No. 883,971.

PATENTED APR. 7, 1908.

J. ROEVER.

MULTIPLE PHONOGRAPH MACHINE.

APPLICATION FILED MAY 29, 1907.

3 SHEETS—SHEET 1.

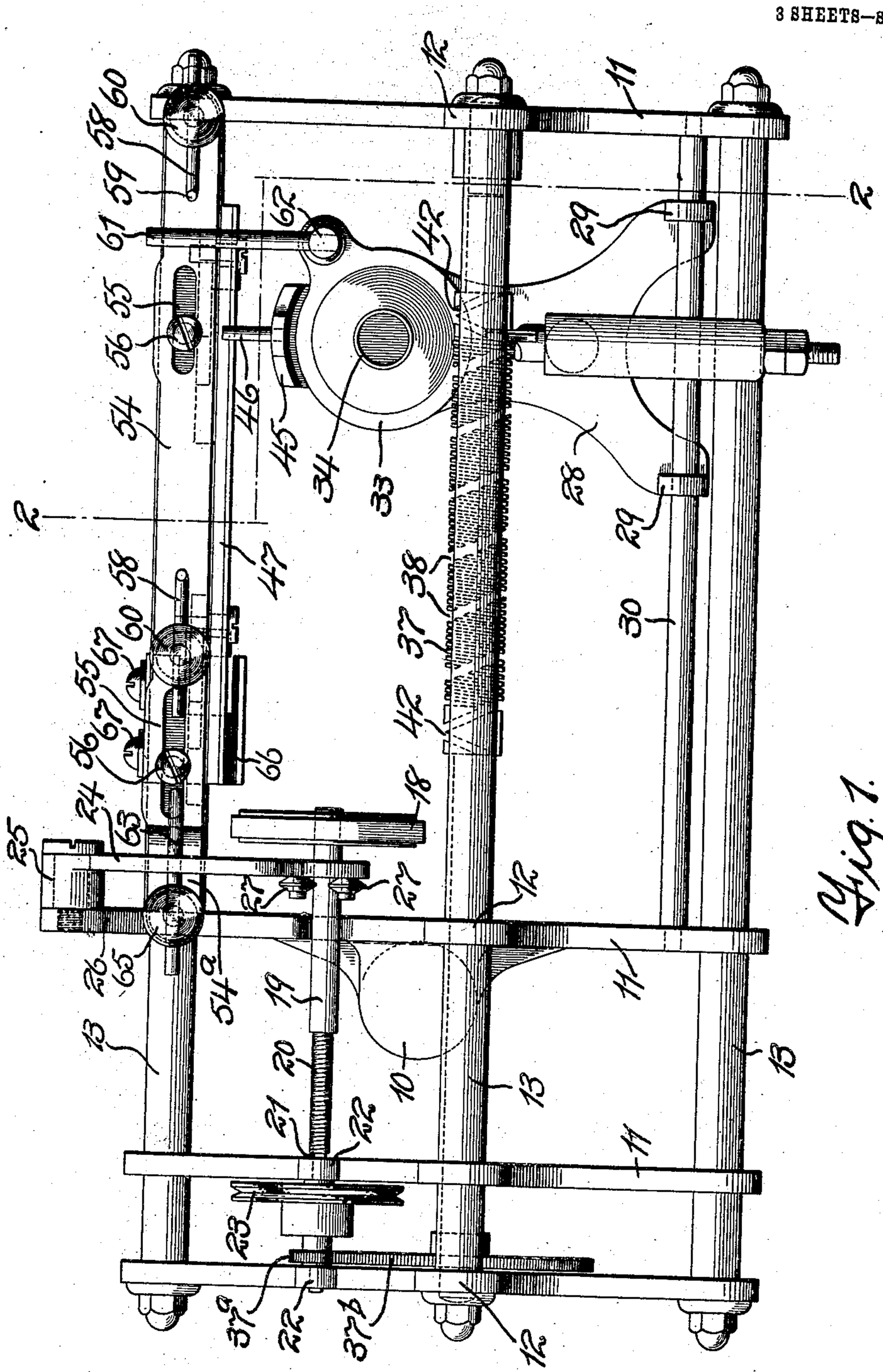

Fig. 1.

WITNESSES:

Ralph Lancaster

Frank L. Stubbs.

INVENTOR.

Julius Roever.

BY W. B. Hutchinson.

ATTORNEY.

No. 883,971.

PATENTED APR. 7, 1908.

J. ROEVER.

MULTIPLE PHONOGRAPH MACHINE.

APPLICATION FILED MAY 29, 1907.

3 SHEETS—SHEET 2.

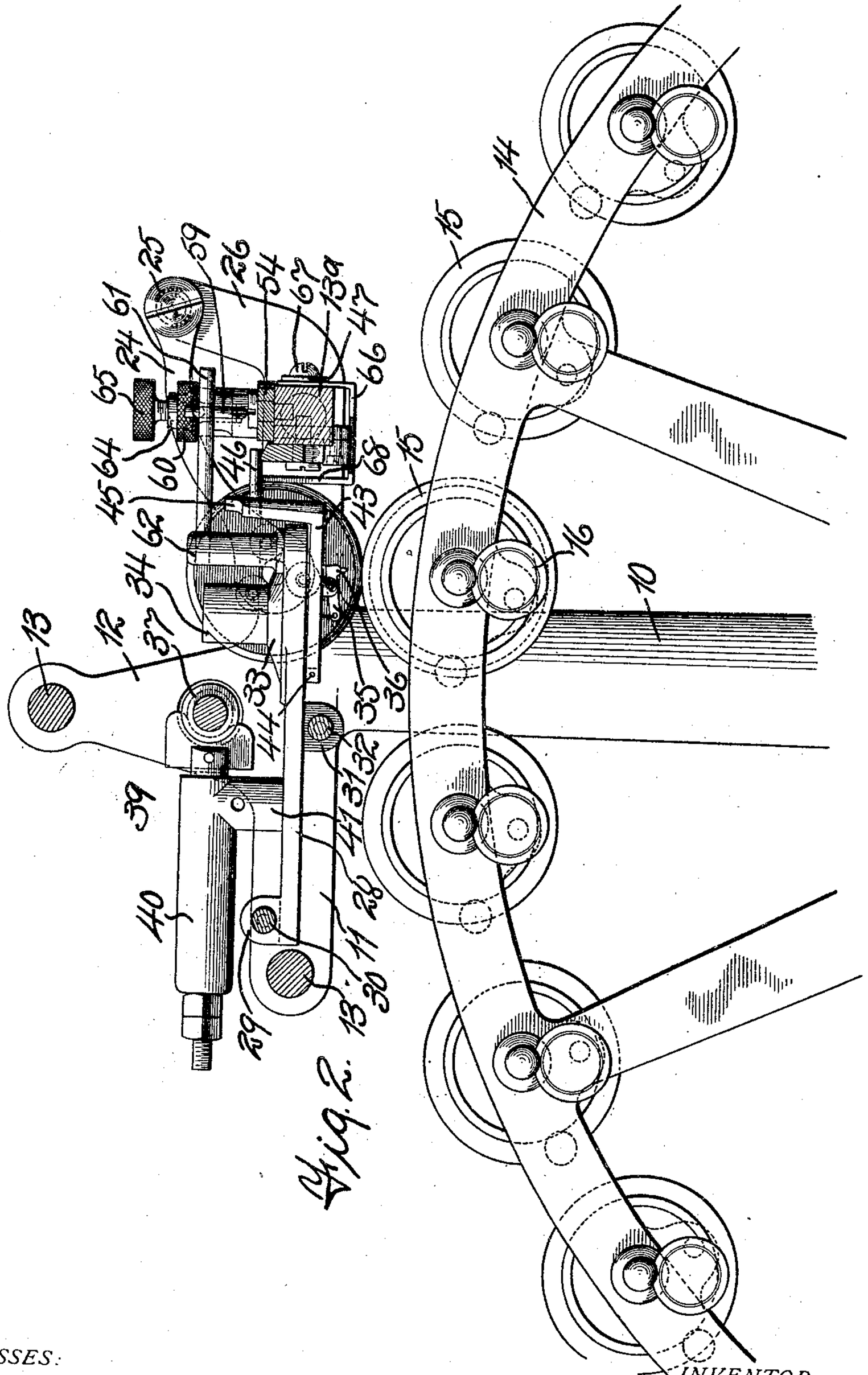

Fig. 2.

WITNESSES:

Ralph W. Lancaster

Frank L. Ditz.

INVENTOR.

Julius Roever.

BY

W. B. Hutchinson.

ATTORNEY.

No. 883,971.

PATENTED APR. 7, 1908.

J. ROEVER.

MULTIPLE PHONOGRAPH MACHINE.

APPLICATION FILED MAY 29, 1907.

3 SHEETS—SHEET 3.

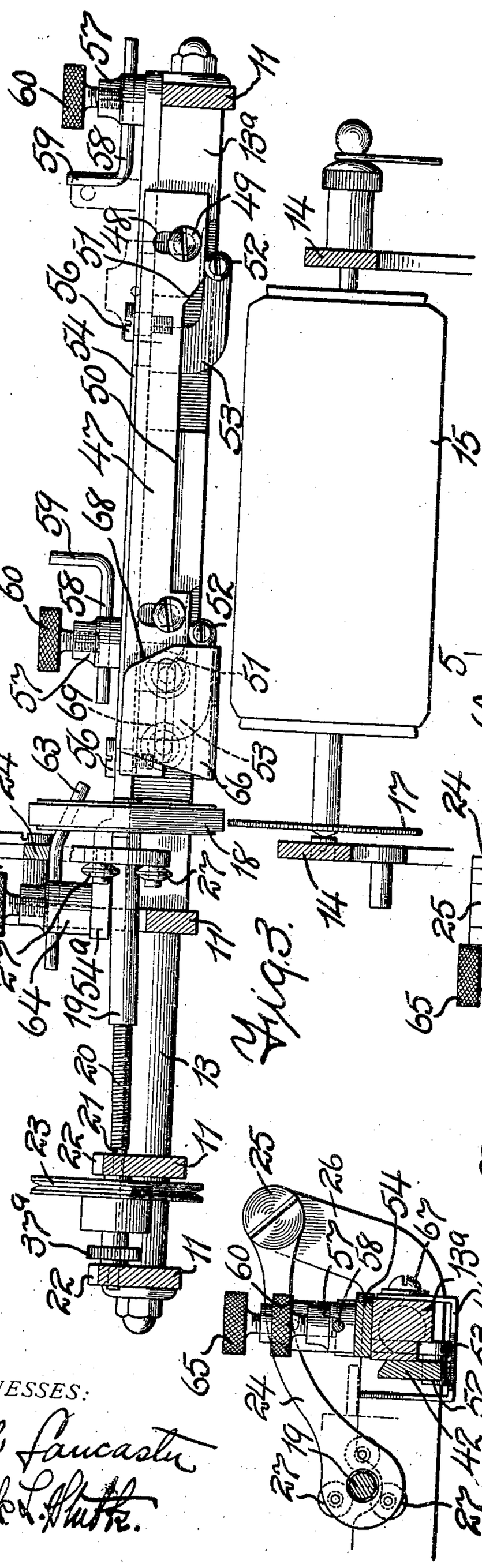

Fig. 3.

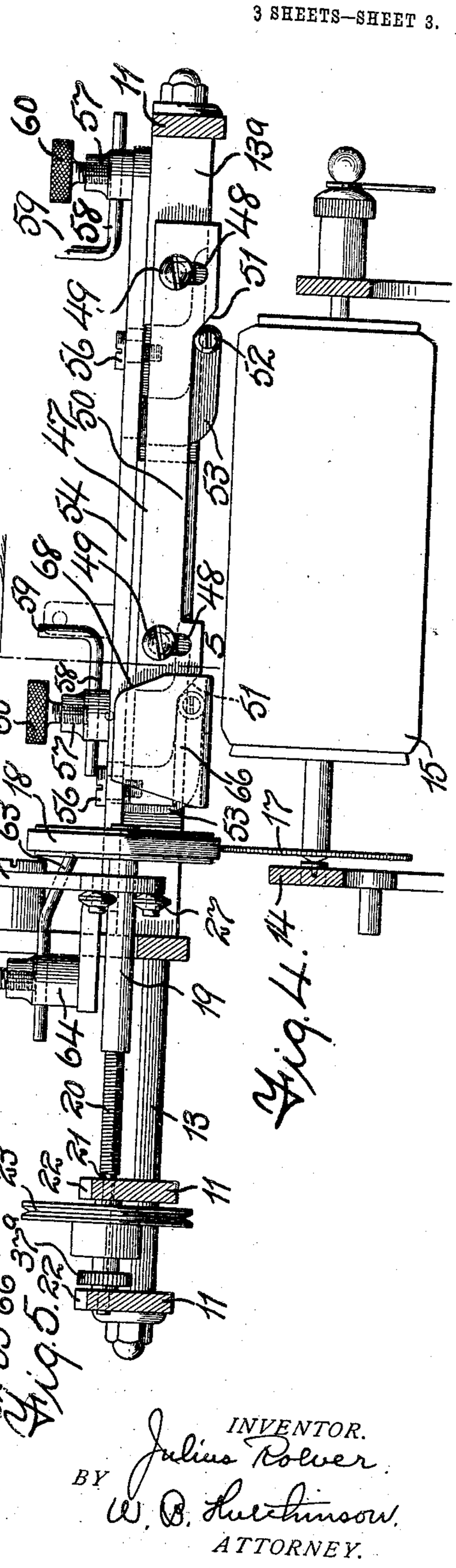

Fig. 4.

Fig. 5.

WITNESSES:

Ralph Lancaster

Frank L. Stutz.

INVENTOR.

Julius Roever.

BY

W. B. Hutchinson.

ATTORNEY.

UNITED STATES PATENT OFFICE.

JULIUS ROEVER, OF NEW YORK, N. Y., ASSIGNOR TO NATIONAL PATENT COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MULTIPLE PHONOGRAPH-MACHINE.

No. 883,971. Specification of Letters Patent. Patented April 7, 1908.

Application filed May 29, 1907. Serial No. 376,270.

To all whom it may concern:

Be it known that I, JULIUS ROEVER, of the city of New York, county of Kings, and State of New York, have invented a new and useful Improvement in Multiple Phonograph-Machines, of which the following is a full, clear, and exact description.

My invention relates to improvements in multiple phonographs, and especially to machines of this class which have different trade names, but in which a wheel, carrying peripherally a quantity of cylindrical records, is actuated so as to bring the several records beneath the stylus of the reproducer, and in which mechanism is used for carrying the reproducer along in a direction parallel with the record which is being played upon.

My invention relates more especially to machines of this class in which the reproducer has a constant relation to the record, but the stylus is lifted out of engagement with the record or dropped to engagement, as required. Heretofore in machines of this character there has been considerable complexity in the mechanism for actuating the machine for moving the reproducer along in a direction parallel with the record, and especially in the means for lifting the stylus out of engagement with the record and dropping it back to place. In some cases spring frames of various kinds have been used to hold the driving mechanism in proper relation with the record to be driven, and a complicated system of levers has been used to lift and drop the stylus.

This particular invention is especially intended to overcome some of the difficulties above named, and produce a simple mechanical mechanism for driving the record, for permitting the driving mechanism to be placed in and out of engagement with the record to be driven, and for actuating the stylus, that is to raise and lower it as desired.

My invention also provides for automatically disengaging the driving mechanism of a record at the same time the stylus is lifted. I also provide a simple means for dropping the stylus at the exact point required in any record, so that when it is dropped the playing begins immediately and after the record is started sufficiently to make the pitch and time correct.

With these ends in view my invention consists of certain improvements in multiple phonograph construction, which will be hereinafter described and the novel features claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar reference characters indicate corresponding parts in all the views.

Figure 1 is a plan view of the structure embodying my invention. Fig. 2 is a cross section on the line 2—2 of Fig. 1, and showing also a segment of the record wheel with a series of records thereon. Fig. 3 is a longitudinal section partly in elevation of my improved structure, showing a part of the record wheel, and in proper relation thereto, and with the driving mechanism out of engagement with the record to be driven. Fig. 4 is a similar view to Fig. 3, but with the driving parts in engagement, and Fig. 5 is a cross section on the line 5—5 of Fig. 4.

In the drawings I have shown my invention supported on a post 10, which carries a horizontal frame extending above the top of the record wheel, to be presently referred to, said frame comprising the cross bars 11, the vertical arms 12, and the tie rods 13, which extend longitudinally, and one of which is preferably squared as shown at 13ª, to provide for conveniently attaching certain parts to be hereinafter described. This frame extends horizontally over the top of the record wheel 14, which, so far as this particular invention is concerned, can be of any approved character, and which carries a peripheral series of individually rotatable records 15 of the usual kind, these having disks 16 attached, by which they can be numbered and identified. My invention relates, however, wholly to the matter carried by the frame above referred to and described below. This frame carries driving mechanism which engages a disk 17 on the spindle of each record 15, as the latter is brought to place, and as shown the disk 17 is driven by the friction wheel 18, which is carried by a flexible shaft comprising the sections 19, 20 and 21. The rigid section 19 has a socket in one end to receive the spiral section 20, which couples onto the section 21, and this is mounted in suitable bearings 22 in two of the cross-bars 11. The flexible driving shaft just described is driven by a pulley 23, or equivalent driving means, and the pulley can connect with any suitable motor or source of power. It will be observed that to disengage the driving mechanism it is simply necessary to lift

the friction wheel 18 from the disk 17, and in this way I obviate the necessity of using spring frames and other structures such as have been heretofore used.

To provide for lifting the free end of the flexible shaft, the section 19 extends through the free end of the swinging arm 24 and this is pivoted as shown at 25 on the rigid arm 26 of the horizontal frame above referred to. To provide for the necessary freedom of movement, the hole through the arm 24 is rather large, and the shaft 19 is centered and journaled between the anti-friction rollers 27 which are pivoted in the arm 24. The frame carries a reproducer carriage 28, which has a movement longitudinal of the frame and parallel with the several records 15, and the carriage can be mounted in any convenient way. As shown it has ears 29 sliding on a guide rod 30, and an ear 31 on the under side sliding on a guide rod 32, as shown clearly in Fig. 2. The carriage supports a reproducer 33, which can be of any approved kind, having the usual top part 34 to connect with a horn. The reproducer is stationary with relation to the carriage 28, and it supports a tilting lever 35, which has a stylus 36 to connect with the record, and which is carried by a plate 43, to be presently referred to. The carriage 28 is moved backward and forward from a screw 37, which has the regulation thread to move the carriage forward, and a coarse cross thread 38 to effect a quick return of the carriage. This arrangement is not claimed as new. The screw connects with the driving shaft by gears 37^a and 37^b, and the thread of the screw engages a blade 39, the shank of which is held in the support 40, which is secured to a post 41 on the carriage 28, and as the blade follows the thread of the screw the carriage is moved forward or backward, as the case may be. When the blade reaches the end of the screw it is guided into engagement with the necessary thread by the cam mechanism 42, and this is not here claimed.

The reproducer stylus is carried by a drop lever or plate 43, which is pivoted to the carriage 28 at one end as shown at 44 in Fig. 2, and at its free end the plate has an upwardly extending flange 45, to which is secured an arm 46, which rides on the thin upper edge of the plate 47, by which the rise and fall of the plate 43 is regulated. Obviously the plate 43 can be given any desired configuration, so long as its free end has an engagement with the plate 47. The plate 47 has a vertical movement on the squared part 13^a of the frame, and to provide for this vertical movement the plate has slots 48 which receive screws 49, and these enter the part 13^a just referred to. The plate 47 is narrower at the middle than at the ends, as shown at 50 in Figs. 3 and 4, and to provide for raising and lowering the plate it has cams 51 near the ends, which engage the rollers 52 on the arms 53, and these extend downward from the top plate 54, which slides longitudinally on the part 13^a. The movement of the top plate is limited by screws 56 which extend through slots 55 in the top plate as shown in Fig. 1. On the top plate, preferably near the ends, are posts 57 which receive the abutment rods 58, which have upturned ends 59 to engage the striking arm hereinafter referred to, and the rods 58 can be adjusted and are held in place by the binding screws 60. The bent ends 59 of the rods 58 are struck by the striking arm 61, which is carried by the post 62 on the carriage 28. It will be seen that by this action the plate 54 is in one instance moved to the right, in which case the rollers 52 striking the cam 51, lift the plate 47, and the free end of the plate 43, so as to bring the stylus 36 out of engagement with the record. This occurs when a record has been traversed and a tune has been played. When, however, the carriage 28 reaches the end of its return stroke, the arm 61 strikes the opposite or left hand rod 58, the plate 54 moves in the opposite direction, and the plate 47 and the plate 43 are dropped so as to bring the stylus into engagement with a record. It is desirable to have the driving mechanism of the record disengaged at the same time that the stylus is raised from the record, and to this end a cam 63 in the shape of a bent rod, is secured to the post 64 by means of the binding screw 65, the said post being on the raised end 54^a of the plate 54. This bent rod 63 is arranged to extend underneath the arm 24, and so just as the stylus is lifted, in the manner already described, the arm 24 is also raised, and the friction wheel 28 lifted out of engagement with the disk 17.

In order that the stylus may drop in the right place and engage the record after the latter has started, and also in such a way that the stylus will not drag along the record, I use a gage which as shown is in the form of a U shaped clip 66, which is fastened to the outer side of the part 13^a of the frame by screws 67, and the clip extends beneath the part 13^a and then upward parallel with the plate 47. The inner side of the clip is inclined as at 68, and when the plate 47 drops so as to drop the stylus into engagement with a record, the arm 46 strikes the inclined part 68, and is thereby guided so as to push the carriage 28 slightly and bring the stylus into the correct place. The gage 66 is longitudinally adjustable in order that the above result may be best attained, and an easy means of adjustment is shown in Fig. 3 in dotted lines, in which the gage has a longitudinal slot 69 to receive the screws 67. Obviously the gage can be differently made, and the essential thing is simply to have the inclined surface engage the part 46 and regulate the dropping position of the stylus 36.

From the foregoing description it will be seen that I have shown a very practical and simple means of accomplishing the results at first referred to, that is to say, the dropping of the plate 47 permits the friction wheel 18 to engage the part 17, and as soon as the disk is started well, the stylus is dropped into engagement with the record 15. It will also be noticed that I have good means of lifting and dropping the stylus, and that when the record has been traversed, the driving parts are automatically disengaged.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a machine of the kind described, the combination with the record wheel and the records thereon, of a flexible shaft connected with a source of power and having an operative connection with each record, and means for breaking the driving connection between the shaft and the record by flexing the said flexible shaft.

2. A machine of the kind described, having a record wheel carrying a series of records, a reproducer arranged to travel opposite a record, a flexible driving shaft having an operative connection with the records, and automatic means for moving the shaft and breaking the driving connection by the movement of the reproducer.

3. The combination with the record wheel and the records thereon, of a flexible driving shaft operatively connected with the records to drive them, a reproducer arranged to travel opposite a record, and a cam mechanism actuated by the movement of the reproducer to move the flexible shaft and break the driving connection.

4. The combination with the record wheel and the records thereon, of a flexible driving shaft operatively connected with the records, a movable arm supporting the free end of the shaft, a reproducer moving opposite the record, and means actuated by the movement of the reproducer to move the aforesaid arm and shaft, thereby breaking the driving connection.

5. The combination with the record wheel and the records thereon, of the flexible driving shaft operatively connected with the records to drive them, a swinging arm supporting the free end of the said shaft, a cam mechanism to engage and lift the arm, a reproducer movable along a record, and means for operating the cam mechanism by the movement of the reproducer.

6. A machine of the kind described, comprising means for supporting a series of records and a driving disk for each record, a flexible shaft having an operative connection with the driving disk, a reproducer movable opposite a record and having a stylus movable in and out with relation to the record, means for lifting the stylus after it traverses a record, and means acting in conjunction with the stylus lifting mechanism to disengage the driving shaft from a record disk.

7. A machine of the kind described, comprising a series of records, driving mechanism supported opposite the records and adapted to operatively connect with each record, a reproducer having a movable stylus, said reproducer moving opposite a record, and means actuated by the movement of the reproducer to engage and disengage the stylus with the record and at the same time engage or disengage the driving connection with the record.

8. A machine of the kind described, comprising means for carrying a series of records opposite a supporting frame, driving means on the frame to engage each record, a reproducer held to slide on the frame, said reproducer having a stylus movable in and out with relation to the record, a plate movable in and out with relation to the record, said plate being arranged to lift or drop the stylus, and means for moving the plate by the movement of the reproducer carriage, said means serving also to control the driving connection with the record.

9. The combination with the movable series of records, of the reproducer movable opposite each record and having a stylus movable in and out with relation to the record, a slide plate arranged to support the stylus, and cam mechanism operated by the movement of the reproducer to move the slide plate in and out.

10. The combination with the records arranged in series, of a reproducer carriage held to slide opposite the record, a reproducer on the carriage having a movable stylus to engage the record, a slide plate movable in and out with relation to the record, abutments struck by the movement of the carriage near the ends of its stroke, and operative connections between the abutments and the slide plate.

11. The combination with the records arranged in series, each being independently driven, of a flexible driving shaft adapted to drive each record, a reproducer movable opposite a record and having a stylus movable with relation to the record, abutments actuated by the movement of the reproducer near the ends of its stroke, means operated by the abutments to move the stylus in and out, and means also operated from the abutments for moving the flexible shaft and breaking the driving connection with a record.

12. The combination with a record and the carriage sliding opposite the record, of a reproducer on the carriage, said reproducer having a stylus movable in relation to the record, a slide plate movable in and out with relation to the record, said slide plate having cam surfaces, movable abutments operated

by the carriage near the ends of its stroke, and an operative connection between the movable abutments and the cam surfaces for actuating the slide plate.

13. The combination with a record and its driving disk, of the flexible driving shaft having a driving connection between itself and the disk, a reproducer carriage movable opposite the record, a reproducer on the carriage, said reproducer having a stylus movable with relation to the record, a plate slidable parallel with the movement of the carriage, means for moving the slidable plate near the ends of the carriage stroke, means actuated by the movement of the slidable plate for engaging or disengaging the stylus with its record, and means also actuated by the slidable plate to disengage the driving shaft from its disk.

JULIUS ROEVER.

Witnesses:
H. A. WILSON,
W. B. HUTCHINSON.