

E. STEIL.  
INVERTED GAS BURNER.  
APPLICATION FILED JULY 27, 1909.

961,040.

Patented June 7, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

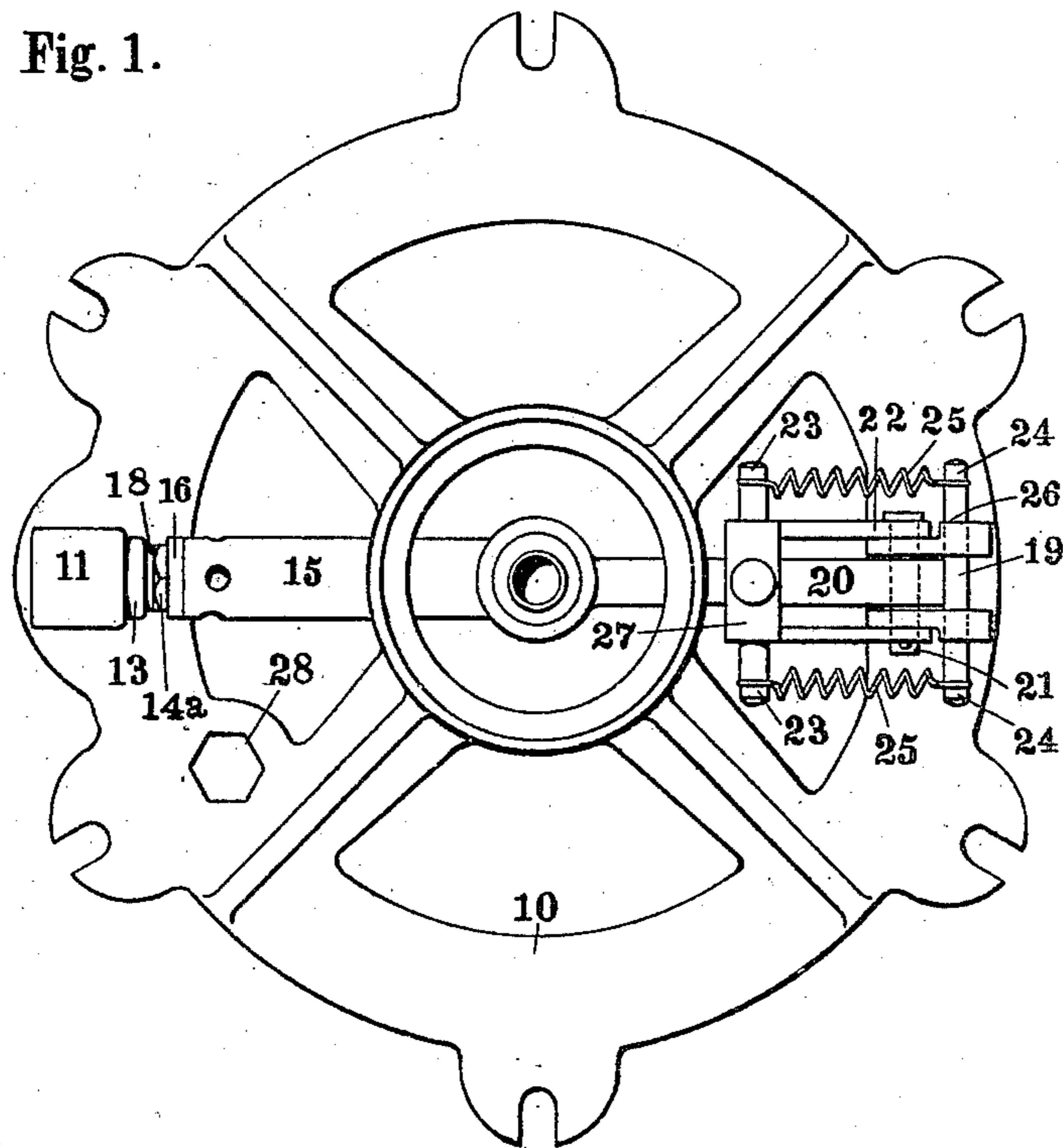


Fig. 3.

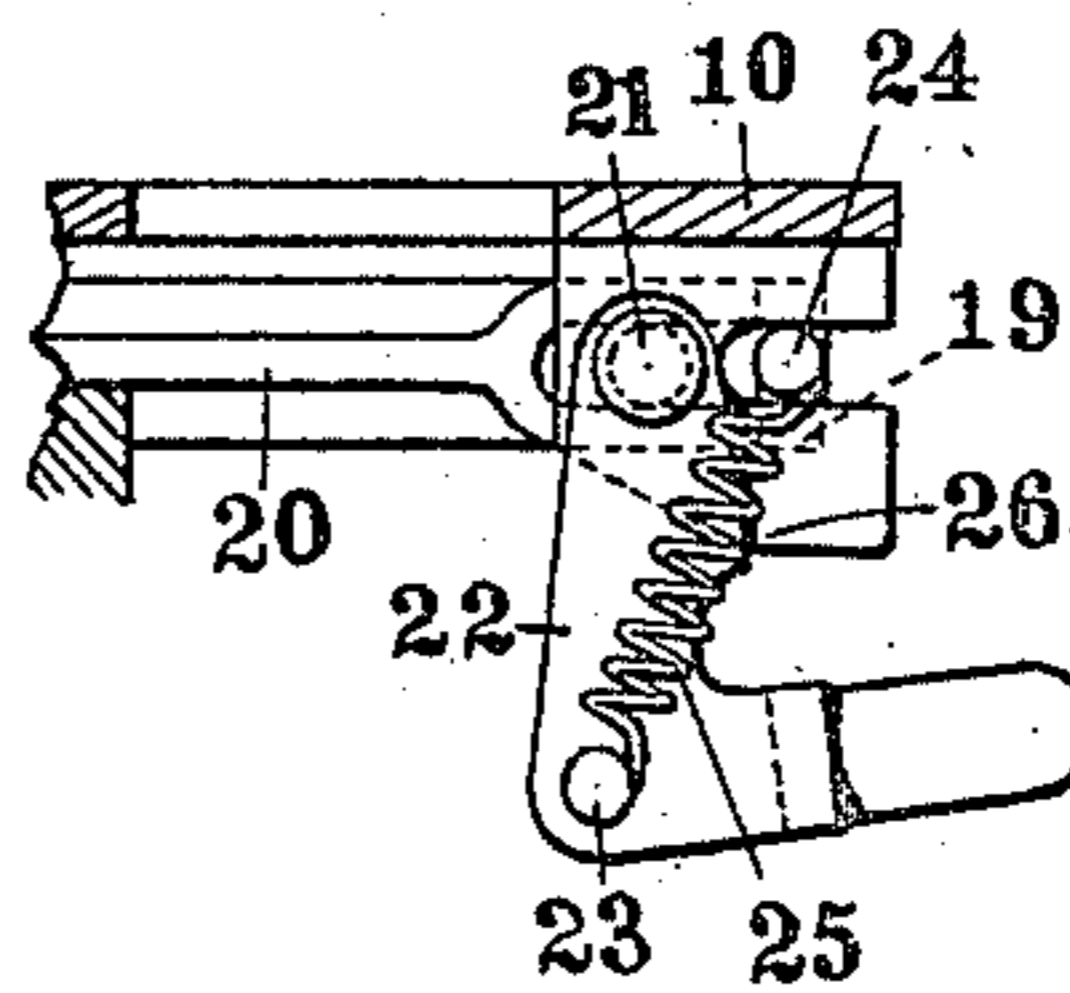
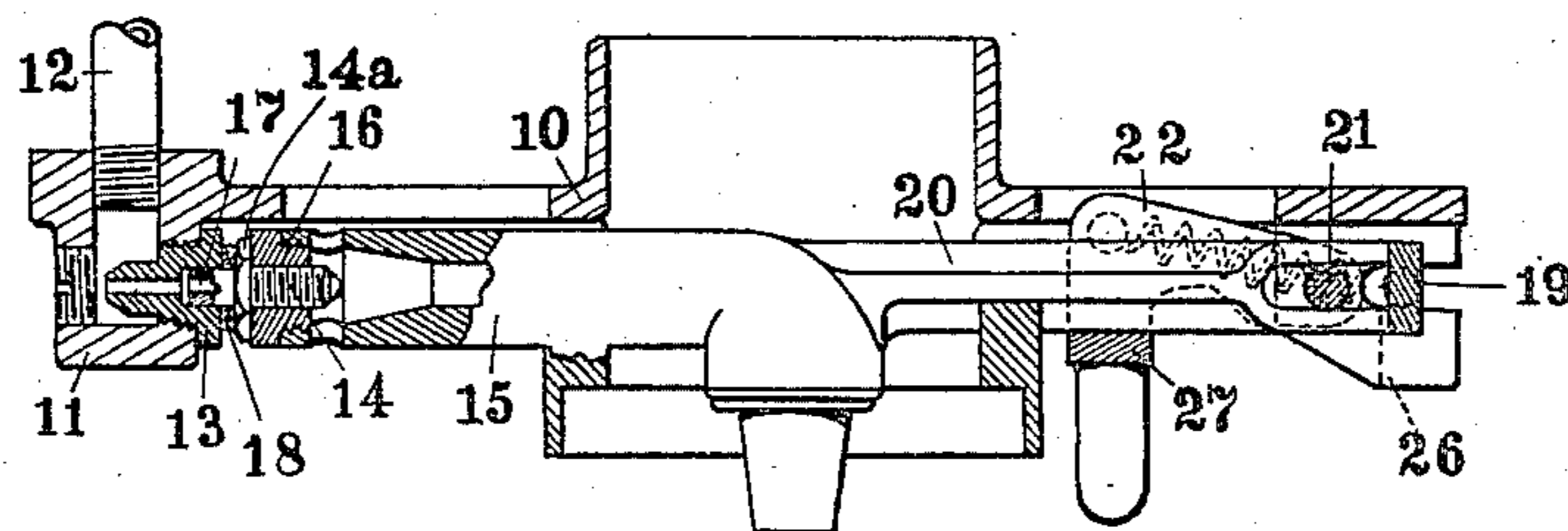


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 4.

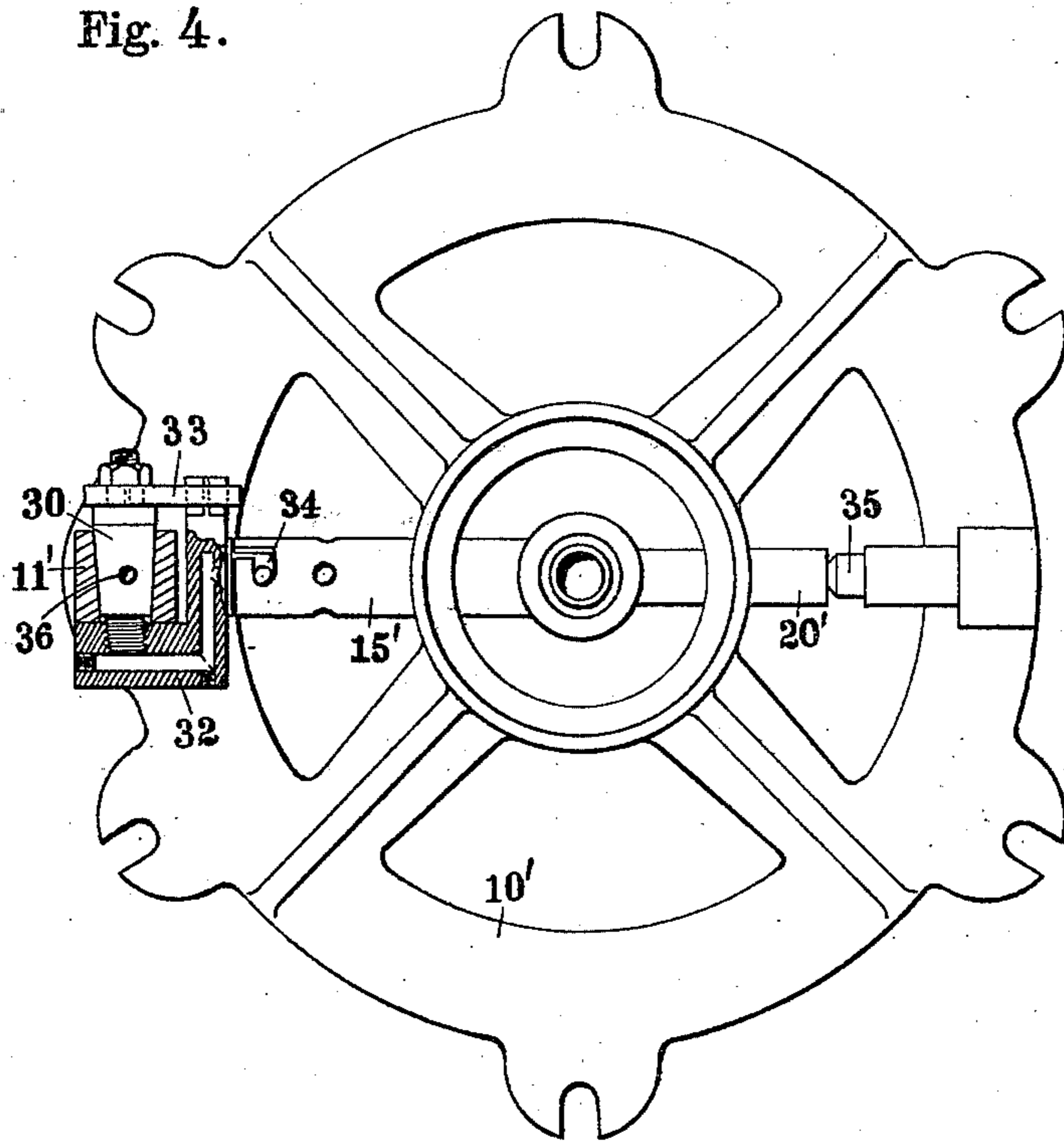
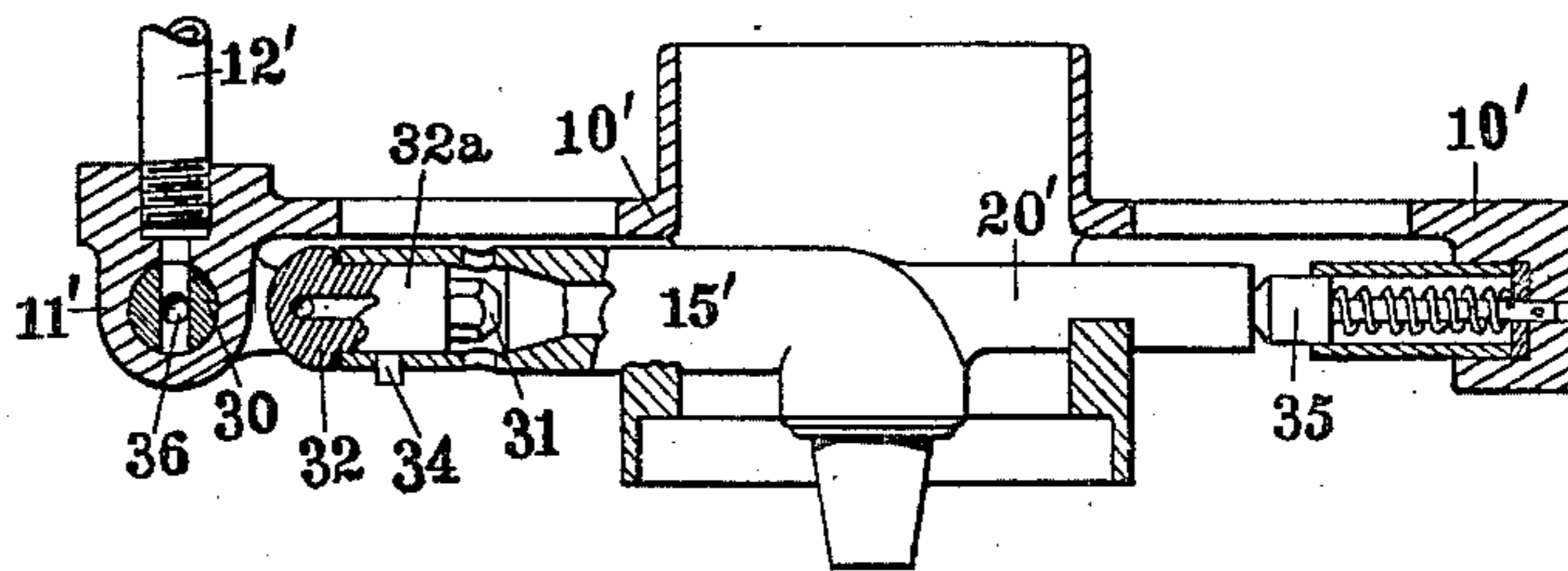


Fig. 5.



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# UNITED STATES PATENT OFFICE.

EDMUND STEIL, OF BERLIN, GERMANY, ASSIGNOR TO BERLIN-ANHALTISCHE MASCHINENBAU-ACTIEN-GESELLSCHAFT, ABTEILUNG XII, OF BERLIN, GERMANY, A FIRM.

## INVERTED GAS-BURNER.

961,040.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed July 27, 1909. Serial No. 509,867.

*To all whom it may concern:*

Be it known that I, EDMUND STEIL, a subject of the King of Prussia, residing at No. 14 an der Apostelkirche, Berlin, in Germany, have invented new and useful Improvements in Inverted Gas-Burners, of which the following is a specification.

This invention has for its object an inverted burner for incandescent gas lamps such as are used for lighting railway vehicles for example.

The object of the invention is to so construct the burner that by the removal of the mixing tube of the Bunsen burner, which is detachable in the usual manner, the gas nozzle is simultaneously moved into such a position that it is readily accessible, which presents the advantage that the clearing of the discharge aperture which is frequently necessary, can be effected speedily, conveniently and certainly without risk of widening the nozzle aperture. This is important because owing to the size of the burner the nozzle aperture must be exceedingly small and it is therefore readily stopped by the impurities conveyed in the gas while on the other hand if the aperture is widened a sooty flame is produced owing to the excessive supply of gas. Therefore, the constructions heretofore known in which the nozzle is immovably attached to the lamp present many defects owing to the inaccessibility of the nozzle which is in horizontal position beneath the lamp plate, so that it may happen that the nozzle aperture is widened or burred thereby imparting an oblique direction to the stream of gas.

According to the invention the burner is constructed in such a manner that upon loosening the mixing tube the nozzle is simultaneously displaced from its ordinary operative position into a position in which the nozzle aperture can be seen without difficulty and is readily accessible to an implement for unstopping it. This is attained owing to the fact that the nozzle is either hinged or can be detached from the gas pipe with the mixing tube. In the operative position the arrangement is such, however, that the nozzle and the mixing tube constitute a rigid connection, in order to prevent the current of gas and the air drawn into the mixing tube from being deflected or impeded owing to an alteration in the relative positions of these two parts.

Two constructions are illustrated by way of example in the accompanying drawing in which—

Figure 1 illustrates a lamp embodying the invention as viewed from below; Fig. 2 is a longitudinal section of the lamp shown in Fig. 1; Fig. 3 is a partial representation corresponding to Fig. 2 but with some of the parts in different positions; Fig. 4 illustrates another construction, in which the nozzle is hinged, the lamp being shown in underneath view and the attachment of the nozzle in section; Fig. 5 represents a longitudinal section of the construction illustrated in Fig. 4.

Like numerals denote like parts in all figures throughout the drawing.

In the construction illustrated in Figs. 1 to 3 a projection 11 extends from the frame of the lamp 10, the gas conduit 12 opening into this projection from above. A nipple 13 is inserted in a channel or bore of the projection 11 and serves as a seat for the gas nozzle 14, which is inserted in an appropriate manner in the mixing tube elbow 15, for example, by means of a sleeve 16 and a suitable screw thread on these parts. The nozzle is fitted into a corresponding bore in the nipple 13 by means of a short tubular projection 17. Between a flange 14<sup>a</sup> of the nozzle 14 and the nipple 13 a washer 18 is inserted so that notwithstanding the fact that the nozzle is only loosely placed in the nipple a good joint is formed when the mixing tube is pressed toward the projection 11 by a spring cocking device acting upon its opposite end. It will readily be understood that when the mixing tube 15 is removed from its operative position the nozzle will simultaneously be withdrawn from the nipple 13 and is then readily accessible. Then if necessary the nozzle can also readily be entirely separated from the mixing tube by unscrewing it, for which purpose a spanner opening 28 of appropriate form can be provided on the frame 10. Obviously the device can be modified in various ways; for example, the nipple 13 which is used owing to the possibility of more exact formation of the seat can be dispensed with and the nozzle can rest against the adjacent face of the projection 11. In accordance with this construction the means for tightening the mixing tube consist of a spring-controlled pressure member 19,

which coöperates with a special safety device passing beyond a dead center in such a manner that in the operative position of the device the tension of the spring is increased.

5 The pressure member acts directly upon an extension 20 of the mixing tube which is forked at its free end and embraces a bolt 21 around which a safety strap 22 is rockable. This strap is provided with lateral

10 projections or studs 23 with which springs 25 engage; the other ends of these springs are connected with similar projections 24 from the pressure member 19 which are arranged in guide slots. In the inoperative

15 position of the strap 22 (Fig. 3) which is indicated by a stop 26 the springs 25 are at a smaller tension than in the safety position (Fig. 2) corresponding to the different interval between the projections 23 and 24;

20 the latter position is limited by a bridge piece 27 after the strap has passed a dead center. Accordingly after the strap has been swung into its inoperative position the mixing tube can readily be removed upon press-

25 ing back the pressure member 19, while in the operative position owing to the increased pressure a good joint is formed between the nozzle and the gas conduit. As the fork of the mixing tube rests upon the pivot bolt

30 21, the safety device is not loaded with the weight of the mixing tube.

In the construction illustrated in Figs. 4 and 5 a valve plug 30 is inserted in the projection 11', its tapered end being fixed on a

35 connecting elbow 32 leading to the nozzle 31. In order to obtain increased rigidity, the other end of the plug 30 is rigidly connected by means of a bridge piece 33 with a lateral projection from the connection 32.

40 The mixing tube 15' is passed onto the cylindrical end 32<sup>a</sup> of the connecting piece 32 and fixed by means of a bayonet joint 34. The extension 20' of the mixing tube is recessed at its free end, the conical point of a

45 spring bolt 35 fixed to the lamp frame 10' engaging in this recess. Instead of this spring locking device, the locking means illustrated in Figs. 1 to 3 or any other appropriate fixing means can of course be

50 employed for securing the burner in its horizontal position. Then in place of the bayonet joint referred to above, any other connection can be used or the mixing tube need merely be passed onto the connection

55 32<sup>a</sup>, without any connecting means employed. The same connection may be employed in the construction illustrated in Figs. 1-3. When the mixing tube is disengaged from the bolt 35, it can be swung

60 downward, the cock rotating in the projection 11', whereupon by loosening the connection the mixing tube can be removed from the connecting piece 32. The nozzle 31 is then downwardly directed so that it is

65 readily accessible and visible; in this posi-

tion it can likewise readily be unscrewed from the connection piece 32 by means of an appropriate tool. As shown in the drawing, the bore 36 of the cock plug may be formed in such a way that when the nozzle is displaced from its operative position the gas supply is simultaneously cut off.

Two modifications of the invention have been disclosed for purposes of examples, but obviously the burner may be varied in different ways without departing from the essence of the invention. I, therefore, do not wish to be limited to the illustrated constructions, but

What I broadly claim as my invention, and desire to secure by Letters Patent, is—

1. In an inverted incandescent gas lamp, the combination with a gas supply conduit, of a gas nozzle movably attached to the gas conduit in a gas tight manner, a mixing tube detachably joined on the nozzle, and spring operated means adapted to press the nozzle and the conduit upon each other.

2. In an inverted incandescent gas lamp, the combination with a gas conduit, of a gas nozzle movably attached to the gas conduit, a mixing tube detachably engaging the nozzle with its admission end, its other end being engaged with supporting means, said means being yielding and adapted to tighten the nozzle and the conduit, thereby securing the same in their proper relative position.

3. In an inverted incandescent gas lamp, the combination with a gas conduit, of a gas nozzle movably attached thereto, a mixing tube detachably attached to the nozzle, and yielding means adapted to tighten the nozzle and the conduit, the said yielding means being rockable, its tension being increased in an operative position and released in the unlocked position.

4. In an inverted incandescent gas lamp, the combination with a gas conduit, of a gas nozzle movably attached thereto, a mixing tube detachably attached to the gas nozzle, and yielding means adapted to tighten the nozzle and the conduit, which means comprise a pressure member engaging with and working on the mixing tube, so as to press it toward the nozzle, a rockable strap, springs connecting the pressure member with the strap in such a manner that their tension is increased in the operative position of the strap and released in the inoperative position of the latter.

5. In combination with a lamp of the character specified, a projection from the frame of the lamp having an opening for receiving a gas supply conduit, said projection having in connection therewith a seat, a nozzle removably engaging the seat, a mixing tube in connection with the nozzle, and spring pressed means engaging the mixing tube for holding the nozzle to the seat.

6. In an inverted incandescent gas burner,  
the combination with the gas conduit of a  
nozzle detachably connected thereto, a mix-  
ing tube in connection with the nozzle, and  
5 means for yieldingly pressing the mixing  
tube, the nozzle and the conduit against each  
other to hold them in position.

In testimony whereof I have signed my  
name to this specification in the presence  
of two subscribing witnesses.

EDMUND STEIL.

Witnesses:

HENRY HASPER,  
WOLDEMAR HAUPT.