G. E. DUNTON.

METHOD FOR USE IN BACKING UP ELECTROTYPE SHELLS IN THE ART OF ELECTROTYPING.

APPLICATION FILED OCT. 30, 1914.

**1,164,079.**

Patented Dec. 14, 1915.

3 SHEETS—SHEET 1.

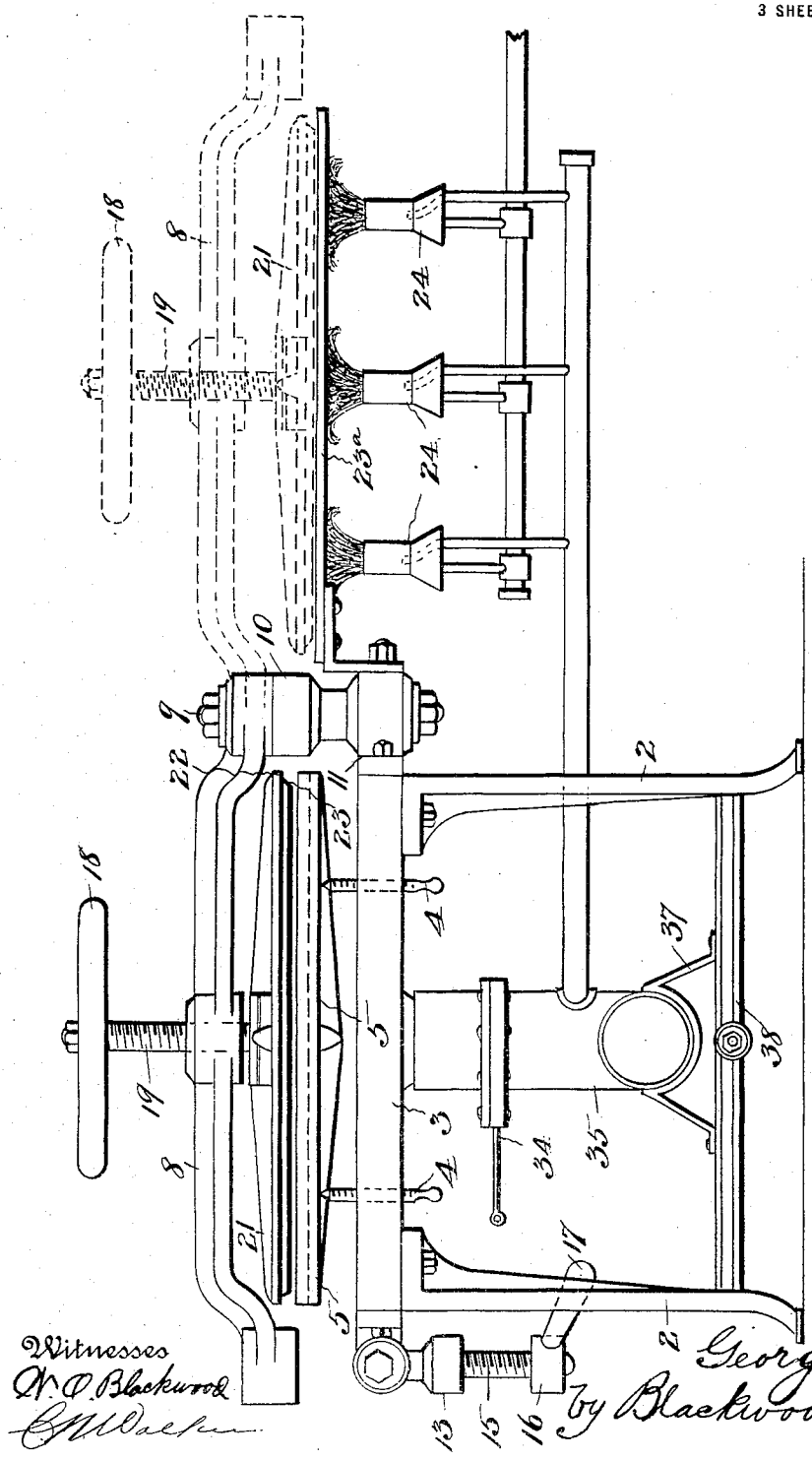



Fig. 1.

Witnesses
N. C. Blackwood
C. M. Wachsmuth

Inventor
George E. Dunton
by Blackwood Bros.
Attorneys.

G. E. DUNTON.

METHOD FOR USE IN BACKING UP ELECTROTYPE SHELLS IN THE ART OF ELECTROTYPING.

APPLICATION FILED OCT. 30, 1914.

**1,164,079.**

Patented Dec. 14, 1915.

3 SHEETS—SHEET 2.

Fig. 2.

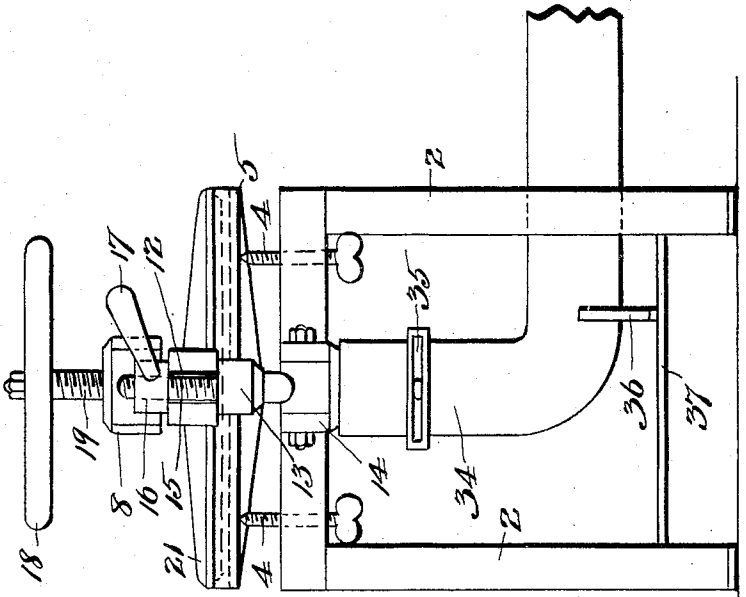
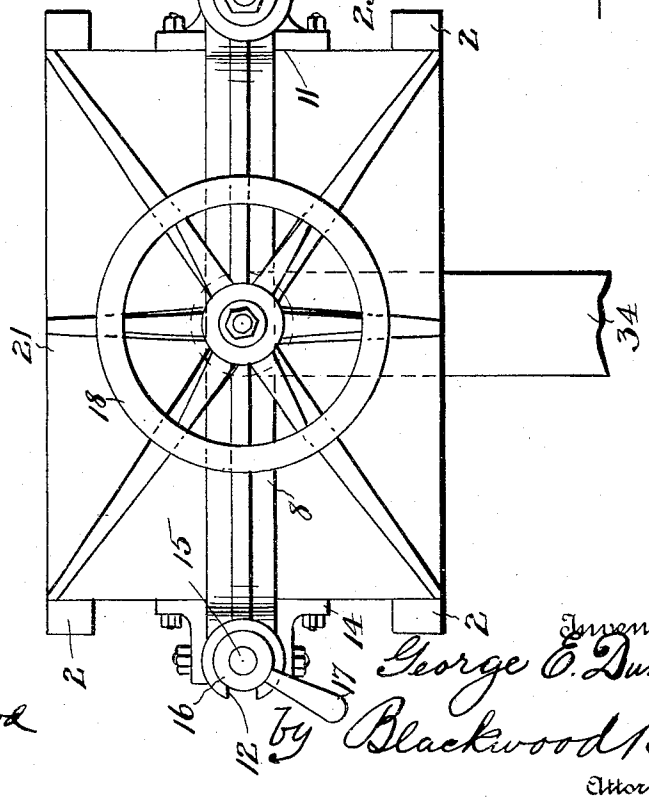



Fig. 3.




Witnesses
A. O. Blackwood
C. M. Wack

Inventor
George E. Dunton
by Blackwood Bros.
Attorneys

G. E. DUNTON.

METHOD FOR USE IN BACKING UP ELECTROTYPE SHELLS IN THE ART OF ELECTROTYPING.

APPLICATION FILED OCT. 30, 1914.

1,164,079. Patented Dec. 14, 1915.

3 SHEETS—SHEET 3.

Fig. 4.

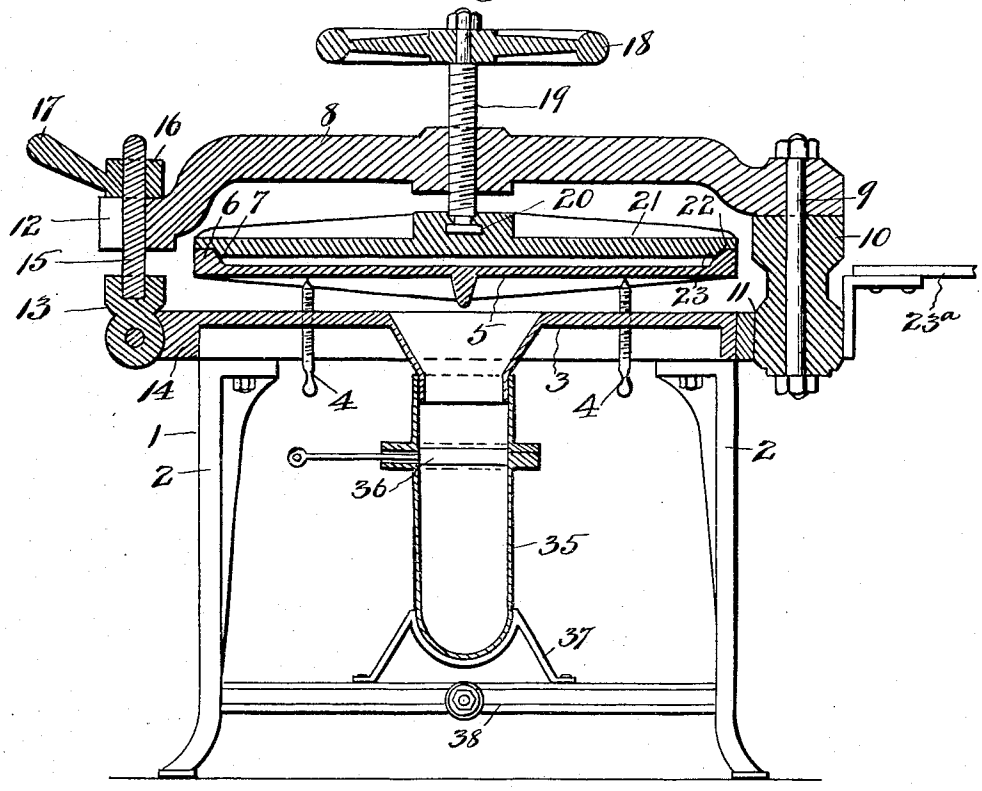
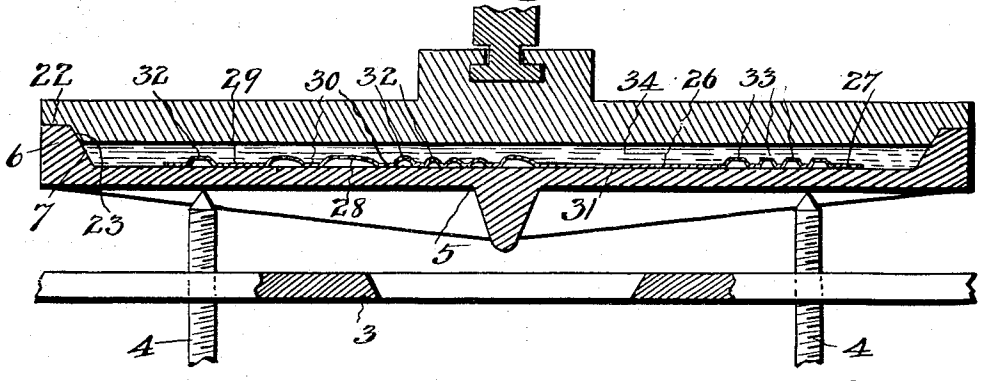



Fig. 5.




Witnesses
W. O. Blackwood
C. M. Walker

Inventor
George E. Dunton
by Blackwood Bros.
Attorneys.

# UNITED STATES PATENT OFFICE.

GEORGE E. DUNTON, OF NEW YORK, N. Y.

## METHOD FOR USE IN BACKING UP ELECTROTYPE-SHELLS IN THE ART OF ELECTROTYPING.

1,164,079. Specification of Letters Patent. Patented Dec. 14, 1915.

Application filed October 30, 1914. Serial No. 869,390.

*To all whom it may concern:*

Be it known that I, GEORGE E. DUNTON, residing at New York city, in the county of New York and State of New York, a citizen of the United States, have invented a certain new and Improved Method for Use in Backing up Electrotype-Shells in the Art of Electrotyping; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to an improved method for use in backing up electrotype shells in the art of electrotyping.

It has for its object to provide a method for manipulating the backing, during the operation of backing up the electrotype shell, in such a manner that the electrotype shell will have a level, flat smooth and perfectly even printing surface.

It further has for its object to provide a method which will cause an even pressure to be exerted on the backing of an electrotype shell, while said backing is in a molten state, and maintain the pressure until the backing has cooled and set.

It further has for its object to provide a method which will enable an electrotype shell to be backed up in forming a printing plate in such a manner as to eliminate the necessity for the so-called "straightening" of the surface of the plate by pounding or hammering certain designated spots on the back of the plate which have not made a perfect contact with the surface of the backing pan or receptacle at the time of the cooling and setting of the backing metal.

It further has for its object to provide a method by which pressure is exerted on the molten metal backing of an electrotype shell which causes the face of the shell to be forced against the backing pan or receptacle and forms a smooth, even printing surface and to cool the backing and shell.

It further has for its object to provide a method by which a liquid tight joint is effected between the face of the shell and the surface of the backing pan or receptacle.

It still further has for its object to provide a method which is very easy, effective and efficacious in practice.

If the shell and backing, comprising the electrotype plate, are not subjected to pressure while the backing is in a molten state and the shell is not forced against the backing pan or receptacle an uneven cooling of the molten metal backing results, causing a shrinkage of the molten metal in spots at the time the molten metal cools and the shell following this shrinkage retracts from the surface of the backing pan or receptacle and an uneven and imperfect printing surface is the result. Usually to correct such defects in the surfaces of the printing plates, after the molten metal backing has cooled to allow the plate being removed from the backing pan or receptacle, the plate is taken by a workman, the surface carefully examined and the location of the shrunken area is located by going over the surface of the plate with a specially prepared block of rubber in which an emery powder, known as flower of emery, is distributed and through which it is incorporated during the vulcanizing of the rubber. The treatment by rubbing the surface of the plate with this emery rubber brightens those areas of the surface of the plate with which it comes in contact leaving the shrunken or indented surfaces dark, by which means the shrunken surfaces are readily disclosed. The finisher then follows the outlines of each shrunken or indented surface with one point of a tool known as a "caliper" pressing the opposite point, which is on the opposite arm or limb of the caliper, against the back of the plate thus marking the spot on the back of the plate. The plate is then turned over, with its face resting on or against the surface of a smooth, level steel plate, and with a hammer blows are struck on the back of the plate until the surface of the plate has been forced outward and is in contact with the surface of the steel plate.

The above operation requires considerable skill and dexterity as too much hammering will cause the surface of the printing plate to become battered or flattened and if the blows are too heavy individual spots, corresponding to each blow, will appear on the surface of the printing plate which will result in heavy and light spots on the printed sheet reproduced from the plate. To obviate the necessity of this finishing operation of the printing surface of the plate, which is exceedingly unsatisfactory and wastes much time, I force the surface of the shell, by my method, into a perfectly even contact with the surface of the backing pan or receptacle, by exerting or imparting an even pressure

to the backing metal while said metal is in a molten state, maintaining said pressure by following up the cooling of said molten metal backing by extra or additional pressure until the backing has cooled and set.

Referring to the drawings which illustrate one form of apparatus for carrying out or practising my method:—Figure 1 is a side elevation. Fig. 2 an end elevation. Fig. 3 a top plan. Fig. 4 a central vertical section. Fig. 5 a central longitudinal sectional view of the backing pan or receptacle, closure, electrotype shell and molten metal backing, on an enlarged scale.

In the drawings in which like reference characters denote like parts throughout the several views, 1 represents the backing stand having legs 2, a top 3 and leveling screws 4. A shallow backing pan or receptacle 5 is mounted on the leveling screws 4 and is provided with an upwardly projecting rim 6 beveled on the inside as at 7. A yoke or arm 8 is provided which is horizontally pivoted on a short shaft 9 mounted in a hub 10 secured to the backing stand at point 11 and the other or opposite end of the yoke or arm 8 is provided with an open slot 12 and 13 is a latch, for locking the yoke or arm in position on the backing stand, pivoted to a bracket 14 secured to the backing stand and provided with a screwthreaded pin 15 adapted to engage the open slot 12 of the yoke or arm, 16 being a nut mounted on the screwthreaded pin 15 and having a handle 17. A hand wheel 18 is mounted in the yoke or arm 8 and is provided with a screwthreaded shaft 19 having a flanged or enlarged lower end 20.

21 is a closure or cover for the backing pan or receptacle, mounted on the lower end of the shaft 19 of the hand wheel, provided with a flange 22 and a depending portion 23 which is adapted to be seated on the beveled rim of the backing pan or receptacle.

The closure or cover of the backing pan or receptacle may be used without heating the same, but to obtain the best results I preferably heat it, before applying it to the backing pan or receptacle, by placing it on a plate $23^a$ over suitable gas burners 24, by floating it on the surface of the molten metal backing in the melting pot or kettle of the furnace or in any other desired manner.

Referring to Fig. 5 of the drawings, 26 is an electrotype shell which has had the lower margins 27 of its edges rubbed down and sealed to the interior surface of the backing pan or receptacle to prevent the molten metal backing from running under the electrotype shell or getting between the surface of the backing pan or receptacle and the electrotype shell.

28 are blank spaces which have been built up in the mold by flowing melted wax over them with a heated building iron before the deposition of the electrotype shell, 29 the surface of a larger type or letter such as are used for headings in the daily newspapers, 30 smaller types for sub headings, 31 large cut surfaces of the shell such as are used in the printing art to illustrate or show some particular diagram, map or other character.

32 are interstices between the indentures made by the types of the form in the mold and represented in the electrotype shell.

33 are other indentures made by the body type of the form in the wax mold and reproduced in the electrotype shell.

It is these innumerable surfaces together with those shown at 29, 30 and 31 which I seek to correct by bringing them into intimate contact with and pressing them against the surface of the backing pan or receptacle.

34 is the molten metal backing which has been introduced into the backing pan or receptacle, in any desired manner, and which completely covers the electrotype shell 26, to the desired depth, the closure or cover having been forced down by means of the hand wheel upon said molten metal backing.

For the purpose of cooling the cast, the electrotype shell and its molten metal backing, an air supply pipe 35 is provided connected with an air pump or any other air forcing means, not shown, and 36 is a valve or gate for controlling the supply of air to and through the air pipe to the underside of the backing pan or receptacle.

The pipe 35 is supported in position under the backing pan or receptacle by means of a U-shaped brace 37 which in turn is supported on a brace 38 connecting the legs of the backing stand.

In performing the operation by my method I take an electrotype shell, which has been produced by any well known means common to the galvanoplastic arts, and treat it by flowing the back of the shell with what is commonly known as soldering flux, place solder foil, a composition of lead and tin, over the back of the shell and then apply heat, by any suitable means, which melts the solder foil over the back of the shell and thereby provides and produces a binder with which to secure the backing to be formed on the shell. The shell with the melted binder thereon is then placed in the backing pan or receptacle and the margins of the edges of its under surface are sealed to the surface of the backing pan or receptacle by rubbing them with a suitable stick, preferably wooden, along the said margins until they are smooth and even and no opening shows between the shell and the surface of the backing pan or receptacle when placed thereon. After this sealing is completed molten metal backing is introduced into the

backing pan or receptacle by being poured therein by means of a ladle or in any other suitable manner, until the molten metal has attained the desired height to form or produce a backing of the proper thickness, the closure or cover having been, preferably, previously heated by gas or in any other manner, is placed on the backing pan or receptacle so that it rests directly on the surface of the molten metal backing therein, pressure is then applied to the closure or cover by means of the hand wheel which in turn exerts pressure on the molten metal backing, and as the molten metal backing cools and recedes from the back of the shell and shrinks, the pressure is constantly continued and maintained until the backing has become cool and set. The molten metal backing having become set, through cooling, the pressure on the closure and the backing is released or discontinued by operating the hand wheel after which the closure or cover is swung to one side out of the way and ready for the next operation. The plate, consisting of the shell and backing, is then removed from the backing pan or receptacle and cleaned by being treated with some detergent, dried to remove stains caused by adhering wax or conducting graphite which became attached thereto during the operation of forming the shell. The cleaned plate then goes to the finishing room where it is sawed into pieces of the desired size and otherwise treated, but so far as the backing up operation is concerned this completes it.

The apparatus is claimed in my application for patent filed October 30th, 1914, Serial Number 869389.

What I claim is:—

1. The method of backing up electrotype shells in the art of electrotyping, consisting in moving the hand wheel, shaft and the closure of a backing pan over a suitable heating device, heating the closure, placing an electrotype shell in the backing pan, rubbing down the margin of the said shell and forming a liquid tight joint between the said margin and the surface of the backing pan, applying molten metal to the back of the shell to form a backing therefor, moving the heated closure to a point over the shell in the backing pan and causing said closure to exert pressure on the backing while it is in a molten state, cooling said backing and shell and finally removing the pressure from the shell and backing and removing the backed up shell.

2. The method of backing up electrotype shells in the art of electrotyping, consisting in moving the closure of a backing pan over a suitable heating device, heating the closure, placing an electrotype shell in the backing pan, rubbing down the back of the margin of the said shell and forming a liquid tight joint between the face of said margin and the surface of the backing pan, applying molten metal to the back of the shell to form a backing therefor, moving the heated closure to a point over the shell in the backing pan and causing said closure to exert pressure on the backing while it is in a molten state, cooling said backing and shell and finally removing the pressure from the shell and backing and removing the backed up shell.

In testimony whereof, I affix my signature in the presence of two witnesses.

GEORGE E. DUNTON.

Witnesses:
HENRY W. BECKER,
NETTIE F. FAIRCHILD.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**