Nov. 17, 1925. 1,562,123

E. L. PITTS

TUBULAR HOLDER

Filed Oct. 20, 1924

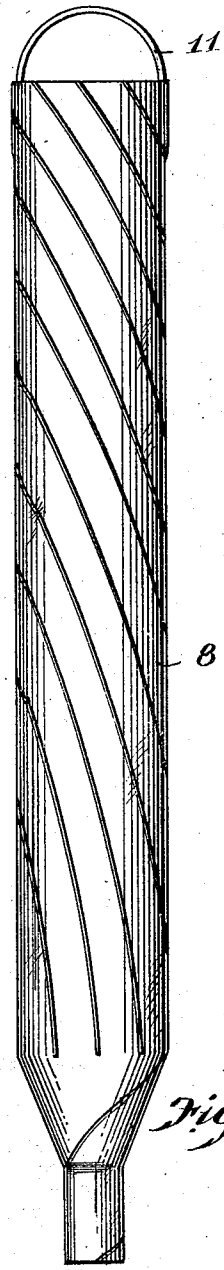

Fig. 1

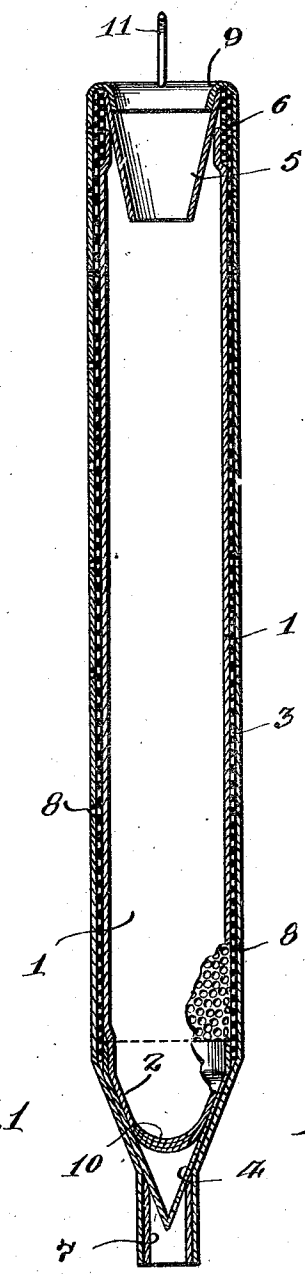

Fig. 2.

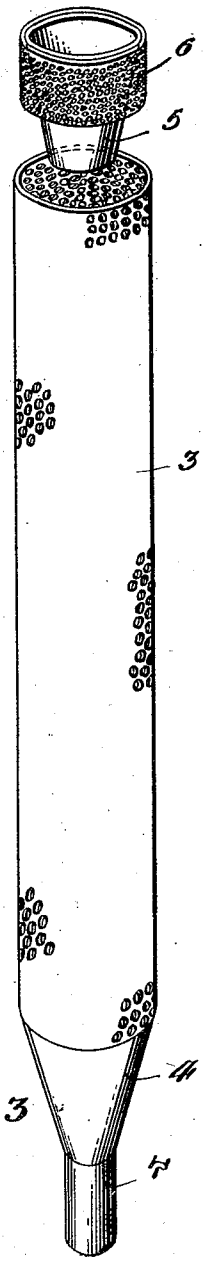

Fig. 3

WITNESSES

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UNITED STATES PATENT OFFICE.

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TUBULAR HOLDER.

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To all whom it may concern:

Be it known that I, EDWARD L. PITTS, a citizen of the United States, and resident of Raton, in the county of Colfax and State of New Mexico, have invented certain new and useful Improvements in Tubular Holders, of which the following is a specification.

My invention relates to holders or receptacles for explosive charges, more particularly to a tubular holder in which an explosive charge can be lowered in the bore of a well or like place to a desirable distance, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of the invention is to provide a holder of the character described which is adapted to insulate the contents thereof against heat resulting from friction between the outer wall of the holder and the wall of a well bore in which the holder is lowered.

A further object of the invention is the provision of a holder of the character described having walls both impervious to moisture, relatively strong and not likely to be weakened because of corosion or to be otherwise impaired during the use of the holder.

A still further object of the invention is the provision of a holder of the character described which will be practically completely obliterated as a result of the explosion of the contents thereof.

Other objects and advantages will be apparent from the following description, considered in conjunction with the accompanying drawings, in which—

Figure 1 is a side elevation of the improved holder,

Figure 2 is a longitudinal vertical section through the holder with a portion of the inner casing broken away, and

Figure 3 is a perspective view of the intermediate casing of the holder with the funnel-shaped member thereof upwardly displaced from normal position.

The improved holder includes an inner casing comprising a tubular body 1 which is open at its upper end and is closed at its lower end by a bottom member 2 which preferably is integral with the body 1 and has substantially the shape of an inverted cone. The inner casing is formed of a non-metallic material, such as a heavy grade of paper or like fibrous and somewhat flexible material, and the walls thereof are imperforate.

The inner casing closely fits in an intermediate casing which comprises a tubular body 3 made of a light gauge foraminous metallic material. The body 3 is open at its upper end and is closed at its lower end by an inverted conical bottom 4 which is made of a light gauge metallic material. The bottom member 4 has imperforate walls and depends below the lower end of the body 3, the rim portion of the bottom 4 closely fitting the lower end portion of the body 3 and being firmly secured to the latter in any suitable known manner, as by the use of solder, so that a fluid tight rigid joint is provided between the body 3 and the bottom 4. A filler member 5 having the shape of an inverted truncated cone or funnel depends within the upper end portion of the inner casing and is provided at its upper end with a depending annular flange 6 which closely fits in the upper end portion of the body 3 of the intermediate casing between the upper end portion of the inner casing and the upper end portion of the body of the intermediate casing, whereby the filler member will be supported at the upper end of the holder in the position shown in Figure 2.

Both the body and the supporting flange of the filler member are made of a light gauge metal but the walls of the body of the filler member are imperforate while the flange is foraminous for a purpose to be presently described.

The lower or pointed end of the bottom 4 of the inner casing is received within a short tubular metallic member 7 which is open at its lower end and is rigidly secured at its upper end by solder or any other suitable means to the bottom member 4 so that the tubular member 7 will depend below the lower end of the bottom member 4 and will be axially aligned with the latter. The cross sectional area of the tubular member 7 is less than that of the body of the inner casing.

The holder also comprises an outer casing or covering 8 which is made of a non-metallic material, such as a heavy grade of paper or other fibrous flexible material and which conformably fits on the tubular member 7 and the intermediate casing. The outer casing or covering terminates at its lower end

flush with the lower end of the tubular member 7 and at its upper end is folded inwardly over the upper edges of the body 3 of the intermediate casing and over the upper end of the filler member 5 to position to lie close against the inner wall of the upper end portion of the body of the filler member as indicated at 9. The outer casing or covering 8 preferably comprises a plurality of strips of paper or like material arranged in spiral convolutions on the body 3 of the intermediate casing and merge at their lower ends into a strip of the same material which is arranged spirally on the exposed portion of the bottom 4 of the intermediate casing and on the tubular member 7, as clearly shown in Figure 1.

It will be understood that the walls of the outer casing or covering and of the inner casing may have any desired thickness and each may comprise a plurality of superposed plies, if desired, without departing from the spirit and scope of the invention. The lower end portion of the bottom 2 of the inner casing, indicated at 10, preferably is thicker than the other portion of the walls of the inner casing.

The holder is formed and assembled substantially as follows:

The inner casing is waterproofed in any suitable known manner and is then inserted in the intermediate casing. The filler member then is placed within the upper end portion of the inner casing with the foraminous flange thereof disposed between the upper end portion of the body of the inner and intermediate casings. The intermediate casing then is thoroughly covered with a suitable glue or other adhesive which is sufficiently fluid to pass through the perforations of the body of the intermediate casing and the flange 6, whereby the lapped portions of the inner and intermediate casings will be firmly cemented together. The flange 6 likewise will be firmly cemented to the upper edge portion of the inner and intermediate casings so that the body of the filler member will be supported within the upper end portion of the body of the inner casing. The intermediate casing with the inner casing and the filler member secured therewithin in the manner described is then encased in the outer casing or covering which is securely cemented to the intermediate casing by glue or other adhesive. The outer casing or covering may be applied by wrapping the strip of material of which it is formed on the intermediate casing and the tubular member 7 and by using glue or like adhesive simultaneously with the application of the strips to the intermediate casing. A bail 11 whereby the holder may be suspended or lowered in the bore of a well or like place may have the end portions of the arms thereof secured in any suitable known manner to the upper end portion of the body of the intermediate casing, these end portions of the arms of the bail being covered by the upper end portions of the body of the outer casing or covering.

A holder formed in the manner just described now is waterproofed in any suitable known manner and then is ready for use to hold an explosive charge so that the same can be lowered in the bore of a gas or oil well, preliminarily to "shooting" the well.

From the foregoing description of the various parts of the device, the operation thereof will be readily understood. Since both the outer and inner casings of the holder are made of non-metallic material, it will be manifest that an explosive charge in the inner casing will be insulated from heat resulting from friction between the outer casing and the wall of a bore in which the holder may be lowered. The walls of the holder as a whole will be reinforced and stiffened by the intermediate casing which is made of metallic material. The intermediate metallic casing will be protected by the outer and inner casings and by the waterproofing of the holder against corrosion.

Since the body of the intermediate casing is foraminous, the glue or like adhesive material is permitted to pass freely therethrough to effect the binding of the lapped portions of the several casings of the holder to one another. Moreover, the explosion of the contents of the holder will result in the practically complete distintegration of the holder so that the well bore will not be obstructed in such manner as to interfere with subsequent operations therein.

I claim:—

1. A holder of the character described comprising a tubular inner casing open at its upper end and closed at its lower end, said inner casing being made of a non-metallic material having imperforate walls impervious to moisture, a tubular intermediate casing in which the inner casing fits, said intermediate casing being closed at its lower end and being made of metallic material, the body of the intermediate casing being foraminous, and an outer tubular casing closely covering the intermediate casing and being made of non-metallic material having imperforate walls impervious to moisture.

2. A holder of the character described comprising a tubular inner casing open at its upper end and closed at its lower end, said inner casing being made of a non-metallic material having imperforate walls impervious to moisture, a tubular intermediate casing in which the inner casing fits, said intermediate casing being closed at its lower end and being made of metallic material, the body of the intermediate casing being foraminous, an outer tubular casing closely covering the intermediate casing and being

made of non-metallic material having imperforate walls impervious to moisture, and a funnel-shaped filler member supported within the upper end portion of the inner casing.

3. A holder of the character described comprising a tubular inner casing open at its upper end and closed at its lower end, said inner casing being made of a non-metallic material having imperforate walls impervious to moisture, a tubular intermediate casing in which the inner casing fits, said intermediate casing being closed at its lower end and being made of metallic material, the body of the intermediate casing being foraminous, and an outer tubular casing closely covering the intermediate casing and being made of non-metallic material having imperforate walls impervious to moisture, and a funnel-shaped filler member supported within the upper end portion of the inner casing, said filler member having a depending flange made of foraminous material and disposed between the upper end portions of the inner and intermediate casings, said flange being joined at its upper end to the upper end of the body of the filler member.

4. A holder of the character described comprising a tubular inner casing open at its upper end and closed at its lower end, said inner casing being made of a non-metallic material having imperforate walls impervious to moisture, a tubular intermediate casing in which the inner casing fits, said intermediate casing being closed at its lower end and being made of metallic material, the body of the intermediate casing being foraminous, an outer tubular casing closely covering the intermediate casing and being made of non-metallic material having imperforate walls impervious to moisture, a funnel-shaped filler member supported within the upper end portion of the inner casing, said filler member having a depending flange made of foraminous material and disposed between the upper end portions of the inner and intermediate casings, said flange being joined at its upper end to the upper end of the body of the filler member, and a bail secured to the upper end portion of the intermediate casing and having the end portions of the arms thereof covered by said outer casing.

5. A holder of the character described comprising an inner tubular casing made of a non-metallic material disposed at its lower end, an intermediate casing having a tubular body and an inverted conical-shaped bottom closing the body at its lower end, the body of the intermediate casing being foraminous and said intermediate casing being made of a metallic material, the inner casing being secured within the intermediate casing, a relatively short tubular member in which the lower end portion of the bottom of the intermediate casing protrudes, said short tubular member being of less area in cross section than the inner casing and secured at its upper end to the bottom of the intermediate casing, and an outer casing of non-metallic material conformably fitting said relatively short tubular member and the closed portion of the intermediate casing, a funnel-shaped filler member supported within the upper part of the inner casing, and a bail attached to the upper end of the body of the intermediate casing.

EDWARD L. PITTS.