

# Break Circuit Attachment

FOR CHRONOMETERS,

—BY—

WILLIAM BOND & SON,

*134 State*  
~~17 Congress~~ Street, Boston.

In the extensive Surveys of our Country carried on by the Government, accurate timekeepers are of the first importance for the determination of longitude, and our clocks and chronometers have been, for many years, employed for that purpose. When the telegraph came into general use, and the wires were extended all over the land, the attention of scientific men was called to the possibility of constructing a clock which could be put into connection with the telegraph lines, and send automatic signals to distant places, enabling observers to determine the longitude more quickly and with greater precision than before. The late Prof. Wm. C. Bond, at that time senior member of our firm, was urged to solve the problem, and about 1848, he devised an arrangement which admirably answered the purpose, and is still used on clocks with the Graham Escapement. The invention of the improved Gravity Escapement, soon after, led his son, our Mr. R. F. Bond, to contrive a more certain break circuit, one of which is on the clock of our construction now at the Cambridge Observatory, sending the time signals to Boston, and one has been in constant use, day and night, for four years, without the failure of a single signal.

These Electric Clocks, although made as compact as possible, for field use, were inconvenient and expensive to transport, and much time and labor were spent in setting up and regulating them at each new station, so that it was soon evident that a break circuit chronometer had become as great a desideratum as the break circuit clock had previously been.

In experimenting for this end, it was feared that the arrangement would have to be on too small a scale to give satisfactory results, and also, that the attachment might seriously affect the performance of the instrument; but finally, in 1870, after two years of experiments, we succeeded in perfecting and applying to chronometers a modified form of our clock break circuit. Much of this success is due to the unwearied pains and skill of Mr. A. MacConnell, our Electrician, and Mr. W. J. Hiatt, our head Chronometer maker, to whose unselfish interest and zeal we gladly pay this tribute. In the chronometers,

1874.