

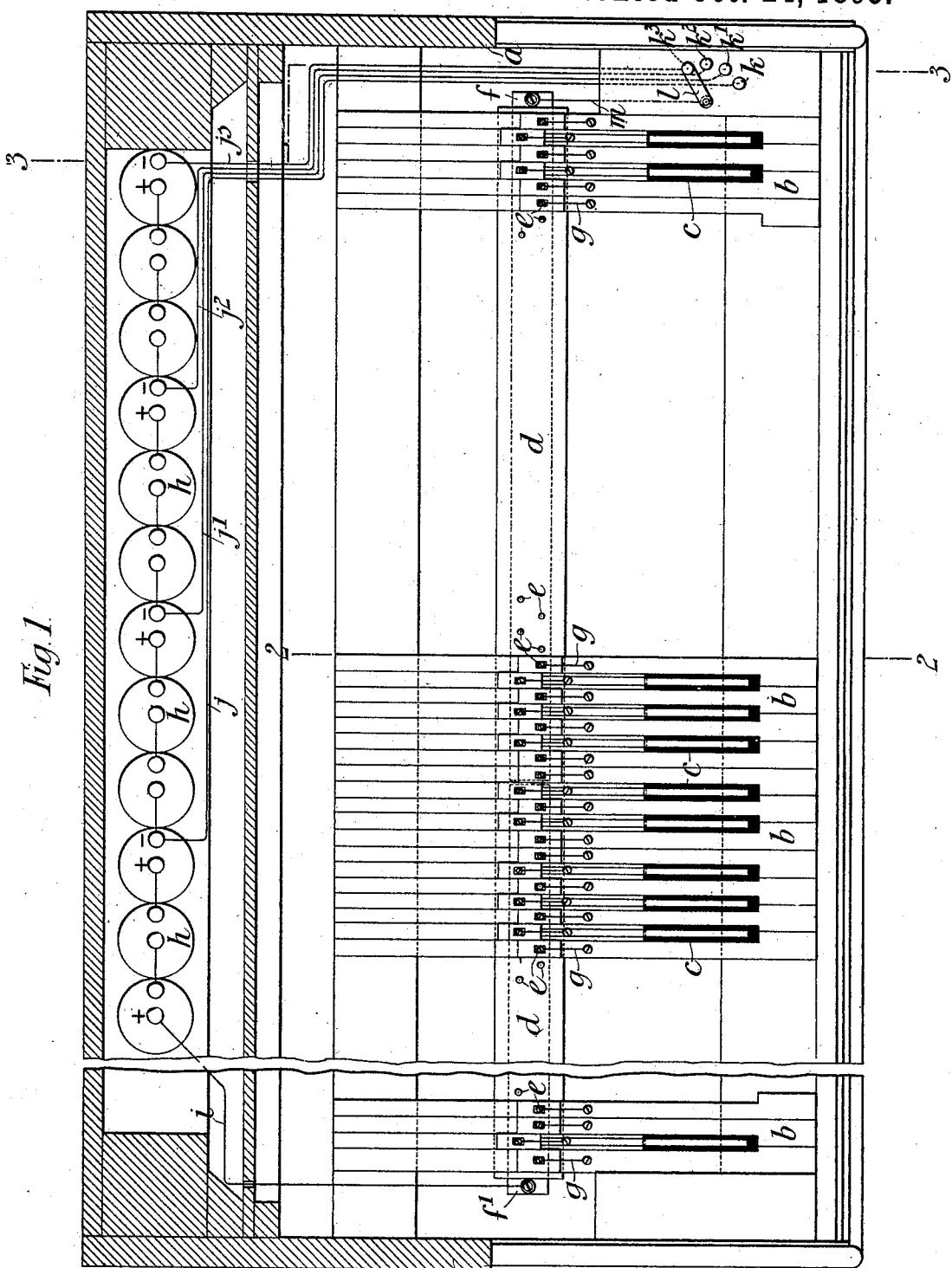
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W. WILLERINGHAUS. 2 Sheets—Sheet 1.

APPLICATION OF ELECTRICITY TO PIANOS OR OTHER KEYED  
INSTRUMENTS FOR HYGIENIC PURPOSES.

No. 507,298.

Patented Oct. 24, 1893.



Witnesses.

G. H. Lefern  
John E. Dousfield.

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Inventor.

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(No Model.)

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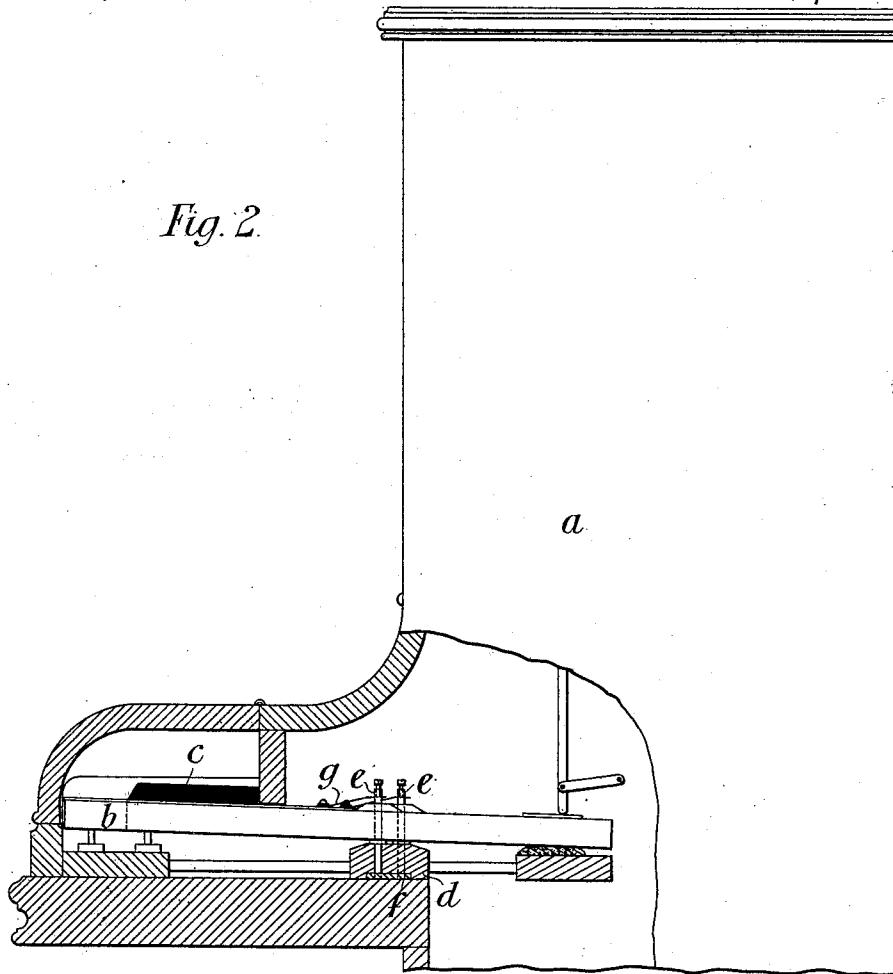
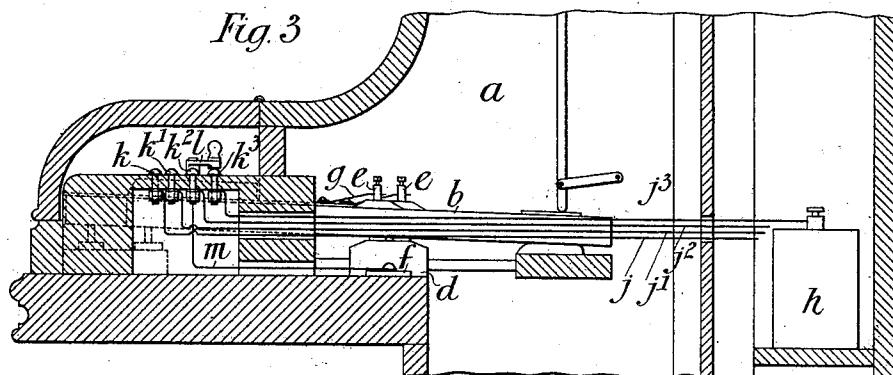


Fig. 3



### *Witnesses.*

John E. Bowfield.

Fig. 4.



### *Inventor.*

W. Willeringhaes

# UNITED STATES PATENT OFFICE.

WILLIAM WILLERINGHAUS, OF LONDON, ENGLAND.

## APPLICATION OF ELECTRICITY TO PIANOS OR OTHER KEYED INSTRUMENTS FOR HYGIENIC PURPOSES.

SPECIFICATION forming part of Letters Patent No. 507,298, dated October 24, 1893.

Application filed May 29, 1893. Serial No. 475,943. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM WILLERINGHAUS, a subject of the Queen of Great Britain, residing at London, England, have invented 5 new and useful Improvements in or Applicable to Pianofortes, Organs, Harmoniums, and other Keyed Instruments or Apparatus, of which the following is a specification.

This invention relates to the combination 10 with pianofortes, organs, harmoniums, typewriters and like keyed instruments or apparatus of means whereby the act of playing or operating the same will communicate to the performer or operator a current of electricity.

15 This invention may be carried out in various ways, for example, when applied to a pianoforte an electric battery may be placed in any convenient part of the instrument and be joined up to suitable conductors introduced 20 into the face of the keys and assuming that one pole of the battery be connected to one half of the keys and the other pole to the remaining half, then as the instrument is played with both hands the circuit would be 25 completed and a current would be passed through the body of the performer; or all the keys may be connected to one pole of the battery, and a suitable contact piece adapted to be applied to any convenient part of the person 30 might be arranged in connection with the other pole of the battery.

To enable my invention to be fully understood I will describe the same by reference to the accompanying drawings, in which—

35 Figure 1 is a sectional plan of a pianoforte having my improvements applied thereto. Fig. 2 is a side elevation partly in section on the line 2—2 Fig. 1; and Fig. 3 is a section on the line 3—3 Fig. 1. Fig. 4 is a sectional side 40 view illustrating the arrangement of the conductors introduced into the faces of the black keys.

45 *a* is the case of the pianoforte, *b*, *b* are the keys for playing the naturals and *c*, *c* those for playing the sharps and flats.

50 *d* is the usual balance rail, and *e*, *e* are the key-pins projecting above the said rail. These pins *e*, *e* are not fixed to the balance rail as hitherto but to two metal plates *f*, *f'* fixed beneath the said rail, holes being formed through the rail through which the said pins project, as shown most clearly in Fig. 2; the pins for

the keys usually played by the right hand being connected to the plate *f* and those which are played by the left hand to the plate *f'*, 55 the said two plates *f*, *f'* being out of electrical contact.

The "natural" keys instead of being covered with ivory as hitherto are faced with a conductor of electricity such, for instance, as 60 nickel which is advantageously silver-plated or, if desired, the said keys may be partly covered with ivory, strips of metal being introduced into the same in such a manner that when the keys are touched by the fingers they 65 will come into contact with the said metal strips. The keys *c*, *c* for playing the sharps and flats may also be covered with metal on their upper faces but in practice I prefer to introduce strips of metal into the surfaces of 70 the same, as shown most clearly in Figs. 1 and 4. These surface pieces or strips are electrically connected, for instance, by wires *g*, *g* with the key-pins upon which they are carried.

75 *h*, *h* indicate the cells (twelve being shown in the drawings and preferably dry cells) of an electric battery, which cells are arranged in some suitable part of the case of the instrument, for instance, between the bracings 80 of the framing, as shown. These cells are connected with one another in the ordinary manner for intensity, that is to say, the zinc of one cell is connected to the carbon of the other; the positive pole of the left hand cell 85 is also connected by a wire *i* with the plate *f'* while the negative poles of the third, sixth, ninth and twelfth cells are connected by separate wires *j*, *j'*, *j*<sup>2</sup>, *j*<sup>3</sup> respectively to the terminals *k*, *k*<sup>1</sup>, *k*<sup>2</sup>, *k*<sup>3</sup> of a four pole switch. The 90 lever *l* of this switch is connected by a wire *m* with the plate *f* in such a manner that, when the said lever *l* is in contact with the terminal *k* three of the cells will be in circuit, when in contact with *k'* six cells will be in 95 circuit, when in contact with *k*<sup>2</sup> nine will be in circuit and when in contact with *k*<sup>3</sup> twelve will be in circuit, the movement of the said lever to make contact with one or the other of the said terminals thus serving to 100 increase or diminish the intensity of the current.

With the arrangement hereinbefore described it will be readily understood that

when a performer places his fingers simultaneously in contact with any of the keys connected with the bar  $f$  and the bar  $f'$  the circuit will be completed through the body of the performer. If no current is required it is only necessary to move the lever  $l$  out of contact with the terminal pins.

I have for the purpose of illustration described my invention as applied to a pianoforte but it will be readily understood how it can be applied to organs, harmoniums and like keyed musical instruments as also to type-writing machines and like apparatus without further description.

15 My invention has a hygienic value, especially for those who practice on the instrument for many successive hours; and more especially if they be of a nervous temperament, or be subject to cramp in the fingers, 20 due to too long playing; and it is found that persons arise from my improved pianos, &c., after a long practice without experiencing the customary fatigue.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A pianoforte, organ, harmonium, typewriter or like keyed instrument or apparatus the keys of which are provided with electric conductors and joined up with an electric battery or other suitable source of electricity, and whereby the act of playing or operating the instrument will complete the circuit so as to communicate a current of electricity to the performer or operator, substantially as hereinbefore described.

2. In a pianoforte, organ, harmonium, typewriter or like keyed instrument or apparatus, keys provided with suitable conductors, such as metal facings or insertions, joined up to a battery, the keys usually operated by one hand being in connection with one pole of the battery and the keys operated by the other hand in connection with the other pole of the said battery, substantially as hereinbefore described and illustrated in the accompanying drawings.

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