To all whom it may concern:

Be it known that I, CLARENCE F. BENJAMIN, a citizen of the United States, residing at the town of Milford, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Combined Carpenters' Squares and Miter-Gages; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in a combined carpenter's square and miter gage, and more particularly to an improvement in the construction shown and described in my Letters Patent Nos. 1,226,172 and 1,226,173, issued May 15, 1917.

In my former construction the blades that were pivoted together and that had interengaging teeth and notches, although hardened, readily became loosened so as to wabble at their pivotal connection. This was due to the fact that the teeth on the upper blade were kept engaged with the notches by a strong spring and when the user wanted to adjust the blades to a certain angle he swung the blades around their pivotal point thus raising the teeth out of the notches against the resiliency of the spring, which caused these teeth to score heavily against the surface of the lower blade and this constant scoring resulted in loosening the blades so that they could no longer become snug and tight.

The aim of this improved construction is to provide a simple and efficient combined square and miter gage which will not become worn in the manner above noted and will not become loose and inaccurate.

A further object of the present invention is to provide a special locking cam lever which is mounted on the same pivot pin which connects the blades and is provided with teeth on its underside to engage in recesses or depressions that are formed in the upper or top blade. When this cam or clamping lever has its teeth engaged in these recesses in the top face of the upper lever, the blades can be moved freely to any adjustment, and when such adjustment is arrived at the cam lever is simply swung to one side or the other to bring the teeth on the cam lever out of the depressions in the top lever, thereby causing the teeth to exert a camming pressure against the top blade to hold the interengaging teeth and notches of the two blades firm.

This invention further resides in the features of construction and the arrangements and combinations of parts hereinafter described and claimed, reference being made to the accompanying drawing wherein:

Figure 1 is a fragmentary elevation of a combined square and miter gage embodying the present invention and showing the clamping lever inoperative:

Fig. 2 is a similar view in which the clamping member is operatively disposed:

Fig. 3 is a plan of the lower or bottom blade depicting the concentric series of recesses therein:

Fig. 4 is a bottom plan view of the top blade:

Fig. 5 is an edge view thereof:

Fig. 6 is a view similar to Fig. 1 illustrating a modification of the invention:

Fig. 7 is a similar view depicting a further modification; and

Fig. 8 is a sectional view therethrough on line 8—8 of Fig. 7.

Referring more in detail to the accompanying drawing, the numeral 1 designates the bottom blade and 2 the top blade which is pivotally connected to the bottom blade by the pivot bolt 3 so that it may be swung to assume any angular relation thereto. The edges of the blades are provided with the inch and fractional inch markings 4, the inches being numbered consecutively from one blade to the other so that when the blades are adjusted at an angle of 180° they combine to form a straight edge or rule with the inches numbered consecutively throughout its length.

The bottom blade is formed with a circular series of recesses 5 in its upper face about the pivot bolt or pin 3, and the top blade is formed with a similar series of teeth 6 on its under face for engagement in the recesses 5. These teeth are pressed from the blade 2 and, consequently, form recesses 7 in the upper face thereof.

Also pivotally mounted on the bolt 3 is a cam or clamping member 8 which is provided with a like number of similarly arranged teeth 9 for engagement in the recesses 7 and for riding out thereof onto the upper face of said top blade. This latter operation is only permitted when the teeth 6 are engaged in the recesses 5, and when the
teeth 9 are out of their recesses 7 they exert a pressure on the top blade to firmly hold the teeth 6 interlocked with their recesses. This riding out action of the teeth 9 is effected by imparting rotary movement to the clamping member, so for this reason the latter is formed with a radial operating handle 10. This handle is normally disposed centrally between two stops 11, carried by the top blade, and when swung to either side, toward either stop, the teeth 9 are moved out of their recesses 7 for firmly clamping the blades together with their cooperating teeth and notches interlocked.

When teeth 9 are out of their recesses the blades are locked and cannot be adjusted until said teeth are moved back into said recesses. In this connection it will also be noted that when the teeth 6 are out of their recesses 5 the clamping cam member cannot be rotated to ride its teeth out of their recesses. Thus, the blades must be set at predetermined adjustments, that is the teeth 6 must be over recesses 5, before the clamping member can be rendered operative. To facilitate shifting of the handle 10 a raised lug 12 is struck up from the latter so as to be more easily engaged by the thumb.

The number of inter-engaging teeth and notches in each series is eight but this number may be multiplied or diminished without departing from the spirit of the invention. Thus, in Fig. 6 the clamping member 13 comprises a bar mounted between its ends on the pivot bolt and embodies only two teeth 14 which are located at diametrically opposite points with respect to the pivotal mounting, such arrangement and disposition of the teeth efficiently serving to hold the two blades firmly with the inter-engaged teeth and recesses or notches thereof. In this form of the invention, the handle end of the lever is upturned to provide a lug 15 with which the thumb may easily engage for shifting the clamping lever.

Illustrative of a further embodiment which my invention may assume are Figs. 7 and 8, the clamping member in this form comprising a winged lever 16 pivoted between its ends and provided with diametrically opposite teeth 17. In lieu of a radial handle, the lever has two upwardly extending wings 18, one on each side of the pivot.

In practice, the blades cannot be adjusted without having the clamping member inoperatively or centrally disposed. The teeth of the top blade will not, therefore, score the upper face of the bottom blade since when the blades are adjusted all pressure between them will be released. The teeth 9 on the clamping member are short and do not extend very far into recesses 7. Consequently, there will be no difficulty in swinging the clamping lever and, although the action of the latter is perfect in locking the blades, the teeth 9 will not effect any appreciable scoring on the top blade.

The blades need not be specially hardened but can readily be stamped from metal in a simple operation and expeditiously assembled to produce a neat and handy tool.

What is claimed is:

1. A combined square and miter gage, comprising a pair of blades, means pivotally connecting them at one end, one of the blades having a circular series of recesses in one of its faces about the pivot means, the other blade having a plurality of teeth on one of its faces for interengaging with said recesses, said teeth being pressed from the blade and thereby forming a like number of recesses in its opposite face, a clamping member mounted on said pivot means and provided with a plurality of teeth for engaging in said recesses and for riding out thereof when the clamping member is rotated, said member having an operating handle, and means for limiting the swing of the latter.

2. A combined square and miter gage comprising a pair of blades, means pivotally connecting them at one end, one of the blades having a circular series of recesses in one of its faces about the pivot means, the other blade having a plurality of teeth on one face for interengaging with said recesses, said teeth being pressed from the blade and thereby forming a like number of recesses in its opposite face, and a clamping member mounted on said pivot means and provided with a plurality of teeth for engaging in said recesses and for riding out thereof when the clamping member is rotated.

3. A combined square and miter gage comprising a pair of blades pivotally connected at one end, interengaging means between the blades adjacent their pivotal connection for holding the blades at predetermined adjustments, and manually operable means for rendering said first means operative and inoperative.

4. A combined square and miter gage comprising a pair of blades pivotally connected at one end, interengaging means between the blades adjacent their pivotal connection for holding the blades at predetermined adjustments, one blade having a series of recesses in its upper face about the pivotal connection, and means for riding in and out of the recesses for exerting a camming pressure on the blades to render the first means inoperative and operative, respectively.

5. A combined square and miter gage including a plurality of blades, means pivotally connecting them at one end, one blade having a plurality of recesses in its upper faces, and means for riding into the recesses for releasing clamping pressure between the two blades and for riding out of
the recesses for providing clamping pressure between said blades.

6. A combined square and miter gage including a plurality of blades, means pivotally connecting them at one end, one blade having a plurality of recesses in its upper faces, and a clamping member mounted on said pivot means and provided with diametrically opposite teeth for riding in and out of the recesses to release and clamp the blades.

In testimony whereof I affix my signature.

CLARENCE F. BENJAMIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."