To all whom it may concern:

Be it known that we, ARNO HÖHNE and HERMANN KRAKE, residents at Leipzig, Germany, have invented certain new and useful Improvements in Door-Operating Means, of which the following is a specification.

This invention relates to a device for opening and closing doors in which an electric motor is connected to the door shaft provided with a toothed wheel which engages a tooth wheel provided on the motor.

The movable door portion a is rigidly connected to an upright shaft b. The upper end of this shaft carries a friction clutch e provided with a tooth wheel d. This tooth wheel engages with a lever shaped sector e which is rotatably journaled in the woodwork or masonry adjacent to the door. The free arm of this sector has an upright extension which is slotted as shown. Adapted to glide in this slot is a pin f arranged eccentrically on a disk g which is driven by the electric motor h. The conductors for starting this motor lead to a contact device arranged in the vicinity of the door handle. This contact device consists of a bell crank lever of which one arm i is so arranged under the influence of a spring that by the closing movement of the door, the catch m of the latter imparts to the arm i an angular movement in opposition to its spring whereby the other arm k of this lever is thrown out of engagement with a contact piece l. When the catch m is retracted by the depression or rotation of the handle in the usual manner the arm k is moved into engagement with the contact piece l. By thus establishing the contact, the electric motor h is started and in rotating the disk g causes the sector e to be reciprocated about its pivot until the circuit is interrupted. By this movement the door thus connected with the motor is first opened and if it is held in this position the motor continues to operate owing to the provision of the friction clutch e. On the door being released it is caused to be automatically closed by the motor immediately the sector e receives the appropriate movement, after which the catch m is caused to cooperate with the lever arm i and thereby to break the circuit.

The opening movement of the door by means of the handle may be facilitated by the provision of a spring arrangement which on the handle being depressed opens the door to such an extent that the catch cannot again drop into the closed position. What we claim and desire to secure by Letters Patent is:

1. In an automatic opening and closing device for doors the combination with a movable door portion of an electric motor, a contact device associated with and actuated by the door handle, a tooth gear arranged on the door shaft and a toothed rocking lever located between said wheel and the motor and adapted to be actuated by the said motor substantially as described.

2. In an automatic opening and closing device for doors the combination with a movable door portion of an electric motor, a contact device associated with and actuated by the door handle, a tooth gear mounted on the door shaft, a toothed sector interposed between said gear and the electric motor and provided with a slotted arm and an eccentric pin engaging with the said slotted arm and actuated by the said motor whereby a rocking movement is imparted to the said sector substantially as set forth.

3. In an automatic opening and closing device for doors the combination with a movable door portion of an electric motor, a contact device associated with and actuated by the door handle, a gear interposed between the door shaft and the said electric motor and a friction clutch between said gear and said door shaft substantially as described.

4. In an automatic opening and closing device for doors the combination with a movable door portion of an electric motor, a contact device associated with and actuated by the door handle, a bell crank lever forming a spring holding said bell crank lever not...
mally in contact with the catch of the said movable door portion substantially as described.

5. In an automatic opening and closing device for doors, the combination with a motor operatively connected with the door, of a slidable catch \( m \) operatively connected with the door handle, and a contact device electrically connected with the motor, said device including a bell crank lever having arms \( i \) and \( k \), one arm lying in the path of movement of the slidable catch \( m \), and the other arm adapted to make and break engagement with a contact-piece, substantially as described:

In testimony whereof we have affixed our signatures in presence of two witnesses.

ARNO HÖHNE.
HERMANN KEAKE.

Witnesses:
RUDOLPH FRICKE,
GUSTAV HOFMANN.