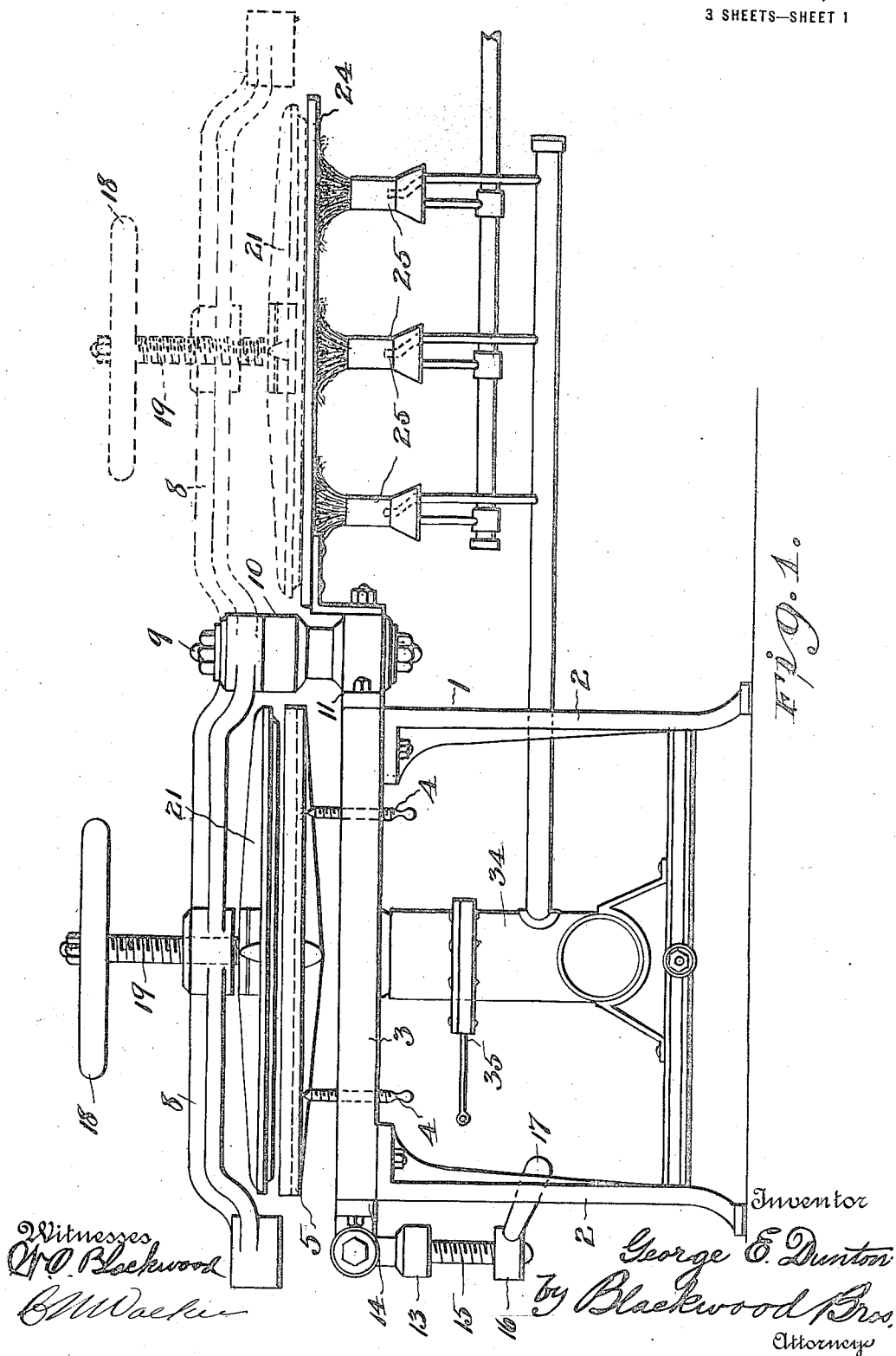


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3 SHEETS—SHEET 1

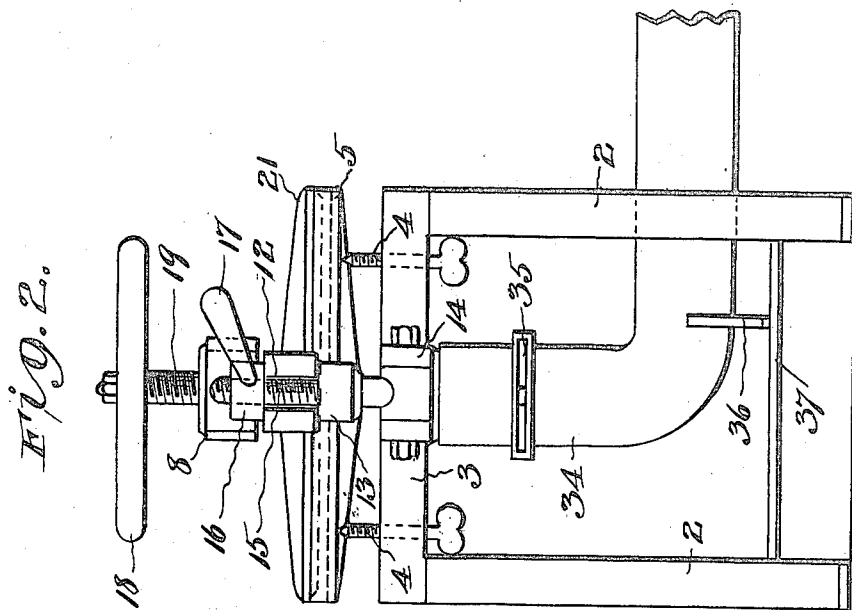
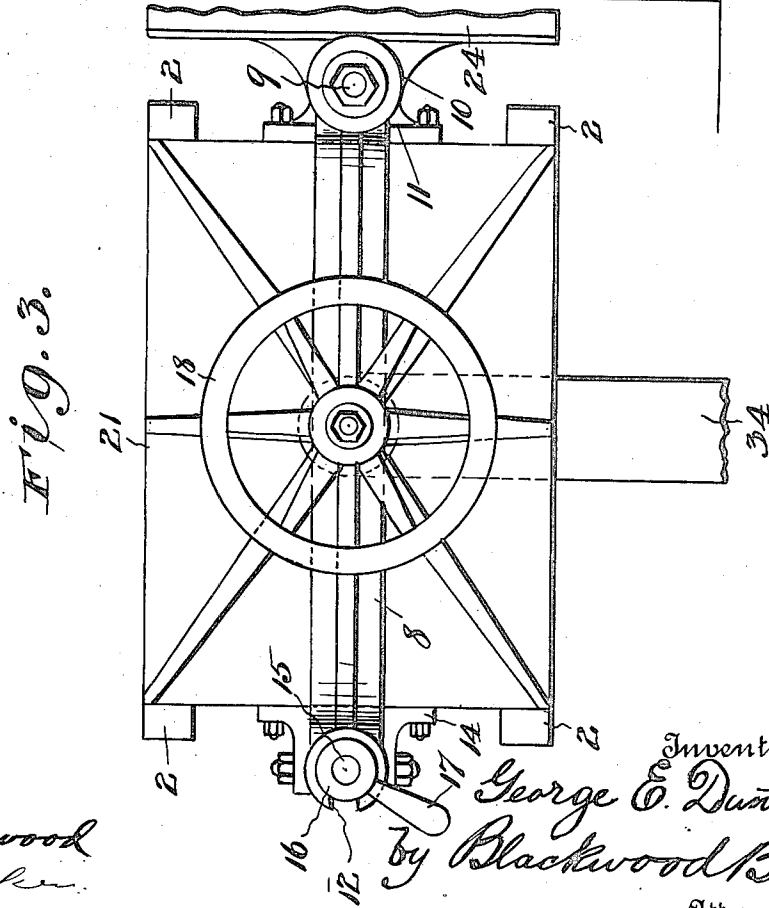


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Fig. 4.

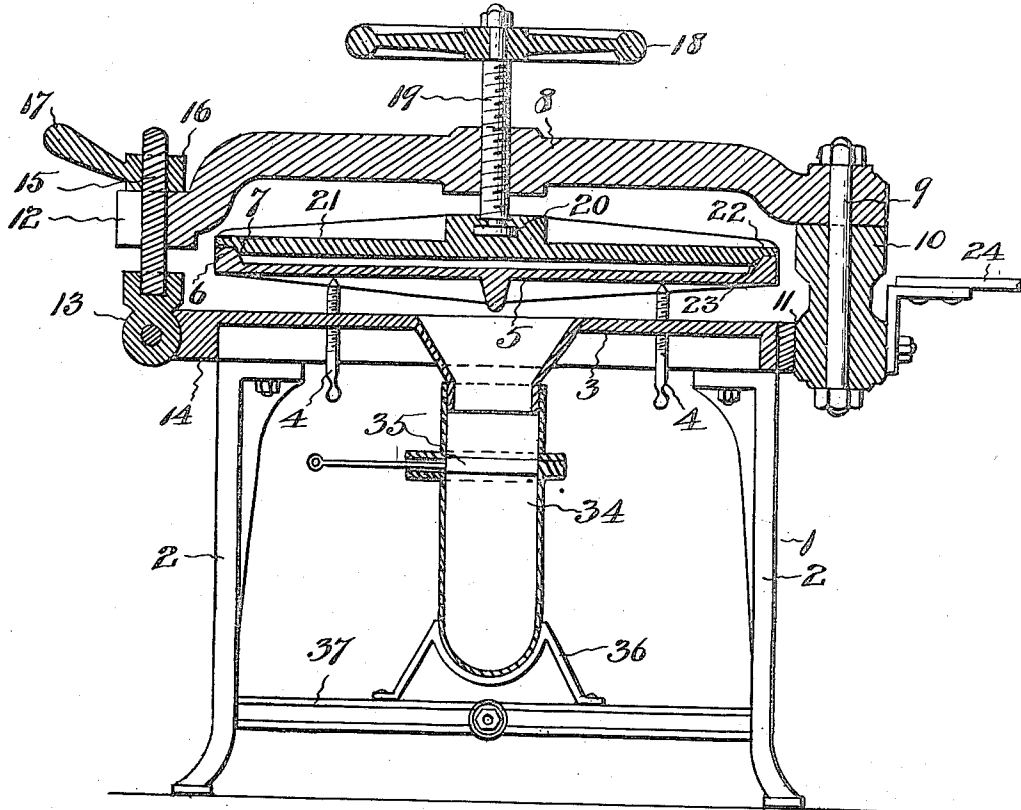
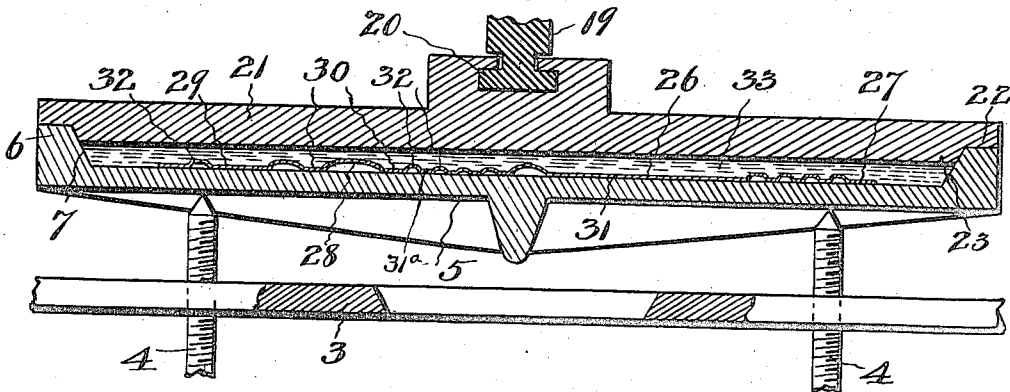


Fig. 5.



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UNITED STATES PATENT OFFICE.

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

APPARATUS FOR BACKING UP ELECTROTYPE-SHELLS IN THE ART OF ELECTROTYPING.

1,164,078.

Specification of Letters Patent.

Patented Dec. 14, 1915.

Application filed October 30, 1914. Serial No. 869,389.

To all whom it may concern:

Be it known that I, GEORGE E. DUNTON, residing at New York, in the county of New York and State of New York, a citizen of the United States, have invented a certain new and useful Improvement in Apparatus for Backing Up Electrotypes 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 improvement in apparatus for backing up electrotypes in the art of electrotyping.

It has for its object to provide an apparatus which will manipulate the backing, during the operation of backing up an electrotypeshell, in such a manner that the electrotypeshell will have a level, flat, smooth and perfectly even printing surface.

It further has for its object to provide an apparatus which will exert an even pressure on the backing of an electrotypeshell, while said backing is in a molten state, and maintain the pressure until the backing has cooled.

It further has for its object to provide an apparatus which will back up an electrotypeshell, 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 at the time of the cooling and setting of the backing metal.

It further has for its object to provide an apparatus which will exert pressure on the molten metal backing of an electrotypeshell, cause the face of the shell to be forced against the backing pan or receptacle, to form a smooth, even printing surface, and cool the shell and backing.

It still further has for its object to provide an apparatus for the purposes stated which is simple, inexpensive and durable in construction and easy and effective in operation.

If the shell and backing comprising the electrotypeshell, 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. To correct such defects in the surfaces of the printing plates, after the molten backing metal 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 flour 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 with which it comes in contact leaving the shrunken or indented surfaces dark, by which means the shrunken surfaces are readily and easily 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 and 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. This operation requires considerable skill and dexterity as too much hammering will cause the surface of the printing plate to become abraded, battered or flattened and if the blows are too heavy individual spots, corresponding to each blow, will appear in 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 time, I force the surface of the shell 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.

The invention consists in the several features and combination of features as more fully hereinafter described and claimed.

Referring to the drawings:—Figure 1 is a side elevation of my apparatus. 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 9 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 screw-threaded 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 screw-threaded shaft 19 having a flanged or enlarged lower end 20.

21 is the 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 or over a plate 24 heated by suitable gas burners 25, 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 large type or letter such as are used for news headings in the daily newspapers, 30 smaller types for subheadings, 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.

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

32 are 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.

33 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 depth desired, 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 34 is provided connected with an air pump or any other air forcing means, not shown, and 35 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 34 is supported in position under the backing pan or receptacle by means of a U-shaped brace 36 which in turn is supported on a brace 37 connecting the legs of the backing stand.

In performing the operation by my apparatus 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 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 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 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. 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 or required height to form or
 5 produce a backing of the proper thickness, the closure 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
 10 molten metal backing therein, pressure is then applied to the closure 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 under
 15 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
 20 which the closure 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
 25 with some suitable 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
 30 finishing room where it is sawed into pieces of the desired size and otherwise treated, but so far as the backing up operation goes this
 35 completes it.

The method is claimed in my application for patent filed Oct., 30th, 1914 Serial Number 869390.

I do not desire to be understood as limiting myself to the specific details of construction and arrangement as herein described and illustrated, as it is manifest that variations and modifications may be made in the features of construction and arrangement in
 40 the adaptation of the device to various conditions of use without departing from the spirit and scope of my invention and improvements. I therefore reserve the right to all such variations and modifications as
 45 properly fall within the scope of my invention and the terms of the following claims.

What I claim is:—

1. In an apparatus for backing up electrotrotype shells in the art of electrotyping, a
 55 backing stand, a backing pan thereon, a

movable yoke or arm provided with a closure for said backing pan, means secured to said backing stand for supporting the closure while being heated, said yoke or arm adapted to be moved to such positions as
 60 to cause the closure to engage the backing pan or the closure supporting means and means for heating said closure supporting means.

2. In an apparatus for backing up electrotrotype shells in the art of electrotyping, a backing stand, a backing pan thereon, a movable yoke or arm provided with a closure for said backing pan, a plate secured to said backing stand for supporting the closure while being heated, said yoke or arm adapted to be moved to such positions as to
 70 cause the closure to engage the backing pan or the plate and means for heating said plate.

3. In an apparatus for backing up electrotrotype shells in the art of electrotyping, a backing stand having a backing pan, a yoke or arm pivoted to said backing stand and provided with a closure for the backing pan, laterally extending means secured to said backing stand adapted to support the said closure, said yoke or arm adapted to be moved to such position as to cause the closure to engage the backing pan or the laterally extending means and means for heating the laterally extending means.

4. In an apparatus for backing up electrotrotype shells in the art of electrotyping, a backing stand, a backing pan adapted to contain an electrotrotype shell therein, means for rubbing the margin of said shell so as to seal and provide a liquid tight joint between the margin of the shell and the backing pan, a yoke or arm provided with a closure for said backing pan, means secured to said backing stand for supporting the closure while being heated, said yoke or arm adapted to be moved to such positions as to cause the closure to engage the backing pan or closure supporting means and means for heating the said closure supporting means.

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

GEORGE E. DUNTON.

Witnesses:

HENRY W. BECKER,
 NETTIE F. FAIRCHILD.