

(No Model.)

2 Sheets—Sheet 1.

W. W. GRISCOM.

MACHINE FOR MAKING STORAGE BATTERY GRIDS OF FORCED LEAD.

No. 521,791.

Patented June 26, 1894.

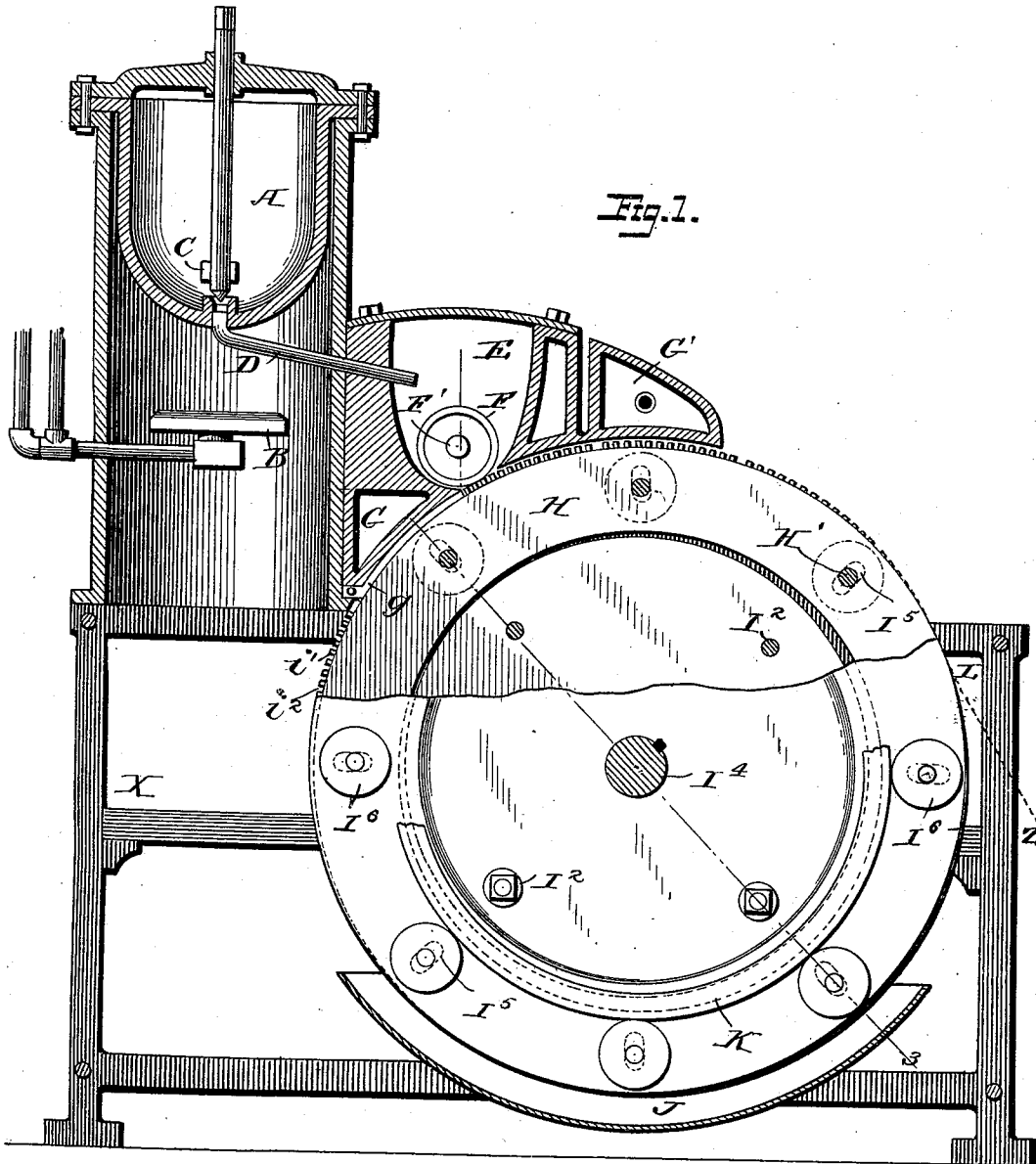


Fig. 1.

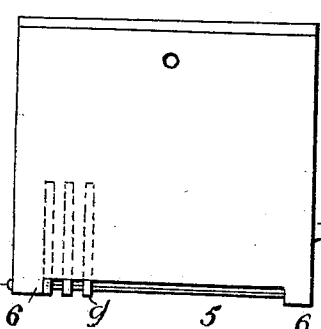


Fig. 4.

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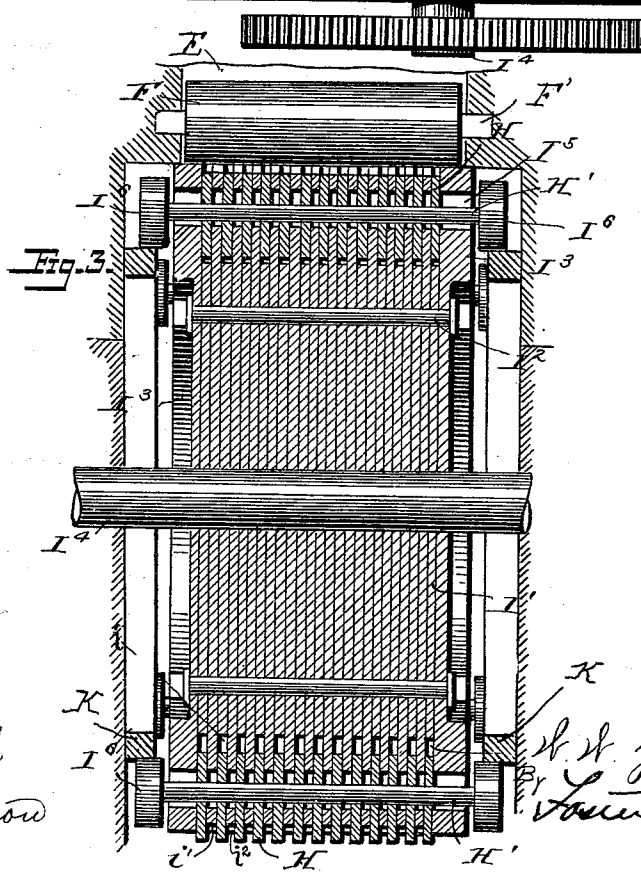
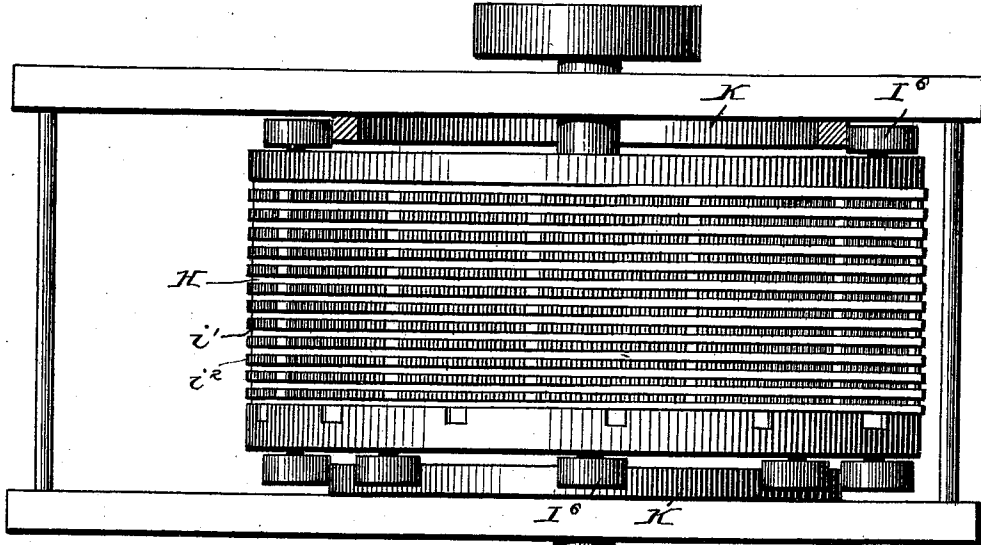
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Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM W. GRISCOM, OF HAVERFORD, PENNSYLVANIA.

MACHINE FOR MAKING STORAGE-BATTERY GRIDS OF FORCED LEAD.

SPECIFICATION forming part of Letters Patent No. 521,791, dated June 26, 1894.

Application filed July 24, 1893. Serial No. 481,333. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. GRISCOM, a citizen of the United States, residing at Haverford, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Storage-Battery Grids of Forced Lead, of which the following is a specification.

My invention relates to machines for continuously forcing metal or other material into continuously moving molds, and it has for its object to improve and simplify the construction of such machines, and to provide means whereby grids may be cheaply and rapidly made, and to these ends my invention consists in machines embodying the various features of construction and having the mode of operation substantially as herein more particularly pointed out.

Referring to the accompanying drawings, Figure 1, is a longitudinal, vertical section of a machine embodying my invention. Fig. 2, is a plan view, partly in section, some of the parts being removed to show the mold and appliances. Fig. 3, is a vertical, transverse section on the line 3—3, Fig. 1. Fig. 4, is a rear view of the chill piece.

While my invention is intended more particularly to be used in making storage battery grids from lead in a cold or plastic condition as counterdistinguished from molten lead, it is evident that it can be used for making other and different articles from other and different materials, and may with proper modifications, be applied wherever continuous casting or "forcing" is advantageous, and I do not therefore limit myself to the particular purpose, nor to the precise mechanism hereinafter described, as they may be varied by those skilled in the art.

My invention relates generally to the class of machines shown and described in the patent, No. 460,933, to A. F. Madden, dated October 6, 1891, and to certain improvements therein, embodied in application, Serial No. 450,551, filed October 31, 1892, wherein the casting or forcing operations were made continuous, and my present invention is to improve the construction and arrangement of the machine so that the work may be quickly and effectively performed.

Some of the features of my present machine

are substantially the same as those in the machines before referred to and for that reason do not require a detailed description, it being sufficient to state that A, represents a melting pot, which is heated by a suitable burner B, preferably supplied with mixed air and gas and this melting pot is provided with a suitable valve C, controlling the flow of metal from the melting pot through the tube or passage D, to a reservoir E, and this reservoir is preferably provided with a hollow roller F, containing a burner F', and provided with means for rotating the same and the roller may be provided with the well known means for maintaining it at a proper temperature, either by heating or cooling it. It will be understood that these means may be varied or omitted and that they form no part of my present invention, but these or some equivalents thereof are used to supply the molten or pasty metal to the mold, and are suitably mounted upon a frame X.

I provide a continuously operating mold into which the metal is forced and from which the molded material is delivered, and while of course the details of construction of the mold will vary according to the articles to be produced, I have shown a mold adapted for the manufacture of secondary battery grids, such for instance as are known as the Griscom type, and I will now proceed to set forth the details of construction.

The mold or cylinder I, has peripheral grooves i , cut or otherwise formed therein, leaving the flanges or ridges i' , having suitable projections or teeth i'' , extending to the outer circumference or periphery of the cylinder, and I preferably make the mold or cylinder of a series of disks, the alternating or intermediate series I' , being smaller in diameter than the remaining disks, all the disks being suitably mounted on a shaft I^4 , supported in the frame of the machine and provided with suitable means for driving it, and in order to hold the disks in position I provide the cylinder heads I^3 , and unite them and the disks by suitable bolts or rods I^2 , which pass through the heads and disks and serve to firmly and positively confine them in position.

In order to form the bottoms or base portions of the mold in the grooves of the disk

or cylinder and at the same time provide means for ejecting the molded articles, I provide a series of annular plates or rings H, which are interposed in the grooves in the mold and are arranged to rotate with the cylinder, but to have their center of rotation eccentric with the center of rotation of the cylinder, so that in some positions the outer peripheries of the revolving rings or ejectors will be below the periphery of the cylinder, while in other positions it will be coincident therewith. Thus as best seen in Fig. 1, under the roller F, the rings H, are below or inside of the peripheral surface of the cylinder and form the base of the mold, while at the side near the dotted line Z, the peripheries of the rings and the cylinder coincide, and the rings act as ejectors for discharging the molded articles. Various means may be employed for producing this eccentric movement of the rings with relation to the mold or cylinder, and I have shown one simple way of accomplishing this and I mount the rings H, on shafts H', which extend through slots I⁵, in the disks and plates of the mold and these shafts are provided with rollers I⁶, which bear upon a suitable cam or eccentric K, mounted on the frame of the machine, and so arranged that the center of rotation of the rings is eccentric from the center of rotation of the mold. It will be seen that as the shafts H', pass through the slots I⁵, of the mold or cylinder, the rings must rotate therewith and at the same speed, but through the intervention of the cams or eccentrics and the shafts on which the rings are mounted they have a movement to and from the center of the axis of the mold and as before stated, at the receiving point of the metal, to form the base or bottoms of the molds and then gradually approach the periphery until the molded article is discharged. In this way I avoid dragging the molded article over a stationary ejector, saving friction and perhaps loss or injury to the molded articles.

It will be evident that by changing the position or shape of the cams or eccentrics K, the depth of the mold may be varied as well as the point of discharge of the molded articles.

In order to prevent the metal running backward or out of the wrong end of the machine, I provide a chill G, arranged above the mold in front of the reservoir and this chill is provided with means for filling the grooves and I have shown detachable pieces g, arranged in the form of segments to fit the grooves, secured to the chill, by a cross rod 5, passing through ears 6, 6, Fig. 4, and through the segments so that they may be removed and others placed in their stead. I also provide another chill G', for cooling the material, which may, as is usual, be provided with means for maintaining a proper temperature and there is preferably used an oil can J, through which the parts of the mold are carried, and there may be a suitable guide L, and other appliances connected with the ma-

chine for delivering and treating the molded articles, but as they form no part of my present invention, they need not be particularly described herein.

It may be remarked that in Figs. 2 and 3, of the drawings, I have shown, for the purposes of clearness, the disks and ejectors very much thicker relatively to the other parts, than they are in actual practice, and it will be understood that any number of disks and ejectors of any desired width may be used, the drawings merely being illustrations of the principles of my invention.

Such being the construction of the embodiment of my invention herein set forth and being sufficient to explain the general principles thereof, what I claim is—

1. A mold comprising a revoluble cylinder having recesses extending around its periphery and provided with eccentric ejectors, rotating with the mold, substantially as described.

2. A mold comprising a revoluble cylinder having circumferential and transverse recesses in its periphery, one deeper than the other, and provided with ejectors forming the bottoms of the deepest recesses and means for moving said ejectors outward during the rotation of the cylinder, substantially as described.

3. A revoluble mold cylinder having ridges or flanges provided with teeth and annular recesses between the ridges or flanges and movable rings eccentrically mounted in said recesses, forming a portion of the molding surface and acting as ejectors, and turning with the cylinder on an axis eccentric thereto, substantially as described.

4. The combination with the revolving cylinder having annular recesses, of rings eccentrically mounted in the recesses and turning with the cylinder on an axis eccentric thereto, substantially as described.

5. The combination with the revolving cylinder having annular recesses in its periphery, of rings eccentrically mounted in said recesses, turning with the cylinder on an axis eccentric thereto rods connecting the rings and extending through slots in the mold and an eccentric cam supporting the rods, substantially as described.

6. The combination with the revolving cylinder composed of disks having projecting teeth and smaller disks interposed between the toothed disks and leaving annular grooves in the periphery of the cylinder, of rings eccentrically mounted in the grooves and connected to rotate with the cylinder and means for moving the rings radially to the cylinder, substantially as described.

7. The combination with a revolving cylinder having annular grooves in its periphery, of a chill having detachable pieces fitting the grooves of the cylinder, substantially as described.

8. The combination with a revolving cylinder having annular grooves in its periphery,

of rings eccentrically mounted in said grooves, turning with the cylinder on an axis eccentric thereto a reservoir arranged to supply metal for the cylinder, and a chill, having
5 pieces connected therewith and extended into the grooves of the cylinder, substantially as described.

9. The combination with a revolving cylinder having grooves in its periphery, of rings
10 eccentrically mounted in said grooves, turning with the cylinder on an axis eccentric thereto a reservoir to contain the metal, and means for forcing the metal into the cylinder, substantially as described.

15 10. The combination with the revolving cylinder having annular grooves in its periphery, of rings eccentrically mounted in the

grooves, devices connecting the rings with the cylinder so that they will rotate therewith, means for moving the rings radially to the
20 cylinder, the reservoir for the metal and chills arranged with relation to the reservoir, the construction being such that the eccentric rings form a portion of the mold, and act as
25 ejectors of the molded article, substantially as described.

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

WM. W. GRISCOM.

Witnesses:

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WM. J. P. ALLEN.