

(No Model.)

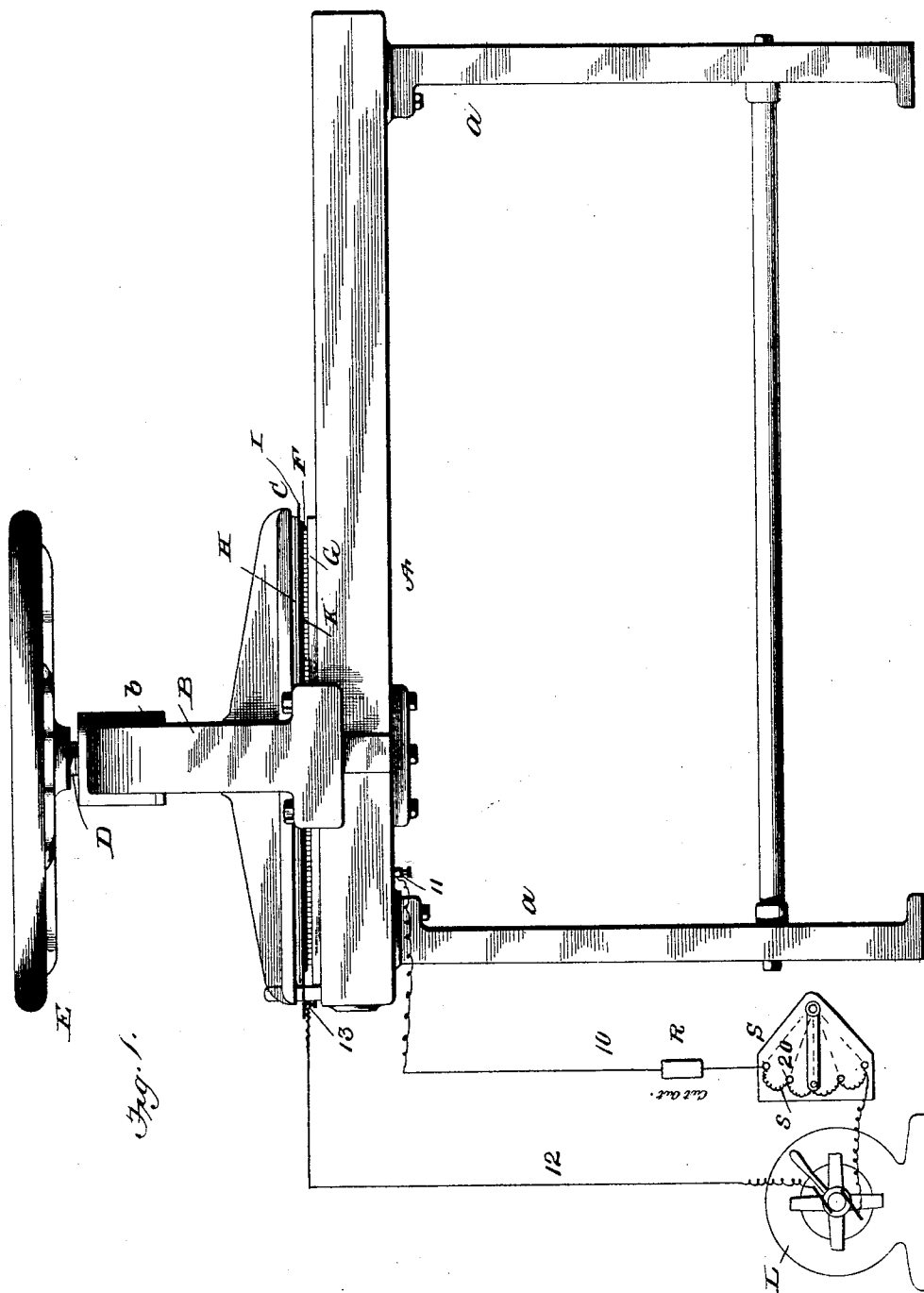
2 Sheets—Sheet 1.

H. A. W. WOOD.

METHOD OF SETTING STEREOTYPE MATRICES.

No. 560,882.

Patented May 26, 1896.



Witnesses

John G. Smith
Joseph C. Stack.

Inventor

H. A. W. Wood
by Louis W. Southgate
Attorney

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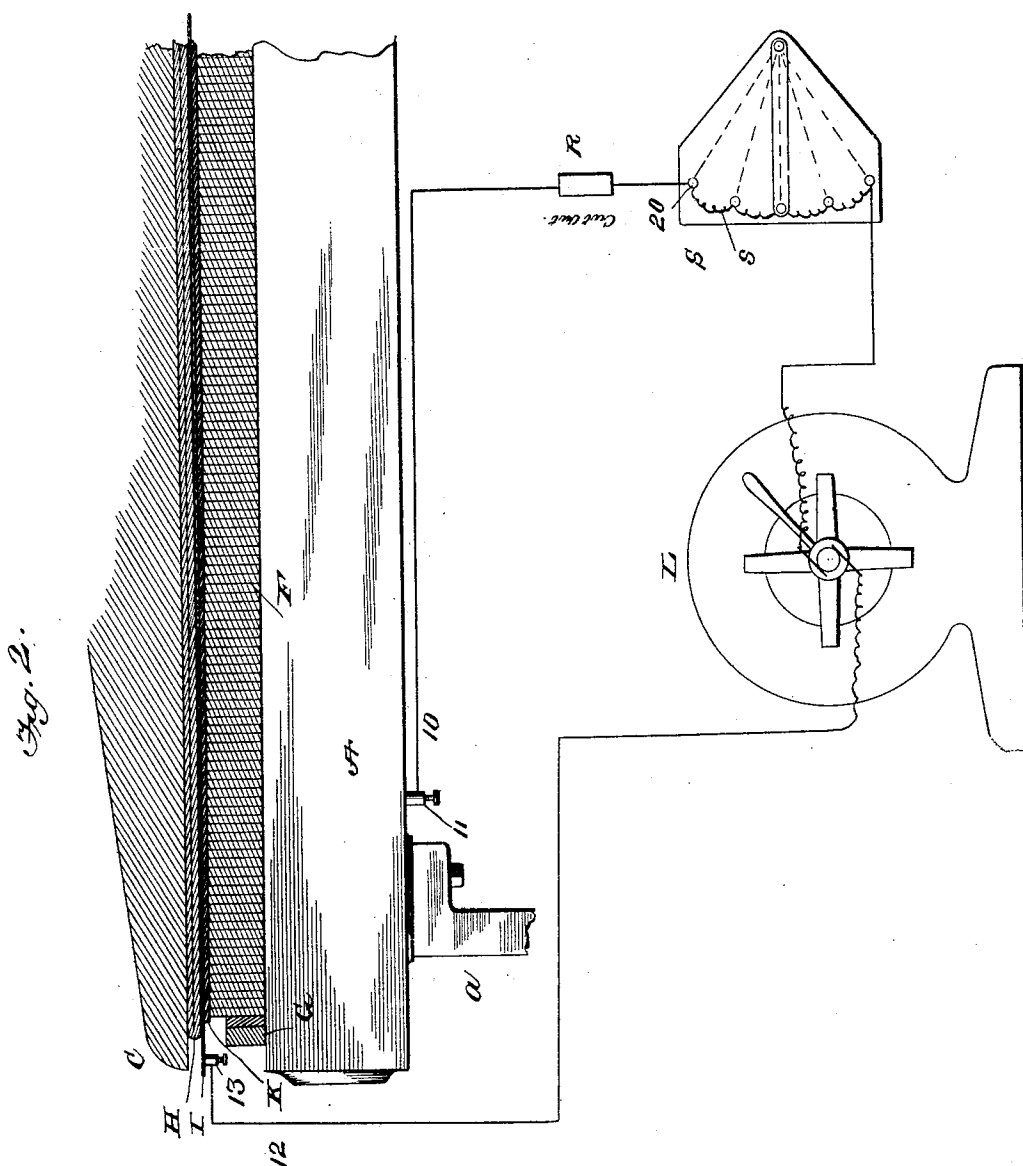
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UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR TO THE CAMPBELL PRINTING PRESS AND MANUFACTURING COMPANY, OF SAME PLACE.

METHOD OF SETTING STEREOTYPE-MATRICES.

SPECIFICATION forming part of Letters Patent No. 560,882, dated May 26, 1896.

Application filed August 5, 1893. Serial No. 482,470. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Improvement in Methods of Setting Stereotype-Matrices, of which the following is a specification.

The aim of this invention is to improve the art of stereotyping and especially relates to a new and improved method of setting or hardening the matrix so that the same may correctly retain the impression of the type and be rapidly prepared.

I have illustrated in the accompanying two sheets of drawings an apparatus by which my method may be practiced.

Referring to said drawings, Figure 1 represents an elevation and partly diagrammatic view of said apparatus, and Fig. 2 a sectional diagrammatic view of the same upon an enlarged scale.

My invention consists in a new and rapid method of and apparatus for setting the matrix and one by which a perfect delineation of the type may be retained without excessive damage to the body of the latter.

In the production of modern newspapers stereotyping plays an important part, in that it is the means by which the likeness of the printing-surface of ordinary type may be transferred from a flat to a curved surface in order that the principle of rotary printing may be employed.

The process of stereotyping consists, first, in the preparation of the "flog." This consists of several sheets of different thicknesses of paper, which are prepared damp and pasted together with a suitable preparation; second, in laying the flog or soft paper mass upon the face of the form of type; third, in impressing the face of the type into the flog, thereby molding the flog into a matrix; fourth, in hardening the matrix so that it may retain the impression of the type; fifth, in placing the matrix within a suitable receptacle and casting a plate from the molded surface of the matrix.

From the above it will appear that there are many operations between the reception

of the type and the casting of the stereotype-plate, and it is obvious that much time must be expended in such work.

The fourth step, as stated above, is ordinarily the one in which the most time is consumed and in which injury is easily done to the type. There are two methods by which this fourth step may be accomplished. One is the "hot" process, the other the "cold" process, so called. In the former the form of type, with the soft matrix upon it, is placed within a heated press for a period of time, during which the type and matrix are brought to such a temperature that whatever moisture is held in the matrix is expelled, thereby leaving the matrix hard and ready for the cast. In the cold process the matrix is stripped from the type while yet moist and is placed alone in a heated receptacle and there dried.

It is apparent that by the hot process more time is consumed than by the cold process, in that the entire form must be heated through before the matrix begins to dry, while in the cold process the heat is applied directly to the matrix without the intervention of the type. It is well known that the cold process is less injurious to the type than is the hot process, for the reason that in the latter process constant heating occurs, which in time distorts the body of the type and causes its ingredients in a measure to disintegrate. Therefore it would appear that, so far as time and economy in type are concerned, the cold process is preferable to the hot; yet, as a fact, the cold process is unpopular, for the reason that with it accurate results are impossible. This condition arises from the fact that the matrix, being hardened away from the type, shrinks and warps, thereby losing the truth of the original impression.

To summarize, it will appear that there are three objections to the present methods of matrix-making, first, the excess of time consumed in practicing the most accurate method; second, the injury to the type resulting from the practice of such method, and, third, the inaccuracy which must result if the first and second objections are obviated.

The object of my invention therefore is to reduce the time consumed in setting the ma-

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trix, to relieve the type of injury, and to produce a matrix which will retain in all perfection the original impression.

To this end I have discovered that if a current of electricity be properly applied to the matrix the latter will be not only rapidly but evenly hardened, and without such injury to the type as has heretofore resulted.

My method may be practiced as follows, reference being had to the accompanying drawings:

The flong is properly prepared and is pressed upon the type.

In the drawings, A represents the table or frame, supported by legs or framing *a*. Connected to the table is a bracket B, which carries a nut *b*, in which is tapped a screw D, which screw is connected to the platen C in the usual manner. The screw D may be operated by the hand-wheel E.

In the drawings, the body of the type is represented by F, and, as shown, is locked in a chase G.

The matrix is represented by K.

The matrix K may be prepared on the right-hand end of the table A, and the chase G with the type and matrix may together be slid under the platen C, where the matrix may be held firmly in contact with the type. It is while in this position that a current of electricity may be applied to the matrix. My usual method of operating this method is as follows: After impressing the matrix upon the form, which is done at the right-hand end of the table A, I lay upon the back of the matrix a sheet of conducting material I—such as, for instance, wire-gauze. (This should be of sufficient fineness to preclude its marring the matrix to any extent.) To one end of this conducting material a wire 12 is attached by means of binding-post 13. The other end of the wire 12 may be attached to a dynamo L or other source of electrical supply. After the conducting material is properly placed upon the matrix I lay thereupon several thicknesses of dry woolen blankets H. These are for the purpose of absorbing the moisture or gases as they are expelled from the matrix, and, if desired, may act as insulation between the plate I and the platen, or, if desired, the platen C may be insulated from the rest of the apparatus. The type F and its superstructure may now be slid along the table A to the position directly beneath the platen C. The table A, or at least the portion of it against which the type rests, is connected, by means of wire 10, binding-post 11, and switch S, to the dynamo L or to any other source of electrical supply which may be used and to which wire 12 connects. The platen C is now screwed firmly upon the blanketing or absorbing material H and the matrix and form brought under a state of pressure. Now if the current from the dynamo L or other source of supply is brought to bear for some period of time it will be found that the matrix will be hardened, re-

taining all the delicacy and accuracy of the original impression. The switchboard S may have a number of resistance-coils, through any number of which the current may be passed, whereby the volume of current may be regulated, as desired, by throwing the switch into any button 20. A cut-out R is also, preferably, interposed in the path of the wire 12 in order that the current may be cut off, in case of short-circuiting, whereby burning of the type will be prevented.

It will be found that a very good result may be obtained by dispensing with the absorbing material H and the flexible conducting-sheet I and placing directly upon the back of the matrix a conducting-plate of metal, through which the current may be passed. It will also be found that instead of the conducting-sheet I a film of black lead or other conducting-powder may be used. This will be found advantageous where there are deep depressions in the back of the matrix that are out of reach of the ordinary flexible sheet and may be used under a conducting-plate I or to form conducting medium by itself. Such a "backing conductor" may be made up as a paste or pulpy mass, if desired, and will after hardening form a very good stiffening for the depressions at the back of the matrix.

It will be observed in the practice of my method that the current hardens the matrix probably both by reduction and by heat, and also that it is found desirable as the resistance to the current increases to increase the current, thereby hastening the work.

By using a current of proper quantity and intensity the matrix may be set very quickly and with comparatively little heating of the type-body.

In some instances, as when very thick matrices are used, I may increase the conductivity of the same by mixing with the paste or otherwise embedding in the matrix or forming therein some suitable conductor—such, for instance, as powdered carbon or black lead. These steps, however, are not absolutely necessary, but may often be found advantageous. They constitute part of my invention, as does also a matrix having incorporated therein a suitable electrical conducting substance. Further, I may incorporate in the paste with which the flong is prepared or incorporate in the substance of the flong itself compounds that will harden or become set under the effect of the electrical current, such as plaster-of-paris or other compounds which will rapidly lose their plastic condition when moisture is expelled therefrom. This latter will be found suitable and desirable for certain classes of work where it is impracticable to use the ordinary ingredients.

In certain classes of work, for instance, a good result may be obtained by passing the current through the matrix alone or, again, by passing it through the matrix and through the type below or through the matrix and

through the conducting substance above; but the preferred way is to pass the current through the matrix while the same is in contact with and pressed upon the type, but it is within the scope of my invention to pass the current through the matrix while the matrix is out of contact with the type and removed therefrom. The matrix, for instance, may be stripped from the type while soft and placed either between plates or between layers of conducting paste or powder, to which the current is passed, or the paste or powder may be placed upon only one side of the matrix, if desired, and the current passed into the conducting material and out of the matrix or into the matrix and out of the conducting material.

The apparatus herein described may be greatly varied, and is shown simply as an illustration of one form by which my method may be carried out.

Of course it is to be understood that insulation may be provided for different parts of the apparatus.

The details of the apparatus and the method may be greatly varied either by a skilled mechanic or one skilled in the art of stereotyping without departing from the scope of my invention.

I do not intend to limit myself to any one or all of the devices or arrangements herein shown and described.

It is to be understood that either an alternating or a continuous current of electricity may be used. It is also to be understood that ingredients other than water may be used in the preparation of the flog—as, for instance, alcohol or ether.

By the term “moisture,” as used in the claims, I mean to imply any substance which will render the flog plastic.

In using the word “type,” I mean to imply any surface which is capable of giving forth a printed impression, whether it be a woodcut or metal type, or whether it be in relief or intaglio.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The method herein described of setting or hardening matrices, which consists in passing an electric current through the same, substantially as described.

2. The method of setting or hardening matrices, which consists in freeing the moisture therein contained by passing an electric current through the same, substantially as described.

3. The method of setting or hardening matrices, which consists in freeing the moisture

contained in the matrix by the passage of an electrical current through the matrix, while the matrix is in contact with the type.

4. The method of setting or hardening matrices, which consists in passing an electrical current through the matrix while it is in contact with the type and pressed thereon.

5. The method of setting or hardening matrices, which consists in molding the matrix onto the type, then finally pressing or holding the matrix to the type, and at the same time, passing a current of electricity through the matrix.

6. The method of setting or hardening matrices, which consists in passing an electrical current through the matrix, and in varying the current as the resistance of the matrix varies.

7. The method of setting or hardening matrices, which consists in placing a conducting substance on the back of the matrix, and in then passing an electrical current through the matrix and backing.

8. The method of setting or hardening matrices, which consists in filling the depressions on the back of the matrix with a conforming conducting substance, and in passing an electrical current through the matrix and backing.

9. The method of setting or hardening matrices, which consists in embodying in the flog, a suitable conducting substance, and in passing an electrical current through the same after molding.

10. The method of setting or hardening matrices, which consists in applying to the back of the matrix a suitable absorbing material, and in driving the moisture from the matrix into said absorbing material by passing a current of electricity through the matrix, substantially as described.

11. A flog or matrix having embedded therein a compound, which will set or harden when an electrical current is passed through the same, substantially as described.

12. The apparatus herein described for setting or hardening matrices by electricity, consisting of a press, and a suitable conducting plate or medium as I, which can be laid on the back of the matrix, and suitable electrical connections.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

H. A. WISE WOOD.

Witnesses:

H. W. COZZENS, Jr.,
JAMES J. MCGRATH.