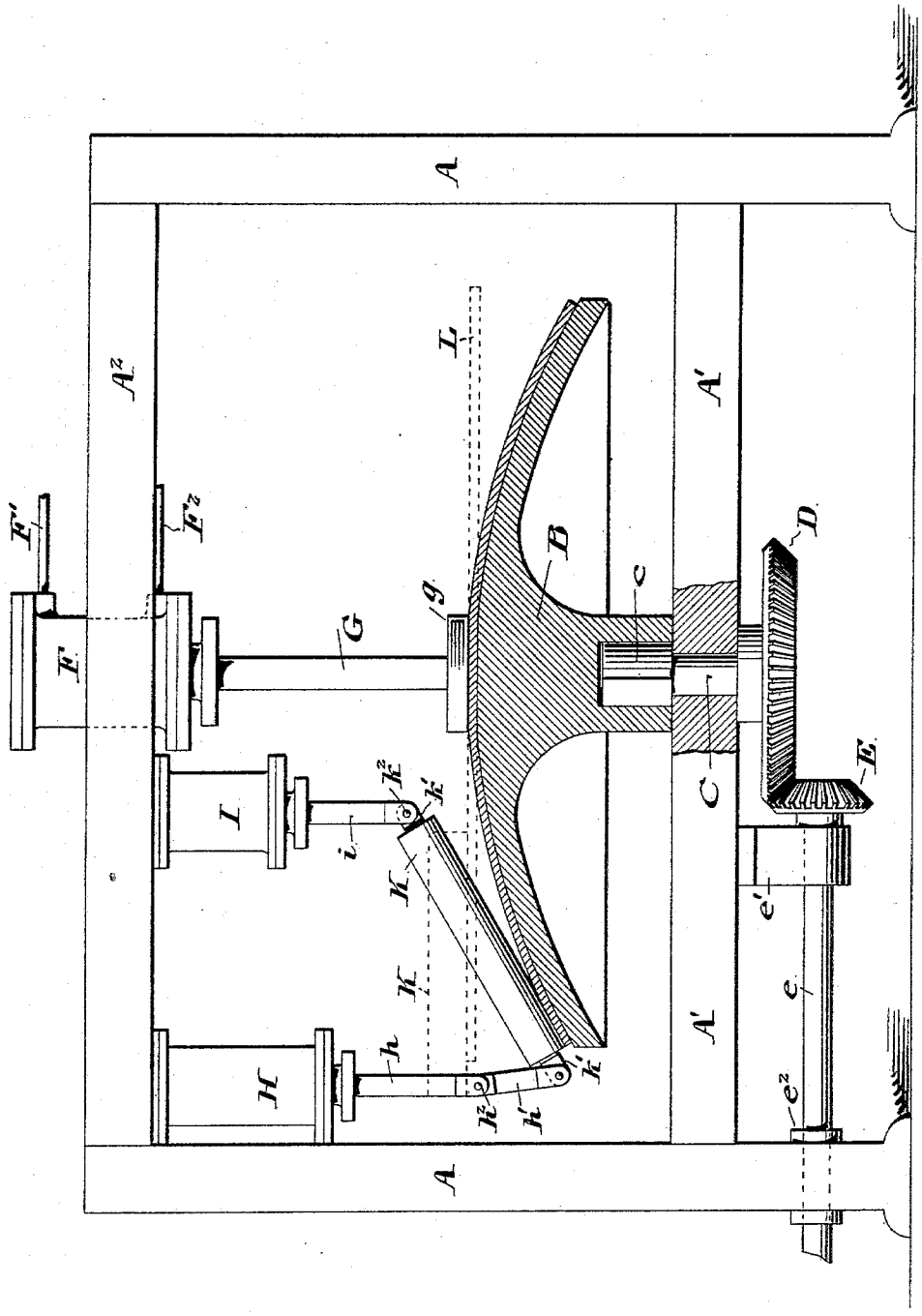
(No Model.)

W. P. WORTH.

MACHINE FOR DISHING METAL.

No. 603,098. Patented Apr. 26, 1898.



WITNESSES:
James H. Bell.
A. E. Paige.

INVENTOR:
William P. Worth,
By Bakewell & Paul
Attorneys.

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UNITED STATES PATENT OFFICE.

WILLIAM P. WORTH, OF COATESVILLE, PENNSYLVANIA.

MACHINE FOR DISHING METAL.

SPECIFICATION forming part of Letters Patent No. 603,098, dated April 26, 1898.

Application filed November 9, 1897. Serial No. 657,927. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. WORTH, of Coatesville, in the State of Pennsylvania, have invented certain new and useful Improvements in Machines for Dishing or Forming Metal, of which the following is a specification, reference being had to the accompanying drawing.

Said drawing represents, partly in side elevation and partly in vertical central section, an apparatus embodying my invention.

The operative parts are supported by and inclosed within a housing consisting of uprights A A, a bottom member or base A', and a top A^2. The base A' supports and affords bearings for a rotating former B, having a convex upper surface adapted to sustain the metal to be operated upon. In the instance shown the curvature of the upper surface extends substantially in the arc of a circle from the outer periphery to a line a short distance on each side of the axis of rotation, the intermediate central portion being flattened; but obviously this particular configuration is not essential, and the upper surface of the table may have any shape of a general convex character which is desired. Said table is secured to the enlarged upper end *c* of a vertical shaft C, supported in and extending through the base A. Upon the lower end of said shaft is a bevel-gear D, engaging with a second bevel-gear E, mounted upon a shaft *e*, supported in suitable bearings *e'* e^2 and driven from any convenient source of power. A hydraulic cylinder F, having suitable pipes F' F^2 for admission and exit of fluid under pressure, is mounted in the upper member A^2 of the housings, the axis of said cylinder being substantially in line with the axis of rotation of the former B. Said cylinder is provided with a plunger G, having a flat-faced presser-block *g* at its lower end, adapted to bear upon the central portion of the plate of metal under treatment and hold the same firmly against the upper surface of the former B, so as to prevent shifting of the plate and insure its rotation along with the former. The presser-block *g* is rotatable with relation to the cylinder F, this being permitted in the present instance by reason of the fact that the plunger G and its piston (not shown) are round. I do not, however, limit myself to this particular method of enabling the presser-block to be rotated with relation to the cylinder.

Upon the upper member A^2 of the housings are also supported two other hydraulic cylinders H and I, respectively, provided with suitable means for effecting the entrance and discharge of fluid under pressure. The cylinder H is provided with a vertical plunger *h* and the cylinder I with a similar plunger *i*. At the lower end of the plunger *h* is a hinged link *h'*, attached thereto by means of a pivot h^2, said link being pivotally connected at its lower end to the spindle or axle *k'*, upon which the forming-roller K is rotatably mounted, but without capacity for longitudinal movement upon said axle. The other end of the axle *k'* is pivotally secured at k^2 to the lower end of plunger *i*. By this means the forming-roller K can be bodily raised or depressed, the movement at each end thereof being independent of the other, so that said roller can be tilted from a horizontal plane into a plane substantially tangential to the convex surface of the former.

The operation of the device is as follows: The roller K being raised so as to be clear above the former B and the presser-block *g* being also raised, a sheet or plate of metal (indicated by the dotted lines at L) is placed in position upon the central portion of the former B. The presser-block *g* is then forced downward, so as to firmly hold the metal upon the former, which is then rotated by means of the driving-shaft and gears. The roller K being now in a substantially horizontal position, as indicated by the dotted lines, the plungers *i* and *h* are depressed, so as to force said roller against the upper surface of the plate of metal as the same rotates with the former. The plunger *h* can, however, be gradually shifted to a greater extent than the plunger *i*, so that the roller K shall tilt and follow the general direction of the descending portion of the plate, and the bending or forming operation is prolonged until the desired configuration of the plate has been attained. Obviously by varying the relative movements of the plungers *h* and *i* the forming-roller can be brought to bear upon the plate in any desired relation thereto, the link connection at

the end of the roller-axle permitting this freedom of adjustment.

Although I have described hydraulic cylinders and plungers as the preferred mechanism for imparting the movements to the presser-block and forming-roller, I do not limit myself thereto, but contemplate the use of any desired means for effecting said movements.

I am aware that the use of a rotating former having a rounded convex periphery in conjunction with a roller adapted to act upon metal supported by such former and bend it around the curved periphery is not, broadly, new, and I therefore do not claim the same. So far as I am aware, however, such devices have only been adapted to bend or upset a relatively shallow flange around the edge of the metal, and therefore did not require or embody means for so controlling the roller as to enable it to act upon a relatively large surface. To accomplish the dishing of a metallic plate with an apparatus of the character embodied in my present invention, it is essential that the bodily movement of the roller toward or from the former should be independently controllable at each extremity of its axis of rotation, and in the type of apparatus particularly described herein I have indicated the preferred method of obtaining such independent control; but I do not desire to limit my claims to the exact devices shown in this respect.

Having thus described my invention, I claim—

1. The combination, with a rotatable former provided with suitable actuating mechanism; of a presser-block; means substantially as set forth for moving said block toward or from said former, while permitting the rotary movement of said block along with said former; a forming-roller arranged in the described relation to said former; and means substantially as set forth whereby the respective ends of said forming-roller may be independently moved toward or from the former, substantially as set forth.

2. The combination, with a rotatable former having a convex upper surface and provided with suitable actuating mechanism; of a presser-block; means substantially as set forth for shifting said presser-block toward or from said former while permitting the rotary movement of said block along with said former; a pair of plungers movable toward and from the surface of said former; a pivoted link connected with one of said plungers; a forming-roller supported at its respective ends upon the other plunger and said link; and means substantially as set forth for shifting said plungers independently of one another.

W. P. WORTH.

Witnesses:
JAMES H. BELL,
RANDOLPH SALTER.