C. P. COTTRELL.

MANUFACTURE OF ELECTROTYPE PLATES.

APPLICATION FILED JAN. 5, 1911.

1,139,259.

Patented May 11, 1915

2 SHEETS—SHEET 1.

Fig. 2.

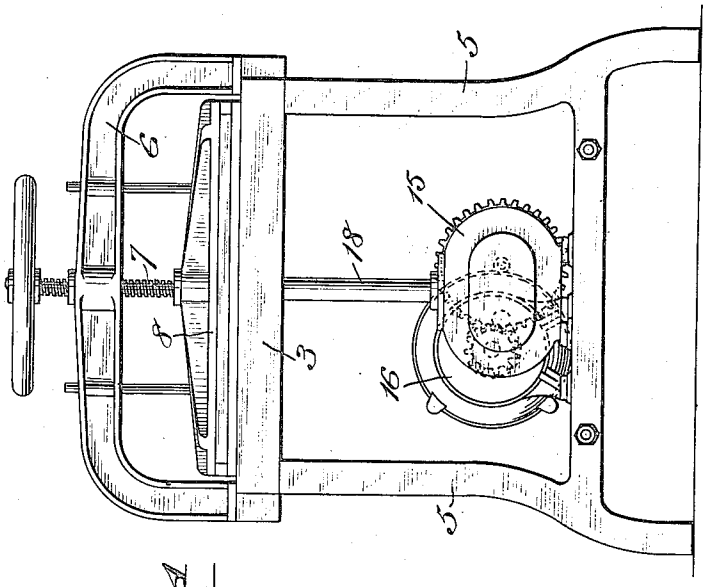
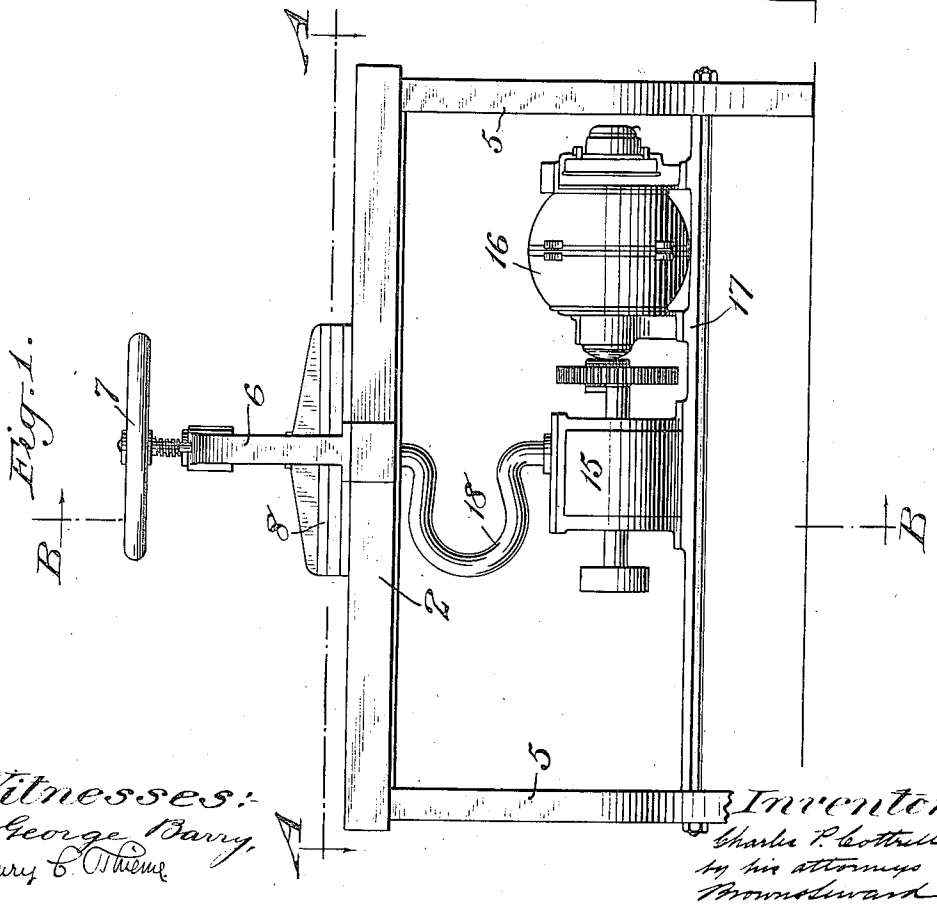


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 4.

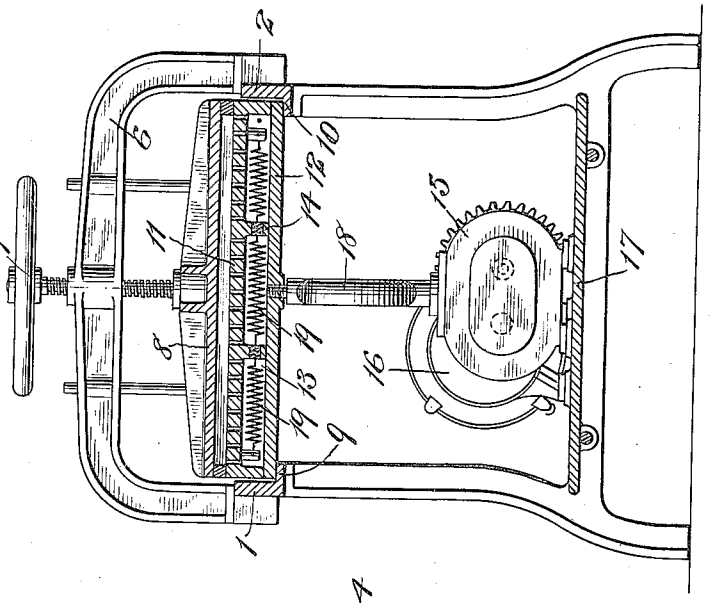


Fig. 9.



Fig. 3.

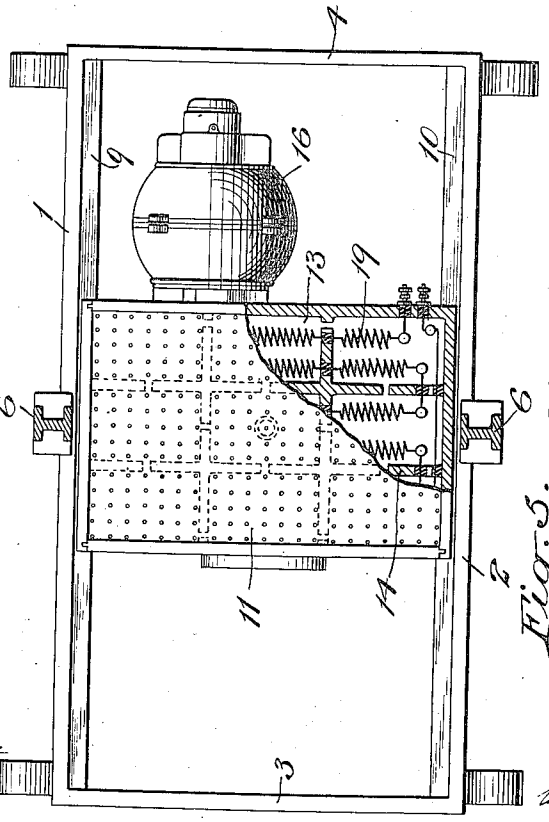


Fig. 5.



Fig. 6.



Fig. 7.

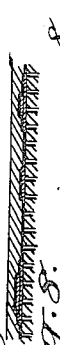


Fig. 8.

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UNITED STATES PATENT OFFICE.

CHARLES P. COTTRELL, OF WESTERLY, RHODE ISLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO C. B. COTTRELL & SONS COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

MANUFACTURE OF ELECTROTYPE-PLATES.

1,139,259. Specification of Letters Patent. Patented May 11, 1915.

Application filed January 5, 1911. Serial No. 600,977.

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 this invention is to provide a new method of producing an electrotype plate with gradations in its face to insure proper printing values therein, which method will produce a better plate than heretofore and in a more economical and expeditious manner.

The present invention is directed to the method of producing electrotype plates which consists in casting the backing up metal onto the back of a shell while the face of the shell with an interposed overlay is held upon a suction surface whereby the backing up of the shell and the formation of the proper gradations in the face of the plate are accomplished simultaneously.

In carrying out the invention, a reverse overlay is pasted onto the face of the shell in proper register therewith. The shell with its interposed reverse overlay is then placed upon a suction surface such, for instance, as the perforated top of a hollow backing pan forming part of an electrotype plate backing up machine. Means, such for instance as an exhaust pump, is used for exhausting the air from the backing pan and thus causing the shell with its interposed reverse overlay to be drawn snugly against said pan by suction exerted through the perforations in said top, which suction serves to draw the shell down into the depressions in the interposed reverse overlay. The backing pan is heated to the desired temperature and the molten backing up metal is then poured onto the back of the shell while the shell is held by suction against the surface upon which it rests. If desired, the reverse overlay may be perforated so as to increase the suction effect upon that portion of the shell which is covered by the overlay so as to insure a more complete drawing down of the shell into the cutout places in the overlay. The pan and thereby the backing up metal is allowed to cool while the shell with its interposed reverse overlay is held snugly against the surface upon which it rests. If so desired, pressure may be exerted upon the backing up metal.

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, 8 and 9 show the several 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 tem-

perature that 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 reverse overlay 20 is pasted onto the face of the electrotype shell 21 in proper register therewith and if desired the reverse overlay may be perforated for the purpose herein set forth. The shell with its interposed reverse overlay is pasted upon the perforated surface of the hollow backing pan. The pan may be heated to the desired temperature and the exhaust pump is started for exhausting the air from within the hollow backing pan and thus draw the electrotype shell with its interposed overlay snugly down onto the perforated surface of the backing pan, the shell at the same time being drawn down into the cutout portions of the overlay. The backing up metal is then poured onto the back of the electrotype shell. The pan and the backing up metal are allowed to cool while the shell with its interposed overlay is held snugly against the surface of the backing pan. If so desired pressure may be exerted upon the backing up metal by bringing the platen 8 into engagement therewith.

It will thus be seen that an electrotype plate is produced in which the proper gradations in its face are formed at the same time that the shell is backed up.

It will thus be seen that the method hereinabove described produces a plate of superior quality in a very simple and expeditious manner.

What I claim is:—

1. In the manufacture of electrotype plates, simultaneously forming gradations in the face of the plate and casting the backing up metal onto the back of the shell while the face of the shell is held upon a suction surface with an overlay interposed between the face of the shell and said suction surface.

2. In the manufacture of electrotype plates, simultaneously forming gradations in the face of the plate and casting the backing up metal onto the back of the shell while the face of the shell is held upon a heated suction surface with an overlay interposed between the face of the shell and said suction surface.

3. In the manufacture of electrotype plates, simultaneously forming gradations in the face of the plate and casting the backing up metal onto the back of the shell while the face of the shell is held upon a suction surface with a reverse overlay interposed between the face of the shell and said suction surface.

4. In the manufacture of electrotype plates, simultaneously forming gradations in the face of the plate and casting the backing up metal onto the back of the shell while the face of the shell is held upon a heated suction surface with a reverse overlay interposed between the face of the shell and said suction surface.

5. The method of producing an electrotype plate with gradations in its printing face consisting in placing a shell face downward upon a surface with an interposed overlay in register therewith, holding the shell on said surface by suction and then casting the backing up metal onto the back of the shell.

6. The method of producing an electrotype plate with gradations in its printing face consisting in placing a shell face downward upon a heated surface with an interposed overlay in register therewith, holding the shell on said surface by suction and then casting the backing up metal onto the back of the shell.

7. The method of producing an electrotype plate with gradations in its printing face consisting in placing a shell face downward upon a surface with an interposed reverse overlay in register therewith, holding the shell on said surface by suction and then casting the backing up metal onto the back of the shell.

8. The method of producing an electrotype plate with gradations in its printing face consisting in placing a shell face downward upon a heated surface with an interposed reverse overlay in register therewith, holding the shell on said surface by suction and then casting the backing up metal onto the back of the shell.

9. The method of producing an electrotype plate with gradations in its printing face consisting in placing a shell face downward upon a surface with an interposed overlay in register therewith, holding the shell on said surface by suction, casting the backing up metal onto the back of the shell and subjecting the backing up metal to pressure.

10. The method of producing an electrotype plate with gradations in its printing face consisting in placing a shell face downward upon a heated surface with an interposed overlay in register therewith, holding the shell on said surface by suction, casting the backing up metal onto the back of the shell and subjecting the backing up metal to pressure.

11. The method of producing an electrotype plate with gradations in its printing face consisting in placing a shell face downward upon a surface with an interposed reverse overlay in register therewith, holding the shell on said surface by suction, casting the backing up metal onto the back of the shell and subjecting the backing up metal to pressure.

12. The method of producing an electrotype plate with gradations in its printing face consisting in placing a shell face downward upon a heated surface with an interposed reverse overlay in register therewith, holding the shell on said surface by suction, casting the backing up metal onto the back of the shell and subjecting the backing up metal to pressure.

13. The method of producing an electrotype plate with gradations in its printing face consisting in pasting a reverse overlay in register onto the face of the electrotype shell, puncturing the overlay, placing the shell with its interposed overlay upon a surface, holding the shell on said surface by suction and casting the backing up metal onto the back of the shell.

14. The method of producing an electrotype plate with gradations in its printing face consisting in pasting a reverse overlay in register onto the face of the electrotype shell, puncturing the overlay, placing the shell with its interposed overlay upon a heated surface, holding the shell on said surface by suction, and casting the backing up metal onto the back of the shell.

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. P. STILLMAN,
A. C. WHITFORD.