A. HOLMES.

WINDOW SHADE FIXTURE.

APPLICATION FILED FEB. 20, 1907.

904,536.

Patented Nov. 24, 1908.

2 SHEETS—SHEET 1.

Fig. 2.

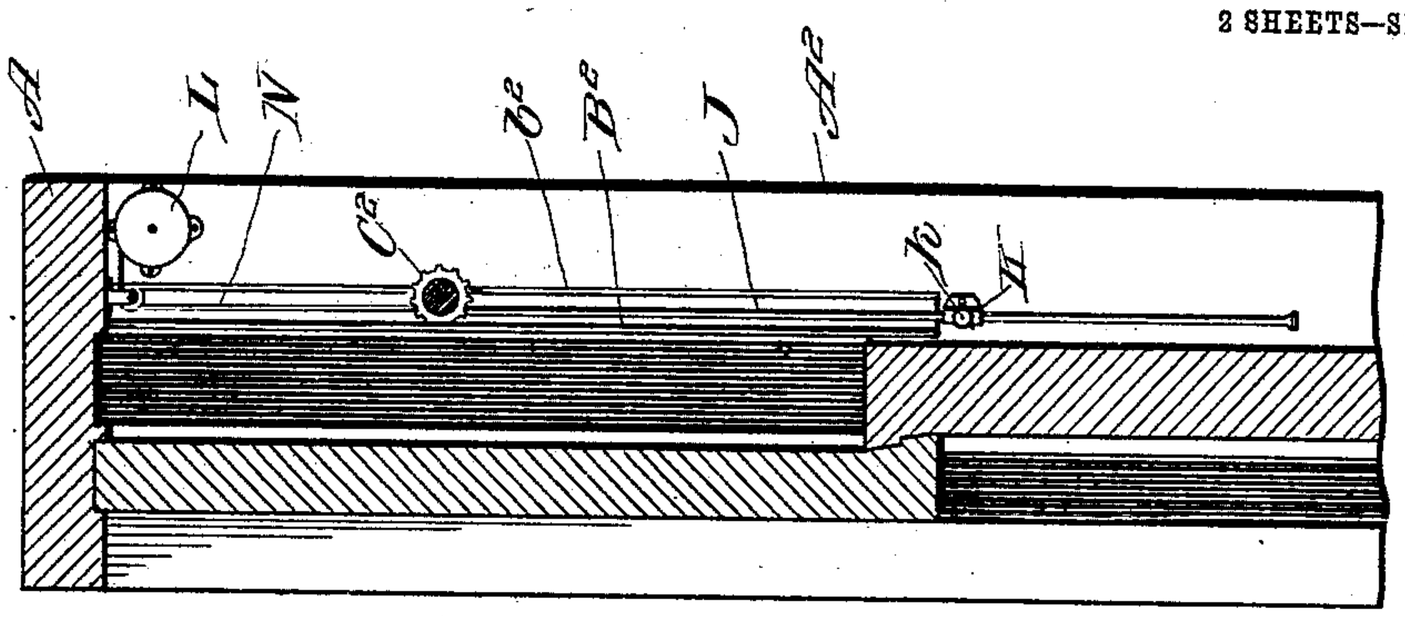

Fig. 1.

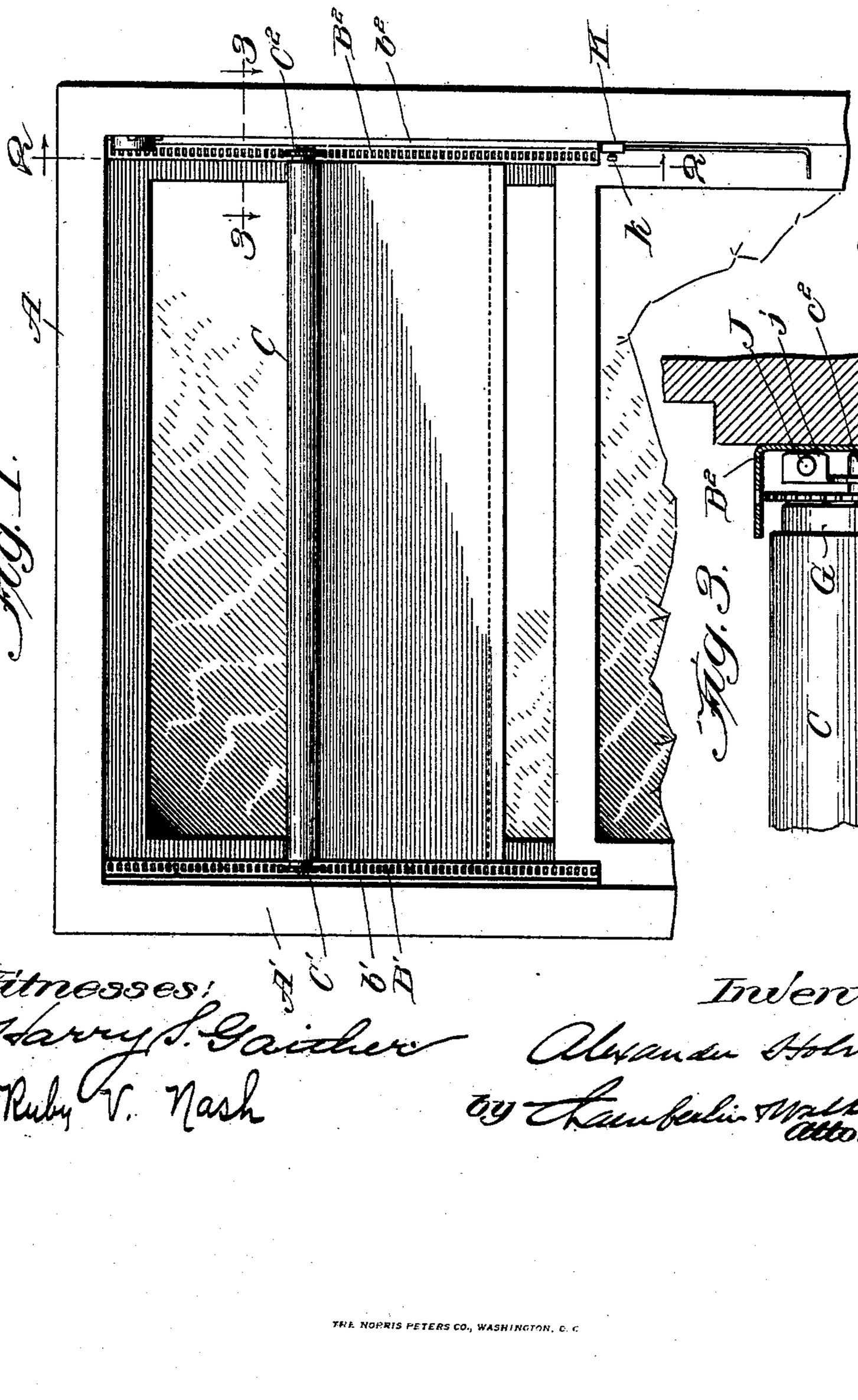

Fig. 3.

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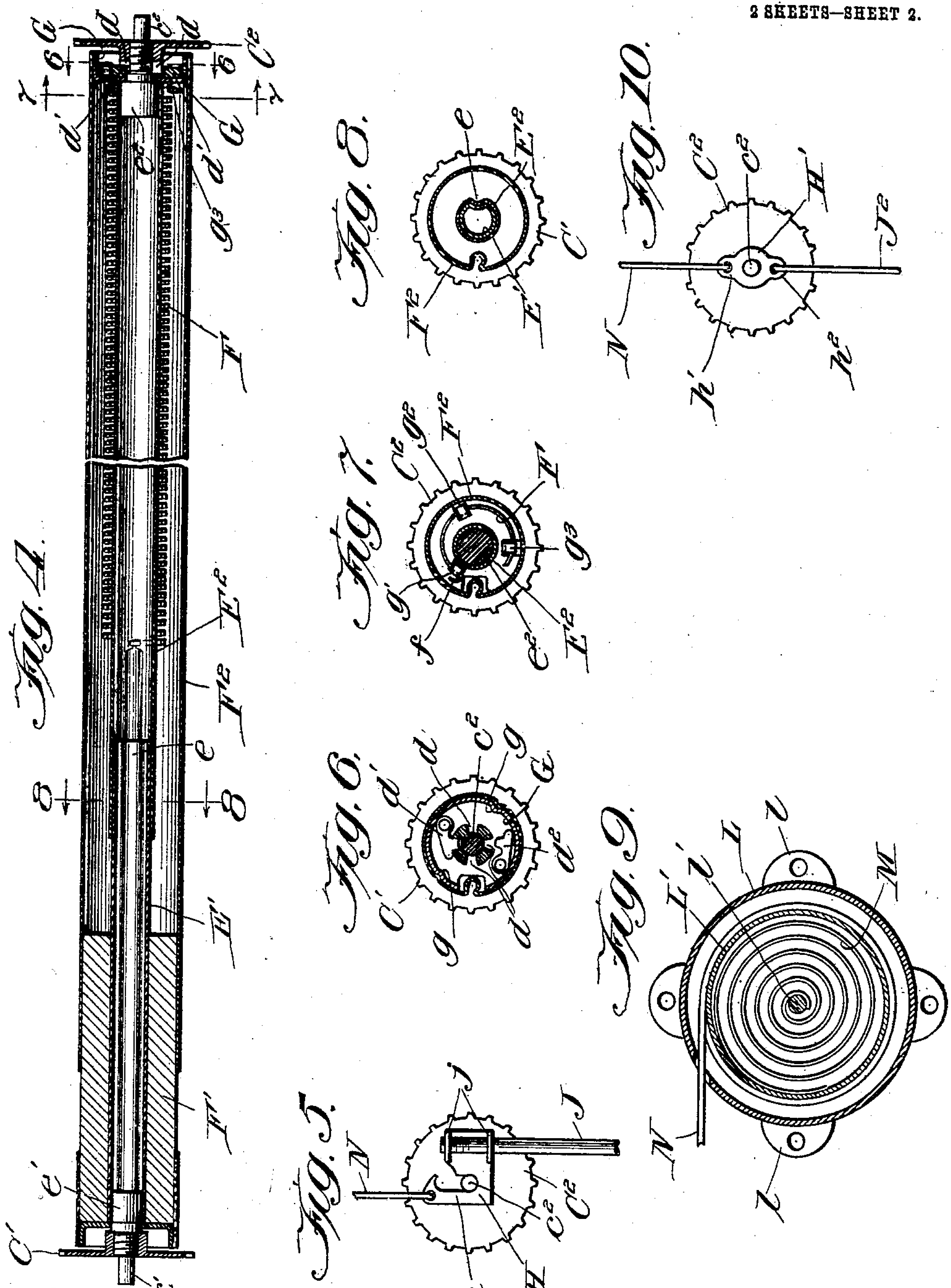

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UNITED STATES PATENT OFFICE.

ALEXANDER HOLMES, OF EUREKA, CALIFORNIA.

WINDOW-SHADE FIXTURE.

No. 904,536. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed February 20, 1907. Serial No. 358,472.

To all whom it may concern:

Be it known that I, ALEXANDER HOLMES, citizen of the United States, residing at Eureka, county of Humboldt, State of California, have invented a certain new and useful Improvement in Window-Shade Fixtures, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates in general to window shades and more particularly to shades the rollers of which are adjustable vertically with respect to the windows.

It is frequently desirable that light should be admitted through the upper part of a window and excluded from the lower part thereof, or that light should be merely excluded from the window intermediate of its top and bottom. Various supporting means for window shade rollers have heretofore been devices for vertically adjusting the position of a shade roller relatively to the window for the purpose of admitting any required amount of light through the window whether above or below the shade roller. In such shade fixtures devised prior to my invention for raising and lowering spring actuated shade rollers it has been necessary to provide vertically movable frames for supporting the shade rollers in addition to the usual supporting journals of the rollers.

The primary object of my invention is to provide a window shade fixture for vertically adjusting the shade roller relatively to the window which will be simple in construction, inexpensive in manufacture and efficient in use.

A further object of my invention is to provide a vertically adjustable window shade roller, the weight of which will be counterbalanced so as to facilitate the raising and lowering of the shade roller.

A still further object of my invention is to provide a vertically adjustable window shade fixture which will require no supporting frame in addition to a central shaft upon which the roller is rotatably mounted and between which and the roller the usual spring is interposed.

My invention may be generally described as comprising an extensible rod upon which a shade roller is rotatably mounted, a spring surrounding the rod and connected at its opposite ends to the rod and to the roller, gravity pawls carried by one end of the roller adapted to engage notches movable with the rod, gears fixed upon the ends of the rod engaging vertical racks fixed to the window casing, a bracket detachably engaging one end of the rod to which a counter-balance is connected and to which is also connected means for drawing the roller downwardly against the action of the counter balance.

My invention will be more fully described hereinafter with reference to the accompanying drawings in which the same is illustrated as embodied in a convenient and practical form, and in which

Figure 1 is a front elevational view of a window showing my invention applied thereto; Fig. 2 a sectional view on line 2—2 Fig. 1; Fig. 3 a sectional view on line 3—3 Fig. 1; Fig. 4 a horizontal sectional view through the shade roller detached from the window casing; Fig. 5 an end elevational view looking from the right in Fig. 4; Fig. 6 a sectional view on line 6—6 Fig. 4; Fig. 7 a sectional view on line 7—7 Fig. 4; Fig. 8 a sectional view on line 8—8 Fig. 4; Fig. 9 a central sectional view through the counterbalance; and Fig. 10 a view similar to Fig. 5 showing a modification.

Similar reference characters are used to designate similar parts in the several figures of the drawings.

Reference character A indicates a window frame of any ordinary or usual construction comprising vertical side frames A′ and A².

B′ and B² designate racks secured to the side frames of the casing by any suitable fastening devices. The racks are preferably made of sheet metal bent as indicated in Fig. 3 so as to provide a central portion which is secured to the vertical side frames of the window casing from which the racks extend inwardly from the inner edges thereof, and from which flanges b' and b^2 respectively extend inwardly from the front edges.

C designates a window shade secured upon a spring roller which may be rotated to unwind or wind up the shade. The roller is shown as extensible in length so that it may

be adjusted to conform to the width of the window upon which it is to be used.

Reference characters F′ and F² indicate two telescopic portions of a roller the former of which may be made of wood while the latter is preferably made of sheet metal, as clearly shown in Fig. 4.

A rod extends concentrically through the shade roller and is also preferably extensible in length. The rod is shown as comprising two telescopic portions E′ and E² composed of tubular sheet metal and having registering longitudinal grooves and ribs *e* to prevent relative rotation of the two united parts. Secured within the opposite ends of the portions E′ and E² of the rod, and forming part of such rod, are studs *e′* and *e²* upon which the roller is rotatably supported.

C′ and C² designate gears fixed upon the studs *e′* and *e²* of the rod adjacent the outer ends of the roller. The gears may be conveniently secured upon the ends of the rod by means of interiorly screw-threaded hubs on the gears engaging exteriorly screw-threaded portions on the ends of the rods. The gears are adapted to engage the racks B′ and B² and are retained in such engagement by means of the ends *c′* and *c²* of the rod which lie within and are guided by the flanges *b′* and *b²* on the racks.

F designates a spring surrounding the rod and secured at one end to the rod and at its other end to the shade roller. The end of the spring which is secured to the shade roller is preferably engaged with ears *g′*, *g²*, and *g³*, formed on the inner surface of the end cap G of the shade roller. The ear *g′* extends inwardly and is engaged by a hook *f* formed on the end of the spring while the ears *g²* and *g³* extend outwardly and are engaged by the first convolution of the spring thereby permitting the spring to be readily attached to the roller.

d′, *d²* designate gravity pawls secured to the outer surface of the end cap G of the roller and are adapted to coöperate with notches *d* carried by the rod, such notches being preferably formed in the hub of the gear C².

H designates a bracket having a hook *h* thereon adapted to detachably engage the end *c²* of the rod, the end of the rod rotatably engaging such bracket. A rod J is secured to the bracket H in any convenient manner, as by means of screw-threads on the upper end of the rod engaging screw-threaded ears *j* on the bracket. The rod J depends from the bracket to a convenient point to be grasped by one desiring to raise or lower the shade roller. The rod J passes through a clamping device K secured to the window casing, such clamping device comprising a clamp screw *k* adapted to engage the rod to retain the same in any desired adjusted position according to the desired height of the shade roller.

A counter balance is provided for facilitating the raising of the shade roller, such counter balance being shown as comprising a circular casing L secured by means of perforated ears *l* to the top of the window casing above the bracket H. A spring M is inclosed within the casing and is secured at its inner end to a fixed stud *l′* within the center of the casing and at its outer end to a drum L′ rotatably supported within the casing. A flexible connection N is secured at one end to the drum L′ and at its lower end to the bracket H.

The manner of applying my improvement to a window and the operation thereof are as follows: The roller, and coincidently the rod within the same are adjusted in length to correspond to the width of the window frame to which the racks B′ and B² have been applied. When the roller and rod have been adjusted to the proper length the gears C′ and C² are engaged with the bottom notches in the racks and the shade roller moved upwardly by rotating the same. The bracket H is then engaged with the end C² of the roller supporting rod so that the hook *h* will extend about the end of the rod as shown in Fig. 5. If the counter balance is employed the lower end of the flexible connection N is then secured to the bracket H. When it is desired to raise the shade roller the clamp screw *k* is disengaged from the rod J whereupon either an upward pressure applied to the rod J or the tension of the spring of the counter balance, will exert an upward pull upon the roller supporting rod so that the shade roller will be elevated through the engagement of the gear wheels C′ and C² with the racks B′ and B². When the roller has been raised to the desired position the clamp screw *k* is engaged with the rod J thereby securely retaining the shade roller at the desired height. When it is desired to lower the shade roller so as to admit light through the upper part of the window a downward pull is applied to the rod J which through the hook *h* of the bracket H exerts a downward pressure on the roller supporting rod so that the roller is lowered through the engagement of the gears with the racks.

In lieu of providing a rod J and bracket H, a cord J² as shown in Fig. 10, may be used for exerting downward pull upon the roller supporting rod. In Fig. 10 H′ indicates a bracket detachably surrounding the end *c²* of the rod and having an ear *h²* from which the cord J² depends and also an ear *h′* to which the lower end of the cord N of the counter balance is secured.

From the foregoing description it will be observed that I have invented an improved shade roller fixture by means of which the

shade may be located at any desired height with respect to the window and in which no supporting frame for the shade roller is required, the rod upon which the roller is rotatably mounted serving to adjustably support the roller upon the window casing. It will be further observed that in my improved shade roller fixture the weight of the shade roller is counter balanced, a single counter balance at one side of the window being sufficient owing to the fact that the gears fixed to the roller supporting rod insure the roller being moved upwardly or downwardly in a horizontal plane through their engagement with the racks.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form, the proportion of parts, and the substitution of equivalents, as circumstances may suggest, or render expedient without departing from the spirit of my invention.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination with a window shade roller, of a rod around which said roller is rotatably supported and having notches movable therewith, a spring surrounding said rod within the roller and connected at its opposite ends to said rod and to said roller respectively, gravity pawls carried by said roller adapted to engage said notches, gears fixed upon the ends of said rod, racks engaged by said gears and secured to the window casing, means for exerting an upward or downward pull upon said rod whereby it is rotated through the engagement of said gears with said racks and the shade roller thereby raised or lowered, and means for causing said rod to be retained in any adjusted position desired.

2. The combination with a window shade roller, of a rod around which said roller is rotatably supported and having notches movable therewith, a spring surrounding said rod within the roller and connected at its opposite ends to said rod and to said roller respectively, gravity pawls carried by said roller adapted to engage said notches, gears fixed upon the ends of said rod, racks engaged by said gears and secured to the window casing, a counter balance connected to said rod for raising the same, means for exerting a downward pull upon said rod whereby the rod is rotated through engagement of said gears with said racks and the shade roller thereby raised or lowered, and means for causing said rod to be retained in any adjusted position desired.

3. The combination with a window shade roller, of a rod around which said roller is rotatably supported and having notches movable therewith, a spring surrounding said rod within the roller and connected at its opposite ends to said rod and to said roller respectively, gravity pawls carried by said roller adapted to engage said notches, gears fixed upon the ends of said rod, racks engaged by said gears and secured to the window casing, a bracket detachably engaging one end of said rod, means connected to said bracket for exerting an upward or downward pull upon said rod whereby it is rotated through the engagement of said gears with said racks and the said roller thereby raised or lowered, and means for causing said rod to be retained in any adjusted position desired.

4. The combination with a window shade roller, of a rod around which said roller is rotatably supported and having notches movable therewith, a spring surrounding said rod within the roller and connected at its opposite ends to said rod and to said roller respectively, gravity pawls carried by said roller adapted to engage said notches, gears fixed upon the ends of said rod, racks engaged by said gears and secured to the window casing, a bracket detachably engaging an end of said rod, a counter balance connected to said rod, means connected to said bracket for exerting a downward pull upon said rod whereby said rod is rotated through the engagement of said gears with said racks and the shade roller thereby raised or lowered and means for causing said rod to be retained in any adjusted position desired.

5. The combination with a window shade roller, of a rod around which said roller is rotatably supported, a spring surrounding said rod within the roller and connected at its opposite ends to said rod and to said roller respectively, gravity pawls carried by said roller, gears fixed upon the ends of said rod, a hub on one of said gears having recesses with which said pawls coöperate, racks engaged by said gears and secured to the window casing, means for exerting an upward or downward pressure upon said rod whereby it is rotated through engagement of said gears with said racks and the said roller thereby raised or lowered, and means for causing said rod to be retained in any adjusted position desired.

6. The combination with a longitudinally extensible window shade roller, of a longitudinally extensible rod around which said roller is rotatably supported, a spring surrounding said rod within the roller and connected at one end to said rod, and at its other end to said roller, gravity pawls carried by said roller, gears fixed upon the ends of said rod, a hub on one of said gears having recesses with which said pawls coöperate, racks engaged by said gears secured to the

window casing, a bracket detachably engaging one end of said rod, a counter balance connected to said bracket for raising said rod, means connected to said bracket for exerting a downward pull upon said rod, and means for causing said rod to be retained in any adjusted position desired.

In testimony whereof, I sign this specification in the presence of two witnesses.

ALEXANDER HOLMES.

Witnesses:
GEO. L. WILKINSON,
RUBY V. NASH.