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PATENTED DEC. 29, 1903.

G. H. DAVIS.

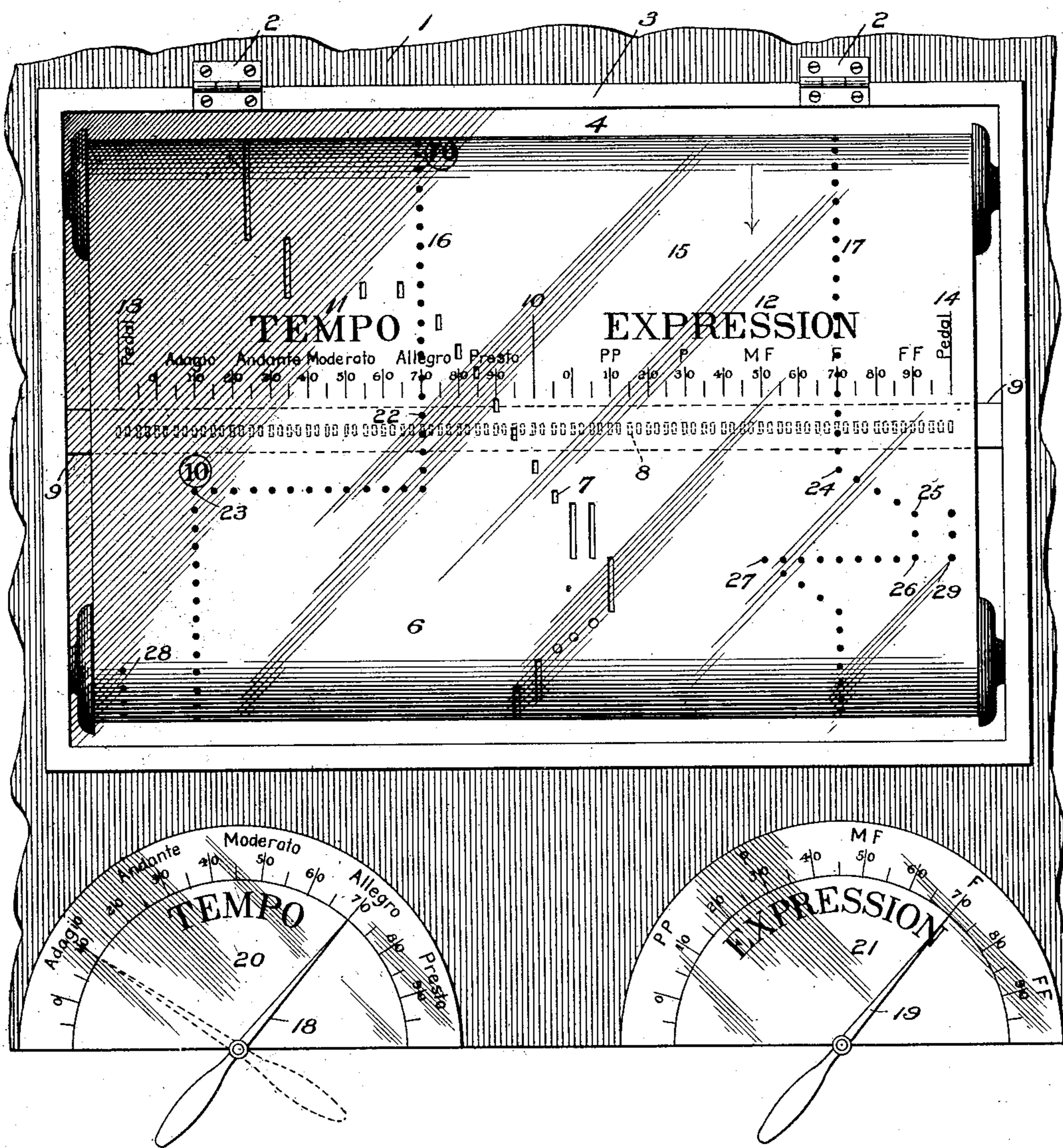
EXPRESSION INDICATOR FOR AUTOMATIC MUSIC PLAYING MECHANISMS.

APPLICATION FILED AUG. 6, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



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Witnesses.

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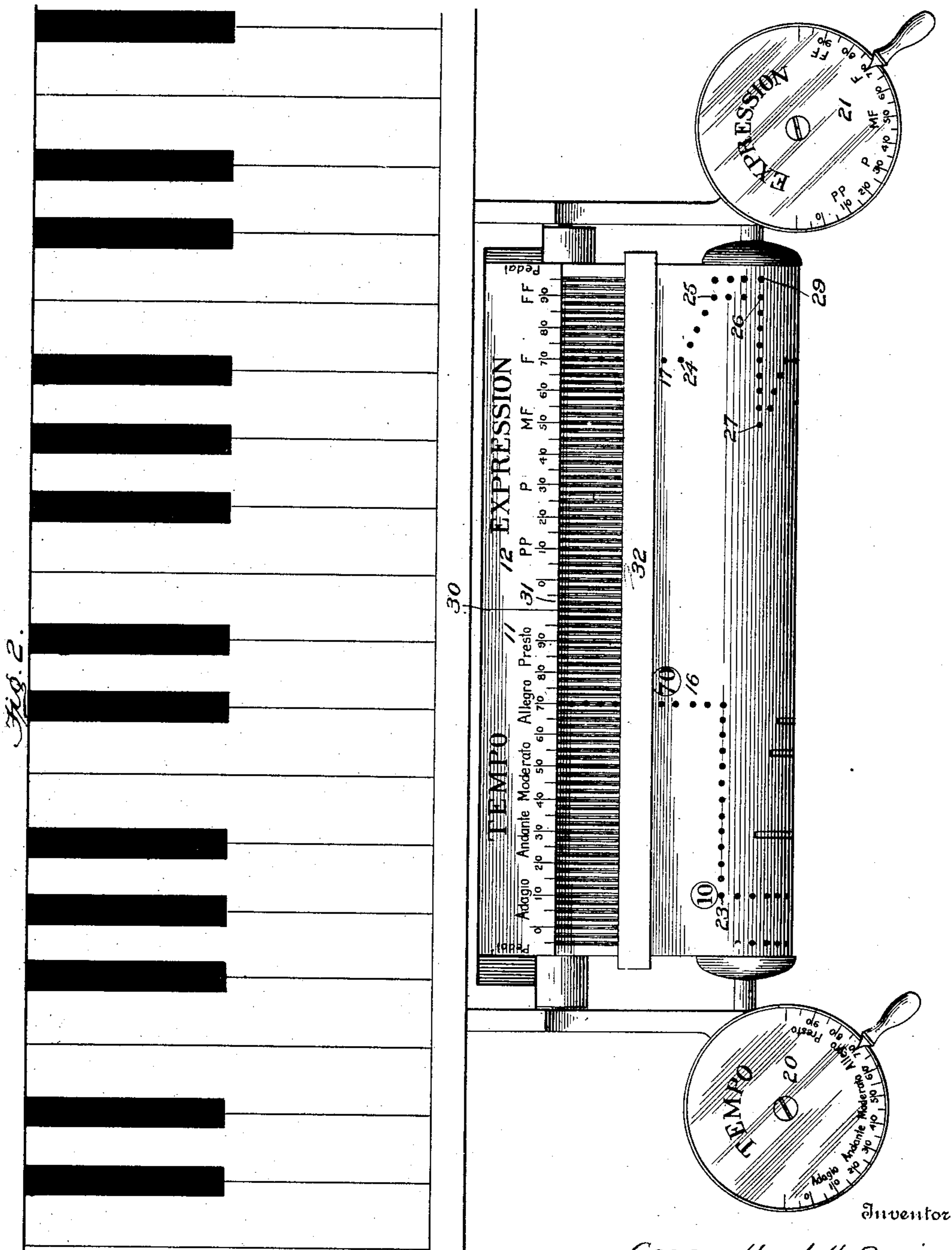
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE HOWLETT DAVIS, OF WEST ORANGE, NEW JERSEY.

EXPRESSION-INDICATOR FOR AUTOMATIC MUSIC-PLAYING MECHANISMS.

SPECIFICATION forming part of Letters Patent No. 748,266, dated December 29, 1903.

Application filed August 6, 1903. Serial No. 168,441. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HOWLETT DAVIS, a citizen of the United States, residing at West Orange, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Expression-Indicators for Automatic Music-Playing Mechanism, of which the following is a specification.

My present invention relates to expression mechanism for self-playing musical instruments, and particularly to that class of such instruments which employ perforated music-rolls as their actuating medium.

The object of my invention is to provide such a novel and useful combination of certain parts of the musical instrument with special markings upon the music roll or sheet which will permit a novice to play any composition with all the gradations of tempo and tone volume intended by the composer or arranger.

In the accompanying drawings, which form a part of this specification, Figure 1 is a plan view of that part of a pneumatic piano-player which carries the music-roll and its cooperating parts. Fig. 2 is a similar view of like parts of an electric piano-player.

In connection with piano-players the musical term "expression" has been narrowed down to mean tone volume only, and wherever this term occurs hereinafter in this specification or upon the drawings it will be given this limited scope only.

I will use the term "modulation" to mean any and all changes produced in either the tone volume or tempo through the pedals or through accenting devices.

So far as I am aware there is no instrument now upon the market which indicates accurately what the various gradations of expression, tempo, and other modulations should be at each and every precise point of the perforated music-sheet, although a complicated and expensive device known as the "metro-style" has been applied to one of the numerous instruments upon the market for indicating accurately the changes to be effected in tempo. In order to accommodate the metro-style, a special instrument is built and an extra charge of fifty dollars is added therefor,

whereas my improvement, applying to both tempo and expression, can be applied to any instrument now in use at a cost of not over fifty cents. Likewise any music-roll now upon the market may readily be marked under my system. In manufacturing my special markings can be applied as cheaply as the present inadequate methods.

Proceeding with a detailed description of my invention, like numerals of reference indicate corresponding parts throughout the several views.

Referring to Fig. 1, the numeral 1 thereon indicates the upper part of the frame of the cabinet form of piano-player, and secured thereto by hinges 2 is a light frame 3, carrying a sheet of glass, celluloid, or other transparent material 4, forming a cover over the well containing the music-sheet 6 and its driving mechanism. The primary object of said cover, which in some instruments is in the form of a slide, is to box in the hissing noise produced by the suction of air passing through the perforations 7 wherever they come in register with the inlet-openings 8 of the tracker-range 9.

Upon the glass 4 I imprint, by means of a decalcomania or otherwise, a double graduated scale 10, one half of which relates to the tempo 11 and is so marked and the other half 12 of which pertains to expression or general tone volume. At either margin of the scale the words "Pedal" (numbered 13 14) are added and relate to the loud and soft pedals of the piano. The said double scale 10 is preferably arranged almost directly over the tracker-range 9, over which latter the perforated music-sheet 6 passes, the direction of travel of the latter during operation being indicated by the arrow 15. Upon the surface of said perforated sheet 6 I imprint two continuous zigzag or sinuous lines, the left-hand one, 16, relating to the tempo and the right-hand one, 17, relating to the expression. These zigzag lines are laid out into a scale corresponding to the one imprinted upon the glass cover 4, and as they pass under the latter the operator notes the numbers on the scales directly over the lines at that point and manually changes the stylus

or indicators 18 19 to point to like numbers upon the corresponding scales 20 21 below, and whenever the lines 16 or 17 pass under different numbers of the double scale 10 the pointers 18 19 are changed accordingly.

For example, take the tempo-line 16. As shown in Fig. 1, at its point 22 it passes under the number "70" and the word "Allegro" and upon the "tempo-dial" 20 below the stylus 18 is properly set at "70" or "Allegro." At point 23, however, the line 16 will pass under the number "10" and the word "Adagio," when the stylus 18 should be changed to the position shown by the dotted outline. It should be explained that when the position of the lever 18 is changed that the rate of travel of the music-sheets is correspondingly altered by varying the speed of the motor or other propelling mechanism.

The mode of operation of the expression-lever 19 in combination with the line 17 and the right-hand "expression - scale" 12 is precisely like that just described for the "tempo" scale, line, and lever. When the line varies diagonally, as from the points 24 to 25, then the lever 19 should be moved from "70" to "90" slower than when the change indicated from points 26 to 27 is to be effected.

Under my improved system the operator can tell precisely what the tempo and expression should be at any time he glances at the sheet, as the zigzag lines, in connection with the double dial, provides a continuous and most accurate instruction. The system of figures, words, and letters now commonly employed upon music rolls or sheets to denote the various modulations are inaccurate, ineffectual, and otherwise faulty—as, for instance, when the word "retard" occurs the operator does not know either to what extent or at what rate to slow up the speed of travel to the sheet, nor does he know at precisely what point to set the "tempo-lever" when such words as "andante," "allegro," &c., appear upon the sheet, particularly if he be not skilled in music. Under the old system a character to indicate modulation is likely to pass unobserved, and the error would not be corrected until the next character was reached, whereas under my present system an operator can know at any time at just what points the modulating-levers should be set.

Even should the system of zigzag lines be dispensed with my scale set over the sheet, in conjunction with lever-dials correspondingly marked with suitable words and figures, will be found to be helpful. For instance, suppose the tempo-line 16 to be dispensed with and the encircled numerals "70" and "10" to be substituted, thereby employing an operating or tempo lever 18 and a correspondingly-numbered dial, such as 20, then an operator by carefully watching for and observing such characters may effect the modulations in a fairly accurate manner; but the system will still be open to the other objections above referred to.

In addition to the zigzag lines referred to I may employ lines, such as 28 29, upon either edge of the sheet, the former mark 28 denoting that the left hand or soft foot-pedal of the piano is to be depressed during the duration of the passage of such line under the left-hand margin of the scale 13 and the mark 29 indicating a like operation of the loud or sustaining pedal.

In Fig. 2 I have shown the application of my improved system to the standard electric piano-player, the "Pianophone," the only important change necessary being the substitution of a cross bar or plate 30 of non-transparent material, upon which the scales 11 and 12 are imprinted in lieu of the transparent cover 6. (Shown in Fig. 1.) In this instance the zigzag lines disappear from view after passing the forward edge 31 of the scale. The lines are likewise out of view while passing under the cross-bar 32; but this forms no serious objection, as the context of the line, together with its continuity and its appearance in advance of the actuating point, serves all practicable purposes.

What I claim is—

1. In indicator mechanism for mechanical musical instruments, the combination with a perforated music-sheet bearing suitable marks or characters indicating effects to be produced in playing, and a controller by which said effects are governed, of a chart or scale bearing characters indicating to the operator at what point to set the controller to obtain the desired musical effects represented by the marks or characters on the sheet, said chart or scale being located across the path of movement of the music-sheet in such position that the characters thereon will register with those on the sheet during the movement of the latter.

2. In indicator mechanism for mechanical musical instruments, the combination with a note-selecting device, and a controller for expression means comprised in the instrument, of a perforated music-sheet bearing suitable marks or characters indicating effects to be produced in playing, said sheet traveling over the note-selecting device, and a chart or scale bearing characters indicating to the operator at what point to set the controller to obtain the desired musical effects represented by the marks or characters on the sheet, said chart or scale being located across the path of movement of the music-sheet in such position that the characters on the later will register with those on the chart or scale during the movement of the sheet.

3. In combination with the tracker of a musical instrument, of a modulation-controlling lever, a scale located adjacent thereto bearing suitable characters, and a dial bearing corresponding characters located adjacent to the modulation-controlling lever.

4. In combination with the controlling-lever of a musical instrument, a dial bearing suitable expression characters, and a chart

or scale bearing corresponding characters, said chart or scale being located across the path of movement of the music-sheet.

5 In indicator mechanism for mechanical musical instruments, the combination with a note-selecting device, and a controller for expression means comprised in the instrument, of a perforated music-sheet having marked thereon a line indicating effects to be produced in playing, said sheet traveling over the note-selecting device, and a chart or scale bearing characters indicating to the operator at what point to set the controller to obtain the desired musical effects represented by the line on the sheet, said chart or scale being located across the path of movement of the music-sheet.

6. In a mechanical musical instrument operated through the medium of a music-sheet, the combination with a controller for a modulation mechanism comprised in said instrument, of a dial having characters to indicate each position of the controller, and an index arranged over the music-sheet across the path of movement thereof, said index bearing characters corresponding to those on the dial.

7. In a mechanical musical instrument operated through the medium of a music-sheet, in combination with the tracker thereof, an index arranged above and entirely across the tracker, said index bearing characters indicating effects to be produced in playing.

8. In a self-playing musical instrument, the combination with the controlling-lever having a pointer, of a dial bearing characters indicating effects to be produced in playing, over which said pointer is arranged to be moved and a scale bearing corresponding characters located across the path of movement of the music-sheet.

9. In a self-playing musical instrument, the combination with the controlling-lever having a pointer, of a dial bearing characters indicating effects to be produced in playing, over which said pointer is arranged to be moved, a scale bearing corresponding characters located across the path of movement of the music-sheet, and a music-sheet having suitable characters marked thereon which cooperate with the characters on the dial and scale.

10. In a self-playing musical instrument, the combination with the tracker, of a scale arranged adjacent thereto and extending across the same, said scale bearing suitable characters indicating effects to be produced in playing.

11. In a self-playing musical instrument,

the combination with the tracker, of a scale 60 arranged adjacent thereto, said scale bearing characters indicating effects to be produced in playing, and a music-sheet mounted to travel beneath said scale, the said sheet having characters thereon which cooperate with 65 the characters on the scale.

12. In a mechanical musical instrument, the combination of a perforated music-sheet having marked thereon, a line indicating effects to be produced in playing, and a controller by which such effects are governed, of a dial having numerals or other characters to indicate each position of the controller, and an index having characters corresponding to said dial arranged over the music-sheet and 75 by the passage of said line thereunder indicating to the operator at what point to set the controller in order to follow said line.

13. In a mechanical musical instrument, the combination of a perforated music-sheet 80 having marked thereon a line and characters indicating effects to be produced in playing, and a controller for a mechanism comprised in the musical instrument, of a dial having numerals and other characters to indicate 85 each position of the controller, and an index arranged above the music-sheet having characters and numerals corresponding to those on the dial, the arrangement being such that during the travel of the music-sheet the line 90 thereon will register with the various characters on the index and indicate to the operator at what point to move the controller on the dial.

14. In a self-playing musical instrument, 95 the combination with the tracker thereof, of a transparent cover arranged over the tracker, and a scale indicating effects to be produced in playing imprinted on said transparent cover. 100

15. In a self-playing musical instrument, the combination with the tracker thereof, of a transparent cover movable over the tracker, and a scale indicating effects to be produced in playing imprinted upon said cover. 105

16. In a self-playing musical instrument, and in combination with the tracker thereof, a transparent strip or plate arranged over the tracker and bearing characters indicating effects to be produced in playing. 110

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

GEORGE HOWLETT DAVIS.

Witnesses:

THOS. V. HENDERSON,
G. E. CROSBY.