F. W. LANE.

PROJECTING INSTRUMENT.

APPLICATION FILED JULY 8, 1914.

1,142,585.

Patented June 8, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

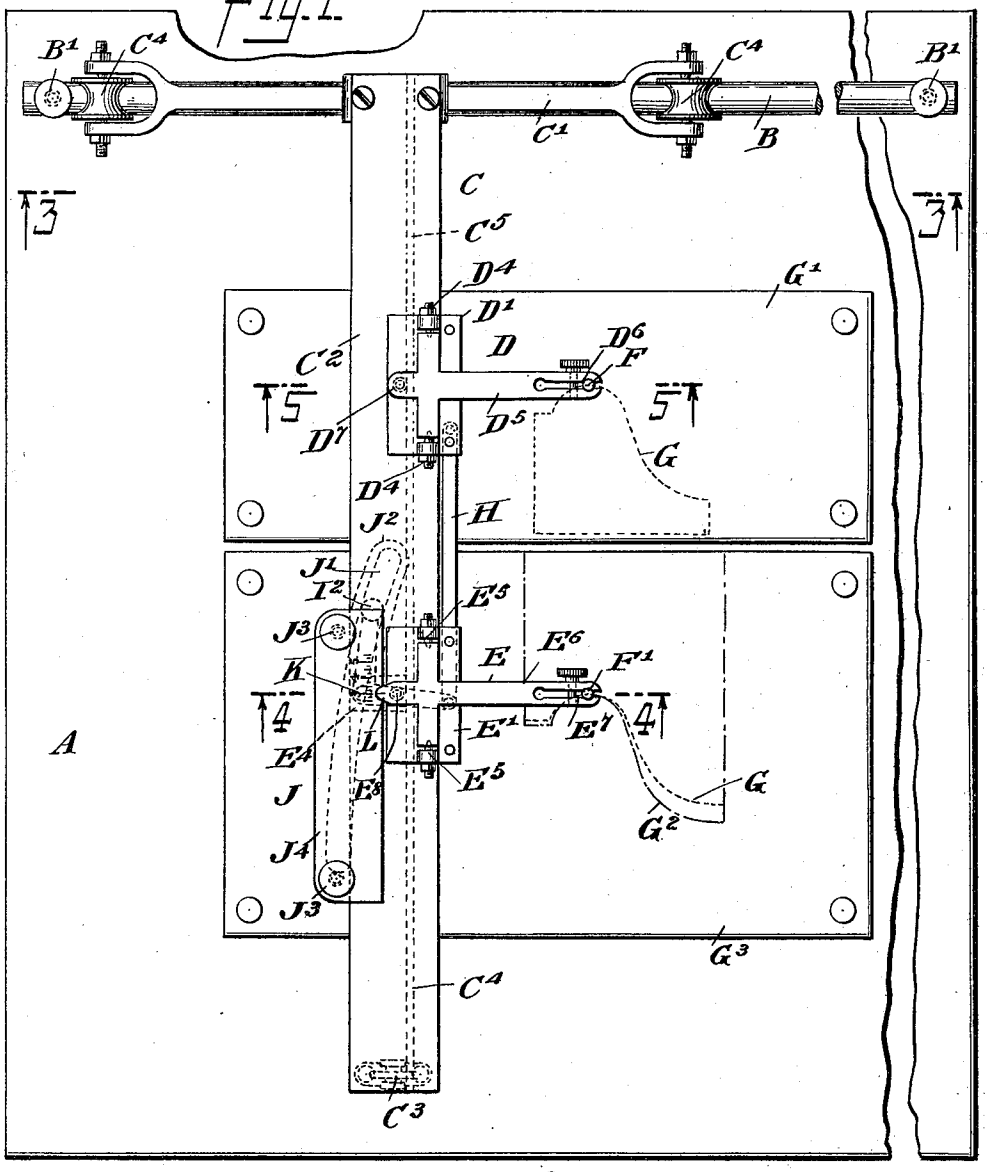
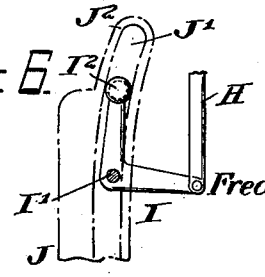


Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 2.

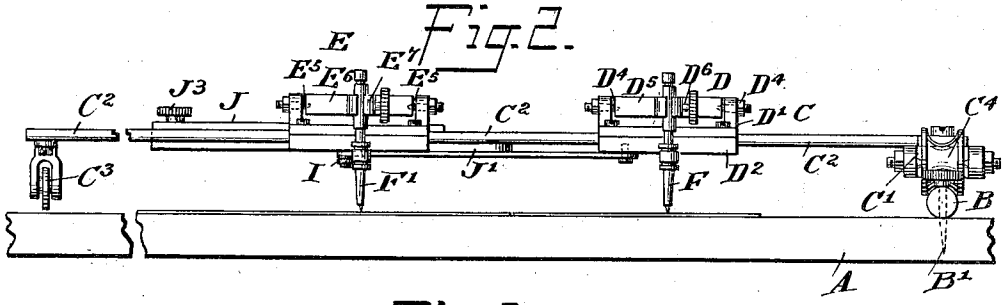


Fig. 3.

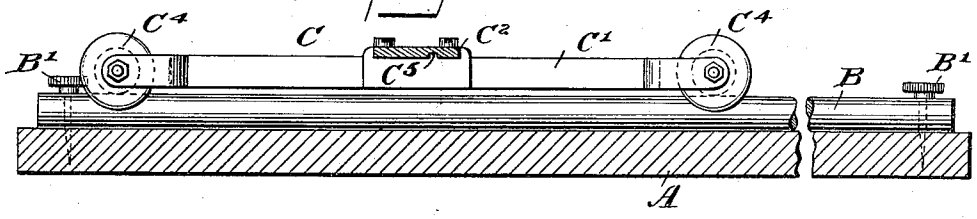


Fig. 4.

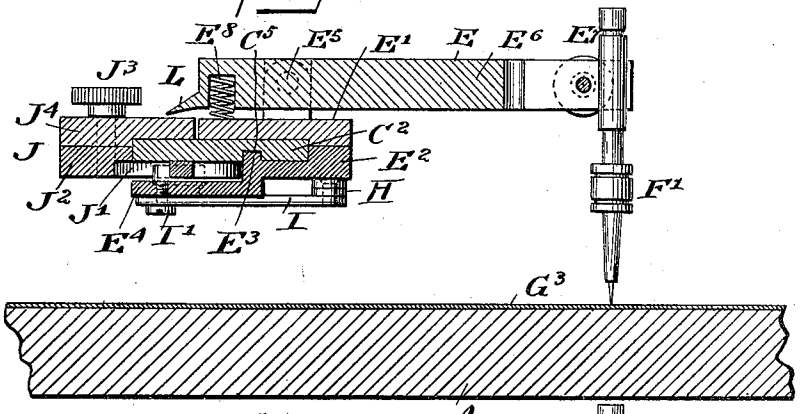
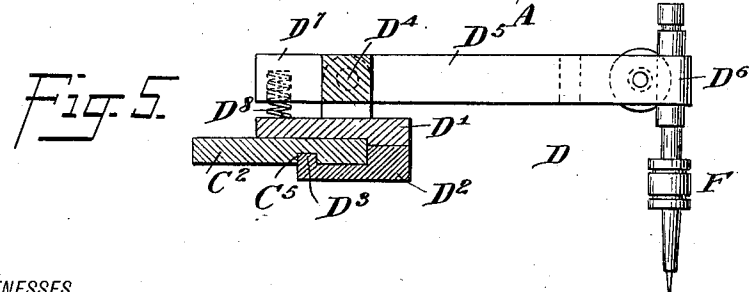


Fig. 5.



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FREDERICK WALTER LANE, OF CHICO, CALIFORNIA.

PROJECTING INSTRUMENT.

1,142,585. Specification of Letters Patent. Patented June 8, 1915.

Application filed July 8, 1914. Serial No. 849,699.

To all whom it may concern:

Be it known that I, FREDERICK WALTER LANE, a citizen of the United States, and a resident of Chico, in the county of Butte and State of California, have invented a new and Improved Projecting Instrument, of which the following is a full, clear, and exact description.

The invention relates to drafting and its object is to provide a new and improved projecting instrument more especially designed for drafting from any good pattern the true contour of the cutting edge of a knife or a cutter, such as is used in the revolving cutter head of a planer, matcher, shaper, sticker or other similar woodworking machine.

In order to accomplish the desired result use is made of two pencil holders mounted to slide on the blade of a guided T-square, a guide on the blade and a connection between the said guide and the said holder to move the same in a given ratio one relative to the other.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the projecting instrument; Fig. 2 is a side elevation of the same; Fig. 3 is a cross section of the same on the line 3—3 of Fig. 1; Fig. 4 is an enlarged cross section of the same on the line 4—4 of Fig. 1; Fig. 5 is a section along the line 5—5 of Fig. 1, and Fig. 6 is a plan view of the bell crank lever used in conjunction with the guide for moving the pencil holders one relative to the other.

It is well known that the cutting edge of a knife or a cutter ground to a certain pattern does not produce this pattern in the article to be cut, such as a molding when the knife is used in the usual revolving cutter head of a woodworking machine. The difference is caused by the circular path made by the knife. The necessary allowance of projection over the true pattern depends upon the size of the circular path in order that the knife or cutter may produce the proper cut. The amount of projection of the knife over the true pattern is not a fixed ratio or proportion. In order to produce the true contour of the cutting edge of the knife or cutter when the contour of the molding to be produced is given is the object of the instrument presently described in detail.

On a drawing board or drawing table A is secured a track B by the use of pins B′ or other fastening devices, and on the said track B is mounted to travel the head C′ of a T-square C having a blade C^2 extending over the drawing board A. The outer end of the blade C^2 is provided with a wheel or a caster C^3 traveling on the surface of the drawing board A to hold the blade C^2 a desired distance above the surface of the drawing table A.

On the blade C^2 of the T-square C are mounted to slide two holders D and E carrying pencils, tracers, pens or like marking tools F and F′, of which the marking tool F is adapted to be moved along the contour G of a pattern for a molding or the like marked on a sheet of paper G′ attached to the surface of the drawing board A. The other marking tool F′ is adapted to mark the true contour G^2 of the cutting edge of a knife or a cutter onto a sheet G^3 attached to the surface of the drawing board A adjacent the sheet G′, as plainly shown in Fig. 1. The holder D is pivotally connected by a link H with one arm of a bell crank lever I fulcrumed at I′ on the under side of the other holder E, and the other arm of this bell crank lever I is provided with a pin or roller I^2 engaging a curved slot J′ formed in the arm J^2 of a guide J adjustably secured on the blade C^2 of the T-square by clamping screws J^3 or the like. On the top of the guide J is arranged a scale K on which indicates a pointer L arranged on the holder E, the said scale representing the size of the smallest cutting circle made by the knife or cutter. Presuming, for instance, that the smallest circle cut by the knife or cutter is say three inches then the user loosens the clamping screws J^3 and moves the guide J lengthwise on the blade C^2 until the pointer L indicates on the mark "3" of the scale K, after which the guide J is clamped in place by the clamping screws J^3. The sheet G′ containing the contour G of the molding to be produced by the cutter head is fastened to the table A and a blank sheet G^3 is fastened to the table at a point below the holder E. The sheet G′ is so located that the marking tool F is at the smallest circle to be cut, which is indicated at the contour G (see

Fig. 1). The operator now manipulates the T-square C in such a manner that the marking tool F overlies the contour G and in doing so causes the other marking tool F′ to mark the true contour G^2 of the cutting edge of the knife or cutter onto the sheet G^3, it being understood that any sliding movement given to the holder D on the blade C^2 causes the holder E to slide on the blade but at a ratio corresponding to the movement of the pin I^2 in the slot J′ of the guide arms J^2. Thus the contour G^2 produced by the marking tool F′ is the one to which the cutters or knives are shaped to produce a molding having the contour G shown in Fig. 1.

The pattern curve G has been shown in Fig. 1 in juxtaposition to the cutter curve G^2 to show the direction between the said curves. In practice, the curve G does not appear on the sheet G^3.

The detail construction of the T-square C is preferably as follows: The head C′ is provided with a grooved wheel C^4 mounted to travel on the track B, which latter is formed of a cylindrical rod fastened to the board A by the pins B′, as previously mentioned. The blade C^2 of the T-square is provided at the under side with a groove C^5 extending lengthwise of the blade to form a guide for the holders D and E. The holder D (see Figs. 1, 3 and 5) consists essentially of a head made in top and bottom sections D′ and D^2 fastened together adjacent one edge of the blade C^2, the section D′ overlying the blade C^2 and the section D^2 fitting the under side of the said blade and having a rib D^3 slidably engaging the groove C^5 (see Fig. 5) to hold the holder head slidable on the blade C^2. The top section D′ is provided with centers D^4 on which is mounted to swing up and down an arm D^5 extending at a right angle to the blade C^2 and being provided, at its free end with a suitable clamping or fastening device D^6 for removably and adjustably holding the marking tool F in place. The pivotal end of the arm D^5 is provided with a heel D^7 between which and the blade C^2 is interposed a spring D^8 to hold the point of the marking tool F in contact with the sheet G′.

The holder E is constructed similar to the holder D and is formed of top and bottom sections E′ and E^2 fastened together adjacent one edge of the blade C^2, and the said bottom section E^2 is provided with a rib E^3 (see Fig. 5) engaging the groove C^5. The bottom section E^2 is further provided with an extension arm E^4 on which the bell crank lever I is fulcrumed. The top section E′ is provided with centers E^5 on which is mounted to swing up and down an arm E^6 provided at its outer end with a clamping or fastening device E^7 for adjustably and removably holding the marking tool F′. The heel end of the arm E^6 is pressed on by a spring E^8 to hold the point of the marking tool F′ in contact with the sheet G^3.

The guide J is provided with a top part J^4 extending onto the top of the blade C^2 at the rear edge thereof, and to this top part J^4 is secured the arm J^2 by the use of the clamping screws J^3 previously mentioned. The scale K is marked on the upper surface of the top part J^4. On loosening the clamping screws J^3 the guide J can be readily adjusted in a lengthwise direction on the blade C^2 so as to cause the pointer L to indicate at the proper mark of the scale K according to the smallest cutting circle made by the knife or cutter, as before explained.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A drafting instrument, comprising a T-square having a blade, holders carrying marking tools slidably mounted on the said blade, a guide adjustably secured to the said blade and provided with a scale, a pointer on one of the said holders indicating on the said scale, and a connection between the said guide and the said holders to move one at a given ratio relative to the other.

2. A drafting instrument, comprising a T-square having a blade, holders carrying marking tools slidably mounted on the said blade, a guide adjustably secured to the said blade and provided with a scale, a pointer on one of the said holders indicating on the said scale, a bell crank lever fulcrumed on one of the said holders and engaging the said guide, and a link connecting the said bell crank lever with the other holder.

3. A drafting instrument, comprising a T-square having a head and blade, a track for the head of the T-square to travel on, holders carrying marking tools slidably mounted on the blade of the T-square, a bell crank lever fulcrumed on one holder, a link pivotally connecting the said bell crank lever with the other holder, and a guide on the said blade and engaged by the said bell crank lever.

4. A drafting instrument, comprising a fixed track, a T-square having a blade and a head slidable on the said track, holders carrying marking tools mounted to slide on the said blade, a guide adjustably secured to the said blade and provided with an arm having a curved slot, a bell crank lever fulcrumed on one of the said holders and engaging the said slot, and a link connecting the said bell crank lever with the other holder.

5. A drafting instrument, comprising a fixed track, a T-square having a blade and a head slidable on the said track, holders carrying marking tools mounted to slide on the said blade, a guide having a scale, said guide being adjustably secured to the said blade and provided with an arm having a

curved slot, a bell crank lever fulcrumed on one of the said holders and engaging the said slot, a link connecting the said bell crank lever to the other holder, and a pointer indicating on the said scale and forming part of the holder on which the said bell crank lever is fulcrumed.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK WALTER LANE.

Witnesses:

CHESTER H. ROAKE,

F. W. JAMISON.

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