C. P. COTTRELL.

MANUFACTURE OF ELECTROTYPE PLATES.

APPLICATION FILED JAN. 5, 1911.

1,034,880.

Patented Aug. 6, 1912.

2 SHEETS—SHEET 1.

Fig. 2.

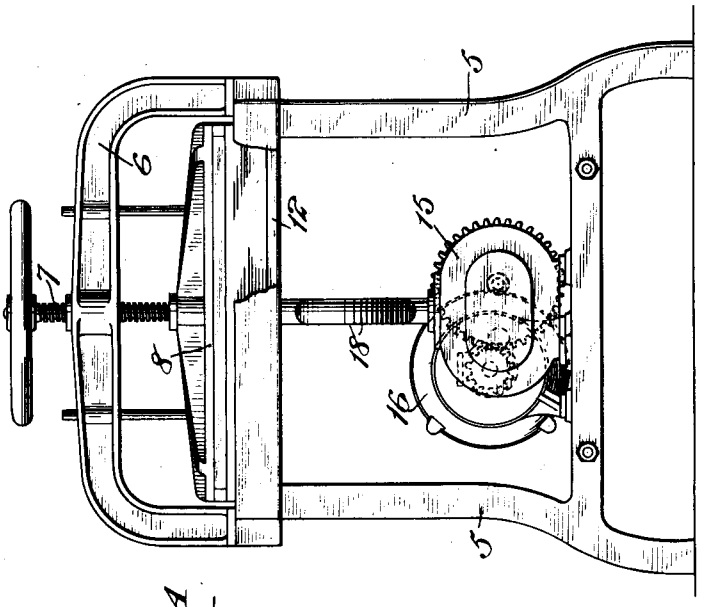
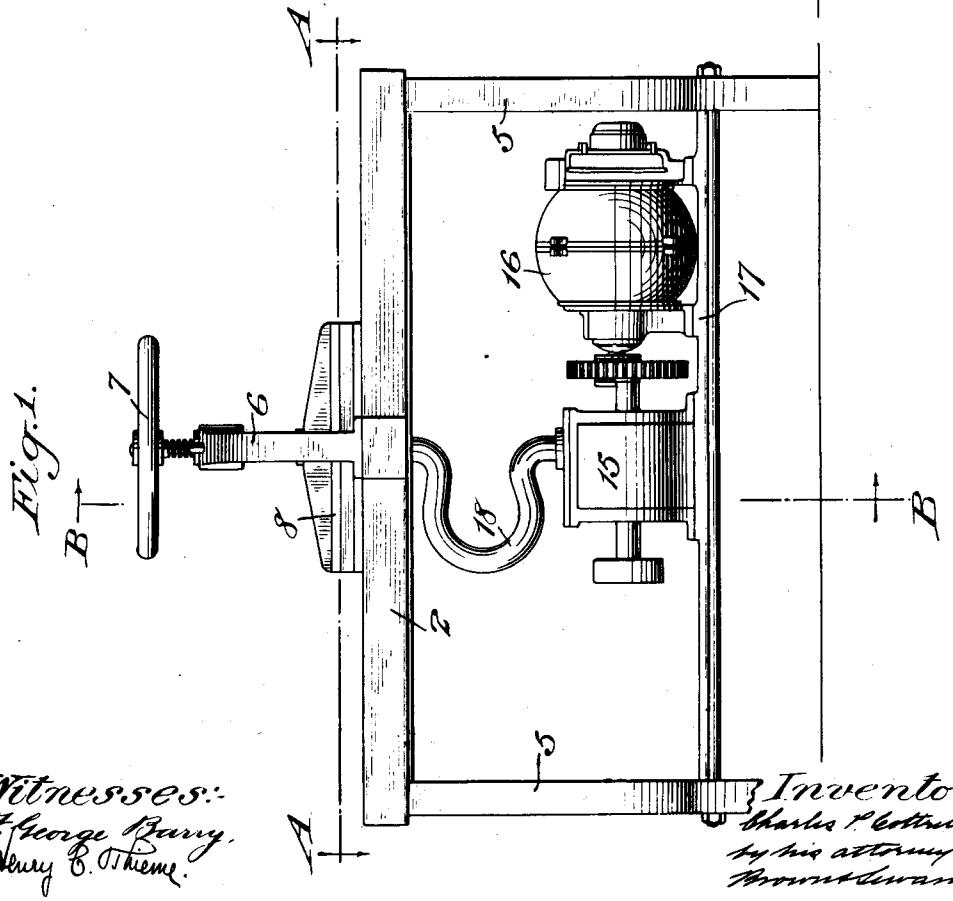


Fig. 1.



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Henry B. Thieme.

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2 SHEETS—SHEET 2.

Fig. 4.

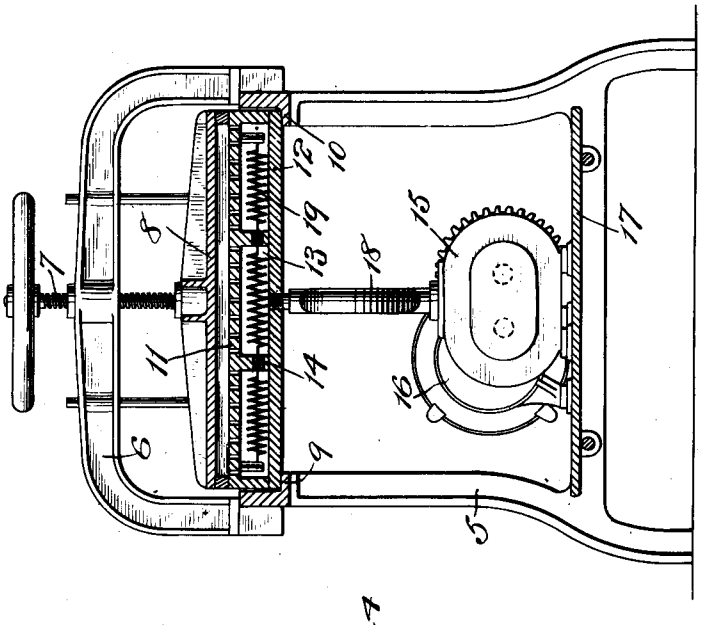

Fig. 8.

Fig. 3.

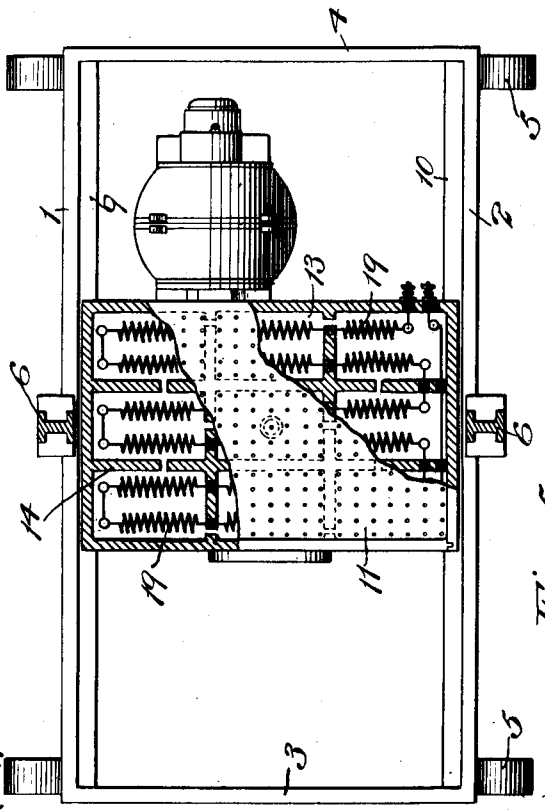

Fig. 5.

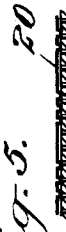

Fig. 6.

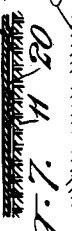

Fig. 7.

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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF ELECTROTYPE-PLATES.

1,034,880. Specification of Letters Patent. Patented Aug. 6, 1912.

Application filed January 5, 1911. Serial No. 600,976.

To all whom it may concern:

Be it known that I, CHARLES P. COTTRELL, a citizen of the United States, and resident of Westerly, in the county of Washington and State of Rhode Island, have invented a new and useful Improvement in the Manufacture of Electrotype-Plates, of which the following is a specification.

The object of my invention is to provide a new method of backing up electrotype shells, which method will produce a better electrotype plate than heretofore and which will produce the same in a more economical and expeditious manner.

In the method of backing up electrotype shells as heretofore commonly practised, it has been found extremely difficult, if not impossible, to hold the shell by use of mechanical devices snugly against the surface upon which it rests, the tendency of the shell being to warp and become somewhat distorted during the casting of the backing up metal onto the back of the shell and particularly during the cooling of the same.

The particular object of my invention is to hold the shell snugly against the surface upon which it rests, by means of suction.

The present invention is directed to the method of backing up electrotype shells where the face of the shell is in direct contact with the surface on which it rests.

My improved method includes the following steps:—The electrotype shell is placed face down upon a suction surface such, for instance, as a backing pan forming part of a backing up machine. Means are used for exerting suction upon the shell to hold it snugly against the said surface, such, for instance, as by using a hollow backing pan having its wall upon which the shell rests perforated and connecting the interior of said pan to an exhaust pump. The molten backing up metal is then cast onto the back of the plate and the plate is held in position by suction while the metal cools. Means are provided for heating the surface upon which the shell rests and means may be provided for exerting pressure upon the back of the backing up metal if so desired.

A means for carrying out my invention is represented in the accompanying drawings, a description of which herewith follows.

Figure 1 represents the machine in side elevation, Fig. 2 is an end view of the same, Fig. 3 is a horizontal section taken in the plane of the line A—A of Fig. 1, a portion of the perforated top wall of the backing pan being broken away to illustrate more clearly the vacuum chamber, the heating means and the strengthening partitions which connect the top and bottom walls of the pan, Fig. 4 is a transverse vertical section taken in the plane of the line B—B of Fig. 1, and Figs. 5, 6, 7 and 8, show the different steps in the process.

The backing up stand comprises side bars 1, 2, and end bars 3, 4, forming an open frame, which frame is supported by suitable legs 5. About midway the length of the stand, a yoke 6 uprises from the side bars 1 and 2 of the frame, in which yoke is mounted a hand screw 7 carrying a pressure plate or platen 8. The hollow backing pan may be slid along the stand into and out of position beneath the platen 8, in the present instance by providing the side bars 1, 2, of the frame with tracks 9, 10, on which the opposite ends of the backing pan rest. This backing pan comprises a perforated top 11 and a bottom 12 spaced therefrom to form a vacuum chamber 13. Suitable strengthening partitions 14 are interposed between the top 11 and the bottom 12 of the backing pan for maintaining the top 11 in a perfectly flat condition by preventing the same from warping or sagging out of shape.

A motor driven exhaust pump serves to exhaust the air from the interior of the hollow backing pan, which pump is shown herein as a rotary exhaust pump 15 driven from an electric motor 16, both mounted upon a shelf 17 of the backing up stand, the pump 15 being connected to the interior of the backing pan through a flexible hose 18 so as to permit the pan to be moved from one end of the frame to the other without disconnecting it from the exhaust pump. Any suitable means may be provided for heating the backing pan to the desired temperature shown herein comprising an electric device including resistance coils 19 located within the hollow space or chamber 13. Electric current may be supplied to this heating device from any suitable source of electrical energy not shown herein.

In operation, the electrotype shell 20 is placed upon the perforated top of the heated hollow backing pan. The exhaust pump

15 may then be put into operation for exhausting the air from the backing pan and thus exerting a suction upon the shell to hold it snugly in position on the pan. The backing up metal 21 is then poured onto the back of the shell 20 while the shell is held by suction against the backing pan. The pan is then allowed to cool thereby permitting the backing up metal to cool while the electrotype shell is held by suction on the pan thus insuring the formation of an electrotype plate of superior quality by a very simple means. If it is desired to exert pressure upon the backing up metal, the backing pan may be moved into position beneath the platen 8 and the platen screwed down into engagement with the metal.

What I claim is:—

1. The method of backing up electrotype shells consisting in casting the backing up metal onto the back of the shell while the shell is held in position upon a suction surface.

2. The method of backing up electrotype shells consisting in casting the backing up metal onto the back of the shell while the shell is held in position upon a heated suction surface.

3. The method of backing up electrotype shells consisting in placing the face of the shell upon a surface, holding the shell on said surface by suction and casting the backing up metal onto the back of the shell.

4. The method of backing up electrotype shells consisting in placing the shell upon a heated surface, holding the shell on said surface by suction and casting the backing up metal onto the back of the shell.

5. The method of backing up electrotype shells consisting in placing the face of the shell upon a perforated surface, holding the shell upon such surface by suction and then casting the backing up metal onto the back of the shell.

6. The method of backing up electrotype shells consisting in placing the face of the shell upon a heated perforated surface, holding the shell upon such surface by suction and then casting the backing up metal onto the back of the shell.

7. The method of backing up electrotype shells consisting in placing the face of the shell, upon a surface, holding the shell on such surface by suction, casting the backing up metal onto the back of the shell and exerting pressure upon the backing up metal.

8. The method of backing up electrotype shells consisting in placing the face of the shell upon a heated surface, holding the shell on such surface, by suction, casting the backing up metal onto the back of the shell and exerting pressure upon the backing up metal.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this twenty-seventh day of December, A. D. 1910.

CHARLES P. COTTRELL.

Witnesses:
A. R. STILLMAN,
A. C. WHITFORD.