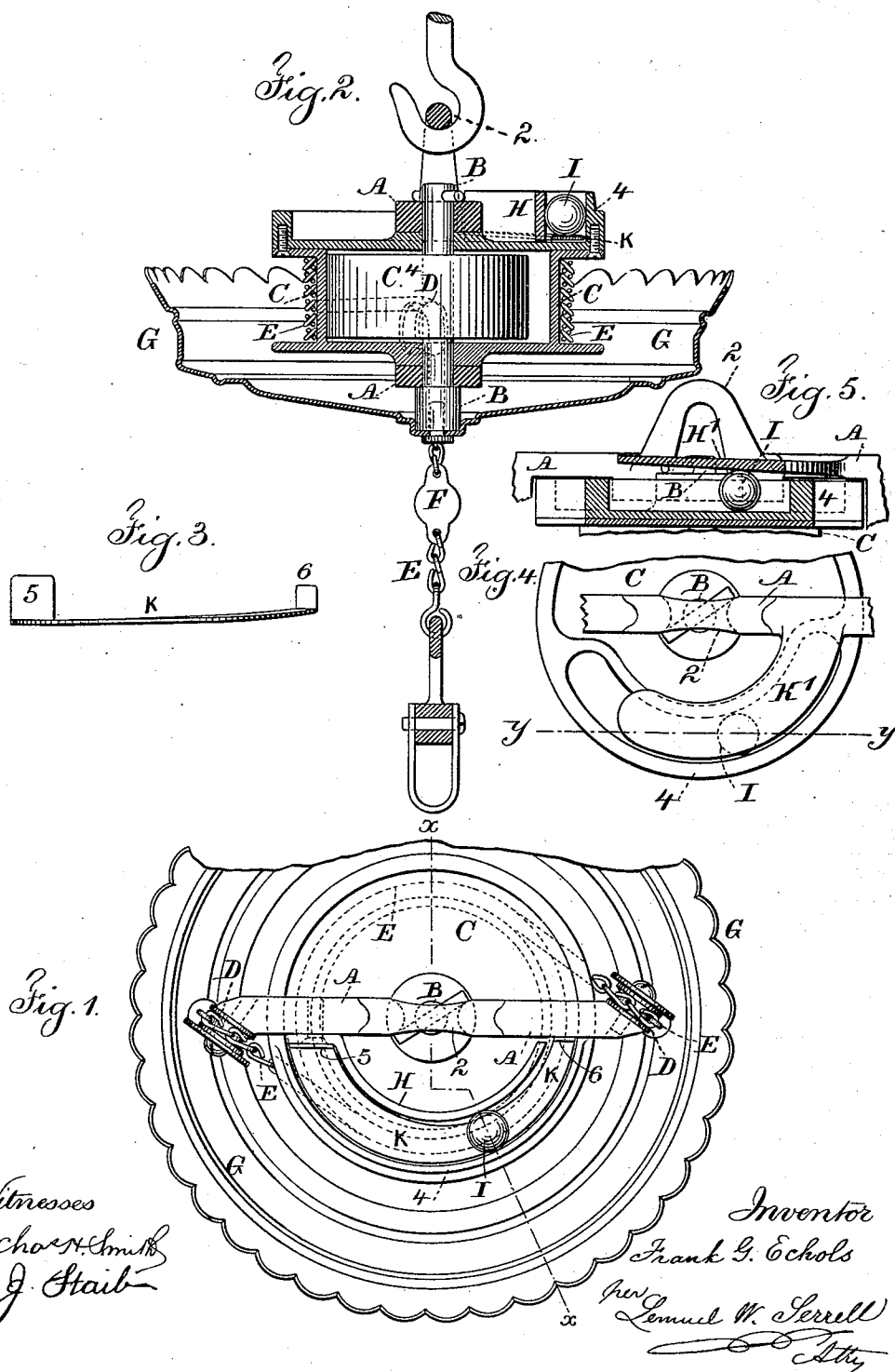


(No Model.)

F. G. ECHOLS.  
SUSPENSION DEVICE FOR LAMPS.

No. 479,874.

Patented Aug. 2, 1892.



# UNITED STATES PATENT OFFICE.

FRANK G. ECHOLS, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE  
PLUME & ATWOOD MANUFACTURING COMPANY, OF SAME PLACE.

## SUSPENSION DEVICE FOR LAMPS.

SPECIFICATION forming part of Letters Patent No. 479,874, dated August 2, 1892.

Application filed March 3, 1892. Serial No. 423,569. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK G. ECHOLS, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented an Improvement in Suspension Devices for Lamps, &c., of which the following is a specification.

In suspension devices for lamps the chains have been connected with a spring-barrel, so as to counterpoise the weight of the lamp, and pawls and friction clutches or stops have been employed in a variety of ways for checking the rotation of the spring-barrel, and in some instances the lamp has been moved laterally to connect or disconnect the devices that hold the barrel and to prevent the same rotating when the lamp is hanging vertically.

My present invention relates to the combination, with the spring-barrel and suspending devices, of a ball-stop within a recess that is narrower at one end than the other, and the rotation of the spring-barrel tends to carry the ball-stop into the narrower portion of the recess and stop the further rotation of such spring-barrel, and when the lamp is drawn down the stop is rolled into the wider portion of the recess, and it is caused to remain there while the lamp is drawn up by moving the lamp laterally and inclining the surface upon which the ball rests, so that the same tends to roll into the wider portion of the recess.

This device is very easily constructed, and it is strong and not liable to become injured in use.

In the drawings, Figure 1 is a plan view of the spring-barrel and suspending devices. Fig. 2 is a vertical section at the line  $xx$  of Fig. 1. Fig. 3 is a detached view of the shoe. Fig. 4 is a plan view of a modification of the tapering recess, and Fig. 5 is a sectional elevation at the line  $yy$  of Fig. 4.

The yoke A is of any suitable character, having a suspending-loop 2 at the upper end and adapted to receive through it the axis B of the spring-barrel C. This spring-barrel is rotated around the axis, one end of the spring  $C^4$  being connected to the axis or to the yoke and the other end of the spring connected to the barrel, as usual in fixtures of this general character. It is advantageous to construct the parts so that the axis of the spring-barrel

is vertical, so that such spring-barrel revolves horizontally. There are sheaves D, connected with the yoke A, and over which the chains E pass, and the ends of these chains are connected with the spring-barrel and pass down to the lamp or to the harp or other supporting or suspending device that receives the lamp. There may be projections F upon the chain for limiting the upward movement of such chain by coming in contact with the ornamental crown or cap G, which incloses the spring-barrel and the parts connected therewith.

I make use of a ball I within a recess that is narrower at one end than the ball and wider at the other end than the said ball. One side of the recess is a fixture and the other side of the recess moves with the spring-barrel, so that when the ball is carried by the movement of the spring-barrel into the narrower portion of the recess it forms a block or stop by which the further movement of the spring-barrel is arrested; and when the spring-barrel is moved in the opposite direction the ball is rolled toward the wider end of the recess and liberated, so that the spring-barrel may be rotated freely in either one direction or the other. The manner of applying this stop will depend upon the peculiar construction of the spring-barrel; but when applied to a spring-barrel upon a vertical axis it is advantageous to provide the spring-barrel with a cylindrical flange or rim 4 at its upper end and to connect with the yoke A the eccentric clamp H, which is above the spring-barrel and permanently connected to the yoke A at the end that is farthest away from the rim 4. This clamp may be in the form of a spring, so that it may yield slightly at the end that is nearest to the rim 4. The space between the rim 4 and the eccentric clamp H is the tapering recess into which the ball I is received, and these parts are in such a relation to the spring-barrel that when such spring-barrel is rotating to wind up the chains the ball I will be carried by such spring-barrel toward the narrower end of the recess, and when the lamp is drawn down the ball will be rolled away from the narrower end of the recess toward the wider end, and thereby the clamping action of the ball will be relieved, and when the

lamp is moved laterally, so that the axis of the spring-barrel will be inclined by the yoke swinging on the suspending-loop 2 the ball will roll down toward the wider part of the segmental recess and remain there out of action while the lamp is raised or lowered until such time as the lamp is brought vertically, or nearly so, beneath the suspending-loop, so that the ball will be carried into the narrower part of the recess and stop the further rotation of the spring-barrel.

As an additional device for determining the action of the ball-stop, it is advantageous to place in the segmental recess a shoe K in the form of a curved plate fitting loosely into the segmental recess and having upturned end flanges 5 6, that prevent the shoe being moved endwise in the recess by the movement of the spring-barrel in either direction. The ball rests upon the bottom plate of this shoe, so as not to be moved one way or the other by contact with the upper flat surface of the spring-barrel. Hence the ball will roll upon the shoe in either one way or the other, according to the inclination of the shoe itself, and by making the narrower end of the shoe at a slight upward inclination the ball will tend to roll away from the narrower part of such recess, so as to relieve the action of the ball as a stop, and the rolling of the ball in either one direction or the other will be regulated according to the inclination of the yoke and spring-barrel one way or the other.

I do not limit myself to the specific arrangement herein represented for employing this ball-stop within the recess, as the same may be varied to suit different characters of fixtures, and I remark that the foregoing description presupposes the spring to be more than sufficient to counterpoise the weight of the lamp when full. Hence the ball-stop will prevent the spring winding up; but if the position of the parts are reversed and the spring is only sufficient to wind up the chains when the lamp is raised, the ball-stop may take the weight of the lamp. The tapering recess is not necessarily segmental, the flat end of the spring-barrel can form one side of that tapering recess, and upon this the ball rests, as seen in Fig. 5, and above this is the cam or inclined clamp H', so as to stop the rotation

of the ball and the spring-barrel by the ball being wedged into the space between the converging surfaces, and when the spring-barrel is rotated by the suspending-chains the ball-stop is rolled out from its position and can be caused to roll away from the inclined clamp by inclining the axis of the spring-barrel, so that its top surface will be an inclination away from the clamp H'.

I claim as my invention—

1. The combination, with a spring-barrel and suspending devices, of a ball-stop within a horizontal recess that is narrower at one end than the other, one side of such recess being a portion of or connected with the spring-barrel and the other side a stationary eccentric or clamp, the suspending device allowing the surface on which the ball rests to be inclined to cause the ball to roll out of action, substantially as set forth.

2. The combination, with the spring-barrel and suspending devices, of a yoke for receiving and sustaining the spring-barrel and its vertical axis, sheaves upon the yoke over which the suspending-chains pass, a rim upon the upper end of the spring-barrel, and an eccentric clamp connected with the yoke, and a ball-stop between the rim and the eccentric clamp, substantially as set forth.

3. The combination, in a suspending device for lamps, of a yoke, a spring-barrel and axis carried by such yoke, a rim upon the spring-barrel, a stationary eccentric clamp permanently fastened at one end, the other end being allowed to yield, and a ball-stop between the eccentric clamp and the rim, substantially as set forth.

4. The combination, in a suspension device for lamps, of a spring-barrel and its axis, a yoke or frame for suspending such spring-barrel, an annular flange or rim upon the spring-barrel, an eccentric clamp, a ball between the eccentric clamp and the rim, and a shoe upon which such ball rolls, substantially as set forth.

Signed by me this 29th day of February, 1892.

FRANK G. ECHOLS.

Witnesses:

L. J. ATWOOD,  
J. H. HURLBUT.