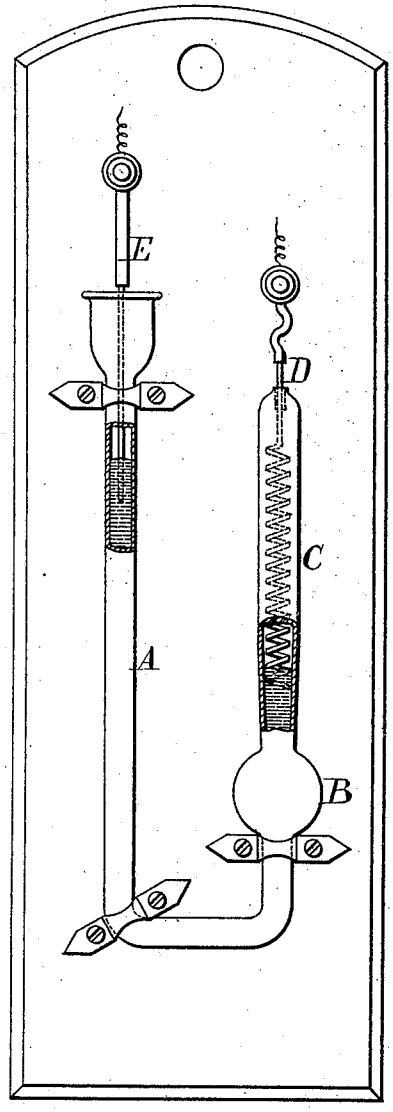
(No Model.)

H. S. KEATING.

ELECTRICAL SAFETY CUT-OUT.

No. 488,123. Patented Dec. 13, 1892.



Witnesses:
George W. Rea
Robt. Ball.

Inventor:
Henry Sheehy Keating,
By James L. Norris.
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY SHEEHY KEATING, OF LONDON, ENGLAND.

ELECTRICAL SAFETY CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 488,123, dated December 13, 1892.

Application filed August 31, 1892. Serial No. 444,672. (No model.) Patented in England June 13, 1891, No. 10,083.

To all whom it may concern:

Be it known that I, HENRY SHEEHY KEATING, a citizen of England, residing at No. 11 Princes Gardens, Kensington, in the county of London, England, have invented a certain new and useful Electrical Safety Cut-Out, (for which I have received Letters Patent in Great Britain, No. 10,083, dated June 13, 1891,) of which the following is a specification.

My invention relates to apparatus introduced in an electric circuit which operates as a safety cut-out—that is to say, it automatically opens the circuit when the electricity conveyed by the circuit becomes excessive.

The accompanying drawing is a front view of a cut-out according to my invention.

A is one limb of a glass tube bent to U form and made with a bulb B and a space C closed at the end, through which is sealed a wire D. The wire within the space C is preferably bent to helical or zigzag form, so as to present a considerable surface. The tube is partly charged with mercury, in which are immersed the ends of the circuit-wires D and E, so that under ordinary conditions the mercury forms part of the circuit. The space C is charged with nitrogen or other gas that does not combine with the mercury, and I prefer that the gas in C should have a pressure a little above that of the atmosphere, causing the mercury to stand at a higher level in the limb A, and thus, should there be accidental fracture of the limb C, the mercury will descend in A, leaving the wire E, and thus opening the circuit. A similar result might be attained by making the pressure in C less than that of the atmosphere, the mercury in that case standing higher in C than in A, but in case of accidental fracture descending from the end of the wire D. The wires D and E being connected to the circuit when the current exceeds a certain amount, the wire D becomes heated, and the gas in C is thus so far heated and expanded as to force the mercury down from the end of the wire D, thus opening the circuit and acting as a safety cut-out.

In order to prevent oxidation of the mercury in the limb A when that limb is open, the surface of the mercury may be covered by glycerine. In some cases, however, instead of leaving the limb A open at the top it may be sealed, leaving sufficient space above the mercury.

Having thus described the nature of my invention and the best means I know for carrying the same into practical effect, I claim—

An electrical safety cut-out consisting of a U-tube hermetically closed at its one end, through which passes a conducting-wire into a space in the tube charged with nitrogen or equivalent gas, a charge of mercury in the tube such that the lower end of the said wire dips into it, and another conducting-wire which dips into the mercury in the other limb of the tube, arranged and operating substantially as herein described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 17th day of August, A. D. 1892.

HENRY SHEEHY KEATING.

Witnesses:

OLIVER IMRAY,

Chartered Patent Agent, 28 Southampton Buildings, London, W. C.

JNO. P. M. MILLARD,

Clerk to Messrs. Abel & Imray, Consulting Engineers and Patent Agents, 28 Southampton Buildings, London, W. C.