A New Travelling Ladder.

IN order that all available space in a telephone exchange building may be used to the greatest advantage it is necessary in the majority of cases to mount a large proportion of the apparatus in positions that are not accessible from the floor level. While this practice allows of a more economical and compact layout of the equipment it tends to introduce maintenance difficulties unless the means provided for bringing such apparatus within reach are easy to handle and ensure absolute security to the user

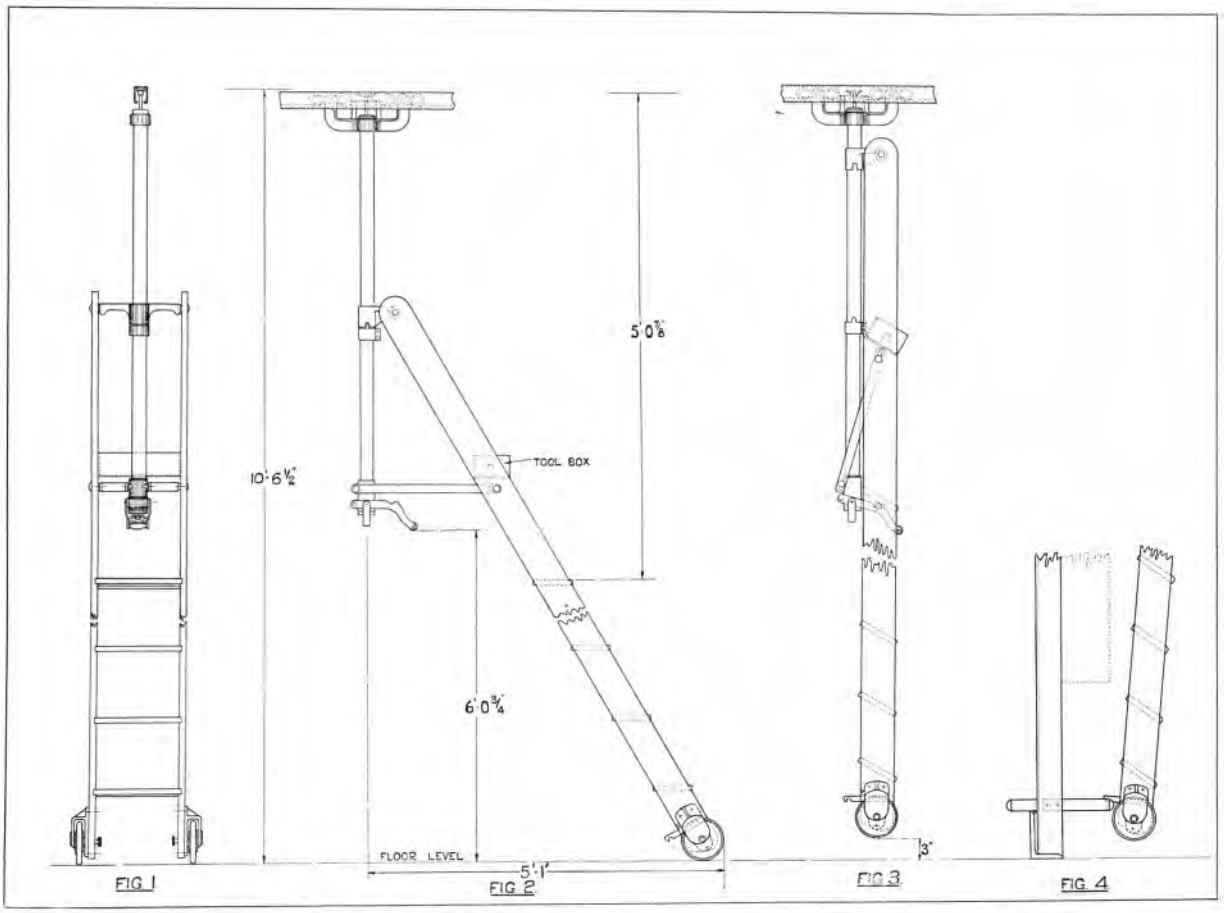
For several reasons the type of travelling ladder hitherto employed in almost all large exchanges falls short of the ideal. It occupies a considerable amount of space when not in use and, on account of its permanent inclination and rigid suspension, its runway must be extended for an appreciable distance beyond the racks which it serves, if complete access to all parts of the racks is to be provided. A serious disadvantage also is the absence of any form of brake, an omission in design which has been responsible for accidents. Unless artificial means are employed to secure the ladder in one position the user is always liable to be disturbed and possibly to lose his foothold. Owing to its limited application it is also often found essential to supplement such equipment by portable ladders and platforms for use in positions to which the travelling ladder cannot be extended. But these again leave much to be desired, from considerations of both safety and convenience.

It may therefore be said that any new design of travelling ladder could incorporate with advantage certain very definite improvements, the chief points being

1. That a simple yet efficient brake should be provided to ensure stability
2. That this brake should be automatically applied when the ladder is in use.
3. That the carriage way and tracking should not overhang or extend beyond the racks which it serves.
4. That the ladder should form the least possible obstruction when not in use.
5. That it should be more adaptable to the needs of various types of racks and should be capable of application to all racks in general use.

All these features, and a number of minor improvements, have been embodied in an entirely new type of ladder recently introduced by The General Electric Company The method of construction, as shown by the accompanying diagrams, marks a complete departure from existing practice. When not in use the ladder may be released by hand from its extended position and drawn up on a vertical suspension member which allows the whole to be turned parallel to the bay it traverses. It may then be left suspended in this way from the overhead runway, occupying the minimum of space between the racks, and free to travel the whole length of the track.

The rear of the ladder, when extended for use, is shown in Fig. 1 This view illustrates the method of attachment to the main vertical member, which is a cylindrical tube suspended from a swivelling double bogie carriage with ball bearing wheels, running in overhead steel tracking of the conventional type. A spring-loaded brake rod passes through the interior of this member and applies a brake shoe to the underside of the



tracking, so preventing the ladder from being moved unless the rod is withdrawn.

A side view of the ladder ready for use is given in Fig. 2. In this position it is maintained firmly at an angle of sixty degrees to the horizontal by a substantial stop located on the vertical support and by the action of the lower bracket arms which reach the limit of a slotted attachment to the ladder strings. When it is desired to wheel the ladder in the ordinary manner the brake is released by depressing the control arm mounted at the bottom of the vertical support. This arm is so placed that the user can easily operate it without descending the ladder

Added convenience is gained by the provision of a box-type container fitted above the topmost step. This is sufficiently deep to prevent the contents from being dislodged when, being temporarily out of use, the ladder is drawn to its upright position. Small tools and spare parts may therefore be carried with perfect safety Provision is also made at the side for the suspension of a soldering iron, an arrangement ensuring that, whatever the position of the ladder, the bit of the iron is always held out of contact with the wood.

Fig. 3 is a side elevation showing the ladder suspended vertically and its wheels a few inches above floor level. To bring it to this position the whole is lifted bodily, when the upper bracket slides over the vertical support, and the lower bracket arms turn on their hinged fixing. When the limit of movement

has been reached, a steel rung, fitted parallel with the ladder steps, is clipped into engagement with a stirrup pawl. This pawl is connected to the lower extremity of the brake rod, and the weight of the ladder compresses the brake spring, holding the brake shoe out of contact with the tracking. In this position the ladder may be moved along the tracking or rotated about its support, the latter facility enabling it to be turned through 180 degrees and used with a reverse angle of inclination. The choice of direction of extension thus makes it possible to reach any point on the racks without recourse to an extended or overhanging runway

When used in conjunction with single side automatic or similar apparatus racks the ladder may be drawn up on its vertical support as described and, as shown by Fig. 4, swung to one side and latched to a lower guard rail. Secured in this manner it occupies the minimum of space, causes the least possible obstruction in the gangway, and does not prevent access to the lower areas of the opposite rack. It may, of course, be latched to either rack, as desired.

Efforts towards simplifying exchange maintenance problems, especially those encountered with automatic equipment, have been almost wholly concerned with methods of assembling and mounting the apparatus itself, but in this latest development will be seen an attempt to improve also the design of one of the principal auxiliary items. The new travelling ladder has proved to be superior to other types in so many respects that it has now been adopted as standard by the British Post Office.