E. W. C. KEARNEY.

TUBE RAILWAY SYSTEM.

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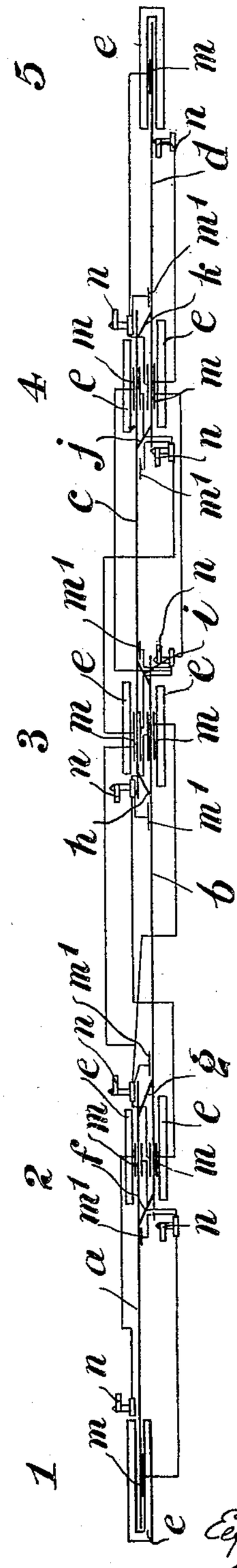
921,845. Patented May 18, 1909



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UNITED STATES PATENT OFFICE.

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TUBE-RAILWAY SYSTEM.

No. 921,845. Specification of Letters Patent. Patented May 18, 1909.

Application filed January 19, 1909. Serial No. 473,064.

To all whom it may concern:

Be it known that I, ELFRIC WELLS CHALMERS KEARNEY, engineer, a subject of the King of England, residing at Westminster, London, S. W., England, have invented certain new and useful Improvements in Tube-Railway Systems, of which the following is a specification.

This invention relates to an improved subway or tube railway system and has for its object to render possible the construction and working of tube railways far less costly than has been possible hitherto.

According to the present invention platforms at every two adjacent stations are connected by independent main track sections each with two dead ends and at each end of the platforms at intermediate stations like-handed turn-outs are arranged having all facing points normally locked in the open position with the signals at "danger" until such time as the crossing trains have both arrived at the station and all points are clear.

While the invention is applicable to a subway or tube railway in which the twin rail or other form of track is adopted it is particularly intended for a tube mono-railway and to make the invention clear I will describe the example of a tube-mono-railway thereunder which is illustrated in diagrammatical form in the annexed drawings.

In the drawings, the lines *a*, *b*, *c*, *d*, are to be assumed as representing independent overlapping single main track tube sections extending between the stations of a proposed mono-railway; *e* indicates the station platforms which at intermediate stations would preferably be provided between the overlapping portions of the tracks, such intermediate platforms not being depicted so as not to render the diagram too involved. *f*, *g*, *h*, *i*, *j*, and *k* indicate turn-outs, *m* and m^1 signal locking bars, *n* the signals, and the numerals 1, 2, 3, 4 and 5 the stations.

As shown the tube sections *a*, *b*, etc. are not arranged end to end but are built so that the adjacent dead ends thereof pass beyond, and to one side of, each other, stations being provided at such adjacent ends and the termini of the line, and like-handed turn-outs such as *f* and *g*, being provided to permit the train from one tube section, as *b*, to pass into another tube section, as *a* by way of the right-handed turn-out *f*, the train from *a* passing into *b* by way of the right-handed turn-out *g*.

With a subway or tube railway having five stations 1 to 5, as shown four trains would be employed, and assuming a moment of the working of the system when a train was at each terminus and two trains were at No. 3 station, the following description will render the working of the system quite clear. In the first place it may well be observed that in any well known or approved manner the turn-outs cannot be set with the facing points closed to allow the train from section *c* to pass into section *b* and the train from section *b* to pass into section *c* until both trains have arrived in station No. 3 common to sections *b* and *c*. When both are present in the station they operate by depressing bars *m*, or in other suitable manner, either to release the respective signals and allow these to indicate "line clear" or permit the signals to be placed at "line clear" position, and similarly operate to close the facing points of turn-outs or permit these to be closed. Upon the points being clear and the signals indicating that the two trains may proceed, that from section *c* will pass into section *b* and travel into station 2, and vice versa, that from section *b* will pass into section *c* and travel into station 4. At the same time the trains in stations 1 and 5 will leave same and travel respectively to stations 2 and 4 also, and when in each of these stations two trains are present and have discharged and taken up their passengers, the passage of the trains from sections *a* to *b*, *b* to *a*, *c* to *d*, and *d* to *c* will be permitted as before described, the next position of the trains in the station being then the same as that first above assumed. When the trains leave the stations they preferably operate, as through bars m^1, to open the facing points of the corresponding turn-outs and set signals appropriated thereto to danger position. Should a train enter one of the common stations 2, 3 or 4 at too high a speed the facing points being at this time locked in the open position, it will proceed along the main track past the points toward the dead end, thus avoiding a possibility of collision.

It is to be understood that any suitable or approved mode of operating the signals and points may be adopted.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. In a single-track railway system the combination of a series of independent single

main track sections connecting the platforms of adjacent stations each section being provided with two dead ends and two like-handed turn-outs connecting the single main track sections at the respective ends of the platforms at each intermediate station substantially as described.

2. In a single-track subway or tube railway system the combination of a series of independent single main track sections connecting the platforms of adjacent stations, each section being provided with two dead ends, two like-handed turn-outs connecting the single main-track sections at the respective ends of the platforms at each intermediate station, signals at each turn-out and means for normally locking all facing points in the open position until such time as the crossing trains have both arrived at the station substantially as described.

3. In a single track subway or tube railway system the combination of a series of independent single main track sections connecting the platforms of adjacent stations, each section being provided with two dead ends, two like-handed turn-outs connecting the single main track sections at the respective ends of the platforms at each intermediate station, signals at each turn-out and means for normally locking all facing points in the open position until such time as the crossing trains have both arrived at the station and all points are clear substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ELFRIC WELLS CHALMERS KEARNEY.

Witnesses:

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