(No Model.) 2 Sheets—Sheet 1.

L. W. SOUTHGATE.

METHOD OF AND APPARATUS FOR FORMING AND DRYING STEREOTYPE MATRICES.

No. 582,833. Patented May 18, 1897.

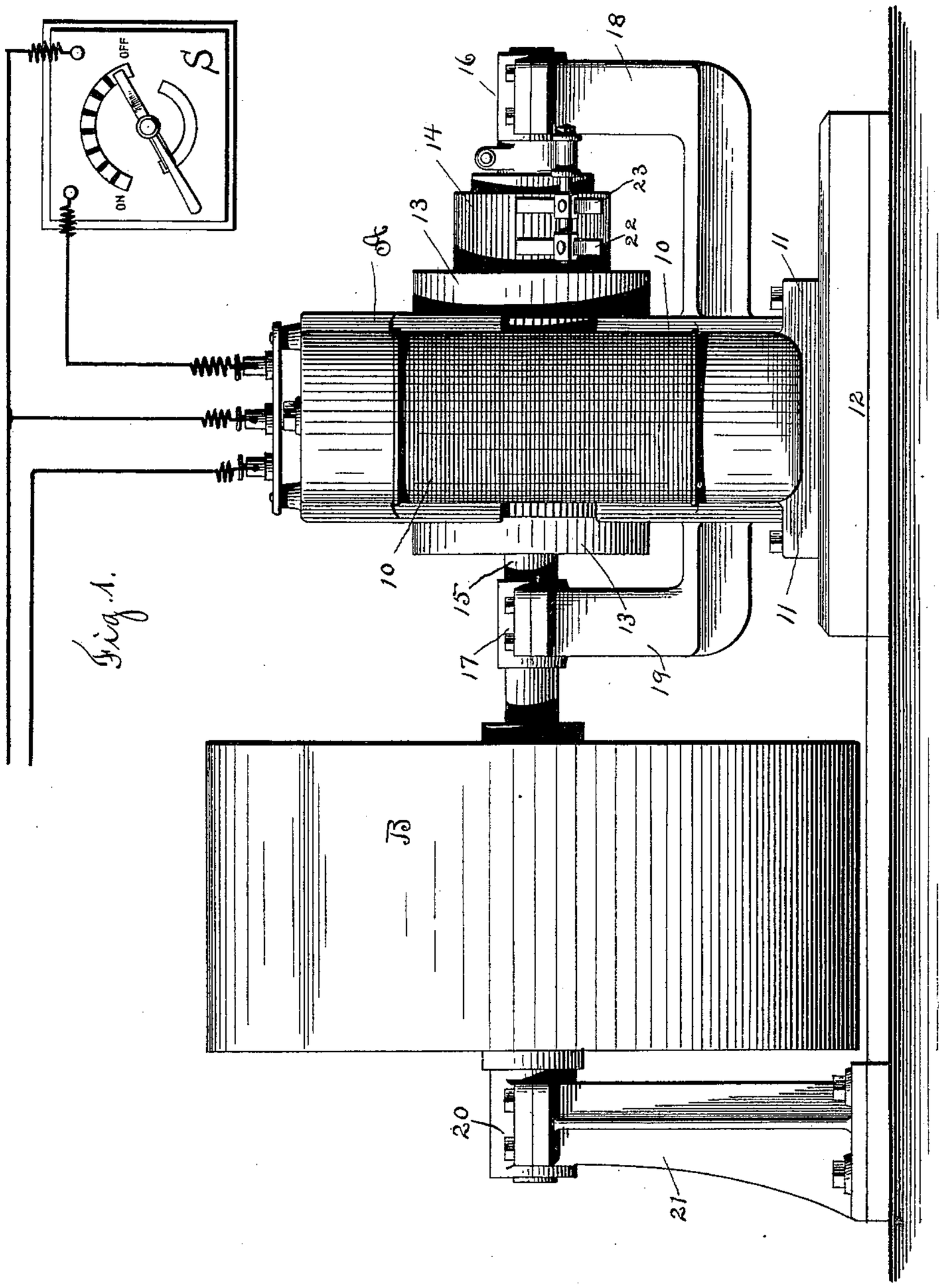

Fig. 1.

Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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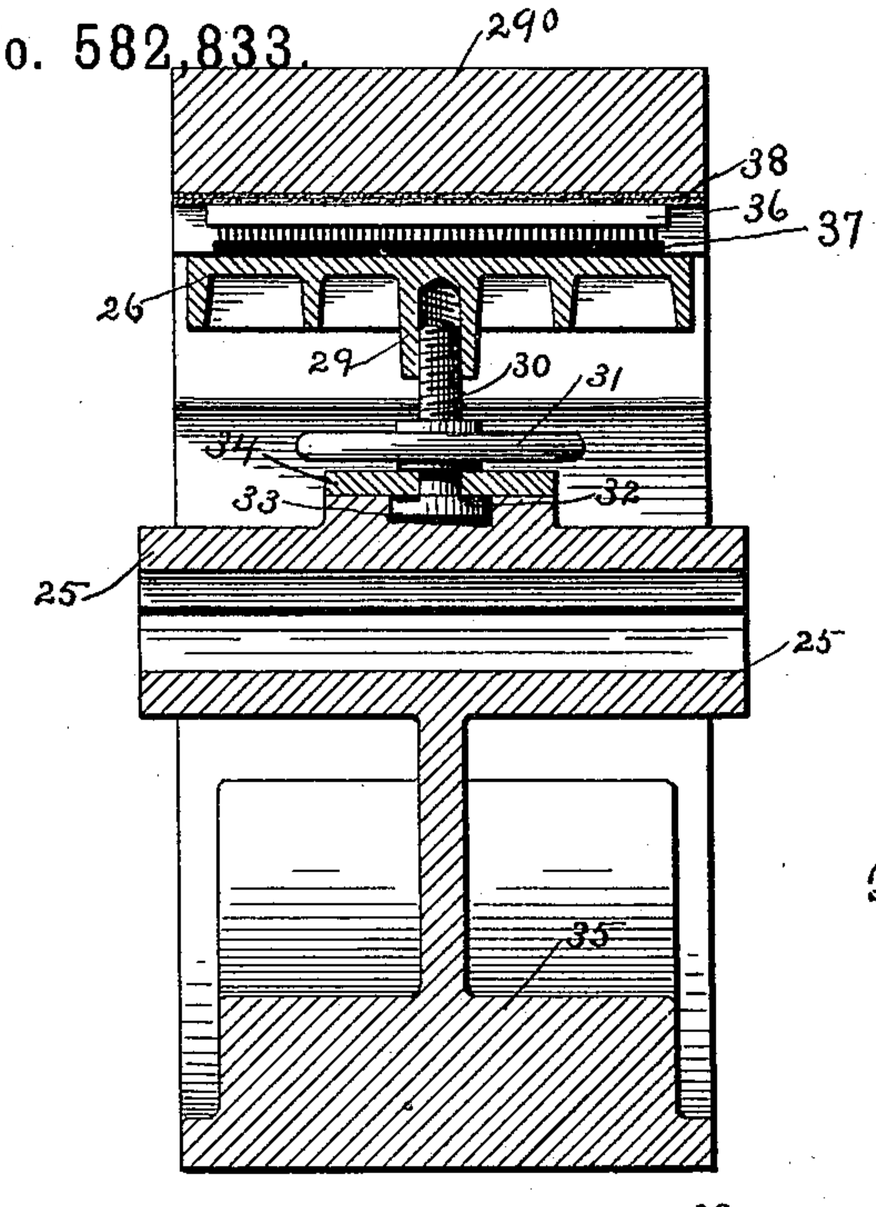

Fig. 4.

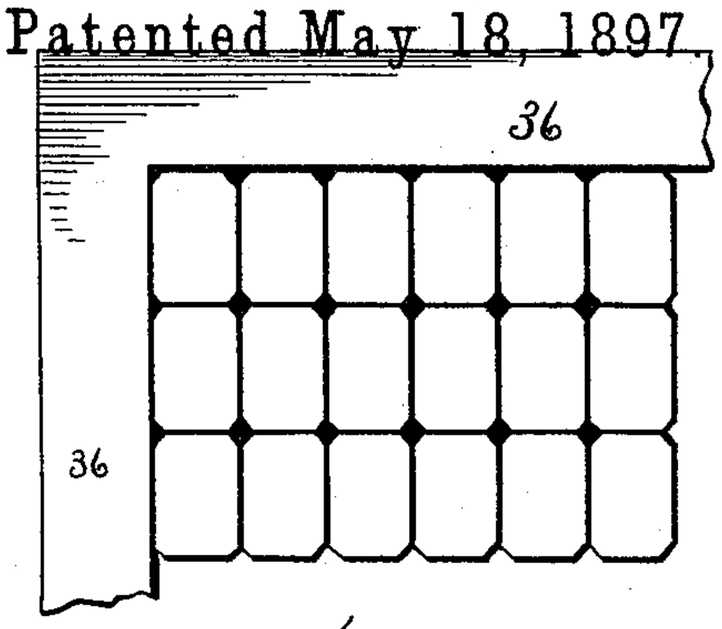

Fig. 5.

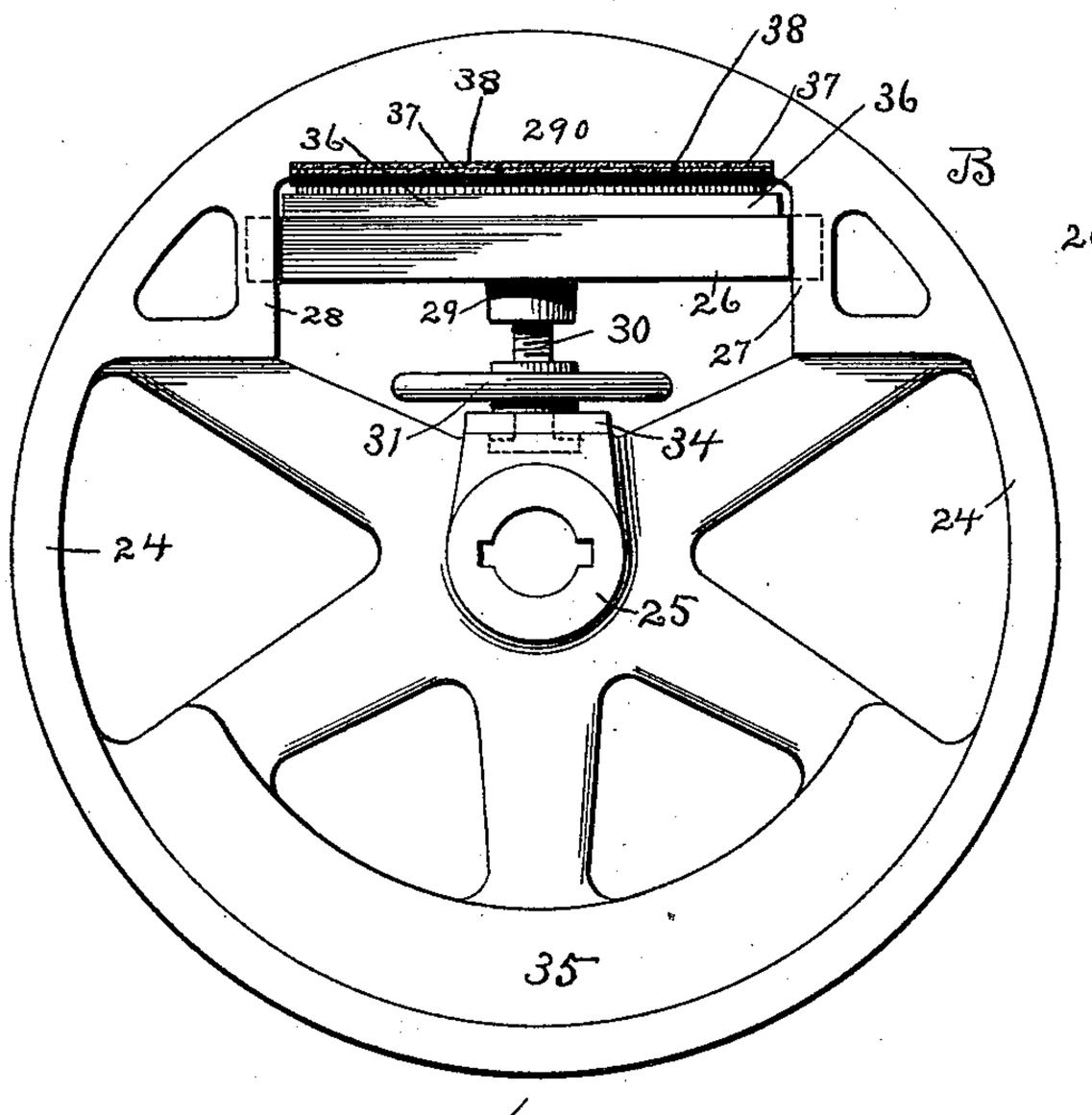

Fig. 2.

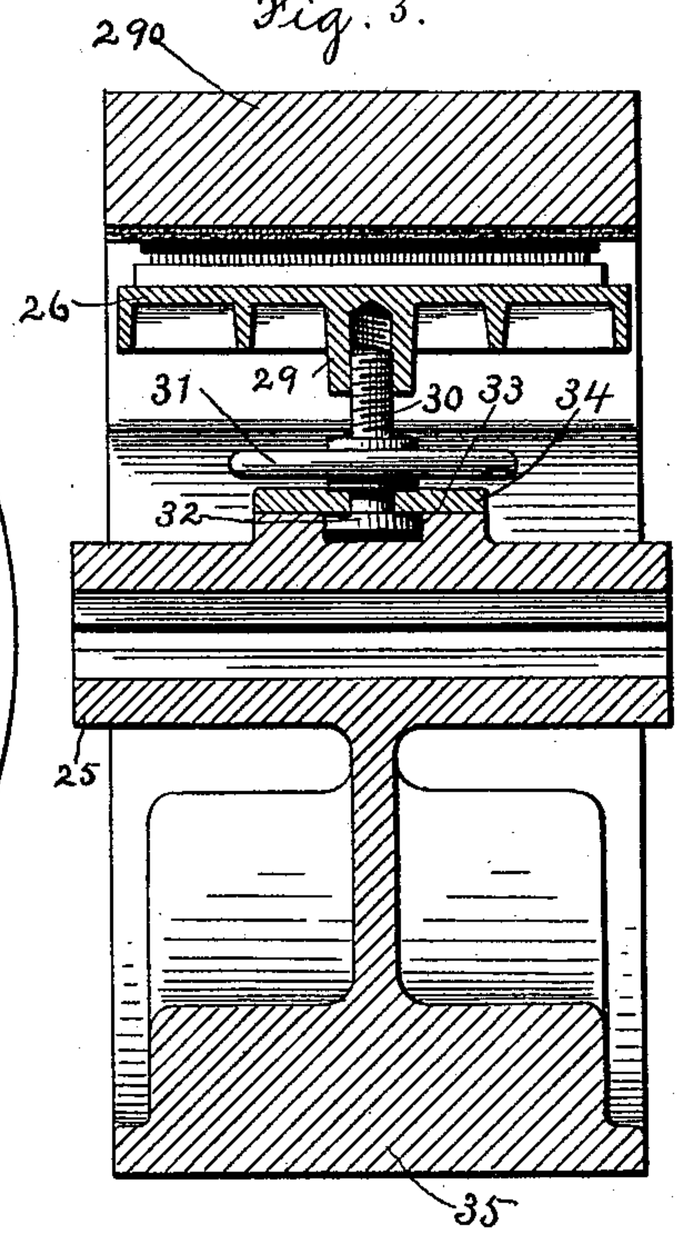

Fig. 3.

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UNITED STATES PATENT OFFICE.

LOUIS W. SOUTHGATE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE CAMPBELL PRINTING PRESS AND MANUFACTURING COMPANY, OF NEW YORK, N. Y.

METHOD OF AND APPARATUS FOR FORMING AND DRYING STEREOTYPE-MATRICES.

SPECIFICATION forming part of Letters Patent No. 582,833, dated May 18, 1897.

Application filed February 19, 1894. Serial No. 500,801. (No model.)

To all whom it may concern:

Be it known that I, LOUIS W. SOUTHGATE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Methods of and Apparatus for Forming and Drying Stereotype-Matrices, of which the following is a specification.

The object of my invention is to improve the methods of forming and drying stereotype-matrices; and my invention is especially applicable to newspaper-work.

In newspaper-work stereotype-matrices are at present formed in two ways. In the more ordinary method, known as the "hot" process, a moist flong, formed of plastic material, usually of several thicknesses of tissue-paper, is first beaten onto a form of type, and then the type and moist flong are heated to dry the matrix in contact with the type. This method is objectionable, as the ordinary type-metal type are necessarily injured by heat, and in this process considerable time is required to properly dry the matrix. The other method that has been suggested is known as the "cold" process. In this method a moist flong of plastic material is beaten onto a form of type and is then removed from the type and heated while not in contact with the form. This method is objectionable, however, as it has been found that the moist flong will shrink and warp during the drying process unless it is held in contact with the type.

In newspaper-work the question of time is important, and efforts have been made to discover some shorter method of forming stereotype-matrices.

The object of my invention is to overcome the objections above noted; and my invention consists in impressing the type into a moist flong and expelling the moisture from the flong by means of centrifugal force.

My invention further consists in an apparatus for carrying out these methods.

In the accompanying drawings, Figure 1 is a side elevation of a centrifugal matrix forming and drying apparatus and a motor for driving the same. Fig. 2 is a side elevation of the centrifugal apparatus, showing the type-form, flong, and absorbent blankets in position. Fig. 3 is a central vertical section of the same. Fig. 4 is a view similar to Fig. 3, showing a different relative arrangement of the type-form, flong, and blankets; and Fig. 5 is a fragmentary view showing one form of type which I may employ.

Referring to the drawings and in detail, A designates a motor for rotating a suitable centrifugal apparatus B.

For rotating the centrifugal apparatus B, I preferably employ an electric motor, although it is evident that any suitable source of power may be employed.

As shown in the drawings, the electric motor A is provided with field-magnets 10, carried on a base-plate 11, which is bolted to a foundation-plate 12, and the motor may be controlled by a suitable switch, as shown. The armature 13 of the electric motor is carried upon a shaft 15, journaled in boxes 16 and 17, which are supported by the brackets 18 and 19.

14 designates a commutator, and 22 and 23 designate the brushes, which may be connected to any suitable source of electrical energy.

The shaft 15 of the armature is extended beyond the box 17 and at its end is supported by a box 20, carried by a bracket 21, which may be bolted to a foundation, as shown.

B designates a centrifugal matrix forming and drying apparatus, which is splined or fastened to the shaft 15 between the boxes 17 and 20.

The centrifugal apparatus B is preferably made in the form of a wheel, having a rim portion 24 connected to a hub 25 by means of suitable spokes, as shown, and also has formed or secured thereto a suitable counterweight 35. A movable platen 26 is mounted on ways 27 and 28 and coöperates with a pressure plate or section 290, formed in the rim 24. Near the center of the platen 26 is formed a threaded boss 29, which engages a a suitable screw 30. This screw 30 is provided with an operating-handle 31 and with a circular head 32, which fits loosely into a

socket 33, formed on the hub 25. The circular head 32 is retained in place by means of a cover or plate 34, as shown. These parts are fitted loosely in order that the platen 26 may move outwardly under the influence of centrifugal force.

With an apparatus thus constructed my method of forming and drying matrices may be practiced as follows: The platen 26 is lowered by operating the hand-wheel 31, and on the platen 26 is placed a form of type 36, from which it is desired to form a matrix. Above the form 36 I then place the moist flong 37, and on top of the flong I may place a number of blankets 38, preferably of absorbent material. The platen 26 is then raised by means of the hand-wheel 31, and the parts are firmly clamped in position against the surface 290. The motor is then started and is preferably run at a high rate of speed, when the form of type on account of centrifugal action will be firmly pressed by centrifugal action into the flong 37, and the moisture of the flong will be quickly expelled, being partly absorbed by the blankets 38. By means of this method it will be seen that I am able to form a stereotype-matrix very expeditiously, and that the moist flong will be dried by centrifugal action without exposing the type to the injurious influence of heat.

In some cases, especially where fine work is required, I contemplate beating the flong into the interstices in the type before placing the same in the centrifugal apparatus and then using the apparatus for the purpose of drying the matrix rather than for the purpose of impressing the type into the flong.

In Fig. 4 I have illustrated a different relative arrangement of the type-form, the flong, and the absorbent blankets, which can be used, if desired. In this arrangement the flong is placed directly upon the platen 26, and the type-form is placed face downward upon the flong, and the absorbent blankets are arranged above the type-form. When this relative arrangement is employed, it is desirable that a perforated form of type should be employed in order that moisture may readily pass through the same and into the absorbent blankets 38.

One way in which a perforated form of type can be formed is by filing or cutting off the corners of the type, and such an arrangement is illustrated in Fig. 5, but other ways of forming perforated type-forms can be used, if desired.

It is to be understood that by the use of the terms "type" and "type-forms" I desire to cover any surface which is capable of giving an impression, whether it be a woodcut or metal type, or whether it be in relief or intaglio.

I am aware that many different forms of apparatus can be used for carrying out my improved methods by those who are skilled in the art.

The centrifugal apparatus can be arranged vertically or horizontally and may be driven by almost any suitable source of power.

An especial advantage of my invention resides in the fact that each type will be forced outwardly with the same pressure from the centrifugal action, and thereby a very nice matrix will be formed, as the spring of the platen is thereby eliminated. This spring of the platen occurs in the ordinary methods where the platen is pressed down at practically only one point on the type.

When driven at low speeds, centrifugal force may be employed to form a matrix without drying the same, and, as has been pointed out, it is within the scope of my invention to beat the flong into the interstices of the type before the same is placed in the centrifugal apparatus for the purpose of drying the flong.

I do not wish, therefore, to be limited to the construction which I have shown and described; but

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The herein-described method of molding and drying stereotype-matrices, which consists in placing the flong in contact with the type, and in then rotating the flong and type while in contact, thereby simultaneously impressing the type into the flong and expelling the moisture from the flong, substantially as described.

2. The herein-described method of drying stereotype-matrices, which consists in placing the matrix against an absorbent material, and in rotating the matrix and absorbent material to force the moisture from the matrix into said absorbent material.

3. The herein-described method of drying stereotype-matrices, which consists in placing the flong on the type, placing an absorbent material on the flong, and then rotating the type, flong and absorbent material to force the type by centrifugal action into the flong, and to drive the moisture from the flong into the absorbent material.

4. In an apparatus for forming stereotype-matrices, the combination with means for forcing a flong into contact with the type, of means for rotating the flong and type while in contact, substantially as described.

5. In an apparatus for forming stereotype-matrices, the combination of a platen and pressure-plate between which the flong can be placed, and means for rotating the parts, substantially as described.

6. In an apparatus for drying matrices, the combination of means for holding a flong against a form of type, and means for rotating the flong in contact with the type, substantially as described.

7. In an apparatus for forming and drying stereotype-matrices, the combination with a platen adapted to receive a form of type, and a flong, of a screw for adjusting said platen, and means for rotating the platen, substantially as described.

8. The combination of a perforated form of type with means for rotating the perforated form while in contact with a moist flong, substantially as described.

9. An apparatus for manipulating stereotype-matrices made in the form of a fly-wheel, and having arranged therein a platen and pressure-plate, substantially as described.

10. An apparatus for manipulating stereotype-matrices made in the form of a fly-wheel, and having arranged therein, a pressure-plate and a platen, the platen being free to have a slight movement under centrifugal action, substantially as described.

11. An apparatus for manipulating stereotype-matrices made in the form of a fly-wheel, and having a platen and pressure-plate arranged therein, and a counterweight arranged to balance the platen and pressure-plate, substantially as described.

12. An apparatus for drying stereotype-matrices made in the form of a fly-wheel, and having a pressure-plate and platen arranged therein, and a screw for adjusting the platen relatively to the pressure-plate, the screw being mounted so as to allow the platen to have a slight movement under centrifugal pressure, substantially as described.

13. An apparatus for manipulating stereotype-matrices made in the form of a fly-wheel, and having a pressure-plate and platen arranged therein, and suitable guides for guiding and holding the platen in proper position relatively to the pressure-plate, substantially as described.

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

LOUIS W. SOUTHGATE.

Witnesses:
R. H. SOUTHGATE,
E. M. HEALY.