

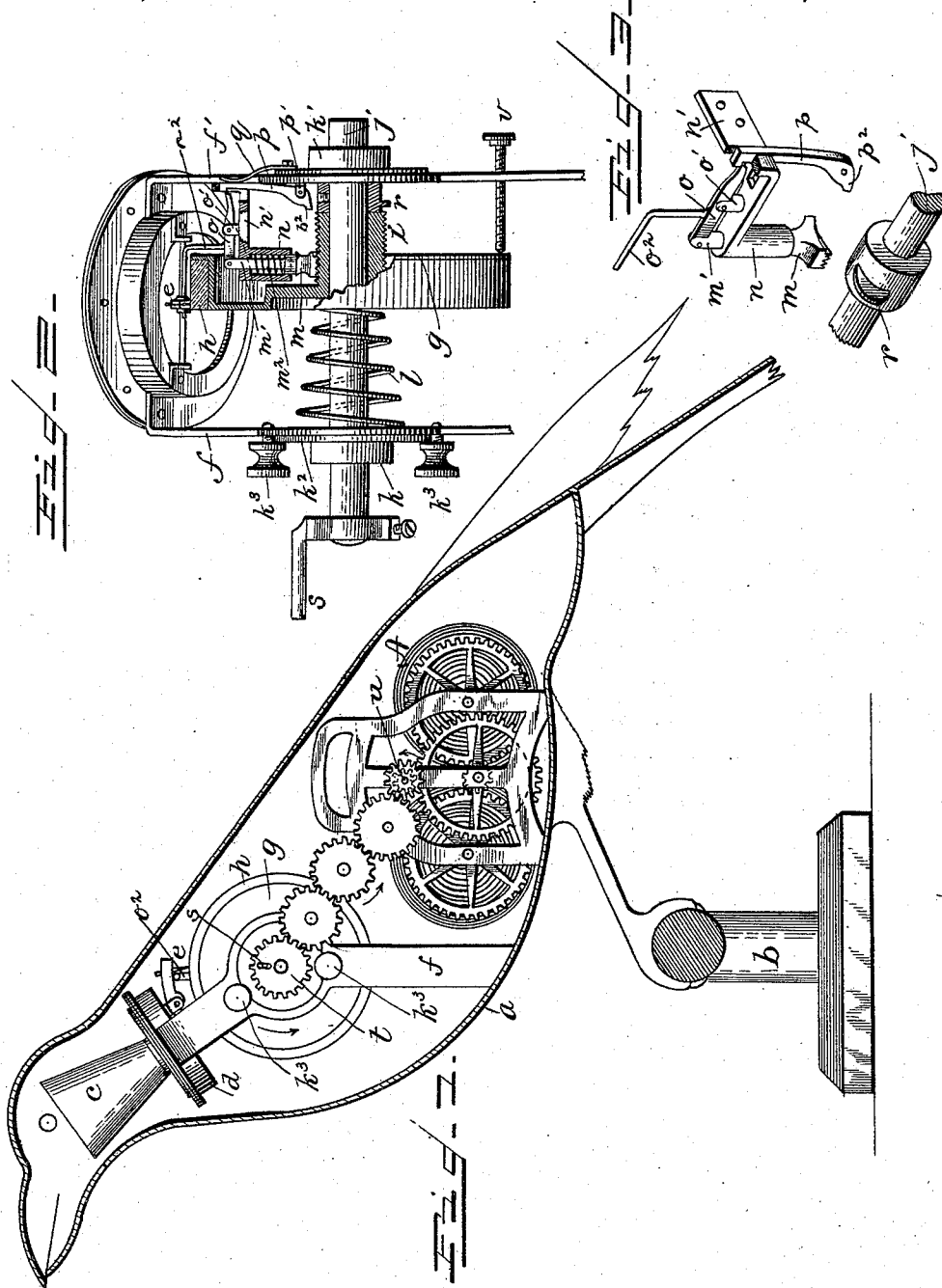
(No Model.)

2 Sheets—Sheet 1.

F. M. & J. A. E. CRISWELL.
PHONOGRAPH.

No. 470,477.

Patented Mar. 8, 1892.



WITNESSES
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Fig. 5.

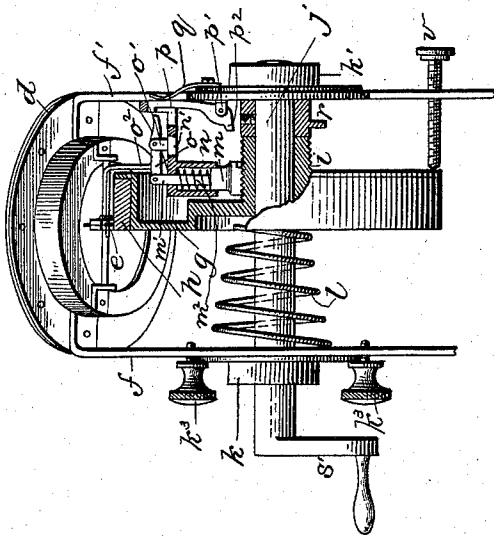
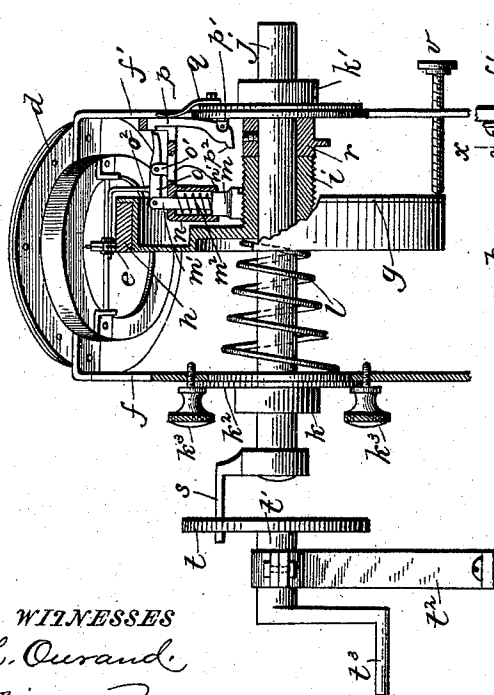


Fig. 4.



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Fig. 7.

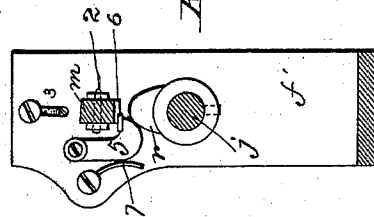
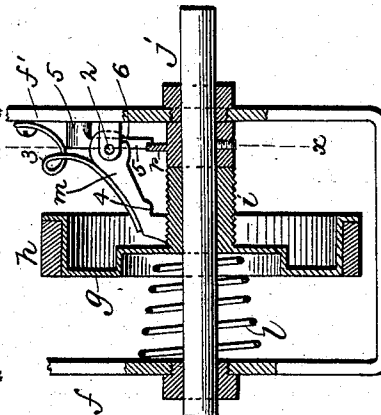


Fig. 6.



INVENTORS.
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UNITED STATES PATENT OFFICE.

FRANCIS M. CRISWELL, OF WASHINGTON, DISTRICT OF COLUMBIA, AND
JAMES A. E. CRISWELL, OF BROOKLYN, NEW YORK; SAID JAMES A.
E. CRISWELL ASSIGNOR TO SAID FRANCIS M. CRISWELL.

PHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 470,477, dated March 8, 1892.

Application filed June 16, 1891. Serial No. 396,517. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS M. CRISWELL, a citizen of the United States, residing at Washington, in the District of Columbia, and
5 JAMES A. E. CRISWELL, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Phonographs, of which the following is a full,
10 clear, and exact description.

The object of our invention is to produce a continuously and automatically repeating phonograph.

In carrying out our invention we have constructed the record-cylinder with mechanism
15 whereby when it has made its full lateral travel it is returned automatically to the starting-point and its revolution and progressive lateral motion continued indefinitely in accordance with the length of run or motion of the motor.

We will describe the principle of our invention first and the best mode in which we have contemplated applying that principle and
25 will then particularly point out and distinctly claim the part or improvement which we claim as our invention.

In the accompanying drawings, in the several figures of which like parts are similarly designated, Figure 1 is a sectional elevation
30 illustrating the application of our invention to the image of a crow. Fig. 2 is a front elevation, partly in section, of the phonograph; and Fig. 3 shows in perspective portions of the repeating mechanism. Fig. 4 is a sectional
35 elevation similar to Fig. 2, showing our phonograph arranged to be worked by hand. Fig. 5 is a similar section showing our repeating mechanism applied to the Edison and kindred phonographs. Fig. 6 is a sectional
40 elevation showing a modified form of our repeating mechanism; and Fig. 7 is a vertical cross-section taken, essentially, in the plane of line $x x$ of Fig. 6, but showing the foot m
45 to be in engagement with the latch 5.

One of the inventors of this invention has adopted for use in advertising his manufacture of a proprietary remedy for corns a stuffed crow, or a representation of a crow,
50 and to add to the attractiveness of such ad-

vertising device we have combined therewith a phonograph; but while our phonograph has this special adaptation we do not wish to be understood as limiting our invention thereto.

The letter a designates the representation
55 of a hollow crow, which may be made of metal, papier-maché, or other material, and b is a perch or pedestal therefor. In the interior of the image of the crow is arranged the phonograph and a motor therefor, the latter in the
60 illustration given being a clock-movement, although, obviously, other sources of power may be employed and located elsewhere than within the image.

In the phonograph c is the resonator, d the
65 vibrating diaphragm-chamber, and e the stylus.

$f f'$ are standards for supporting the diaphragm-chamber and other working parts of
70 the phonograph.

g is the record cylinder or drum, and h the record-surface thereon. The record-cylinder is provided with a hub i , projecting laterally from one side, and this cylinder is fixed to a
75 shaft j , which is adapted to slide in the direction of its length in bearings k and k' , arranged in the standards f and f' . The bearing k is provided with a circular flange k^2 , which is fitted into a corresponding opening in the standard
80 f and removably held therein on one side by screws k^3 and on the other by the cylinder-spring l , which bears against it. The other bearing k' may be fixed. The removable bearing admits of the ready removal of the cylinder, its shaft, and the spring. The hub i is
85 provided with a screw-thread on its outer surface, and this screw-thread is engaged by a correspondingly-screw-threaded foot m , which is fixed in relation to the frame, so that as the cylinder is revolved the engagement of the screw-thread of the foot with the screw-thread of
90 the hub will cause such cylinder and its shaft to move laterally from the foot. This foot has a stem m' arranged in a tubular socket n' and is provided with a spring m^2 , which
95 tends normally to force the foot into engagement with the hub. The socket n' is secured to the standard f' by a bracket n . The stem m' of the foot m is jointed to a lever o , which
100 in turn is fulcrumed to a post o' on the bracket

n , and the other end of this lever is engaged by a latch p at certain periods, and this latch is held up to the lever by a spring q . Normally the latch and lever are disengaged.

- 5 The latch p is pivoted at its lower end to a post p' on the standard f' , and said latch terminates in a toe or tappet p^2 , which extends therefrom in the direction of the length of the shaft j and toward the record-cylinder.
- 10 A cam r is fixed to the shaft j next to the hub i and is adapted to engage and lift the foot m and the toe or tappet p^2 , as will be described. The lever o is provided with an arm o^2 to lift the stylus e in the return movement
- 15 of the record-cylinder.

In the accompanying illustration of our invention the phonograph-cylinder is arranged to be rotated by a clock-movement A , and for this purpose the shaft j is provided with a crank s on one end, and this crank engages a slotted pinion t , which is in train with the main shaft u of the clock-movement. The crank s is as long as the length of movement of the shaft j , so as always to be in engagement

- 20 with and to be rotated by the pinion t . A stop v (shown as a screw arranged in the standard f') is employed to limit the return movement of the cylinder.
- 25

- 30 The clock-movement as a motor for our phonograph is selected for the purpose of this specification and without intending to limit our invention to it, and hence the following description of the operation must be understood with this reservation: The clock-movement having been wound up and the record-cylinder surface inscribed in the usual manner, the record-cylinder is rotated, and as it rotates the foot m gives to it and its shaft a progressively lateral movement. The spring l is
- 35 compressed during this movement until the cam r comes into contact with the foot m , at which time the said foot is lifted by the cam out of engagement with the screw-thread of the hub, when the spring is free to return the cylinder to its starting-point. By the lifting of the foot the arm o^2 is also lifted, and it raises the stylus from the record-surface. When the foot is lifted, of course the opposite end of its lever o is depressed, and when
- 40 so depressed the spring q forces the latch into engagement with the lever and holds the foot up. The cylinder continues to rotate during this movement, and when the cam again comes uppermost it is in the plane of the toe or tappet p^2 , and, lifting such toe, rocks the latch
- 45 and disengages the latch from the lever o , thereby permitting the spring m^2 to throw down the foot into engagement with the screw-threaded hub and removing the arm o^2 from engagement with the stylus, and thus permitting the phonograph to go on with its work. These operations are repeated so long as the power holds out, and hence a record on the cylinder may be repeated continuously with-
- 50 out, as heretofore, renewing the power after each complete movement of the cylinder. It is this automatic and continual repetition of
- 55
- 60
- 65

the record which distinguishes our invention and which also renders our invention peculiarly adaptable for advertising purposes, although, it need scarcely be said, the same characteristic of our invention fits it for more extended use.

The spring-foot and its lifting, latching, and releasing mechanism may be designated generally and for the purposes of this specification as an "automatic clutch." Any clutching mechanism having the functions and mode of operation of these parts may be substituted for them, and hence we mean not to limit our broad invention to any mere details of construction.

The image of the crow will have a suitable opening—for example, a partible bill—for the emission of sound, and such image is constructed also with a partible or separable body for gaining access to the phonograph. The body of the image is made sufficiently strong to receive the frames of the phonograph and its motor.

Instead of operating the phonograph by power we may mount the slotted disk t upon a shaft or arbor t' in a bracket t^2 and apply thereto a crank or clock-key or other turning device t^3 , as illustrated in Fig. 4.

Obviously our invention of repeating mechanism is applicable to the Edison and kindred phonographs, wherein the record-cylinder slips on the shaft and the shaft has no sliding movement. (See Fig. 5.) In this case the cam r may be made upon the hub of the record-cylinder or upon a collar and fixed to the shaft, and the ordinary handle s' may be substituted for crank s for operation by hand, or the shaft j may be geared for driving by power.

In Figs. 6 and 7 we have shown a modification of our repeating mechanism. The foot m is made as a lever pivoted at 2 to the standard f' and normally borne into contact with the screw-threaded hub i by a spring 3, which is fastened to the standard f' . The heel of the foot is made with a jog 4, which is engaged by the cam r to lift the said foot out of engagement with the threaded hub to permit the spring l to return the record-cylinder. A latch 5, pivoted to the standard f' , swings laterally of the foot m to engage a notch 6 in its rear end to hold up said foot until the record-cylinder returns. A spring 7, acting upon the latch 5, normally forces said latch toward the foot m . As the cam r comes uppermost when the latch is in engagement with the notch 6, it strikes the nose of said latch and forces it out of said notch, and thus the foot is released to re-engage the screw-threaded hub and repeat the movement of the record-cylinder. The foot m in this form of our invention may carry also a stylus-lifter.

Instead of connecting the shaft j with its power-motor by means of toothed gears, we may use belting or other form of connection.

In applying our repeater to the Edison and

other forms of phonographs, we do not limit our invention to the use of the peculiar form of shaft-bearings here shown, but may use other forms.

5 What we claim is—

1. In a phonograph, a record-cylinder having a screw-threaded hub and usual means for receiving and transmitting a record, combined with means for rotating said cylinder
10 continuously, a spring normally tending to return said cylinder, and a spring-foot screw-threaded to engage such hub, a lever to which the foot is jointed, a latch for periodically engaging such lever, and a cam for alternately
15 lifting the foot and vibrating the latch for effecting the progressive movement of the cylinder to transmit its record and to return it automatically to the starting-point and repeat these operations, substantially as described.
20

2. In a phonograph, a rotary record-cylinder and usual means for receiving and transmitting a record, said cylinder having a screw-threaded hub, combined with a complementally screw-threaded foot, a cam connected to
25 move with the hub, and intermediate mechanism acted upon by the cam for effecting the engagement of the foot with said hub and to disengage and re-engage the two automatically during the rotation of the cylinder to
30 effect repetition of the record continuously, substantially as described.

3. In a phonograph, a rotary record-cylinder,

a shaft to which it is fixed, bearings in which said shaft has longitudinal motion, and
35 usual means for receiving and transmitting a record, said cylinder having a screw-threaded hub, combined with a complementally screw-threaded foot, a spring to hold it in engagement with the hub, a lever from one end of
40 which the foot is suspended, a latch to engage the other end of such lever, a spring normally tending to return the cylinder, and a cam to disengage the foot and hub and cause the engagement of the latch and lever and there-
45 after when the cylinder is returned to release the latch and lever and permit the foot to engage the hub, substantially as described.

4. In a phonograph, a phonograph-cylinder having a screw-threaded hub, a shaft to which
50 it is fixed, and a cam on said shaft and bearings in which the shaft has a longitudinal movement, combined with a spring-foot to engage such hub, a lever to which the foot is jointed, and a latch adapted to engage such lever, sub-
55 stantially as described.

In witness whereof we have hereunto set our hands.

FRANCIS M. CRISWELL.

JAMES A. E. CRISWELL.

Witnesses as to Francis M. Criswell:

CHAS. E. GROSS,

GEO. F. GRAHAM.

Witnesses as to James A. E. Criswell:

PAUL JOHST,

W. MAYVILLE TWITCHELL.