

(No Model)

H. N. H. LUGRIN.

APPARATUS FOR LIGHTING INTERIORS OF BUILDINGS.

No. 585,770.

Patented July 6, 1897.

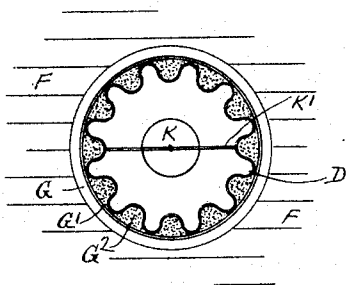


Fig. 2.

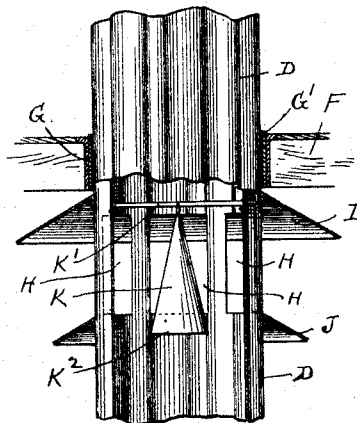
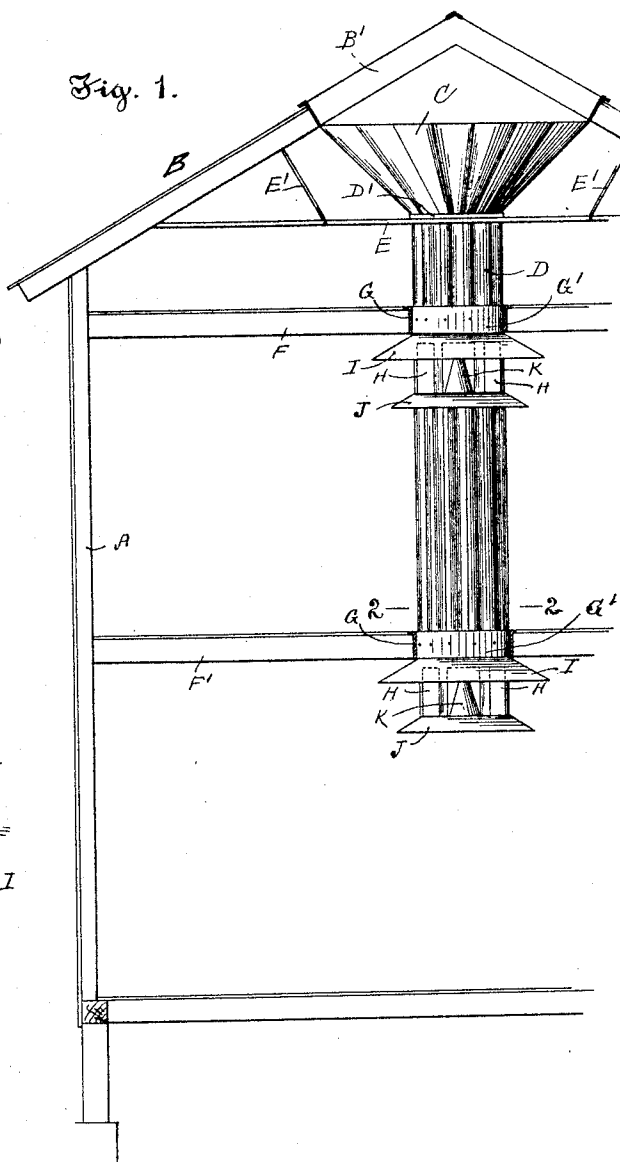


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

HORATIO N. H. LUGRIN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO
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APPARATUS FOR LIGHTING INTERIORS OF BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 585,770, dated July 6, 1897.

Application filed April 20, 1896. Serial No. 588,245. (No model.)

To all whom it may concern:

Be it known that I, HORATIO N. H. LUGRIN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Apparatus for Lighting the Interior of Buildings, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, in which—

Figure 1 represents in sectional view a portion of a building containing an apparatus for lighting the interior embodying my invention and shown in full. Fig. 2 is a transverse sectional view of my improved apparatus on line 2 2, Fig. 1; and Fig. 3 represents a portion of the apparatus on a larger scale, with a part broken away to disclose the interior reflecting-cone.

Similar letters refer to similar parts in the different figures.

Referring to the drawings, A denotes one of the side walls of the building; B, the roof, provided with a skylight B', beneath which is suspended my improved lighting apparatus, which I term a "light-shaft," conveying light to the several stories of the building, two stories being represented in the accompanying drawings.

Beneath the skylight B' is placed a funnel-shaped light-receiver C, having its upper end the largest and placed immediately beneath the skylight B', with its lower end contracted to the area of the tubular light-shaft D, which may or may not be attached to the funnel-shaped receiver C, but is provided with a collar D', resting upon the bars E, suspended by truss-rods E' from the roof of the building, said collar D' serving to support the shaft D, suspended below the bars E and passing through the floors F and F'. The floors F and F' are provided with openings for the tubular shaft D, said openings being lined by metallic thimbles G, and the shaft D, where it passes through the floors, is provided with cylindrical collars G', fitting the thimbles G, but capable of sliding therein. The collars G' are attached by rivets or otherwise to the shaft D, and a space between the collars and the shaft D is filled with a layer of asbestos G².

Immediately beneath each floor the shaft D

is provided with openings or windows H, and immediately above and below the windows H are placed the beveled reflectors I and J, attached to the shaft D and provided with reflecting-surfaces upon their opposing sides or upon the under surface of the reflector I and upon the upper surface of the reflector J. A light-reflecting cone K is suspended concentrically within the shaft D, preferably by means of a transverse bar K', attached to the inner surface of the shaft D and extending diametrically across it, the cone K being suspended at its apex with its axis coincident with the axis of the shaft D. The outer surface of the cone K is a light-reflecting surface and is placed opposite the windows H. The shaft D consists of a continuous metallic tube suspended by the collar D' from a supporting-framework, said tube being corrugated and provided with an interior reflecting-surface. The corrugating of the inner surface of the shaft D multiplies the angles of reflection of the rays of light, causing a more equal diffusion of the light within the shaft and also at its delivery through the windows H, thereby avoiding intense shadows.

The reflecting-cone K has a long axis with preferably a small base K², so as to occupy a comparatively small part of the area of the light-shaft.

The rays of light entering through the skylight and receiver C into the upper end of the light-shaft D are broken or shattered by the multiplicity of the reflecting-faces of the light-shaft, thereby producing a uniform diffusion of light, the light being reflected back and forth and transmitted downward through the shaft and through the first series of windows or openings H. A portion of the rays of light are reflected directly from the inner sides of the shaft D. Other rays are reflected from the inner surface of the shaft D against the conical reflecting-surface of the cone K, from which they are thrown out through the windows H. Those passing through the windows H in an upward direction are then thrown downward by the inner reflecting-surface of the upper beveled reflector I, and those rays which are downwardly reflected next the outer surface of the shaft D are again reflected upwardly and outwardly by the upper

reflecting-surface of the lower beveled reflector J. The proper widths of the beveled reflectors I and J will be determined by the diameter of the shaft D and the height of the apartment to be lighted, but I prefer to make the lower beveled reflector J narrower than the upper reflector I.

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

1. In an apparatus for lighting the interior of buildings the combination with a light-receiver of a continuous shaft passing through the floors but independently thereof, means for suspending said shaft from its upper portion with its lower portion hanging free and unconnected with the building, substantially as described.

2. In an apparatus for lighting the interior of buildings, a tubular shaft open at its upper end and provided with openings for delivery of light into the building, said shaft having an interior reflecting-surface bent into a series of alternate ridges and grooves, parallel with each other and with the axis of the tube whereby the sides of adjacent ridges will present opposing faces, substantially as described.

3. In an apparatus for lighting the interior of buildings the combination of a tubular light-conveying shaft open at its upper end and provided with a series of openings in its sides for the delivery of light into the build-

ing, and a body supported concentrically within said shaft and opposite said openings, and provided with a reflecting-surface, substantially as described.

4. In an apparatus for lighting the interior of buildings, the combination of a tubular light-conveying shaft open at its upper end and having side openings for the delivery of light into the building said tubular shaft having an interior corrugated light-reflecting surface, and a light-reflector supported concentrically in said tubular shaft, substantially as described.

5. The combination with a building provided with openings in alinement, of thimbles surrounding said openings, a tubular light-shaft, but capable of sliding therein, and means for suspending said shaft from its upper portion with its lower end free, substantially as described.

6. The combination of a tubular light-conveying shaft provided with openings in its sides for the delivery of light into a building, and a conical light-reflector supported in said shaft opposite said openings with its apex uppermost, substantially as described.

Dated this 18th day of April, 1896.

HORATIO N. H. LUGRIN.

In presence of—

RUFUS B. FOWLER,
JOHN T. MCINTYRE.