Feb. 13, 1951 C. C. CAHILL ET AL 2,541,808

PATTERN LAYOUT DEVICE

Filed June 7, 1946 2 Sheets-Sheet 1

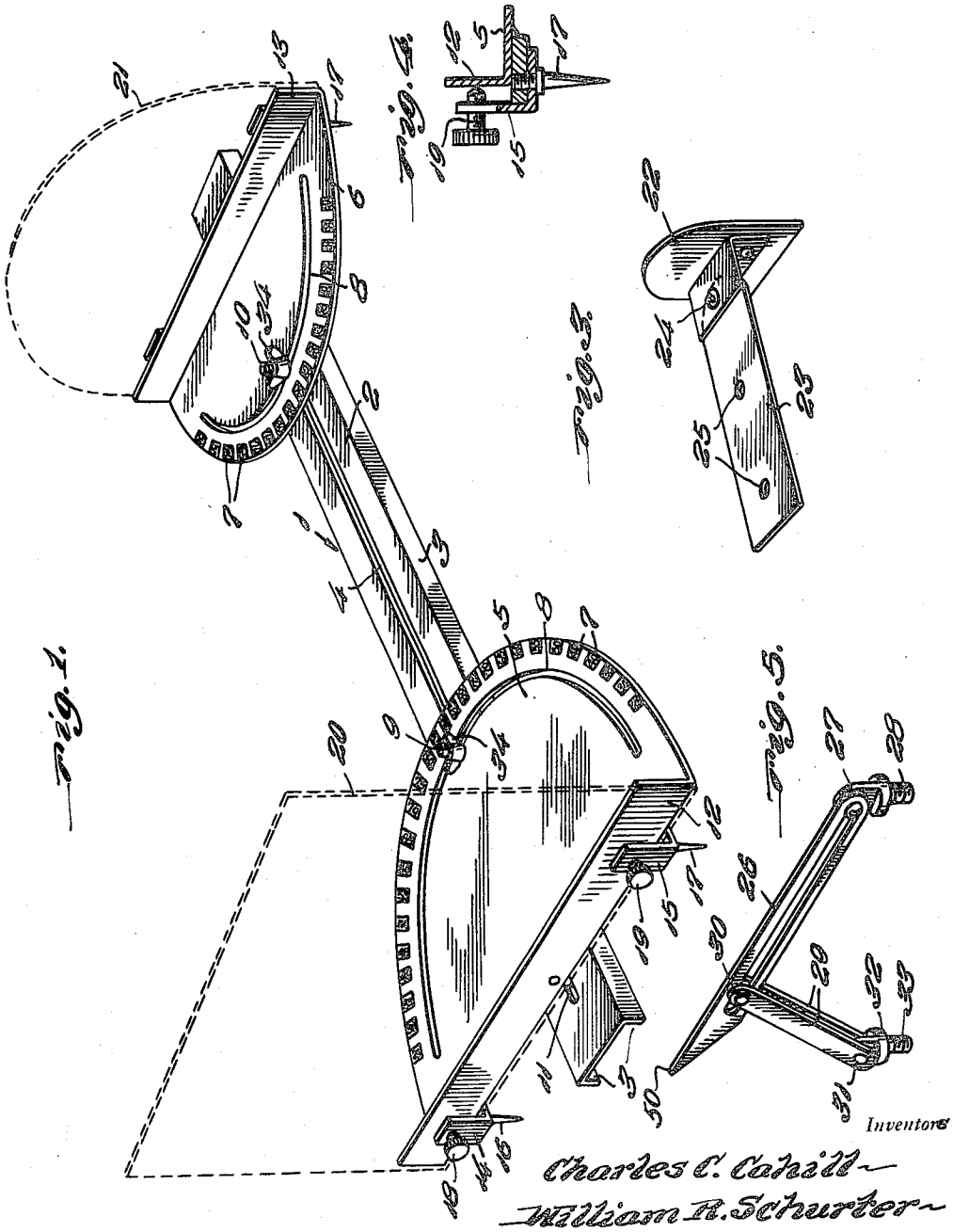


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

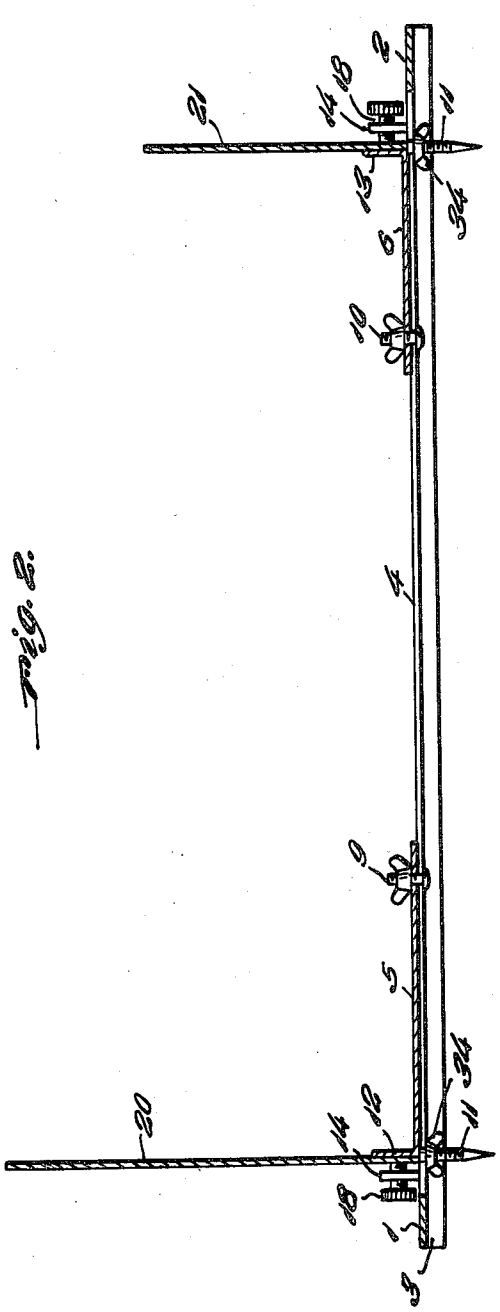
Fig. 5.

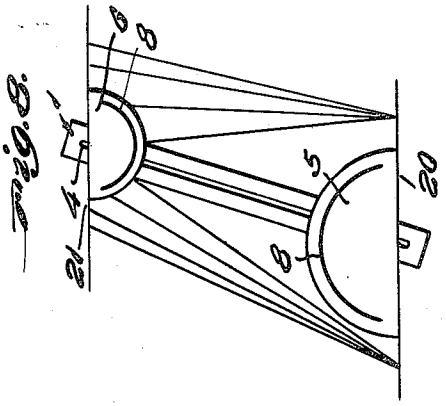
Inventors
Charles C. Cahill
William R. Schurter
By Clarence A. O'Brien
and Harvey B. Jackson
Attorneys

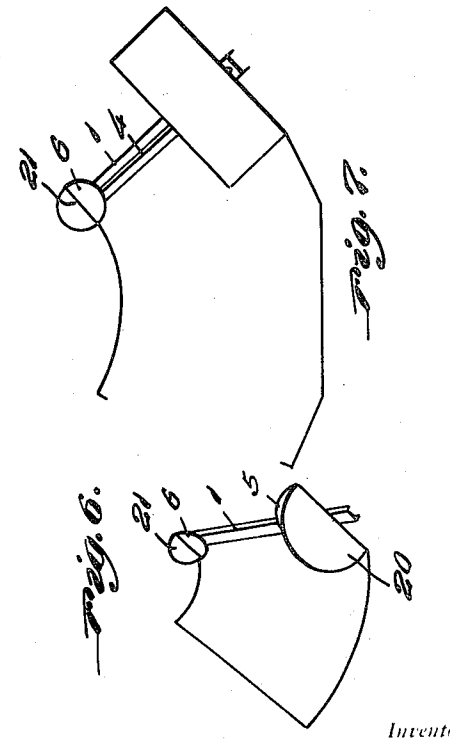
Feb. 13, 1951 C. C. CAHILL ET AL 2,541,808

PATTERN LAYOUT DEVICE

Filed June 7, 1946 2 Sheets-Sheet 2







Inventors

Charles C. Cahill

William R. Schurter

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Patented Feb. 13, 1951 2,541,808

UNITED STATES PATENT OFFICE

2,541,808

PATTERN LAYOUT DEVICE

Charles C. Cahill, Allentown, and William R. Schurter, Trenton, N. J.; Eleanor T. Cahill administratrix of said Charles C. Cahill, deceased

Application June 7, 1946, Serial No. 675,266

8 Claims. (Cl. 33—26)

1

This invention relates to metal working jigs used for laying out sheet metal work, and more particularly to a tool for determining the outline or pattern of various transitions and fittings used in air-conditioning, ventilation, and other branches of sheet metal work.

An object of this invention is to provide a simple and inexpensive tool or jig of the class described, whereby different pieces of sheet metal necessary to form various transitions and fittings may be laid out without the slow and technical method of pattern drafting utilizing mechanical drawing and triangulation.

A further object of the invention is to provide a device of the character described including a channel body member having a longitudinally extending slot formed through it, and having calibrated semi-circles of different dimensions adjustably connected to said body member and slidable along said slot, said semi-circles being adapted to receive various sizes and shapes of plates, and cooperating positioning pins or points being associated with said semi-circles, whereby various metal working transitions and fittings may be quickly laid out.

A further object of the invention is to provide a metal working jig which is highly efficient in operation, and relatively inexpensive to manufacture and produce.

Other objects will appear as the description proceeds.

In the accompanying drawings which form a part of this application,

Figure 1 is a perspective view of the improved metal working jig;

Figure 2 is a longitudinal sectional view taken through the jig;

Figure 3 is a perspective view of an attachment for making funnels, and other sheet metal pieces;

Figure 4 is an end view of a corner of a semi-circle with clamp and point;

Figure 5 is a perspective view of an attachment for making ordinary and scalene cones;

Figure 6 is a taper fitting to make large diameter pipe to small diameter pipe;

Figure 7 is a transition fitting for making square pipe to round pipe, and

Figure 8 shows the device when making an elevation drawing of an off-center transition.

Like characters of reference are used throughout the following specification and the accompanying drawings to designate corresponding parts.

In carrying out the invention, there is provided a channeled body member 1 having a flat top 2 and depending side flanges 3. The body 1 is formed with a longitudinally extending slot 4 which extends to points near its extremities.

The semi-circular calibrated scale bodies 5 and 6 are provided with the degree calibration 7 along their curved edges, and are provided with the arcuate slots 8 adjacent to and parallel with the said curved edges. Adjusting bolts 9 and 10 ex-

2

tend through the slot 4 and through the said scale bodies 5 and 6 to permit angular shifting of said bodies with respect to the body member 1, and to clamp the same in fixed position when the shifting has been accomplished.

A centering pin 11 extends downwardly from the true center of the scale bodies 5 and 6, the body 5 being somewhat larger than the scale body 6.

The flat sides of the scale bodies 5 and 6 are upturned to form the vertical flanges 12 and 13, respectively, and cooperate with the combined clamps 14 and 15, the same being formed with the detachable points or pins 16 and 17, also having the set screws 18 and 19 threaded through their upper extremities to clamp various sizes and shapes of plates 20 and 21 in position next to said flanges.

The attachment shown in Figure 3 comprises an upstanding rounded plate 22 and a forwardly extending plate 23 adjustably connected thereto by the screw or bolt 24, and formed with the apertures 25. When it is desired to make a pattern for the truncated cone portion of a funnel or the like, the attachment shown in this figure is secured to the channel member 1 in place of body 5 by means of bolts passing through the slot 4. The distance between this attachment and the body 6 determines the slop of the elements of the conical portion. When the semi-circular template 21 and the attachment are secured in position, the device is placed with the curved edges rubbed with carpenter's chalk and facing the pattern paper and it may then be rolled for scribing the outline of the pattern. Obviously, the cylindrical portion of a funnel would present no pattern problem.

The attachment illustrated in Figure 5 comprises a slotted arm or beam 26 having a head 27 slidably engaged in the slot of arm 26 and formed with a depending integral threaded stud 28. A pair of spaced links 29 are connected by the pin 30 to slide in the slot in the arm 26 and are connected at their outer ends by the pin 31 secured to the head 32, also formed with a depending threaded stud 33, said attachment being used for making ordinary and scalene cones. When it is desired to make a pattern for a scalene cone the attachment of this figure is secured to the channel member 1 in a manner similar to the above described attachment. The point 50 of the arm 26 will act as the pivot point and vertex of the scalene cone as the base 21 is rolled upon the paper. The angularity of the axis of the cone with respect to the base is dependent upon the distance between the lugs 28 and 33, and the altitude of the cone is dependent upon the distance between the point 50 and the base 21. To lay out the pattern for the cone, the edge of the semi-circular base is rubbed with carpenter's chalk and placed for rolling contact on the pattern paper. The device is then rolled to the extremities of the semi-circular edge with

the point 50 acting as a pivot point. By drawing straight lines between the extremities of the resulting curved chalk line and the pivot point a pattern for half of the cone will result.

The figures 6, 7 and 8 represent various fittings perspectively for making large diameter pipe to small diameter pipe, for making square pipe to round pipe, and when making an elevation drawing of an off-center transition.

The operation of the device will now be generally described as follows when making a side elevation of the required fitting. The proper plates are clamped to the scale bodies 5 and 6, after which the device is placed on the elevation drawing so that the center pins 11 coincide with the center line and ends of the fitting required, then the bodies 5 and 6 are swung until the end pins 16 and 17 coincide with the line designating the top and bottom of the fitting (see Figure 8). The center pins 11 are slightly longer than the pins 16 and 17 to allow the plates 5 and 6 to turn after the said center pins 11 are located. The wing nuts 34 on the end pins 11 are then tightened, and the edges which will become the outline of the pattern will be rubbed with carpenter's chalk. The device is then rolled across a flat sheet of drafting paper producing a line where the chalked edge has touched the paper. In most cases, this operation produces a half pattern which may be cut and folded to produce a full pattern.

While the preferred embodiment of the invention has been illustrated and described, it will be understood that it is not intended to limit the scope thereto, as many minor changes in detail of construction may be resorted to without departure from the spirit of the invention.

Having thus described our invention what we claim as new and desire to secure by Letters Patent of the United States is:

1. A pattern layout instrument comprising an elongated slotted body member, a pair of semi-circular plates adjustably mounted on the body member, said plates being horizontally movable and transversely swingable on the body, means for locking said plates on the body in adjusted positions, fixed center pins depending from said plates through the body, vertical flanges on said plates, complementary vertical elements spaced from and connected with said flanges and defining seats for accommodating various sizes of templates, means for locking said templates in the seats and detachable pins depending from said complementary elements.

2. A pattern layout instrument comprising an elongated slotted body member, a pair of semi-circular plates adjustably mounted on the body member, said plates having a straight edge and an arcuate connecting edge, fixed center pins depending from said plates adjacent the straight edge and inserted through the body, arcuate slots formed in said plates in spaced relation to and parallel with the arcuate edges, locking means vertically disposed through said slots and the body, vertical flanges on said straight edges and means complementary to said flanges for holding various sizes of templates.

3. The combination of claim 2, wherein said last mentioned means includes angle irons having a vertical section spaced from the flanges and a horizontal section connected to the plates, set screws inserted through the vertical section for locking templates between the sections and the flanges.

4. The combination of claim 3, wherein end pins are detachably threaded to said horizontal sections and depend therefrom.

5. In a pattern layout instrument having a slotted body member and a pair of semi-circular plates adjustably mounted thereon, means for attaching templates to said plates comprising vertical flanges on said plates, clamping elements integral with and spaced from said flanges, adjustable transverse locking pins carried by said clamping elements and engageable with said flanges.

6. For use with a pattern layout instrument having a slotted body member, an adjustable semi-circular plate mounted thereon at one end, a vertical flange on said plate, and clamping elements complementary to said flange for retaining templates in a vertical relation to the body, detachable means carried by the body for making scalene cones and comprising a slotted arm having an attaching member swivelly mounted at one end, said attaching member being receivable in the body, a pair of parallel links slidably mounted on said arm at one end and having a swivelly secured body attaching member at the other end.

7. A pattern layout instrument comprising an inverted elongated channel member, having a central longitudinal slot, a semi-circular plate, having a straight back edge and a forward arcuate connecting edge, adjustably mounted on the body, a center pin depending from the plate and receivable through the slot, an arcuate adjusting slot formed in said plate in spaced relation to and parallel with the arcuate edges, a locking member vertically disposed through said plate slot and the body slot, a flat extension plate extending adjustably from one end of the body, a vertical plate disposed on the extending end of the extension plate, an arcuate upper edge on said vertical plate, a vertical flange on said semi-circular plate at the back edge and clamping means complementary to said flange for retaining templates on the semi-circular plate.

8. A metal working jig including an elongated inverted channel member having a central longitudinal slot, a pair of semi-circular bodies, each of said bodies having a straight edge and an arcuate connecting edge and being adjustably mounted on said channel member, center pins depending from said bodies adjacent the straight edges, degree calibrations on the margin of the arcuate edges, arcuate slots formed in said bodies in spaced relation to and parallel with the arcuate edges thereof, means for securing said semi-circular bodies in adjusted positions, vertical flanges on said straight edges, complementary elements spaced from said flanges and defining a seat for various sizes and shapes of templates, means for locking said templates in said seats and detachable end pins depending from the complementary elements.

CHARLES C. CAHILL.
WILLIAM R. SCHURTER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
984,347	Cardell	Feb. 14, 1911
1,015,423	Cardell	Jan. 23, 1912
1,039,901	Constantinescu	Oct. 1, 1912