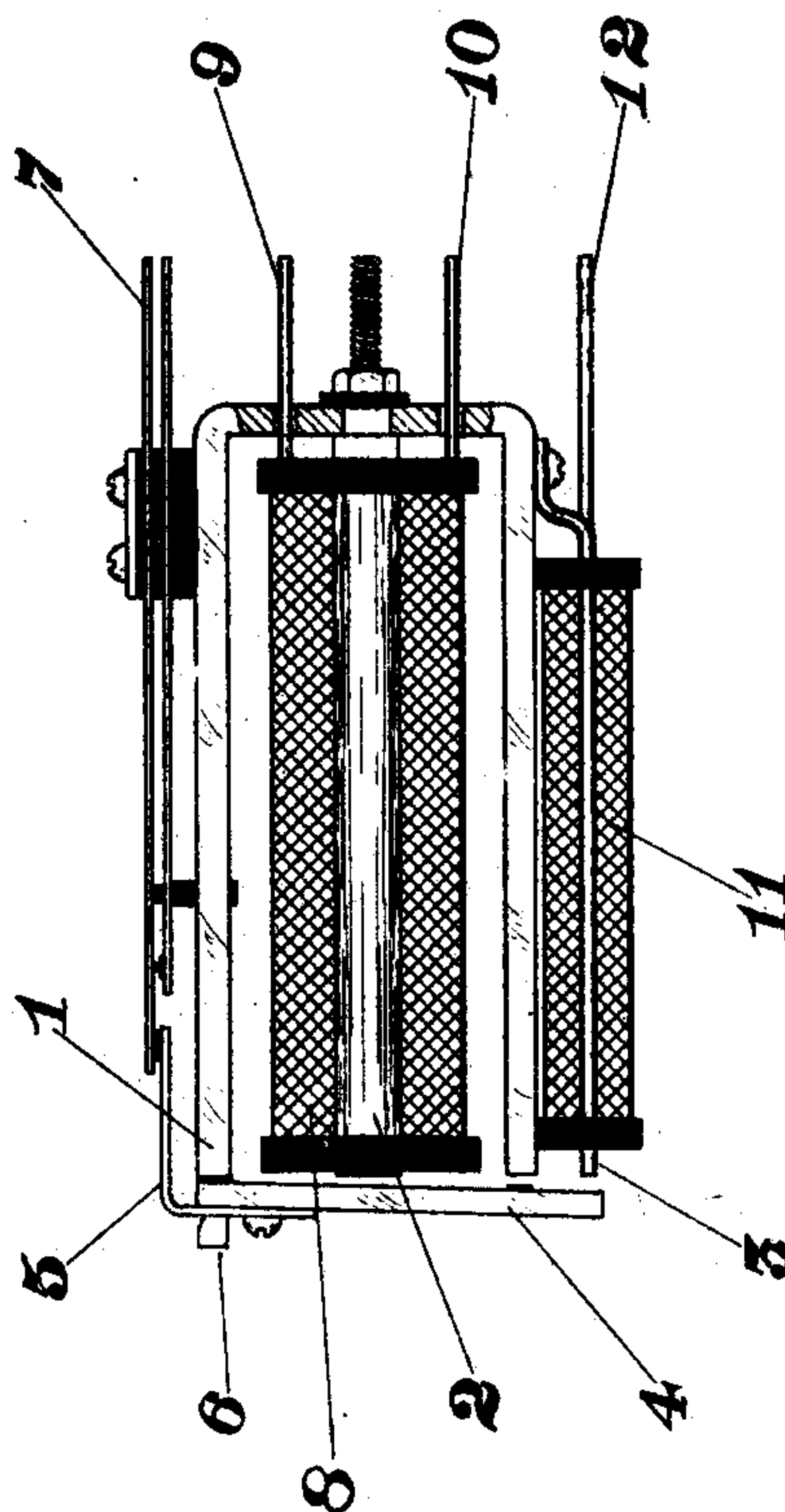


H. P. CLAUSEN.
ELECTROMAGNETIC DEVICE.
APPLICATION FILED MAY 25, 1911.

1,088,878.

Patented Mar. 3, 1914.



WITNESSES
John A. Faggart
C. E. Hague

INVENTOR
HENRY P. CLAUSEN
BY *C. L. Bradbury*
ATTORNEY.

UNITED STATES PATENT OFFICE.

HENRY P. CLAUSEN, OF ROCHESTER, NEW YORK, ASSIGNOR TO STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

ELECTROMAGNETIC DEVICE.

1,088,878.

Specification of Letters Patent.

Patented Mar. 3, 1914.

Original application filed March 25, 1907, Serial No. 364,460. Divided and this application filed May 25, 1911. Serial No. 629,296.

To all whom it may concern:

Be it known that I, HENRY P. CLAUSEN, a citizen of the United States, and resident of Rochester, county of Monroe, State of New York, have invented certain new and useful Improvements in Electromagnetic Devices, of which the following is a specification.

My invention relates to electro-magnetic devices, known as telephone relays and used for the purpose of controlling the current in one circuit through the agency of the current in other circuits.

This is a division of my application, Serial No. 364,460, filed March 25, 1907.

The object of the invention is to provide a relay having one coil of high magnetic efficiency for initially actuating the relay, and another coil of low magnetic efficiency, inexpensive to construct and having a small winding space for maintaining the relay in actuated condition. Relays of this kind are useful in telephone circuits of various kinds in which it is desirable to lock the relay in its actuated position, and are especially valuable where the initially actuating coil is subject to alternations in the current direction, the magnetic circuit of this relay being such that alternations in the circuit of the larger coil do not demagnetize the smaller coil.

My invention is illustrated in the accompanying drawing, in which I have shown a mechanical embodiment.

The embodiment of my invention comprises a U-shaped frame 1, of magnetic material, between the limbs of which the magnetic core 2 is secured. A second magnetic core 3 is secured beneath the lower limb of the U-shaped frame, both cores being adapted to act upon the armature 4. This armature is supported upon knife edges formed in the angle piece 5 and resting upon the projections 6 extending from the end of the upper limb of the U-shaped member 1. The rearwardly extending limb of this angle 5 engages the switch springs 7 which are adapted to open and close the secondary

circuit in a manner well known. The main core 2 is surrounded by a coil 8, the wires of which are connected to the terminals 9 and 10, and the core 3 is surrounded by coil 11, the wires of which are connected to terminals 12. The cores are preferably removably secured to the U-shaped member, though they may be made an integral part thereof if desired.

In the operation of my device the magnetization of the main core 2 by the passage of current through the coil 7 sets up magnetic lines which flow through the core 2, the armature 4 and the two limbs of the U-shaped member 1. The flow of current through the coil 11 magnetizes its core 3 and produces magnetic lines through the core 3, the lower end of armature 4 and the lower limb of the U-shaped member 1. Of course a portion of the magnetism produced by the main coil 8 is carried through the core 3 and a portion of the magnetism produced by the auxiliary coil 11 is carried through the core 2, but these portions are so slight as to be practically negligible in the operation of the device.

While I have shown and described my invention with respect to certain details herein illustrated, it is to be understood that I do not wish to be unduly limited thereto, many modifications being possible without departing from the spirit or scope of my invention.

I claim—

1. In an electro-magnetic device, a U-shaped frame of magnetic material, an electro-magnet within said frame, the ends of said frame and the end of the electro-magnet core forming the poles of said magnet, an armature for said magnet extending across said frame and an auxiliary magnet using one limb of said U-shaped frame as a portion of its magnetic circuit, also acting upon said armature.

2. In an electric relay, the combination with main and auxiliary cores, of a flat strip of magnetic material lying between said cores and forming the return magnetic

circuit for each core, a second strip of magnetic material forming a return magnetic circuit for one core, and an armature supported thereon in position to be similarly
5 actuated by the magnetization of either or both cores in either the same or opposite polarity.

Signed by me at Rochester, county of Monroe, and State of New York, in the presence of two witnesses.

HENRY P. CLAUSEN.

Witnesses:

JOHN A. TAGGART,
CHARLES E. HAGUE.