of the corner.

The dimensions of this tool are selected to be consistent with its functions. The handle is proportioned to fit the average human hand. The distance from the edge **40** to the shank **12**, together with the length of the tool and the apex angle of the seam-rolling band **31** are coordinated to provide clearance between the side wall **37** and the

fingers or knuckles of the user. A distance of one and one-half inches (1½") from the edge **40** to the shank **12**, and a length of seven inches are preferred.

The diameter of the roller should not be too small or the roller will tend to pucker the paper and smear the pattern when rolling an outside corner. The diameter should not be too large, or too much will be left unrolled at the end of a seam where the roller bumps ceiling or baseboard. A diameter of one and one-quarter inch to two inches (1¼"–2") for the edge **40** is satisfactory. One and one-half inches (1½") is the preferred diameter. With the larger diameter rollers, the slant heights of the sides **32** and **33** of the groove may advantageously be correspondingly increased to about one-half inch.

The apex angle of the flat-seam rolling portion **31** should be as small as possible consistent with the requirement that a slight irregularity in the side wall should not be scrubbed by the edge. If the angle is too large, flat-seam rolling is not smooth. This apex angle may be as large as fifteen degrees in most cases, without harm.

The outside-corner-rolling groove is preferred to be distinct from a right angle so that one or the other of the sides of the corner may be pressed. It is preferred that the sides meet at an acute angle such as 60 degrees rather than an obtuse angle. The obtuse angle would tend to make the groove too wide, thereby requiring a wider roller. Ninety degrees and fifty-five degrees are practical limits for the groove angle.

Although described in terms of cones and edges, a practical tool should have all corners rounded so that the paper is neither scraped, cut, or embossed; and such rounding of "edges" is understood. The optimum degree of rounding depends upon the paper and the wall. Similarly, while conical surfaces are described, and substantially conical surfaces are preferred, performance would not be altered substantially if the surfaces were outwardly convex and doubly curved, not developable. Moreover, while it is preferred and contemplated that the roller will be of unitary construction with possibly a bushing insert as shown, it is entirely possible that the roller could be separated at the bottom of the groove into two separately-rolling parts. This construction would simplify the moulding of the parts of plastic.

It will be understood that other modifications may be made in the design or arrangement of the parts without departing from the spirit of the invention as defined by the following claims.

I claim:

**1.** In a wall-paper seam roller having a handle, elongated in an axial direction, an axle, a roller, and means for interconnecting said roller, said axle, and said handle to constrain said roller to rotation about an axis substantially transverse to said direction, fixed at the distal end of said handle as held, the improvement characterized in that: said roller has an outside-corner-rolling groove, an inside-corner-rolling edge at an end of said roller, and a flat-seam-rolling band situated between said groove and said edge.

**2.** A roller as defined by claim **1** wherein said means comprises a thin shank extending from the distal end of said handle, and wherein said axle is a stub axle fixed to said shank, whereby the center of said roller is offset from the centerline of said handle, thereby to provide clearance for fingers at an inside corner.

**3.** A roller as defined by claim **1** wherein said band is a portion of a conical surface having an apex angle of substantially five degrees.

**4.** A roller as defined by claim **2** wherein said band is a portion of a conical surface having an apex angle less than fifteen degrees.

**5.** A roller as defined by claim **1** wherein said outside-corner-rolling groove is bounded at its proximal edge by a surface portion comprising an extension of said flat-seam-rolling band, for stabilizing said roller in flat-seam rolling, and wherein said groove is defined by a pair of generally conical sides sloping substantially equally relative to said band and meeting at the bottom of said groove at an angle of about sixty degrees.

**6.** A roller as defined by claim **5** wherein said angle is between fifty-five and ninety degrees.

**7.** A roller as defined by claim **2** wherein said edge is between one and one-quarter and two inches from said shank.


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U.S. Cl. X.R.

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