

The "Ringrose" Automatic Firedamp Alarm

by Manfred Stutzer/Ludwigshafen and Peter Appleton/Wigton

The flame safety lamp had been used as an accurate and reliable instrument for detecting the presence of firedamp. As a flame would not continue to burn if the air was seriously deficient in oxygen, it also acted as a safeguard to the presence of blackdamp.

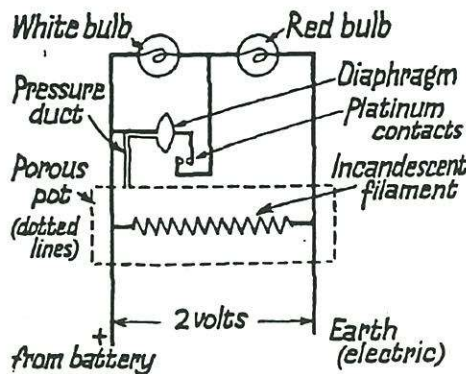
However, the rapid displacement of flame lamps by electric lighting during the 1920's led to situations where the work-force of a mine was wholly dependent on the tests that Pit Deputies and Officials could carry out during a shift using Approved Flame Safety Gas Tester Lamps, as required by The Coal Act of 1911 in the United Kingdom.

By 1922 the Miners' Lamp Committee had recommended that "where electric lamps were generally used" a proportion of workmen should be provided with, and instructed in use of flame safety lamps to test for gas on a more local basis at the site of their work.

Many attempts have been made to devise other forms of firedamp indicators with varying success. Amongst these the Ringrose firedamp Alarm Lamp was seen by the Mines Department as having the advantages of working continuously and automatically.

The inventor, Henry Thomas Ringrose, who was Managing Director of the firm "International Gas Detectors Ltd." on Great Wilson

Street, Leeds II, maintained that the firedamp Alarm should not be seen as being in competition with the flame lamp, as its function was perceived as quite different, that is, to act as a first line of defence offering the miner automatic warning if gas was present in the atmosphere.

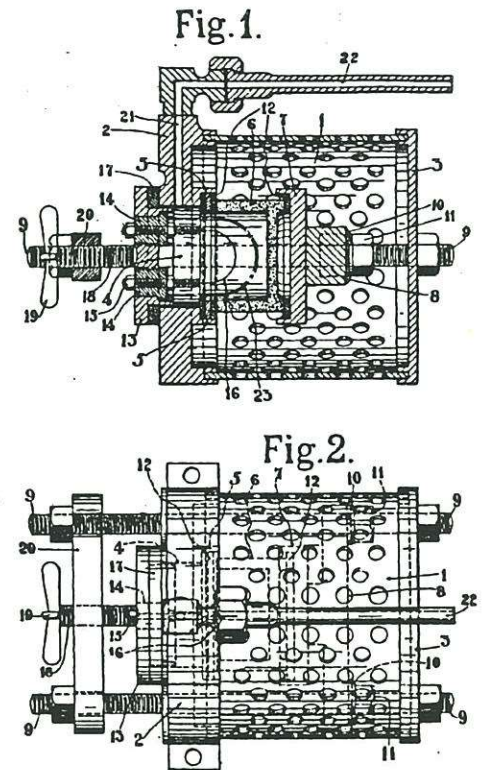


Principle of the alarm.

The original 'Ringrose' of 1926 was not in the form of a lamp, but was purely a firedamp detecting device, as the patent No. 267,990 clearly shows.

By 1929 the design had been transformed into a type of safety lamp that served the dual function of providing a light as well as detecting firedamp. However, the simple basic principle upon which it operates was left unchanged:

A change of pressure inside a sealed porous pot would take place if firedamp from the surrounding atmosphere entered the pot, and was then burned upon an incandescent fila-

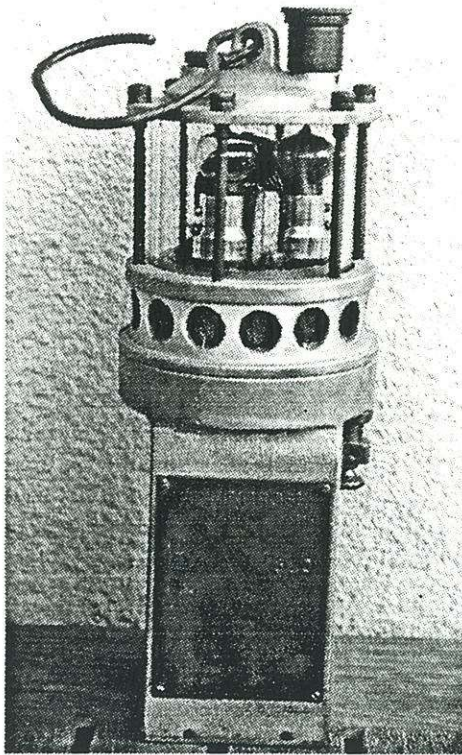


First Patent Specification No. 267,990, March 28, 1927.

ment. Such change in pressure caused the closing of electrical contacts which completed a circuit causing a red warning bulb to glow.

The new 'Ringrose' was approved in September 1929. Small scale trials over short periods of time were undertaken to help improve the design until by the end of 1931 it was thought to give reasonably consistent and reliable results.

Further extensive Pit trials, under normal working conditions were required to discover unforeseen limitations and weaknesses. Markham Collieries, Warsop Main Colliery,



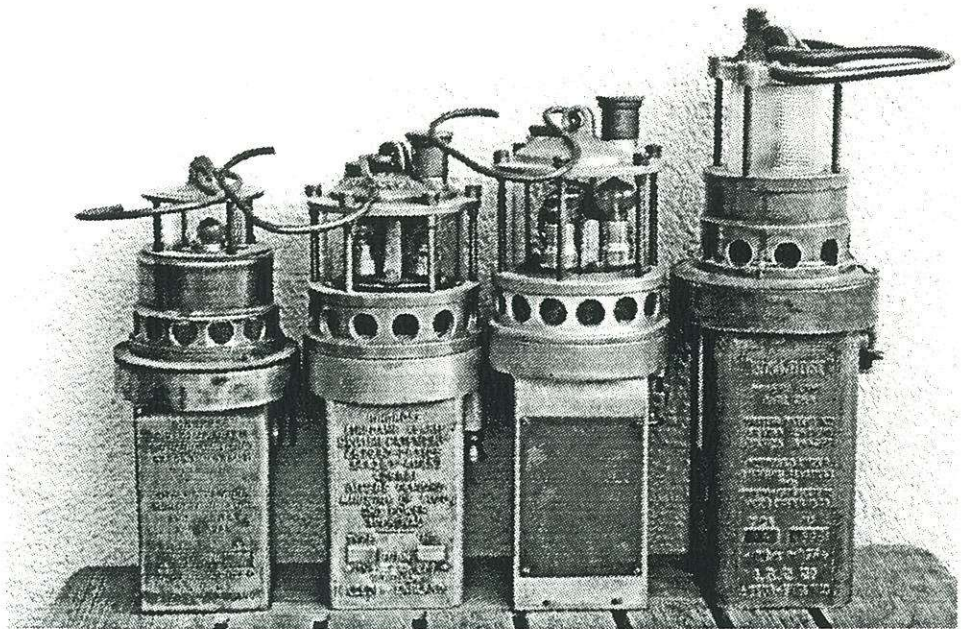
A very early Ringrose, one of the first lamp designs, 1928. This lamp is fitted with an additional "arresting signal".

and Ireland Colliery in Yorkshire were amongst the first Collieries where, in 1934, more than 200 Ringrose Firedamp Alarms were introduced.

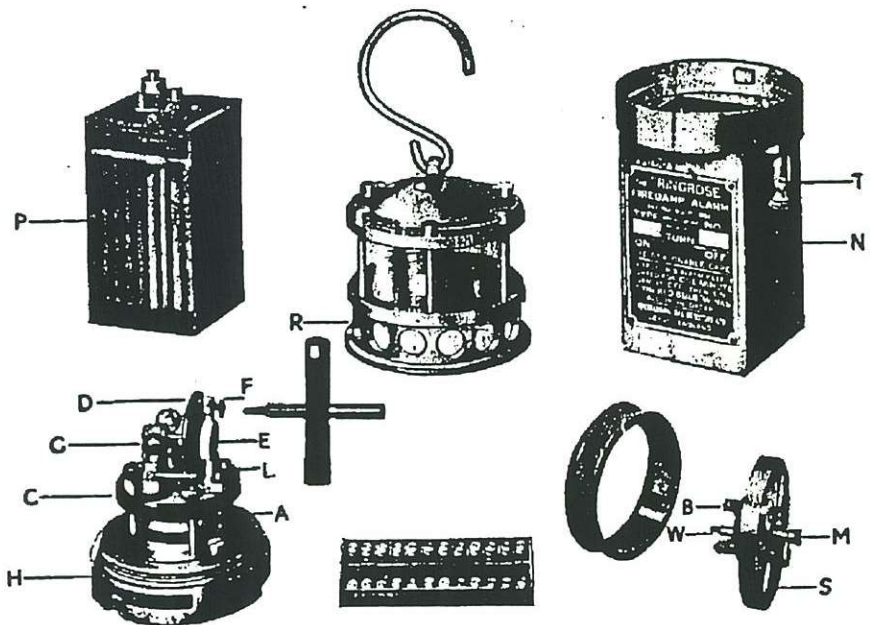
The detector normally reacted if 2.5% methane was in the air, but even 1.25% could be detected, if necessary.

Some lamps were fitted with a special device to give an audible alarm or "arresting signal" in addition to the red warning light.

Correspondence between Peter Appleton and Mr. Jack Utley of I.G.D. Ltd., Leeds confirmed that the last manufactured Ringrose Firedamp Alarm Lamp Type 47/125 ceased production in the early 1970's.



Four different Ringrose Firedamp Alarms.



1935 ad for a Ringrose Firedamp Alarm, Type R (disassembled).

When the "red light" was activated, the mine workers would proceed as follows:

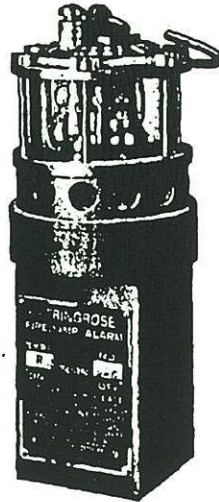
- 1. Immediately switch off all electric current.**
- 2. All men would withdraw to the intake airway.**
- 3. The deputy would be sent for and informed of the event.**

SECURITY FROM GAS ASSURED

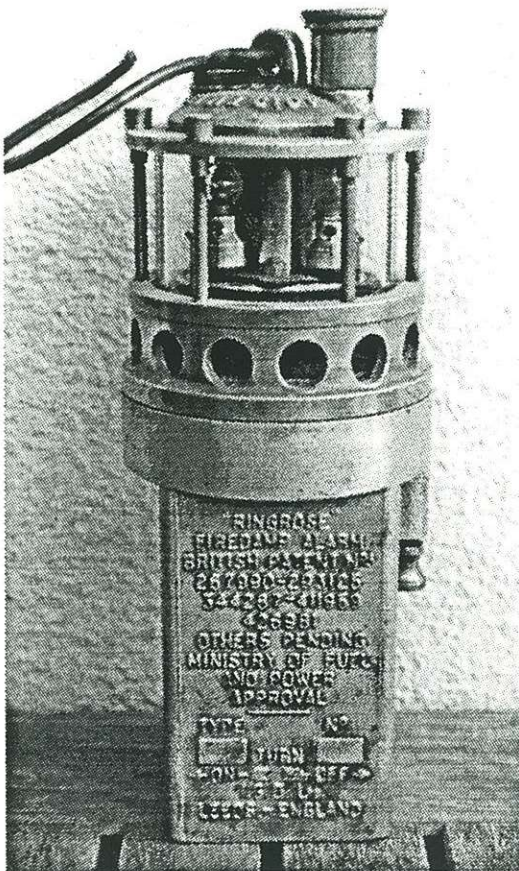
Advertisement from *The Colliery Guardian*, May 1935. Type R.

Approved for **SAFETY** and **ACCURACY** by the Mines Departments of Great Britain, France, Belgium and Germany.

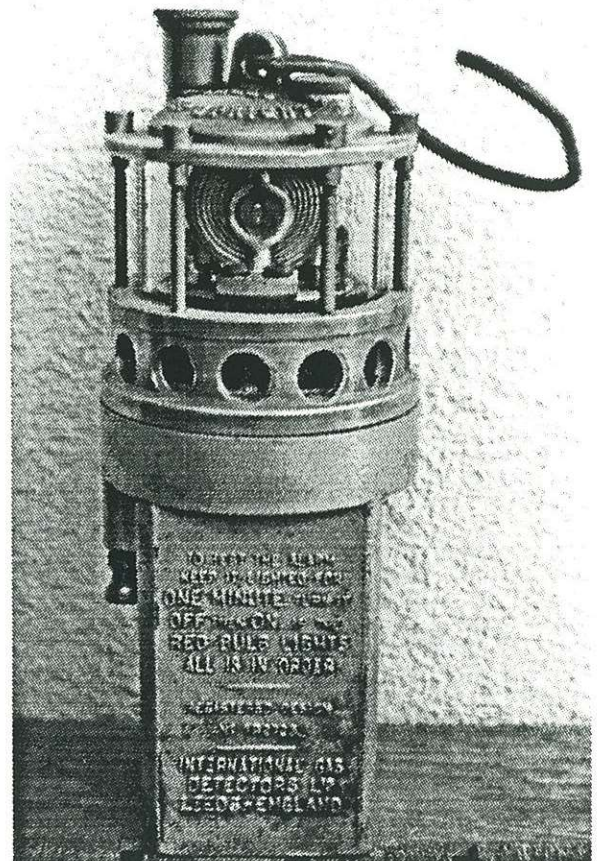
OVER TWO HUNDRED CORPORATIONS use the device for the protection of their men against explosive gases.



THE ALARM has two electric bulbs in series, one being red. Normally the white lamp only is illuminated, but gas at a pre-determined percentage short circuits the white lamp and puts the full voltage on to the red, thereby giving an **ARRESTING SIGNAL**.



Front and back views of Ringrose Firedamp Alarm Type: MDS5.

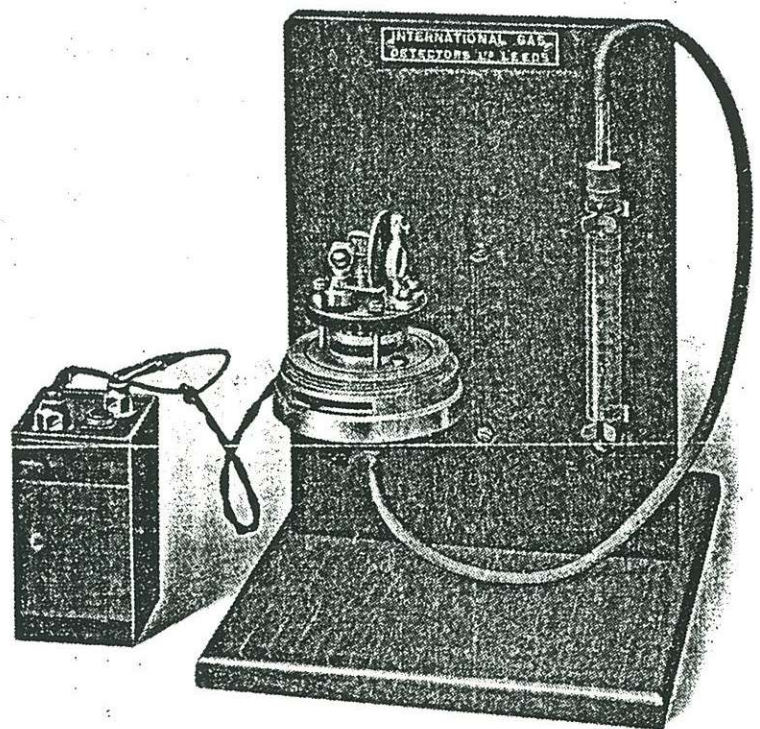


"RINGROSE" AUTOMATIC FIREDAMP ALARM



Advertisement for Type R lamp, ca. 1935.

Advertisement for testing stand,
ca. 1935.



TESTING STAND.

Right: Front and back views of the Ringrose firedamp alarm Type: CH4/DB.



Below left: Ringrose model 47/125. This type was produced in considerable numbers. Production ended in the early 1970's.



British Patents Taken Out By H. T. Ringrose

GB 267990	1927	Device For Recording Presence Of Inflammable Vapours
GB 293125	1928	Apparatus For Detecting Gases
GB 319530	1929	Device Indicating The Presence Of Inflammable Gases
GB 331711	1930	Device For Indicating The Presence Of Inflammable Vapours
GB 344287	1931	Electrical Signal Or Indicating Means
GB 412761	1934	Electrical Signalling Or Indicating Means For Recording The Presence Vapours Or Gases
GB 426981	1935	Electrical Signalling Means
GB 477338	1937	Detection Of The Presence Inflammable Vapours
GB 484194	1938	Indicator Of Flammable Vapours
GB 494882	1938	Detecting Poisonous Gasses
GB 520515	1940	Portable Lamps
GB 530524	1940	Portable Lamps Indicating The Presence Of Inflammable Vapours
GB 531408	1940	Portable Lamps Detecting The Presence Of Poisonous Gases
GB 547452	1941-1944	Indicating The Presence Of Inflammable Vapours
GB 595000	1946-1948	Recording Apparatus