

May 11, 1937.

J. E. RANGES

2,079,697

LOADING COIL CASE

Filed May 15, 1935

2 Sheets-Sheet 1

FIG. 1

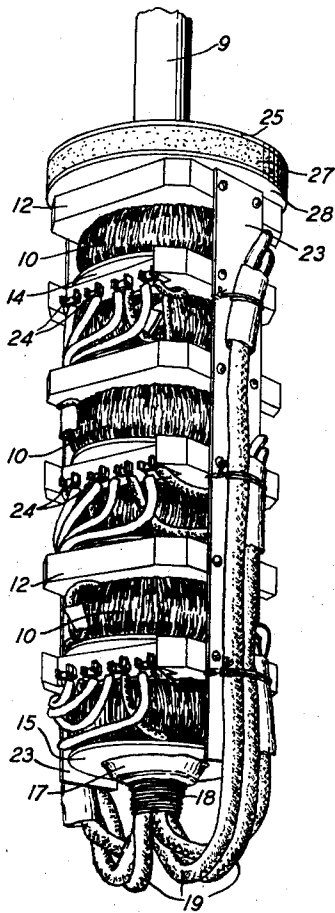
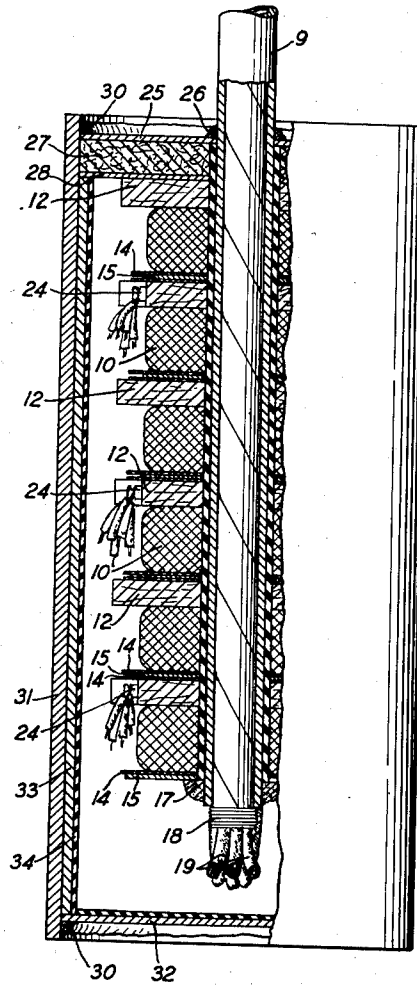


FIG. 2



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2 Sheets-Sheet 2

FIG. 3

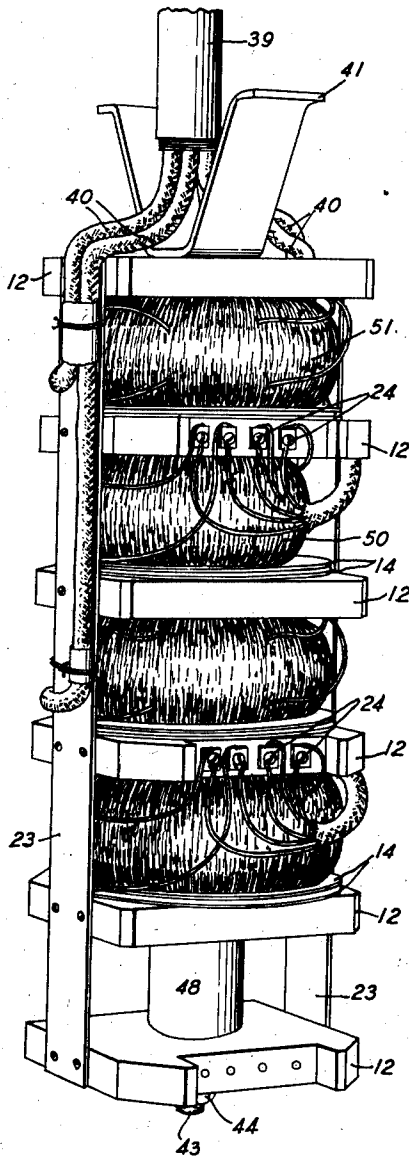
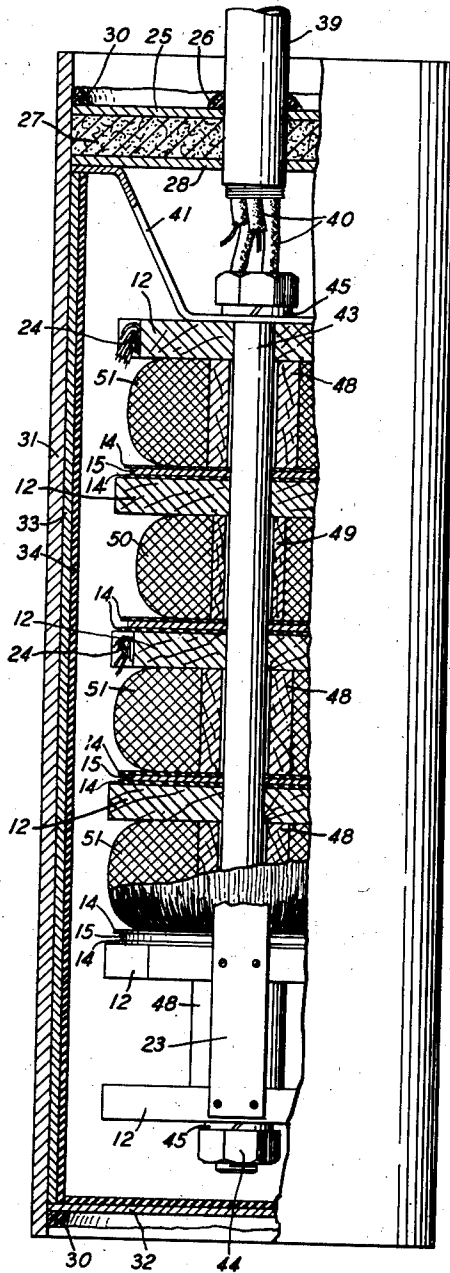


FIG. 4



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UNITED STATES PATENT OFFICE

2,079,697

LOADING COIL CASE

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Application May 15, 1935, Serial No. 21,593

8 Claims. (Cl. 178—46)

The present invention relates to inductive devices and more particularly to an assembly of loading coils and the connecting means for the wiring thereto and to protecting means therefor.

It is an object of this invention to provide loading coils for communication cables that will be reliable and relatively inexpensive.

It is a further object of this present invention to provide supporting and housing means for the small and less ponderous loading equipment recently developed from the use of new alloys for loading cores.

A feature of the present invention involves mounting means relatively small in size to pass through a center hole in a small loading coil or a series of small loading coils to carry the coils and their connections in a rigid reliable manner.

A further feature of this invention involves a wooden structure capable of centrally supporting the loading coils and their terminals and wiring.

Other features of the invention include the combination of spaced heads for a double walled metallic casing from which the electrical equipment is insulated and by which structure the electrical equipment is shielded from inductive interference.

Other objects and features of this invention will be seen in the drawings accompanying this specification of an illustrative embodiment of the invention in which:

Fig. 1 is a perspective view of loading coil mounting means according to this invention;

Fig. 2 is a partial cross-section of the assembly of Fig. 1 in a case;

Fig. 3 is a perspective of a modification for special coils; and

Fig. 4 is a partial section of the assembly of Fig. 3 in a case.

The loading coils are of the kind used for loading telephone lines or cables of small size connecting to stations at considerable distance from a central switching point.

In Fig. 1, a lead sheathed telephone stub cable 9 carries a loading coil assembly arranged along and supported by the outer lead covering of the cable. The individual loading coils 10 are spaced from one another by wooden blocks 12 spaced along the lead sheath. Each individual coil rests on one of two paper washers 14 which are arranged on both side faces of a metallic washer 15 employed for inductive shielding in the customary manner. The lowest metal washer 15 is retained on the lead sheath by a securing means, such as a wiped or soldered

joint 17. String wrappings 18 secure the individual local cables or leads 19 in a group below the joint 17, suitable strap members 23, preferably of insulating material, longitudinally space the wooden blocks 12 from one another in desired relationships and furnish a support for the lead wires in the local cables 19 connecting to the terminals 24 mounted or pegged on each wooden block.

A circular head plate 25 arranged to be the outer closure for the loading coil case is secured to the lead sheath on the stub cable in a wiped or soldered joint 26. The head 25 is spaced by a felt washer 27 from a metal inner head 28, the felt washer being arranged to prevent solder from a joint 30 around the periphery of the head closure from entering the loading coil chamber and possibly short-circuiting lead wires. The outer casing enclosing the loading coil assembly consists of a lead sleeve 31 closed at the bottom by a metal plate 32, such as a brass plate. This lead sleeve is stiffened by an internally arranged steel sleeve 33 disclosed and claimed in a patent application Ser. No. 20,959, filed May 11, 1935 by Greenidge. A paper lining 34 insulates the interior of the casing and its loading coil assembly from the inner metal sleeve 33.

An embodiment shown in Figs. 3 and 4 provides for satisfactory mounting means on a central dowel of loading coils of various sizes even to the smallest so far proposed. The stub cable 39 passes through the head closure of a loading coil casing similar to that in the embodiment of Fig. 1, being secured thereto in similar manner. The stub cable 39, however, terminates just inside the head and the leads or local cables 40 extend downwardly through the casing around both sides of the loading coil assembly. The loading coil assembly is hung from a metal bracket 41 resting on the upper edge of the steel reinforcing inner casing 33 at its extremities. A bolt 43 passes centrally through the loading coil construction placing a tension on the assembly of loading coils through the bracket 41, a nut 44 and lock washers 45. Hollow wooden spools 48 and 49 of suitable sizes and of length respectively equal to the thickness of an adjacent coil telescope over the central metal dowel and space the washers 14 and 15 and the wooden blocks 12 the proper distances from one another for the particular loading coils employed. The loading coils 50 and 51 are shown as of unlike dimensions because of differing requirements of loading characteristics. This proposed arrangement

for supporting loading coils accommodates itself very well to variations in coil dimensions. Each coil 50 is carried on one of the spools 48 and coil 51 is carried on one of the hollow spool-like members 49 of smaller size, all spools being arranged along the central dowel bolt 43. The local cables 40 to these loading coils are carried, as in the earlier disclosed embodiment, along a stiff insulating spacing member 23 adapted to fasten to each of the wood block members 12 and retain the local cables in proper positions relative to the coils on the terminals to which they connect.

What is claimed is:

1. A loading coil casing having a cylindrical casing means, a head recessed within the case and secured thereto in a metallic joint as by solder, a rigid metal head supported from within the casing and spaced from the outer head closure, and a fibrous washer arranged between the two heads to prevent molten solder from entering the casing.

2. In a loading coil structure, a casing, a stub cable entering the casing and terminating just within the casing, a bracket member retained at its extremities within the casing, local cable from the stub cable passing around the bracket member, a long bolt passing approximately centrally through the bracket member, loading coils spaced along the bolt, and connections from the local cable to the loading coils.

3. In a loading coil structure, a casing, a stub cable entering the casing, a bracket member securing a loading coil assembly to the side walls of the casing, a long bolt secured to the bracket member, loading coils spaced along the bolt, hollow spool members each of suitable size to locate an individual coil member centrally on the bolt arranged within each loading coil and connections from the loading coils to the stub cable.

4. A loading coil structure having a casing, a stub cable entering the casing, a bracket retained in place within the casing, a bolt carried on the bracket, rigid spacing members strung on the bolt, loading coils mounted between the

spacing members, spool members each of suitable size strung in place on the bolt members, to center the individual coils on the bolt and local cable providing connection between the stub cable and the loading coils.

5. A loading coil structure in a casing, a stub cable entering the casing and terminating just within the casing, a rigid loading coil assembly secured only to the side walls of the casing, a long bolt extending centrally of the loading coil assembly, insulating spacing members strung on the bolt, loading coils mounted between the spacing members and terminal connections for the loading coils on the insulating spacing members.

6. In a loading coil structure, a plurality of toroidal loading coils, block members of suitable dimensions disposed in the center of each loading coil, insulating members disposed between the coils and in contact with the spacing blocks, strips of insulating material fastening the insulating block members and coils into a unitary structure, and bolt means to hold the assembled structure rigidly under pressure, exerted through the blocks disposed centrally of each coil.

7. A loading coil assembly comprising a long bolt, a series of loading coils arranged on the bolt, blocks strung on the bolt and arranged transversely between adjacent coils, a hollow spool within each coil for approximately centering the coil on the bolt and for protecting the coils from undue pressure in tightening of the bolt, and strip insulation parallel to the bolt to carry local cable connections to the coils.

8. A loading coil casing, a head recessed within the casing and secured thereto in a metallic joint as by solder, a rigid metal head supported within the casing and spaced from the outer head, a tight soldered joint between the head and casing and a fibrous washer clamped between the two heads to seal the interior of the casing from molten solder employed in sealing the outer head to the main casing.

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