

1,409,737.

Patented Mar. 14, 1922.
 2 SHEETS—SHEET 1.

Fig. 2.

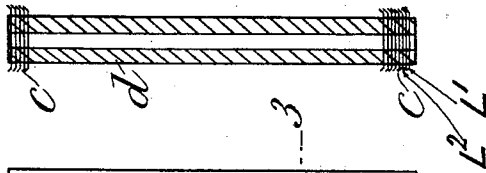


Fig. 1.

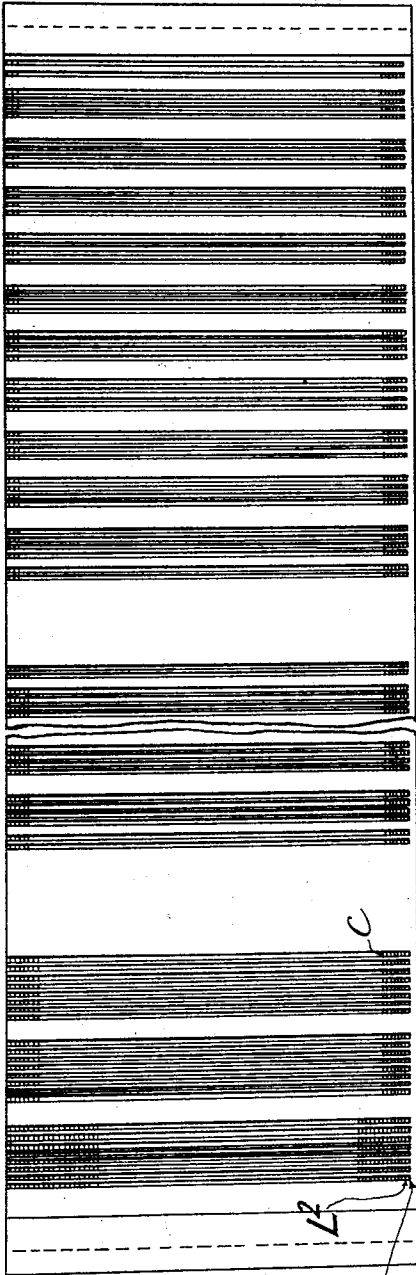
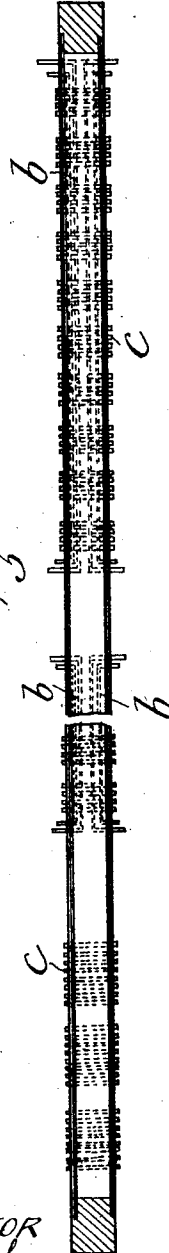


Fig. 3.



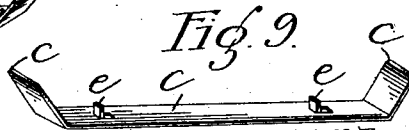
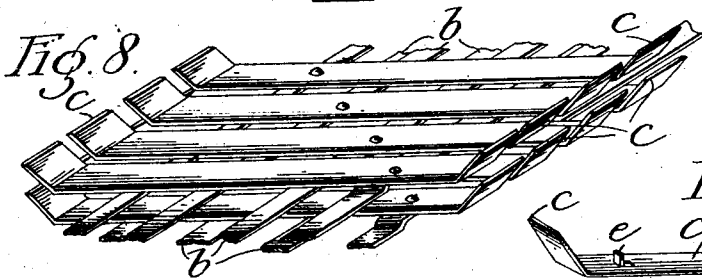
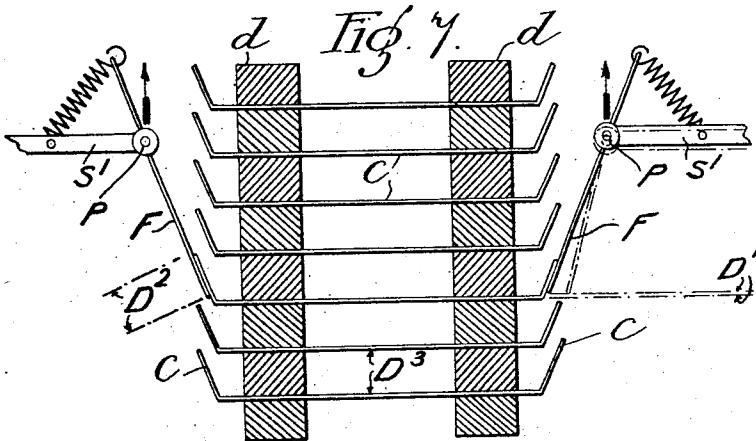
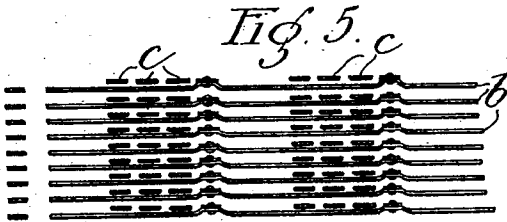
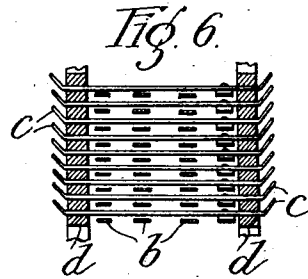
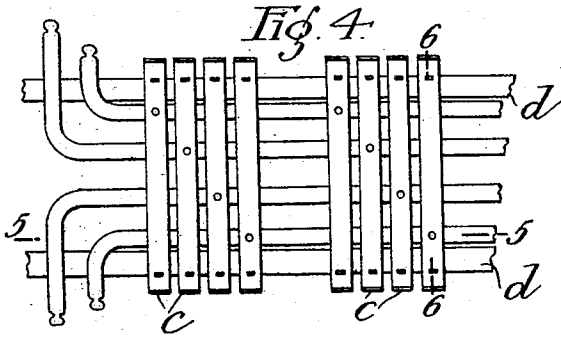
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 ATTORNEYS.

T. LENAGHAN.
 AUTOMATIC TELEPHONE SYSTEM.
 APPLICATION FILED NOV. 2, 1920.

1,409,737.

Patented Mar. 14, 1922.

2 SHEETS—SHEET 2.



INVENTOR
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UNITED STATES PATENT OFFICE.

THOMAS LENAGHAN, OF CROYDON, ENGLAND.

AUTOMATIC TELEPHONE SYSTEM.

1,409,737.

Specification of Letters Patent. Patented Mar. 14, 1922.

Application filed November 2, 1920. Serial No. 421,382.

To all whom it may concern:

Be it known that I, THOMAS LENAGHAN, a subject of the King of Great Britain and Ireland, residing at Croydon, in the county of Surrey, England, have invented Improvements in Automatic Telephone Systems. (a continuation of my prior application filed April 28, 1920, Ser. No. 377,288 as to all matter common to both applications, for which I have filed an application in England, April 23, 1919, No. 10202,) of which the following is a specification.

This invention relates to terminal or contact banks as used in automatic telephone switching systems, but more particularly in the system described in my co-pending application No. 377,288, but it is to be understood that the scope of its use is not confined to the said system. The principal object of this invention is the provision of a number of contacts so shaped that switch members having access to the said contacts will as they sweep over the contacts encounter surfaces that are at all times in condition to ensure perfect contact.

This is secured by making the several contacts of angular formation, that is to say with portions inclined outwardly and upwardly in relation to the bank as a whole. A further object is, by the provision of stamped up projections or lugs in the contacts to provide an economical method of holding the contacts in their banks.

A further improvement due to the shape of the stamped contacts, and their assembly, is that the vertical distance the switch has to travel whilst disengaged from a contact is reduced to a minimum whilst still ensuring the necessary insulation between the contacts—a further improvement is thus also attained in that the distance of contact, whilst the switch is travelling in an upward direction, is increased to give almost the total separating distance between the contacts.

Referring to the drawings:

Fig. 1 is a front elevation of a bank assembly; Fig. 2 an end elevation of same, and Fig. 3 a section through the line 3—3 Fig. 1. Fig. 4 is a plan of the connecting bars to which the contacts are riveted or interconnected by other means; Fig. 5 is a section on the line 5—5 Fig. 4. Fig. 6 a section on the line 6—6 Fig. 4. Fig. 7 a view semi-diagrammatic showing the switch fin-

gers contacting with one of the bank contacts; Fig. 8 is a perspective view of the contacts and connecting bars; and Fig. 9 a view of one of the contacts alone.

As shown in Fig. 1 a number of horizontal levels L^1 L^2 etc. of contacts c Fig 9 are interconnected by connecting bars b to either accommodate one or more circuits on the one level or to allow of the subdivision of the component parts of one circuit, such as when employed for a line circuit where part of the contacts may be used for outgoing connections, part for incoming connections and part for the connection of control recorders, as described in my application filed April 28, 1920, Ser. No. 377,288, the said contacts being available for connections by the switch members on both faces of the bank as shown in Fig. 2. In Fig. 3 is shown the interconnection of the contacts c which are preferably punchings, Figs. 4, 5 and 6 showing more clearly the details of the arrangement. The contacts Fig. 9 are held in the bank by horizontal separating strips d , leaving the centre of the bank hollow, these strips may be slotted on either their vertical or horizontal faces as desired to engage the contact, each projection e on which engages in the vertical slot if used, or on the face of the strip if the horizontal slot is used, thus preventing any movement of the contact. As an alternative to the foregoing the contact and bars may be held by a moulded insulation. Fig. 7 shows a view of the switch members S^1 — S^2 making contact with the bank contacts C . The said switch members do not form part of this specification and are fully described in my copending application No. 377,288 being only illustrated herein to show the functions of the bank contacts. The switches S^1 travel in the direction shown by the arrows, the fingers F , pivoted at the point P sweeping over the various contacts; as herein illustrated, the distance D^1 in which the finger F is out of contact with a bank member is reduced to the minimum whilst the distance of contact D^2 is at a maximum, being the total separating distance D^3 less D^1 .

By reason of the shape of the contacts c it will be self-evident that the surfaces engaged by the fingers F so overhang that dust cannot accumulate thereon.

What I claim is:—

1. In a telephone contact bank, a plurality of contact members each of which is formed

with an angular portion presenting an overhanging surface which is inclined outwardly and upwardly in relation to the bank as a whole which surface is always in condition to make good electrical contact with movable switch members adapted to sweep upwardly over the bank, substantially as described.

2. In a telephone system, a plurality of contact members arranged in several horizontal levels constituting a vertical bank capable of being swept over by switches on both faces, each contact member being formed with an angular portion presenting an overhanging surface which is inclined outwardly and upwardly in relation to the bank as a whole.

3. In a telephone contact bank, a plurality of contact members each of which is formed with an angular portion presenting an overhanging surface which is inclined upwardly and outwardly in relation to the bank as a whole and with punched up projections, and separating insulators for such contact members engaged by such projections whereby the contact members are rendered self holding in the bank, substantially as described.

4. In a telephone system, a plurality of contact members each formed with a pair of angular portions presenting overhanging surfaces which are inclined upwardly from the horizontal and with punched up projections and insulating members engaged by said projections separating them in several

horizontal levels so as to render them self holding in a bank capable of being swept over upwardly by movable switches on both faces, substantially as described.

5. In a telephone system, a plurality of contact members arranged in several horizontal levels constituting a vertical bank capable of being swept over by switches, each contact member being formed with an angular portion presenting an overhanging surface which is inclined outwardly and upwardly in relation to the bank as a whole and a plurality of conductors interconnecting the contact members on one horizontal level, the said contact members being grouped to accommodate one or more circuits on that level.

6. In a telephone system, a plurality of contact members arranged in several horizontal levels constituting a vertical bank capable of being swept over by switches, each contact member being formed with an angular portion presenting an overhanging surface which is inclined outwardly and upwardly in relation to the bank as a whole and a plurality of conductors interconnecting the contact members on one horizontal level, the said interconnecting conductors being subdivided in order that the several contact members may be available for the connection of the several component parts of a given circuit.

Signed at London, England, this 14th day of October, 1920.

THOMAS LENAGHAN.