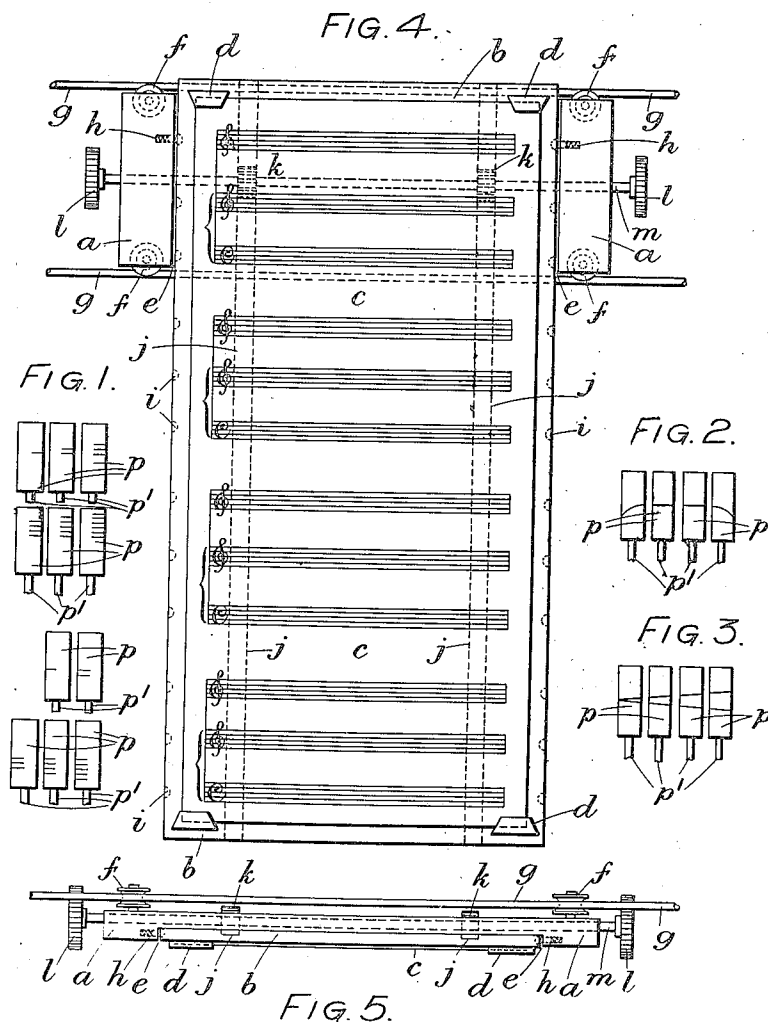


L. FORTONI.
 TYPEWRITING MACHINE FOR MUSIC.
 APPLICATION FILED FEB. 3, 1920.

1,429,862.

Patented Sept. 19, 1922
 3 SHEETS—SHEET 1.



Witnesses:
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Fig. 6.

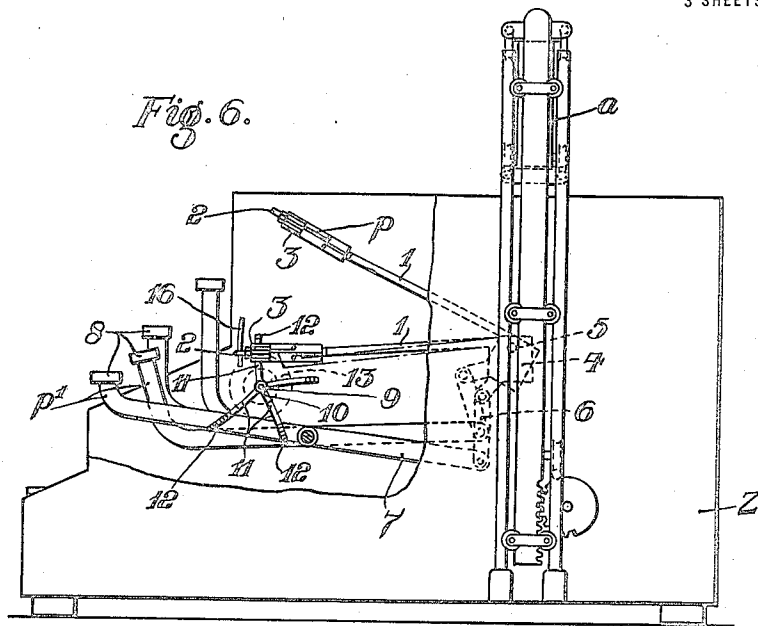


Fig. 7.

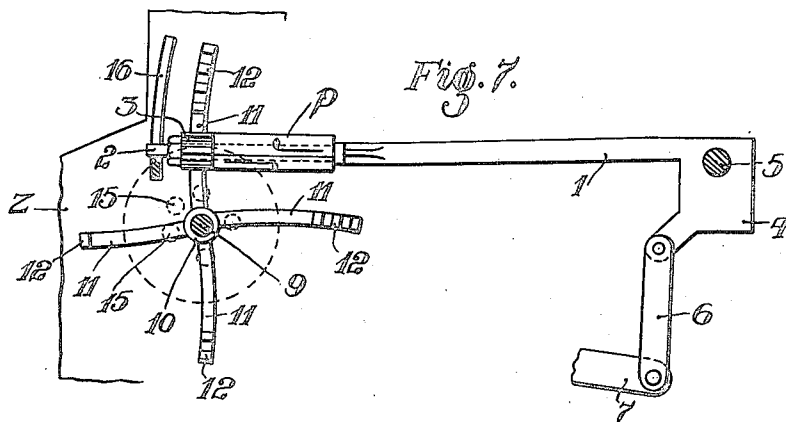
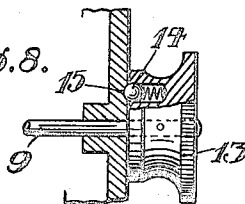


Fig. 8.



By

Luigi Fortoni

[Signature]

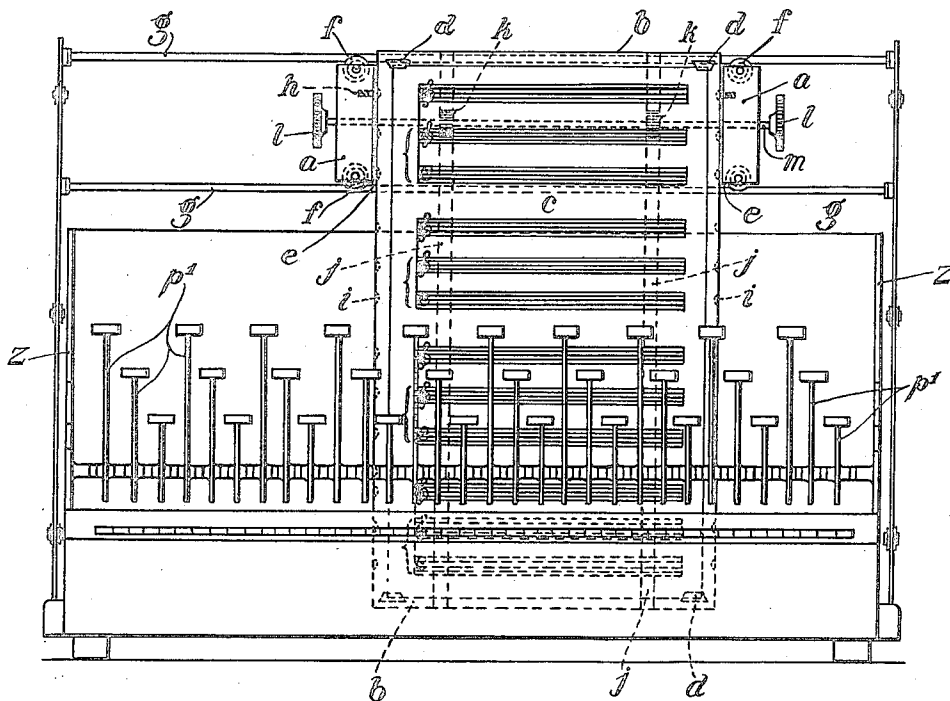
Attorney.

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Fig. 9.



Luigi Fortoni,

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UNITED STATES PATENT OFFICE.

LUIGI FORTONI, OF LONDON, ENGLAND.

TYPEWRITING MACHINE FOR MUSIC.

Application filed February 3, 1920. Serial No. 355,928.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, LUIGI FORTONI, a subject of the King of Italy, residing at London, county of Middlesex, England, have invented new and useful Improvements in Typewriting Machines for Music (for which I have filed an application in England, Aug. 15, 1913, Patent No. 18,578 of 1913), of which the following is a specification.

This invention has reference to the typewriting machine for music for which I obtained a United States Patent No. 1,073,976, dated 23rd September, 1913.

In the specification on the said patent I described a construction of revoluble polygonal block carrying musical note type specially devised for printing notes above or below the musical stave, the said note type being furnished with ledger lines. In the said patented structure only a certain number of the printing levers carried such blocks.

In accordance with the present invention the revoluble polygonal blocks are applied to all of the printing levers, and in addition to carrying musical notes for impressions above and below the stave, also embody note type for printing directly on the stave, alphabetical printing, punctuation points and the usual musical signs, thereby rendering the machine capable of use for not only printing or typing music, but in producing songs to type the words thereof, or, when desired, the machine may be used exclusively for printing words alone, as for instance in correspondence.

The invention further relates to the construction, provision and use of type blocks furnished with ledger lines in sets to the number corresponding to the pitch of the notes to which they are to be applied, either above, or below, the stave, the said ledger lines being so arranged that, after the notes have been printed, they are applied thereto in the correct position according to the pitch of the notes, thus differentiating from my former invention wherein the ledger line notes employed had each its proper value and number of lines integral therewith which, necessarily, involved the use of a large number of type; the present construction further enabling, by any set of such ledger lines, the printing upon two notes, whether

the ledger line be through the head, or through the stem, as will be hereinafter fully pointed out.

The invention further provides for type blocks so constructed and arranged as to print "crescendo" and "dimuendo" signs, also "ties," "slurs," or grouping lines piece by piece.

And lastly, the invention has reference to the paper-holder for use with such revoluble type whereby the music sheet after receiving the impression of the notes, or other signs, from the aforesaid revoluble type, receives the requisite displacement and alignment.

In order that my invention may be readily understood, I will now describe it fully with reference to the accompanying drawings, wherein:

Fig. 1 shows an arrangement or combination of revoluble polygonal blocks, the faces of which carry sets of ledger lines.

Fig. 2 shows an arrangement or combination of like blocks suitable for printing a "tie."

Fig. 3 shows an arrangement or combination of like blocks for printing the "crescendo" sign.

Fig. 4 is a front elevation of the perfected paperholder together with its carriage, and Fig. 5 is a top or edge view of the same.

Fig. 6 is a side elevation, partly broken away, of my music typewriter showing an arrangement for operating the printing levers for printing all the notes, signs, characters, etc.

Fig. 7 is an enlarged view of one of said printing levers and of part of the mechanism coacting therewith;

Fig. 8 is a detail of a holding device used in connection with the printing levers, and

Fig. 9 is a front view of a music typewriter in which is arranged the paper-holder hereinafter fully described.

In carrying out my present invention, and in so far as it relates to the printing, I effect this operation by providing one of the faces of the revoluble polygonal blocks *p* with a musical note, another of such faces with one or more ledger lines, another with alphabetical letters, another with a numeral, or numerals, and another with a punctuation

point, or points, or such other sign as is used in music.

By these means I am enabled to reduce considerably the number of printing-levers p^1 as, owing to the construction of the said 5
revolvable polygonal blocks, these latter can be employed to print a variety of characters, that is to say by means of one and the same block a variety of characters both musical 10
and typographical or alphabetical can be printed, without it being necessary to provide a separate block for each such character. And in the case of notes requiring ledger lines, as many of these lines may be 15
applied simultaneously as the pitch of the note demands.

For printing notes outside the stave, the music-sheet is first raised by the shift key-board, so bringing it to the pitch of the note 20
required, and then the character of the note, for instance a breve, or a semibreve, or a crotchet is printed, and then, by means of another face of the block corresponding thereto, the ledger lines, to the number re- 25
quired, are printed upon the note at one and the same time, or, in other words, by a single stroke of the key.

By having the ledger lines arranged on the faces of the polygonal blocks (see Fig. 30
1), so as to correspond in number, position, and height with the pitch of the notes above, or below, the stave, I am enabled to print, by means of a single sign, or set, upon two notes, whether the same be a 35
breve, a semibreve, and so on, that is to say two ledger lines can be used to print the note "do," or the note "re," upon the stave in the treble clef, whether it be a breve, or a semibreve, or a crotchet, or a 40
quaver, or a semiquaver, or a demisemiquaver, or a semidemisemiquaver, and whether its stem be upwards, or downwards; and further, by a single stroke, it will be possible to print any number of 45
ledger lines required and corresponding to the pitch of the note.

To bring the required face of a revolvable polygonal block into the printing position, the said block is actuated by any suitable 50
means, as for instance by those shown in Figs. 6, 7, and 8 of the drawings.

In these figures, an arm 1 mounted in the frame Z of the machine carries at its free end one of the polygonal blocks p mounted 55
on an axis 2 forming an extension if said arm and in alinement with said block. Mounted pivotally on the axis 2 and fast with the block is say a pinion 3 corresponding with the faces of the block. The arm 60
1 terminates at its inner end in a heel 4 pivoted at 5 in the machine, and connected, through a link 6, to its corresponding printing lever 7, by means of which the arm 1 is actuated by depressing its key 8.

65 Extending across the machine and pro-

jecting through one of its sides is a horizontal shaft 9, on which is mounted a set or series of wheels 10 corresponding in number with the printing levers or arms 1. Each of these wheels is provided with four 70
segmentally shaped arms 11 furnished near its free end with teeth 12, designed to gear with its pinion 3. One of these arms is furnished with one tooth, another with two teeth, another with three teeth, another 75
with four teeth, and so on.

The aforesaid horizontal shaft 8 at the end projecting outside the machine, carries a knob or head 13 (see Fig. 8) bearing any desired indication, for instance an arrow, to 80
indicate the position to which the radial arms 11 are to be set, and by turning which, to the requisite extent, the toothed arm pertaining thereto rises, and passing between the spaces of the printing levers comes into 85
position to be engaged by the pinion 3. By then depressing that one of the keys 8 of the printing levers or arms 1 corresponding thereto, this latter will rise and its pinion will come into engagement with the desired 90
one of the radial arms 11 and so turn the printing block according to the number of teeth on the radial arm raised.

On releasing the key of the printing lever 1 the pinion 3 will fall back into gear with 95
the toothed radial arm 11, and so restore the printing block to its normal position.

Any suitable device, as for instance that shown in Fig. 9, may be employed to retain the radial arms in the position in which they 100
may have been adjusted. This device comprises the knob 13 on the shaft 10 (see Fig. 8) furnished with a spring-pressed ball 14, which, on the knob being turned, engages in one of a series of recesses 15 in the frame 105
of the machine, corresponding with the different positions of the arm. And to prevent the printing levers from shifting or wobbling when rising, or when falling, guides 16 are provided on the front frame 110
of the machine.

Thus, in a machine wherein the compass is 33 notes, starting from "la" on the 5th 115
ledger line below the stave, to "mi" on the 6th ledger line above the stave, there are 12 notes above the stave and 10 notes below the same. Therefore, for printing the 12 notes above the stave, I employ a combination of six sets of ledger lines (see Fig. 1), each being capable of printing upon two 120
notes, whether the ledger line be through the head, or through the stem of the note; that is to say for the note "la" on the treble clef upon the first ledger line above the stave, the ledger line, on being printed, 125
passes through its head, while for the note "si" above the first ledger line above the stave, it passes through its stem. For the next two notes I employ, in similar manner, two ledger lines, and so on up to the 6th

combination, which carries six ledger lines. For the notes below the stave, the same arrangement is employed, but the ledger lines are here arranged as a combination of five sets.

It is to be noticed that the type for printing the ledger lines above the stave are arranged in the right hand upper quarter of the face of the type blocks, while the type for printing the ledger lines below the stave are arranged in the left hand lower quarter of the face of the type blocks; the said ledger lines being spaced at such a distance apart as to correspond exactly with the lines of the musical stave on the music sheet.

Each of the blocks carrying the type is revolvably mounted on the end of a printing-lever p^1 , and said type is cast on, or otherwise suitably applied to, the said blocks.

In order to obtain the requisite displacement of the music-sheet, and the alignment, I provide the paper carriage a , (see Figs. 6 and 9) with a sliding paper-holder or plate b carried in the machine Z , on which the music-sheet c is fixed, and maintained in a perfectly flat condition by any suitable means, such as spring clips d . This paper-holder b works in guides e formed in the said paper-carriage a which is adapted to travel horizontally, by means of rollers f , on and between the rails, or rods, g , as in the aforesaid original patent. In order to bring any stave of the music-sheet to the normal level of the printing point, the holder b is raised, or lowered, and with it the music-sheet, by any suitable means, as for instance by racks j secured thereto, at back, and pinions k meshing with said racks, and operated by buttons or knobs l , at the ends of the shaft m on which the pinions are mounted. When the music-sheet has been adjusted so as to bring the desired stave to the level of the printing point of the machine, the paper-holder is then retained in position by means of spring-controlled pins or studs, h (or their equivalent), adapted to enter slots or notches i , formed, for their reception, in the said holder, and likewise corresponding with the normal level of the printing point of the machine; hence by shifting the paper-holder b it is not necessary to shift the music-sheet separately each time that it is required to print a fresh stave, so economizing time.

For printing grouping lines, one of the faces of the revoluble polygonal blocks is provided with straight lines and another with oblique lines, and both corresponding to the value of the notes, that is to say, one line for a quaver, two for a semiquaver, three for a demisemiquaver, and four for a semidemisemiquaver, the length of the said grouping lines corresponding with the extent of shifting of the paper-carriage.

For writing "legato," two of the faces of

one of the revoluble blocks carry the curved finials or bows, of the "tie" or the "slur," while another of the faces carries one or more dashes or short lines (see Fig. 2), so arranged as to join, or register, with the finials or bows on the aforesaid face, and to form the body of the sign. Thus, in writing any of the aforesaid signs, the face of the block carrying one of the finials or bows is first brought into action by depressing its printing-lever, then the said block is partly revolved by means of the actuating mechanism to present the face bearing the dash or short lines, during which action the plate b carrying the music-sheet is shifted laterally and the key struck successively until the length of the body of the "tie" or "slur" required is attained, and, finally, the block is again partly revolved until the other finial or bow is brought into the printing position, whereupon its lever is struck and the sign completed.

For writing "crescendo" some of the faces of the blocks are provided with short lines or dashes (see Fig. 3), disposed at such an angle, or otherwise so arranged, as to meet at the apex end and produce the requisite sign, the plate b carrying the music sheet being correspondingly shifted laterally, in the ordinary way, during printing, until the requisite length of sign is attained. For writing "diminuendo" the lines or dashes are arranged on the printing blocks in the reverse order to that shown for "crescendo."

Although I have referred more particularly to certain signs, it is to be understood that type for writing all other known signs in music can be provided.

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

1. In a machine for typewriting music, the combination of printing levers and revoluble polygonal blocks applied to all of the levers and carrying musical note characters for printing above and below the stave or directly on the stave and also for alphabetical printing whereby music notes, words of a song, or ordinary printed matter may be typed by the one machine.

2. In a machine of the class specified, the combination of printing levers, and revoluble polygonal blocks applied to all of the levers and provided with musical note characters for printing above, below and directly on the stave, and also type for ordinary word printing, together with ledger lines to which the notes are to be applied above, below or on the stave, the ledger lines being disposed for application in the requisite number and correct position and at the proper pitch of the notes, whereby two notes may be printed by means of a single sign or set of ledger lines.

3. In a machine of the class specified, the

- combination of printing levers, and revoluble type blocks carried by all of the levers and provided with note and ledger line characters and crescendo, diminuendo, tie, slur and grouping line signs, together with type for printing words, the signs being arranged and the blocks successively operable to register with each other and produce a sign of the required length and form.
4. In a machine of the class specified, the combination with a travelling paper carriage, of an adjustable holder for carrying a music sheet in flat condition and having recesses therein, the music sheet being adapted to be raised and lowered on the holder, spring controlled pins applied to the carriage to engage the recesses of the holder and located to correspond with the normal level of the printing point, the holder also being provided with racks, pinions for engaging the racks to raise and lower the holder to bring the music stave desired to the printing point of the machine, and printing levers having movable blocks carried

thereby and provided with note and musical characters and also word printing type.

5. In a machine of the class specified, a plurality of printing levers, and revoluble polygonal blocks movably carried by the levers and having their respective faces provided with ledger lines in different positions.

6. In a machine of the class specified, a plurality of printing levers, and revoluble polygonal blocks carried by the levers and having portions of tie and slur signs on the respective faces thereof.

7. In a machine of the class specified, a plurality of printing levers, and revoluble polygonal blocks carried at the ends of the said levers and having portions of crescendo or diminuendo signs thereon.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

LUIGI FORTONI.

Witnesses:

O. P. BRUSA,

A. E. STRATTON.