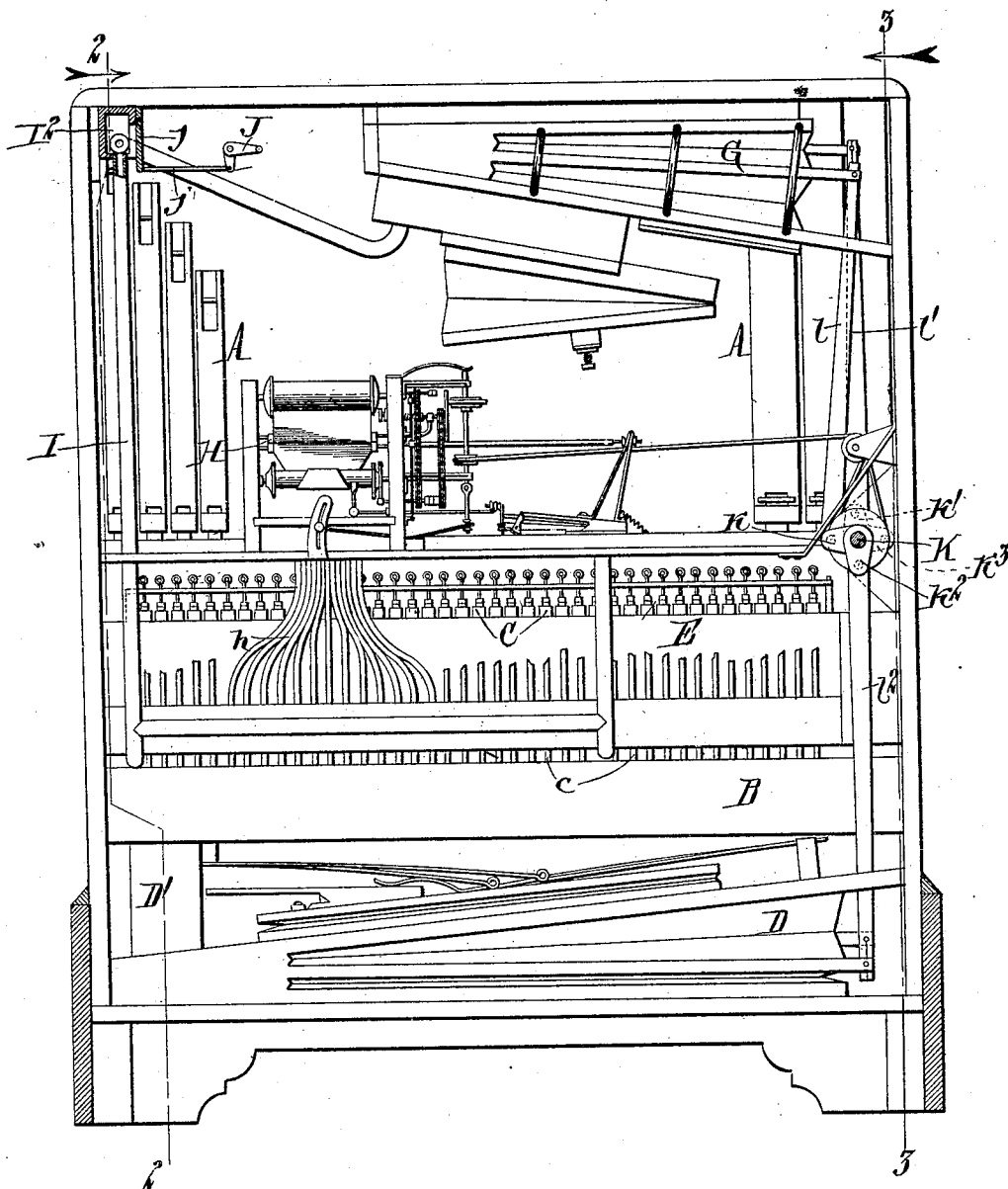


E. DE KLEIST.
PNEUMATIC MUSICAL INSTRUMENT.
APPLICATION FILED MAY 13, 1908.

937,445.

Patented Oct. 19, 1909.
2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
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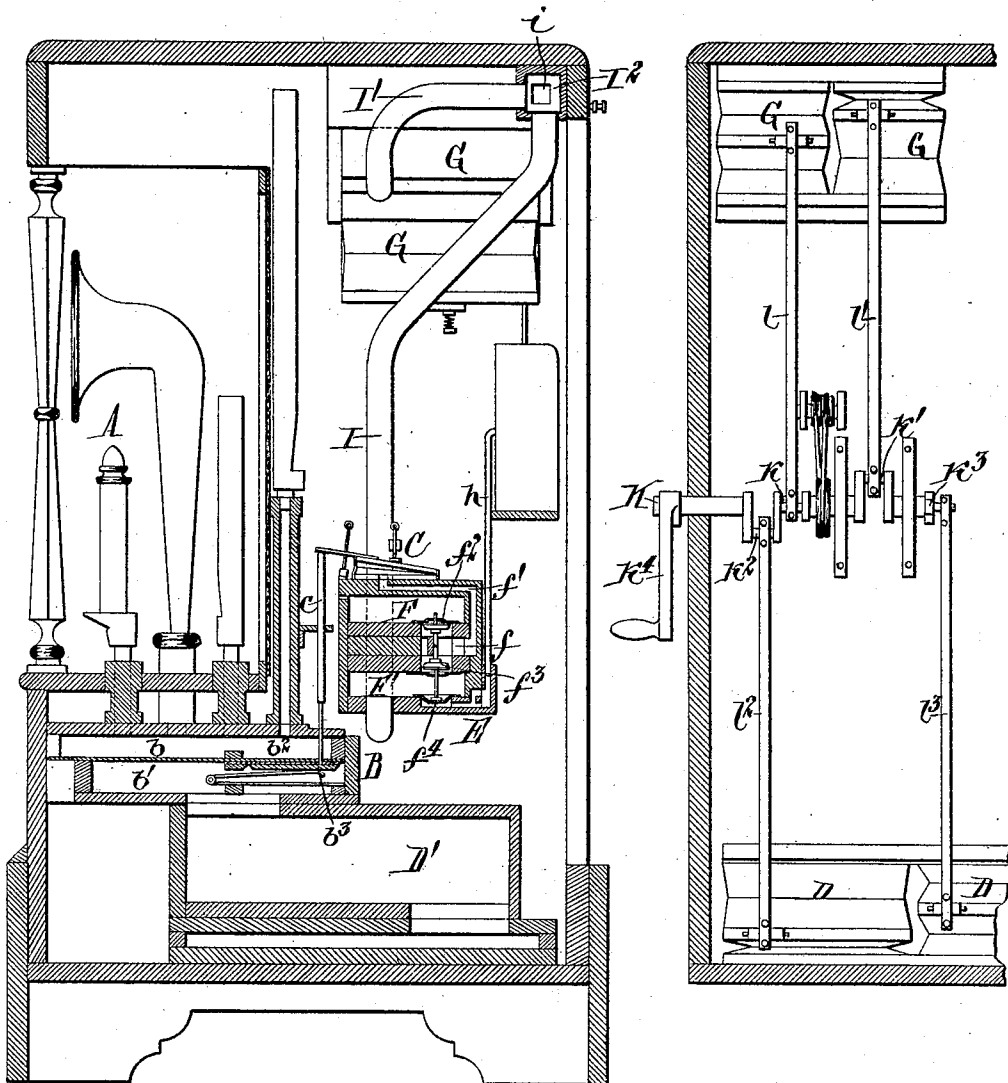
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Fig. 4.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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PNEUMATIC MUSICAL INSTRUMENT.

937,445.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed May 13, 1908. Serial No. 432,581.

To all whom it may concern:

Be it known that I, EUGENE DE KLEIST, a citizen of the United States, residing at North Tonawanda, in the county of Niagara and State of New York, have invented a new and useful Improvement in Pneumatic Musical Instruments, of which the following is a specification.

This invention relates to pneumatic musical instruments and more particularly to organs in which the valves which control the passage of the air to the pipes or other sound-producing parts are operated by a pneumatic action and tracker mechanism including a reversing gear for automatically rewinding the music sheet.

One of the objects of the invention is to improve the arrangement of the pressure and exhaust bellows and their driving mechanism with a view of rendering the instrument compact in construction and facilitating access to its parts for readily repairing and renewing them.

In the accompanying drawings consisting of 2 sheets: Figure 1 is a sectional rear elevation of a pipe organ embodying the invention, the rear wall of the case being omitted. Fig. 2 is a transverse vertical section thereof in line 2—2, Fig. 1. Fig. 3 is a similar section in line 3—3, Fig. 1, showing the driving connections between the crank shaft and the suction and pressure bellows.

Similar letters of reference indicate corresponding parts throughout the several views.

A indicates the organ pipes and B the wind or pressure chest which may be of ordinary construction, *b* Fig. 2, indicating one of the individual ducts or channels thereof with which the respective organ pipe or pipes communicate; *b*¹ the longitudinal compressed air chamber common to all of said ducts and with which each of the latter communicates by the usual port *b*² controlled by a valve or pallet *b*³. These valves are opened by the customary motor pneumatics C through stickers *c*.

D indicates the pressure bellows, two of these being preferably employed, which rest on the bottom of the inclosing case, as shown in Fig. 3. They are connected with the main pressure chamber *b*¹ of the wind chest by a trunk D¹.

The motor pneumatics C may be controlled

by a pneumatic action and coöperating tracker-mechanism of any suitable construction. In the preferred construction shown, E indicates the wind chest of this action arranged above the pressure bellows D and in rear of the groups of organ pipes. This chest contains the usual air chamber F which communicates with the atmosphere and the exhaust chamber F¹ connected with a pair of main suction or exhaust bellows G.

f indicates one of the individual exhaust and flushing channels with which the corresponding motor pneumatic communicates by a duct *f*¹, *f*², *f*³ the double puppet valve controlling the ports which connect said channel with the air and exhaust chambers F, F¹; *f*⁴ the diaphragm for operating said valve, and *h* the usual tubes leading from the diaphragm chambers to the ducts of the tracker board H.

The exhaust chamber F of the wind chest E is connected with the suction bellows G preferably by tubes or conduits I, I¹ and an interposed valve box or chamber I² which latter is conveniently located in one of the upper rear corners of the case, as shown. This box is provided in one of its walls with a flushing port *i* controlled by a swinging or other suitable valve *j* which is normally closed and which is opened when it is desired to flush the wind chest for rendering the motor pneumatics inoperative and promptly stopping the playing of the instrument. In the construction shown in the drawings, this flushing valve is opened by a bell crank lever J, one arm of which is connected with the valve by a rod *j*¹, while its other arm has a suitable handle for turning it.

The suction bellows G are preferably arranged in the upper rear portion of the case above the exhaust wind chest E, and these bellows and the pressure bellows D are operated from a common transverse crank shaft K suitably supported within the case preferably at one side thereof. This shaft has a pair of differently-located cranks *k*, *k*¹ with which the movable boards of the suction bellows are connected by pitmen *l*, *l*¹, and a second pair of similarly-arranged cranks *k*², *k*³ with which the movable boards of the pressure bellows D are connected by pitmen *l*², *l*³, as shown in Figs. 1 and 3. The driving shaft K extends through the rear

wall of the case and is provided with a hand crank k^4 , but it may obviously be driven by an electric or other suitable motor, if desired. This construction, while furnishing a simple and direct driving mechanism for both the suction and pressure bellows, permits a convenient and accessible arrangement of said bellows and a compact construction of the instrument.

10 I claim as my invention:—

1. In an instrument of the character described, the combination with the pressure and exhaust wind chests, an exhaust bellows for said exhaust chest arranged above said
15 chests, a pressure bellows for said pressure chest arranged below said chests, a crank shaft arranged between said upper and lower bellows, and actuating connections between said upper and lower bellows and the

cranks of said shaft, substantially as set forth. 20

2. In an instrument of the character described, the combination with the pressure and exhaust wind chests, a crank shaft arranged in the case of the instrument at one
25 side thereof, exhaust and pressure bellows arranged in the upper and lower portions of the instrument and connected with said exhaust and pressure chests respectively, and actuating connections between said upper
30 and lower bellows and the cranks of said shaft, substantially as set forth.

Witness my hand this 9th day of April, 1908.

EUGENE DE KLEIST.

Witnesses:

C. F. GEYER,

E. M. GRAHAM.