

(Model.)

M. W. SHAPLEY.
Machine for Flanging Circular Plates.
No. 238,535. Patented March 8, 1881.

Fig:1.

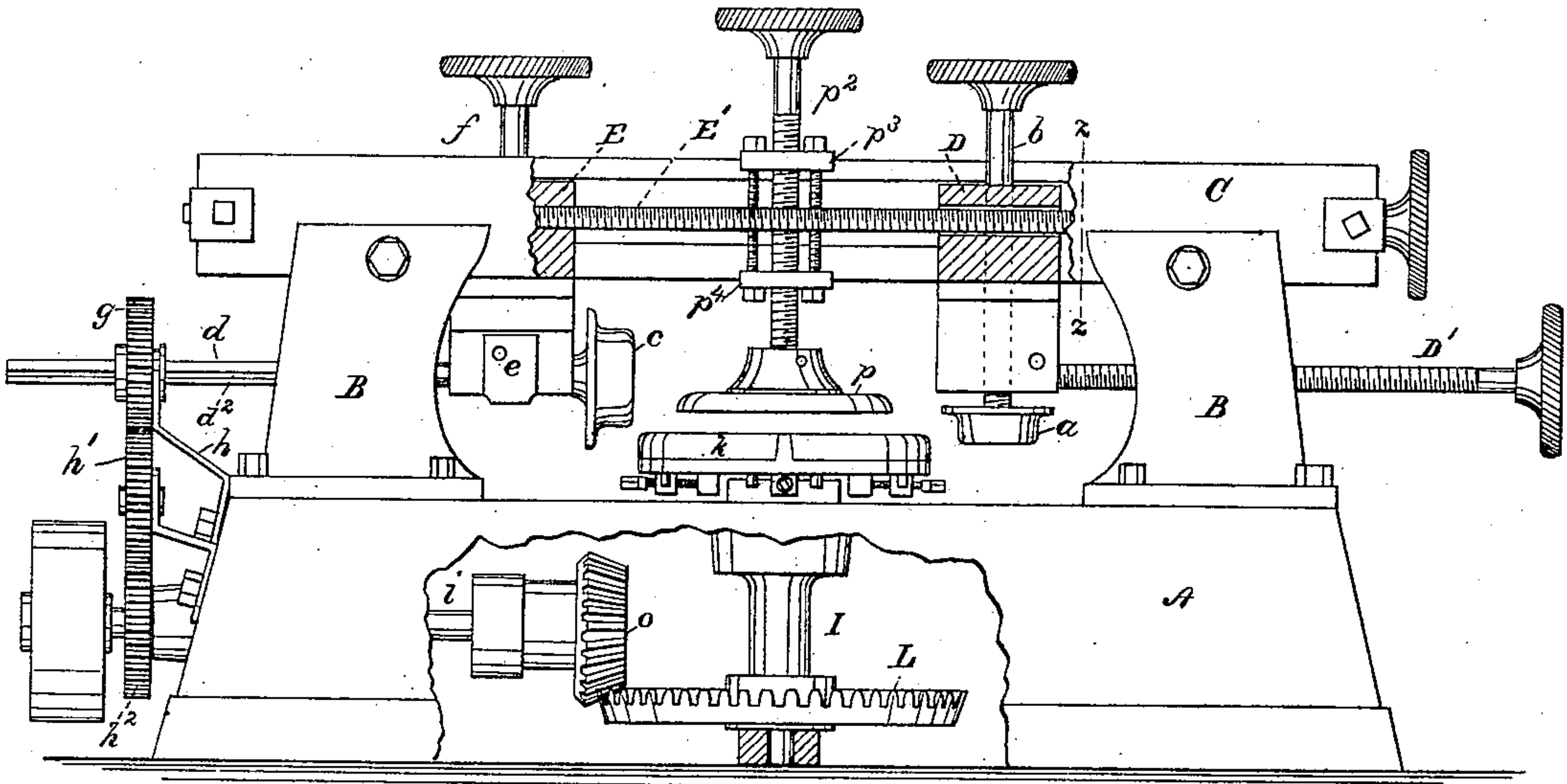


Fig:2.

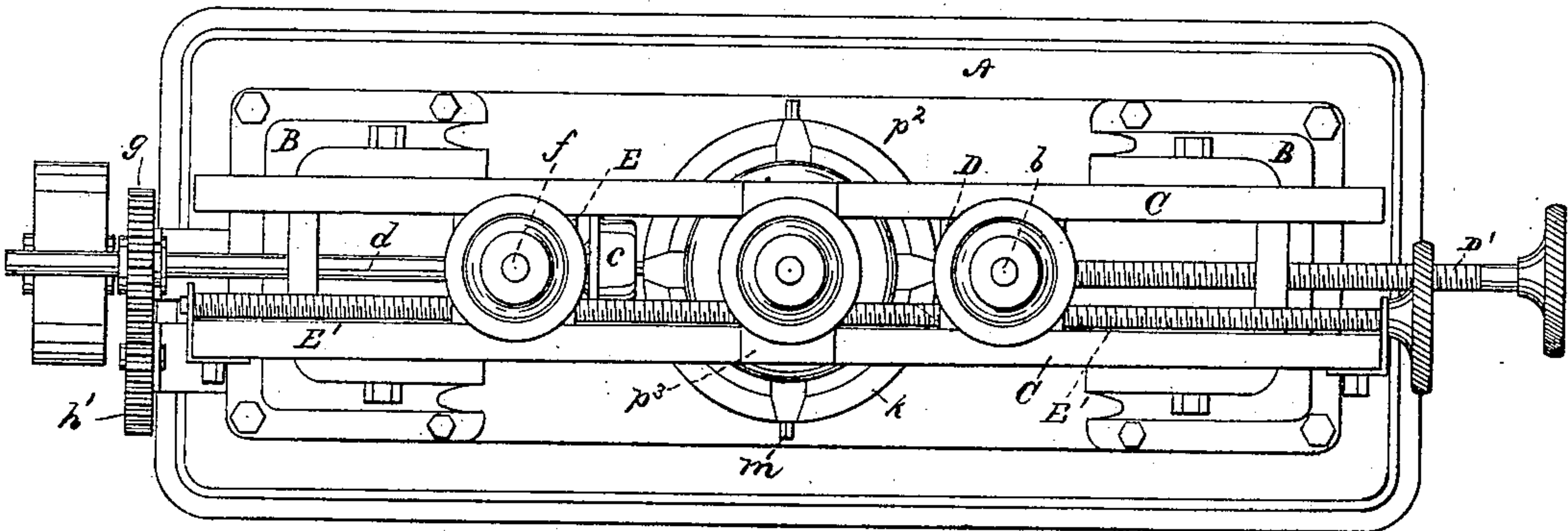


Fig:3.

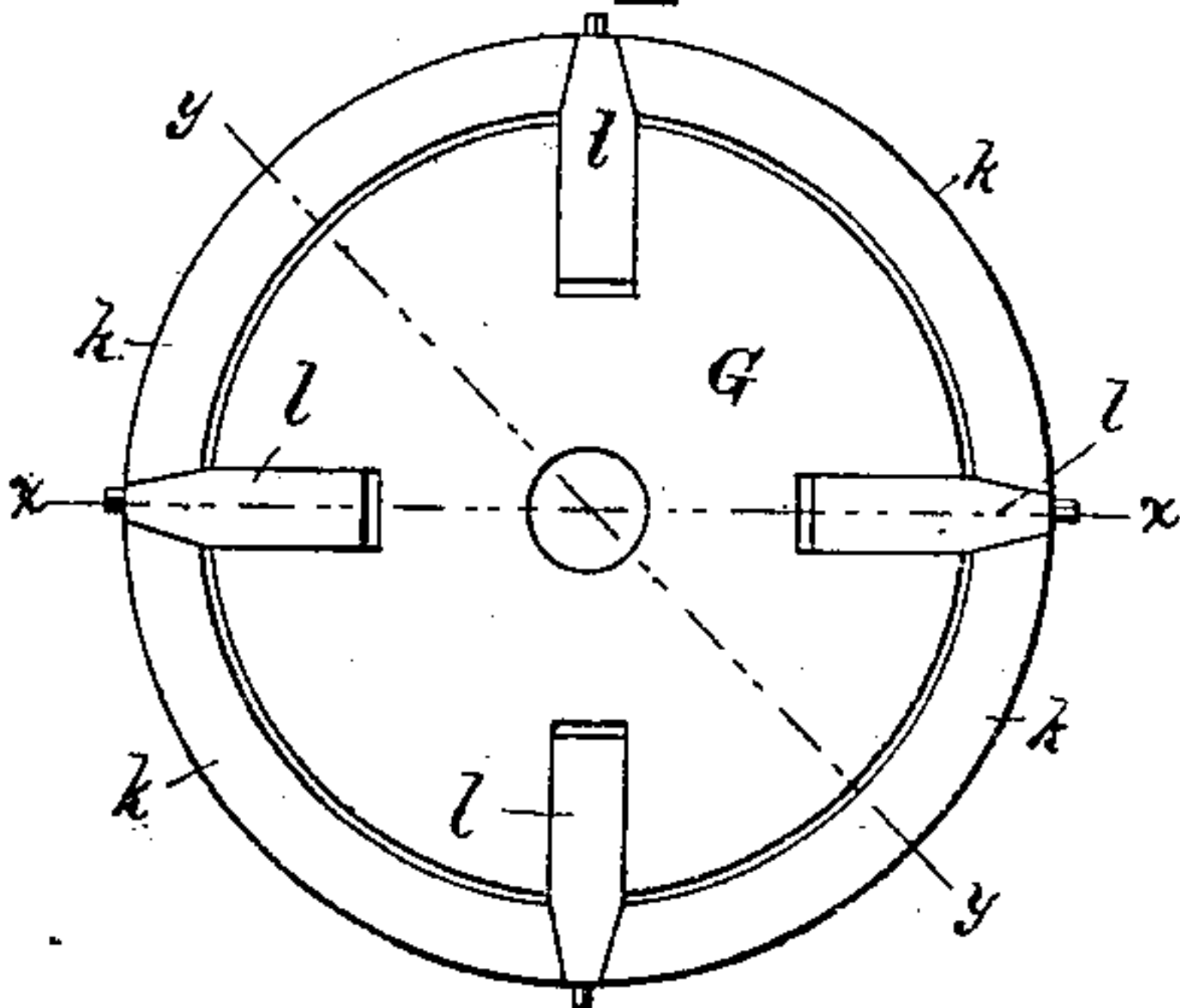


Fig:4.

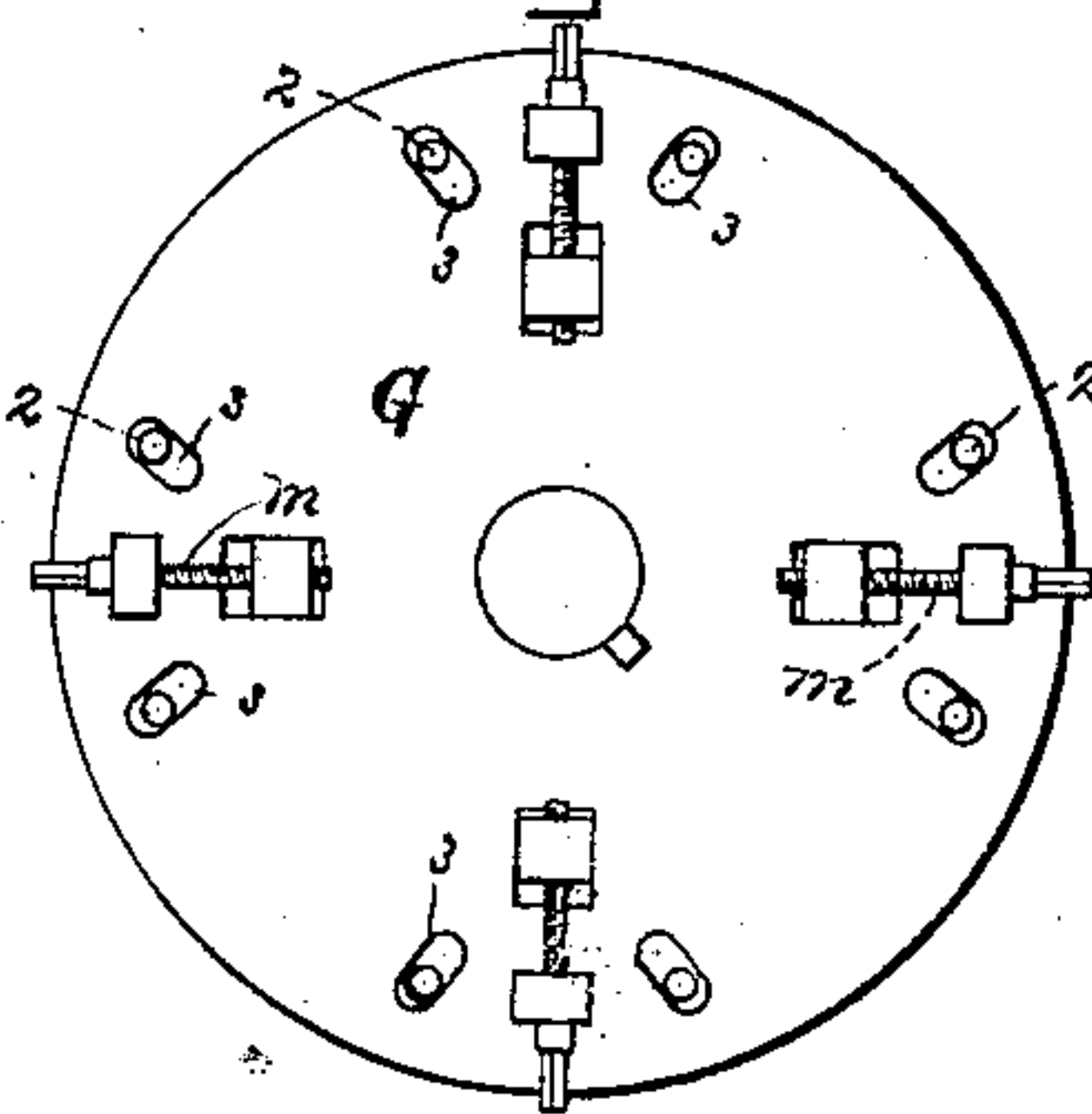


Fig:5.

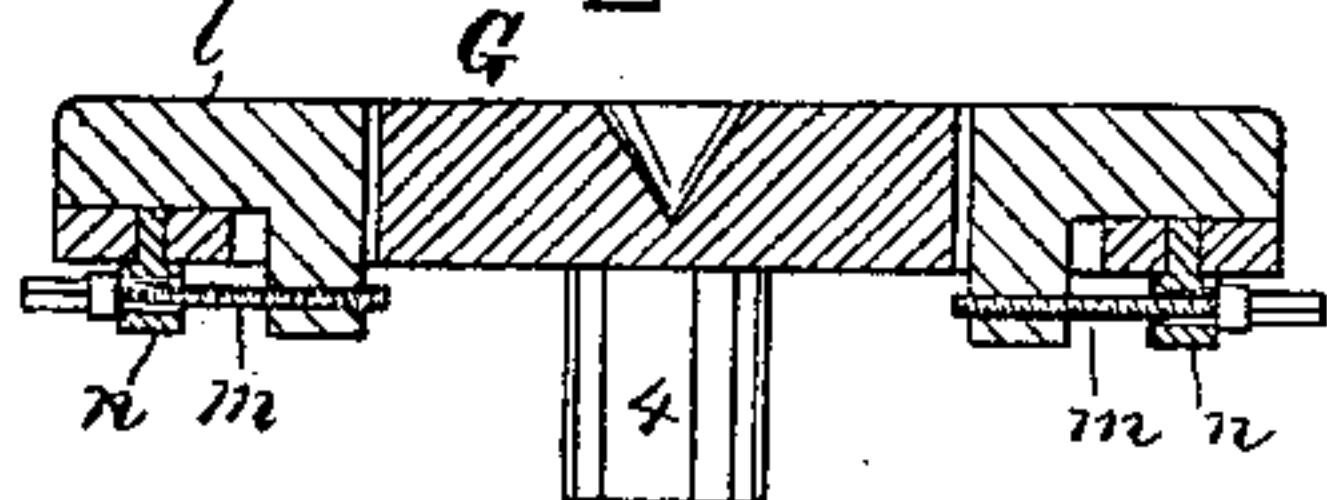
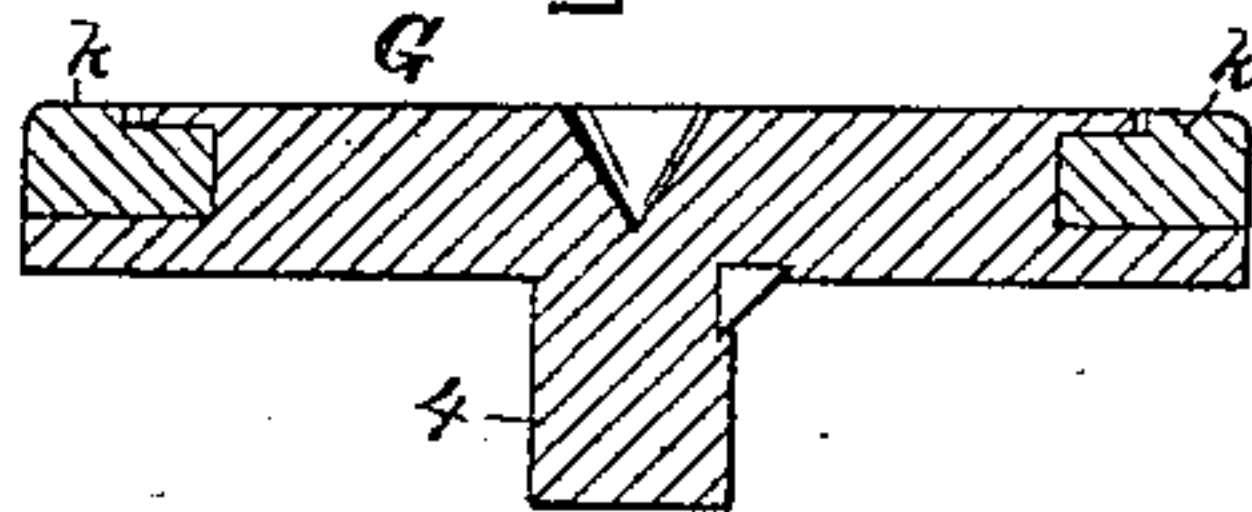


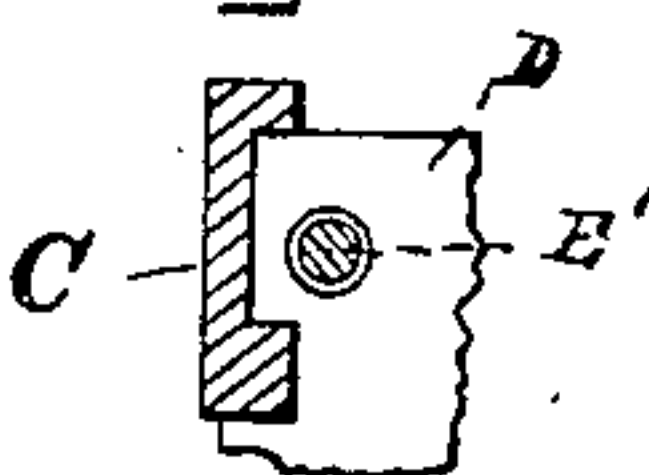
Fig:6.



WITNESSES.

V. D. Dearborn,
Arthur Reynolds.

Fig:7.



INVENTOR-
Martin W. Shapley.
By Crosby Gregory Attys.

UNITED STATES PATENT OFFICE.

MARTIN W. SHAPLEY, OF BINGHAMTON, NEW YORK, ASSIGNOR TO JAMES E. AND WM. M. SHAPLEY, OF SAME PLACE.

MACHINE FOR FLANGING CIRCULAR PLATES.

SPECIFICATION forming part of Letters Patent No. 238,535, dated March 8, 1881.

Application filed October 25, 1880. (Model.)

To all whom it may concern:

Be it known that I, MARTIN W. SHAPLEY, of Binghamton, county of Broome, State of New York, have invented an Improvement in Mechanism for Flanging Metal Plates, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to mechanism for flanging metal plates, and, as I have practically demonstrated, is more especially adapted to flanging boiler-heads.

Prior to this my invention it has been customary to place upon a rotary bed or table the metal plate to be flanged, and the edges have been gradually turned over by means of conical rollers gradually turned from a horizontal into a vertical position. In some cases one or more conical flanging-rollers have been gradually moved downward toward the bed, in order to follow the metal, being turned over by the said rollers.

My invention consists in a rotating bed and holder to confine a metal plate thereto, and the flanged roller adapted to revolve about a vertical axis, its actuating-screw, and horizontally-movable carriage to move the said roller horizontally, combined with a flanged roller on a horizontally-rotating shaft placed at right angles to the axis of the said bed, and a carriage to hold the said shaft, and with means to move the said carriage toward and from the axis of the said bed, the said rollers turning about axes at right angles to each other, substantially as described; also, in the combination, with the holder and one or more rollers to flange a metal plate, of a rotating bed provided with segmental adjustable rims and means to move them to expand and contract the diameter of the bed, whereby accommodation is made for different thicknesses of metal plate and the desired inside or outside diameter is insured for the plate being flanged. In all cases I employ two flanging-rollers, one of which is secured or fixed at the end of a rotating horizontal shaft supported in a bearing made vertically adjustable in a horizontally-adjustable carriage, while the other roller is mounted loosely upon and at the lower end of a vertically-adjustable shaft held in a horizontally-adjustable carriage.

These two flanging-rollers being gradually moved toward the center of the bed or table, and being progressively lowered, gradually turn over the edge of the metal plate, keep it down on the bed or table at its edge, and turn the flange to accord exactly with the edge of the table or bed.

Figure 1 represents, in side elevation and partial section, a metal-flanging machine containing my improvements, the pressure plate or holder and flanged rollers being lifted and drawn back preparatory to inserting a metal plate to be flanged; Fig. 2, a top view thereof; Fig. 3, a top view of the bed or roller; Fig. 4, an under-side view thereof; Fig. 5, a section of Fig. 3 on the line $x x$; Fig. 6, a section on line $y y$, Fig. 3; and Fig. 7, a section of one of the cross-beams on the line $z z$, Fig. 1.

The frame-work A has at each end suitable uprights, B, that support the cross-beams C C, grooved or channeled at their inner sides (see Fig. 7) to receive projections at the sides of the carriages D E.

The carriage D is made horizontally movable by the screw D', connected therewith and extended through a threaded part of one of the uprights B.

The flanged roller a , having its acting-face cylindrical and its end somewhat conoidal, is connected loosely with the lower end of the screw b , the said screw serving to adjust the said roller a vertically, as may be desired.

The carriage E is made horizontally adjustable by means of the screw E'.

The flanged roller c is fast upon the shaft d mounted in the bearing e , made vertically adjustable in the carriage E by the screw f . The shaft d has a groove, d^2 , to receive a spline of the toothed gear g , held by the bearing h , and driven by the gear h' , the latter being driven by the gear h^2 on the rotating driving-shaft i , provided with a belt pulley or pulleys of usual construction. The shaft d is driven positively to rotate its flanged roller c , and may be freely moved longitudinally with the carriage, as may be desired, toward and from the table or bed G. This bed is provided at its edge with adjustable segmental rims k , between the adjacent ends of which are wedges l , made adjustable to expand or contract the diameter of the bed by means

of adjusting devices, shown as screws *m*, having collars and extended through ears *n* of the bed. Pins 2 at the under sides of the segmental rims extend through slots 3 in the bed.

5 By turning the screws *m* and moving the wedges *l* the rims may be made to occupy a circle of greater or less diameter, and consequently the table or bed may be adjusted in diameter to the thickness of the metal plate, thus gaging exactly the inside or outside di-
10 ameter of the flanged head.

The bed *G* has a sleeve, 4, which is fitted to the upper end of the shaft *I*, having attached to it a bevel-gear, *L*, engaged and driven by
15 the bevel-pinion *o* on the shaft *i*.

The metal plate to be flanged is placed upon the bed *G* and centered, when the holder *p*, loosely connected with the vertically-adjustable screw-shaft *p*², fitted to the threaded plates
20 *p*³ *p*⁴, is turned to force the holder down upon the metal plate and hold it firmly upon and so as to rotate with the bed. Then the machine is started, the flanged roller *a* is gradually forced toward the bed, against and down
25 upon the edge of the plate to be turned over, gradually forcing the said edge down to form a flange. At the same time the positively-driven flanged roller is gradually moved forward toward and downward upon the partially
30 turned over edge of the metal disk, holding it down upon the bed *G* and assisting in gradually turning it over and keeping the flanged part close to the edge of the bed, conforming the disk and the interior of the flange exactly
35 to the exterior of the bed.

By the use of two flanged rollers, *a c*, one to turn about a vertical and the other a horizontal axis, as described, the flange may be more accurately and expeditiously made than by means of two rollers such as marked *a* or two
40 such as marked *b*.

I claim—

1. The rotating bed and holder between which to confine a metal plate to be flanged, and the flanged roller *a*, held to revolve about
45 a vertical axis, and an adjusting-screw, *b*, and the horizontally-movable carriage in which the said screw is held, combined with the roller *c*, its horizontally-rotating shaft *d*, placed at right angles to the axes of the said bed, a carriage
50 to hold the shaft *d*, and with means to move the said carriages toward and from the axis of the said rotating bed, the said rollers turning about axes at right angles to each other, substantially as shown and described. 55

2. The holder, the rotating bed *G*, its segmental adjustable rims *k*, and means to move them to expand and contract the diameter of the bed, combined with one or more rollers to act upon and turn over the edge of a metal
60 disk or plate secured to and rotated with the said bed and holder, substantially as set forth.

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

MARTIN W. SHAPLEY.

Witnesses:

W. H. HECOX,
B. S. CURRAN.