(No Model.)

W. B. FLEMING.

ELECTRIC ATTACHMENT FOR MUSICAL INSTRUMENTS.

No. 585,663. Patented July 6, 1897.

Fig. 1.

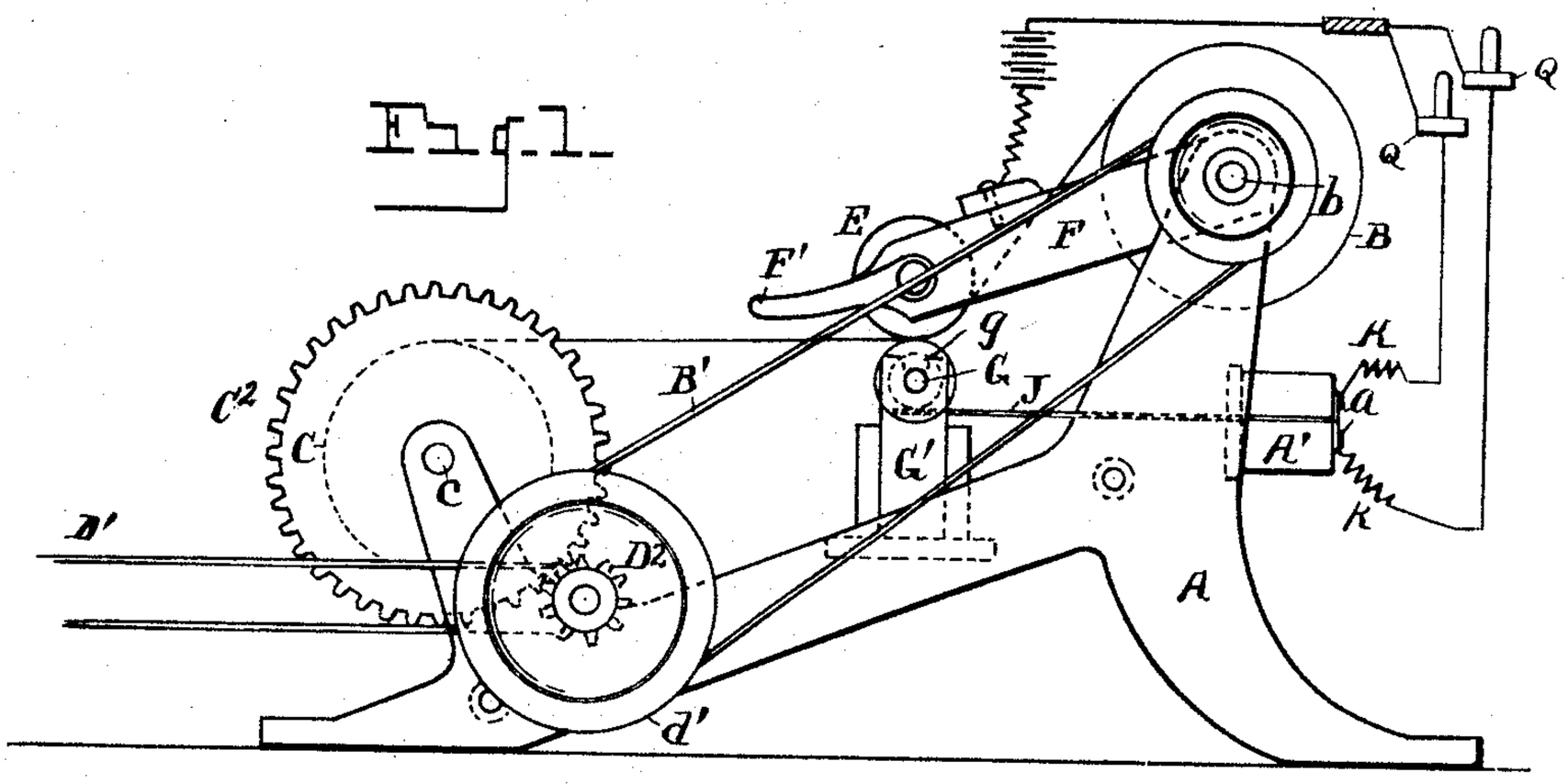

Fig. 3.

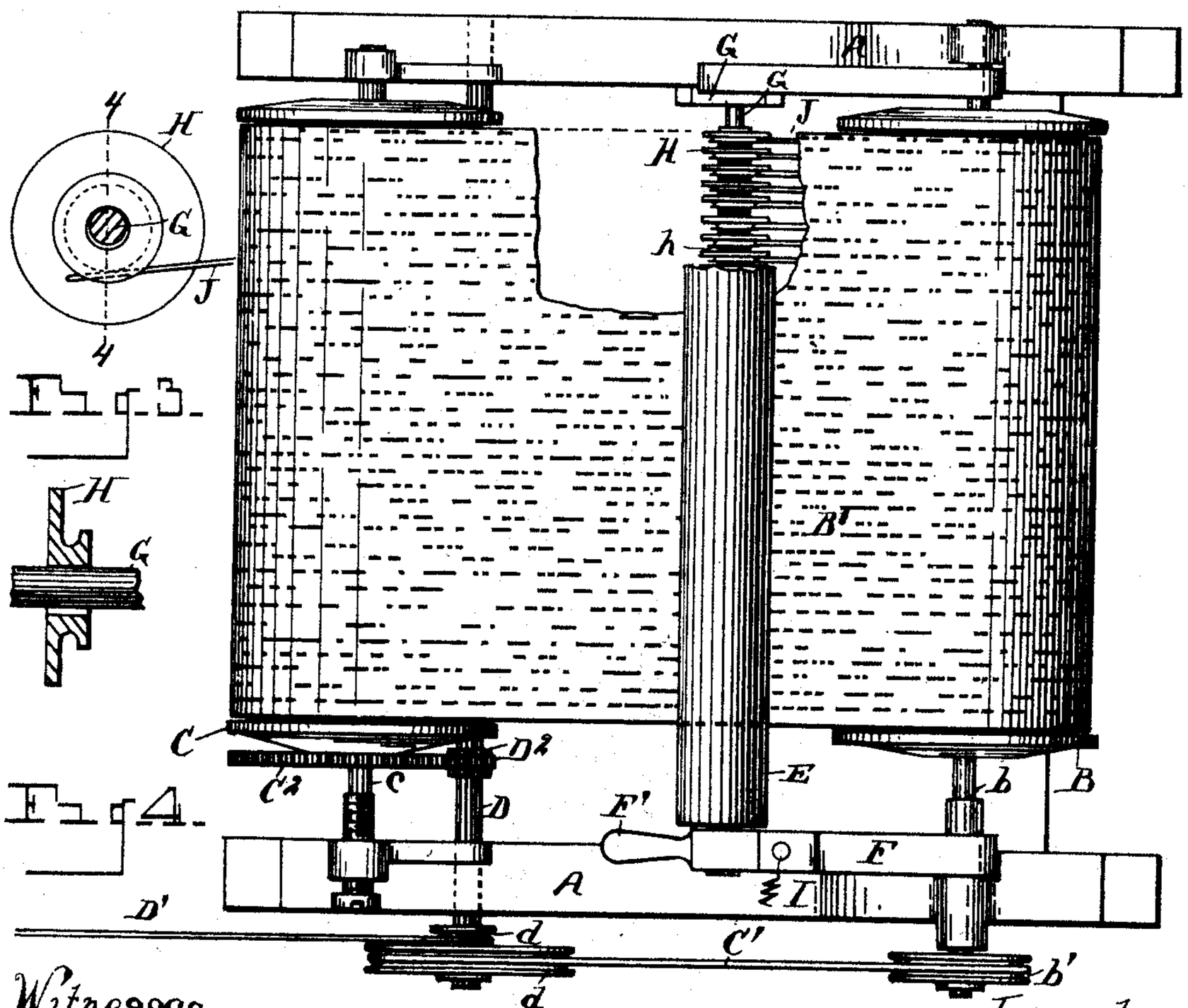

Fig. 4.

Fig. 2.

Witnesses
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WILLIAM B. FLEMING, OF DETROIT, MICHIGAN.

ELECTRIC ATTACHMENT FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 585,663, dated July 6, 1897.

Application filed January 13, 1897. Serial No. 619,048. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. FLEMING, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Attachments for Musical Instruments; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object certain new and useful improvements in an attachment to musical instruments; and it consists of the construction, combination, and arrangement of devices and appliances hereinafter described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a plan view showing certain parts broken away. Fig. 3 is a detail view illustrating more fully the construction of one of the disks H. Fig. 4 is a section on the line 4 4, Fig. 3.

My improved attachment embodies an electrical action, and it is to this electrical action that the invention chiefly pertains.

Accordingly I carry out my invention as follows:

A represents any suitable frame constructed to carry a perforated music-roll, as upon a spool or drum B, having its shaft journaled in said frame.

B′ denotes the music-roll, and *b* the shaft.

C denotes a feed-roller, having its shaft *c* also journaled in the frame A, upon which the music-roll is wound as it unrolls from the drum B.

To actuate the rollers B and C, any suitable means may be provided. As shown in the drawings, I provide a driving-shaft D, to which any desired power, as an electric motor, may be connected, as by a belt D′, the shaft D being provided with a driving-pulley *d*. The shafts *b* D may be provided with pulleys *b′* *d′*, connected by a belt C′. The shaft D is also provided with a pinion D^2 and the shaft *c* with a gear C^2, meshing with said pinion to rotate the drum C and wind thereupon the music-roll as it is unwound in the use of the instrument from the drum B.

E denotes a metallic roller, preferably made of brass plated with platinum to prevent its burning, said roller being journaled in an oscillatory frame F. One end of the frame F may be jointedly engaged upon the shaft *b*, permitting the roller E being swung upward and away from an underlying shaft G, journaled in suitable bearings G′ upon the frame A. Upon this shaft G are a series of disks H, equaling in number the keys upon the keyboard of the musical instrument to which the attachment is applied. A battery-wire I is connected with the roller E. To each of the disks H is led a contact-spring J. The said disks have their outer peripheries in contact with the roller E and are preferably provided with hubs *h*, concaved on their outer periphery to receive the adjacent end of the corresponding contact-spring, the concavity serving to hold the spring in engagement therewith, the springs also exerting a tension to keep the disks up against the roller E. The disks H are insulated one from another, as indicated at h^2, and are mounted upon the shaft G, which is provided with insulation G^2 or made of insulating material, as of fiber, for example. The bearings G′ may be made of wood or other suitable material. With the several contact-springs J are connected electrical conductors K, leading to a magnet of suitable construction.

The frame F may be made of iron and the battery-wire I be connected therewith, and so with the roller E.

The music-roll passes between the roller E and the disks H, and it will be apparent that when the music-roll passes onward therebetween at every perforation in the music-roll electrical contact will be formed between the roller E and the corresponding disks H, completing the electrical circuit and operating the musical instrument accordingly.

The conductors K of two adjacent contact-springs J, I prefer to lead, the one upward and the other downward, to two rows of binding-posts *a* and *a′* upon a cross-bar A′ upon the frame A. This is simply in order to space the conductors farther apart. Each conductor, it will be understood, leads to a separate magnet. The frame F may be provided with an operating-handle F′ for convenience in swinging it upward off from the

disks H upon the shaft G in putting in a fresh music-roll B'. I prefer that the bearings G' should be open above the shaft G, as indicated at *g*, permitting said shaft, with its disks thereupon, to be readily removed and put into place.

The bore or orifice *h'* in the disks H, through which the shaft G is passed, is of larger diameter than that of the shaft on which the disks are located, so that the contact-springs may force the disks into contact with the roller E should there be any imperfection or unevenness on the surface of the roller E.

An electromagnet is located in the circuit in Fig. 1, the same being indicated at Q. In said figure one circuit only is shown, but it will be understood that each contact-spring J is in a separate circuit similar to that shown in Fig. 1.

What I claim as my invention is—

1. In an attachment for musical instruments, a roller E, a conductor in electrical connection therewith, a shaft provided with series of disks adjacent to said roller, mounted upon said shaft and insulated one from the other, and spring contact-arms in electrical connection with said disks, substantially as set forth.

2. In an attachment for musical instruments, a roller, a conductor in electrical connection therewith, a series of disks adjacent to said roller, and spring contact-arms in electrical connection with said disks, said disks formed with hubs concaved on their peripheries to receive the corresponding contact-arms, substantially as set forth.

3. In an attachment for musical instruments, a roller, a conductor in electrical connection therewith, a shaft, a series of disks mounted upon said shaft adjacent to said roller, and spring contact-arms in electrical connection with said disks, the bore of said disks being of larger diameter than that of said shaft, substantially as set forth.

4. In an attachment for musical instruments, the combination of two rotatable feed-drums, a music-roll mounted thereupon, a roller E, intermediate said drums, an electrical conductor connected therewith, a series of disks insulated one from another adjacent to said roller, and spring contact-arms having independent electrical conductors connected therewith, said arms having electrical contact against said disks on the under side thereof, whereby the disks may be removed without interference with said contact-arms, substantially as described.

5. In an attachment for musical instruments, the combination of the feed-drums, the roller E mounted in an oscillatory frame, a conductor in electrical connection therewith, a series of disks adjacent to the roller insulated one from the other, and contact-springs in electrical connection with said disks, the shaft of said disks being removable from its bearings without disturbing said contact-springs, substantially as set forth.

6. In an attachment for musical instruments, a drum B, upon which a music-roll is placed, a drum C, upon which the music-roll is wound in the action of the device, means to actuate said drums, a roller E, a series of insulated disks H adjacent to said roller, an insulated shaft upon which said disks are mounted, and springs J in contact with said disks, said springs and roller provided with electrical conductors, substantially as described.

7. In an attachment for musical instruments, the combination of the drums, a perforated music-roll arranged to be fed from one drum to the other, a roller E, a shaft G provided with disks to contact with the roller E through the perforations of the music-roll, spring contact-arms in contact with said disks, and electrical conductors leading to the roller and to the disks, said disks insulated one from another, as set forth.

8. In an attachment for musical instruments, provided with a perforated music-roll, a roller, a series of insulated disks adjacent to said roller, between which disks and the roller the music-roll travels, and contact-arms, the roller and disks in electrical circuit and forming electrical contact through the perforations of the music-roll, said disks formed with hubs to receive the corresponding contact-arms, for the purpose set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

WILLIAM B. FLEMING.

Witnesses:

O. B. BAENZIGER,

N. S. WRIGHT.