No. 679,026. Patented July 23, 1901.

E. DE KLEIST.

TUNE CONTROLLING DEVICE FOR MUSICAL INSTRUMENTS.

(Application filed Oct. 4, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

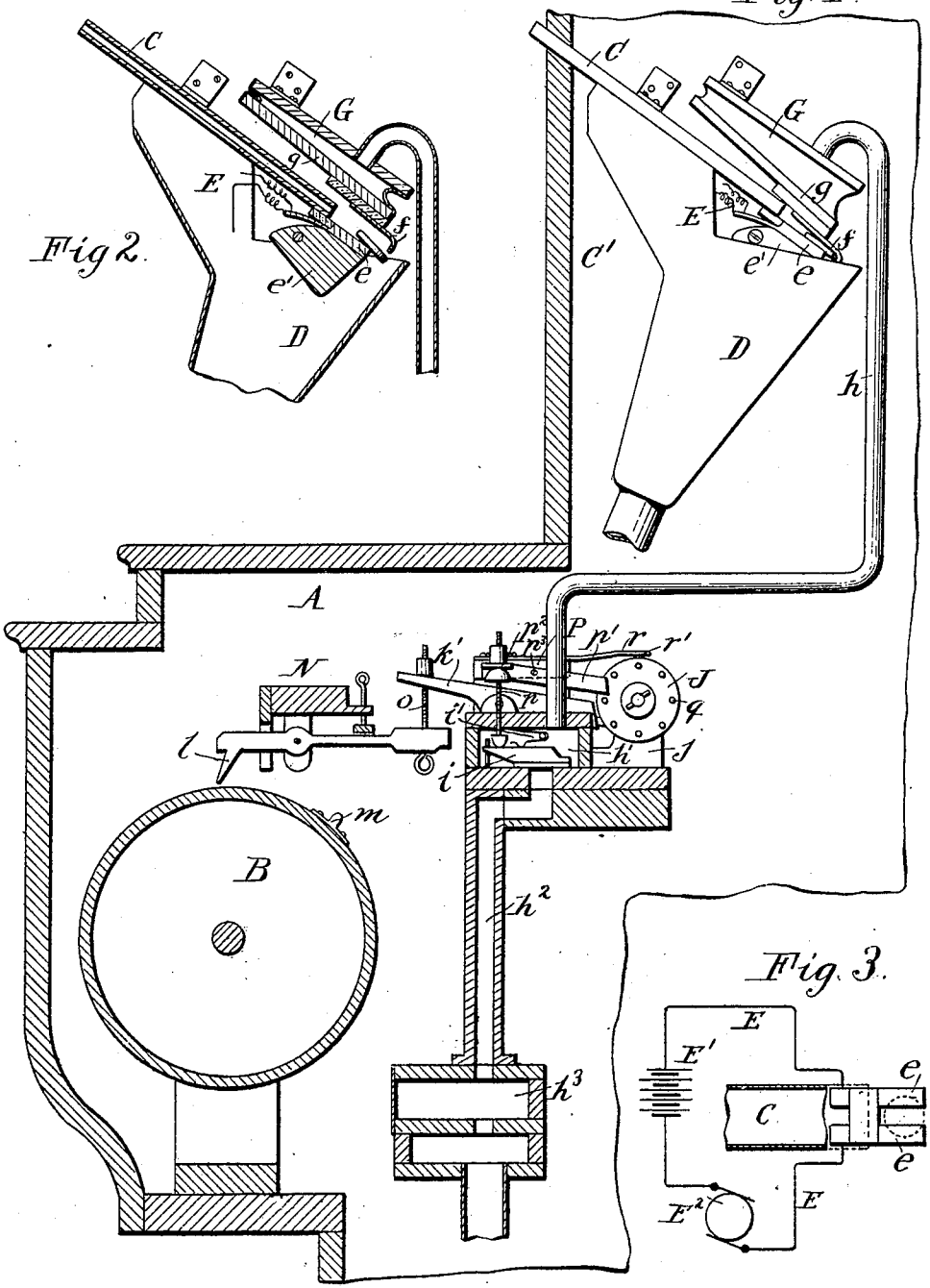


Fig. 2.

Fig. 3.

Witnesses:
E. A. Volk.
F. F. Schreiner

Eugene de Kleist Inventor
By Wilhelm Bonner
Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 679,026. Patented July 23, 1901

E. DE KLEIST.

TUNE CONTROLLING DEVICE FOR MUSICAL INSTRUMENTS.

(No Model.) (Application filed Oct. 4, 1900.) 2 Sheets—Sheet 2.

Fig. 4.

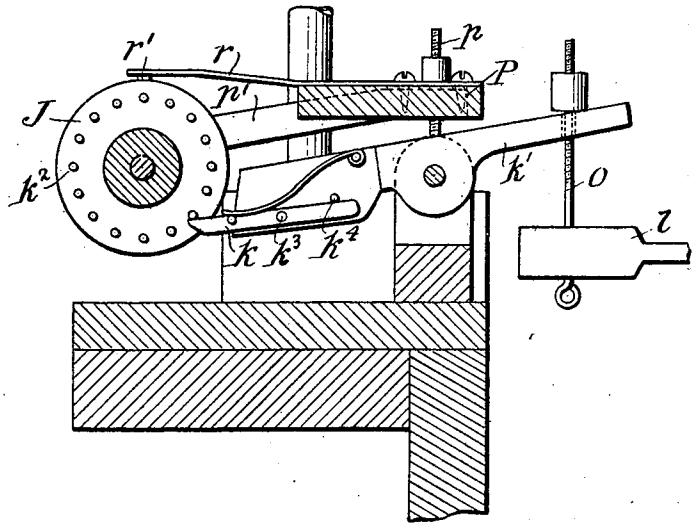
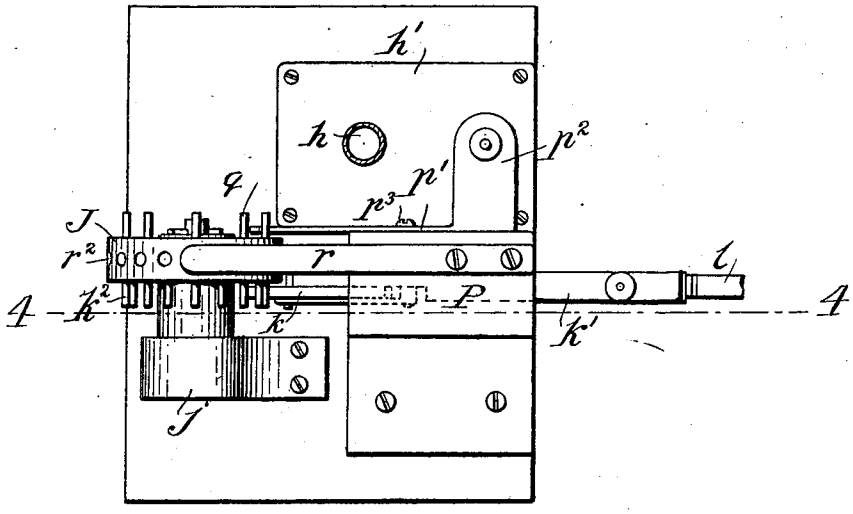


Fig. 5.



Witnesses:
E. A. Volk.
F. F. Schuyinga.

Eugene de Kleist Inventor.
By Wilhelm & Bonner
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EUGENE DE KLEIST, OF NORTH TONAWANDA, NEW YORK.

TUNE-CONTROLLING DEVICE FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 679,026, dated July 23, 1901.

Application filed October 4, 1900. Serial No. 31,995. (No model.)

To all whom it may concern:

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

This invention relates to a tune-controlling device for coin-controlled musical instruments.

The object of my invention is the provision of a simple and inexpensive device which enables the instrument to be adjusted to play a tune a greater or less number of times for every deposit of a coin, as may be desired.

In the accompanying drawings, consisting of two sheets, Figure 1 is a fragmentary transverse vertical section of a self-playing piano provided with my improved regulating device, showing the electric-motor circuit closed by a deposited coin. Fig. 2 is a vertical section of the coin-chute and adjacent parts, showing the retractable coin-stop raised to release the coin. Fig. 3 is a diagrammatic sectional top plan view of the coin-chute, the motor-circuit, and its terminals. Fig. 4 is a transverse vertical section in line 4 4, Fig. 5. Fig. 5 is a top plan view of the tappet-wheel and the parts coöperating therewith.

Like letters of reference refer to like parts in the several figures.

A is the upper portion of the case of an automatic piano of the type in which the hammers of the piano-action are operated by motor-pneumatics controlled by pivoted fingers, which are actuated by a horizontal pin-barrel B. The strings or sound-producing parts, the action, and the motor-pneumatics form no part of my invention and are therefore not shown in the drawings. They may be of any suitable or well-known construction.

C is a coin-chute arranged in the contracted upper portion C′ of the piano-case and extending through the front wall thereof, and D is a hopper which receives the coins deposited in the chute and discharges the same into a suitable receptacle. (Not shown in the drawings.)

e e represent a pair of separated metallic plates arranged at the foot of the coin-chute, substantially flush with its bottom and forming the terminals of an electric circuit E. This circuit contains a battery E′ or other source of electrical energy and an electric motor E^2, which drives the pin-barrel of the instrument in any suitable or well-known manner. The terminal plates *e* are supported by a fixed cross-piece *e′* and are insulated from the coin-chute.

f is a retractable stop arranged at the foot of the terminal plates *e* and consisting of a depending lip which is carried by the lower hinged board *g* of a bellows or pneumatic G, so that when said pneumatic is allowed to expand the stop-lip *f* overhangs the lower end of the terminal plate and intercepts the coin, as shown in Fig. 1, while when the air is exhausted from the pneumatic its hinged board and the stop-lip are raised, thereby releasing the coin and allowing it to drop into the hopper D. This stop-lip is insulated from the pneumatic, as shown. When a coin is deposited in the chute, it is arrested by the stop *f* and rests upon both of the terminal plates *e*, thereby closing the motor-circuit and causing the motor to operate the instrument until the circuit is broken by the retraction of the stop and the release of the coin.

The pneumatic G is connected by a pipe or duct *h* with a valve-chest *h′*, and the latter is in turn connected by a duct h^2 with the main suction-chest h^3, from which the usual motor-pneumatics of the instrument are operated.

i is a valve arranged in the valve-chest *h′* and normally closing the upper end of the duct h^2, so as to cut off the pneumatic G from the effect of the suction-current. This valve is held closed by a spring *i′* and is automatically opened by the following mechanism:

J is an upright tappet-wheel arranged in rear of the valve-chest and mounted on a horizontal shaft supported in standards *j*. This wheel is intermittently rotated by a feed-pawl *k*, which is carried by a vertically-swinging rock-lever *k′* and which engages with an annular row of equidistant pins k^2, projecting from one side of the wheel J. This feed-pawl is pivoted by a horizontal pin k^3 to the front arm of the rock-lever *k′* and is held stationary during its upward or active stroke

by a stop-pin k^4, arranged on said rock-lever, but is free to yield and ride over the pins of the wheel during its return stroke.

l is a vertically-swinging rock lever or finger arranged transversely above the pin-barrel B and standing in the path of a pin or projection m, arranged on the barrel, so as to be tripped and rocked by the same once during every rotation of the barrel. This rock-finger is supported by a stationary cross-piece N, and its rear arm is connected with the adjacent arm of the rock-lever k' by a rod o, which transmits the movement of the finger to said rock-lever, thereby causing the feed-pawl to turn the wheel J. The cut-off valve i is operated from this wheel by a rod or sticker p, bearing at its lower end upon the rear end of said valve and connected at its upper end with the rear arm of a vertically-swinging rock-lever p', having a laterally-extending lug p^2, through which said sticker passes, as shown in Figs. 1 and 5. This rock-lever is pivoted at p^3 to a bracket or stationary support P. The front arm of this rock-lever projects into the path of an annular row of equidistant tappets or trip-pins q, which project from the side of the wheel J opposite that on which its feed-pins k^2 are arranged and which successively trip said lever, causing the same to open the valve i and allowing the air to be exhausted from the pneumatic G.

r is a spring-detent secured to the bracket P and provided at its free end with a depending pin r', which interlocks with one of a series of depressions r^2, formed in the edge of the actuating-wheel J.

In the normal position of the parts the suction-valve i is closed, the pneumatic G is expanded, and the coin-stop f is in its depressed position, as shown in Fig. 1. Upon depositing a coin in the chute C the same is arrested by the stop f and closes the motor-circuit, as heretofore described, causing the instrument to be operated. When the barrel B has made a complete rotation, its projection m trips the rock-finger l, causing the actuating-wheel J to be turned the distance of one of its feed-pins k^2 through the medium of the rock-lever k' and feed-pawl k. When by the rotation of the wheel J one of its tappets or pins q rocks the lever p', the suction-valve i is opened and the air exhausted from the pneumatic, thereby raising its hinged bottom board and retracting the coin-stop f. The released coin now drops into the hopper D, and the motor-circuit being now broken the instrument stops playing. By providing the tappet-wheel J with an equal number of tappets q and feed-pins k^2 the instrument is stopped after the barrel makes a complete rotation and plays a tune once. By providing the wheel with half as many tappets as feed-pins, as shown in the drawings, the barrel will make two turns and play the tune twice before the suction-valve i is operated and the instrument is stopped, while by providing the wheel with one-third as many tappets as feed-pins the barrel will make three turns and play the tune three times before the instrument is stopped, and so on, according to the number of tappet-pins on the wheel. The tappet-pins are preferably removably secured in openings formed in the wheel J, so that a greater or less number of pins may be placed on the wheel for causing the instrument to play a tune the desired number of times for each deposit of a coin.

I claim as my invention—

1. In a musical instrument, the combination with a rotary pin-barrel which controls the sound-producing parts, and a motor-circuit, of a coin-chute, contacts arranged adjacent to the chute and forming terminals of said circuit, a pneumatic having its movable member provided with a stop which projects normally into the path of the coin, a suction-chamber connected with said pneumatic by a duct or passage, a cut-off valve arranged in said passage, and an actuating device for said valve which is operated by said pin-barrel, substantially as set forth.

2. In a musical instrument, the combination with a rotary pin-barrel which controls the sound-producing parts, and a motor-circuit, of a coin-chute, contacts arranged adjacent to the chute and forming terminals of said circuit, a pneumatic having its movable member provided with a stop which projects normally into the path of the coin, a suction-chamber connected with said pneumatic by a duct or passage, a cut-off valve arranged in said passage, an actuating-wheel provided with an annular row of feed-pins and an annular row of tappets, a lever which actuates said valve and which is operated by said tappets, a trip-finger which is operated by a projection on said pin-barrel, and a feed-pawl engaging with the feed-pins of said actuating-wheel and operated by said trip-finger, substantially as set forth.

3. In a musical instrument, the combination with a rotary pin-barrel having a projection, of a motor-circuit, a coin-chute, contacts arranged to be traversed by the coins and forming terminals of said circuit, a pneumatic having its movable member provided with a stop which projects normally into the path of the coin, a suction-chamber connected with said pneumatic by a passage containing a cut-off valve, an actuating-wheel provided on one side with an annular row of feed-pins and on its opposite side with an annular row of actuating-pins, a lever which opens said valve and which is operated by the actuating-pins of said wheel, a rock-lever carrying a feed-pawl which engages with the feed-pins of said wheel, and a trip finger or lever connected with said rock-lever and standing in the path of the projection on said pin-barrel, substantially as set forth.

4. In a musical instrument, the combination with a rotary pin-barrel which controls the sound-producing parts, and a motor-cir-

cuit, of a coin-chute, contacts arranged adjacent to the chute and forming terminals of said circuit, a pneumatic having its movable member provided with a stop which projects normally into the path of the coin, a suction-chamber connected with said pneumatic by a duct or passage, a cut-off valve arranged in said passage, an actuating-wheel provided with an annular row of feed-pins and an annular row of tappets which latter are removably secured to said wheel, a lever which actuates said valve and which is operated by said tappets, a trip-finger which is operated by a projection on said pin-barrel, and a feed-pawl engaging with the feed-pins of said actuating-wheel and operated by said trip-finger, substantially as set forth.

5. The combination with a motor-circuit, of a coin-chute, contacts arranged adjacent to the coin-chute and forming terminals of said circuit, a pneumatic having its movable member provided with a stop which projects normally into the path of the coin, a suction-chamber connected with said pneumatic by a duct or passage, a cut-off valve arranged in said passage, and means for operating said valve, substantially as set forth.

Witness my hand this 27th day of September, 1900.

EUGENE DE KLEIST.

Witnesses:
CARL F. GEYER,
JNO. J. BONNER.