

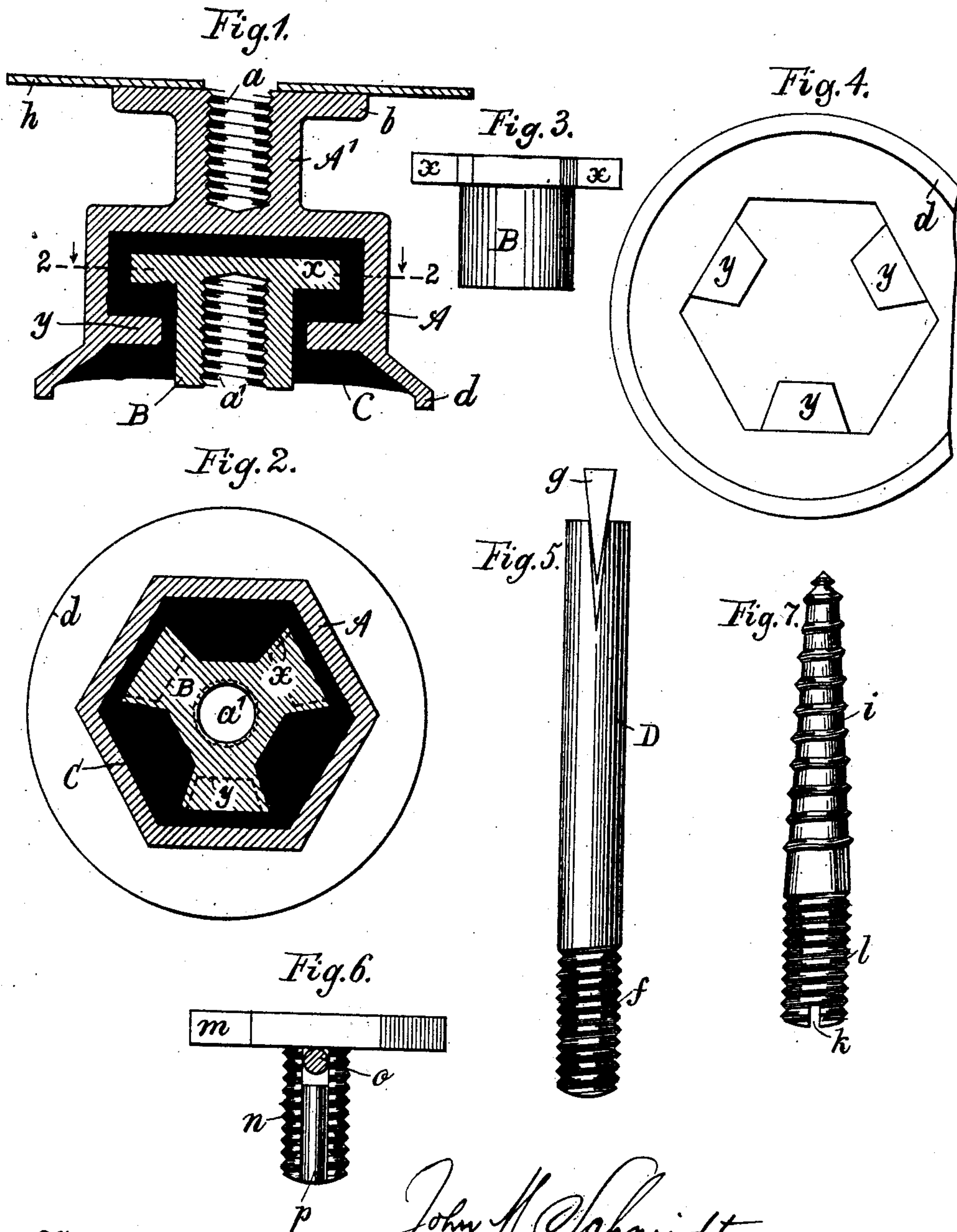
No. 710,216.

J. M. SCHMIDT.
INSULATING HANGER.
(Application filed June 19, 1902.)

Patented Sept. 30, 1902.

(No Model.)

2 Sheets—Sheet I.



Witnesses:
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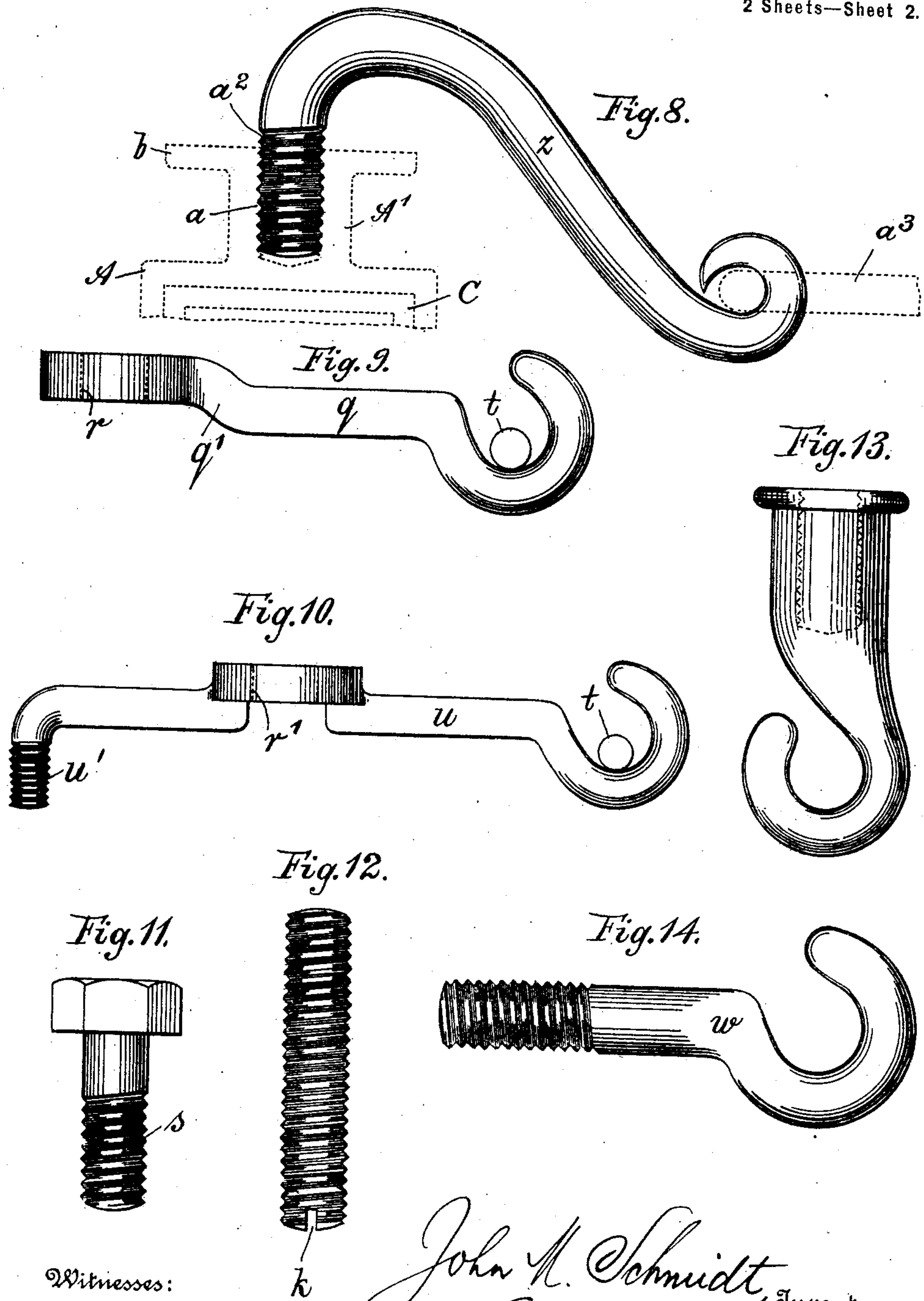
Patented Sept. 30, 1902.

J. M. SCHMIDT.
INSULATING HANGER.

(Application filed June 12, 1902.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

JOHN M. SCHMIDT, OF ELKHORN, WEST VIRGINIA.

INSULATING-HANGER.

SPECIFICATION forming part of Letters Patent No. 710,216, dated September 30, 1902.

Application filed June 12, 1902. Serial No. 111,375. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. SCHMIDT, of Elkhorn, West Virginia, have invented certain new and useful Improvements in Insulating-Hangers, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings, wherein—

Figure 1 is a sectional view of an insulating-hanger made according to my invention; Fig. 2, a cross-sectional view thereof looking down on line 2 2 indicated in Fig. 1. Fig. 3 is an elevation of the thimble; Fig. 4, a bottom view of the shell. Figs. 5, 6, 7, and 8 are elevations of different devices for securing the insulating-hanger in position, and Figs. 9, 10, 11, 12, and 13 are elevations of devices to be affixed to the insulating-hanger and serving for connecting therewith of the trolley-wire or other means to be carried or supported by the hanger. Fig. 14 is an elevation of a device to be used in pairs in connection with my improved insulating-hanger for stretching of live or of span or of guy wires.

My invention relates to appliances for electric service in mines; and it consists of the hereinafter-described construction of an insulating-hanger and of the combination therewith of the various devices to be used in connection therewith for the various purposes required.

It is well known that the electric traction in mines is greatly impeded by the difficulties encountered in wiring and in maintaining the wires in position. The question of properly stringing electric wires in mines, maintaining them in position, and at the same time keeping them safely insulated was always perplexing to mine-engineers, because radically different conditions not only in different mines but also in the same mine are met with. Insulating-hangers of different constructions and arrangements have been devised heretofore to meet various conditions, and though the construction of such implements seems to be a simple problem none of the hangers heretofore devised answers for all requirements of the service.

In the present state of the art it is necessary to have a large variety of insulating-hangers of different constructions on hand

in every mine where electric traction service is installed, and still conditions arise in which some kind of a special device must be rigged up, because none of the known constructions of insulating wire-hangers meets such conditions.

The object of my invention is to devise a hanger adapted to be used for all purposes and under all conditions arising in connection with electric service in mines; and, furthermore, the object of my invention is to devise various auxiliary parts to be used in connection with the hanger as the conditions of its use may require.

An insulating-hanger embodying my invention is shown in sectional view in Fig. 1 and in Fig. 2 in cross-sectional view. These figures show what may properly be designated as the "body" of the insulating-hanger, to which the different devices are attached, some for securing the hanger in place and others for connecting to it the wires. The body of the hanger consists of a cup or shell A, a thimble B, and of the insulating-filling C.

The body of cup or shell A above the flange *d* is made hexagonal in shape, so the hanger may be screwed on and unscrewed again upon the device securing it in place like a screw-nut. For this purpose the cup or shell A is extended into a neck A', which is provided with a screw-threaded bore *a* and a flange *b*. The screw-threaded bore *a* serves to receive the device whereby the hanger is affixed in position. Thimble B is provided with similarly screw-threaded bore *a'* to permit securing thereto of such auxiliary devices as may be required.

A serrated flange *y*, projecting inwardly into the hollow space of the cup or shell A, is provided, as shown in Fig. 2, and whereon a similarly-serrated flange *x* is provided on thimble B. By inserting thimble B into the cup or shell A and turning the thimble to one side approximately one-sixth of a turn the flanges *x* and *y* interlock with each other. This arrangement of the interlocking flanges renders the insulating-hanger greatly more durable and serviceable than any construction heretofore known and permits of use for the insulating-filling C of any material serviceable as insulator, because the thimble be-

ing interlocked with the shell cannot be withdrawn, whereas in other constructions only such insulating materials can be used which also possess the qualities of cementing mediums, the retaining capacity of the insulating material being depended upon for holding the thimble within the cup or shell of the hanger.

The parts of the hanger can be made of any metal, preferably of cast-iron, and except the screw-threading of bores a in the neck of the cup and a' in the thimble they require no other manual labor or finish.

When assembling the hanger, the cup is first partly filled with insulating material in fluid state, then the thimble is inserted, the projecting parts of flange x being passed between the projecting parts of flange y , and then the thimble is turned to one side one-sixth of a turn to interlock the flanges, whereupon the remaining space between the two parts is filled with insulating material.

The device shown in Fig. 5 of the drawings is a wedge-bolt ordinarily used for affixing an insulating-hanger to the top rocks of a mine. One end f of this wedge-bolt D is screw-threaded to fit into the screw-threaded aperture a of the hanger. The other end is split and a wedge g set therein, serving for securing the bolt in the drill-hole. In connection with this fastening device, and, in fact, whenever it is required to secure the hanger in places where the rock constituting the roof is apt to crumble, I use the disk h (shown in Fig. 1) between the flange b of the hanger and the rock. This disk h is made of thick sheet metal. Its purpose is to prevent the breaking out of the edges of the drill-hole and cracking in the surrounding rock by sidewise strains upon the hanger. This arrangement insures a much greater durability and safety in the wiring.

If the hanger is to be suspended from a span-wire, I use the device shown in Fig. 6 of the drawings. This is a screw-bolt with a large flat hexagonally-shaped head m , whose shank (designated n in the drawings) is recessed or split to permit span-wire o to be inserted therein. A filling-piece p is set in the slot to prevent the drawing together of the parts of the screw-threaded end, and the insulating-hanger is attached thereto by screwing it onto the shank of the screw.

For securing the hanger to the top beams of a mine I use the combined wood-screw and bolt shown in Fig. 7. The conical part i of this device is provided with a wood-screw thread to enable it to be screwed into the timbers. For this purpose the slot k is provided, into which a screw-driver can be inserted to handle the screw-bolt. The insulating-hanger is thereupon secured to the bolt by screwing it onto the screw-threaded end l thereof.

Fig. 8 shows a device to be used in connection with the hanger on curves. The threaded part a^2 of hook z is screwed in bore a of

the hanger, and the span-wire a^3 is fastened to the other end. The ear or lug carrying the trolley-wire is attached at a' of the hanger A.

When the hanger is to be used for carrying a feeder-wire, I employ for that purpose such device as shown in Fig. 9. This is a bracket in the form of a hook having a perforated shank q , the aperture r being large enough to permit bolt s , (shown in Fig. 11,) which is fitted into the screw-threaded aperture a' of the hanger. By means of this bolt the hook is secured to the hanger. The feeder-wire t rests in the bend of the hook. It will be noted that shank q of the bracket is bent at q' . This bend is required to have shank q when secured to the hanger clear of flange d of the cup or shell A.

The bracket u (shown in Fig. 10) is similar to Fig. 9 and the last-described combination, but possesses the further advantage that it secures equal stress on both sides of the hanger. It is affixed to the hanger by means of a bolt, like s . (Shown in Fig. 11.) This bolt is inserted through aperture r' into the screw-threaded bore a' of the hanger. Bracket u serves also as electrical connection between the feeder and trolley wires, the latter, t , being carried in the bent, as shown in the drawings, and to the other screw-threaded terminal u' of the bracket being secured the ear or lug. It will be noted that the shank of this bracket u is also bent to clear flange d of the shell A of the hanger.

In place of bolt s , Fig. 11, a screw like Fig. 12 may be used. In such case the ear or lug for carrying the trolley-wire is suspended on the free end of this screw, which then serves as nut to hold a bracket, as shown in Fig. 9 or 10, to the hanger. This saves the putting up of the ear or lug separately and does away with the tapping of feeder and trolley wires at intervals together, because in such case the bracket is made into an electric connection between feed and trolley wires, thus distributing the current more uniformly.

When it is required to secure an ear to the hanger, I use the screw-threaded stud shown in Fig. 12. One end of this stud is screwed into the ear and the other into the aperture a of the hanger. Slot k , provided in this stud, serves for the same purpose as the slot k in the device shown in Fig. 7. In place of slot k a collar of square or hexagonal shape may be provided upon the stud. This stud may also be used for affixing to the hanger of a hook, like the one shown in Fig. 13, or for suspending the hanger by means of such a hook when such arrangement is required.

For insulating span or guy wires I provide the hanger with two hook-bolts w , as shown in Fig. 14, one screwed in either of the holes a and a' of the hanger. When using the hanger for holding the end of a heavy feeder-wire, I insert between the hook w of the last-described combination and the end of the wire a common turnbuckle, which itself does not need to have any insulating division on

it, the insulating-hanger being sufficient for this purpose.

In case I have to carry in place of the feeder-wire a wire for other purposes, which is not intended to have any electrical connection with the trolley-wire, I use wooden bracket of similar construction, as shown in Fig. 9. The wood is impregnated with some insulating fluid, as tar, and is secured to the hanger by bolt s. (Shown in Fig. 11.) This arrangement I have found to be sufficient.

My improved insulating-hanger, in combination with the herein-described auxiliary devices, is adapted for all purposes and under all conditions arising in connection with the wiring in mines. Its advantages are that it is a safe, compact, and reliable insulating as well as suspending device adapted for any use in connection with electric wiring in mines, it is more efficient and suitable by reason of its peculiar construction and more durable and also capable of sustaining much greater strains than any insulating-hanger heretofore known in the art. Its further advantage is that it can be produced more cheaply than any construction heretofore known, and being capable of combination with the auxiliary devices as required for different conditions of its use in mines it will not be necessary to keep different kinds of hangers in stock, but only a supply of the different auxiliary devices, by means of which the hanger can be utilized in any condition.

I claim as my invention—

1. An insulating-hanger, comprising a shell, having an inwardly-deflected serrated flange; a thimble, having an outwardly-projecting serrated flange, loosely fitted into the shell, the conformation of the flange of the thimble corresponding reversely with the serrated flange of the shell, an insulating-filling between the thimble and the shell, and means for securing to the shell and to the thimble of the auxiliary devices substantially as herein shown and described, for affixing the hanger in place and for connecting thereto of wires.

2. An insulating-hanger, comprising a shell, having outwardly the form of a screw-nut, and provided with a screw-threaded bore; an insulating-filling contained in the shell, a thimble provided with a screw-threaded bore,

embedded in the insulating-filling contained in the shell.

3. The combination with an insulating-hanger, comprising a shell having a neck extending from the body of the shell, a flange surrounding the terminus of the neck, and a screw-threaded bore in the neck; an insulating-filling contained in the shell, a thimble provided with a screw-threaded bore and interlocking flanges, embedded in the insulating-filling, with a screw-threaded bore, of a screw-threaded stud fitted into the screw-threaded bore of the hanger, for affixing the hanger in place or for connecting thereto of devices for supporting a wire thereon.

4. The combination with an insulating-hanger provided with a screw-threaded bore and with a device for affixing the hanger fitted into the screw-threaded bore, of a centrally-perforated disk fitted upon the device for affixing the hanger and set thereon.

5. The combination with an insulating-hanger, provided with a screw-threaded bore, of a device for suspending the hanger from a span-wire comprising a slotted bolt fitted into the screw-threaded bore, provided in the hanger and a filling for the slot of the bolt, substantially as herein shown and described.

6. The combination with an insulating-hanger provided with a screw-threaded bore, of a device for supporting a wire comprising a hook adapted to receive the feed-wire and having its shank perforated, and a screw-bolt fitted into the perforation of the shank of the hook and into the screw-threaded bore of the hanger.

7. The combination with an insulating-hanger having a screw-threaded bore, of a bracket perforated approximately midway between the ends thereof, and having one end formed to hold a feeder-wire and provided with means for connecting to it the ear or lug carrying the trolley-wire on the other end; and of a screw-threaded bolt, fitted into the perforation of the bracket and into the screw-threaded recess of the hanger.

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