

(No Model.)

2 Sheets—Sheet 1.

G. H. GRAHAM.
MUSICAL INSTRUMENT.

No. 593,468.

Patented Nov. 9, 1897.

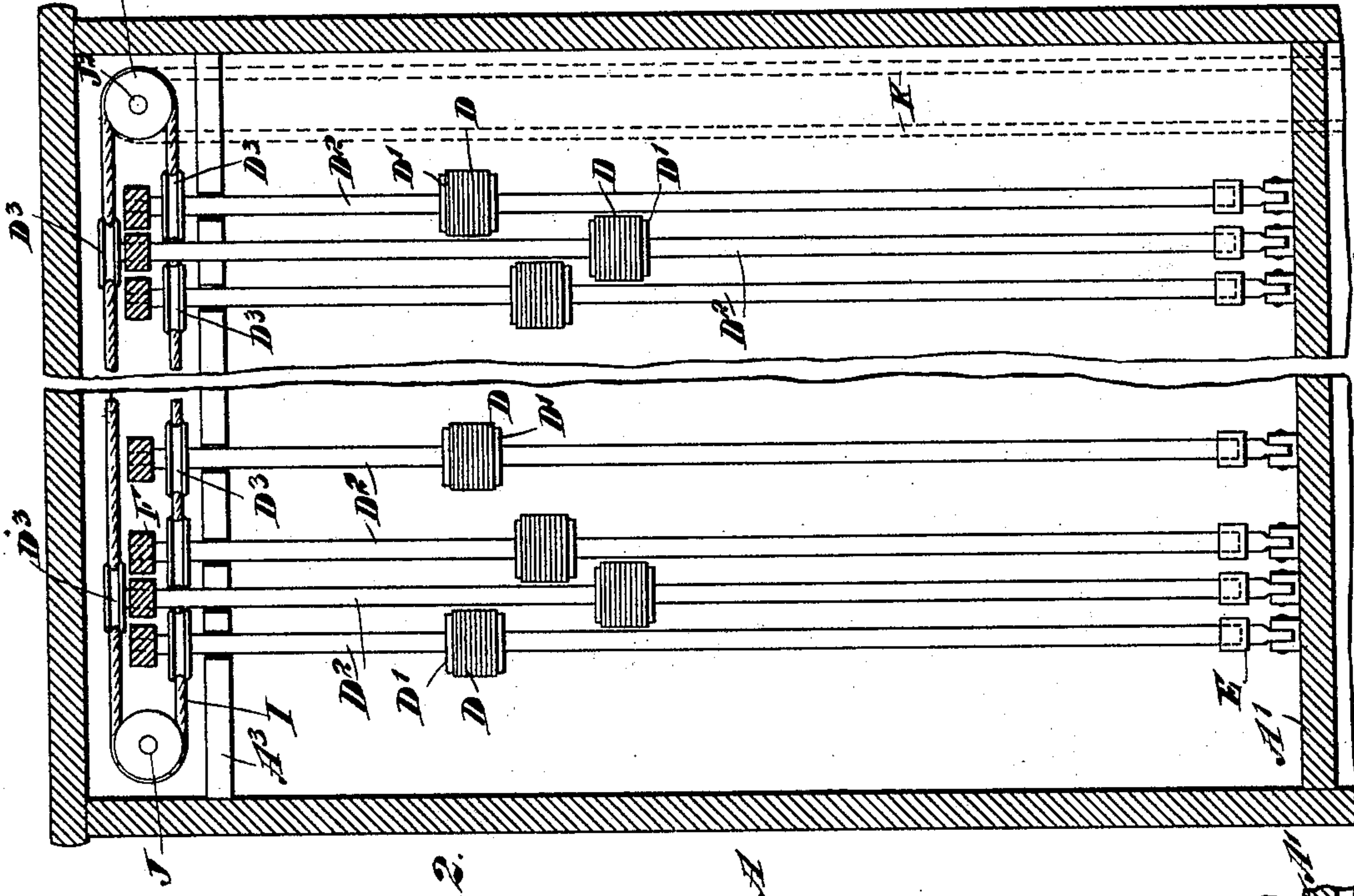


Fig. 2.

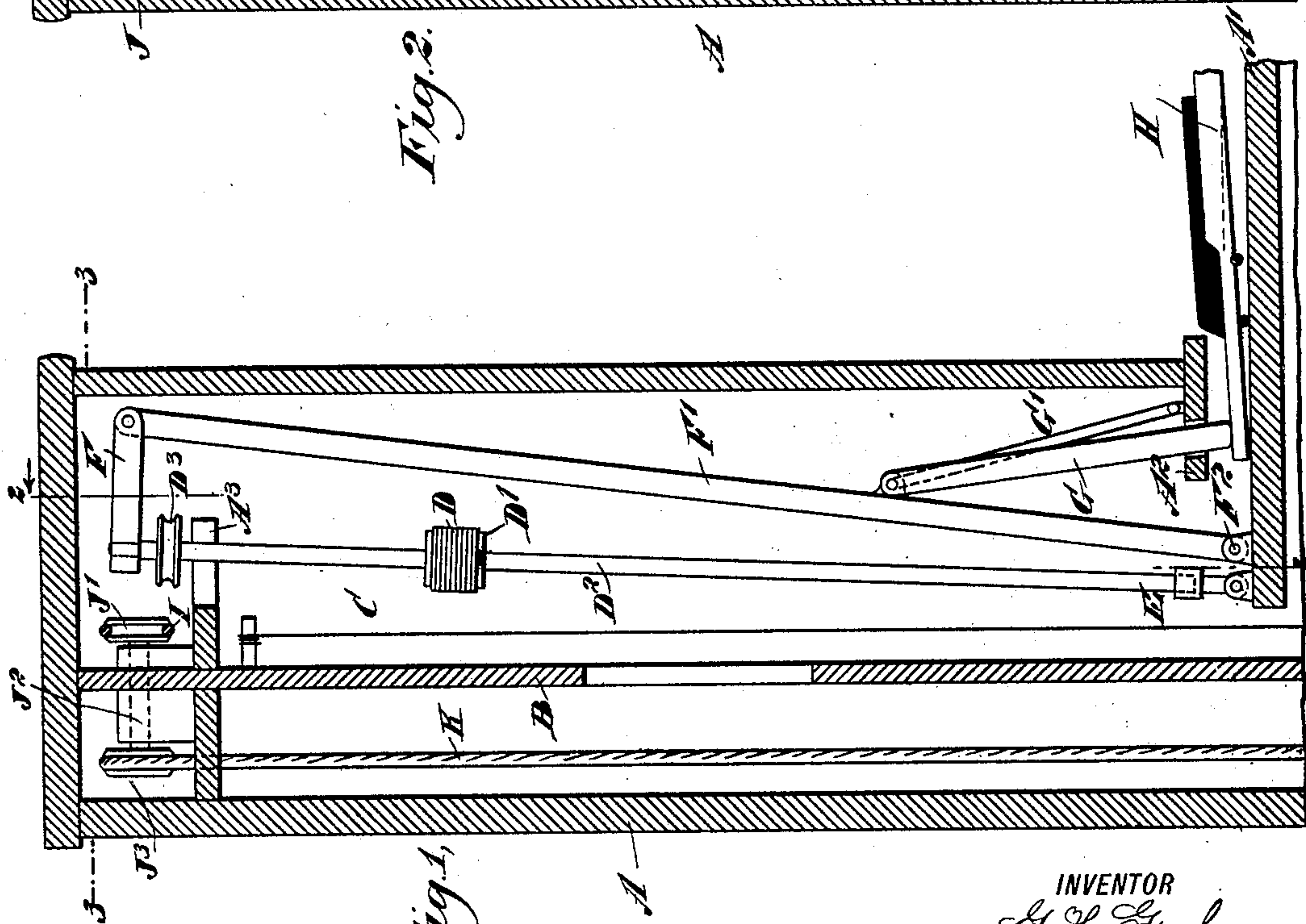


Fig. 1.

WITNESSES:

Edward Thorpe.
Geo. H. H. H.

INVENTOR
G. H. Graham.

BY *Mundy*
ATTORNEYS.

(No Model.)

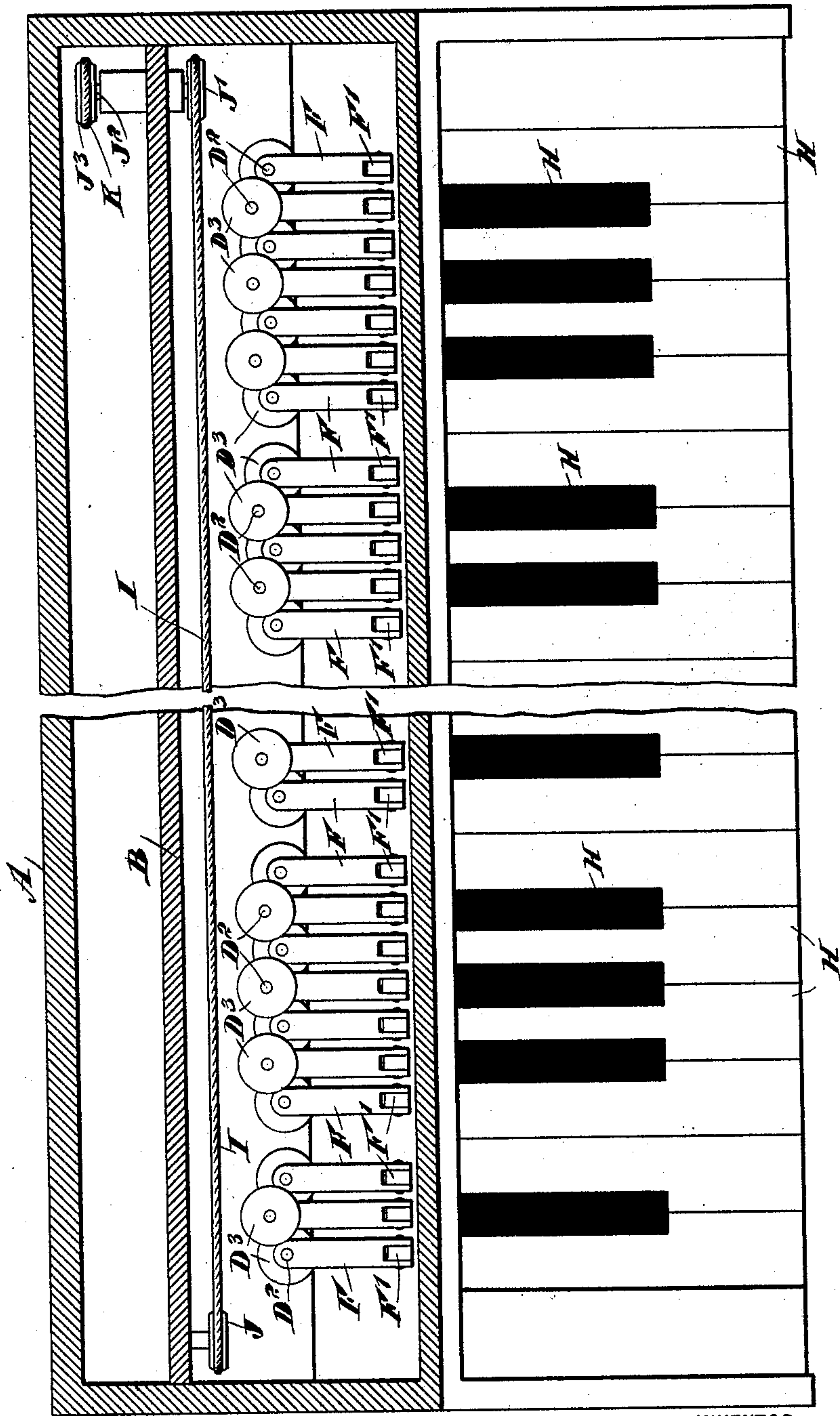
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Fig. 3.



WITNESSES:

Edward Thorpe.
H. G. H. H. H.

INVENTOR

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BY

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UNITED STATES PATENT OFFICE.

GHOLSON H. GRAHAM, OF SEABRIGHT, NEW JERSEY.

MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 593,468, dated November 9, 1897.

Application filed November 17, 1896. Serial No. 612,446. (No model.)

To all whom it may concern:

Be it known that I, GHOLSON H. GRAHAM, of Seabright, in the county of Monmouth and State of New Jersey, have invented a new and Improved Musical Instrument, of which the following is a full, clear, and exact description.

The invention relates to stringed musical instruments, such as violins, cellos, and the like, and in which a bow is drawn over the strings to sound the same.

The object of the invention is to provide a new and improved musical instrument which is simple and durable in construction and arranged to enable the performer to properly play the instrument by manipulating keys on a keyboard.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a cross-section of the improvement. Fig. 2 is a sectional front view of the same on the line 2 2 of Fig. 1, and Fig. 3 is a sectional plan view of the same on the line 3 3 of Fig. 1.

The improved musical instrument is provided with a suitably-constructed casing A, in which is held a sounding-board B, and strings C, stretched over the sounding-board in the usual manner. Each of the strings C is adapted to be engaged by a hair D, wound on a wheel D', secured on a shaft D², journaled at its lower end in a step E, fulcrumed on the keyboard-base A' or other part of the frame or casing of the instrument.

The upper end of the shaft D² is journaled in a link F, pivotally connected with a lever F', fulcrumed at F² on the base A' and pivotally connected with a jack G, loosely guided in a guideway A², forming part of the casing A. The free end of the jack G rests on the inner end of a key H, and a spring G' presses on the said jack to hold the latter and the lever F' normally in an outermost position, as indicated in Fig. 1, so that the hairs D are away from the corresponding strings C.

The upper end of each shaft D² is fitted to

slide laterally in a suitable bearing A³, forming part of the frame A, and near this end of the shaft is secured a grooved wheel D³, adapted to be moved in contact with a traveling rope, cord, or belt I, passing over pulleys J J', journaled in the upper part of the casing A. The shaft J² of the pulley J' receives a rotary motion from a suitable motor or other means, the shaft being provided for this purpose with a pulley J³, over which passes a belt K, connected with the motor or other device.

When a traveling motion is given to the belt, cord, or rope I and the performer plays one or more keys H, then the corresponding jacks G of the said keys impart a rearward-swinging motion to the levers F', each of which by the link F swings the shaft D² rearwardly to bring the pulley D³ in contact with the moving traveling rope, cord, or belt I, so that a rotary motion is transmitted to the corresponding shaft D². The rearward-swinging motion of the shaft D² brings the hairs D in engagement with the corresponding string C, and as the shaft D² is at this moment rotated, and with it the wheel D' and the hairs D, it is evident that the latter by moving over the string C sound the same in a similar manner as a bow does when drawn over a string. By pressing a number of keys simultaneously the corresponding strings are sounded to produce the desired chord or the like. Thus it is evident that the performer in playing the keys causes a sounding of the strings by the action of the revolving hairs D.

As soon as a key H is released the spring G' draws the lever F' to its former position, and the lever F' in moving to this position swings the shaft D² forward and moves the hairs D out of contact with the strings C and the pulley D³ out of engagement with the traveling belt I, so that the rotary motion of the shaft D² ceases.

It will be seen that the instrument may be constructed with any desired number of octaves to give any desired range to the instrument.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A musical instrument, provided with a revoluble shaft adapted to be moved laterally,

a hair-covered wheel on each shaft, and adapted to engage a corresponding string, and a traveling belt adapted to be engaged by the said shaft to rotate the latter at the time the
5 hairs of the wheel are in engagement with the said string, substantially as shown and described.

2. A musical instrument, comprising a sounding-board carrying strings, shafts
10 mounted to turn and to swing laterally, a hair-covered wheel on each of the said shafts and adapted to engage a corresponding string, levers connected with the said shafts and adapted to be actuated by keys to move the
15 said shafts laterally, a traveling belt, and pulleys on the said shafts and adapted to engage the said traveling belt to rotate the shafts, substantially as shown and described.

3. In a musical instrument, the combination with the strings, of shafts pivoted at one
20 end to swing toward and from the strings, wheels on the shafts for engaging the strings, levers pivoted at one end adjacent to the pivoted ends of the shafts and having their free
25 ends connected to the free ends of the said shafts, means for swinging the said levers on their pivots and means for rotating the shafts when swung upon their pivots to bring the

wheels in contact with the strings, substantially as described. 30

4. In a musical instrument, the combination with the strings and keys, of shafts pivoted at their lower ends to swing toward and from the strings, and provided with wheels, levers pivoted at their lower ends adjacent to
35 the shafts and having a link connection at their upper ends with the upper ends of the shafts, means for swinging the levers on their pivots from the keys and means for rotating the shafts when swung upon their pivots to
40 bring the wheels in contact with the strings, substantially as described.

5. In a musical instrument, the combination with the keys, the strings and an endless traveling belt, of pivoted shafts provided with
45 grooved wheels at their upper ends for engaging the endless belt, wheels on the shafts for engaging the strings, pivoted levers, links connecting the upper ends of the levers and shafts and jacks connected with the levers
50 and operated by the keys, substantially as herein shown and described.

GHOLSON H. GRAHAM.

Witnesses:

FRANK D. GRAHAM,
W. M. GRAHAM.