

Jan. 23, 1923.

1,443,107

T. WALTON.
APPARATUS FOR PRINTING OR COPYING MUSIC AND THE LIKE.
FILED FEB. 19, 1920.

4 SHEETS-SHEET 2

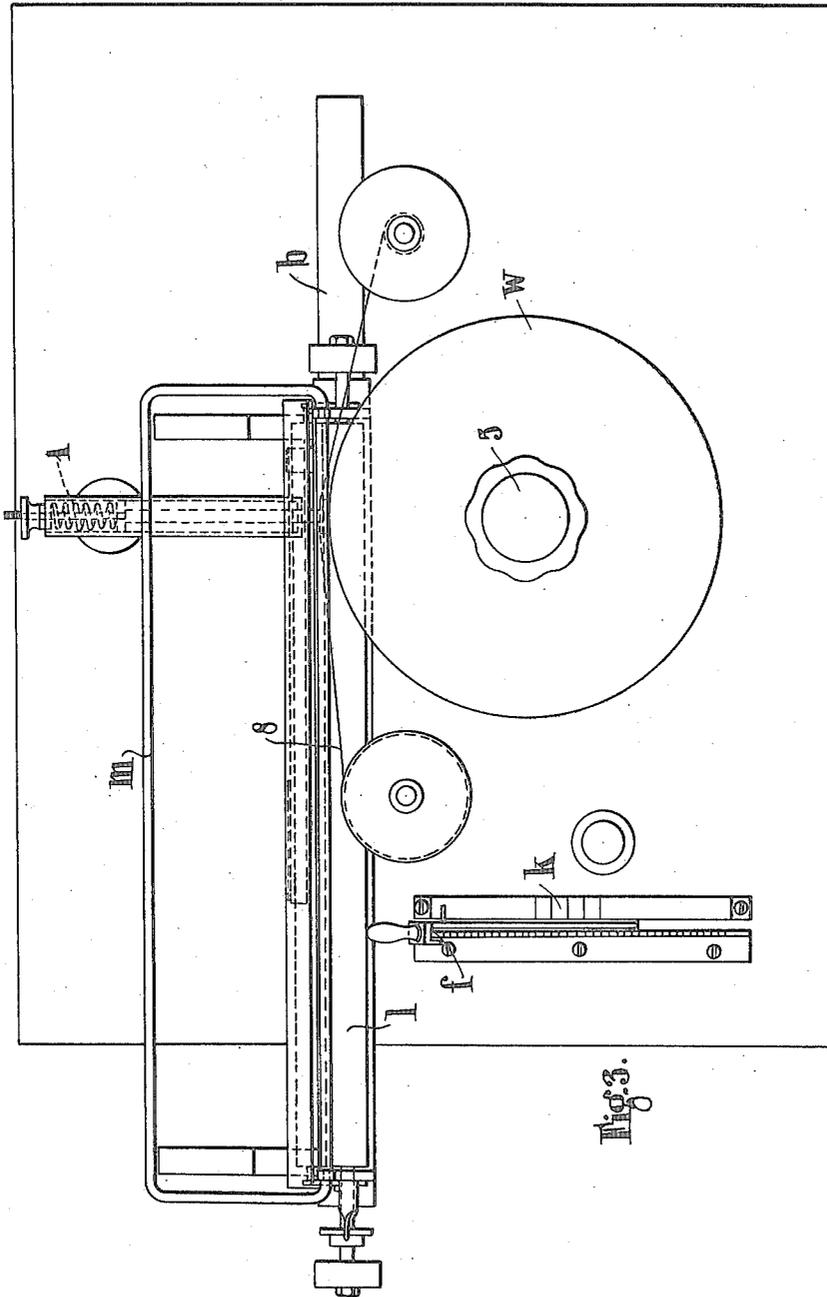


Fig. 3.

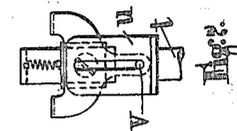
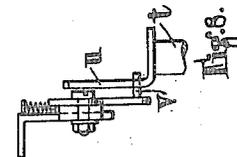
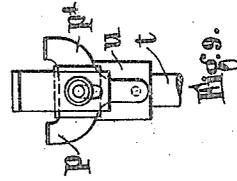
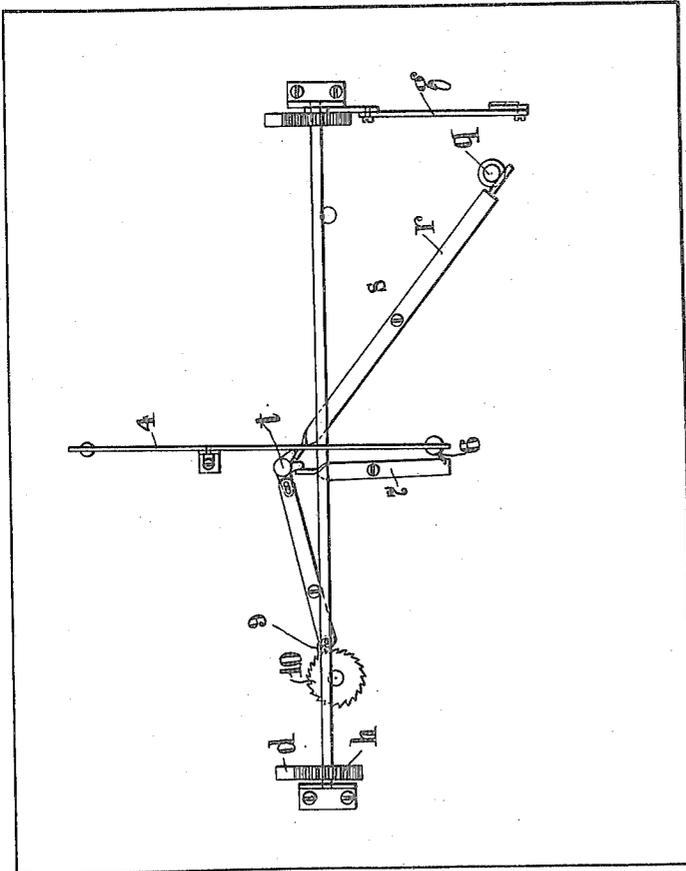
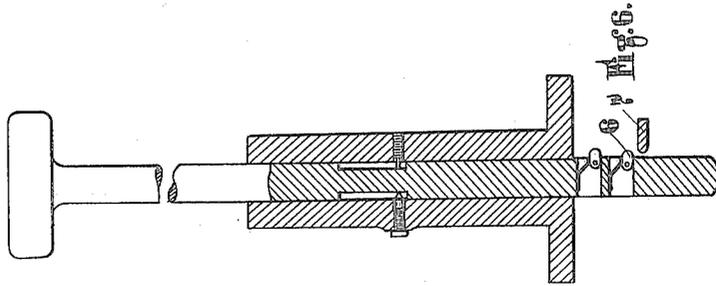
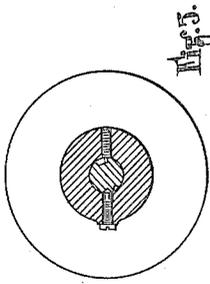
INVENTOR
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H. R. Kerslake
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4 SHEETS-SHEET 3



13Y

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ATTORNEY

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4 SHEETS-SHEET 4

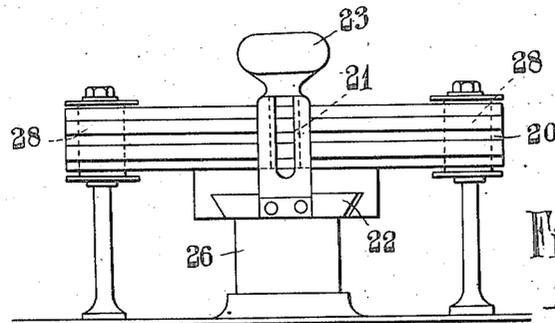
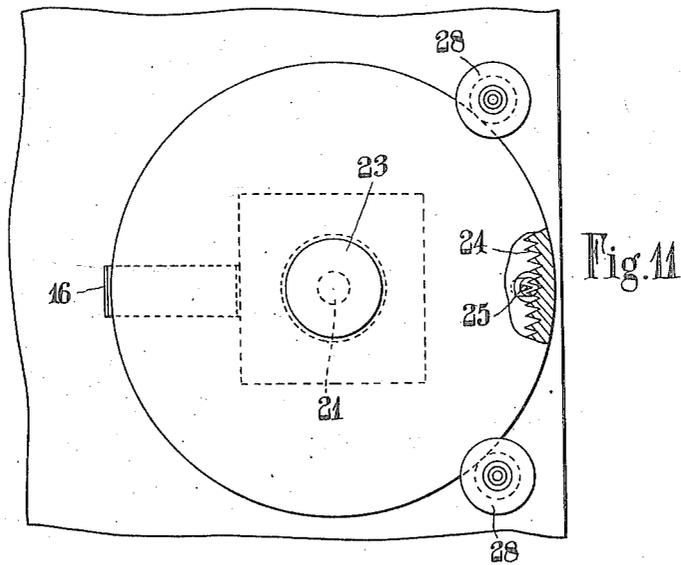
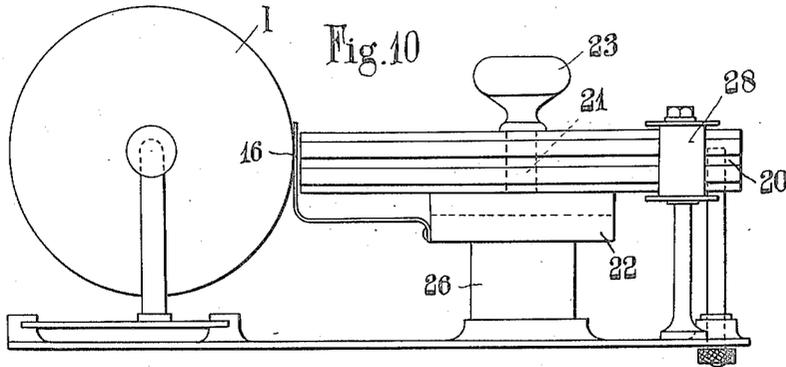


Fig. 12

Inventor

T. Walton,
By H. R. Kerlake
Att'y

UNITED STATES PATENT OFFICE.

THOMAS WALTON, OF LONDON, ENGLAND.

APPARATUS FOR PRINTING OR COPYING MUSIC AND THE LIKE.

Application filed February 19, 1920. Serial No. 359,935.

To all whom it may concern:

Be it known that I, THOMAS WALTON, a subject of the King of Great Britain and Ireland, and residing at St. Andrew's Vicarage, Short Street, New Cut, Lambeth, London, S. E. 1, England, have invented a certain new and useful Improved Apparatus for Printing or Copying Music and the like, of which the following is a specification.

10 This invention relates to the printing or copying of music and like manuscript and has for its object to devise a simple, cheap and efficient form of hand-operated printing device whereby such manuscripts may
15 be printed or copied much more rapidly than can be done by hand in the usual manner, and much more quickly and cheaply than by the ordinary copper-plate or other printing processes, while at the same time
20 a machine in accordance with the invention will be much cheaper and more simple to construct than the music typewriters which have hitherto been proposed.

The invention consists in apparatus for
25 printing or copying music and the like comprising in combination means for holding the material to be printed upon, hand-operated means for displacing such material laterally and vertically, a single member
30 carrying all the necessary type characters and adapted to be moved in a substantially horizontal direction relatively to the material to be printed upon to produce ink or the like impressions upon such material.

35 The invention also consists in apparatus for printing or copying music and the like comprising in combination means for holding the material to be printed upon, hand-operated means for displacing such material
40 laterally and vertically, a single circular rotary member carrying all the necessary type characters upon its periphery and adapted to be moved in a substantially horizontal direction relatively to the material to
45 be printed upon to produce ink or like impressions upon such material.

50 The invention also consists in the form of apparatus hereinafter described or indicated.

The accompanying drawings illustrate one convenient form of apparatus in accordance with the invention:—

Figure 1 is a side elevation;
Figure 2 is a front elevation;

Figure 3 is a plan;

Figure 4 is an underneath plan;

Figures 5 and 6 are views on a larger scale illustrating details of the hammer operating mechanism; and

Figures 7 to 9 are views showing a further detail.

Figures 10, 11, and 12 illustrate a side elevation, plan, and rear elevation respectively of a modification hereinafter described.

In carrying my invention into effect in one convenient manner, I provide my improved apparatus with a metal or other base-plate *a*, bed-plate, foundation or support and upon such support I arrange a bar or other guide *b* on or in which is slidable laterally a carriage *c* or other support adapted to receive the paper (not shown) or other sheet or other material upon which the printing is to be effected.

In one convenient construction, the guide or the like *b* may be adapted to be moved vertically or substantially so in relation to the base-plate *a* by being provided with rack members *d* mounted in guides *e* and actuated by a lever *f* or levers and suitable linkage *g* or other mechanism connected with pinions *h* gearing with the racks, the hand operated pivoted lever *f* being arranged in conjunction with a quadrant *i* or other like variable retaining mechanism, the arrangement being such that the paper sheet may be correctly positioned in relation to the printing member so that the note or other character to be printed may be properly positioned in relation to the stave. The quadrant or other like device may be furnished with any suitable index scale *k* so that the correct positioning of the paper may be indicated by the correct positioning of the pivoted lever in relation to the scale or index upon or in conjunction with the quadrant.

The carriage *c*, which is mounted upon a guide, may comprise a roller *l* and an auxiliary roller *l'* between which the paper or other material is adapted to be passed, for assisting in adjustment of the paper the upper part of which may be held by a bar or suitable light framework *m* and the carriage is laterally movable upon the vertically moving guide in any suitable manner. It is desirable that the carriage should be capable

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of its normal movement for the normal spacing of the notes and should also be capable of an intermediate movement for any intermediate notes that may have to be printed. For this purpose I provide the carriage with two racks *u, o*, having their teeth staggered and controlled by the double pawl, *p, p'* the carriage being moved by a spring *y* when the racks are released. The spacing mechanism is normally operated by a hand actuated member *q* which when depressed against a spring *q'* moves the bar *r* pivoted at *s* in such a manner as to rotate the spindle *t*, the member *q'* having upon its lower extremity a circular member *q²* having a double inclined surface which on being moved in a downward direction moves the pivoted lever *r* outwards, the member *q²* engaging the reduced portion *r'* to effect this movement, whereby the projection *u* and pin *v* rocks the spring controlled pawl *p, p'*, so that the racks are alternately released by the pawls, and as each rack is so released the carriage advances one tooth. The spacing may also be actuated automatically when the printing is effected in the manner hereinafter referred to.

The base-plate carries a rotatable disc or other like member *w* upon the outer periphery or in any other suitable position upon which I arrange type (either engraved or separately formed), the form and character of which is made to conform to the form and character of the notes or other signs to be printed, and such printing wheel or the like may be slidably movable in a direction substantially at right angles to the direction of lateral movement of the paper (as shown in Figures 10, 11 and 12) so that any particular type upon the printing member may be moved by the operator into contact with the paper for the purpose of printing thereon, the paper or other material being held up to the printing wheel by an anvil or other abutment formed with or secured to the carriage and arranged at the back of the paper.

In such construction (as shown in Figures 10, 11 and 12) the type wheel 20 may be carried upon a vertical spindle 21 which in turn, is mounted in the slide 22 carrying the printing member so that by means of a knob 23 or the like upon the printing wheel the latter may be moved into any desired position in order to bring any required character into position for printing, whereupon the printing member 20 is moved forward to print, the type having if necessary been previously moved into contact with inking rollers 28 for the purpose of inking the same.

In the preferred construction which is in Figures 1 to 9 the wheel *w* is not slidably movable, but the printing is effected by a hammer *z* controlled by the spring 1 and actuated by the bell-crank lever 2, bar 3, lever

4 and depressible handle 5 passing up through the spindle of the wheel *w*. The printing mechanism may be made automatically to effect the spacing by means of the spring controlled member 6 (Figure 6) which, on the downward movement for printing, passes over the bar 7, without affecting its position, but on the upward movement, deflects the pivoted bar 7 in order to rotate the spindle *t*, spring-controlled pin *t'* working in a slot *t²* in the spindle of the depressible handle 5 is provided to limit the rotary movement and also the vertical movement of the said member. When the printer is not required to space, the handle 5 is rotated so that the projection 6 will clear the bar 7 during the downward movement of the member 5. The automatic spacing and the hand spacing, may, if desired, be used in conjunction with one another when increased spacing is required.

As above indicated, inking rollers 28 may be employed, or, as shown, I may employ an ink ribbon 8 which may be similar to a typewriter ribbon and may be spaced by a pawl 9 and ratchet 10 (Figure 4) operated by the spacing mechanism in the manner shown in Fig. 2.

If necessary or desirable, suitable V-guides 24 and pawl 25 or the like may be provided in conjunction with the printing member, or I may employ a pin 11 in conjunction with holes in the printing wheel in order to hold the latter rigid during the printing operation.

In order to prevent any excess ink from coming into contact with the paper from parts of the printing member adjacent to the particular character that is for the moment being used, the pillar 26 may support a slotted plate 27 or other like device in the printing position relative to the paper so that the type may enter the slot in the plate and mark upon the paper while adjacent parts of the disc will come in contact with the portions of metal or other material at the sides of the slot.

It will be understood that the foregoing details of construction are given by way of example and the invention is not to be confined to such as I may modify the method of mounting and actuating the carriage to adjust its position laterally and vertically and I may also vary the form of printing device and the manner of arranging for the same to be supplied with ink or other printing medium depending upon the particular class of printing for which the apparatus is required or any particular practical requirements that may have to be fulfilled.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. Apparatus for printing or copying

music and the like comprising in combination means for holding the material to be printed upon, hand operated means for displacing such material laterally and vertically, a single member carrying all the necessary type characters and adapted to be manually rotated to bring the necessary type character into a position relatively to the material to be printed upon, and means whereby a further relative movement between said rotatable member and the material to be printed upon causes an ink or like impression to be produced upon such material substantially as described.

2. Apparatus for printing and copying music and the like comprising in combination means for holding the material to be printed upon, hand operated means for displacing such material laterally and vertically, a single circular rotary member carrying all the necessary type characters upon its periphery and adapted to be rotated by hand to bring the necessary type character into position relatively to the material to be printed upon, and means whereby a further relative movement between such rotatable member and the material to be printed upon causes an ink or like impression to be produced upon such material substantially as described.

3. Apparatus for printing or copying music and the like comprising a base plate, carriage carried by said base plate and movable laterally and vertically, a single circular rotary member also carried by said base plate and having all the necessary type characters upon its periphery, means whereby relative horizontal movement may be effected between the printing member and the material to be printed upon and means whereby the printing may be effected in ink or the like printing medium substantially as described.

4. A machine for printing or copying music as claimed in claim 3 wherein the circular printing means is adapted to be moved in a substantially horizontal direction for the purpose of bringing the type into printing relationship with the material to be printed upon substantially as described.

5. Apparatus for printing or copying music and the like comprising in combination means for holding the material to be printed upon, hand operated means for displacing such material laterally and vertically, a single member carrying all the necessary type characters and adapted to be manually rotated to bring the necessary type character into a position relatively to the material to be printed upon, means whereby a further relative movement between said rotatable member and the material to be printed upon causes an ink or like impression to be produced upon such material, and means for locking the print-

ing member in the printing position at the moment of printing substantially as described.

6. Apparatus for printing or copying music and the like comprising in combination means for holding the material to be printed upon, hand operated means for displacing such material laterally and vertically, a single circular rotary member carrying all the necessary type characters upon its periphery and adapted to be rotated by hand to bring the necessary type character into position relatively to the material to be printed upon, and means whereby a further relative movement between such rotatable member and the material to be printed upon causes an ink or like impression to be produced upon such material and the provision in the circular printing member of recesses adapted to co-operate with the V-block for the purpose of locking the printing member in the printing position at the moment of printing substantially as described.

7. Apparatus for printing or copying music and the like comprising in combination means for holding the material to be printed upon, hand operated means for displacing such material laterally and vertically, a single member carrying all the necessary type characters and adapted to be manually rotated to bring the necessary type character into a position relatively to the material to be printed upon, means whereby a further relative movement between said rotatable member and the material to be printed upon causes an ink or like impression to be produced upon such material, and means for effecting lateral movement of the material to be printed upon by the operation of the printing member, substantially as described.

8. Apparatus for printing or copying music and the like comprising in combination means for holding the material to be printed upon, hand operated means for displacing such material laterally and vertically, a single member carrying all the necessary type characters and adapted to be manually rotated to bring the necessary type character into a position relatively to the material to be printed upon, means whereby a further relative movement between said rotatable member and the material to be printed upon causes an ink or like impression to be produced upon such material and means for effecting the lateral movement of the material to be printed upon both manually and by the operation of the printing member substantially as described.

9. Apparatus for printing or copying music and the like comprising in combination means for holding the material to be printed upon, hand operated means for displacing such material laterally and vertically, a sin-

gle member carrying all the necessary type characters and adapted to be manually rotated to bring the necessary type character into a position relatively to the material to be printed upon, means whereby a further relative movement between said rotatable member and the material to be printed upon causes an ink or like impression to be produced upon such material, and means for effecting the lateral spacing comprising a hand-actuated member depressible against the action of a spring and co-operating through suitable levers with a carriage carrying two racks having staggered teeth and a double pawl co-operating with said racks, substantially as described.

10. Apparatus for printing or copying music and the like comprising in combination means for holding the material to be printed upon, hand operated means for displacing such material laterally and vertically, a single member carrying all the necessary type characters and adapted to be manually rotated to bring the necessary type character into a position relatively to the material to be printed upon, means whereby a further relative movement between said rotatable member and the material to be printed upon causes an ink or like impression to be produced upon such material, and

means for gauging the vertical movement to be given to the material to be printed upon, substantially as described.

11. Apparatus for printing or copying music and the like comprising in combination means for holding the material to be printed upon, hand operated means for displacing such material laterally and vertically, a single member carrying all the necessary type characters and adapted to be manually rotated to bring the necessary type character into a position relatively to the material to be printed upon, means whereby a further relative movement between said rotatable member and the material to be printed upon causes an ink or like impression to be produced upon such material, and means for effecting the lateral spacing comprising a depressible spindle in the printing member, said spindle being provided with pawls to engage on their upward movement with a bar, said bar co-operating with a spindle and suitable levers to actuate two racks to effect the spacing of the carriage carrying the material to be printed upon, substantially as described.

Dated this 22nd day of September 1919.

In testimony whereof I have signed my name to this specification.

THOMAS WALTON.