W. F. COOPER.

OPERATING MECHANISM FOR MECHANICAL PLAYERS.

APPLICATION FILED JULY 6, 1907.

950,892.

Patented Mar. 1, 1910.

2 SHEETS—SHEET 1.

Fig: 1

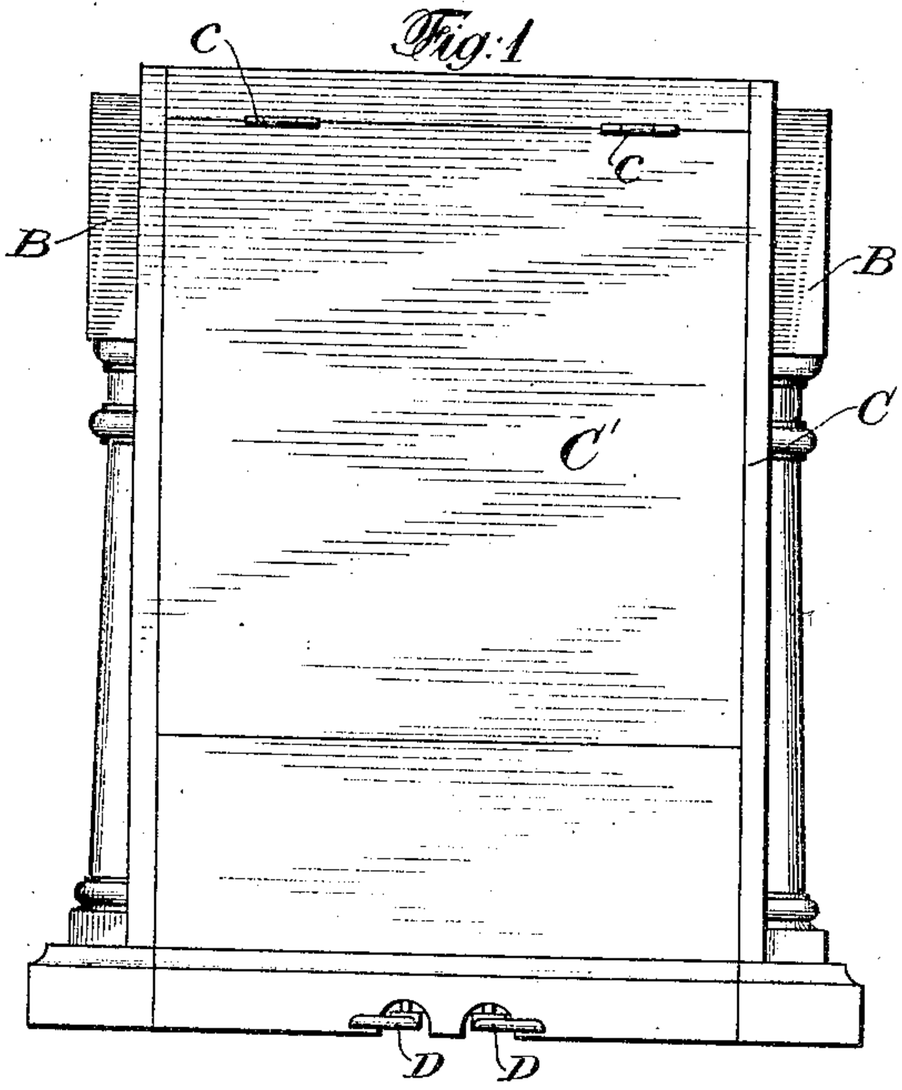


Fig: 2

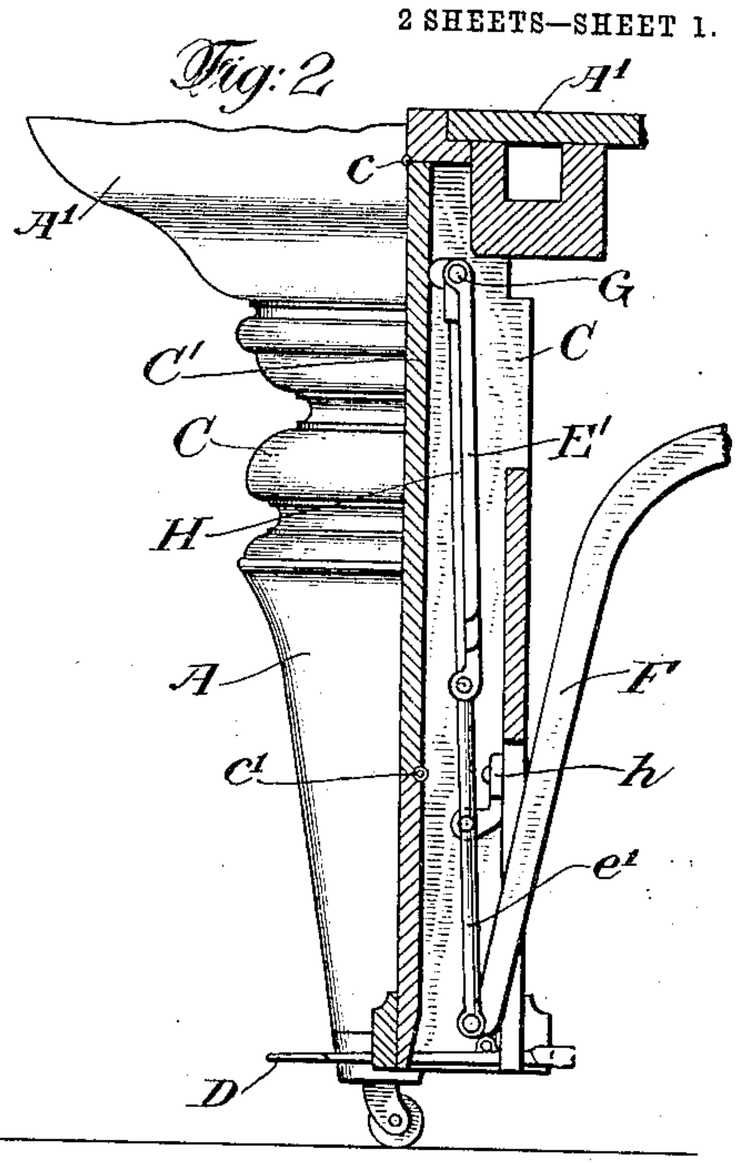


Fig: 3

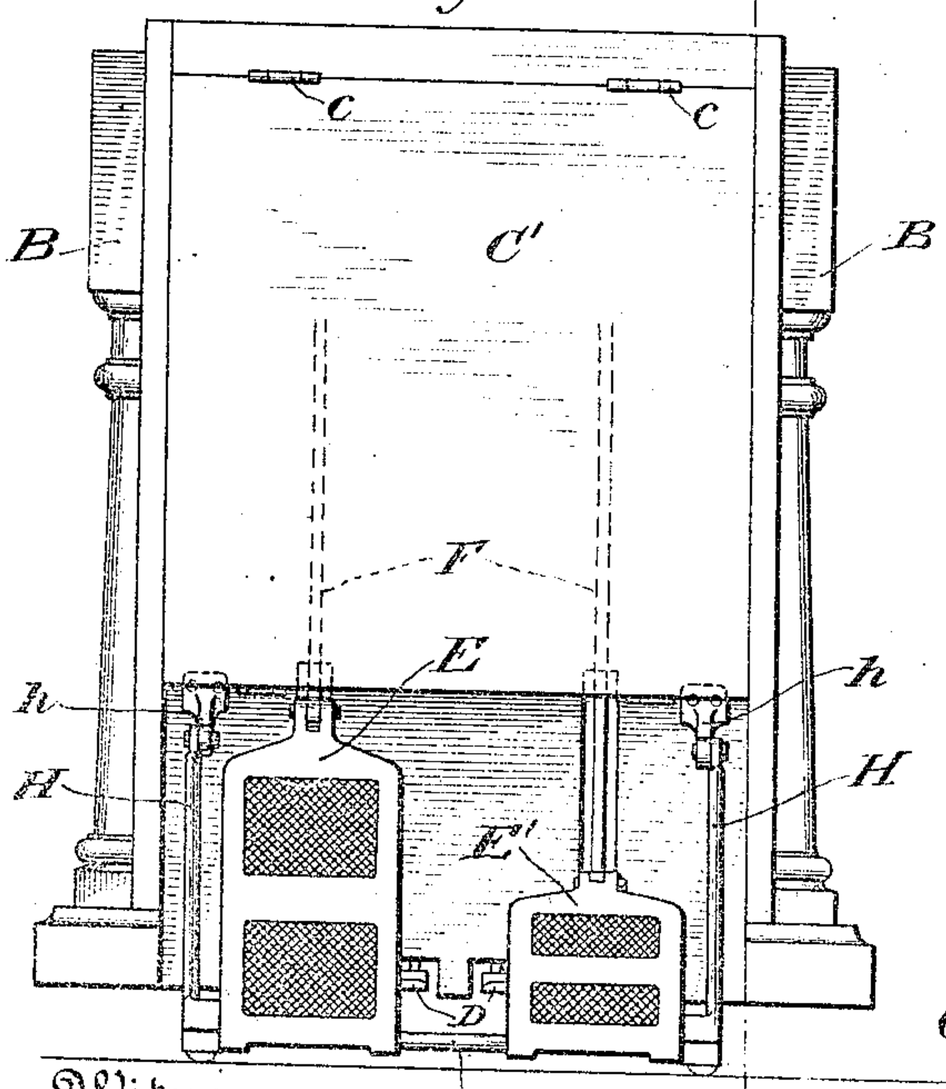
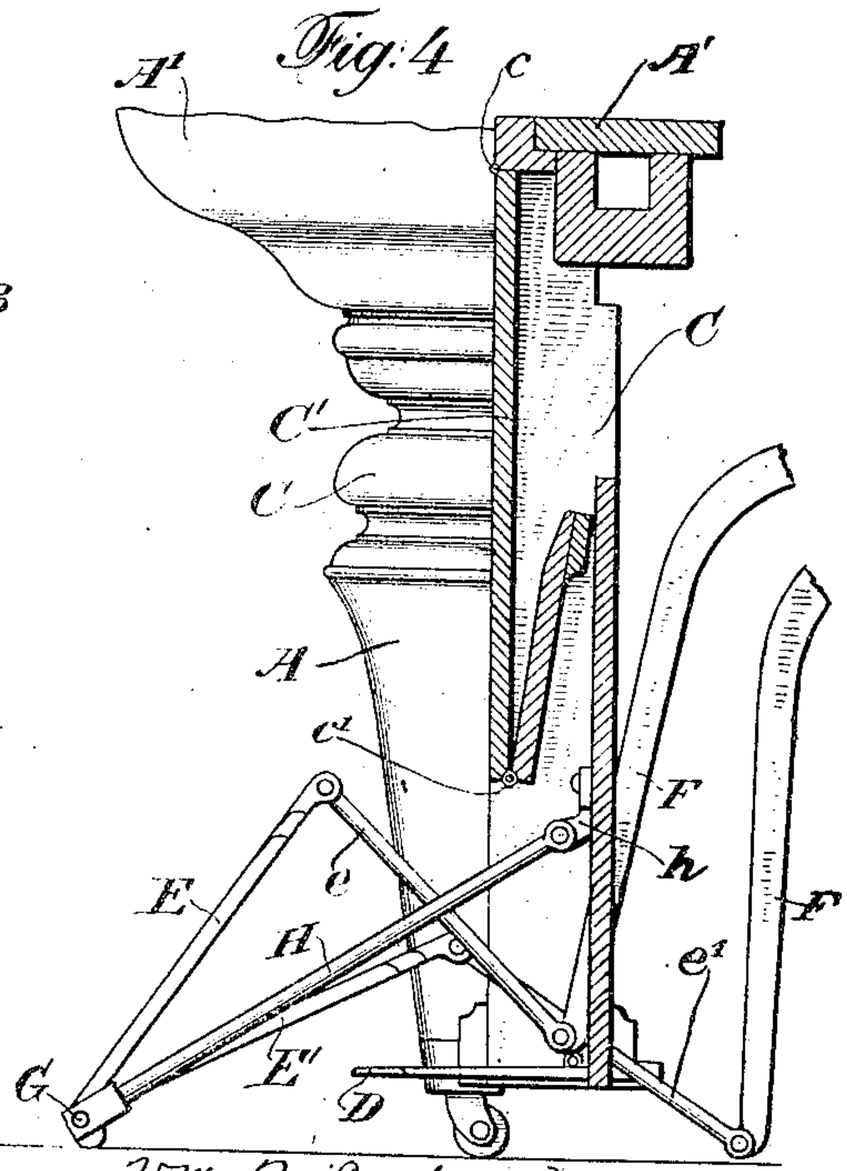


Fig: 4



Witnesses:
John O. Gempeler.
Ed. M. Harris

Wm F. Cooper Inventor

By his Attorneys Kenyon & Kenyon

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2 SHEETS—SHEET 2.

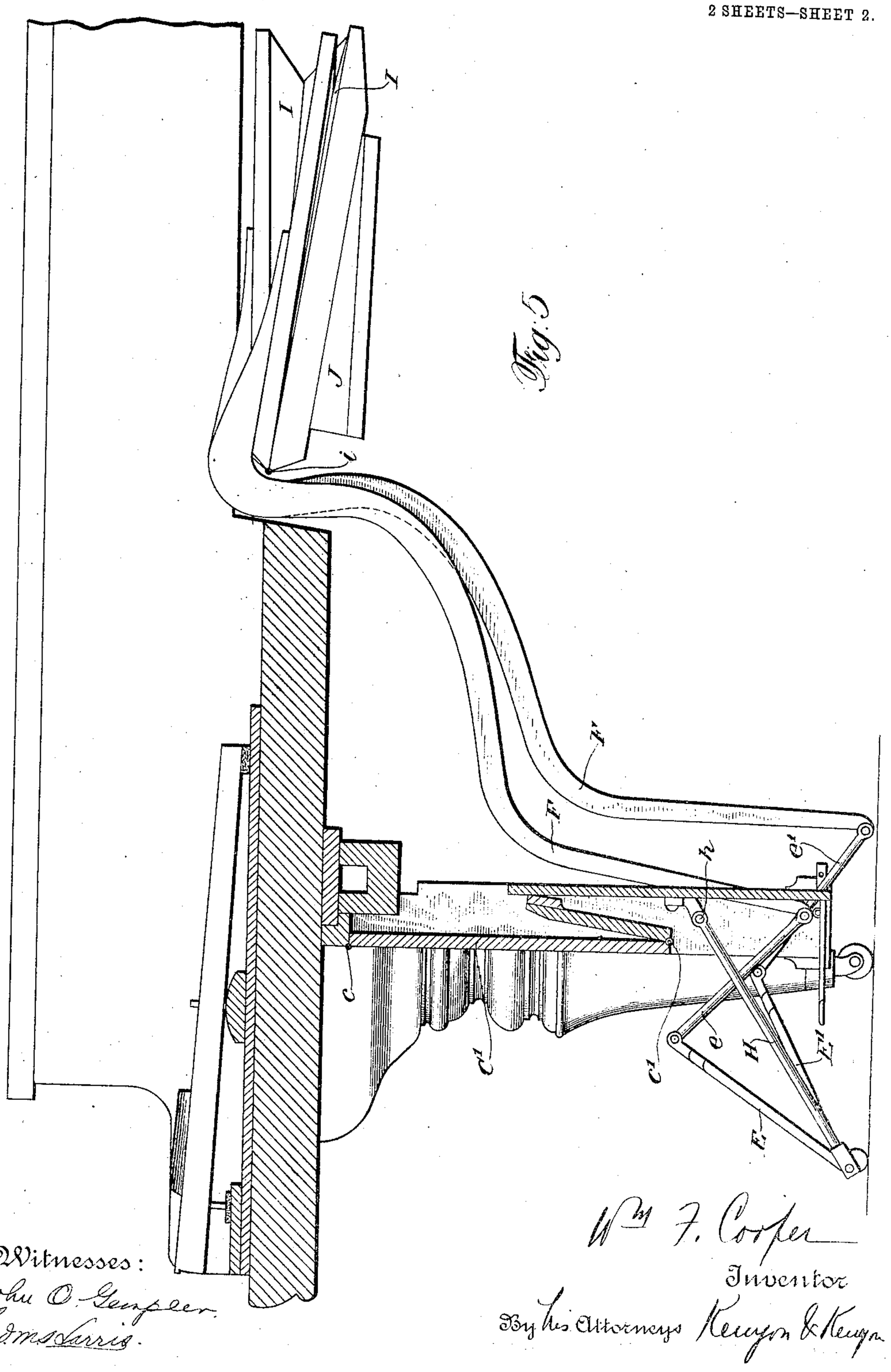

Fig. 5

Witnesses:
John O. Gempeler.
Edm. Harris.

Wm F. Cooper
Inventor
By his Attorneys Keuyon & Keuyon

UNITED STATES PATENT OFFICE.

WILLIAM F. COOPER, OF NORWALK, OHIO, ASSIGNOR TO THE A. B. CHASE COMPANY, A CORPORATION OF OHIO.

OPERATING MECHANISM FOR MECHANICAL PLAYERS.

950,892. Specification of Letters Patent. Patented Mar. 1, 1910.

Application filed July 6, 1907. Serial No. 382,454.

To all whom it may concern:

Be it known that I, WILLIAM F. COOPER, a citizen of the United States, and a resident of Norwalk, in the county of Huron, State of Ohio, have invented certain new and useful Improvements in Operating Mechanism for Mechanical Players, of which the following is a specification.

My invention relates to player grand pianos and more particularly to the treadle mechanism for operating the bellows thereof.

The object of my invention is to provide an improved form of treadle mechanism, for a player grand piano, which may be moved from the operating to an inoperative position, and vice versa, with the greatest possible ease in order to permit the instrument to be played manually or automatically, and also to so construct and arrange the parts that when placed in an inoperative position the treadle mechanism will be folded in a compact and obscure position that will not interfere with the appearance of the instrument.

Another object is to provide an operative connection between the treadle mechanism and their corresponding pumping bellows, which will be at once simple and having the least possible frictional bearings, while at the same time admitting of the placing of the bellows in an obscure position.

To these ends my invention consists in the construction, combination and arrangement of parts as hereinafter more particularly described.

Referring to the drawing, Figure 1 is a front view of a pedal support for a piano when the treadle mechanism is in its inoperative position and closed within the casing of the pedal support. Fig. 2 is a cross-section through the center of the structure of Fig. 1. Fig. 3 is a view similar to Fig. 1 but with the treadles in the operating position. Fig. 4 is a cross-section on the line 4—4 of Fig. 3. Fig. 5 shows my invention applied to a grand piano, showing the position of the bellows under the piano.

A, Figs. 2 and 4, indicates one of the piano legs and A′ indicates a part of the piano casing from which the pedal support of the piano is carried. The pedal support comprises 2 posts B, B, and an intermediate casing C, which is in the form of a shallow box extending down almost to the floor and carrying the usual piano pedals D. The front C′ of the box or casing is hinged at the top at *c* and also has a hinge *c′* near the bottom enabling the lower part of the front C′ to be folded within the casing as indicated in Fig. 4 when the treadles are to be placed in their operating position.

The two treadles E and E′ are hinged at their forward ends to a rod G. This rod is fixed at a definite position in front of the pedal support by the rods H, which are pivotally secured to a rod G at their outer ends. The inner ends of these rods H are carried by hinged mountings *h* inside of the casing C.

The hinged mountings *h* are located at a substantial distance above the bottom of the casing, while the lower ends *e*, and *e′*, in their movement each take one position in which its rear end is inside the casing close to the bottom thereof. This is the position shown in Fig. 4 for the rod *e*. The length of the rod *e* (or *e′*) added to that of the treadle E (or E′) is equal to the vertical distance from the axis of the hinged mounting *h* to the lower end of the rod *e* added to the length of the member H. With this construction and arrangement the dimensions are such that the treadles E, E′, the rods *e*, *e′* and the members H will all fold vertically within the casing as shown in Fig. 2. Moreover, since the members H tie these various parts together this folding can be accomplished whatever the initial position of the treadles E, E′. By lifting upon the members H the parts will all be forced to take the position shown in Fig. 2.

F are arms extending downward from the pumping bellows I and connected to the rods *e*, *e′* at their lower ends. These arms are fastened solidly at their upper ends to the movable leaves of the pumping bellows so that upon the depression of the pedals, the rods *e*, *e′* being forced downward and backward will cause the pumping or exhausting bellows to open upward, swinging upon the hinge point *i′*. This upward movement of the bellows I exhausts air from the reservoir J in the customary manner.

This, as will readily be seen, is a very efficient construction whereby the number of connections to the bellows of the player grand piano, which must necessarily be remote from the pedal mechanism, is materially reduced.

Having thus described my invention what

I claim as new and desire to secure by Letters Patent is:—

1. In a player grand piano a piano, a treadle mechanism a pumping or exhausting bellows placed horizontally under the piano and an arm extending downward therefrom, and connected to the actuating treadle mechanism.

2. In a player grand piano a piano, a treadle mechanism a pumping or exhausting bellows placed horizontally under the piano close to the bottom thereof and an arm extending downward therefrom and connected to the actuating treadle mechanism.

3. In a player grand piano a piano, a treadle mechanism a pumping or exhausting bellows placed horizontally under the piano close to the bottom thereof and an arm extending downward and forward therefrom and connected to the actuating treadle mechanism.

4. In a player grand piano a piano, a treadle mechanism, an actuating rod a pumping or exhausting bellows placed horizontally under the piano close to the bottom thereof and an arm extending downward and forward therefrom and connected to the actuating rod of the treadle mechanism.

5. In a player grand piano a piano, a treadle mechanism, an actuating rod a pumping or exhausting bellows placed horizontally under the piano and opening upward and an arm attached thereto extending downward and pivoted to the actuated rod attached to the player treadle.

6. In a player grand piano, a support, a treadle in front thereof, a member hinged at one end to the front of the treadle and at its other end having a hinged mounting upon said support, an actuating member hinged at one end to the treadle and having its other end at one position extending to a point below said hinged mounting, the sum of the length of the treadle and said actuating member being substantially the same as the length of the first-named member added to the vertical distance between the said hinged mounting and the rear end of the actuating member, a pumping or exhausting bellows connected with the piano and an arm extending downward therefrom and pivoted to said actuating member.

7. In a player grand piano, a support, a treadle in front thereof, a member hinged at one end to the front of the treadle and at its other end having a hinged mounting to said support, and an actuating member hinged at one end to the treadle and having its other end at one position extending to a point below said hinged mounting, the sum of the length of the treadle and said actuating member being substantially the same as the length of the first-named member added to the vertical distance between the said hinged mounting and the rear end of the actuating member, a pumping or exhausting bellows placed horizontally under the piano and an arm extending downward therefrom and pivoted to said actuating member.

8. In a player grand piano, a support, a treadle in front thereof, a member hinged at one end to the front of the treadle and at its other end having a hinged mounting to said support, an actuating member hinged at one end to the treadle and having its other end in one position extending to a point below said hinged mounting, a pumping or exhausting bellows placed horizontally under the piano, and an arm extending downward and forward therefrom and connected to the said actuating member of the treadle mechanism.

9. The combination with a grand piano, of a box lyre mounted beneath the piano, and player piano pedals mounted upon and foldable within the box lyre.

10. The combination with a grand piano, of a box lyre mounted beneath the piano, a closure for the front of the box lyre and player piano pedals hinged upon the box lyre, and foldable outward to operative position and inwardly to inoperative position.

11. The combination with a grand piano, of a box lyre mounted beneath the piano, ordinary piano pedals mounted upon the box lyre and player piano pedals mounted upon the box lyre and foldable within the box with the ordinary pedals remaining without the box.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIAM F. COOPER.

Witnesses:
E. D. Sackett,
A. N. Lawson.