No. 812,111. PATENTED FEB. 6, 1906.

F. A. ANDREWS.

PENDANT GAS AND OTHER LAMP.

APPLICATION FILED OCT. 18, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

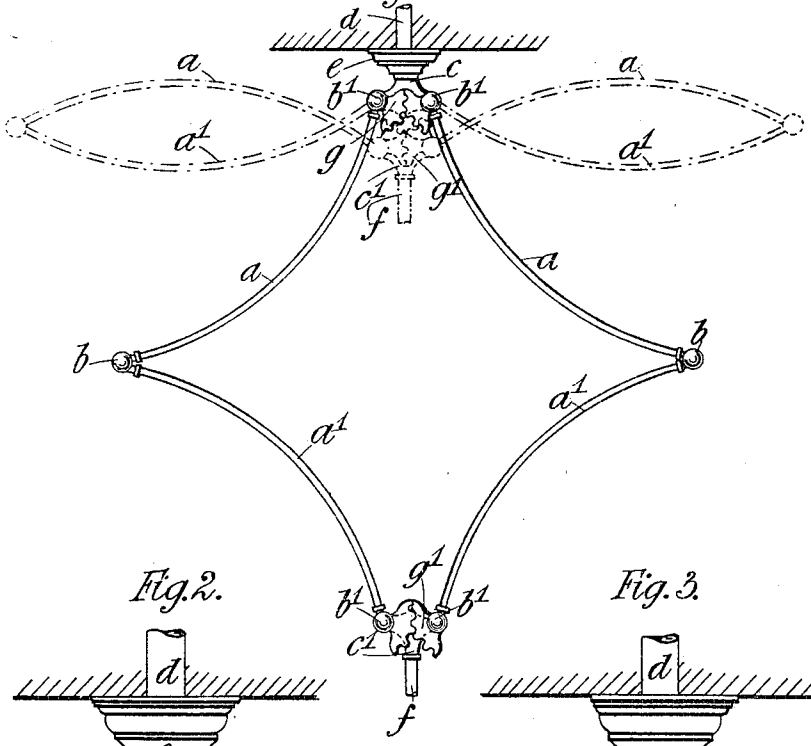


Fig. 2.

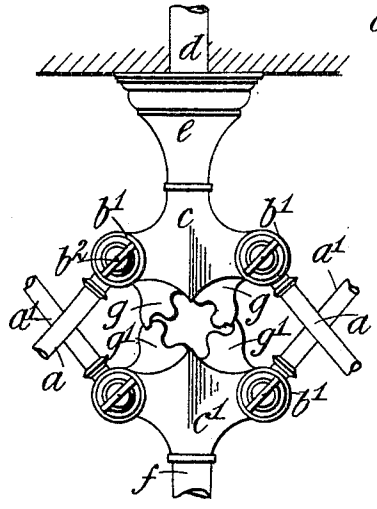
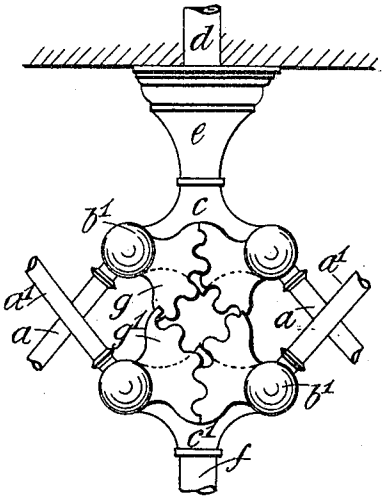


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4

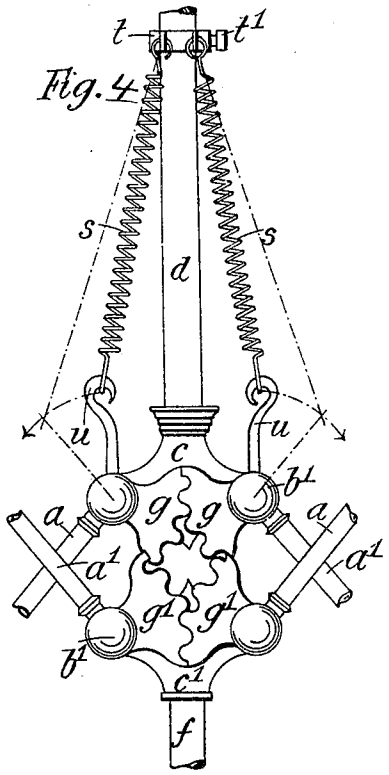
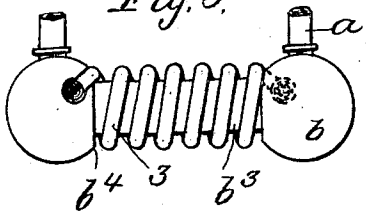


Fig. 5.



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PENDENT GAS AND OTHER LAMP.

No. 812,111. Specification of Letters Patent. Patented Feb. 6, 1906.

Application filed October 18, 1904. Serial No. 229,025.

To all whom it may concern:

Be it known that I, FREDERICK AUGUSTUS ANDREWS, a subject of the King of Great Britain and Ireland, residing at London, in the county of Middlesex, England, have invented new and useful Improvements in Pendent Gas and other Lamps, of which the following is a specification.

This invention relates to pendent gas and other lamps; and it has for its object to so construct them as to render them capable of being balanced without the use of counterpoise-weights and of being used in rooms having low ceilings.

To this end the pendant (which may sometimes be used as a bracket) comprises a suitable number of pairs of arms arranged in the form of a closed figure and articulated together in such a manner that it can be elongated or be shortened, as desired, and to maintain the pendant in its lowered or elongated or in its raised or shortened condition intermeshing toothed sectors or equivalent means are interposed between the arms. Frictional devices, as well as elastic devices, are also provided and may be used either separately or in combination to prevent the joints between the arms yielding too readily to the weight of the pendant and causing it to become unduly elongated or forced out of shape from the position to which it may have been adjusted.

Reference being had to the accompanying drawings, Figure 1 is an elevation of one form of the improved pendant constructed according to the invention, the full lines showing it when elongated or lowered and the dotted lines when shortened or raised. Figs. 2 and 3 are front and back elevations, respectively, on an enlarged scale, of the toothed sectors, together with the unions on which they are mounted. Fig. 4 is an elevation of a slightly-modified form of the improved pendent lamp, combined with an elastic device or connection for assisting the raising or the closing of the same. Fig. 5 is a detached view in elevation of a convenient form of swivel-joint for connecting the upper and lower pairs of arms.

In each of the examples illustrated, there are two pairs of arms constituting together an upper couple a, and a lower couple a', and these arms are so arranged that when lowered and in use, they form a kind of lozenge or rhombus. They are connected together at their outer or lateral ends by swivel-joints b of ordinary and well-known construction, and at their upper and lower ends they are also connected by similar joints b' to the unions c c', respectively, the upper one, c, of which communicates directly with the supply-pipe d (on which is the ceiling-plate e) and the lower one, c', with the nozzle f, leading to the fitting that carries the burner or burners. The toothed sectors g g' are mounted or formed on the adjacent ends or sockets of the arms a a', respectively, and each pair is adapted to gear together, as clearly shown in Figs. 2 and 3. Thus when raising the pendant or when lowering it both the upper and lower pairs of arms are compelled to work together in unison and so keep the pendant balanced without the use of counterbalance-weights. In the example illustrated in Figs. 1 to 3 the frictional contact of the swivel-joints is sufficient to support the pendant, assuming it to be of comparatively little weight, without fear of its displacement by vibration or other causes; but as an additional security thumb-screws b^2 are provided to regulate the frictional contact. All the arms, or only those comprising one lateral pair or couple, are hollow to allow passage of the gas from the supply-pipe d through the joints b b' to the burner or burners. (Not shown.)

For comparatively heavy pendants and in order to prevent them becoming elongated under their own weight, the ordinary swivel-joints above referred to are advantageously replaced by the arrangement shown in Fig. 5, in which a coiled spring 3 is disposed between said swivel-joints at the arms of each lateral couple, one end of such spring being fixed to the socket portion of the joint and the other end to the plug or spigot portion thereof, which for this purpose is lengthened, and around this plug portion the said spring 3 is coiled. Thus when lowering or elongating the pendant the tension of the springs will be increased, while when raising or shortening it the said springs will expand more or less under their own resiliency.

In the modified arrangement of pendent lamp shown in Fig. 4 direct-acting elastic devices or means are employed to assist or contribute to its easy raising or shortening, as well as to constantly counterbalance its

weight and preserve an effective balance. These means comprise spiral springs *s*, the upper ends of which are secured to a collar or sleeve *t* on the supply-pipe *d* and the lower ends of which are connected to arms *u* on the upper joints of the arms. The collar *t* is free to be adjusted and fixed (by means of a set-screw *t'*) at any point along the supply-pipe *d*, so as to allow the tension of the springs to be increased or diminished, according as the arrangement may be applied to a heavier or a lighter pendant.

It is to be understood that the invention is not confined to the precise details of construction and arrangement hereinbefore described and as shown in the drawings, as it is obvious they may be modified in numerous ways to suit various circumstances without departing from the nature of the invention. For instance, instead of suspending the pendant from the ceiling it may be arranged as a wall-bracket, in which case it would be mounted with the arms in a vertical plane. Such an arrangement will be found exceedingly useful to dentists, surgeons, workmen, and others. Furthermore, the toothed sectors *g g'* may be arranged at the lateral joints of the couples instead of on the upper and lower unions, and in such case a suitable joint would be inserted at the upper and lower ends of the arms.

The improved pendant is equally suitable for electric lighting as for gas, in which case the wires would be preferably led through the arms *a a'* of either lateral couple, or it may be arranged for oil-lighting, a suitable attachment being then provided to carry the reservoir, burner, chimney, and shade.

The elastic means or devices hereinabove described may be applied to pendants of the single-arm type.

Having now described the invention, I claim—

1. In a pendent gas-lamp, the combination with the supply-pipe, of a union, a pair of sockets on said union, two hollow plugs each having one of its ends connected with one of said sockets, sockets on the other ends of said plugs, a pair of tubular arms connected with said second pair of sockets and having swiveled relation to the said union, intermeshing toothed sectors between the adjacent ends of said arms, hollow plugs connected to the other ends of said arms, a second pair of tubular arms pivotally connected to the first pair by means of said last-named plugs, a union for establishing connection with the burner, a third pair of hollow plugs pivotally connecting the second pair of arms in said union, and intermeshing toothed sectors between the adjacent ends of said second pair of arms, the arms all lying in planes substantially parallel with each other and at right angles to the planes of the plugs.

2. In a pendent lamp, the combination of a union, a pair of tubular arms pivotally jointed at their inner ends to said union, means for mechanically gearing the inner ends of said arms together, a second pair of tubular arms having their inner ends pivotally jointed to the outer ends of the first pair, a union, means for pivotally jointing the outer ends of said second pair of arms to said last-named union, means for mechanically gearing the inner ends of the second pair of arms together, and resilient rotation-opposing devices interposed at two of the joints.

3. In a pendent lamp, a pair of substantially parallel hollow plugs, means for connecting said plugs with a gas-supply pipe, a pair of partially-rotatable pipes connected to said plugs, means for gearing said pipes together so as to cause them to move in unison, a second pair of hollow plugs connected to said pipes and substantially parallel with the first pair of plugs, a second pair of pipes connected to said plugs and in a plane substantially parallel with the plane of the first pair of pipes, a third pair of hollow plugs substantially parallel with the first pair of plugs, means for connecting said third pair of plugs with a common burner-tube, means for gearing the second pair of pipes mechanically together, all of said pipes being capable of partial rotation about the axes of the respective plugs, and means for offering limited resistance to said rotation.

4. In a gas-pendant, the combination of two unions, a pair of tubular arms pivotally jointed to each other and to said unions on one side of the central line, a second pair of tubular arms pivotally jointed to each other and to said unions on the opposite side of said central line, intermeshing toothed sectors gearing said pairs of arms together near one of said unions, intermeshing toothed sectors gearing said pair of arms together near the other union, and springs coiled around the joints between the arms of each pair and connected to said arms for resisting their turning about the joint and so counteracting the weight of the lamp on the joints between the arms.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

FREDERICK AUGUSTUS ANDREWS.

Witnesses:

GEORGE ERNEST MINTERN,

H. D. JAMESON.