When the unit is switched on, a node on cam 94 pivots the lifting lever unit 170 (Fig. 5) which depresses the friction disc unit 172 and lifts the pick-up arm clear of pick-up rest. Immediately the arm is clear of the rest, a valley in cam 96 releases the pick-up cam lever unit 84, which in turn allows spring 85 to pull in the pick-up arm until eccentric pin 180 engages against lever 76, which is set for 10 or 12-in., as outlined above.

Immediately lever 84 has left the pick-up arm pivot, and eccentric pin 180 and lever 76 is holding the pick-up in the correct position, a valley in cam 94 allows lever 170 to lower the pick-up on to the record and a deep valley in each cam allows all the levers to move clear of the pick-up arm unit, leaving it free to traverse the record.

Auto-trip mechanism.—When the pick-up has played approximately two-thirds of the record the lug on the pick-up arm lever engages link 11 (Fig. 3), and through this link moves friction plate 10.

The operating lever 7 is moved by the friction plate 10 through a very delicate friction drive between a felt pad underneath the operating lever and the polished surface of the friction plate.

As the operating lever moves towards the centre the rubber bush 40 comes slowly into the orbit of the revolving striker 41, which gently brushes the surface of the bush, pushing it back out of the way.

This process continues as long as the needle on the record is in the playing groove. The friction drive relaxes to allow these two contrary movements to take place.

When the needle leaves the playing grooves and enters the run-off groove on the record, the extra motion imparted to the operating lever 7 moves the tip of the trip lever 39 into the orbit of the striker, which now, instead of brushing back the rubber bush, strikes the tip of the trip lever, causing it to rise slightly to free the friction drive and to pivot on its fulcrum and operate the clutch release lever 38 recommencing the changing cycle.

As mentioned under "Action of Pick-up Arm," the track follower on lever 170 lies in a deep valley during the playing period in order to leave the pick-up free. One side of this valley is very steep, so that immediately the cam recommences to revolve the track follower has to move sharply out of the valley. This lifts the pick-up almost vertically off the record, and soon after cam 96 brings the pick-up back to the rest ready for the next record to drop.

Action of platform.—In addition to the action described earlier, the platform has a tilting motion controlled by levers 167, 165 and 161, which lowers it to pass underneath the magazine of records.

Overarm.—The overarm (Fig. 2) has three functions:—

(a) The rubber pad nearest to the platform rests on the magazine of records to keep them in contact with the platform.

(b) The pad nearest the pick-up arm, which normally is clear of the record by approximately $\frac{1}{8}$ in., comes into action when the record dropped is a 12-in. and the remaining record or records are all 10-in. When the 12-in. record falls the platform is back in the 12-in. position, and as the 10-in. records remain suspended on the record spindle the pad prevents them tipping up into the path of the incoming platform and fouling it.

(c) When the last record has dropped on the turntable the platform falls and depresses the rod situated in front of the platform support. This rod releases the auto switch mechanism which operates at the end of the record.

Overthrow mechanism.—When the clutch lever is engaged by knock-off catch lever 139 (Fig. 4) at the end of a batch of records, or by the lip on the underside of clutch release lever 38 at the end of a changing cycle during a programme, it is prevented from continuing to revolve with the cam mechanism to which it is attached. Pivoting slightly on its fulcrum, it disengages from the clutch attached to the motor, thereby leaving the motor free to play the record.

When the clutch lever is released from the clutch the residual motion in the cam mechanism is not sufficient to move it quite clear, and it would make intermittent contact with the teeth on the clutch causing a clicking sound during the programme. To prevent this, the overthrow lever 102 is fitted. This is controlled by a relatively powerful spring 169 and operates on a pin on the swing cam 96.

As the cam revolves the pin rides up the side of the lever, pivoting it and putting a tension on the spring. At the moment the clutch lever is disengaged from the clutch, the pin on the swing cam reaches the end of the lever and the tension stored in the spring makes the inclined end of the lever give the pin a kick round. The extra movement thus imparted to the cam mechanism ensures that the clutch lever is quite clear of the clutch.

ADJUSTMENTS.

If the record changer has been stopped for any reason, with the pick-up arm not on the rest, the arm should not be interfered with, but the motor restarted and the arm allowed to return to the rest.

Pick-up dropping position.—The pick-up has been finely adjusted so that the needle comes on to 10-in. records in a $9\frac{5}{8}$-in. diameter circle and 12-in. records in a $11\frac{5}{8}$-in. diameter circle.

There may be a few records where the track starts further away from the centre, and in these exceptional cases the needle may alight on the record a few grooves from the start of the record. If the pick-up dropping position were set for these exceptional records it would not be suitable for average records.

Should the dropping position of the pick-up require adjustment, the pick-up adjusting screw, which rotates the eccentric pin (180, Fig. 5) should be turned with the changer in its start position; that is, with the pick-up arm on its rest. A quarter of a turn in either direction will give the maximum adjustment. After adjustment, switch on and check the dropping position.

Occasionally the pick-up will select the 12-in. position irrespective of whether a 10 or 12-in. record is to be played. This fault is usually due to the pick-up arm timing either being set a shade too fine or having slipped.

To correct the timing operate the changer until the platform is in its most forward position, then stop the motor. Slacken screws 58 (Fig. 3), bring lever 49 forward until the elongated slot is hard on the stop formed on the base casting.

Hold lever in this position and bring lever 57 forward hard on the collar assembly 61, 62 and 63, then ease it back approximately 1/32 in. and re-tighten screws 58.

Pick-up height.—The height to which the pick-up rises is controlled by the friction disc unit 172 (Fig. 5), which may be screwed up or down as necessary after releasing set screw.

The height the pick-up rises should be such that a long needle just clears the surface when returning to the rest after playing the eighth record.

If the pick-up does not fall low enough to play the first record on the turntable, stop collar 177 should be screwed down after releasing set screw.

After carrying out any of these adjustments always remember to re-tighten the set screws, otherwise the settings will not remain constant.

Caution.—When making adjustments to the pick-up arm, it should never on any account be forced into position. If the turntable is turned by hand it should not be turned backwards. If the pick-up does not run into the record grooves after alighting on the record edge, check the level of the unit by placing a spirit level on a record on the turntable. Also make sure that the flexible pick-up lead is not twisted or restricting movement of pick-up arm and that levers operating pick-up arm are free from obstruction or are not jammed.

Auto-trip mechanism.—Satisfactory operation of the changer depends upon the operation of the auto trip. Occasional adjustment of the auto-trip friction spring may be necessary.