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HIGH-FREQUENCY IRON-CORED COIL

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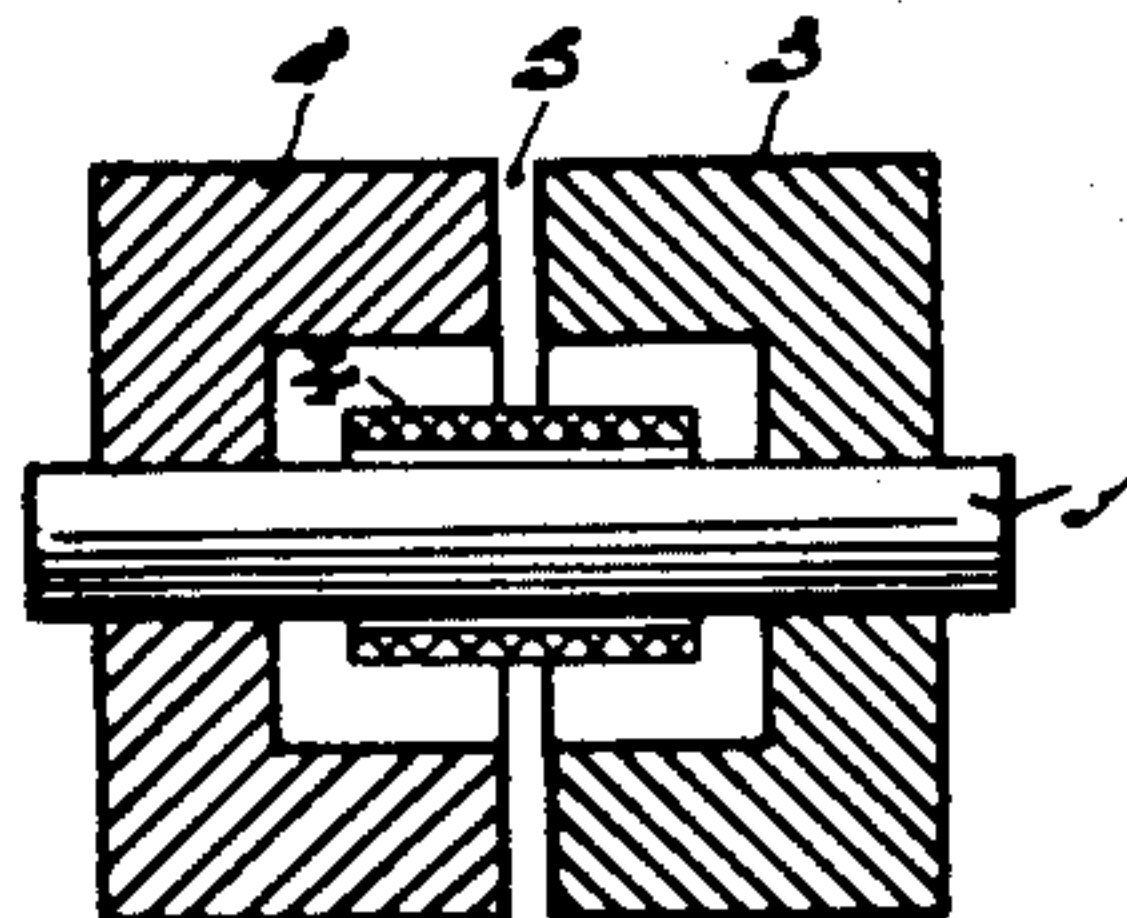


Fig. 1

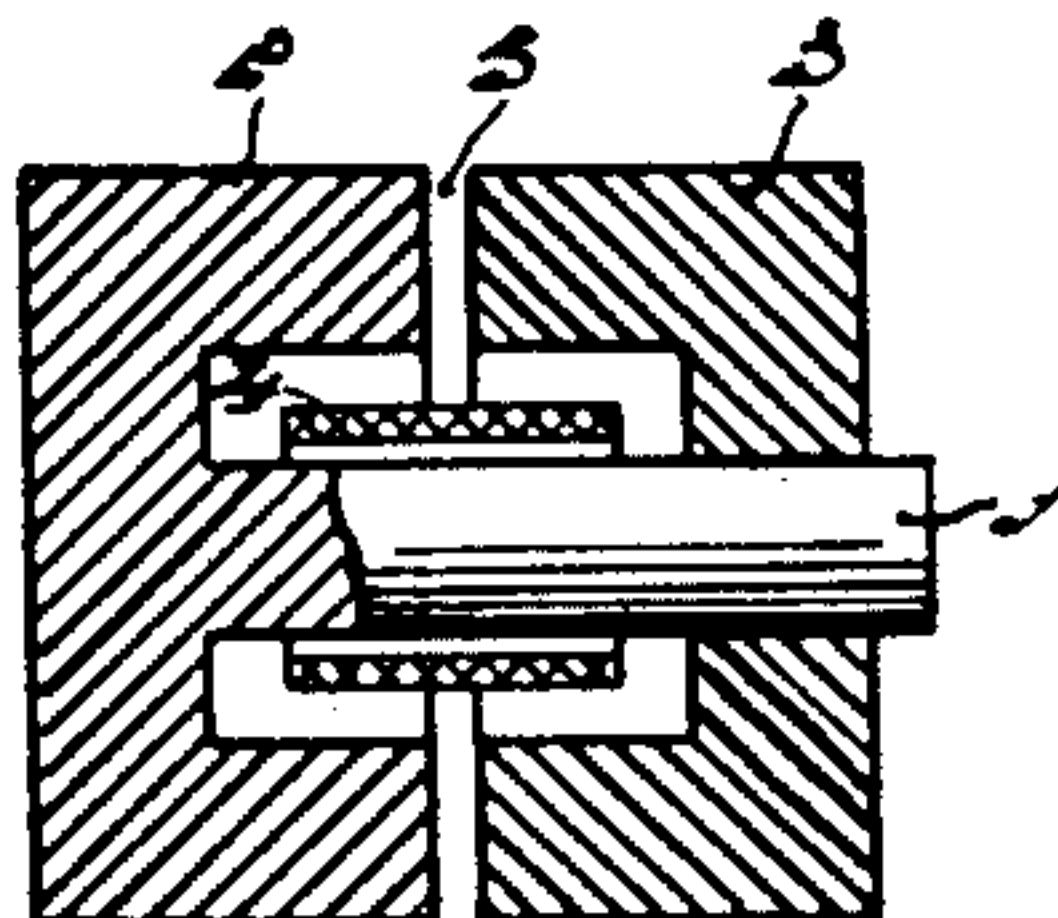


Fig. 2

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HIGH-FREQUENCY IRON-CORED COIL

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Patent expires August 27, 1962

1 Claim. (Cl. 171-242)

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This invention relates to a high-frequency iron-cored coil, consisting of a core of high frequency iron with a winding provided thereon and a shell also consisting of high-frequency iron which completely surrounds the core and the winding, air gaps between core and shell being avoided.

Such high-frequency coils, which are called iron-clad cored coils, are used in radio receiving sets as inductance coils of resonant circuits which are tunable by means of a variable condenser. In mass-production of these coils small deviations from the desired inductance value always occur which require final adjustment to the desired value. In a well-known construction of iron-clad cored coils this adjustment is possible since the shell consists of two parts one of which is rigidly connected to the core and the other is shaped as a ring which is movable on the core and within the first-mentioned part of the shell.

The displacement of the ring involves a variation of the inductance due to variation of the magnetic resistance of the magnetic circuit. This variation of the magnetic resistance exclusively results from an increase or a decrease in length of the path of the lines of force. This involves the drawback that the adjustment of the inductance is always accompanied by a variation of the losses since, for instance, an increase of the path of the lines of force will bring about an increase of the iron volume which, as is well-known, increases the losses. The invention has for its purpose to provide a construction which permits adjustment of the inductance of iron-clad cored coils without modifying the iron volume, so that the losses of the coil are not appreciably affected by adjustment of the inductance.

According to the invention this is achieved by forming the shell of two parts in such manner that at least one of two parts is movable over the core and an adjustable air-gap is formed between the two parts of the shell, variable air-gaps between core and shell being avoided.

The drawing represents two forms of construction of a high-frequency coil according to the invention.

Fig. 1 represents a coil having a cylindrical

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core 1 made from high-frequency iron. The shell consists of two cylindrical parts 2 and 3 which also consist of high-frequency iron and both of which are movable on the core 1. The winding provided on the core 1 is designated by 4. By shifting the two shells parts 2 and 3 relatively to one another the air-gap 5 formed between them can be adjusted and consequently also the inductance of the coil. Since a slight variation of the air-gap involves a considerable variation of the magnetic resistance of the circuit and the deviation of the inductance from the desired value is small as a rule, only slight variations of the air-gap are necessary for adjusting the inductance to the desired value, so that the adjustment does not entail an appreciable variation of the iron volume. As a result thereof the losses also remain practically unchanged.

The form of construction represented in Fig. 2 solely differs from that shown in Fig. 1 in that only one part of the shell, viz. the part 3, is movable on the core 1. The other part 2 constitutes a mechanical unit with the core 1.

What I claim is:

A high frequency inductance coil comprising a cylindrical core of high-frequency iron, a coil winding disposed on said core, and a cylindrical high frequency iron shell encasing said core and said coil comprising two congruent cylindrical portions, one of said shell portions being movable relative to said core and provided with an apertured portion for passing said core therethrough, said core and said movable shell portion inter-fitting with a constant air-gap.

EWOUT ADRIAAN VAN YZEREN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,925,224	Alder	Sept. 5, 1933
2,064,772	Vogt	Dec. 15, 1936
2,130,815	Riepka	Sept. 20, 1938
2,180,850	Reiser	Nov. 21, 1939
2,220,126	Six et al.	Nov. 5, 1940