

(No Model.)

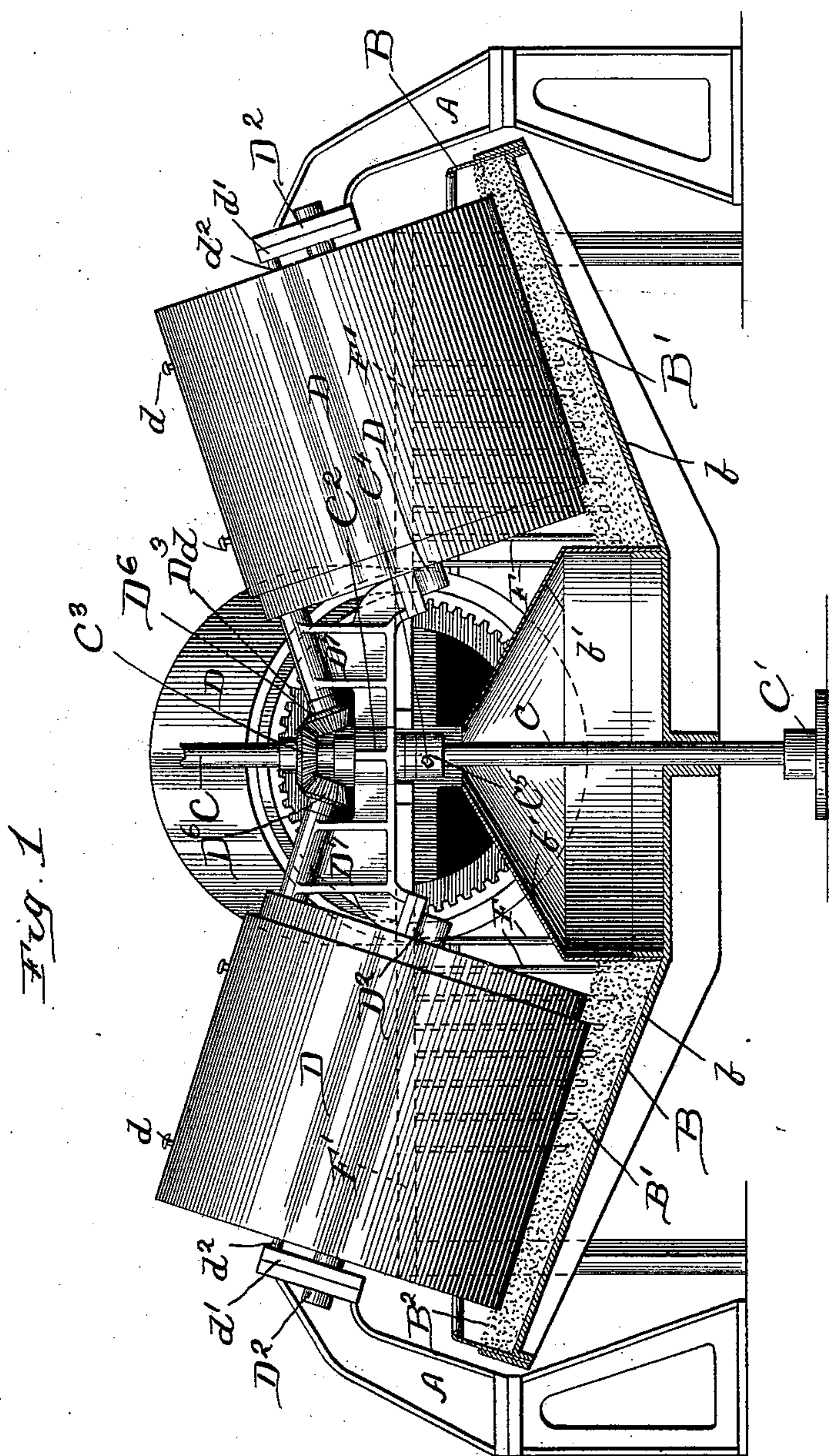
3 Sheets—Sheet 1.

J. G. HODGSON.

MACHINE FOR CLEANING AND POLISHING TIN PLATE.

No. 561,111.

Patented June 2, 1896.



Witnesses.

Wm. N. Rheem.
Wm. P. Hanning

Inventor

John G. Hodgson

By Munday, Carter & Adcock

His Atty's.

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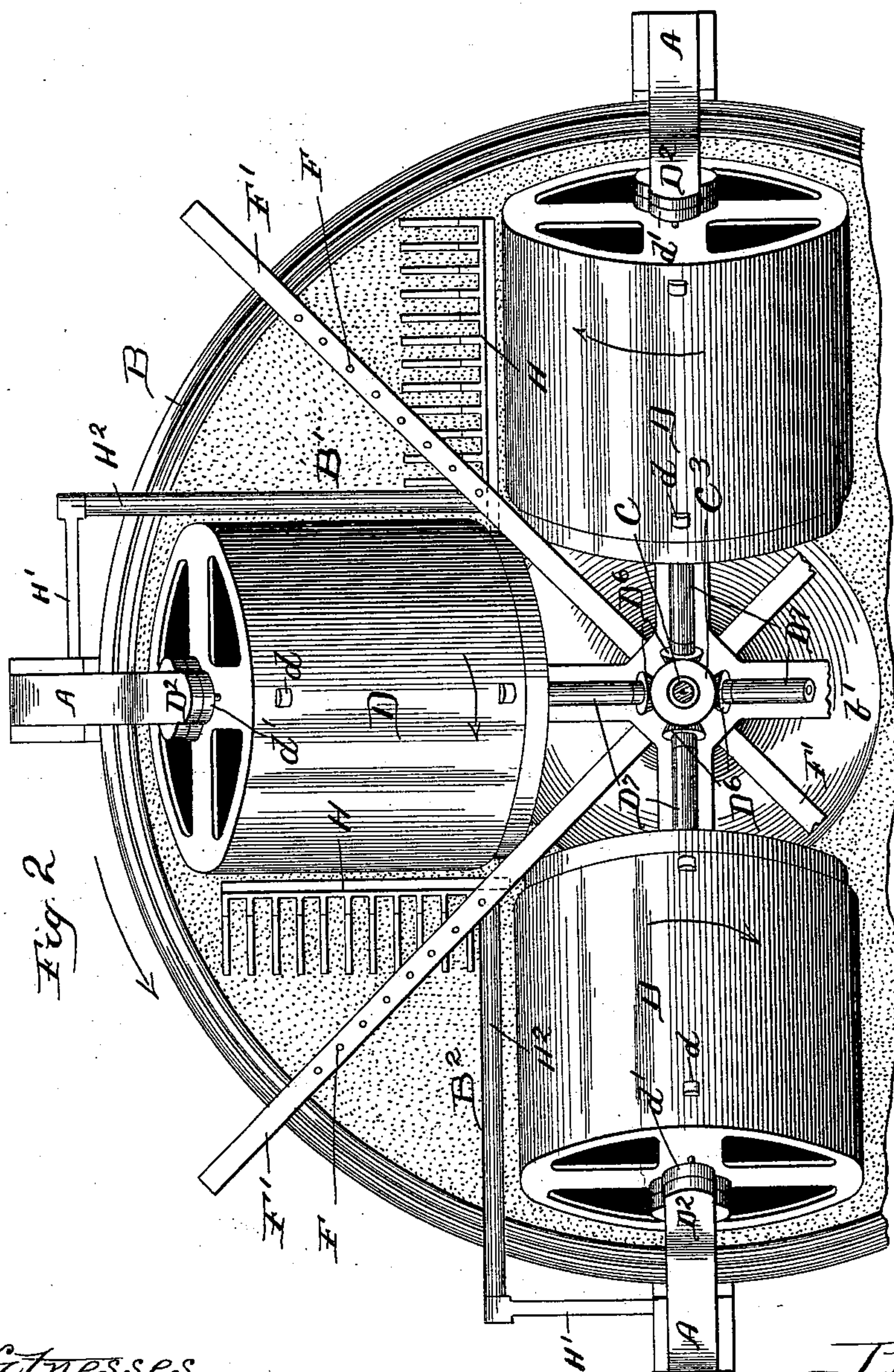
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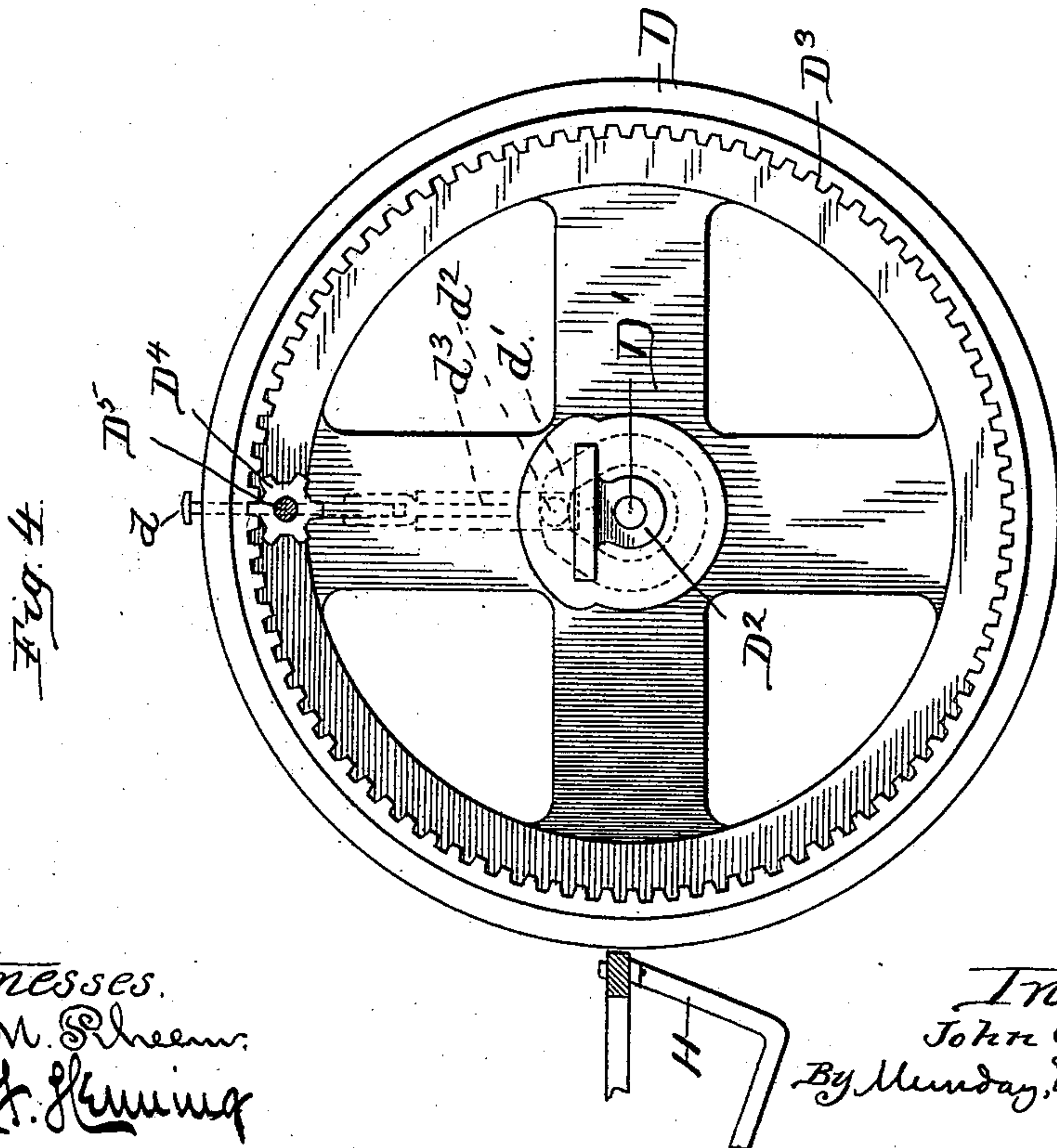
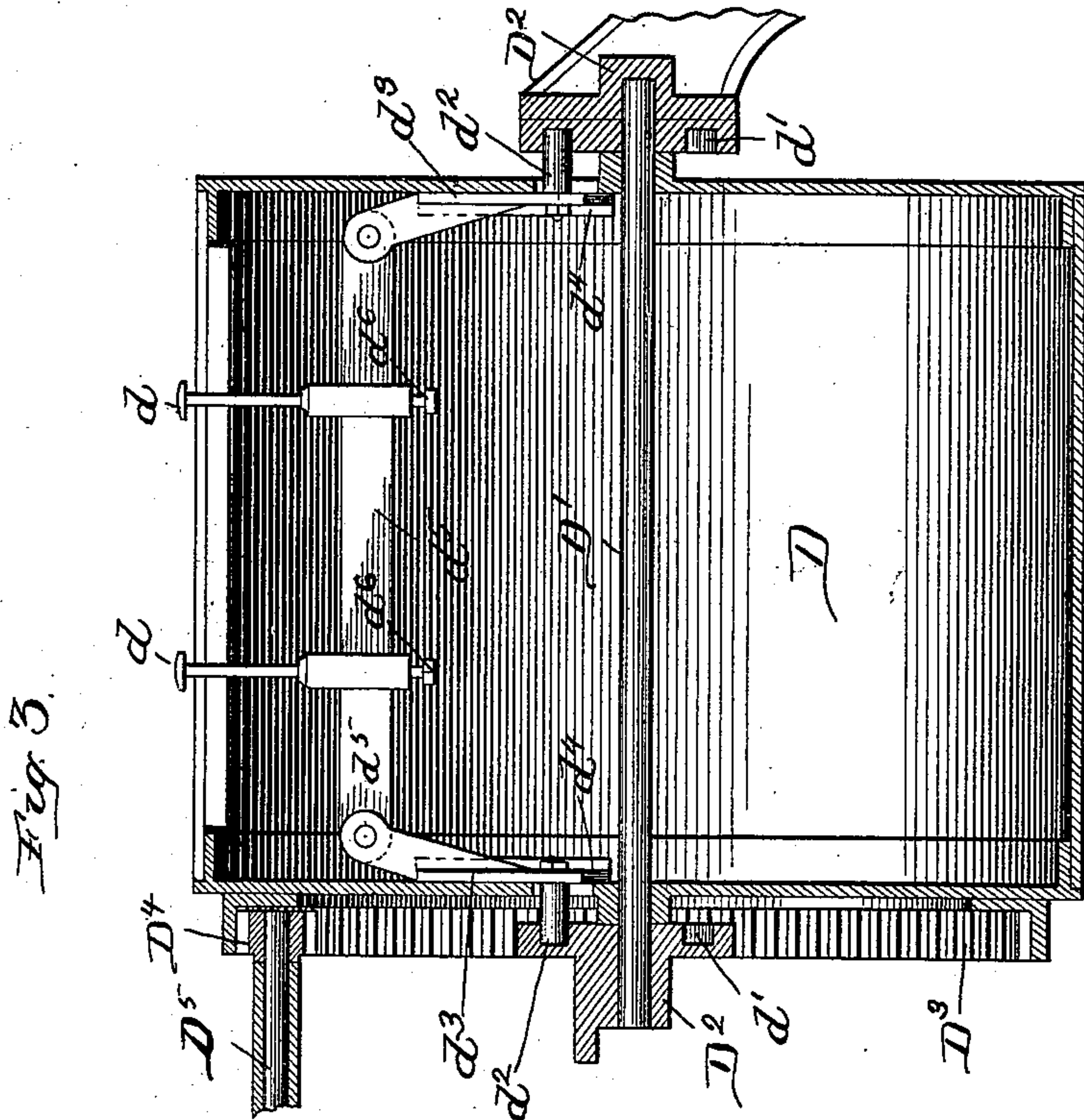
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Inventor:
John G. Hodgson
By Munday, Evans & Aderk,
his Attys.

UNITED STATES PATENT OFFICE.

JOHN G. HODGSON, OF MAYWOOD, ILLINOIS, ASSIGNOR TO EDWIN NORTON,
OF SAME PLACE, AND OLIVER W. NORTON, OF CHICAGO, ILLINOIS.

MACHINE FOR CLEANING AND POLISHING TIN-PLATE.

SPECIFICATION forming part of Letters Patent No. 561,111; dated June 2, 1896.

Application filed September 5, 1892. Serial No. 445,074. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. HODGSON, a citizen of the United States, residing in Maywood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Machines for Cleaning and Polishing Tin-Plate, of which the following is a specification.

My invention relates to machines for cleaning and polishing tin-plate or other metal-coated sheets after the same have been tinned or coated.

The object of my invention is to provide a process and machine whereby this cleaning and polishing of the surface of the sheet may be done perfectly and with uniformity, so that the whole product may be alike and fit for any use—as, for example, the manufacture of cans for putting up condensed milk—and whereby at the same time the work may be done automatically, rapidly, and cheaply and without the necessity of employing skilled labor.

I have discovered, and herein my invention primarily consists, that the tin or metal coated plates of iron or steel as they come from the tinning-bath may be perfectly, uniformly, and rapidly cleaned and polished by holding the plates in contact with the upper surface of a rapidly moving or revolving mass of bran or other similar absorbent cleaning material, the mass of bran being stirred simultaneously or from time to time in order to present fresh material at its surface and to prevent the bran at the surface of the mass from becoming fouled or charged with the grease removed from the tinned plates and which is absorbed by the bran.

In practicing my invention any suitable means or mechanism may be employed for containing the mass of bran or material and giving the mass a rapid movement or revolution, and the plates to be cleaned may be held in contact with the surface of the revolving mass of bran by any suitable mechanical devices or mechanism. Likewise, too, the mass of bran may be stirred by any suitable mechanical means.

For practicing my invention, however, I prefer to use an automatic machine of the particular construction herein shown and described which I have specially devised for re-

volving or moving the mass of bran, stirring and leveling or smoothing the upper surface of the mass of bran, and holding the plates in contact with the revolving mass of bran, and in this my invention in part consists. This automatic machine comprises, first, a bin or vessel for containing the bran mounted on or secured to a central vertical shaft or axis adapted to be given a rapid revolving movement; second, a series of stirrer-arms projecting downwardly into the mass of bran in the containing vessel and attached to stationary supports, whereby the mass of bran is stirred, and, third, one or more sheet-holding devices, preferably four, arranged above the vessel and adapted to hold the sheet in contact with the surface of the rapidly-revolving mass of bran, and each consisting, preferably, of a slowly-revolving drum, the shafts or axes of which extend out radially from the axis of the bran-containing vessel and are mounted parallel to the surface of the revolving mass of bran. These drums are furnished with a clamp or device for clamping one edge of the sheet to the drum. As these sheet-holding drums revolve the sheet bends around the drum and each portion of its surface is brought and held thereby against the surface of the revolving mass of bran, the drum also serving to press the sheet firmly against the surface of the moving mass of bran with the pressure necessary to clean and polish the same. By the rapid revolving movement of the bran-containing vessel the mass of bran, owing to the centrifugal action, is compressed, so that it exerts a greater pressure against the sheet of tin held by the drum in contact therewith. The bottom of the bran-containing vessel is preferably dish-shaped, as the surface of the bran naturally assumes under the centrifugal action a somewhat hollow or inverted-cone form.

In the accompanying drawings, which form a part of this specification, I have shown one form of apparatus embodying my invention and suitable for use in practicing it, and that which I believe to be the best form now known to me.

In the drawings similar letters of reference indicate like parts.

In said drawings, Figure 1 is a central ver-

tical section; Fig. 2, a partial plan view. Fig. 3 is a detail section of one of the sheet-holding drums, showing the mechanism for automatically clamping and releasing the sheet from the drum; and Fig. 4 is an end view of one of the drums.

In the drawings, A represents the frame of the machine.

B is the bran-containing vessel or bin, secured to or carried by a central upright revolving shaft C, by means of which a rapid revolving movement may be communicated to the mass of bran or other cleaning or polishing material B' in said vessel. This bran-containing vessel is preferably about six to ten feet in diameter. The bottom b of this vessel is preferably conical or dish shaped, as is clearly indicated in Fig. 1 of the drawings. The central portion of the vessel is preferably provided with a hollow dome b', which incloses the shaft C and keeps the bran from coming in contact with it or its bearings, and also serves somewhat to diminish the quantity of bran or material necessary to fill the vessel to the requisite depth. The shaft C has a suitable bearing C' at its lower end and another bearing C² on the frame of the machine.

D D are the revolving drums by which the sheets to be cleaned are held in contact with the upper surface B² of the mass of bran B'. These are each furnished with suitable clamps or devices d for clamping the sheet thereon. The axes or shafts D' of the drums preferably extend out radially from the upright shaft C of the bran vessel B, and the shafts D' are also, preferably, arranged in a somewhat inclined position conforming, approximately, to the dished or conical surface of the revolving mass of bran B' in the vessel B which it naturally tends to assume under the centrifugal action. The shafts D' of the drums are journaled in suitable bearings D² on the frame of the machine. Each shaft is furnished with an internal gear D³, which meshes with the gear D⁴ on the inclined shaft D⁵, carrying at its inner end a beveled gear D⁶, which meshes with a beveled gear C³ on the shaft C, whereby a slow revolving movement is communicated to the drum from the shaft of the bran-containing vessel. The inclined shaft D⁵ is journaled in a suitable bearing D⁷ on the frame. The clamps d are automatically opened and closed to release and discharge the sheet by means of the stationary cams d' on the box or bearing D² of the drum-shaft D', which engage pins d², carried by a slide d³, adapted to reciprocate radially in suitable guides d⁴ on the drum, and to which slides the clamps d are connected by a cross-bar d⁵. The clamps d are connected to the cross-bar d⁵ adjustably by means of the set-screw d⁶. F F are stirrer pins or fingers carried by stationary arms F', which extend out radially from the center of the vessel B. Secured to the arms F' are fingers or racks H, which serve to catch or support the sheet

of tin-plate G as it is discharged from the drum D.

The mode of operation is as follows: As the drums D revolve over the surface of the revolving mass of bran B' the clamps d are automatically opened and the operator then inserts a sheet under the clamps and holds it there as the drum revolves until the clamps d are automatically closed. As the drum continues to revolve the thin sheet of tin plate is carried around by the drum and each portion of its surface held by the drum in contact with the revolving mass of bran a regular and uniform length of time, so that the whole surface of the sheet is acted upon alike and properly cleansed and polished. As the drum continues to revolve the sheet is carried around thereby until the clamp d again automatically opens, when the sheet slides down the periphery of the drum and falls into the rack H. The operator then turns the sheet with its other face to the drum, and then its other surface is cleansed and polished in the same manner. The stirrers F are preferably made of different lengths conforming to the conical or dish shaped surface which the mass of bran tends to assume under centrifugal action, so that the fingers themselves will thus tend to maintain the surface of the bran smooth or plane. As the drums D are several in number, they also tend to level or smooth the surface of the revolving mass of bran, and the centrifugal action likewise tends in a measure to this result. The drums D are preferably arranged to revolve in the opposite direction to the vessel B. As the sheets bend around the drum the drum presses the sheets against the surface of the bran or cleaning material, and the spring or elastic nature of the sheets, together with the gravity of their free ends, also aids in pressing or holding the surface of the sheet in contact with the revolving mass of bran or cleaning material in the vessel B.

H² is a guard, preferably in the form of a leather or felt covered roll, extending parallel to the drum D and journaled in suitable brackets H', attached to the frame. The object of this guard is to prevent the thin flexible sheet dropping away from the drum as the clamp or gripper d is carried with the axis of the drum.

The vessel B is supported upon the shaft C by an adjustable collar C⁵, fixed to the shaft C by a set-screw C⁴. By adjusting this collar up and down the height of the vessel B in respect to the drums D may be regulated or varied to give more or less pressure of the sheet on the bran or other cleaning material.

By the use of the word "bran" in the specification and claims I desire to claim any suitable cleaning material in a loose, granular, or powdered form.

I claim—

1. The automatic tin-plate-cleaning machine herein described, consisting in a revolving bran-containing vessel B mounted on an

upright shaft C, a series of revolving drums mounted on shafts extending radially from the shaft of said vessel and provided with clamps for securing the sheets to the drums, 5 and stirrer arms or fingers attached to the stationary frame and projecting into said vessel B, substantially as specified.

2. In a tin-plate-cleaning machine, the combination with a movable vessel B for containing and moving a mass of bran or cleaning material, with means for holding the sheet to be cleaned in contact with the surface of the moving mass and means for imparting motion to said containing vessel B, substantially as 15 specified.

3. The combination with a revolving bran-containing vessel B of a revolving sheet-holding drum D, substantially as specified.

4. The combination with a revolving bran-containing vessel B of a revolving sheet-holding drum D provided with clamps *d* substantially as specified. 20

5. The combination with a revolving bran-containing vessel B of a revolving sheet-holding drum D, and stirrers F, substantially as 25 specified.

6. The combination with a revolving bran-containing vessel B of a revolving sheet-holding drum D provided with clamps *d*, and 30 means for automatically opening and closing said clamps *d*, substantially as specified.

7. The combination of revolving vessel B having shaft C, revolving drum D, having shaft D' and gears connecting said drum D 35 and shaft C, said drum D having clamp *d*, a cam and mechanism operated by said cam for opening and closing said clamp *d*, substantially as specified.

8. The tin-plate-cleaning machine, consisting of a vessel B containing a mass of bran or other absorbent dry granular cleaning material, an upright revolving shaft C for communicating a rapid revolving movement to said vessel and the mass of bran therein, 45 substantially as specified.

9. The tin-plate-cleaning machine, consist-

ing of a vessel B containing a mass of bran or other cleaning material, an upright revolving shaft C for communicating a rapid revolving movement to said vessel and the mass of 50 bran therein, and stirrers F for agitating the mass of bran as it revolves, substantially as specified.

10. The tin-plate-cleaning machine, consisting of a vessel B containing a mass of bran 55 or other absorbent dry granular cleaning material, an upright revolving shaft C for communicating a rapid revolving movement to said vessel and the mass of bran therein, said vessel B having a dish or conical shaped bottom *b*, substantially as specified. 60

11. The tin-plate-cleaning machine, consisting of a vessel B containing a mass of bran or other absorbent dry granular cleaning material, an upright revolving shaft C for communicating a rapid revolving movement to 65 said vessel and the mass of bran therein, and a central dome *b'*, substantially as specified.

12. The combination with a revolving vessel B containing bran or other granular cleaning material, of means adapted and arranged to hold the sheet in an inclined position conforming, approximately, to the dished or conical surface which the upper surface of such cleaning material tends to assume under centrifugal action, substantially as specified. 75

13. The combination with a revolving vessel B, of sheet-holding device D extending radially and arranged at an angle to conform to the dished or conical surface of the cleaning material in the vessel B, substantially as 80 specified.

14. The combination with a revolving vessel B, of sheet-holding device D extending radially and arranged at an angle to conform to 85 the dished or conical surface of the cleaning material in the vessel B, and stirrers F, substantially as specified.

JOHN G. HODGSON.

Witnesses:

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LEW. E. CURTIS.