

(No Model.)

F. V. PHILLIPS.

TOOL FOR GROOVING WINDOW SASH.

No. 393,260.

Patented Nov. 20, 1888.

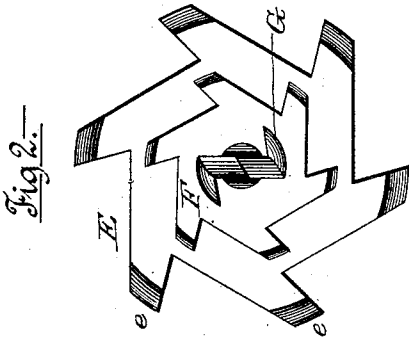
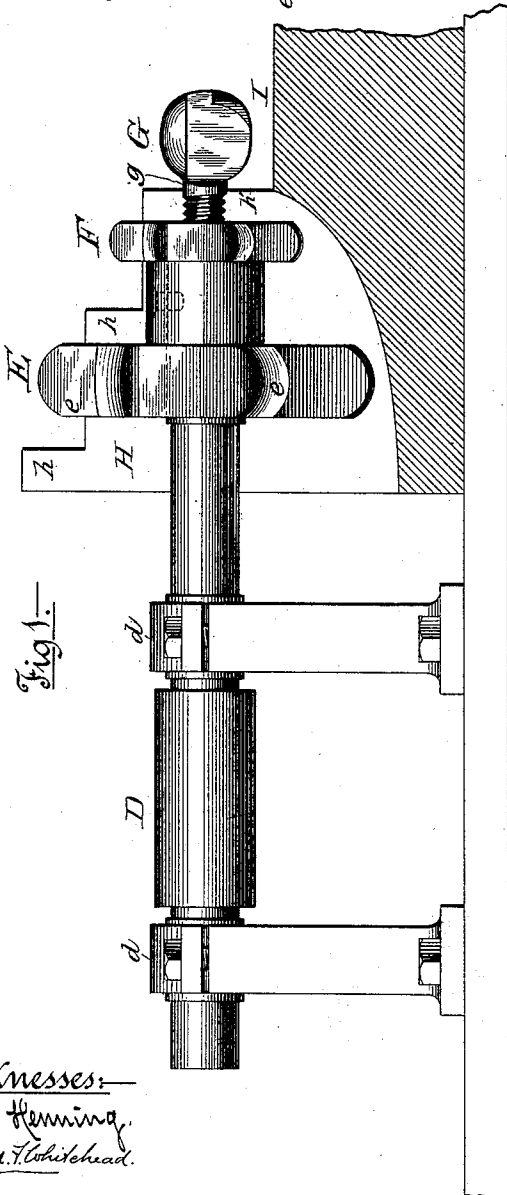


Fig. 3.—

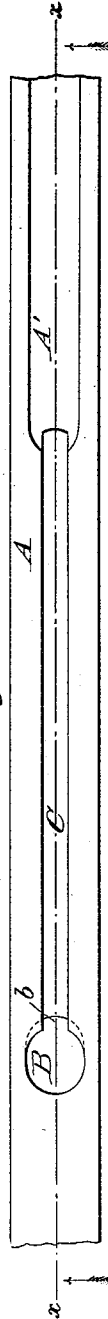
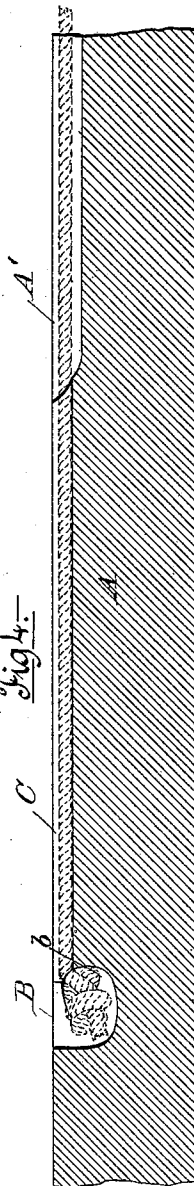


Fig. 4.—



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UNITED STATES PATENT OFFICE.

FRANCIS V. PHILLIPS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE CHICAGO SASH PULLEY COMPANY, OF SAME PLACE.

TOOL FOR GROOVING WINDOW-SASH.

SPECIFICATION forming part of Letters Patent No. 393,260, dated November 20, 1888.

Application filed December 24, 1887. Serial No. 258,879. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS V. PHILLIPS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tools for Grooving Window-Sash; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a special tool devised for the purpose of cutting grooves and recesses in the edges of sliding window-sash for the reception of knotted weight-cords. Heretofore sash have been cut in the following manner—that is to say, the edge of the sash has been provided with a groove of uniform width to a desired distance from the top downward, and at the lower end of this or at a short distance from the lower end of this groove a straight hole or recess has been bored into the side of the sash. In the latter case the end of the groove has been connected with the recess by a hole or inclosed passage bored from the end of the groove into the recess. I have invented a new construction of the grooves and recess of the sash embracing connected grooves of unequal width reaching to the recess, and also involving an undercut form of such recess.

The present invention relates to the tool by which the groove or grooves and an undercut recess may be cut in the sash.

The accompanying drawings illustrate both the tool herein claimed and the grooves and recess in a sash which are made by the tool.

Figure 1 is a side elevation of my improved cutting-tool having two groove-cutters. Fig. 2 is an end view of the cutting-tool. Fig. 3 is an edge view of a sash-stile containing the cuts made by the tool shown in Figs. 1 and 2. Fig. 4 is a section of the sash-stile in the line 4 4 of Fig. 3.

First pointing out the novel construction of the cuts in the sash, A represents a sash-stile; A', a wide groove therein adapted to slide over the sash-pulley, and B a recess cut in the edge of the sash at any desired distance below the end of the groove A'. The recess B is under-

cut in a direction toward the groove A', as indicated by dotted lines in Fig. 3 and by full lines in Fig. 4, and the groove A' and recess B are connected by an open narrow groove, C. The novel features in this construction are set forth in and form the subject of another application for patent filed by me of even date herewith.

In Figs. 1 and 2, showing the special tool by which the grooves and recess may be conveniently and rapidly cut, D is a shaft or arbor mounted in any suitable bearings, *d d*, and rotated by any suitable application of power. E is a peripheral disk-cutter having teeth *e e*, and secured upon the arbor D. F is a smaller and narrower peripheral disk-cutter mounted on the same arbor D, exterior to the cutter E, and similar thereto, and G is a parti-spherical cutter secured to the extreme end of the arbor and connected therewith by a neck, *g*. Said cutter G has one or more cutting-edges on both its outer end and its periphery, whereby it is adapted to cut both endwise and laterally, the narrow neck by which the cutting-bulb is supported allowing a lateral movement of the cutter after it shall have been thrust endwise into the wood a distance equal to or greater than its own depth. H is a stationary table extending desirably on both sides of the cutting-tool, the remote portion of the said table being shown in end elevation. Said table is provided with longitudinal shoulders or gages *h h*, by which the sash-rail may be guided as it is slid along the table over the cutters E and F of the tool to successively make the grooves A' and C. The edge *h'* of the table H forms a shoulder or stop, against which the sash-rail may be brought to rest when said rail, resting on the support I, is pushed inward against the end cutter G to make the recess B of the sash.

In the use of the tool described to make the construction of the grooves and recess shown in Figs. 3 and 4, it will be found most economical of time to make the recess B first, which is done by placing the rail on its side upon the support I and pushing it horizontally inward against the end cutter G until the rail comes to rest against the stop *h'*. After the rail has come to a stop, or the end cutter G has entered to its full depth, the rail is moved longitudi-

nally on its support *I* to produce the under-cut *b* of the recess, as shown in Figs. 3 and 4, said under-cut being directed toward the top of the rail. The rail is then moved lengthwise back to its original position and withdrawn from the cutter. The groove *A'* is next cut by the cutter *E*, and afterward the passage *C* is cut by the cutter *F*, all in a familiar manner.

The parti-spherical form of the cutter *G* is, for many reasons, preferable; but I do not wish to be limited to such form, since any other form of cutter connected by a relatively narrow neck, *g*, to the arbor will serve the purpose of making the desired undercut recess *B*, provided it has one or more end and peripheral cutting-edges, whereby it may first be thrust into the wood to the desired depth and then made to cut laterally to give the undercut required.

I claim as my invention—

1. The rotary combination cutting-tool described, comprising an arbor carrying a peripheral or grooving cutter, *E*, a second peripheral or grooving cutter, *F*, narrower than the cutter *E*, and an end cutter, *G*, connected

with the end of the arbor by a neck of less diameter than that of the body of the cutter, and provided with a cutting edge or edges both upon its end and peripheral faces, substantially as and for the purposes set forth.

2. The combination, with a rotating cutting-tool, comprising an arbor carrying a peripheral cutter, *E*, a second peripheral cutter, *F*, of less diameter than the cutter *E*, and an end cutter, *G*, connected with the arbor by a relatively narrow neck, and provided with a cutting edge or edges both upon its end and peripheral faces, of a stepped table, *H I*, having horizontal parts opposite and below the level of the several cutters, *E F G*, and lateral stops or shoulders *h h'*, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

FRANCIS V. PHILLIPS.

Witnesses:

C. CLARENCE POOLE,
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