(No Model.) 2 Sheets—Sheet 1.

W. R. FOX.

MITERING MACHINE.

No. 493,494. Patented Mar. 14, 1893.

Fig. 1.

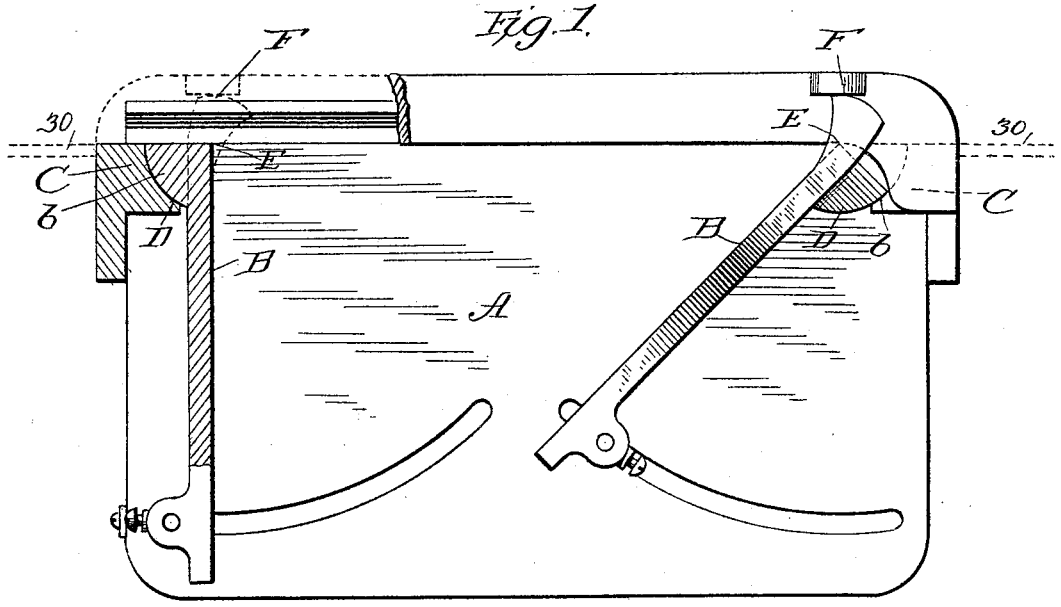

Fig. 2.

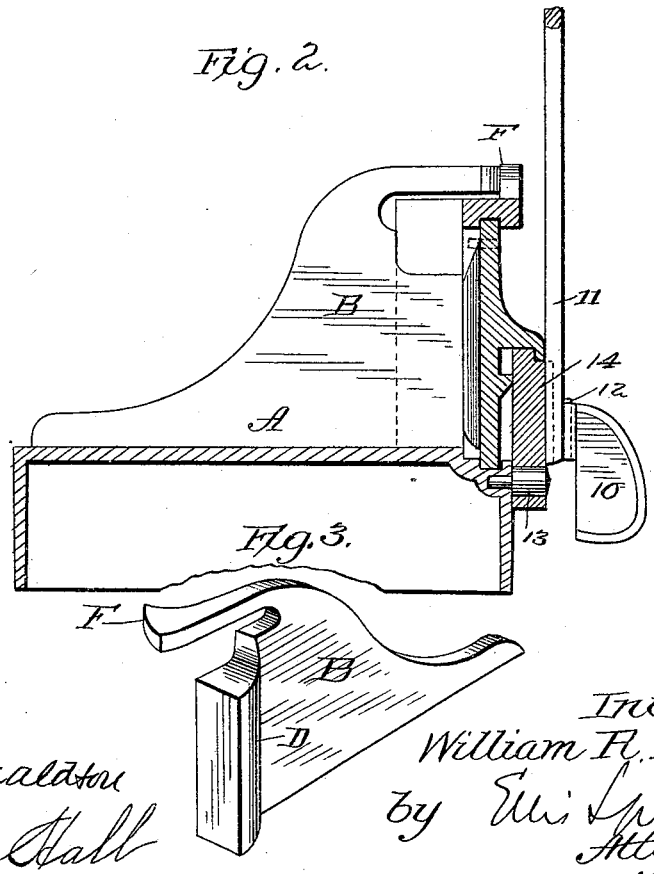

Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

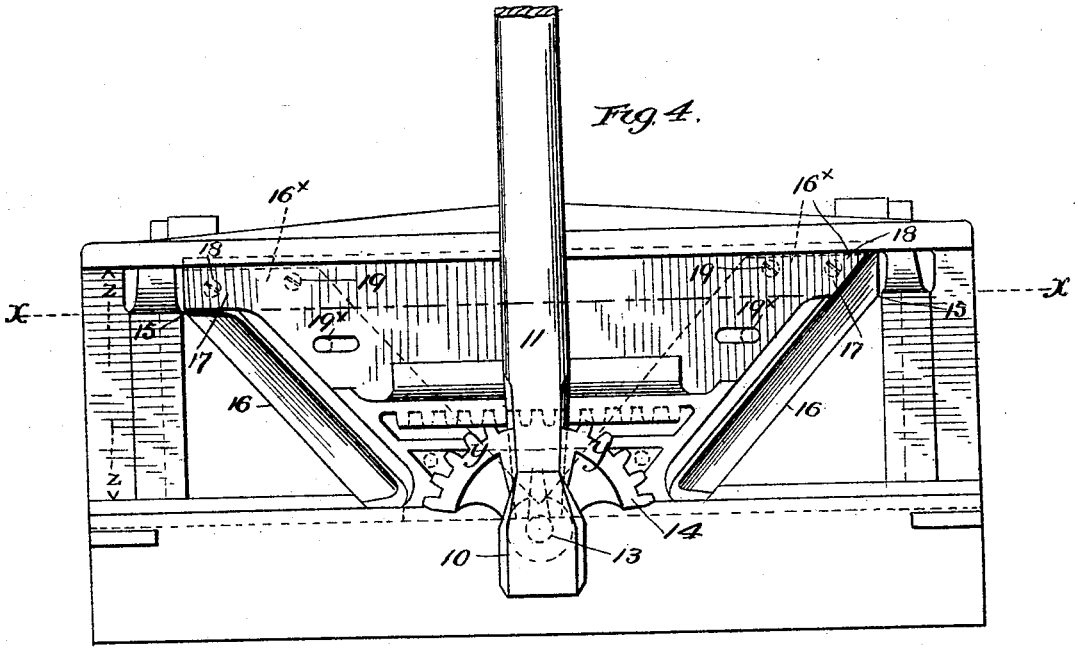


Fig. 5.

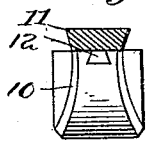


Fig. 6

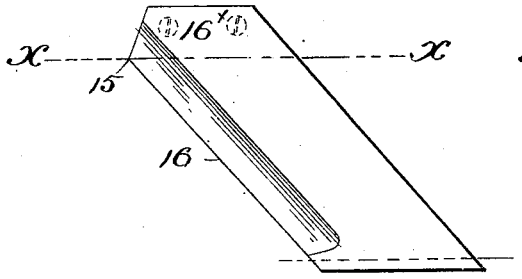
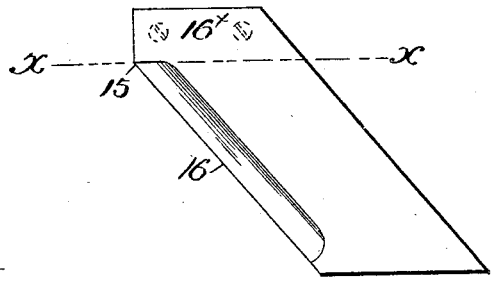


Fig. 7.



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Inventor
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UNITED STATES PATENT OFFICE.

WILLIAM R. FOX, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO THE FOX MACHINE COMPANY, OF SAME PLACE.

MITERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,494, dated March 14, 1893.

Application filed February 5, 1892. Serial No. 420,389. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. FOX, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Mitering-Machines, of which the following is a specification.

My invention hereinafter described is an improvement in mitering machines, pertaining especially to the gage and is of the kind shown in Letters Patent of the United States granted to me on December 4, 1888, No. 393,970. In gages of this kind the shearing edge or vertical corner of the gage is maintained on the line of cut while the gage turns, the gage being supported against the thrust of the knife by an abutment or post against which it bears. The inner end of the gage is held adjustably in place, ordinarily by a thumb screw working in a slot. The object of my invention is to support more effectually the end of the gage next to the knife; further to maintain the knife in a central position relatively to the ends of the frame and also to prevent springing of the knife.

The invention is shown in the accompanying drawings, in which:

Figure 1 shows a plan view of the invention. Fig. 2 an end elevation. Fig. 3 a detail view. Fig. 4 is a rear view of the machine. Fig. 5 is a detail view on line *y*—*y* of Fig 4. Figs. 6 and 7 are detail views of the knife.

In the drawings, A represents the bed of the machine along the edge of which the knife moves. At the end of its path is a post C having a curved face *b*. This curve is struck from the point E as a center on the edge of the bed next to the path of the knife. The gage B is provided with an enlarged end having a curved vertical face D struck from the corner or shearing edge of the gage which coincides with the point E when the gage is in place against the post. The free end of the gage may be provided with a thumb screw and nut moving in a slot in the ordinary manner, but it will be apparent that, whether the gage is located at right angles as shown in full lines on the left of Fig. 1 or at an acute angle as shown at the right of Fig. 1, the curved part of the gage will bear upon the curved part of the post and hold the gage in position. The gage may have a front curved bearing below in the form of a pintle, or a bearing on the frame above as shown at F against which a curved projection on the gage is supported, as shown in my aforesaid patent.

When the machine is at work the knife pressure is directly against the post and as the gage is held by the front bearing so that it cannot project over the path of the knife, the tendency of the pressure is to hold it between the front bearing and the curved face of the post regardless of any fastening at the free end of the gage.

It is desirable in this class of machines to maintain the knife in a central position relatively to the ends of the machine or to hold the lever in a balanced position so that the carriage will remain in position as left by the operator, in any part of the stroke. I employ a weight 10 Figs. 2 and 4 which is preferably carried by the operating lever 11 it being connected thereto by a beveled tongue and groove 12. The weight extends below the pivot 13 of the driving segment 14 and is heavy enough to counterbalance the upper end of the lever and prevent the weight of said upper end when moved to one side or the other of its central position from moving the knife beyond the frame. After continued use of the machine the movement of the parts become so free that the weight of the upper end of the lever will force the knife beyond the frame. This tendency is counteracted by the weight which may be heavy enough to return the knife to its central position should it be moved aside. Wings 30 may be used on the frame to protect the knives as in my application, Serial No. 401,058, filed July 29, 1891. In order to prevent springing of the knife under the strain of the work I furnish a support for the upper portion close to the point 15 which is the first part of the cutting edge to enter the material to be cut, the edge 16 inclining away from this point toward the center of the machine. This support is provided by forming a lug or extension $16^{\times}$ on the knife extending above the point 15, and the upper line *x*—*x* of the cut, the depth of the frame work from

z—z being preferably increased to accommodate this lug or extension. The carriage is also formed deeper and is provided with an extension 17 reaching over the plane of the point 15 and alongside the knife extension to afford a lateral bearing for the same. The knife extension is secured to the carriage above and adjacent to the point 15 by a screw 18 and a second screw 19 is also used to make the fastening secure and maintain the cutting edge and particularly the point 15 against springing. The knife throughout its body portion is held by screws $19^{\times}$ to the carriage in the usual manner.

In Fig. 6 the knife on the right of Fig. 4 is shown separately while in Fig. 7 and on the left of Fig. 4 a modification is shown in which the lug or extension is of the full thickness above the point 15, the bevel in this case extending only to the upper line x—x of the cut.

I claim as my invention—

1. In a mitering machine, a gage having a curved bearing face curved on an arc struck from a point in the line of its shearing edge, in combination with a post having a corresponding bearing face, substantially as described.

2. In combination the main frame having a guide way, the knife carriage adapted thereto and having outwardly projecting knives, said frame having a portion extending adjacent to guide way and outside of the line of projection of the knives' edges when the carriage is in normal position the lever for operating the carriage and a weight for holding the carriage in normal position with its knives shielded by the frame, substantially as described.

3. In combination the frame comprising the upper and lower ways the carriage extending across between the guide ways and movable therein, the knife arranged alongside the said carriage with its body portion bearing thereagainst throughout its extent, both the said knife and carriage having an extension above the line of cut which extensions are secured together, substantially as described.

4. In combination the frame comprising the guide ways, the carriage extending across between the guides, the knife having its body portion secured to the carriage with its cutting edge inclined and projecting beyond the carriage and ending in a forward point 15 at the top of the cutting edge the said knife and carriage having extensions above said point secured together, substantially as described.

5. In combination the frame comprising the guide ways, the carriage extending across between the guides, the knife having its body portion secured to the carriage with its cutting edge inclined, projecting beyond the carriage and ending in a forward point 15 at the top of the cutting edge, the said knife having an extension above the point 15 and the said carriage having an extension above the said point and reaching forward alongside the knife extension and secured thereto.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM R. FOX.

Witnesses:
JNO. DUFFY,
EARL STOKOE.