

No. 641,454.

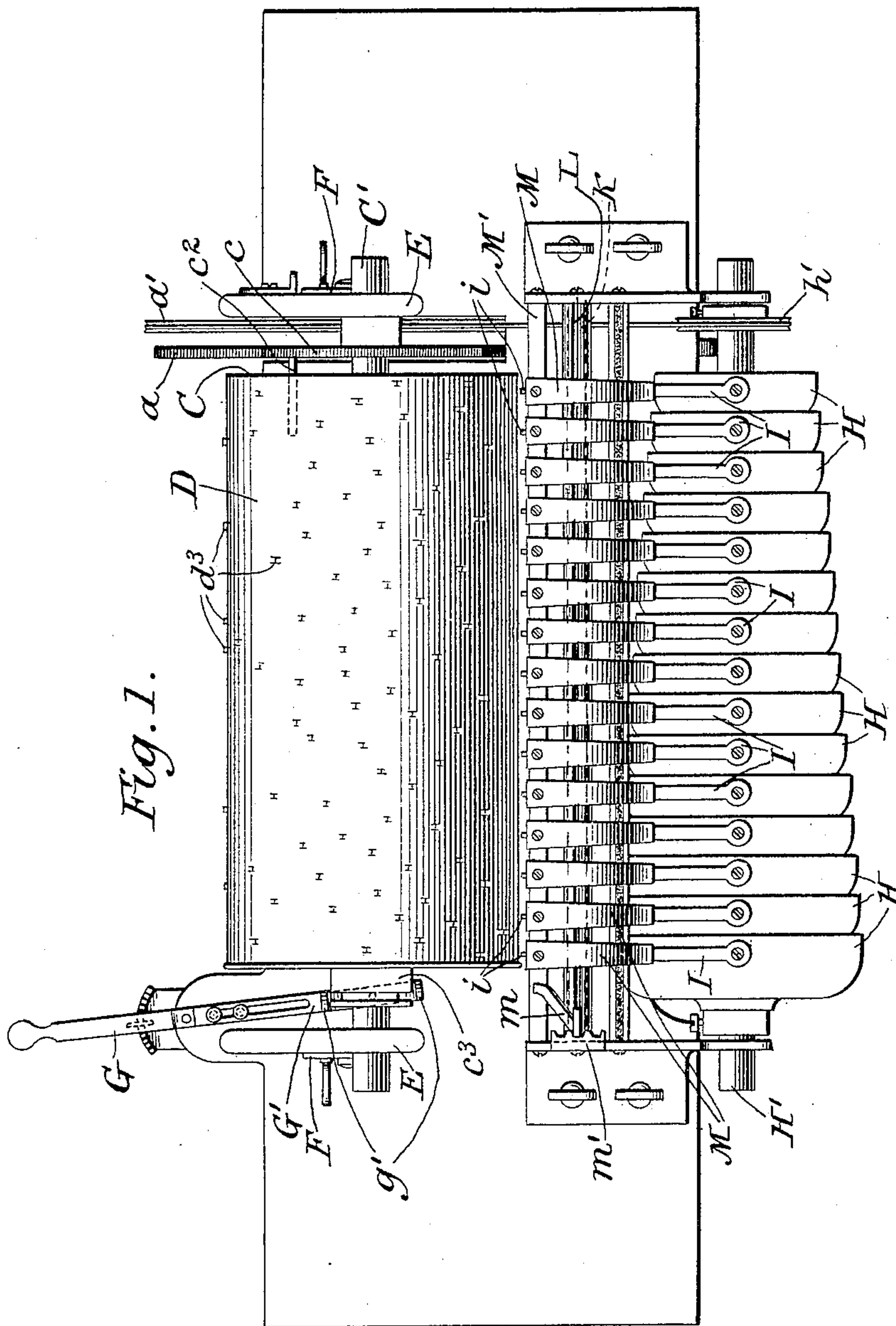
Patented Jan. 16, 1900.

K. LANDA.  
MUSIC BOX.

(Application filed Apr. 5, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:

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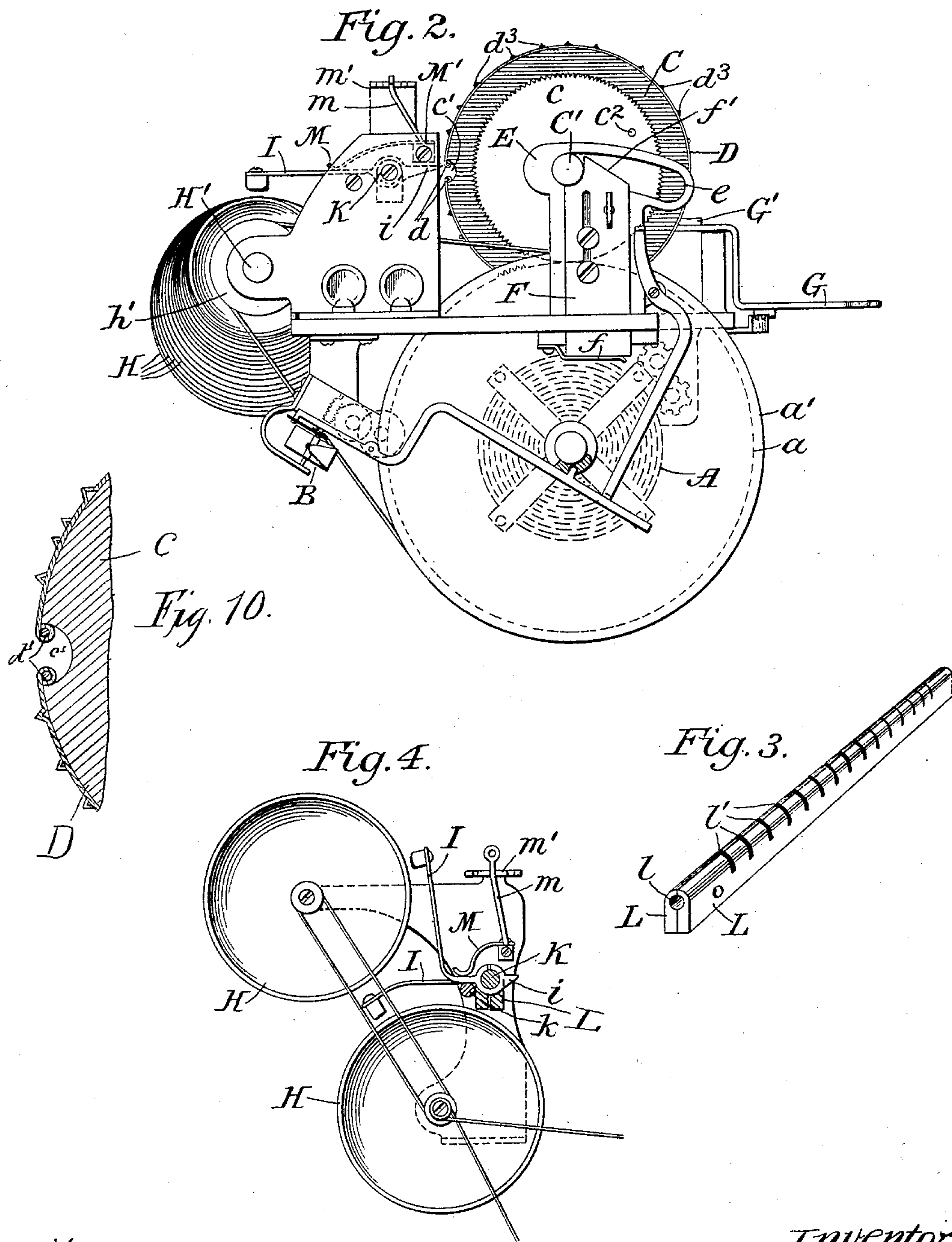
Patented Jan. 16, 1900.

K. LANDA.  
MUSIC BOX.

(Application filed Apr. 5, 1899.)

3 Sheets—Sheet 2.

(No Model.)



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MUSIC BOX.

(Application filed Apr. 5, 1899.)

3 Sheets—Sheet 3.

(No Model.)

Fig. 5.

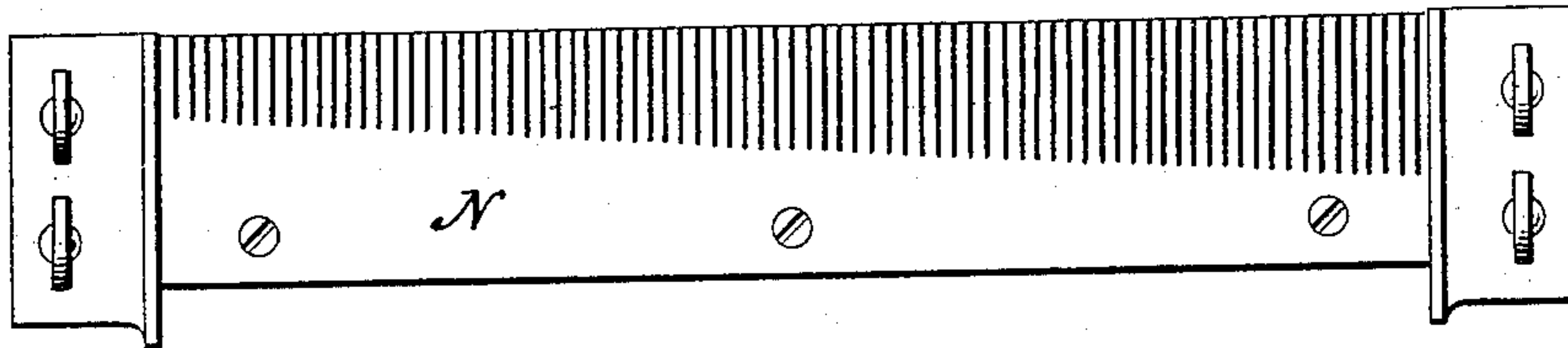


Fig. 6.

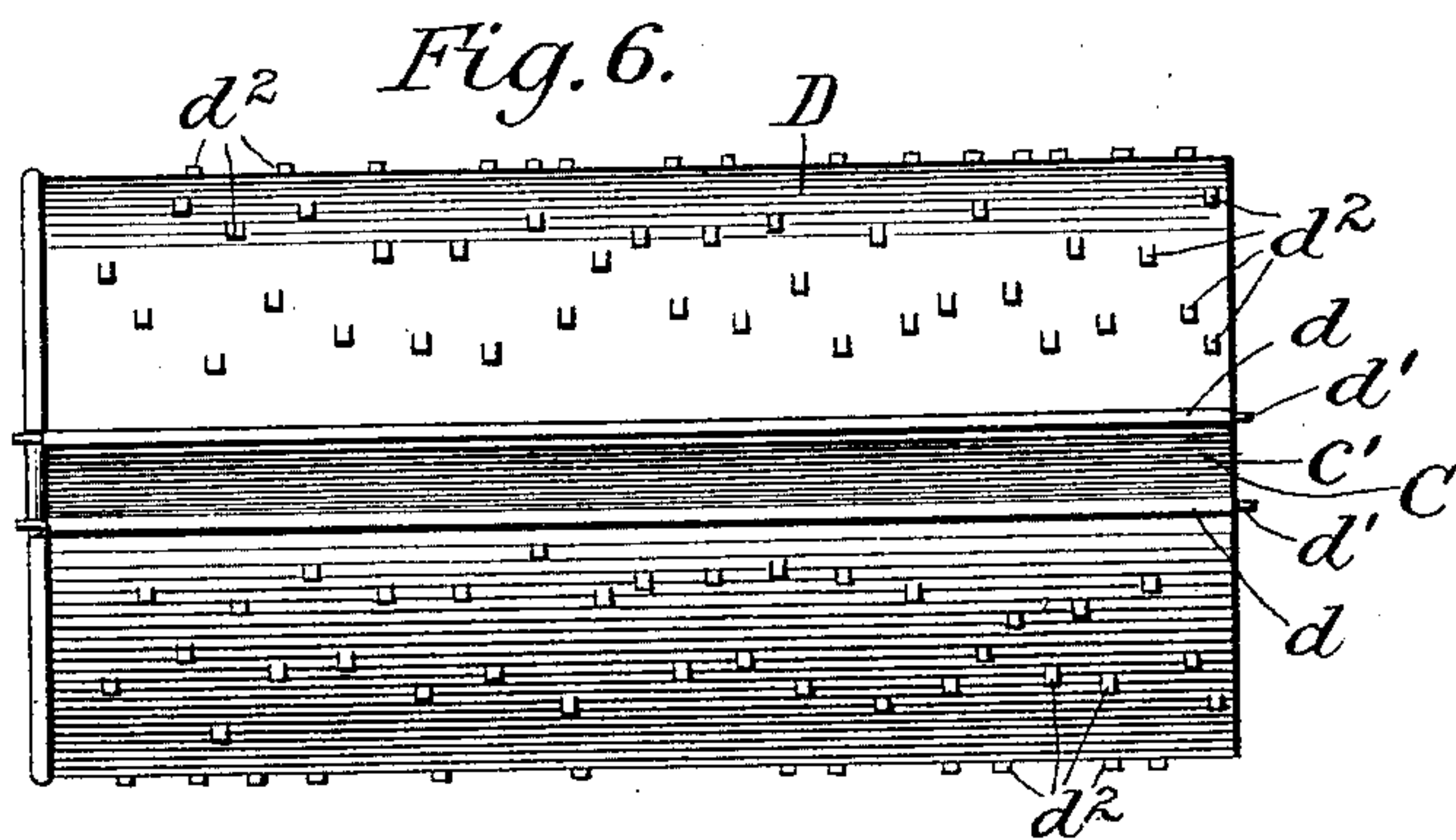


Fig. 8.

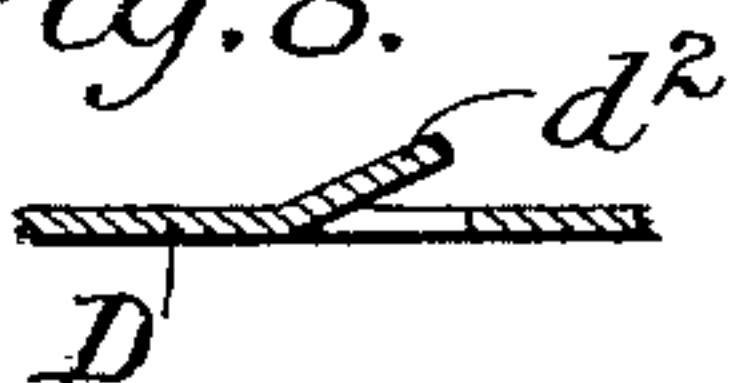


Fig. 7.

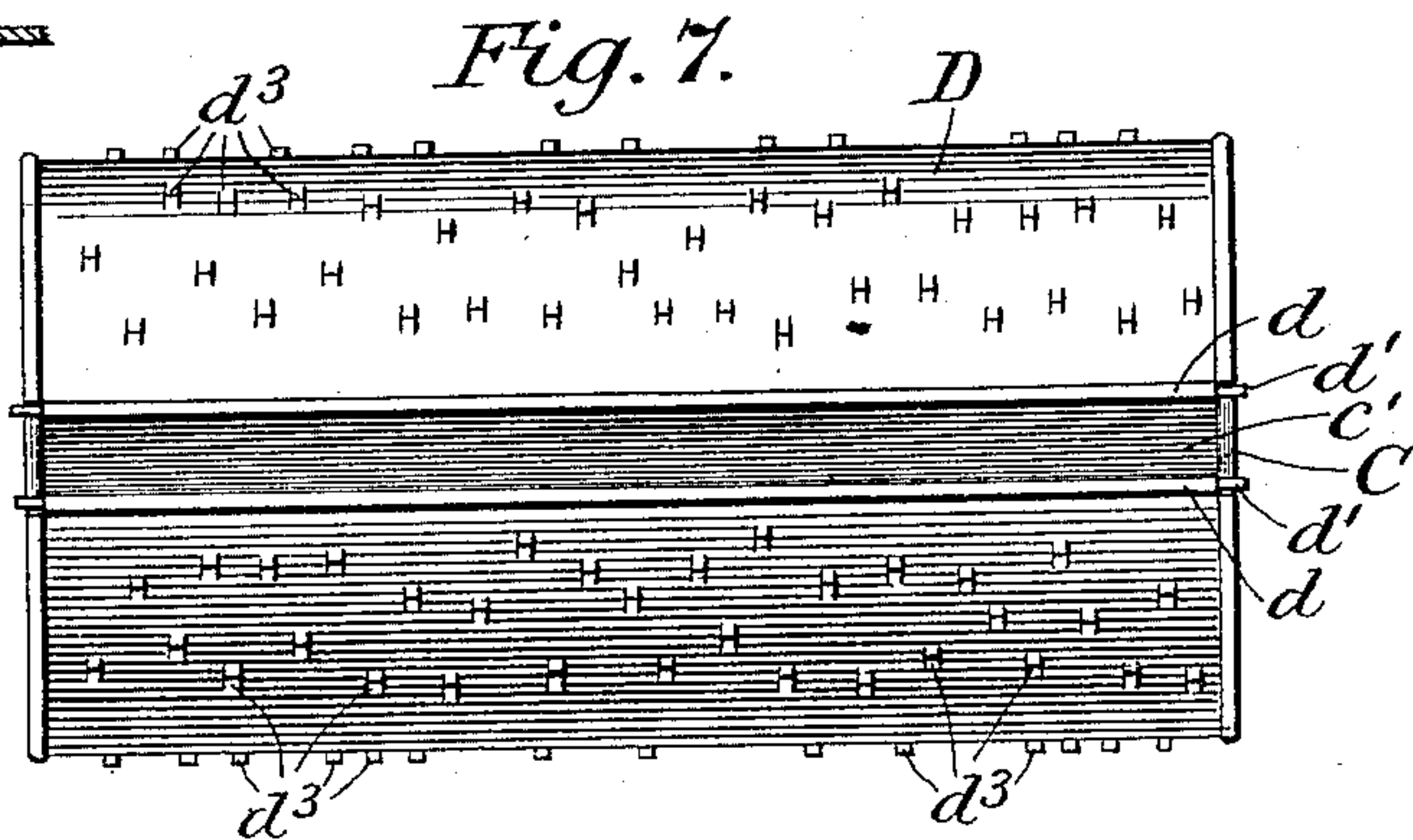


Fig. 9.



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# UNITED STATES PATENT OFFICE.

KARL LANDA, OF BAYONNE, NEW JERSEY.

## MUSIC-BOX.

SPECIFICATION forming part of Letters Patent No. 641,454, dated January 16, 1900.

Application filed April 5, 1899. Serial No. 711,782. (No model.)

*To all whom it may concern:*

Be it known that I, KARL LANDA, a citizen of the United States, residing in the city of Bayonne, in the State of New Jersey, have invented certain new and useful Improvements in Music-Boxes, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to automatic musical instruments or music-boxes in which the sounding bodies, whether comb-teeth or bells or other bodies, are made to give forth their respective tones by the operation or under the control of a tune sheet or disk or cylinder or other surface which is driven by or through suitable mechanism.

The main object of the invention is to produce a novel instrument of this character which shall be simple and inexpensive in construction and shall be easily capable of adjustment for different tunes. It has been sought especially to produce an instrument of this character in which bells shall be employed as the sounding bodies, while at the same time the instrument shall have a wide range of tone and shall be capable, therefore, of playing tunes which have a wide range.

Some features of the invention are particularly concerned with the mounting and sounding of the bells; but other features, as will be understood, are capable of application to other forms of music-boxes, such as those which employ combs.

A convenient and practical embodiment of the invention is represented for purposes of illustration and explanation in the accompanying drawings, in which—

Figure 1 is a plan view of such a music-box with the casing removed. Fig. 2 is an end view of the same. Fig. 3 is a perspective view of the improved bearing and spacing block for the hammers. Fig. 4 is a detail view in end elevation showing two sets or series of bells in place of the single series or set shown in Fig. 2. Fig. 5 is a plan view of a comb which may be substituted for the bells. Figs. 6 and 7 are plan views of cylinders with music-sheets thereon, showing slight modifications. Figs. 8 and 9 are detail views in section, illustrating the manner of forming the teeth on the tune-sheet shown in Figs. 6 and 7, respectively. Fig. 10 is a detail cross-section

of the cylinder, showing how the beaded ends of the music-sheet are sprung over the edges of the groove.

In the music-box shown in the drawings a suitable clockwork mechanism, sufficiently represented at A and having an ordinary governor B, drives, through the gears *a* and *c*, the cylinder C, which supports the tune-sheet D and is itself mounted upon a suitable shaft C'. The latter is supported in bearing-brackets E, which are slotted concentrically with the axis of the gear *a*, so as to permit the shaft and cylinder to be rolled back from operative position for the purpose of changing the tune-sheet. A sliding latch F is pressed upward normally by a spring *f* to retain the shaft and cylinder in operative position, the upper end of the latch being beveled off, as at *f'*, so as to permit the shaft to be rolled over it, thereby depressing the latch, when the cylinder is returned to operative position.

The tune-sheet D must be readily removable from the cylinder C, and for this purpose the latter has in its periphery a groove *c'* parallel with the axis, and the ends of the tune-sheet are rolled inwardly, preferably over a wire *d'*, so that when the inward bead or shoulder thus formed on one edge of the sheet is engaged with the corresponding edge of the groove, as shown in Fig. 1, the inward bead or shoulder similarly formed on the other edge of the sheet can be snapped over the other edge of the groove and will engage the same, the sheet being thereby retained firmly in position on the cylinder, but yet easily removable by disengaging one edge of the sheet from the groove. It will be understood that the sheet is of such length as to permit the beads or shoulders to engage the edges of the groove snugly when the sheet encircles the cylinder. The tune-sheet may have its teeth formed as usual by punching out one end of the tooth, as shown at *d*<sup>2</sup> in Figs. 6 and 8; but is preferably formed by striking up the metal without separating either end of the tooth, as shown at *d*<sup>3</sup> in Figs. 7 and 9.

Each tune-sheet may be formed with two or more sets of teeth for as many different tunes, the teeth of one set being offset laterally on the sheet from the teeth of another set. In order that the different sets may be



brought into different operative relation with respect to the sounding bodies, the cylinder must be capable of being shifted longitudinally upon its shaft. As represented in the drawings, a long pin  $c^3$  is fixed in the gear  $c$  and engages the cylinder, so as to compel the rotation of the cylinder with the gear, while permitting it to be moved longitudinally on its shaft. A shifting-lever  $G$  is pivoted on the frame and engages a grooved hub  $c^3$  on the cylinder, and in order that the cylinder may be rolled back for the detachment of the tune-sheet without disengaging the shifting-lever the latter is provided with a sliding section  $G'$ , armed with pins or a yoke  $g'$ , by which the hub is straddled, so that the section  $G'$  slides upon the main part of the lever  $G$  when the cylinder is rolled back.

As represented in Figs. 1 and 2, the sounding bodies or bells  $H$  are mounted in close proximity to each other upon a common shaft  $H'$ , and in order that the quality of tone of the bells may be improved or mellowed, as is the case when a bell or other sounding body is moved rapidly through the air, the bells are rotatable or preferably are rotated during the operation of the instrument. For this purpose the shaft  $H'$  is mounted in suitable bearing-brackets and is operatively connected with the clockwork mechanism  $A$ , so as to be rotated thereby, band-pulleys  $h'$  and  $a'$  on the shaft  $H'$ , and the shaft of the clockwork mechanism, respectively, or any other suitable form of gearing being provided for this purpose.

To produce the tones, the bells are struck by hammers  $I$ , which are operated or whose operation is determined by the teeth of the tune-sheet. As represented in the drawings, the hammers are pivotally mounted upon a suitable shaft or rod  $K$  and rest normally upon a suitable stop-rod  $k$ , the heels of the hammers projecting into the paths of the teeth on the tune-sheet. For convenience in mounting the hammers and in securing the proper spacing thereof a supporting and spacing block (shown in Fig. 3) is provided, said block consisting of two parts  $L$   $L$ , which are formed separately, but which when placed face to face form a bearing  $l$  for the rod or shaft  $K$  throughout its length, such bearing being slotted at proper intervals, as at  $l'$ , to receive the shanks of the hammers. By this construction the hammers are easily assembled, no separate spacing-thimbles are required, and the hammers are accurately spaced and securely retained in proper relative position.

In order that the loudness of the tone may be varied at will, springs  $M$  are arranged to bear upon the hammers and are secured to a bar  $M'$ , which is rotatably mounted in the frame of the instrument. An arm or handle  $m$  is secured to the bar near one end and is adapted to engage a rack  $m'$ , by means of which the springs are retained in adjusted position to bear with more or less force upon the hammers.

In Fig. 4 are shown two series or sets of bells  $H$  and corresponding sets or series of hammers  $I$ , whereby the range of the instrument is doubled over that shown in Fig. 2. The operation of the instrument with two or even more sets of bells is precisely the same as that of an instrument with one set of bells and need not be described further herein. In Fig. 5 is shown a comb  $N$ , which may be substituted in the instrument shown in the drawings for the bells and hammers without changing other parts of the instrument.

The operation of the improved instrument is as follows: The latches  $F$  being withdrawn the cylinder  $C$  is moved back and the tune-sheet is applied thereto in the manner already described. Then the cylinder is returned to its operative position, where it is held by the latches, and the driving mechanism is set in motion, causing the cylinder to be revolved slowly and at the same time causing the bells  $H$  to revolve. As the teeth  $d^2$  or  $d^3$  of the tune-sheet make contact with the heels of the hammers  $I$  they cause the hammers to be lifted against the pressure of the springs  $M$  until the teeth pass beyond the heels. The hammer-heads thereupon strike the bells under the influence of the springs, producing the desired tones.

I claim as my invention—

1. The combination with a music-box cylinder having a longitudinal groove of a tune-sheet having its ends turned in to snap over the opposite edges of said groove, substantially as shown and described.

2. The combination with the driving mechanism and cylinder of a music-box, of bearings for the shaft of said cylinder said bearings being slotted concentrically with the driving-gear to permit the shaft and cylinder to be moved back, and latches to engage said shaft and retain the cylinder in operative position, substantially as shown and described.

3. The combination with the cylinder of a music-box, said cylinder being movable longitudinally and also movable laterally, of a shifting-lever for shifting said cylinder longitudinally and pivoted on the frame, said shifting-lever having an extensible portion engaging said cylinder to move therewith as the cylinder is moved laterally.

4. A music-box comprising a series of sounding bodies, a series of hammers therefor, means to actuate said hammers, and a bearing-block for said hammers, said bearing-block comprising two parts forming between them a bearing for the pivot pin or rod of the hammers and slotted at intervals to receive the shanks of the hammers, substantially as shown and described.

5. A music-box comprising a series of sounding bodies, a series of hammers, means to actuate said hammers, a bar rotatably mounted in proximity to said hammers, a series of flat springs secured to said bar and bearing directly and separately upon said hammers, and means to rotate said bar and



hold it in adjusted position, substantially as shown and described.

5 6. A music-box comprising driving mechanism, a bell rotatable on its support, a hammer, actuating devices therefor, and driving connections between said mechanism and said bell, substantially as shown and described.

10 7. In a music-box, the combination of a tune-sheet carrier, driving mechanism geared to said carrier, a series of bells, a common shaft upon which said bells are mounted, a

series of hammers actuated by said tune-sheet, and operative connections between said driving mechanism and said shaft where- 15 by the bells are rotated while the hammers act thereon, substantially as shown and described.

This specification signed and witnessed this 25th day of March, A. D. 1899.

KARL LANDA.

In presence of—

ANTHONY N. JESBERA,  
W. B. GREELEY.