

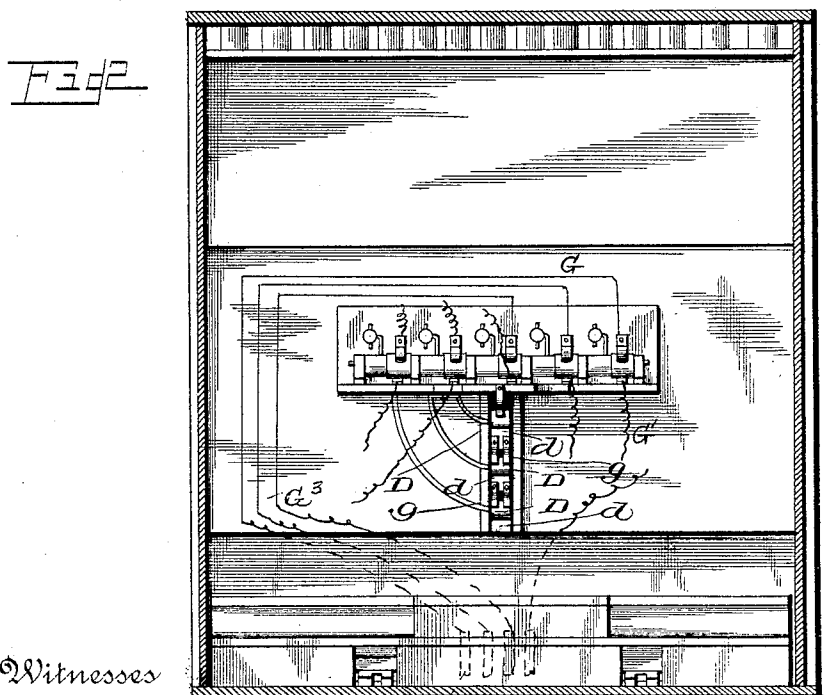
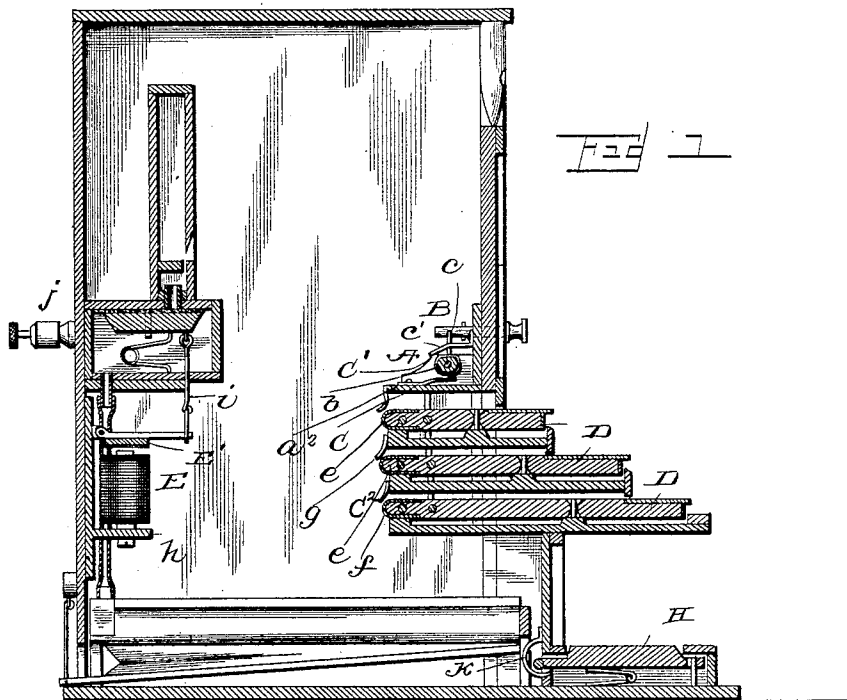
(No Model.)

4 Sheets—Sheet 1.

R. P. STRAND.
ELECTRICAL ORGAN.

No. 478,032.

Patented June 28, 1892.



Witnesses

W. L. Raming

Inventor

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Richard Percy Strand.
By his Attorney
L. W. Ballou.

(No Model.)

4 Sheets—Sheet 2.

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Fig 3

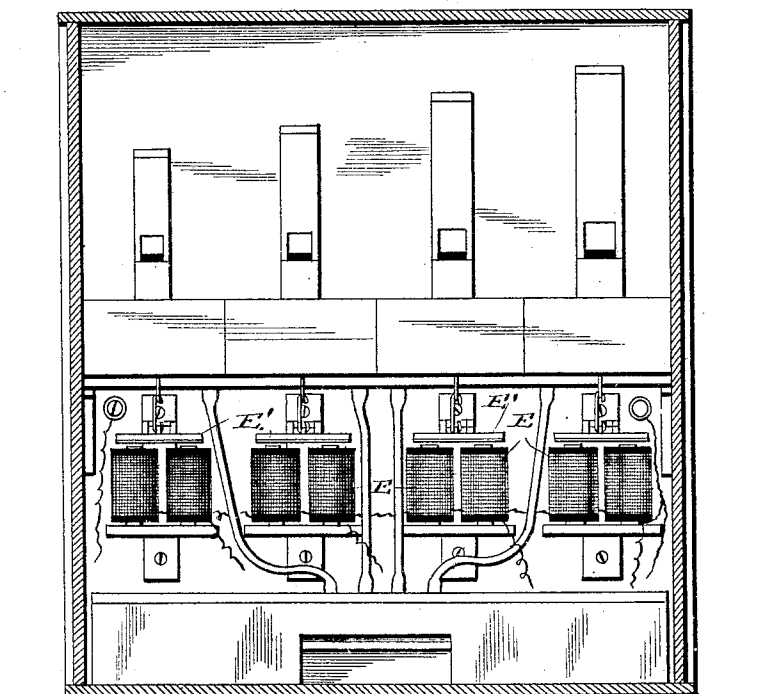
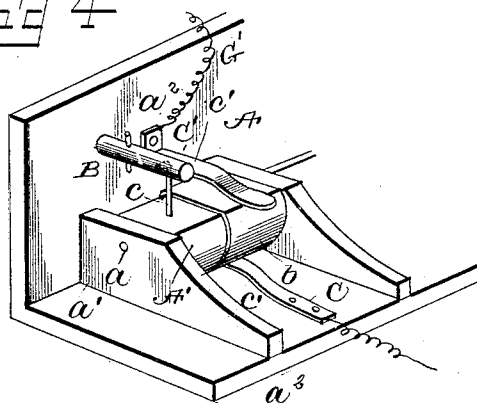


Fig 4



Witnesses

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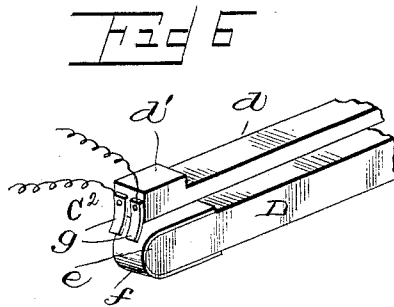
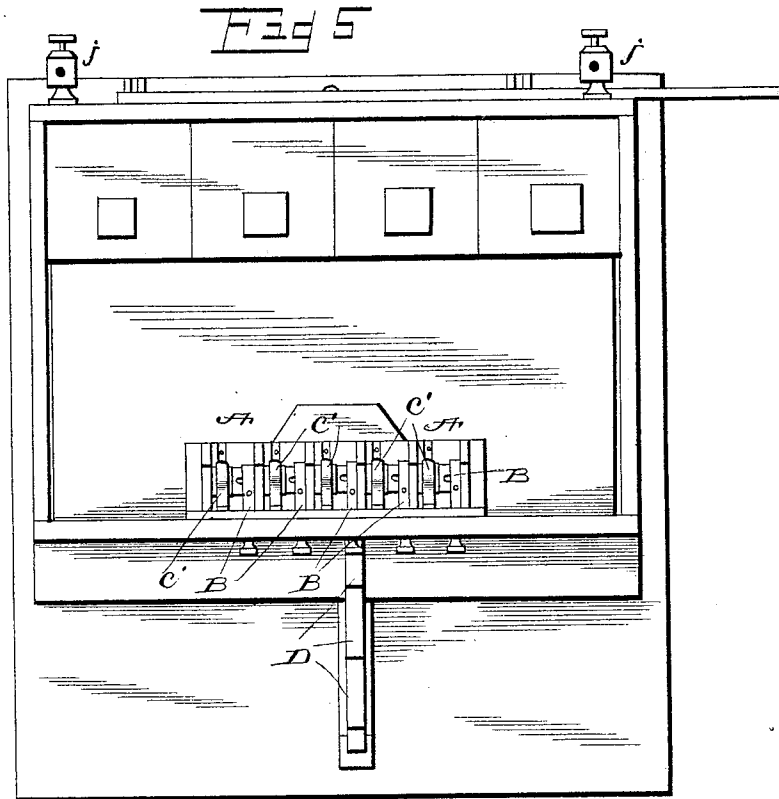
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Witnesses

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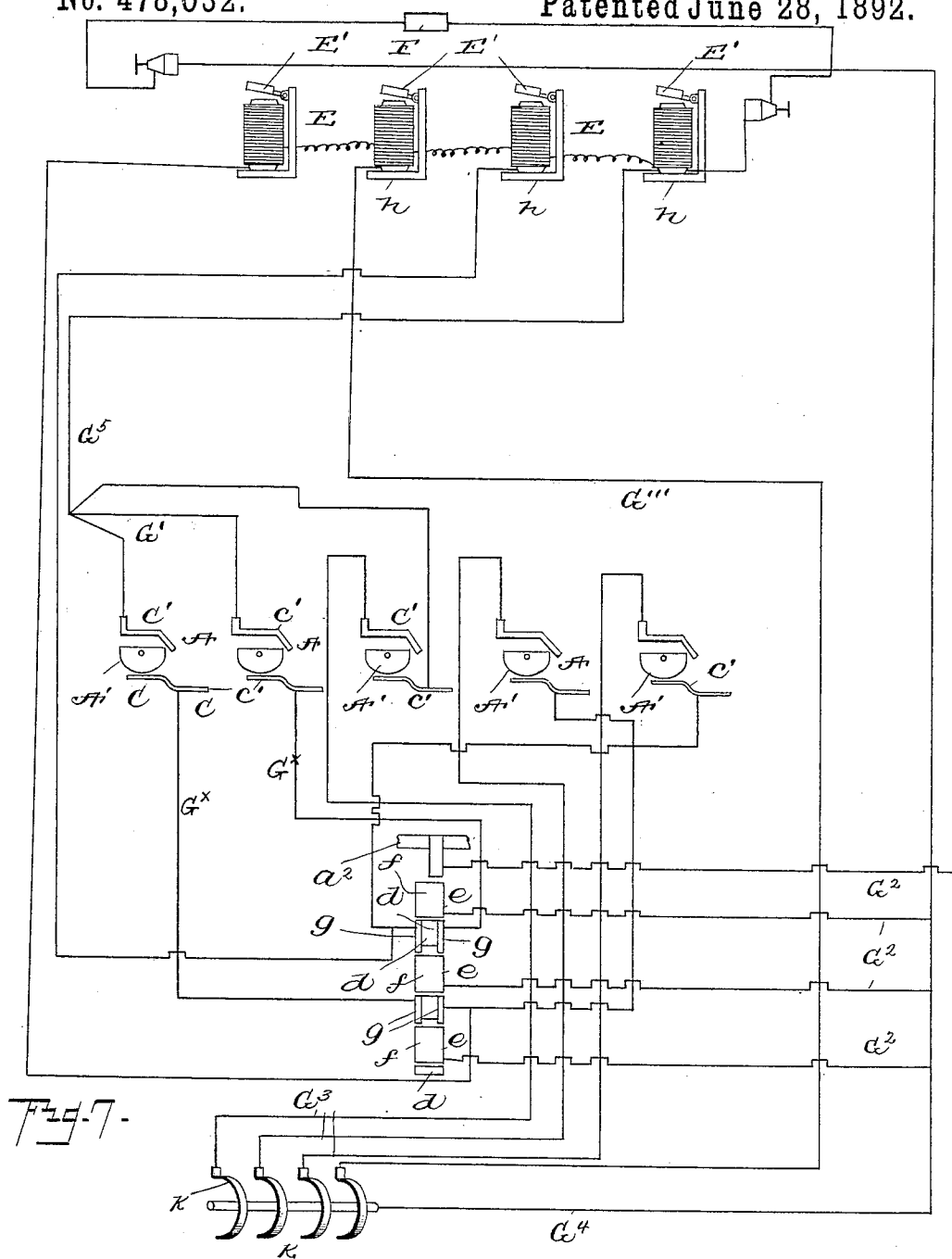
By his Attorney

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UNITED STATES PATENT OFFICE.

RICHARD PERCY STRAND, OF ST. JOHN, CANADA.

ELECTRICAL ORGAN.

SPECIFICATION forming part of Letters Patent No. 478,032, dated June 28, 1892.

Application filed March 23, 1892. Serial No. 426,119. (No model.)

To all whom it may concern:

Be it known that I, RICHARD PERCY STRAND, a subject of the Queen of Great Britain, residing at St. John, in the county of St. John and Province of New Brunswick, have invented certain new and useful Improvements in Electrical Organs; and I do hereby 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.

My invention relates to an improved electrical organ whereby through the action of an electric circuit produced by actuating a key electrically connected to an electro-magnet attracting an armature adapted to operate through a lever the valve the instrument is operated or played, and whereby the desired keys or manuals, where more than one bank of keys or manuals is employed, may be readily electrically coupled by the actuation of electrically-connected appliances, all substantially as hereinafter more fully disclosed, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a broken transverse sectional elevation of my electrical organ. Figs. 2 and 3 are broken vertical sections thereof looking in reverse directions, and Fig. 4 is a broken horizontal section of the same. Fig. 5 is an enlarged detailed view of the circuit-closer for the organ-action. Fig. 6 is a similar view of the circuit-closer or coupler for the manuals or keys. Fig. 7 is a diagrammatic view of my invention.

In the embodiment of my invention I employ a series of circuit-closers A A A, one for each of the slides or plugs B of the coupler of the keys or manuals of the instrument. These circuit-closers consist each of a rock-bar A', approximately semi-cylindrical or segmental in cross-section, and axially pivoted or hung by short end gudgeons or pivots *a* in suitable bearings or supports *a'*, secured upon a common bracket or shelf *a²*, held or secured upon the inside of the front of the instrument. These rock-bars are furnished with straps or plates of metal *b*, though wholly encompassing them, yet they need only be applied to the convex surface of said rock-bars. These rock-bars are suitably connected to the slides or plugs B B by right-angled links or rods *c*,

whose lower ends are secured or fixed in the upper flat sides of said rock-bars, while their upper ends are let into and turn in transverse apertures in said slides or plugs.

C C' are two series or sets of springs, consisting preferably of flat metal straps or plates *c'*, the lower set or series C being secured upon the horizontal portion of the shelf or bracket *a²* and having upwardly curved or bowed portions or otherwise adapted to provide for their normal engagement with the metal-covered convex portions of the rock-bars A' of the circuit-closers A. The upper set or series of springs or plates C' are secured or fastened at their upper ends to the vertical portion of the shelf or bracket *a²* and are provided with downward and rearward inclined end portions standing normally slightly away from the metal-covered flat portions of the rock-bars A', but adapted to have engagement or contact with said metal-covered flat portions of said rock-bars when the slides or plugs B are pulled outward.

C² C² refer to a second series of circuit-closers, one for each key of the row or bank of spring-pressed keys or manuals D, and arranged adjacently thereto. The circuit-closers consist each of a horizontal bar or arm *d*, fast to and projecting from the inside of the front of the instrument and having upturned free or inner ends or shoulders *d'* thereat, upon which inward extensions *e* of the keys or manuals D normally rest. These key-extensions *e* are furnished at their inner free ends with metal strips or plates *f*, adapted as the keys or manuals B B are depressed or actuated by the player to engage pendent metal strips or plates *g*, two secured to the inner free ends of the two upper bars or arms *d* and one secured to the shelf or bracket *a²* above.

E E are electro-magnets suitably supported upon brackets or shelves *h*, secured to the inside of the back of the instrument, and adjacent to the upper end of said magnets are the armature-levers E', pivoted at their side edges to said brackets and having their arms connected by wires or rods *i* to the valves or pallets of the organ-action.

The two series of circuit-closers and the electro-magnets are included in electric circuits comprising a storage or primary battery

F and series or groups of wires $G\ G'\ G^2\ G^3\ G^x$ and the binding-posts j and their wires $G^4\ G^5$.

H is the pedal, normally standing out of contact with a series of metal plates or springs $k\ k$, of which three are the terminals of a group of three wires G^3 , extending from the three upper springs C' of the left-hand three of the series of circuit-closers A of the coupler, and to the pedal is connected one of the binding-post wires G^4 , and with this wire is connected the group of three wires G^2 , connecting with the keys D. The group of wires G connect the springs C of the right-hand three of the series of circuit-closers A with the upper two of the key-supports or arms $d\ d$ and with the group of two connected wires G' , said wires G' connecting with the right-hand two of the upper series of springs C' and with a single wire G^5 , leading to an end magnet E and intermediately suspended for convenience from a pin or projection on the end valve-box. The group or series of two wires G^x connect with the left-hand two of the lower series of springs C, and, like two of the group of wires G, also connect with the upper two key-supports $d\ d$, and with the group of wires G^x connect wires G'' , leading to the intermediate electro-magnets E, while the remaining end magnet E is connected by a wire G''' to the fourth one of the springs k , adapted to be engaged, as above stated, by the pedal H. The wires G'' and G''' , like the wire G^5 , are intermediately suspended, for convenience, from pins or projections on opposite valve-boxes.

In the event of the employment of a motor for blowing or actuating the bellows an electrical generator could be belted thereto and the current thus be obtained. The circuit may be also produced by a direct current of low voltage.

Among other advantages of my invention it is observed that an absolutely even touch is obtained, and that the touch is no heavier when all the manuals or keys are coupled than that of any single manual. The action is perfectly noiseless and will always remain so, whereas a mechanical action, even if perfectly noiseless at the outset or when new, will become very noisy after a few years' use. No "ciphering" from action-sticking is experienced. The depth of touch remains the same under all variations of temperature.

All other so-called "electric actions" are electro-pneumatic, and the part that the electric portion figures is simply to open a small valve and admit air under very high pressure. This requires the construction of a very intricate and expensive action in addition.

No mercury-cups are used for contacts,

which collect dust and soon become unreliable, all the contacts being frictional and consequently keep themselves bright and may always be depended on.

The keyboards may be placed at any distance from the organ. This is always desirable, but rarely practicable on account of the great expense involved.

The instrument is exceedingly simple in construction, consequently not so easily gotten out of order as complicated instruments of the kind, and is less expensive.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with an electro-magnet and an armature-lever adapted to actuate the valve or pallet, of a key having an inward extension, and a fixed arm or bar adapted to rest upon said arm or bar, and an electrical connection between said parts, substantially as set forth.

2. The combination, with the keys, of an electric coupler therefor, comprising rock-bars and means for actuating said rock-bars, and electric connections between said coupler and the keys, substantially as and for the purpose specified.

3. The combination, with the keys, of an electric coupler therefor, comprising rock-bars and means for actuating said rock-bars, the series of springs having metal contact with said rock-bars, and the groups of wires between said parts and the electro-magnets and battery, with the armature-levers adapted to actuate the valves or pallets, substantially as set forth.

4. The combination of the keys having inwardly-extended portions, the fixed arms or bars and bracket having metal contact with the latter, the electro-magnets and the armature-levers connected to the pallets or valves, and the electric connections between said key extensions, said arms or bars, and the electro-magnets, substantially as set forth.

5. The combination of the electrically-connected keys, the electric coupler therefor, the electro-magnets, the armature-levers connected to the pallets or valves, the series of springs or plates having electric connection with said coupler, the pedal adapted to have contact with said springs or plates, and the electric connections between said keys, coupler, and electro-magnets, substantially as set forth.

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

RICHARD PERCY STRAND.

Witnesses:

C. A. STOCKTON,
J. J. PORTER.