D. J. HAUSS.

MUSICAL INSTRUMENT.

APPLICATION FILED AUG. 30, 1909.

1,170,750. Patented Feb. 8, 1916.

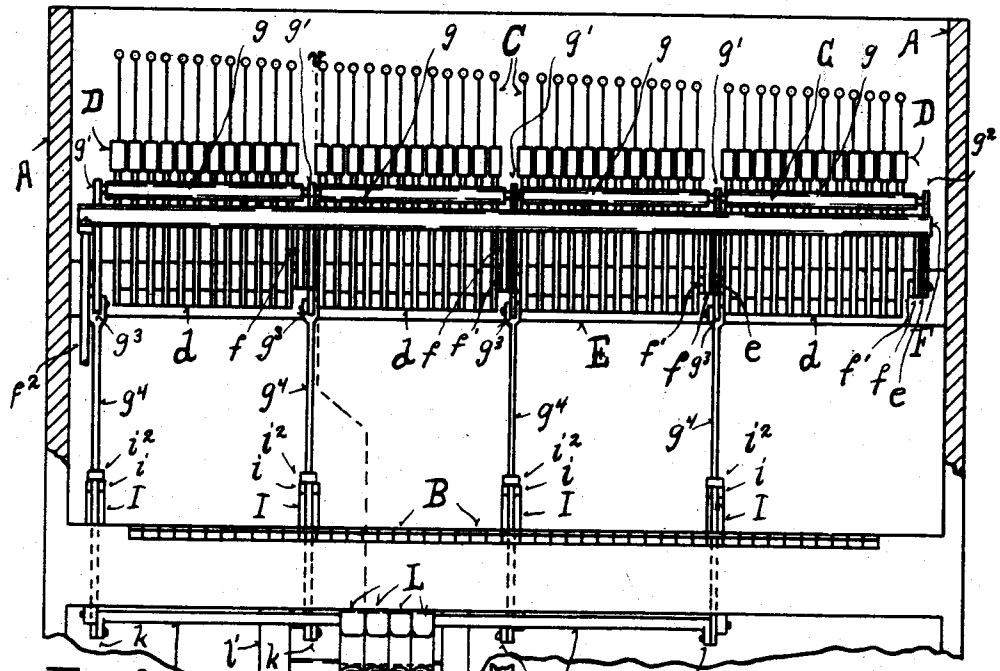

Fig. 1.

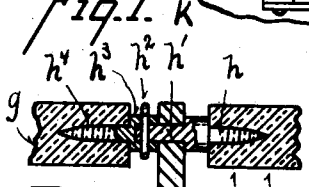

Fig. 5.

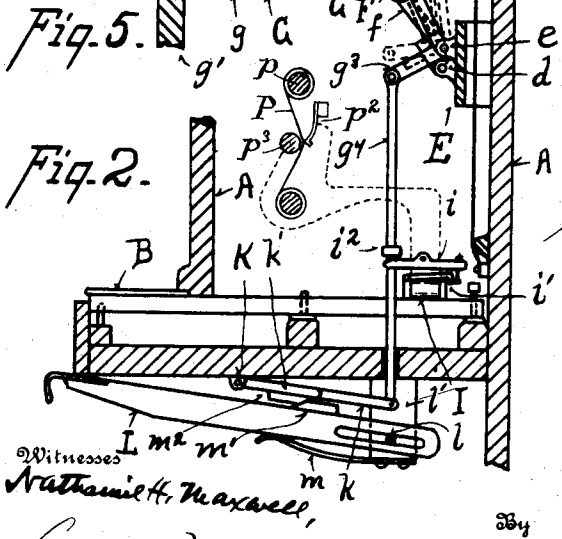

Fig. 2.

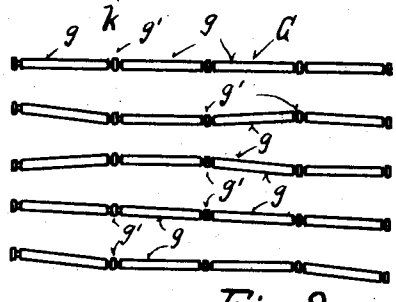

Fig. 3.

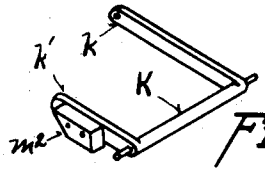

Fig. 4.

Witnesses

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MUSICAL INSTRUMENT.

1,170,750. Specification of Letters Patent. Patented Feb. 8, 1916.

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To all whom it may concern:

Be it known that I, DAVID J. HAUSS, a citizen of the United States, residing at Aurora, in the county of Dearborn and State of Indiana, have invented certain new and useful Improvements in Musical Instruments, of which the following is a specification.

My invention relates to improvements in musical instruments.

One of its objects is to provide a hammer bar adjustable in sections, and which is primarily adapted to be used in connection with an electrically or pneumatically actuated instrument to make prominent such parts of the music as may be desired.

Another object is to provide a sectional hammer bar adapted to be adjusted in sections together with means for actuating the same, through the movements of the music sheet.

Another object is to provide a sectional hammer bar and means adapted to be selectively employed to actuate the same either mechanically through the music sheet or manually as desired.

Another object is to provide in connection with the usual hammer bar of pianos and similar instruments, a supplemental hammer bar adapted to be adjusted and means to effect such adjustments in sections.

It further consists in certain details of form, combination and arrangement, all of which will be more fully set forth in the description of the accompanying drawings, in which:

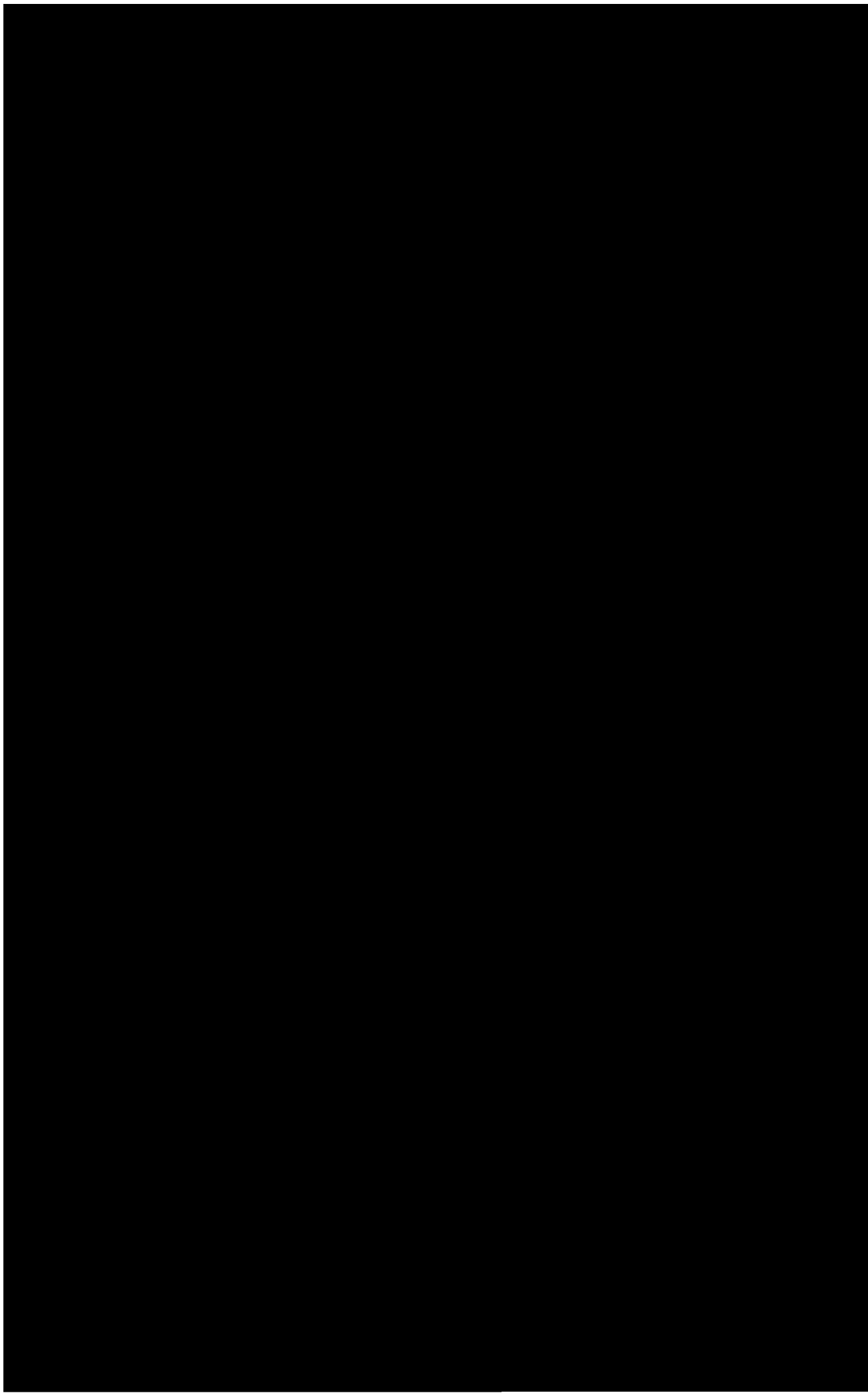
Figure 1 is a front elevation of the upper portion of a piano with the front panel of the casing removed disclosing the strings or wires, the hammers, and hammer bars, and their actuating mechanism. Fig. 2 is a vertical section on line *v v* of Fig. 1. Fig. 3 is a diagram illustrating a variety of sectional adjustments of the sectional hammer bar. Fig. 4 is a perspective view of a detached portion of the mechanism employed to manually actuate the sectional hammer bar. Fig. 5 is a sectional detail of one of the joints of the sectional hammer bar.

I have illustrated my improvements applied to a piano adapted to be manually actuated and also mechanically actuated. It may however be applied to pianos and other instruments adapted to be exclusively actuated through the use of perforated music sheets, and in either style of instrument the sectionally adjustable hammer bar is adapted to be actuated manually if desired, or where a music sheet is employed, to be actuated automatically through the movements of the music sheet.

In the accompanying drawings A represents the instrument casing, B represents the music keys, C the music strings, and D the hammers pivotally attached at *d* to a frame E, and actuated by the keys B through transmitting mechanism of usual construction, not shown. The musical sounds are produced by the striking of the respective hammers upon the strings, and the volume of sound has been heretofore controlled by a hammer bar F, which by pressing the heads of the hammers nearer to the strings shortened the stroke of the hammers and reduced the volume of sound. The hammer bar F acts uniformly upon all the hammers, being a rigid bar from end to end. As illustrated the hammer bar F is provided with arms *f* which are pivotally connected to ears *f'* carried by the frame E, and said hammer bar is actuated through a rod f^2 adapted to be actuated by pressure on one of the pedals at the base of the instrument.

I preferably employ my improved sectional hammer bar in conjunction with the usual hammer bar F. As illustrated the sectional hammer bar G, is composed of a series of short sections *g* which are supported at the ends and between the respective sections by means of arms or links *g'* which are pivoted at their lower ends to ears *e* carried by the frame E, and at their upper ends are connected to the hammer bar G. The arm g^2 is preferably locked rigidly so as to hold the end of the sections *g* of the bar G rigidly in the desired position, while the arms *g'* are of the bell-crank lever type and adapted to move the left hand and intermediate sections, and the left hand end of the right hand section to varying positions toward and from the strings C, thereby shortening or lengthening the stroke of the various hammers to correspond with the adjustment of the various sections of the hammer-bar G, and thereby to subdue or make prominent different portions of the music being played.

The respective sections of the hammer bar G may be and are preferably connected together, which may be effected by several different instrumentalities, in Fig. 5 I have



scribed, the combination with a series of hammers of a musical instrument, strings upon which the hammers act, of a bar for engaging said hammers to control their position relatively to the strings, comprising a series of sections pivotally united, actuating levers engaging the sections of the bar for actuating the same, and manually operable levers engaging said actuating levers and adjustable to normally hold said hammers at rest in position to make a minimum stroke or any desired intermediate stroke, said manually operable levers being independently temporarily operable without disturbing their respective adjustments for normal positions of rest for the hammers.

3. In a mechanism of the character described, the combination with a series of hammers of a musical instrument, and strings upon which the hammers act, of a sectional bar for engaging said hammers to control their position relatively to the strings, the sections of the bar being pivotally united, bar actuating means engaging at one end with the ends of each of the bar sections and provided at the opposite ends with inclined faces, manually operable levers provided with inclined faces to yieldingly engage the inclined faces of said actuating means, and adjustable to bring said inclined faces in pairs progressively into engagement to predetermine the minimum stroke of said hammers.

4. In a mechanism of the character described, the combination with a series of hammers of a musical instrument and strings upon which the hammers act, of a bar for engaging said hammers to control their position relative to the strings, comprising a series of sections pivotally united, a series of actuating devices connected to respective sections, for independently operating a portion of the bar, means for manually controlling the movement of said actuating mechanism, and electrically actuated mechanism having electric circuits controlled by a music sheet to automatically operate said bar independently of said manually control.

5. In expression mechanism for musical instruments, the combination with a series of hammers, of means for shifting the position of rest thereof whereby the length of stroke of the successive hammers varies from end to end of said series, and mechanism adjustable to predetermine the minimum stroke of said hammers and operable independently of its adjustment to temporarily increase the stroke of said hammers.

6. In expression mechanism for musical instruments, the combination with a series of sound-producing devices, of a rest rail operable to progressively decrease the length of stroke of successive sound producing devices from end to end of the series, and an independent and separately operable sectional rest rail, a series of actuating levers connected to the respective sections of said sectional rest rail, and adjustable means to predetermine the position of said sectional rest rail and thereby the minimum stroke of said sound producing devices independently of the operation of said first named rest rail.

In testimony whereof I have affixed my signature in presence of two witnesses.

DAVID J. HAUSS.

Witnesses:
WALTER F. MURRAY,
C. W. MILES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."