

(No Model.)

J. McNEIL.
TEMPLET FOR BOILER HOLES.

No. 467,298.

Patented Jan. 19, 1892.

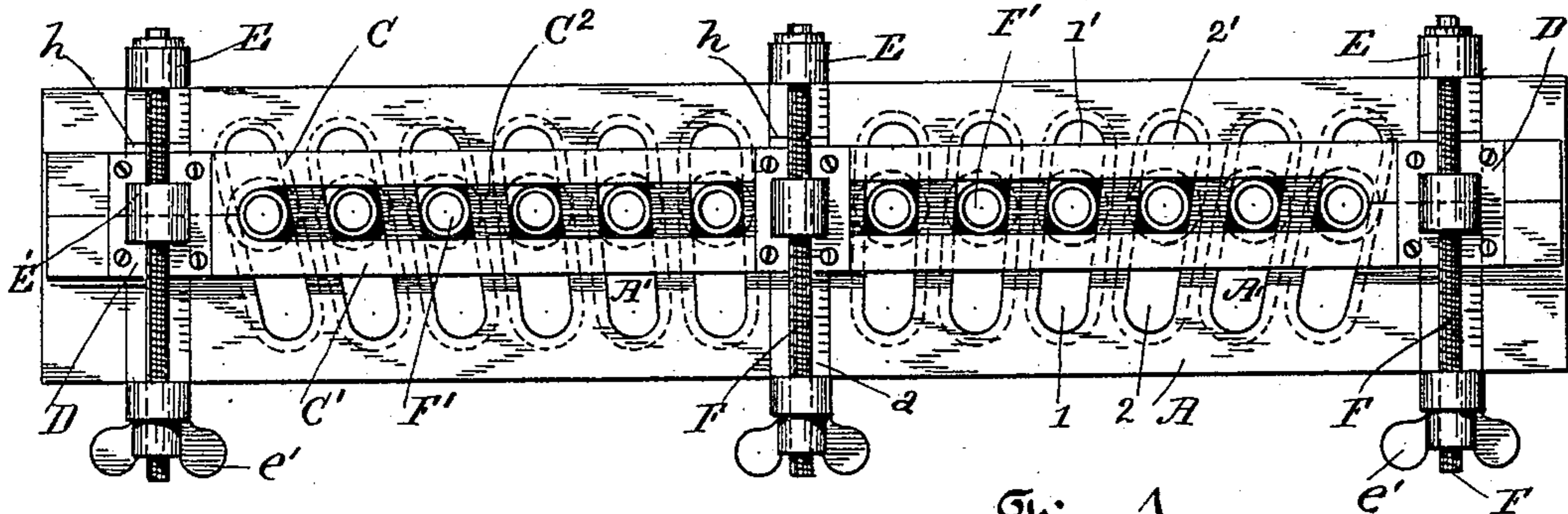


Fig. 1.

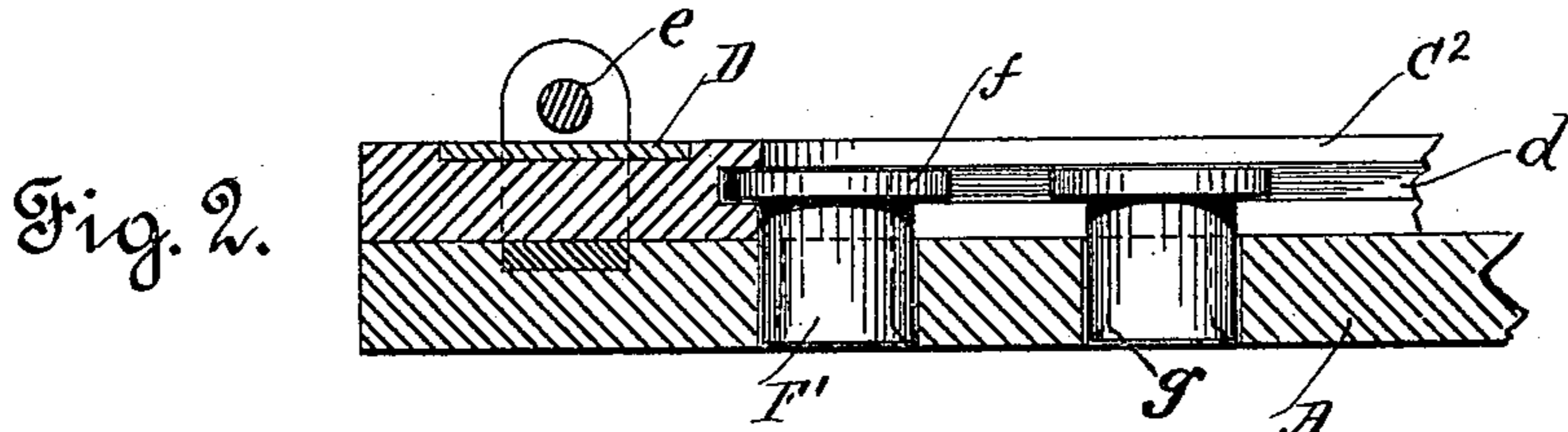


Fig. 2.

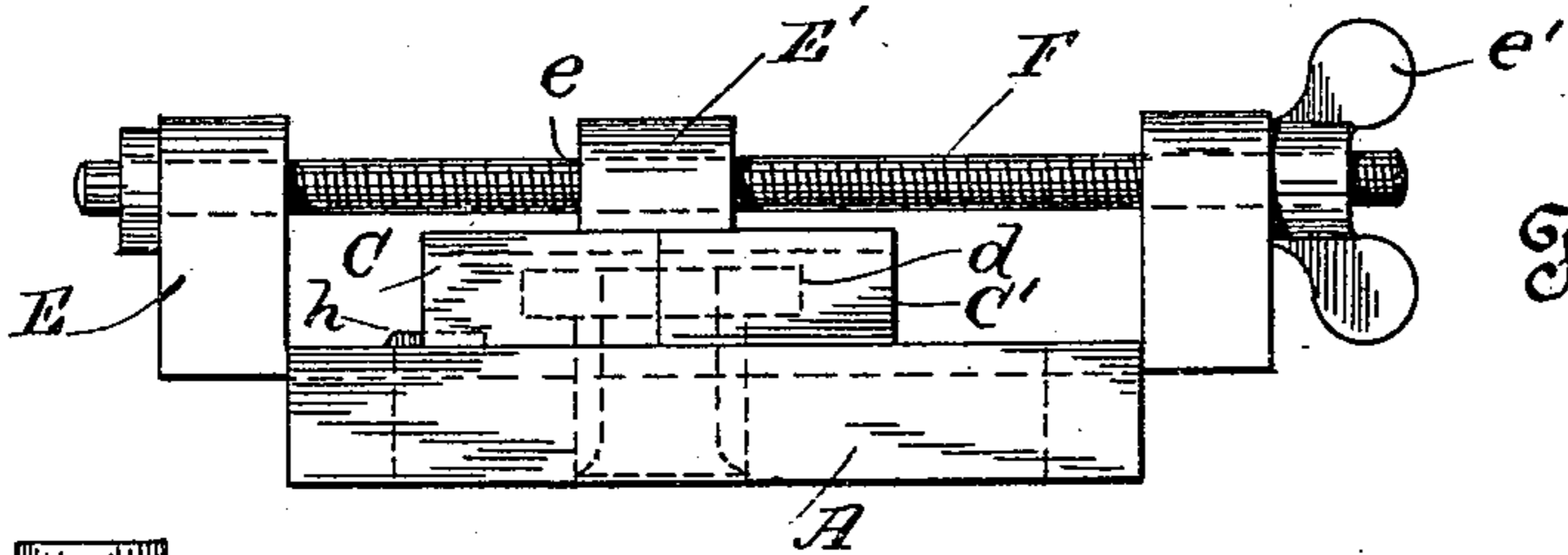


Fig. 3.

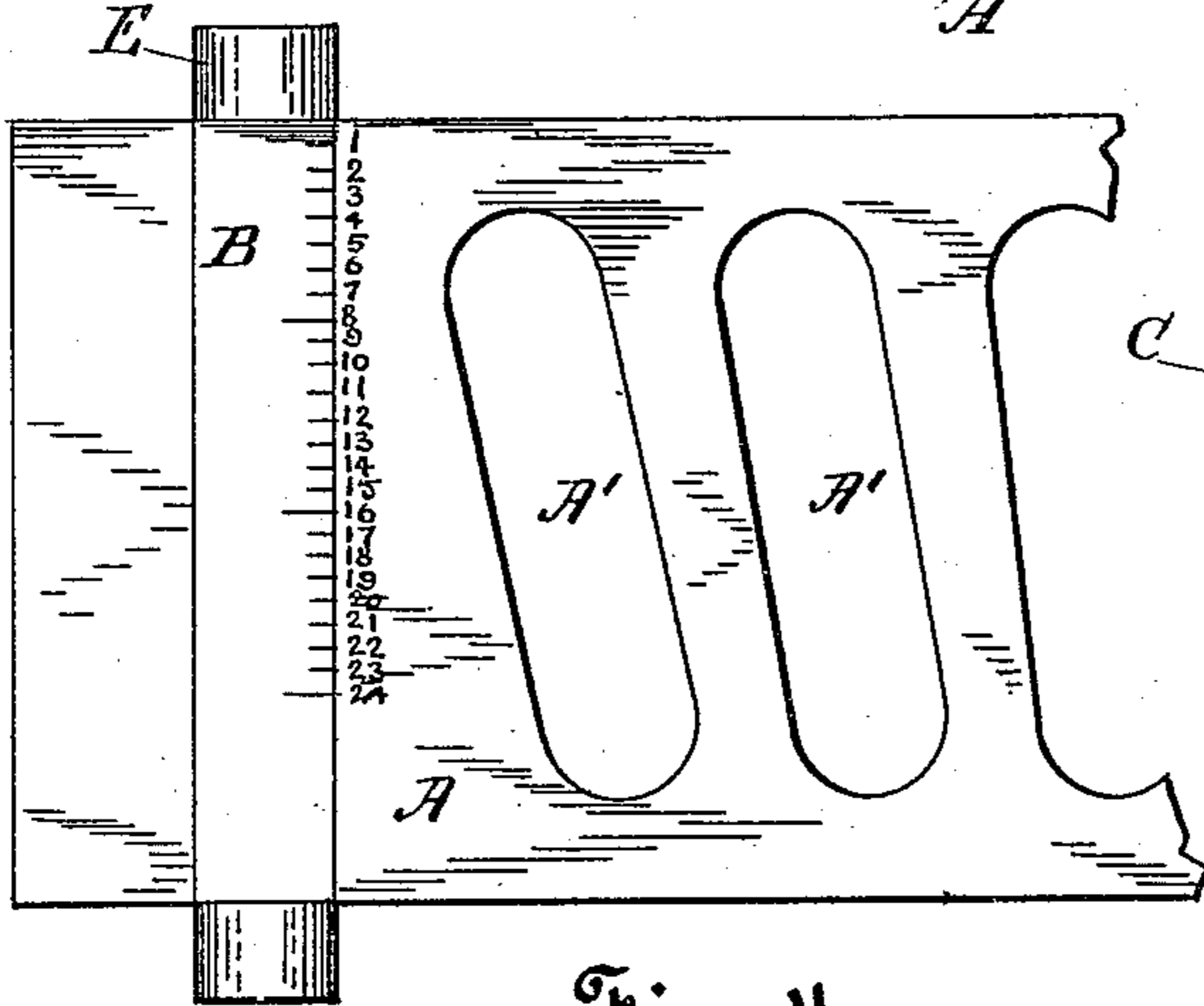


Fig. 4.

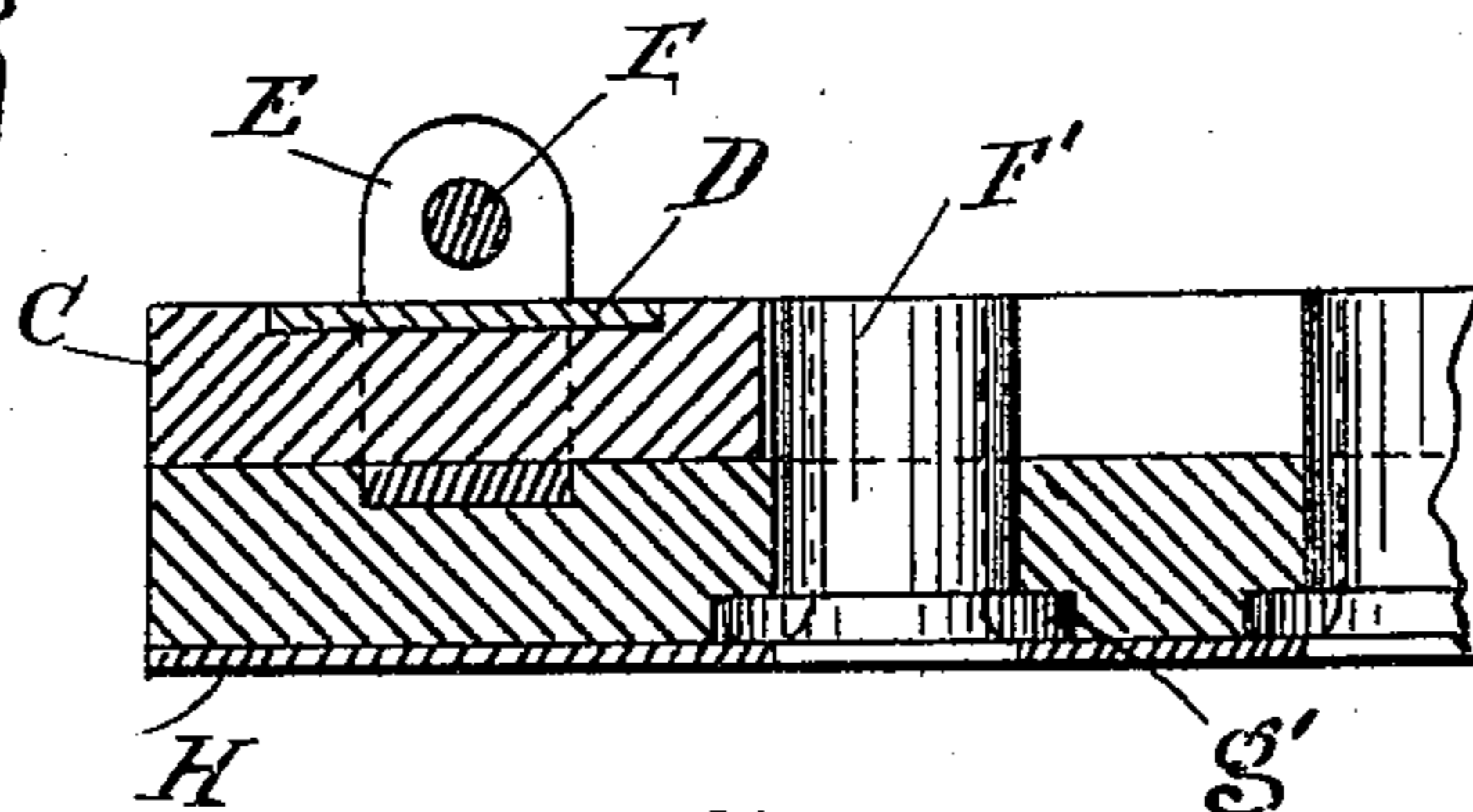


Fig. 5.

Witnesses.

H. Houteverde.

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UNITED STATES PATENT OFFICE.

JAMES MCNEIL, OF SAN FRANCISCO, CALIFORNIA.

TEMPLET FOR BOILER-HOLES.

SPECIFICATION forming part of Letters Patent No. 467,298, dated January 19, 1892.

Application filed September 15, 1891. Serial No. 405,763. (No model.)

To all whom it may concern:

Be it known that I, JAMES MCNEIL, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Spacers or Regulators; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention has relation to certain new and useful improvements in what I term "spacers" or "regulators" for boiler-making, which consists in the arrangement of parts and details of construction, as will be hereinafter more fully set forth in the drawings, described, and pointed out in the specification.

The object of my invention is to provide a spacer or regulator for the purpose of enabling an ordinary mechanic marking or laying off on the flat metal sheet the position of the boiler-holes, so that when the sheet is turned in order to form a boiler-body the holes will be true at an equal distance apart, thus dispensing with the necessity of forming minute calculation by dividers or use of patterns for this purpose, and which at the same time will allow for regulation, so as to increase or decrease the distance required to be given one hole from another, and which will further permit the laying off of the work, so as to bring the holes after being formed upon the arc of a circle.

For a more comprehensive understanding of my invention reference must be had to the accompanying drawings, wherein similar letters and figures of reference are used to denote corresponding parts throughout the entire specification and several views.

Figure 1 is a top plan view of my improved spacer with the parts in position for laying off holes; Fig. 2, a longitudinal sectional elevation, partly broken away in order to more fully illustrate hollow working shell; Fig. 3, an end view of Fig. 1; Fig. 4, an enlarged broken top plan of base-plate with adjusting-plate removed; and Fig. 5, a modification of Fig. 2, showing hollow marking-shell working within guideways formed in base-plate.

The letter A is used to indicate the base-

plate, which is provided with a series of elongated openings A', which are cut upon a true angle from a given center and of which a given number is placed to either side of the base-plate center. Inasmuch as I cut said openings on a true line from a given point corresponding with the center of the base-plate, it is obvious that the same will run diagonally to the center *a* of the plate, consequently their own centers increasing in distance from one another the further they are elongated. As shown in the drawings, the distance from center 1 to center 2 represents one and three-fourths inches, while at top of opening the distance from center 1' to 2' increases to two and one-half inches, and the center intermediate the top and bottom corresponding in distance to the measured point. As the openings are struck further from center *a* the inclination thereof increases, as will be observed by reference to Fig. 1. To the base-plate A, I secure the indicating-scales B, three in number, one at each end and one in the center, and upon said scales are indicated eight inches, commencing with the top at one-eighth and continuing increasing an eighth-inch in number until bottom of scale is reached. The numbers of each scale correspond, and the purpose thereof will be hereinafter more fully set forth and described. Upon said base-plate moves the spacer or regulating-plate, which consists of two bars C C', which run the entire length of the base-plate and are united by means of clamp or plate pieces D, which are bolted to each thereof. The plates C C' are cut away so as to form, when brought together, longitudinal openings C², and the inner face or wall thereof I cut away so as to form guideways *d*, (shown more clearly in Fig. 2,) within which the shouldered end of the hollow marking-shell works. Secured to the base piece or plate A and projecting upwardly therefrom at each end of the scales are the bearing-blocks E, and from the clamp-pieces D upwardly project the bearing-blocks E', which are provided with screw-threaded openings *e*. Through the screw-threaded opening of each block works the screw-rod F, the outer ends of which are plain and turn within bearing-blocks E. To one end of said rod is rigidly secured the thumb-screws *e'*, by means of

which the same is rotated. As said screw-rods are turned to right or left the spacer or regulating-plate is moved up or down by reason of the rotating screw-rod working within screw-threaded opening *e* of bearing-block *E'*. The head *f'* or flange of the hollow marking-shell *F'* works within the longitudinal guideways *d* of the regulating-plates, as clearly shown in Fig. 2, and the lower portion or shell proper works in the elongated openings *A'* of the base-plate. As the regulating-plate moves up or down the hollow marking-shells are allowed to move toward or from each other in order to increase or decrease the distance from their centers. The object of making and employing hollow marking-shells is for the purpose of allowing the operator of the spacer to insert a piece of chalk or pencil therethrough when the regulating-plate has been moved to required point, in order to designate on the metal sheet thereunder where hole is to be bored. In order that a clear and distinct mark shall be left upon the sheet, I incline or bevel the lower end of the shell outwardly, as shown at *g*, Fig. 2. If so desired, the regulating-plate may be formed of one solid piece cut away so as to provide the longitudinal opening *C'*, and the base piece or plate has longitudinal guideways *g'* formed therein, within which enlarged or flanged head of hollow marking-shell works, as shown in Fig. 5; but in this case an extra face-plate *H* must be provided for the purpose of holding the marking-shells in proper position. The bearing-blocks *E'* are provided with fingers or pointers *h* for the purpose of indicating number of scale-plate. When the regulating-plate has been adjusted to proper position, each indicating-finger will point to same number on the scales. When it is desired that the holes be marked upon a circle, the end bearing-blocks are adjusted correspondingly and the center one moved upward until the proper pitch is allowed the spacing-plate, which, owing to the ductility thereof, will permit of such bending. However, if so desired, said plate need not be formed solid, but may have a central joint, in order to allow for central give when marking upon a curve, but for all purposes the flexibility of the metal is sufficient to answer this purpose.

I am aware that minor changes may be made in the arrangement of parts and details of construction herein shown and described without creating or necessitating a departure from the nature and scope of my invention.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent of the United States, is—

1. In a spacer or regulator for laying out holes in sheet metal, the combination, with the base-plate provided with a series of elongated openings cut from a center, of the movable spacing-plate connected to the base-plate, and the marking-shells working within the openings of the base-plate and by the movement of the spacing-plate adapted to increase

or decrease the marked centers, as and for the purpose set forth.

2. In a spacer or regulator for laying out holes in sheet metal, the combination, with the base-plate provided with a series of openings cut from a center, of the movable spacing-plate, marking-shells carried by said plate, and mechanism for adjusting said plate in order to increase or decrease the distance between the marked centers, as and for the purpose set forth.

3. In a spacer or regulator for laying out holes in sheet metal, the combination, with the base-plate provided with a series of openings, said plate having indicating-scales secured thereto, of an adjustable spacing-plate for increasing or decreasing the distance between the marked centers and marking-shells carried by said plate, as and for the purpose set forth.

4. The combination, with a spacer or regulator for laying out holes in sheet metal, of the hollow movable marking-shells adapted to be adjusted so as to increase or decrease the distance from center to center, as and for the purpose set forth.

5. The combination, with a spacer or regulator for laying out holes in sheet metal, of the hollow movable marking-shells working in guideways, said shells adapted to be moved up or down with adjustment of the spacer, as and for the purpose set forth.

6. In a spacer or regulator for laying out holes in sheet metal, the combination, with the base-plate provided with a series of elongated openings, of an adjustable spacing-plate having an elongated slot formed therein, hollow marking-shells movably working within the base and spacing-plates, and the screw-rods for giving adjustability to the spacing-plate, as and for the purpose set forth.

7. In a spacer or regulator for laying out holes in sheet metal, the combination, with the base-plate provided with a series of elongated openings, of the adjustable spacing-plate, said plate consisting of two sections suitably united and cut away so as to form a longitudinal opening, guideways formed therein, hollow marking-shells working in said guideways and openings of the base-plate, and mechanism for giving adjustment to the spacing-plate, as and for the purpose set forth.

8. In a spacer or regulator for laying out holes in sheet metal, the combination, with the base-plate, of the adjustable spacing-plate of greater ductility than the base-plate, so as to allow of the same being adjusted to the arc of a circle, and mechanism for imparting adjustability to the spacing-plate, as and for the purpose set forth.

9. In a spacer or regulator for laying out holes in sheet metal, the combination, with the base-plate, of upwardly-projecting bearing-blocks secured thereto, an adjustable spacing or regulating plate, bearing-blocks secured thereto, said blocks provided with screw-threaded openings, and the screw-

threaded rods working within the bearing-
blocks of the base-plate and through the
screw-threaded opening of spacing-plate and
bearing-blocks and adapted with the rotation
5 thereof to raise or lower the spacing-plate, as
and for the purpose set forth.

10 In a spacer or regulator for laying out
holes in sheet metal, the combination, with
the base-plate, of a graduated scale-plate se-
cured thereto, a spacing-plate provided with

indicating-fingers, and mechanism for adjust-
ing said spacing-plate, as and for the purpose
set forth.

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

JAMES MCNEIL.

Witnesses:

N. A. ACKER,
J. W. KEYS.