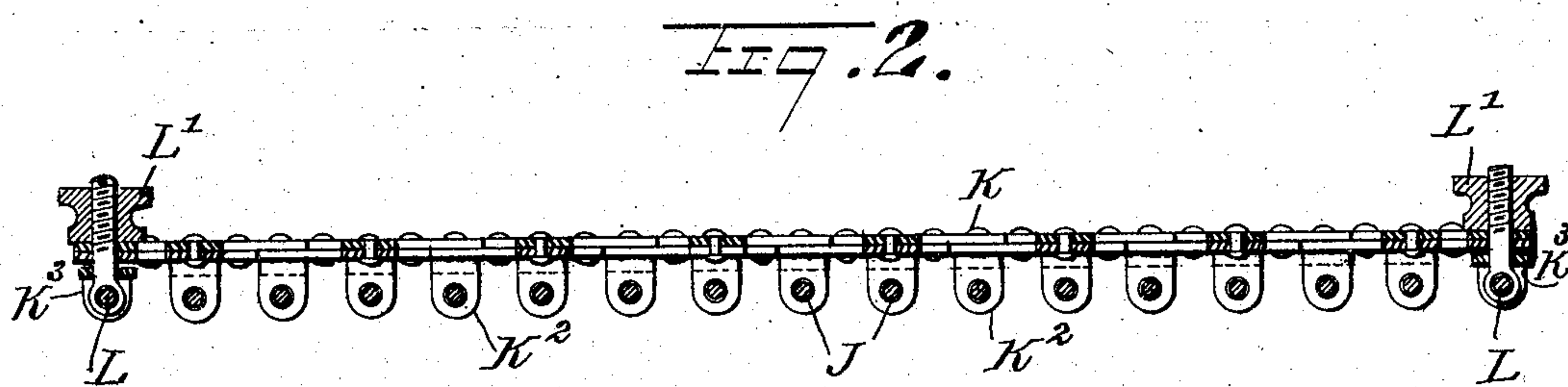


No. 791,235.

PATENTED MAY.30, 1905.

A. A. ALLEN.
DRAFTING INSTRUMENT.
APPLICATION FILED JULY 7, 1904.

2 SHEETS--SHEET 1.



WITNESSES:

H. Walker
Prof. Hoston

INVENTOR

Albert Arthur Allen

BY *mmmm*
ATTORNEYS

No. 791,235.

PATENTED MAY 30, 1905.

A. A. ALLEN.
DRAFTING INSTRUMENT.
APPLICATION FILED JULY 7, 1904.

2 SHEETS—SHEET 2.

BY *Mumukshu*
ATTORNEYS

UNITED STATES PATENT OFFICE.

ALBERT ARTHUR ALLEN, OF ORTONVILLE, MINNESOTA.

DRAFTING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 791,235, dated May 30, 1905.

Application filed July 7, 1904. Serial No. 215,622.

To all whom it may concern:

Be it known that I, ALBERT ARTHUR ALLEN, a citizen of the United States, and a resident of Ortonville, in the county of Bigstone and State of Minnesota, have invented a new and Improved Drafting Instrument, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved drafting instrument more especially designed for the use of tinners, plumbers, and other mechanics in laying out the blanks for forming elbows, T's, and other articles of sheet-metal and like material.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

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 side elevation of the divider for obtaining peripheral ordinate points. Fig. 2 is a sectional plan view of the same on the line 5 5 of Fig. 4. Fig. 3 is a sectional plan view of the radial divider for use in connection with the peripheral divider for accurately laying out curve coördinates for the joints of tapering bodies. Fig. 4 is a side elevation of the same, parts being shown in section; and Fig. 5 is a diagrammatic plan view of the same, showing its use.

The peripheral divider B is arranged for obtaining ordinate points spaced equal distances apart and dividing the periphery of a tubular body into equal parts. This divider B may be used in connection with a diameter-divider of any suitable or approved construction arranged for obtaining on the diameter of the tubular body the diametrical ordinate points. By drawing from these points it is evident that the curved coördinates are obtained to permit of conveniently and quickly drawing the desired curve.

The peripheral divider B consists of spacing-bars J, connected at their upper ends to pivots K' on the upper ends of the links of a lazy-tongs K, and the said spacing-bars J are

mounted to slide in suitable bearings K², held on the pivots at the lower ends of the links of the lazy-tongs K. By the arrangement described the spacing-bars J are all spaced equal distances apart, and by opening or closing the lazy-tongs the spaces are increased or diminished correspondingly, the lazy-tongs being opened or closed, so as to render the distance between the end spacing-bars J equal to the developed or straightened-out periphery of the tubular body under treatment.

The end spacing-bars J are mounted to slide in bearings K³, held on pivots L, connecting the end links of the lazy-tongs K with each other, the said pivots L being in the shape of clamping-screws, having their nuts L' arranged for clamping the several parts of the end links of the lazy-tongs together to hold the lazy-tongs in their adjusted position.

In order to lay out the joints for tapering tubular bodies, use is made, in connection with the peripheral divider B, of a radial divider N, shown in detail in Figs. 3, 4, and 5 and consisting of radial bars N', fulcrumed at one end on a pivot O and carrying at their other ends slidable bearings P, adapted to be fastened to the arms N' by set-screws P'. The bearings P are adapted to be engaged by the lower ends of the spacing-bars J, and the latter are secured to the bearings by set-screws P². On the pivot O is held to turn a sleeve Q, in which is adjustably secured by a set-screw Q' a rod R, provided at its free end with a head R' for receiving a pencil or other marker S, adapted to be fastened in place by a set-screw R². The lower end of the pivot O is peripherally provided with a gimlet-point O' for conveniently securing the pivot in position in a hole on the sheet on which the laying-out is to be done, and on the upper threaded end of the said pivot O screws a nut O² for clamping the several parts on the pivot in place after the arms N' are spread apart the desired distance in fan shape and according to the position of the spacing-bars J, as will be readily understood by reference to Figs. 3 and 5.

In order to lay out the blanks for an elbow, for instance, the operator, by means of a suitable diametrical divider, lays out the diameter

of the tubular body on the blank sheet of tin or other sheet metal and marks the diametrical ordinate points. The operator now figures out the length of the periphery of the tubular body and extends the same at right angles to the diameter laid out on the sheet, as above explained, and then opens the lazy-tongs K, so that the end bars thereof cover the distance of the periphery. The operator now marks the peripheral points on the sheet and then draws the coördinate lines from both points, the point of intersection of the said lines giving the curve coördinate for forming the necessary curve. The operator now cuts along the line of this curve and then bends the two pieces of the blank into a tubular shape, so that the two pieces peripherally fit at the miter-joint along the curved edges, as will be readily understood.

For forming the blanks for a skew-T and in laying out an angular collar for the dome of a hot-air heater, &c., the operator proceeds in substantially the same manner as above described.

In forming the joints for tapering tubular bodies use is made of a diametrical divider A, as plainly indicated in Fig. 5, in connection with the peripheral divider B, having its bars J attached to the bearings P of the radial arms N', it being understood that the latter are spread apart by the said spacing-bars J an equal distance with the pivot O at the center, relative to which the divider A is radially arranged. The ordinates for the diametrical points are drawn by the pencil S, and the ordinates for the peripheral points are radial along the arms N', so that the intersection of the lines drawn by the pencil S with the arms N' gives the curve coördinates to allow the operator to draw the desired curve along which the sheet is cut to produce the proper joint.

It is understood that in the foregoing I have given but a few examples of the use of the instrument, and it is evident that the instrument can be readily employed for laying out various other curves required in the formation of tubular jointed bodies.

While the divider B is especially designed for use as a peripheral divider in laying out the blanks for forming tubular bodies, it is to be understood that the said divider can be employed for accurately dividing other objects or spaces into equal parts.

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

1. An instrument comprising a divider having parallel spacing-bars, connected links having a fixed connection at one end with the spacing-bars and a sliding connection at the other end with said bars, bearings in which

the end spacing-bars are mounted to slide, the said bearings being held on pivots connecting certain of the links of the lazy-tongs, and means for clamping the said links together to hold the lazy-tongs in adjusted position.

2. An instrument comprising a divider having parallel spacing-bars, connected links forming lazy-tongs and having pivots at their upper ends to which the upper ends of the spacing-bars are connected, bearings held on pivots at the lower ends of the connected links and in which the spacing-bars are mounted to slide, and bearings in which the end spacing-bars are mounted to slide, the said bearings being held on pivots connecting the end links of the lazy-tongs with each other.

3. An instrument comprising a divider having parallel spacing-bars, connected links having a fixed and a sliding connection with the said spacing-bars, bearings in which the end spacing-bars are mounted to slide and pivots connecting the parts of the end links together and on which the said bearings are held, the said pivots being threaded and provided with nuts for clamping the parts of the end links together.

4. An instrument for obtaining curve coördinates, comprising a divider having parallel spacing-bars, links having a fixed and a sliding connection with the said spacing-bars, radial arms connected with the said spacing-bars, and a pencil having its pivot coinciding with the pivot of the radial arms.

5. An instrument for obtaining curve coördinates, comprising a multidivider having spacing-bars for dividing a line into a number of equal parts, a pivot, radial arms fulcrumed on the said pivot and connected with the bars of the said multidivider, and a scribe consisting of a sleeve mounted on the pivot, a rod adjustably held on the said sleeve and a scribing-point in the outer end of the rod.

6. An instrument for obtaining curve coördinates, comprising a multidivider having spacing-bars for dividing a line into a number of equal parts, a pivot, radial arms fulcrumed on the said pivot, bearings adjustably held on the said radial arms and connected with the bars of the said multidivider, and a scribe consisting of a sleeve mounted on the pivot, a rod adjustably held on the said sleeve and a scribing-point in the outer end of the rod.

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

ALBERT ARTHUR ALLEN.

Witnesses:

THOS. F. WILSON,
P. E. GODFREY.