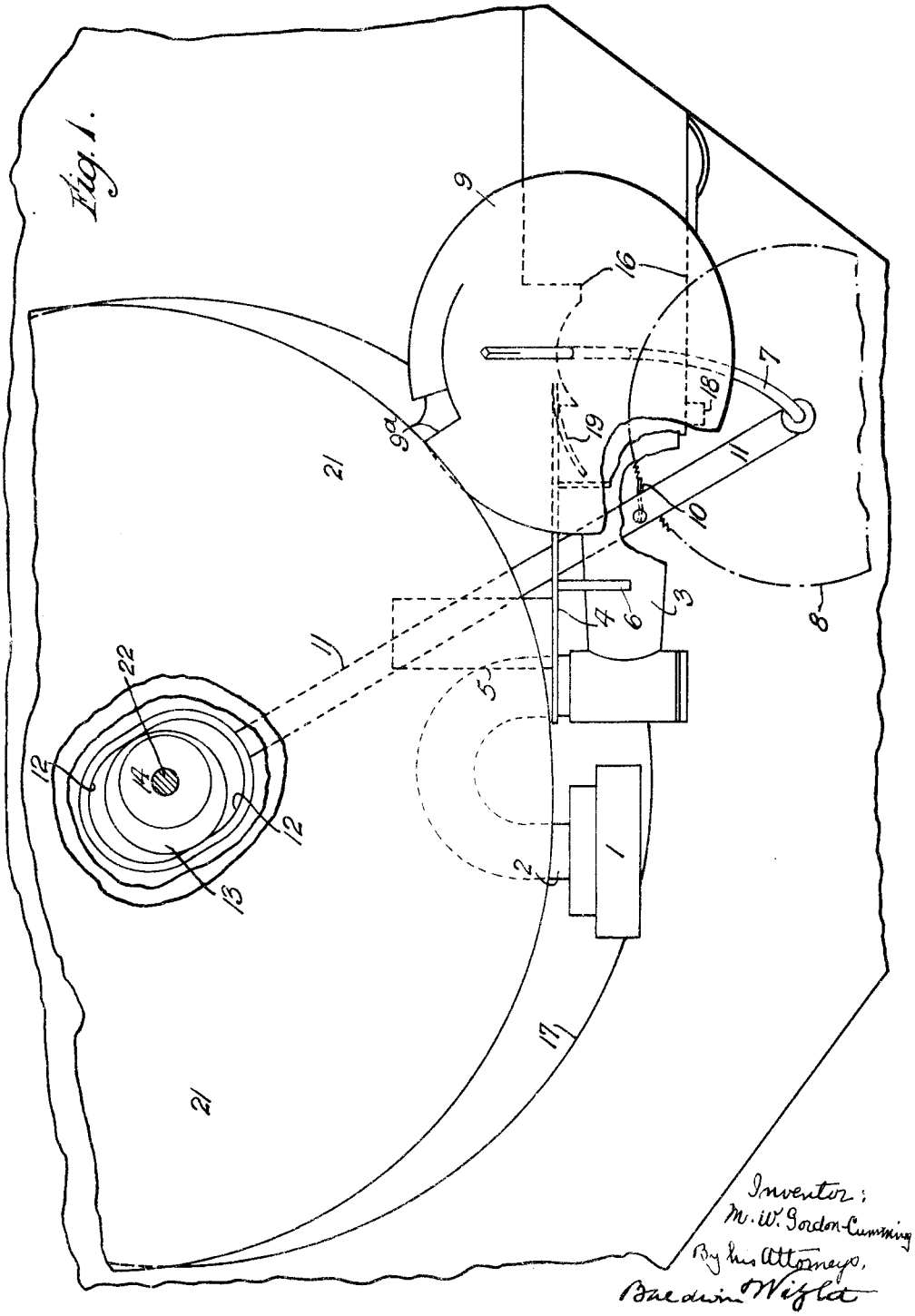
Feb. 5, 1929. 1,701,450

M. W. GORDON-CUMMING

MULTIPLE RECORD MACHINE

Filed June 22, 1926 4 Sheets-Sheet 1



Feb. 5, 1929. 1,701,450

M. W. GORDON-CUMMING

MULTIPLE RECORD MACHINE

Filed June 22, 1926 4 Sheets-Sheet 2

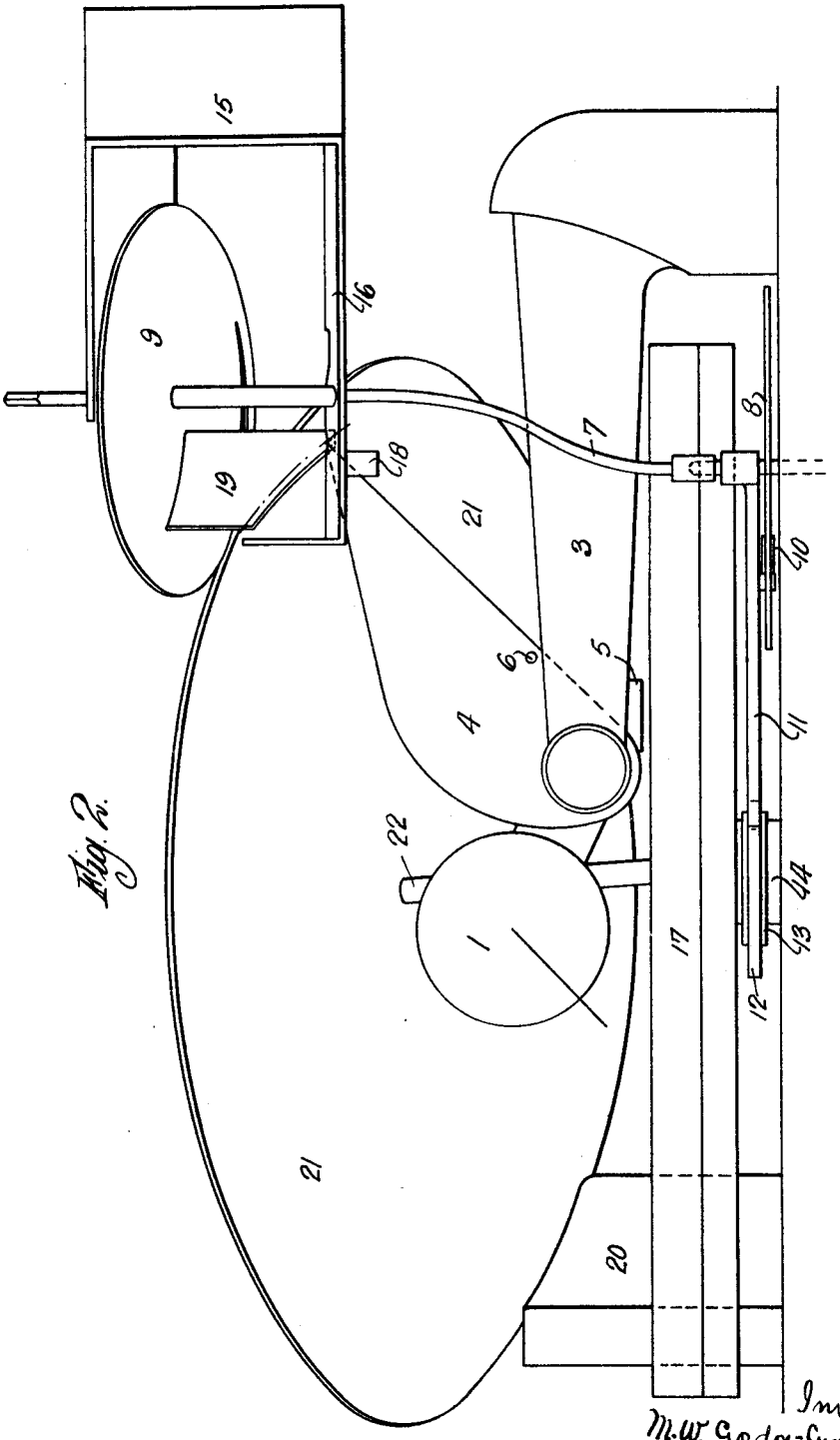


Fig. 2.

Inventor
M. W. Gordon-Cumming
By his attorneys Bradbury & Wright

Feb. 5, 1929. 1,701,450

M. W. GORDON-CUMMING

MULTIPLE RECORD MACHINE

Filed June 22, 1926 4 Sheets-Sheet 3

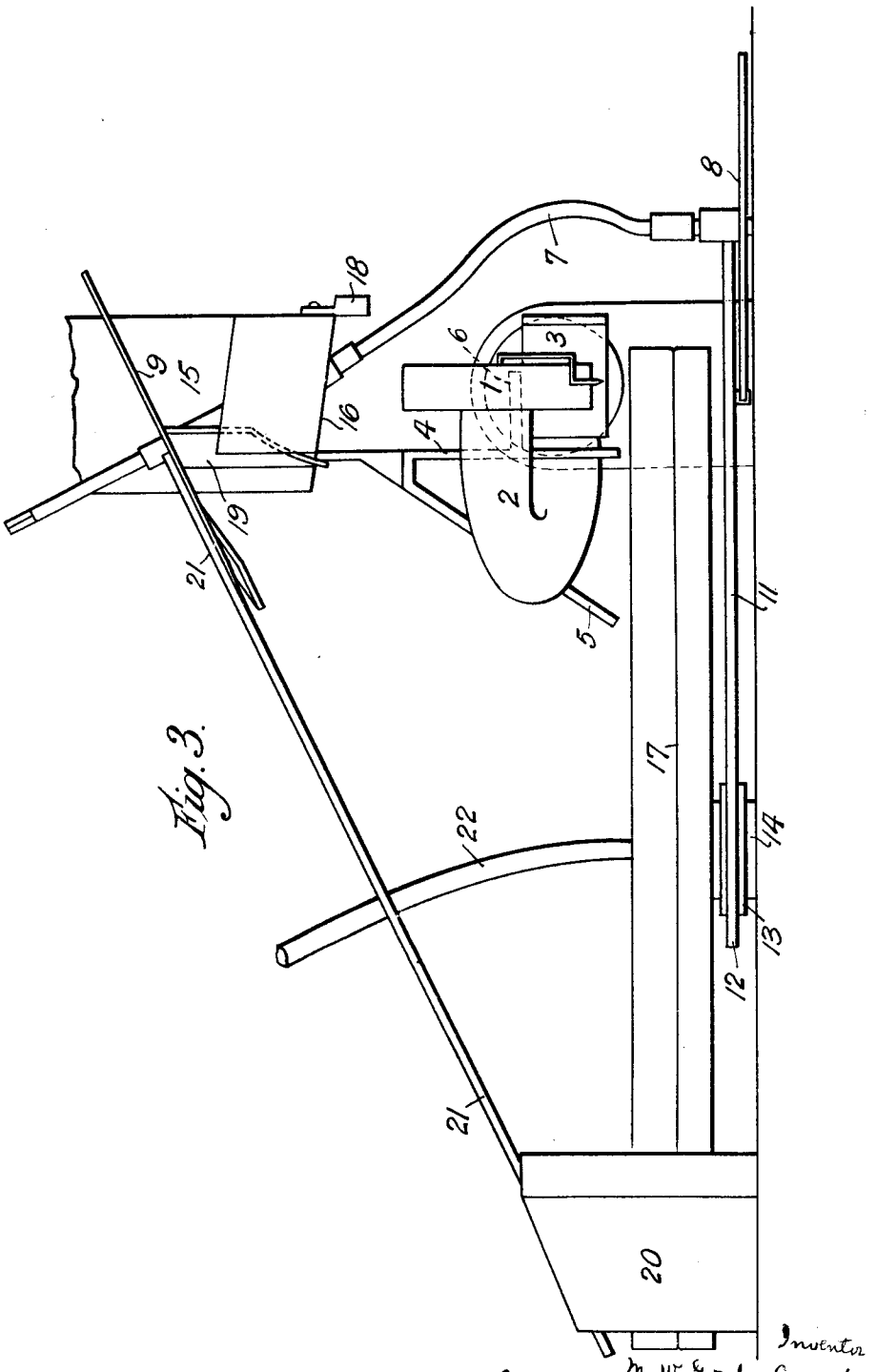


Fig. 3.

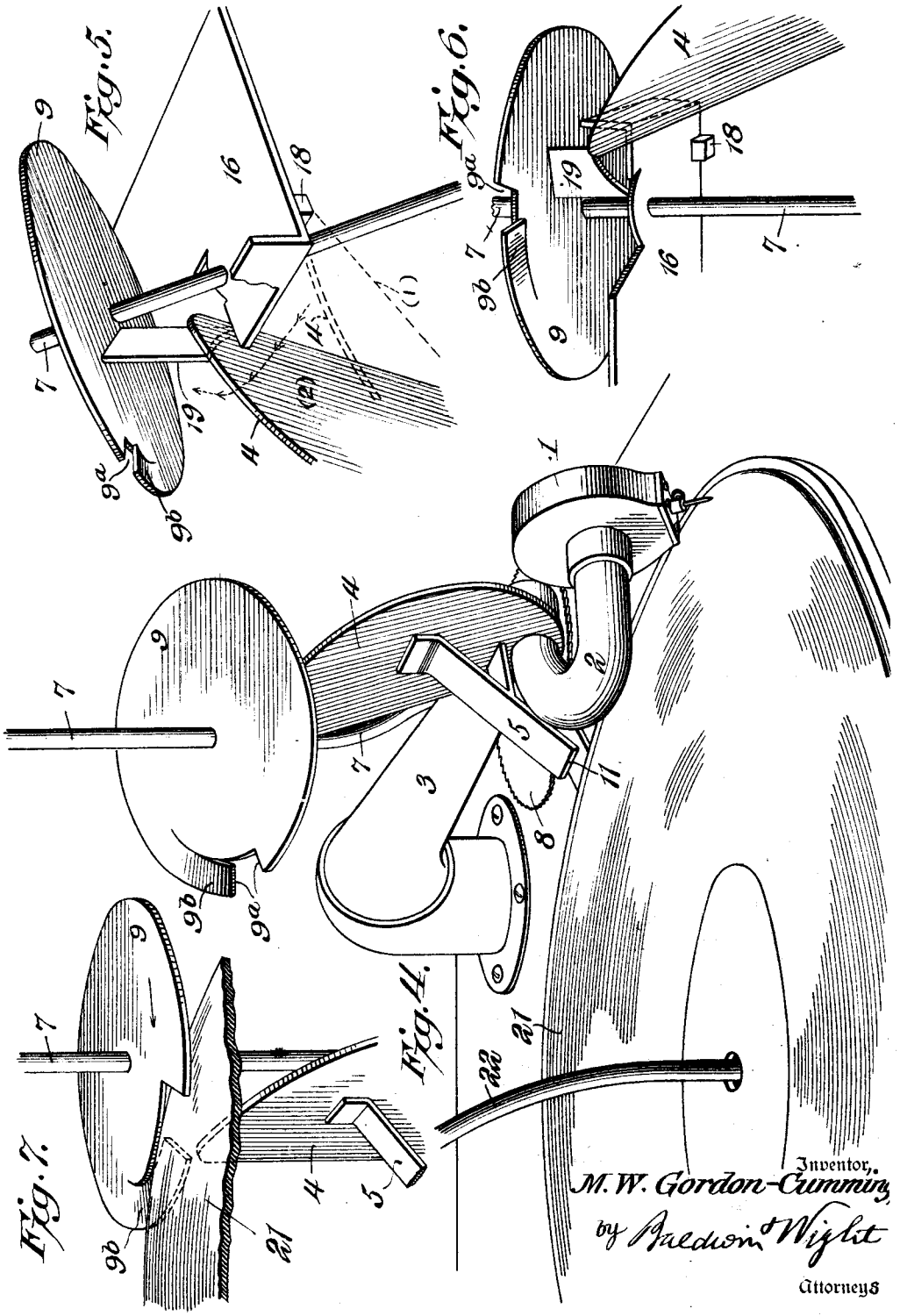
Inventor
M. W. Gordon-Cumming
By his attorneys Baldwin Wright

Feb. 5, 1929. 1,701,450

M. W. GORDON-CUMMING

MULTIPLE RECORD MACHINE

Filed June 22, 1926 4 Sheets-Sheet 4



Patented Feb. 5, 1929. 1,701,450

UNITED STATES PATENT OFFICE.

MICHAEL WILLOUGHBY GORDON-CUMMING, OF WINSLOW, ENGLAND.

MULTIPLE RECORD MACHINE.

Application filed June 22, 1926, Serial No. 117,732, and in Great Britain June 23, 1925.

This invention relates to multiple record machines, adapted to play a plurality of records in succession.

According to the present invention the requisite movements of the sound box and tone arm of a gramophone or the like (other than the movement of the tone arm which takes place while a record is being played) are effected by means of the weight of the record, the said weight being utilized to raise the sound box and to swing the tone arm and sound box clear of the turntable, while a new record is being placed in position.

In one form of construction, the records are supported at two points above the tone arm and at an angle to the horizontal. One point of support is fixed and the other, located above the first point of support, comprises a worm adapted to hold the edges of the records and driven by the gramophone motor, or other suitable means, so that it moves through one revolution and therefore releases one record, each time a record is played.

The record, when released by the worm, moves successively under the action of its own weight, over a curved guide plate, attached to the sound box and so shaped as first to raise the sound box, and secondly swing the tone arm clear of the turntable.

When the sound box is raised and the tone arm swung out clear of the turntable, but before the tone arm is in position ready for playing a new record, the sound box is held in the raised position by means of a detent which engages the underside of an inclined guide. When the record has come into position upon the turntable, the weight of the sound box and tone arm returns the tone arm into the playing position, the said arm moving inwardly until the detent attached to the sound box comes opposite a slot in the guide so that the sound box is released, enabling the stylus to engage the outer edge of the record and to play the same.

In the accompanying drawings which illustrate the invention, Figure 1 is a plan view, parts being broken away and parts in section, Figure 2 a side elevation and Figure 3 an end elevation. Figs. 4, 5, 6 and 7 are perspective views of the operating parts of the machine.

1 is a sound box carried by a goose-neck 2, which is pivotaly mounted in a tone arm 3. Secured to the goose-neck 2 is an arm 4, provided with an extension 5 and a stop pin 6. 7 is a flexible shaft, fast with a ratchet wheel 8, and with a releasing disk 9 having a cut-away portion 9^a, the ratchet wheel 8 being rotated by a spring pawl 10, engaging therewith. The pawl 10 is carried by a lever 11, loosely mounted at one end on the shaft 7 and whose other end is slotted at 12 and engaged by an eccentric 13 secured to the motor spindle 14 of the gramophone. 15 is a frame in which the flexible shaft 7 is journalled. The lower face 16 of the frame is inclined upwards towards the centre of the turntable 17 (see Figure 3) of the gramophone, whilst 18 is a stop located at the edge of the face 16. 19 is a cam secured to the underside of disk 9 and 20 is a support for records 21, located opposite the disk 9. 22 is a guide by which the record 21 is guided on to the turn-table 17, and which is loosely mounted on the spindle 14.

Fig. 4 is a perspective view showing the parts in position to begin playing a record. Fig. 5 is a perspective view showing the lever 4 in two positions (1) in which it is in engagement with the stop 18 and (2) in which the lever 4 has just passed the edge of the inclined plate 16 and is held by the cam plate 19 which gradually releases the lever 4 to permit the sound box 1 to engage the face of the record. In Fig. 6 the cam 19 is shown in the position of releasing the lever 4 and Fig. 7 shows a record disk 21 being transferred from the disk 9 to the lever 4. In this figure a portion of the edge of the disk 9 is cut away and a further portion is cut and turned downwardly as indicated by the part 9^b for the purpose of releasing a record 21 from the disk 9. This figure clearly shows how this operation is performed.

In operation the disk 9 is rotated at such a speed that at the end of a predetermined time (say four and a half minutes) a record 21 arrives at the end of the turned-down portion 9^b of the disk 9 and is thereby allowed to fall.

When a record is released, it falls firstly on to the arm 4 (which, when the previous record has been played, is, of course, near the centre of the turn-table 17), whereby the weight of the record first rocks the arm about its pivotal mounting on the tone arm 3, and with it the goose neck 2 with which the arm is fast. This raises the sound box 1 from engagement with the record, and thereafter the weight of the record, still in engagement with the arm 4, swings the arm, and hence the tone arm 3, outwardly from the centre of the turn-table.

Before the end of this swinging movement

of the arm 4, the record drops from the arm 4 on to the guide 5 which, while being so shaped as to cause the weight of the record to continue the outward movement of the tone arm until the arm 4 engages the stop 18, also allows the record to drop gradually on to the turn-table. By the time that the record has dropped from the arm 4 to the guide 5, the said arm has been moved under the inclined plate 16 which thus prevents the arm from lowering, and hence moving, the sound box into contact with the record. After the record has dropped on to the turntable, the arm 4 is caused, by the inclined surface 16, automatically to return towards the centre of the turn-table, this movement being sufficient to move the sound box over the commencement of the record, but the rise of the inclined surface being insufficient to allow the sound box to be dropped by the arm 4 into contact with the record. Finally, the sound box is gradually lowered into contact with the record by the cam 19 which engages the upper end of the arm 4 and is fast with the constantly rotated member or disc 9, the arm sliding upwardly along the edge of the plate 16.

The weight of the sound box 1, and the goose-neck 2, causes the upper end of the arm 4 to move along the inclined face 16 of the frame 15 and sound box 1 moves towards the edge of the record 21, until the said arm 4 comes against the cam 19 secured to the disk 9. Continued rotation of the disk 9 and consequently of the cam 19 allows the arm 4 gradually to move upwardly, whereby the stylus carried by the sound box is gradually lowered on to the edge of the record 21. The tone arm is moved to the centre of the turntable by the grooves in the record 21 in the usual manner, and at the end of a predetermined period, the next record is released by the worm 9 and the operation repeated.

What I claim is:

1. In a gramophone having means for automatically feeding records to the turntable thereof, the combination of a tone arm, a sound box pivotally mounted on said tone arm, a turntable, and means adapted to be actuated by the weight of the next record to be played for automatically raising the sound box and moving the tone arm and sound box clear of said turntable.

2. In a gramophone having means for automatically feeding records to the turntable thereof, the combination of a tone arm, a sound box pivotally mounted on said tone arm, a turntable, means adapted to be actuated by the weight of the next record to be played for automatically raising the sound box and moving the tone arm and sound box clear of said turntable, means for automatically causing the tone arm and sound box to swing into a position for playing the said record, and means for automatically lowering said sound box on to said record after the said record is in position upon the turntable.

3. In a gramophone having means for automatically feeding records to the turntable thereof, the combination of a turntable, a tone arm, a goose-neck pivotally mounted on said tone arm, a sound box carried by said goose-neck, an arm secured to said goose-neck and adapted to be actuated by the weight of the next record to be played for automatically raising the sound box and moving the tone arm clear of said turntable, an inclined plate adapted to be engaged by said arm for automatically causing the tone arm to swing into a position for playing the said record, and a cam engaging said arm for automatically lowering said sound box on to said record after the said record is in position upon the turntable.

4. In a gramophone having means for automatically feeding records to the turntable thereof, the combination of a turntable, a tone arm, a goose-neck pivotally mounted in said tone arm, a sound box carried by said goose-neck, an arm secured to said goose-neck adapted to be actuated by the weight of the next record to be played for automatically raising said sound box and moving the tone arm clear of said turntable, a detent adapted to hold the sound box in the raised position, an inclined guide for causing the tone arm to swing into a position for playing said record, and means in said inclined guide for releasing said detent for allowing the sound box to be lowered on to said record.

MICHAEL WILLOUGHBY GORDON-CUMMING.