

(No Model.)

J. S. WORTH.
MACHINE FOR DISHING METAL.

No. 603,095.

Patented Apr. 26, 1898.

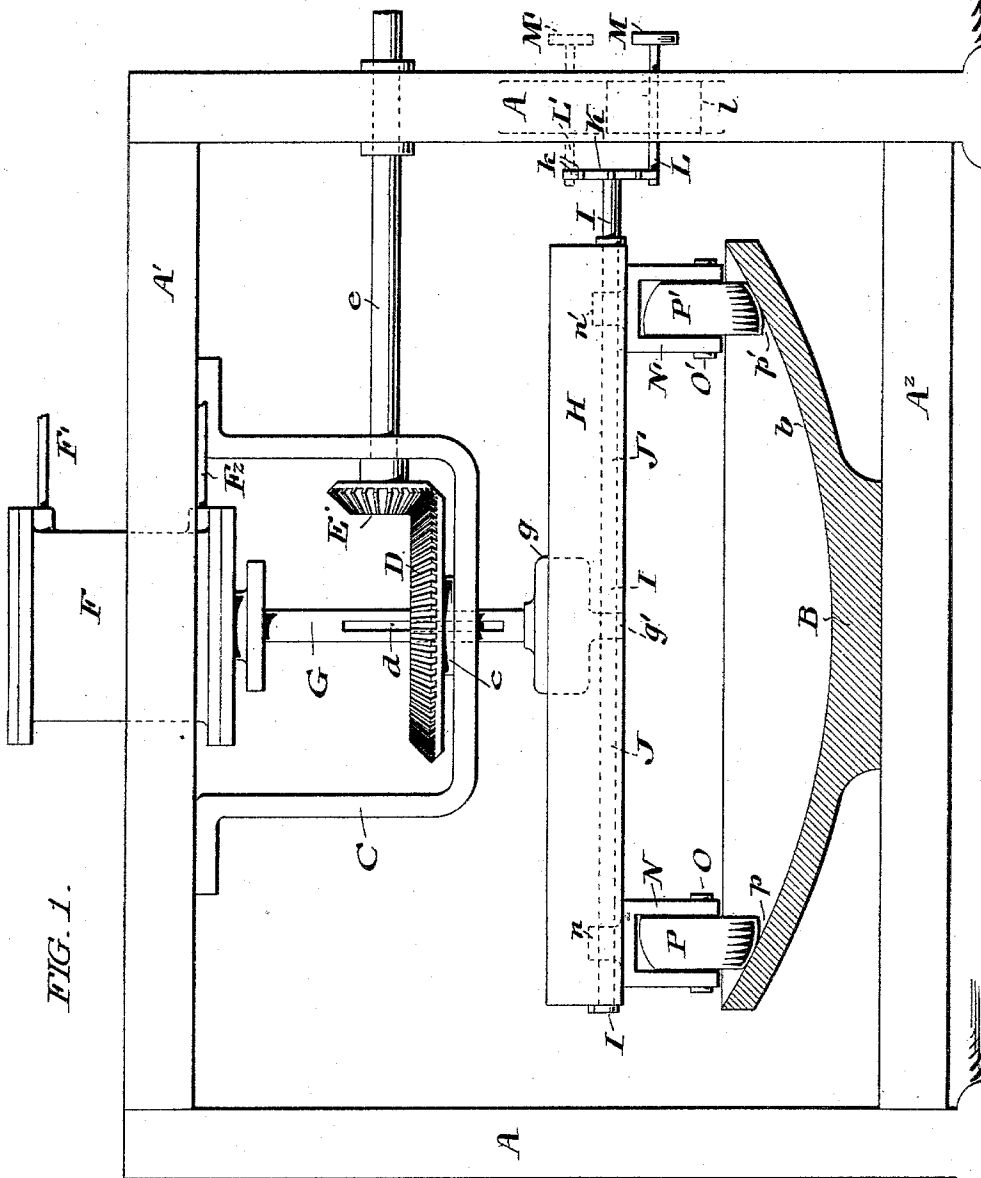


FIG. 1.

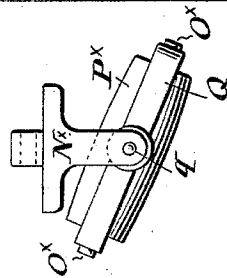


FIG. 2.

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MACHINE FOR DISHING METAL.

SPECIFICATION forming part of Letters Patent No. 603,095, dated April 26, 1898.

Application filed October 20, 1897. Serial No. 655,778. (No model.)

To all whom it may concern:

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

In said drawings, Figure 1 represents, partly in side elevation and partly in vertical central section, an apparatus embodying my invention. Fig. 2 is a detail view showing a modification of the forming-rollers.

The operative parts are supported by and inclosed within the housing consisting of up-rights A A and horizontal top and bottom members A' A², respectively. The bottom member A² serves as a base for a fixed table or former B, whose upper face *b* is concave. In the form shown in the drawings the concavity is substantially in the arc of a true circle throughout its whole extent; but obviously this feature may be varied.

Supported upon the upper member A' of the housing is a hydraulic cylinder F, provided with suitable pipes F' F² for admission and discharge of fluid under pressure and having a cylindrical plunger G, which extends downward in a line substantially coincident with the center of the former B. Said plunger terminates at its lower extremity in a flat enlargement *g*, on each side of which is secured a horizontal bar H, extending substantially across the full diameter of the former B. The enlargement *g* of the plunger forms a distance-piece between the bars at their longitudinal center, similar distance-pieces (not shown) being also secured between them at or near their end portions, so that the bars H thus united by the distance-pieces constitute a rigid horizontal frame having a longitudinal opening or interspace substantially through its entire length. This frame, which I term the "presser-beam," is bodily movable in a vertical direction by means of the hydraulic plunger, and said plunger is rotatable with relation to the cylinder, so that the presser-beam may be revolved in a horizontal plane upon an axis substantially coincident with the center of the former B.

Convenient means for rotating the plunger, and with it the presser-beam, are shown in the form of a bevel-gear D, freely mounted

for longitudinal movement upon the plunger G, but engaging therewith for rotary movement by means of a key and slot *d* or other well-known device. The lower face of the gear D runs upon a block *c*, mounted in the U-shaped hanger C, secured upon the upper member A' of the housing. Said gear D meshes with a gear E, mounted upon the end of a shaft *e*, which is journaled in one of the vertical arms of the hanger C and also in the upright A and is driven from any suitable source of power.

Within the interspace of the presser-beam is mounted a longitudinal shaft I, having a central bearing in the downwardly-depending extension *g'* of the plunger enlargement *g* and having suitable bearings at each end of the presser-beam. Said shaft is threaded in opposite directions on each side of its longitudinal center, the respective threaded portions being indicated at J J'. Upon the projecting end of the shaft I is mounted an actuating-wheel K, having radial arms *k*, which are adapted to engage with a horizontal rod L, mounted in a vertically-adjustable plate *l* (see dotted lines) upon one of the uprights A and capable of longitudinal movement, so that it can be shifted by means of the handle M into or out of position for engagement with the arms *k* of the wheel K.

Mounted upon the threaded portions of the shaft I are two roller-carriages N N', respectively, whose upper faces are adapted to bear firmly against, while sliding freely upon, the under surface of the presser-beam, and at that portion of the upper face of each carrier which is opposite to the interspace of the presser-beam an upwardly-projecting hub is provided, as indicated at *n n'*, through which the shaft I extends, said hubs being respectively threaded to correspond and engage with the oppositely-threaded portions J J' of said shaft. Each roller-carriage also comprises a pair of downwardly-depending arms adapted to afford bearings for a horizontal shaft O or O', upon which is mounted a forming-roller P or P'. The face of the periphery of said forming-rollers is curved, as indicated at *p p'*, so as to properly bear upon and travel over the surface of the metal to be formed without catching or distorting the latter. Rotation of the shaft I in one direction or the other will thus shift the roller-carriers N N'

inward or outward with relation to the center of the former B, and such actuation of the shaft I may be effected by rotation of the wheel K.

5 The operation of the device is as follows: The presser-beam being raised by means of the plunger, so as to clear the former B, the sheet of metal to be dished or formed is placed upon the upper surface of the former.
 10 The plunger G is then depressed, carrying the presser-beam downward and bringing the forming-rollers P P' into contact with the sheet of metal at the desired point. The shaft E is then rotated and the presser-beam is re-
 15 volved thereby, causing the forming-rollers to travel over the surface of the metal. If the rod L is shifted, so as to be within the range of revolution of the wheel K, it will engage with one of the arms k of said wheel at each rota-
 20 tion of the presser-beam, and said wheel in passing will be turned the distance represented by the interval between two arms, thus actuating the shaft I, so that the re-
 25 spective screw-threads J J' thereon shall shift the roller-carriages N N' inward toward the center of the former B. This actuation of the shaft I may be thus repeated at each revolu-
 30 tion of the presser-beam or may be controlled by withdrawing the rod L from the range of the wheel K, so that the wheel shall clear it in passing. Under these circumstances the
 35 roller-carriages will remain stationary with relation to the presser-beam, and thus the travel of said carriages can be arrested at any desired point. So, also, the wheel K may be
 shifted by hand and the carriages thus ad-
 justed at any desired point irrespective of any automatic shifting.

In Fig. 2 I have shown a modified type of
 40 roller-carriage, which is specially useful in cases where it is not desired to shift the position of the carriage with relation to the presser-beam, but which may obviously be
 45 used in connection with shifting mechanism, automatic or otherwise, such as has just been described. Said modification consists in
 mounting the forming-roller P^x (which has preferably the oblong shape indicated) in an
 50 open frame Q, supported upon trunnions q in the bifurcated arms of the roller-carrier N^x, so that it may swivel with relation there-
 to. With this type of swiveling roller the tilting movement of the roller itself during
 the descent of the presser-beam brings its
 55 periphery to bear upon the metal first in a substantially horizontal relation and after-
 ward following the general direction of concavity of the former B, so that without any
 actual travel of the carriage with relation to
 60 the presser-beam the roller may form or dish the metal throughout a substantial distance.

It is obvious, of course, that even the type of roller shown in Fig. 1 is adapted, without
 travel upon the presser-beam, to effect a lim-
 65 ited forming action, and hence I do not desire to restrict my claims in every instance to the use, in conjunction with either type of

roller, of means for effecting its travel rela-
 tively to the former B.

I am aware that it is not new to use a roller 70
 in this class of machines nor to move said roller mechanically or by hand across the face of the material, and I am also aware that the
 use of a stationary former is not new in con-
 junction with a roller. Hence I do not claim, 75
 broadly, any of the said devices.

I claim—

1. The combination, with a stationary
 former having a concave upper surface, of a
 revoluble presser-beam bodily movable to- 80
 ward and from said former; means substan-
 tially as described for effecting said move-
 ments of the presser-beam; a pair of forming-
 rollers journaled upon axes transverse to the
 direction of movement of the presser-beam; 85
 traveling carriages for said rollers; and
 means, substantially as set forth, for shifting
 said rollers in a direction transverse to the
 axis of revolution of the presser-beam.

2. The combination, with a stationary 90
 former, of a revoluble presser-beam, bodily
 movable toward and from said former; means,
 substantially as set forth, for effecting the de-
 scribed movements of the presser-beam; a
 longitudinal shaft carried by said presser- 95
 beam and having oppositely-threaded por-
 tions; a pair of roller-carriages engaging re-
 spectively with said threaded portions of the
 shaft; forming-rollers mounted in said car-
 riages; and an actuating device for said shaft 100
 adapted to engage with a stationary member
 at intervals during the revolution of the
 presser-beam, whereby said shaft is automati-
 cally actuated and the travel of the roller-
 carriages effected during revolution of the 105
 presser-beam, substantially as described.

3. The combination, with a stationary
 former, of a hydraulic cylinder and plunger;
 a presser-beam carried by said plunger and
 revoluble with relation to said cylinder; a 110
 gear-wheel operatively connected with said
 plunger to permit longitudinal movement
 thereof during rotation of said gear-wheel;
 driving mechanism for said gear-wheel; a pair
 of roller-carriages mounted on said presser- 115
 beam; forming-rollers journaled in said car-
 riages; a shaft having oppositely-threaded
 portions engaging respectively with said car-
 riages; and means, substantially as set forth,
 for actuating said shaft. 120

4. The combination, with a stationary
 former, of a revoluble presser-beam, bodily
 movable toward and from said former; means,
 substantially as set forth, for effecting the
 described movements of said presser-beam; a 125
 pair of swiveling roller-carriers mounted on
 said presser-beam, said carriers comprising a
 frame pivotally supported upon trunnions;
 and a pair of rollers mounted in said frames
 respectively, substantially as described.

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Witnesses:

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