(No Model.) 2 Sheets—Sheet 1.

S. B. H. VANCE.

COMBINED GAS AND ELECTRIC LIGHT FIXTURE.

No. 306,557. Patented Oct. 14, 1884.

Fig. 4.

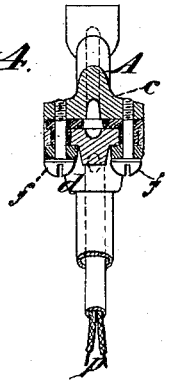


Fig. 1.

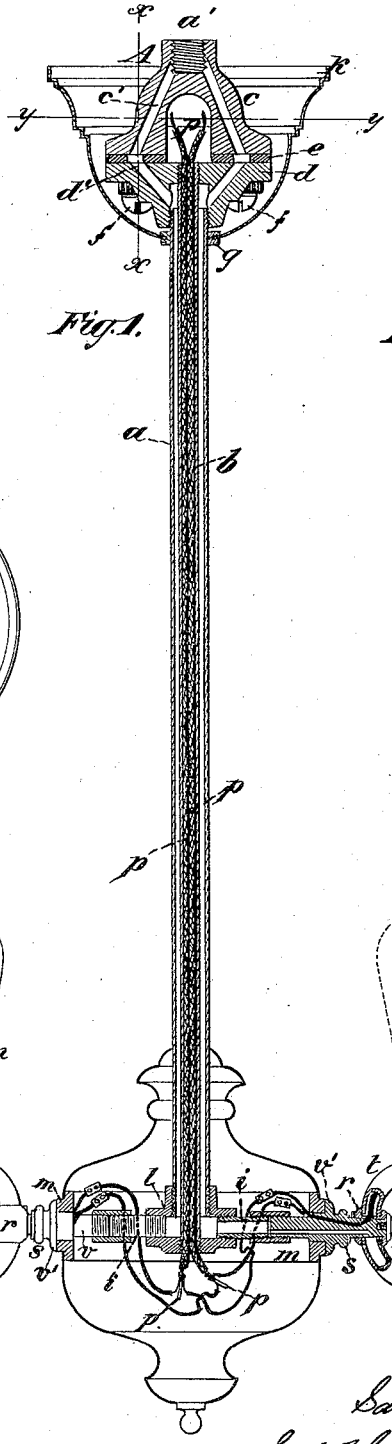


Fig. 2.

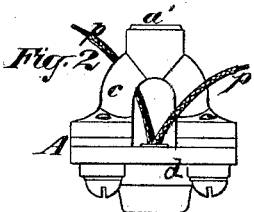


Fig. 6.

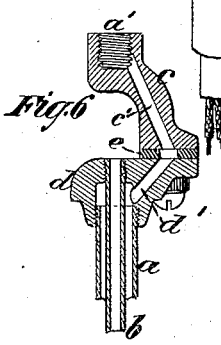


Fig. 5.

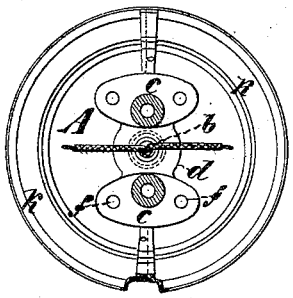
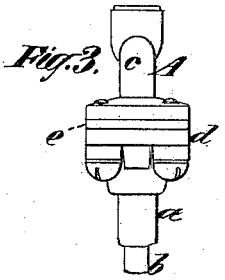


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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COMBINED GAS AND ELECTRIC LIGHT FIXTURE.

No. 306,557. Patented Oct. 14, 1884.

Fig. 7.

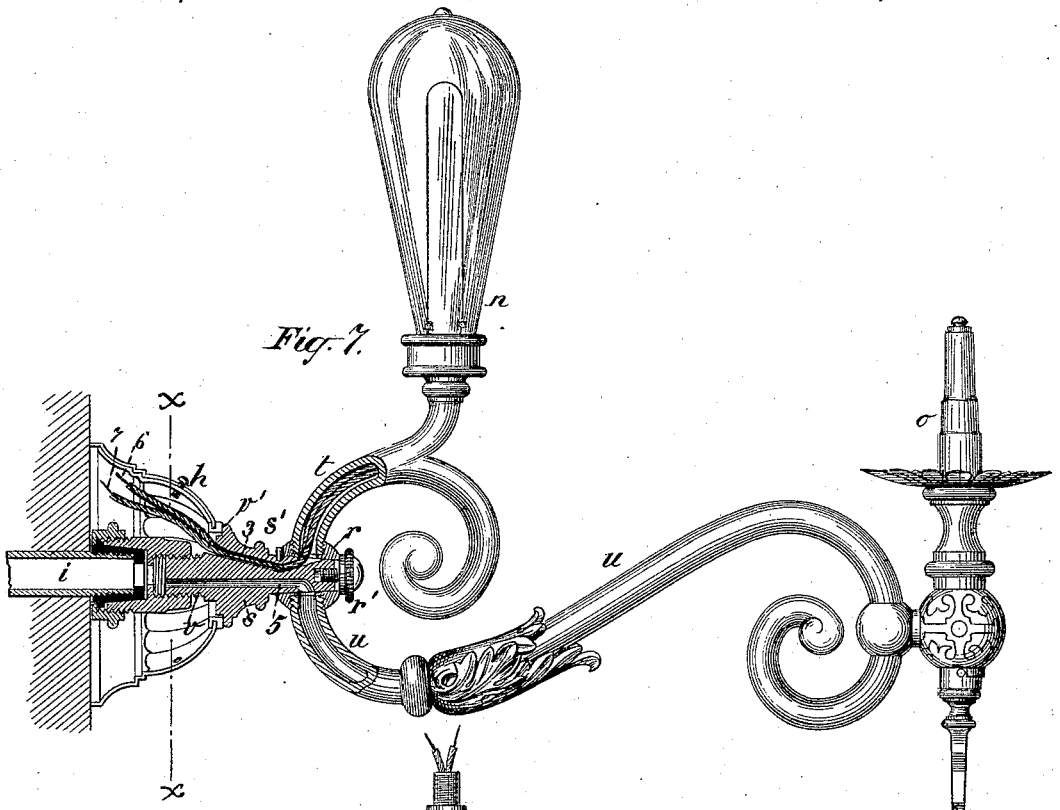


Fig. 8.

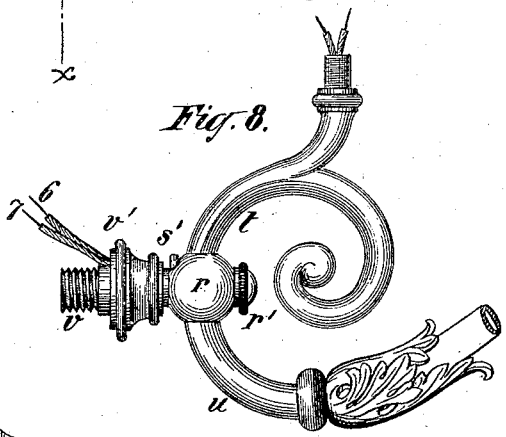


Fig. 9.

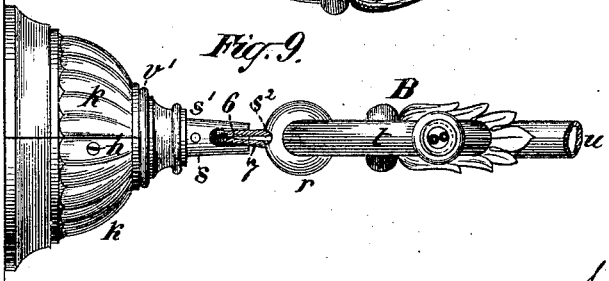
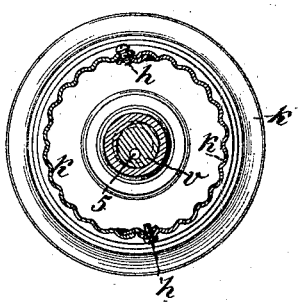


Fig. 10.



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UNITED STATES PATENT OFFICE.

SAMUEL B. H. VANCE, OF NEW YORK, N. Y.

COMBINED GAS AND ELECTRIC-LIGHT FIXTURE.

SPECIFICATION forming part of Letters Patent No. 306,557, dated October 14, 1884.

Application filed April 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL B. H. VANCE, of the city, county, and State of New York, have invented certain new and useful Improvements in Combined Gas and Electric-Light Fixtures, of which the following is a specification.

My present invention is more nearly related to that class of compound chandeliers or fixtures shown in a former patent, No. 290,152, in which I am a joint patentee, which shows a chandelier supplied with both gas-burners and electric lamps and ducts conveying the gas and wires within the tubes and chambers of the chandelier. In this case the stem of the chandelier consists of an inner and an outer tube, the outer tube being connected at the top by an insulating-coupling with the gas-pipe, and at the bottom with the arms of the chandelier which support the burners, while the inner tube is open at each end and receives the wires which connect the main conductors with the branch wires in the arms which connect to the electric lamps. In my present invention I show this same arrangement, but I employ an improved form of insulating-coupling, which is made in the form of a hollow cranked bend divided electrically by insulation, and which connects the gas-pipe with the outer gas-tube of the stem, while the inner wire-tube opens through the lower end of the cranked bend in line with the gas-pipe, or nearly so, and enables the wires to be freely inserted therein without affecting the passage of the gas. I prefer to make the hollow cranked bend double, or in the form of a Y, as this is much stronger, but it is not essential. In my former patent the arms were simply screwed to the gas-pipes of the chandelier-ring, and the gas and wires entered by separate openings at this connection, but both passed through the same duct in the arms, and it was necessary to seal the point where the wires entered by suitable cement to prevent the escape of gas. Now, in my present invention the gas-pipes of the ring are terminated with a ground plug having a way for the wires and a way for the gas, and the arms have a ground socket to connect with said plug, which thus divides the duct or passage of the arms into a way for gas coincident with the gasway in the plug, and a way for wires coincident with the wireway in the plug, thus making independent ducts for gas and wires, and rendering the connection of the arms perfectly gas-tight, as well as simple and secure, and at the same time readily removable when it is desired to pack the chandelier for shipment, which is one of the chief objects of my improvement.

My present invention therefore consists, mainly, in the features here outlined, which are applicable both to pendant fixtures or chandeliers as well as to wall-brackets, as hereinafter fully set forth.

In the drawings annexed, Figure 1 presents a vertical sectional elevation of a combined electric and gas chandelier embodying my improvements. Fig. 2 is a front elevation of the insulating Y-shaped coupling at the top of the chandelier, and Fig. 3 is a side elevation thereof. Fig. 4 is a vertical section through the coupling on line *x x* of Fig. 1, and Fig. 5 is a cross-section on line *y y* of Fig. 1 through the coupling and bisected canopy. Fig. 6 is a vertical section of a coupling of slightly-modified form. Fig. 7 presents a sectional side elevation of a wall-bracket provided with my improvements, and illustrating the same more fully and on a larger scale, omitting, however, the insulating-coupling in Fig. 1. Fig. 8 is a fragmentary side elevation of the bracket-arm and its ground connecting-plug shown disconnected from the gas-pipe. Fig. 9 is a fragmentary plan view of Fig. 7, with the bracket-arm slipped off from the ground connecting-plug, showing the passage of the wires through the same. Fig. 10 is a cross-section on line *x x* of Fig. 7, illustrating the bisected canopy or wall-plate.

Referring to the two sheets of drawings, it will be seen that the construction of the arms which support the gas-burners and electric lamps, and their connection by means of the ground and perforated plugs with the gas-pipes and wires is the same whether applied to the pendent chandelier or the wall-bracket, but these feature are best shown in the case of the wall-bracket on Sheet 2, as the scale of the drawing is much larger than in the case of the chandelier in Sheet 1. As the chandelier, however, in Sheet 1 embodies all the features of my present invention, including the insulating-coupling, I shall therefore first refer to this sheet.

In electric-light fixtures applied to gas-pipes, as is well known, it is considered necessary to entirely insulate each fixture from the gas-pipes, which is generally done by means of a metal coupling electrically divided by insulating material applied at the connection of the fixture with the gas-pipe at the surface of the ceiling or wall, so that no circuit will be made with the ground in case any of the electric wires should make accidental contact with any part of the fixtures.

In Fig. 1, A indicates the coupling, which in this case is of novel construction, and is applied as usual to the top of the stem *a b* of the chandelier, and is formed with a screw-socket, *a'*, at the top to connect with the gas-pipe projecting from the ceiling. The stem, as shown, consists of two pipes, *a b*, one within the other, the inner and smaller pipe serving to convey the electric wires, while the outer pipe, or rather the space between the outer and inner pipes, serves to convey the gas, as shown in my former patent.

Now, the insulating coupling A may be described as a hollow cranked bend made in two sections, *c d*, which are electrically separated by the insulating-layer *e*, and secured together gas-tight by screws *f f*, which screw into one section, but are insulated around the stems and heads from the other section, as best shown in Fig. 4. The coupling is preferably made in the form of a double-cranked bend, or in the form of a Y or hollow square, as seen best in Figs. 1, 2, and 5; but it may be made in the form of a single-cranked bend, as illustrated in Fig. 6. In either case the upper section, *c*, of the bend is formed with the screw-socket *a'*, which receives the iron gas-pipe, while the lower section, *b*, is formed with a screw-socket, *b'*, to receive the main or gas pipe *a* of the stem, as shown. Channels *c' d'* are bored through the limbs of the upper section into the upper socket, *a'*, and through the lower section into the lower socket, *b'*, which channels meet together, and thus form a gas-passage from the upper socket, *a'*, to the gas-pipe *a* of the stem, as shown best in Fig. 3, while the inner pipe, *b*, of the stem rises through the socket *b'* and screws into the top of the lower section, *d*, in a gas-tight manner, and opens freely to the air just within the loop or bend in the coupling and in line with the socket *a'*, as shown. Hence by this construction the electric wires can be readily passed from the ceiling down each side of the open bend or crotch into the open tube *b* to connect with the branch wires in the chandelier, as shown in Fig. 1, while the flow of the gas to the outer tube, *a*, will take place independently through the channels of the bend, as will be readily understood. This coupling is therefore not only simple in construction, but very convenient in form, and while it provides perfectly independent passages for gas and wires it renders the insertion of the wires in the stem of the chandelier or the connection of the wires in the stem with the main conductors extending from the ceiling a very simple and easy operation. This form of coupling is also very strong, and provides a large free passage for the gas with certainty in the insulation of the fixture from the gas-pipe.

In order to insure greater strength, the coupling is made in a double-cranked or Y shape, as before stated, and shown best in Figs. 1, 2, and 5; but where great strength is not required, such as for light or slender chandeliers, it may be made in a single-cranked bend, as in Fig. 6, the construction being substantially the same in both cases.

In order to properly conceal the coupling and also the connection of the pipes and wires, and impart a finished appearance to the top of the chandelier, the said parts are therefore surrounded, as usual, by the canopy-shell *k*, which, however, in my case is bisected into two semicircular sections, which lap together by a rabbeted joint, as shown in Fig. 5, with the narrow neck of the sections embracing a grooved or flanged collar, *g*, which is fixed on the stem-pipe *a*, as shown, while the sections are held securely together by screws *h h*, (see also Figs. 7, 9, and 10, which show the same feature on the wall-bracket;) hence by this construction the electrical connections can be easily made at the top of the chandelier, and the canopy afterward put in place to cover the connections in a much more convenient manner than would be the case if the canopy were made in one continuous shell, as heretofore, in which case it would have to be slid up and down on the stem, which is objectionable.

Now, referring to the lower part of Fig. 1, the connection of the gas and wires with the arms of the chandelier will be apparent. It will be noted that the main gas-pipe of the stem screws into the central distributing-hub, *l*, from which the gas-pipes *i i* radiate to the chandelier-ring *m* and connect with the arms B B, which support the electric lamps *n* and gas-burners *o*. The central pipe, *b*, of the stem screws gas-tight into the base of the hub *l*, and is open to the air at the bottom of the hub, so that the wires *p p* can hence be passed freely out of the lower end of the tube to make connection with the branch wires in the arms, as shown in my former patent, without affecting the passage of the gas from the hub through the pipes *i* to the burners in the arms B, as will be readily comprehended. In my present invention the construction of the gas and wire ducts of the arms B and the connection of the arms with the gas-pipes are of a peculiar novel nature and best shown in the enlarged views, Figs. 7, 8, and 9, to which reference may first be had. Referring, therefore, to Figs. 7, 8, and 9 it will be seen that the arms B are formed at their point of connection with a socket, *r*, which has a ground tapering bore like the plug-socket of a faucet or stop-cock, and receives the corresponding ground and tapered end of connecting-plug *s*, which connects with the gas-pipes. When

the plug is inserted in the socket *r*, it is there held by the screw *r'*, as shown best in Figs. 7 and 8, and is prevented from turning by a pin, *s'*, which engages a notch, *s²*, on the socket, as illustrated in Figs. 7, 8, and 9. Now, from the top of the socket a tube or duct, *t*, extends to the seat for the electric lamp *n* to convey the wires thereto, while from the bottom of the socket a tube, *u*, extends to the gas-burner *o* to convey the gas thereto, and when the plug is inserted in the socket, as seen best in Figs. 1 and 7, it separates the gas-tube *u* gas-tight from the wire-tube *t*. The plug *s* has a threaded end or neck, *v*, which couples with the gas-pipes *i*, as seen in Figs. 1 and 7, and it is also formed with a seating flange or shoulder, *v'*, which in the case of the chandelier, as in Fig. 1, seats against the ring *m* of the chandelier, but which, in case of the wall-bracket receives the neck of the bisected canopy *k*, as shown in Figs. 7 and 8. The plug is also bored with two channels or ducts, 3 5, which open, respectively, on the periphery of the ground part of the plug within the socket *r* at diametrically opposite points, and coincident, respectively, with the wire-tube *t* and the gas-tube *u*. The lower channel, 5, coincident with the gas-tube *u*, forms, of course, a channel for the gas, and this channel, as shown, is continued through the screw-neck of the plug, and hence when the gas-pipe is coupled thereto conveys the gas to the gas-burner, as will be readily comprehended from Figs. 7 and 1. The upper channel, 3, coincident with the wire-tube serves to convey the wires to the electric lamp, and this channel, as shown, is drilled obliquely and opens behind the seating-flange *v'*, and above or on one side of the screw-neck *v*, and is therefore open to the air and free to permit the insertion, or rather the protrusion, of the wires from the duct through the ring of the chandelier, as seen in Fig. 1, or behind the canopy, as shown in Fig. 7, so as to connect with the main wires, as will be reaily understood from Figs. 1, 7, and 8. It will therefore be seen that by this construction the connection of the arms with the gas and electric conductors of the fixture is rendered very simple and certain, and independent ducts are provided for both gas and wires, which are separated gas-tight from each other, and yet both enter through the same part or connection, which renders the fixture very neat and complete, and is a great improvement on former constructions. Another great advantage of this construction is that the arms are rendered readily removable when required, for in such case it is only necessary to detach the wires 6 7 at the couplings 8 9, (see Fig. 1,) remove the screw *r'*, and then withdraw the arm so as to remove the socket *r* from the plug *s*, as seen in Fig. 9, and draw the wires 6 7 out of the channel of the plug. The arms can then be compactly arranged with the other parts of the chandelier-fixtures for transportation, and when the chandelier is to be put up the arms can be again readily attached by inserting the wires into the channel of the plug and pressing the socket over the ground tip of the plug, (see Fig. 9,) and screwing the same in place again, as seen in Fig. 7, after which the protruding ends of the wires 6 7, the opposite ends of which are permanently fastened in the seat for the electric lamp *n*, may be connected with the main conductors at the couplings 8 9, as will be readily understood by reference to Figs. 1 and 7. This advantage of easy removal and attachment is of great importance, as will be readily obvious without further statement, and forms one of the chief merits of my improvement.

In Fig. 1 the threaded necks of the connecting-plugs *s* are shown as coupled by a simple right and left threaded nipple with the gas-pipes *i* of the chandelier, but of course any other suitable form of connection may be used.

In Fig. 7 the plug is shown connected with the gas-pipe *i*, extending from the wall, the connection being made by a peculiar form of insulating union, which forms a feature in a separate application filed coincident with this, but which it will not be necessary to here describe, and which is sufficiently illustrated in Fig. 7 to serve the purpose of this application without detailed description.

The canopy or wall-plate *k* is bisected in the same manner as described in the case of Fig. 1, and fits between the wall and the seating-shoulder on the connecting-plug *s*, as well shown in Figs. 7 and 9, the base of the canopy resting against the wall, while the narrow neck embraces the plug behind the seating-flange *v'*, which flange thus holds the canopy in place, while the two sections thereof are held firmly by the screws *h h*, as before described, and shown best in Figs. 9 and 10.

It will be understood that it is not absolutely necessary that the meeting surfaces of the socket and plug *s* should be ground to fit gas-tight, as these may be packed or made of partly-elastic material to insure a tight fit; but a solid metallic and ground fit is obviously preferable.

Instead of making the coupling A in two metallic sections separated by insulating material, the coupling might be made in one piece of insulating material if found practicable. It will also be seen that the construction of the connecting-plug *s* and socket *r* might be so modified as to be relatively reversed, the socket being attached to the gas-pipe *i*, while the plug projected from the arm B, but it is not recommended. It will be also obvious that the connecting-neck *v* of the plug *s* may be made with a female screw, instead of the male screw shown in the drawings, which latter, however, is considered most convenient.

What I claim is—

1. The combination, with a combined gas and electric-light fixture, formed with separate pipes to convey the gas and wires, of the insulating-coupling A, made in the form of a hollow cranked bend, and having the gas and wire pipes connected therewith, substantially

in the manner and for the purpose herein shown and described.

2. The combination, with the inner wire-pipe, *b*, and outer gas-pipe, *a*, of the insulating-coupling A, made in two hollow sections, *c d*, in the form of a cranked bend separated by insulation, with the gas-pipe *a*, opening into the hollow of the section *d*, and the wire-pipe *b*, opening through the section, substantially as and for the purpose set forth.

3. In a combined gas and electric-light fixture, an insulating-coupling made in the form of a hollow double-cranked bend or hollow Y with the gas-pipes opening into the hollow of the bend, and the wire-pipe passing through the bend into the open fork or crotch thereof, substantially as and for the purpose set forth.

4. In a gas and electric-light fixture, the combination, with the gas-pipe, the arm thereof, and the electrical wires, of a plug connecting the pipe and arm and perforated with ways for the gas and wires coincident with the wire and gas ways in the arm, the gasway of the plug being connected with the gas-pipe of the fixture, and the wireway opening exteriorly to permit the insertion or protrusion of the wires of the arm to connect with the main wires without permitting the escape of gas, substantially as described.

5. In a combined gas and electric fixture, the combination, with arms B, supporting the gas-burners, and electric lamps provided with an attaching-socket, *r*, and wire and gas ways *t u*, leading from the socket to the lamp and burners, of a plug, *s*, connecting with the fixture, adapted to fit in said socket and divide the gasway from the wireway thereof, said plug having ways for the gas and wires corresponding with those of the arm, the gasway connecting with the gas-pipe, while the wireway opens on the exterior of the plug to permit the passage of the wires without permitting the escape of gas, substantially as herein set forth.

6. The combination, with the arms B, having socket *r*, with the electric-wire tube *t* and gas-tube *u* proceeding therefrom, of the plug *s*, adapted to tightly fit said socket, and having the connecting-neck *v*, with the gasway 5, opening within said neck, and the wireway 3, opening on the side of said neck, and both said ways opening on the socket end of the plug coincident with the respective wire and gas ways of the arm, substantially as herein shown and described.

7. The combination, with the arm or arms B, having the socket *r*, of the plug *s*, fitting the same, and having the attaching screw-neck *v*, internally-opening gasway 5, and externally-opening oblique wireway 3, arranged and operating substantially as and for the purpose set forth.

8. The combination, with the arm or arms B, having the socket *r*, of the plug *s*, having the ways 3 5, means for fastening the plug in the socket of the arm, and means for preventing the turning of the plug in the socket, substantially as and for the purpose set forth.

9. The combination of the arm B, having the socket *r* with notch s^2, with the plug *s*, having the ways 3 5, the pin *s'*, and fastening-screw *r'*, substantially as and for the purpose set forth.

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