

July 14, 1936.

R. H. KEATON

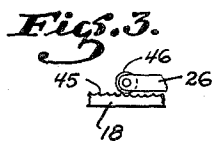
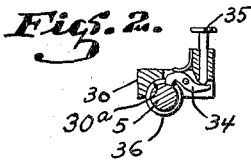
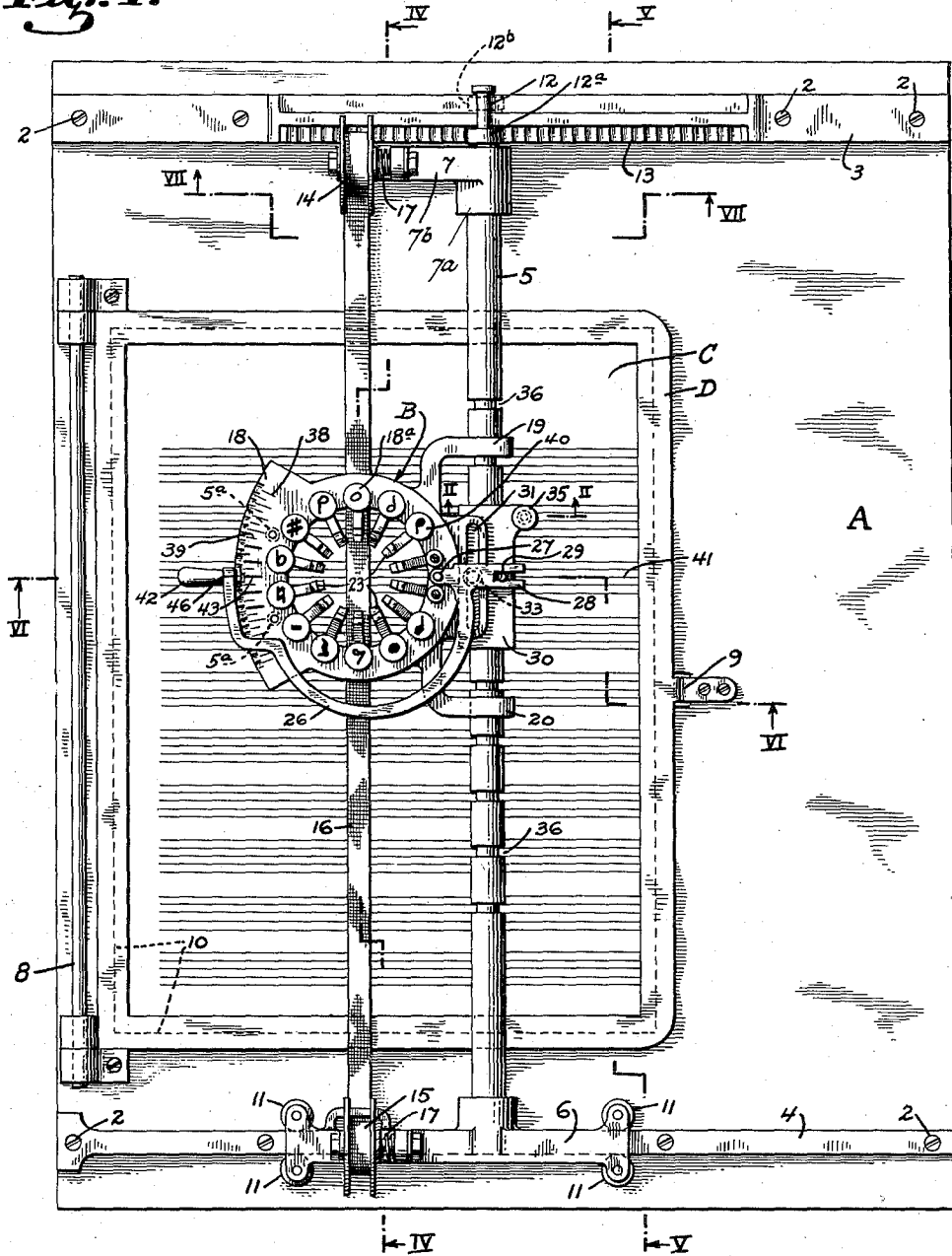
2,047,690

MUSIC TYPING MACHINE

Filed June 12, 1934

2 Sheets-Sheet 1

Fig. 1.



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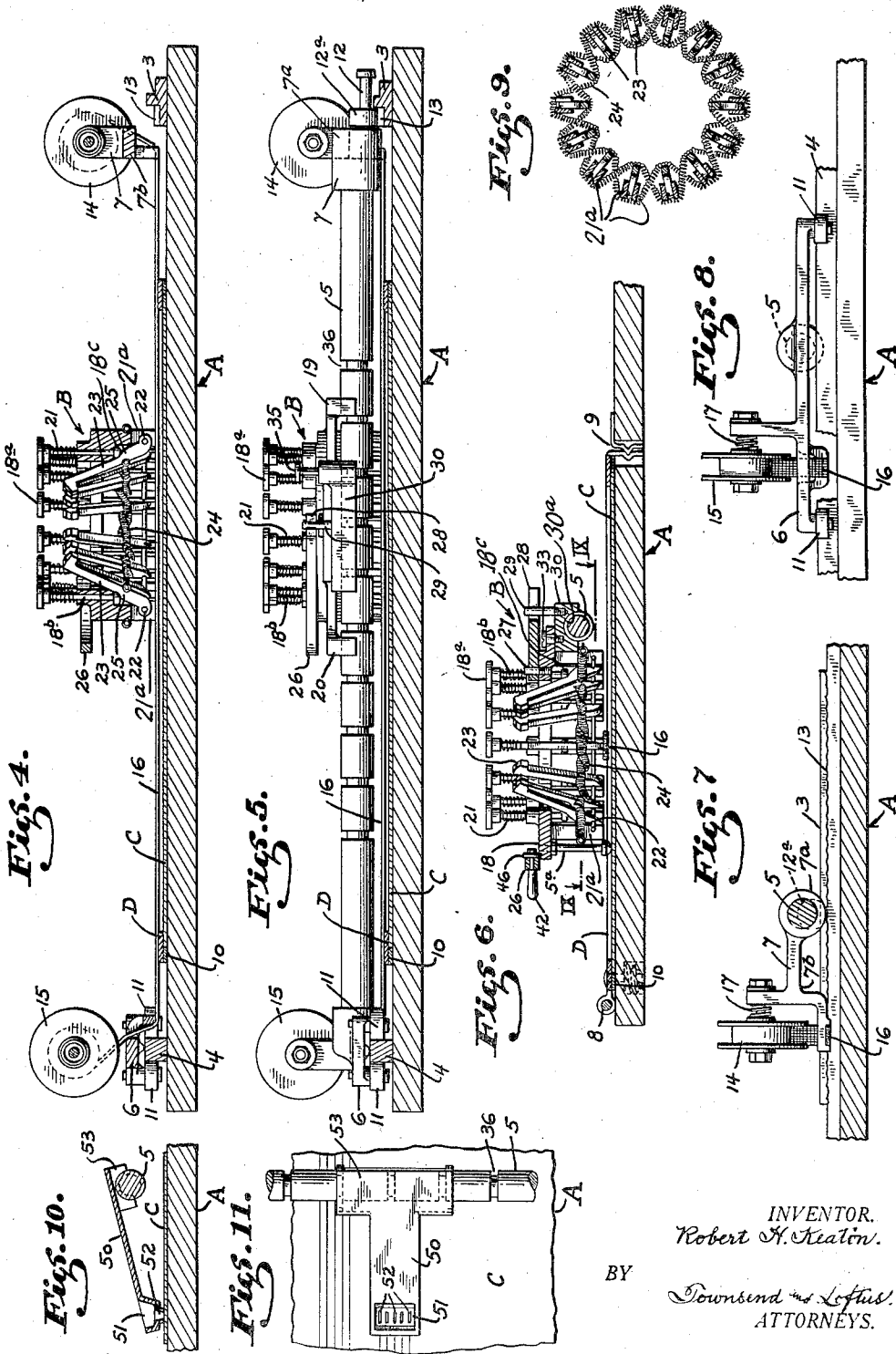
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# UNITED STATES PATENT OFFICE

2,047,690

## MUSIC TYPING MACHINE

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Application June 12, 1934, Serial No. 730,225

### 1 Claim. (Cl. 197—8)

This invention relates to a machine for typing music, and is particularly intended for use by composers, arrangers, teachers and students.

Heretofore practically all music written by composers, arrangers, etc., has been written by hand. Handwork is slow and tedious as the characters must be neat and legible and must be accurately placed on the lines or in the spaces between the lines. The lines upon which music is written is known as the "staff". It consists of five lines and four spaces and in a medium large staff the distance from one line to the center of the adjacent space is only one twenty-fourth of an inch, therefore making accurate placing of characters slow, tedious and hard on the eyes; hence, if rapid work is required the result is generally poorly written, illegible music, which is difficult to read.

The object of the present invention is to provide a machine whereby the characters most frequently used in the writing of music may be rapidly typed and accurately placed on the staff, the remaining characters being filled in by hand afterwards, or as the work proceeds; to provide a machine which is simple and compact in construction and operation and which can be rapidly manipulated; to provide a machine which is constructed to be operated by both hands, one hand operating a single lever whereby a selected character is properly positioned on the staff and whereby spacing between characters is controlled, and the other hand functioning merely to depress or strike the key whereby the selected character is printed; and further, to provide a machine which leaves the printed characters or music in a position which is clearly visible for inspection and review as the work proceeds.

The invention is shown by way of illustration in the accompanying drawings, in which—

Fig. 1 is a plan view of the machine,

Fig. 2 is a cross section taken on line II—II of Fig. 1,

Fig. 3 is a partial end view of the position indicating head,

Fig. 4 is a central vertical section taken on line IV—IV of Fig. 1,

Fig. 5 is a similar section taken on line V—V of Fig. 1,

Fig. 6 is a vertical cross section taken on line VI—VI of Fig. 1,

Fig. 7 is a vertical cross section taken on line VII—VII of Fig. 1,

Fig. 8 is an end view of the carriage supported by the track member 4,

Fig. 9 is a cross section taken on line IX—IX of Fig. 6,

Fig. 10 is a vertical sectional view showing an attachment whereby the staff lines on the music may be ruled, and

Fig. 11 is a plan view of the lining device shown in Fig. 10.

Referring to the drawings in detail, and particularly Fig. 1, A indicates a base plate at opposite ends of which are secured, by screws 2 or similar means, trackways 3 and 4. Extending longitudinally of the base is a bar 5 and secured to opposite ends thereof are carriages 6 and 7 whereby the bar is supported with relation to the trackways. The bar 5 serves two main functions; first, that of a partial support for the typing machine generally indicated at B, and secondly as a spacer when moving or shifting the machine from one set of staff lines to another.

The music to be written is typed on a sheet of paper generally indicated at C, which is clamped and held against the base by means of a frame D. The sheet of paper may have the staff lines printed, or otherwise applied thereto, but they may be lined by the machine here shown as will hereinafter be described.

The frame D is hinged to a pintle rod generally indicated at 8 and as such may be readily opened to remove or insert a new sheet, the frame being secured when in clamping position by a spring latch generally indicated at 9, see Figs. 1 and 6. In order that each sheet of paper to be typed shall be accurately positioned, guide bars are secured to the base at one side and end. These bars are indicated at 10 and they are of sufficient importance to be mentioned. For instance, if a sheet of music has been completed and, after removal from the machine, it is found that mistakes have been made or that changes are desired, such a sheet can be replaced and by placing it in engagement with the guide and positioning bars 10 exact positioning may be obtained when the clamping frame is lowered.

The carriage, indicated at 6, is an elongated bar at opposite ends of which are journaled rollers 11 which engage opposite sides of the trackway 4. This positioning of the rollers permits the carriage, together with the bar 5, to be lifted upwardly away from the trackways. This is an important feature as this is essential when a new sheet to be printed upon is to be inserted, removed, and so on. The carriage secured to the opposite end of the bar 5 is slightly different. It consists of a hub member 7a, as shown, with a laterally extending arm 7b. It carries a shaft 12 and this, in turn, carries a roller 12a which engages a spacing track 13 formed on one side of

the trackway 3. The roller supports the carriage with relation to this track and it permits the carriage to be lifted away from the track. The carriage 7 also supports a reel 14 and a similar reel 15 is supported on the carriage 6. The reels function to carry a type-ribbon 16 and this passes beneath the typing machine B in a position to be struck by the keys when they are operated. The reels 14 and 15 are journaled on bolts carried by the respective carriages which are equipped with nuts at opposite ends so that the reels can be readily removed, but springs 17 are interposed between the reels and bolts so as to produce the desired degree of frictional resistance to rotation, thereby keeping the ribbon from sagging.

It is considered unnecessary to provide for automatically imparting movement to the ribbon as typing proceeds as the keys seldom strike the ribbon in the same place, as is usual with an ordinary typewriting machine, hence it is only necessary to move or shift the ribbon from time to time; it is for this reason that automatic ribbon feeding means have been eliminated as it is a simple matter for the operator to grasp one of the reels and rotate it by hand a sufficient amount to shift the ribbon as it wears. One reel thus functions as a supply reel and the other as a re-winding reel.

The typing machine consists of a ring-shaped frame B, at one side of which is formed a positioning index head 18. Formed on the opposite side of the ring-shaped frame are a pair of arms 19 and 20, in the lower faces of which are formed half round recesses, said half round recesses resting on the rod 5 and forming a partial support for the typing machine or frame B; said recesses also permitting sliding movement of the frame B with relation to the rod 5 from end to end thereof, the other side of the frame being supported by legs 5a which are freely slidable over the paper C or sheet music to be typed upon. The frame or machine B is provided with a plurality of key heads 18a each secured to a vertically positioned stem 18b. The stems are guided and supported in the frame B and are normally held in a raised position by interposed helical springs 21. Formed on the lower face of the frame B are spaced arms 21a between which are pivotally mounted, as at 22, a series of type bars 23, each type bar carrying a selected character so that when it is depressed engagement will be made with the ribbon 16 and an impression of the character will be formed on the staff, the type bars, in other words, functioning as the type bars of an ordinary typewriter. The type bars are normally held in raised position by springs, such as shown at 24, see Figs. 4, 6 and 9, but they are depressed when engaged by the lower ends of the key stems 18b, the key stems terminating in collars 18c which in turn engage cam portions 25 on the key bars. Only one key is struck or depressed when a music character is to be typed, but it is necessary to first position the character before the key is struck. This is accomplished in the present instance by use of a lever generally indicated at 26, see Fig. 1. This lever is pivoted to the frame B at 27, and is provided with a slotted or fork-shaped extension arm 28 and this embraces a pin 29 secured on the spacing head 30. The frame B is secured to the spacing head 30 but it is free to slide longitudinally thereof, this being accomplished by forming a slotted extension 31 on the frame and passing a headed screw therethrough which is fastened to the spacing head 30; this screw being indicated at 33 in Fig. 6. The spac-

ing head 30 is also provided with a semi-circular recess 30a in its lower face and this recess forms a bearing surface between the rod 5 and the head 30 and it also permits longitudinal movement of the spacing head with relation to the rod. The spacing head carries a latch 34, see Fig. 2, and a depressor 35 whereby the latch is actuated. The latch 34 is engageable with a series of annular notches 36 formed in the rod 5, the spacing between said notches being equal to the spacing between each set of staff lines printed or ruled on the sheet C. If it is desired to move the typing machine or frame B from one set of staff lines to the other, it is only necessary to depress the pusher rod 35. In so doing, the latch 34 swings out of the notch or groove 36 with which it engages. It is then possible to slide the spacer head 30 and the frame B longitudinally of the rod until the next notch or groove 36 is engaged by the latch and as the spacing between the notches or grooves 36 is equal to the spacing between the different sets of staff lines proper positioning of the typing machine or frame B will be insured.

The frame B moves in unison with the spacing head 30 when it is moved from one notch to another, but the frame B is free to move longitudinally of the spacing head and the rod 5 when the spacing head is locked by the latch 34. This free independent movement of the frame B is accomplished by operation of lever 26 and is essential, as is the means whereby the frame is moved transversely of the staff lines, so that different characters to be typed or printed may be properly positioned on or between the staff lines, or on added lines above or below the staff. When lever 26 is grasped by its handle 42 and swung in one direction or another the lever will swing about the bar 29 and as the lever is pivotally attached to the frame B at the point 27, frame B will be moved longitudinally of the spacing head 30, or in other words, transversely of the staff lines and it is thus possible to type or print on any line or in the spaces between the lines.

The machine shown in the present instance is only provided with fourteen keys. These keys are provided with the musical characters which are most extensively used. There are, of course, many other characters required in the writing of music but they will be applied by hand as will hereinafter be described. The fourteen characters employed are shown on the key heads 18a, see Fig. 1, and when a certain character is to be typed or printed it is, of course, necessary to position the same on a certain line or space of the staff, or above or below the staff.

The character positioning head 18 is graduated or indexed, as shown in Fig. 1, there being thirteen long lines, such as shown at 38, and twelve shorter lines, such as indicated at 39. The five heavy long lines indicate the staff lines and the lighter long lines the four lines above and four lines below the staff; the twelve shorter lines indicating the spaces between the staff lines and the spaces above and below the same. If the quarter note, indicated at 40, is to be printed or typed and it is to be positioned on the center line of the staff lines, indicated at 41, lever 26 is grasped by the handle 42 and it is moved over the index head 18 until it aligns with the long center line 43. When this position is assumed the key carrying the quarter note, indicated at 40, may be struck or depressed and that quarter note will then appear on the line 41 of the staff. If the same quarter note is to be applied to a space between the staff lines, the handle 42 is

grasped and the lever is swung until the handle registers with the short line 39, which indicates the particular space desired, and the key is then struck. One function of the lever 26 is therefore

5 that of positioning the character to be typed but it has another function, to-wit, that of spacing the characters longitudinally as they are being typed or printed, this being accomplished by merely pushing on the lever 42 so that the roller 12a at the end of rod 5 will roll from one space over into another on the spacing track 13. This track presents an undulating surface and the spacing between the undulations being equal and being the distance desired when spacing the characters one after another on the staff lines. In other words, when the handle 42 is grasped, the whole frame B, together with the rod 5 and the carriages 6 and 7, can be moved transversely of the base or longitudinally of the staff lines and the movement during normal operation will be one space. The outer edge of the positioning index head 18 is also provided with an undulating surface, such as shown at 45 see Fig. 3. A roller 46 is journaled on the inner end of the handle 42 and this roller rides over the undulated surface, the undulations registering with the long and short marks 38 and 39 so as to retain the lever 26 in whatever position it has been moved during the period when the selected key or character is being struck.

It has already been stated that the machine shown in the present instance is provided with only fourteen keys and as such can only print or type fourteen musical characters. This is done to produce as simple an compact a machine as possible. The fourteen characters are those which are most frequently used and which have to be accurately placed, other characters could obviously be added but that would increase the size of the machine and add complications and, furthermore, slow up the operation. The additional characters required can be quickly filled in by pen or pencil as the typing is proceeding, or afterwards, and it is for this reason that only the most essential characters are provided. For instance, only whole, half and quarter notes are provided on the keys illustrated. Hence, if one-eighth, one-sixteenth, or one thirty-second notes are required, one, two or three flags can be added to the stem of the quarter note, after it has been printed, by the mere dash of a pen. In instances where several one-eighth, one-sixteenth, or thirty-second notes follow in succession the stems will be connected together with one, two or three lines drawn by the pen. Where dots to indicate staccato notes, for repeat signs, etc., are required they can be quickly applied with a pen; also various expression signs, tempo terms, meter numbers and clef signs can be inserted either by pen or by a rubber stamp.

In actual operation when working along one set of staff lines the operator will actuate the lever 26 to position the character to be typed or printed. After it has been printed the whole machine will be moved longitudinally of the staff lines, one space, which space is controlled by the roller 12a moving from one undulation to another on the spacing track 13, the next character to be printed can then be positioned by the lever 26 and printed, and so on, and when a line has been completed latch 34 is released by the depressor 35 and the frame B and spacer head 30 is moved longitudinally of the rod 5 until the next notch 36 is engaged. The whole machine, to-wit, the

frame, the cross rod, and the carriages are then moved transversely of the lines to the beginning of the next set of staff lines and the typing or printing can proceed.

When the sheet has been completely filled, frame B is lifted vertically and removed from the supporting rod 5, and so is the rod 5 with the carriages 6 and 7. This leaves the space above the clamping frame D clear and it can then be opened to remove the sheet and to insert another, after which the cross bar 5 and carriages are replaced and then the frame B. It should be noted that the frame B is of a circular formation. This is important as it provides ample space for the keys and leaves a comparatively large central opening through which the music being typed is clearly visible. It might also be stated that the ribbon 16 employed should be as narrow as possible so that when a key is struck and the machine is shifted one space, the last letter typed or printed will be uncovered thus permitting the operator to determine whether the printed character applied is correctly positioned and so on.

If the operator desires to rule the staff lines on the sheet of paper, he can remove the frame B and the spacer head 30 by merely lifting them off the cross bar 5, and replacing the removed unit with a ruling head such as shown in Figs. 10 and 11. This head is provided with an arm which terminates in an ink well 51. This ink well is provided with a plurality of stylus members 52 which are fed with ink from the well. The head indicated at 53 is provided with semi-circular bearings on its lower face to permit the head to rest on the cross bar 5, hence by merely grasping the cross bar and moving it transversely of the sheet to be ruled, the lines of one staff will be drawn and then by moving the head member 53 from notch to notch the different sets of staff lines may be correctly ruled and spaced. When ruling paper it is preferable to shift the roller 12a from the spacing track 13 to the dotted line position shown at 12b, see Fig. 1, as this portion of trackway 3 is smooth. It permits the roller to roll freely without transmitting any vibration as such vibration might have a tendency to blur the lines. After the sheet has been ruled the ruling head can be removed and the frame and spacing head 30 replaced, after which typing of music may proceed as previously described.

While many features of the present machine are more or less specifically illustrated and described, I wish it understood that various changes may be resorted to within the scope of the appended claim. Similarly, that the materials and finish of the several parts employed may be such as the manufacturer may decide, or varying conditions or uses may demand.

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

In a music typing machine comprising a platen, and a type frame supported for movement transversely and longitudinally thereover and having a plurality of type members for printing in a central position relative to the frame, an inked ribbon disposed between the platen and type frame, and means supporting said ribbon for longitudinal movement with the type frame, whereby each character printed will be exposed to view upon movement of the frame to a position for printing the next succeeding character.

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