APPARATUS FOR PREPARING MATRIX SHEETS FOR THE REPRODUCTION OF WRITTEN MUSIC OR THE LIKE.

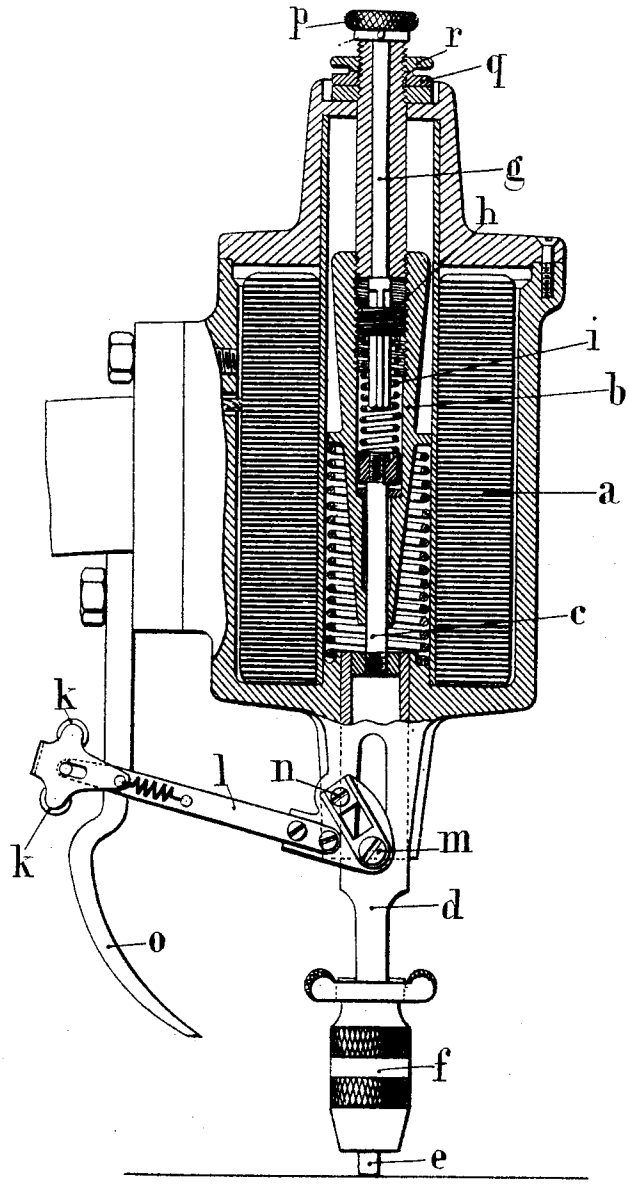
APPLICATION FILED JAN. 8, 1908.

956,312.

Patented Apr. 26, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



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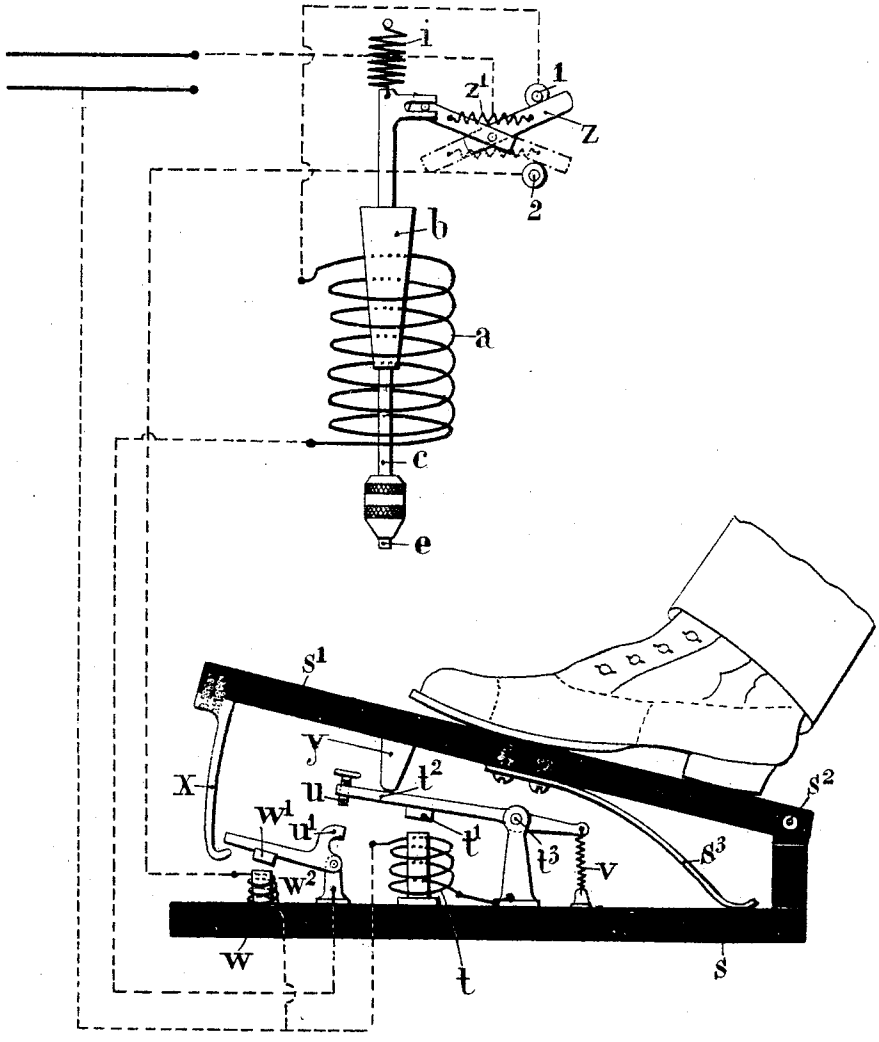
2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PREPARING MATRIX-SHEETS FOR THE REPRODUCTION OF WRITTEN MUSIC OR THE LIKE.

956,312. Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed January 8, 1908. Serial No. 409,787.

To all whom it may concern:

Be it known that I, FRANÇOIS DOGILBERT, of 18 Rue Oberkampf, in the city of Paris, Republic of France, printer, have invented an Improved Apparatus for Preparing Matrix-Sheets for the Reproduction of Written Music or the Like, of which the following is a full, clear, and exact description.

This invention relates to an improved apparatus for printing suitable surfaces by means of suitable characters or type, but the said machine is more particularly suitable for the preparation of matrix sheets intended for use in the reproduction of written music. The said improved apparatus or machine is electrically operated and is provided with a controlling arrangement by which great regularity in the action exercised by the character or type on the surface to be printed upon or stamped, is obtained automatically.

The invention is represented in the accompanying drawing in which:

Figure 1 shows, in vertical section, a view of the machine head with the arrangements for operating the type carrying bar. Fig. 2 shows, diagrammatically, a machine provided with a pedal for closing the electric operating circuit.

As shown in Fig. 1: *a* is a solenoid traversed, at the desired moment, as will be hereinafter shown, by a current of sufficient intensity which acts on the conical core *b*. This core can slide on the rod *c* which is rigidly attached to the type carrier *d*. The type *e* is mounted on this part preferably by means of a universal instantaneously gripping chuck *f*. A rod *g* acting on a nut or screw-threaded abutment *h* engages in a screw-threaded part of the cone *b*, when it is turned in the proper direction, compresses or extends a spring *i* arranged between the rod *c* and the nut *h*. The parts being thus arranged it will be understood that when the cone *b* is attracted by the solenoid and descends, the type carrier rod *c* also descends and brings the type into contact with the matrix sheet which is to be printed upon and presses the same thereon, as shown in Fig. 1. Commencing from the moment at which the type is brought into contact with the matrix sheet, the cone *b* continues to descend and compresses the spring *i* in such a manner as to gradually increase, until a desired maximum is attained, the pressure of the type on the matrix sheet, and there is thus obtained a very clear impression avoiding any hard or rough blow which would give rise to many inconveniences, as much from the point of view of the wearing out of the tool, as from what concerns the beauty of the impression and the precision of the blow which is especially indispensable in the case of printing musical signs.

The machine hereinabove described also comprises accessory parts necessary for inking the character and for putting the paper or other matrix sheet on which the impression is to be made, into proper position. In the machine illustrated in the drawing, the inking is effected by rollers *k* mounted on levers *l* receiving an oscillatory movement corresponding to that of the rod *c* by means of a slide carried by the latter and in which a collar or pin *m* carried by a lever *l*, is in engagement. In its to and fro movement, the lever *l*, oscillating about its axis *n*, causes the rollers *k* to pass over an inking table *o* and afterward brings them beneath the type *e* which is thus charged with ink before being applied to the matrix sheet. The rod *g* which permits the tension of the spring *i* to be adjusted, and consequently permits regulation of the force of the blow and the strength of the pressure with which the type is applied to the matrix sheet, is terminated by an adjusting button *p*, which can, as an increased measure of precaution, be secured by lock nuts *q*, *r*.

In order that it may be operated, it is evidently necessary that the machine herein described should be supplied, at the moment when it is desired to strike the blow, with a suitable electric current traversing the bobbin of the solenoid *a*. The regularity of the blow evidently depends on the proper operation of the contact effected in the apparatus. Fig. 2 shows a pedal which fulfils, from this point of view, all the required conditions and which, combining its action with that of the electro-mechanical arrangement hereinabove described, permits perfect work to be obtained. This arrangement comprises a piece of wood or other equivalent material *s* which is fixed and rests on the ground. A second piece of wood or other equivalent material *s'* is articulated thereto at s^2 and is operated by the foot of the operator. Normally the piece or pedal *s'* is held raised by a spring s^3.

An electro magnet t mounted in series with the bobbin a of the machine establishes contact between two pieces u and u' when the circuit is closed. For this purpose, the armature t' of the electro magnet t is mounted on a balance-arm t^2 pivoted at t^3 and controlled by a spring v. A second electro magnet w, with thin wire windings, intended to break the contact between u and u', acts on the armature w' mounted on a bell crank lever w^2 beneath which a hook x attached to the pedal s' can engage. The parts being thus arranged, when the pedal s' is depressed, the tappet y lowers the balance arm t^2 and closes the contacts u, u' which remain closed on account of the attraction of the armature t' by the electro magnet t. In this position of the various parts, current passes through the solenoid a and the core b being attracted it strikes the type upon the matrix sheet, as has been hereinabove explained. If the foot of the operator is kept on the pedal, an automatic interrupter z operated by the solenoid a and comprising two blades pivoted together and connected by a spring z', closes the circuit through the terminal 2 instead of through the terminal 1. The circuit through the solenoid a is thus broken and, on the contrary, a current is sent through the shunt circuit in which the electro magnet w is included. The latter attracts the armature w', breaks the contacts between u and u', and the machine can thus only strike one blow at a time. In order to make another impression, it is necessary first to permit the pedal s' to rise, whereby the hook x brings the bell crank lever w^2 back to its original position, and the balance arm t^2 is returned to its position of rest under the action of the spring v. If, moreover, in place of continuing to press on the pedal s', this pedal is simply given a blow, the armature t' remains attached to the electro magnet t and the balance arm t^2 will return to its original position only after the machine has broken the circuit. The circuit is broken in this case by means of the commutator z, which on the downward movement of the core closes the circuit through the magnet w, thus depressing the armature w' and breaking the contact between the parts u and u'.

It is to be understood that the device is not limited to any special kind of type, and that instead of printing the type, as described, it can also be used for printing a whole stave; in this latter case the ordinary type is replaced in the type holder by a block provided with the five necessary lines or with five distinct fillets adapted to print the stave.

Claims:

1. In a device of the class described, a solenoid, a type carrier connected with the core thereof, a circuit in which the solenoid is interposed, a swinging arm forming one of the terminals therewith, a magnet interposed in the circuit and acting on the arm, an elbow lever to which the other terminal is connected and with one arm of which the free end of the swinging arm contacts to close the circuit, a shunt circuit closed by the operative movement of the solenoid core, a second magnet interposed in the shunt circuit and acting on another arm of the elbow lever to break the main circuit, means movable in one direction for operating the swinging lever to close the circuit, and means operated by the reverse movement of the said means to move the elbow lever away from the magnet.

2. In a device of the class described, a solenoid, a type carrier yieldingly connected to the core thereof, a circuit in which the solenoid is interposed, mechanical means for closing the circuit, a magnet interposed in the circuit for retaining the circuit closed, and means operated by the movement of the core for interrupting the circuit.

3. In a device of the class described, a solenoid, a type carrier connected with the core thereof, a circuit in which the solenoid is interposed, a treadle, means whereby the movement of the treadle in one direction will close the circuit, a magnet interposed in the circuit for retaining said circuit closed, means operated by the reverse movement of the treadle for opening the circuit and means operated by the movement of the solenoid for opening said circuit.

The foregoing specification of my improved apparatus for preparing matrix sheets for the reproduction of written music or the like signed by me this 13th day of December 1907.

FRANÇOIS DOGILBERT.

Witnesses:
H. C. Coxe,
Maurice H. Pignet.