

No. 815,621.

PATENTED MAR. 20, 1906.

J. M. MURDOCK.
WINDOW SHADE FIXTURE.
APPLICATION FILED SEPT. 18, 1904.

Fig. 1.

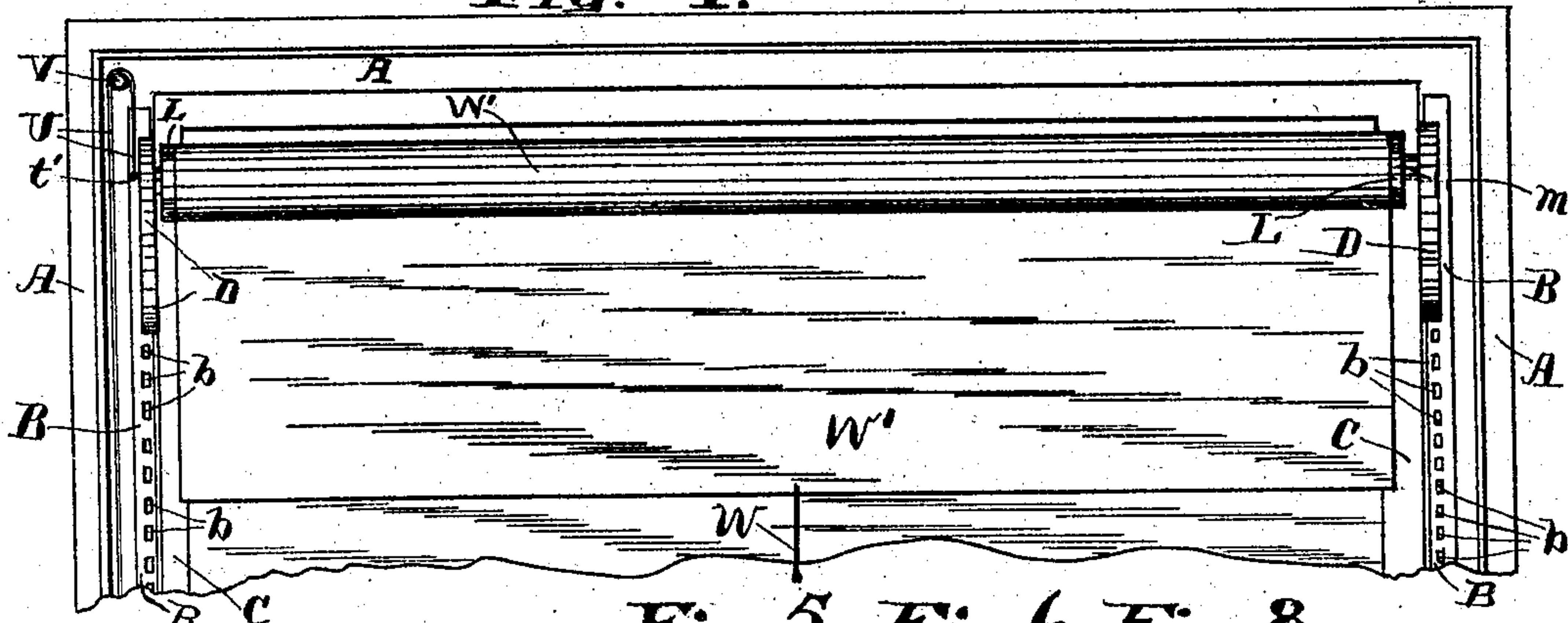


Fig. 5. Fig. 6. Fig. 8.

Fig. 3.

Fig. 4.

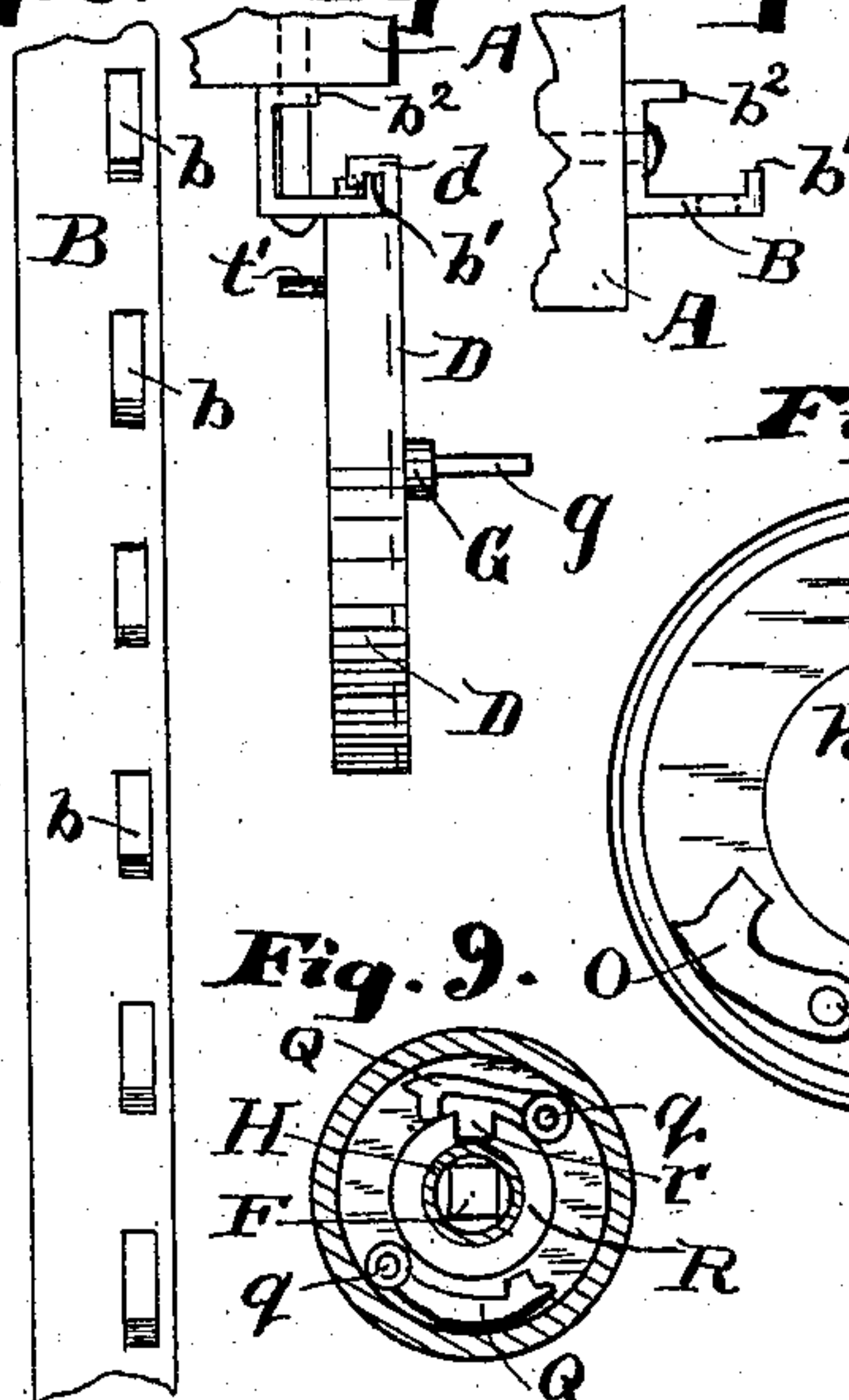
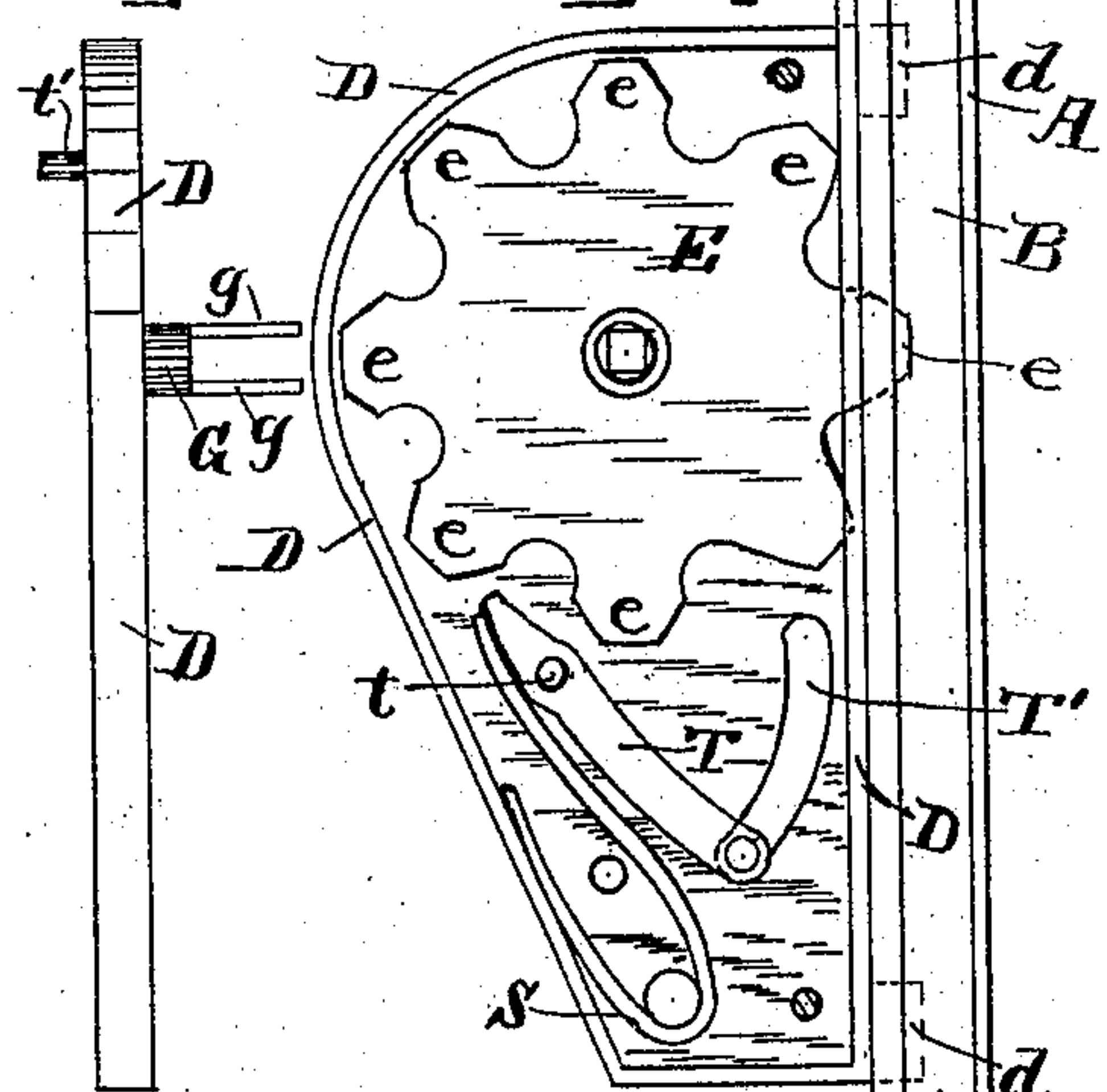


Fig. 7.

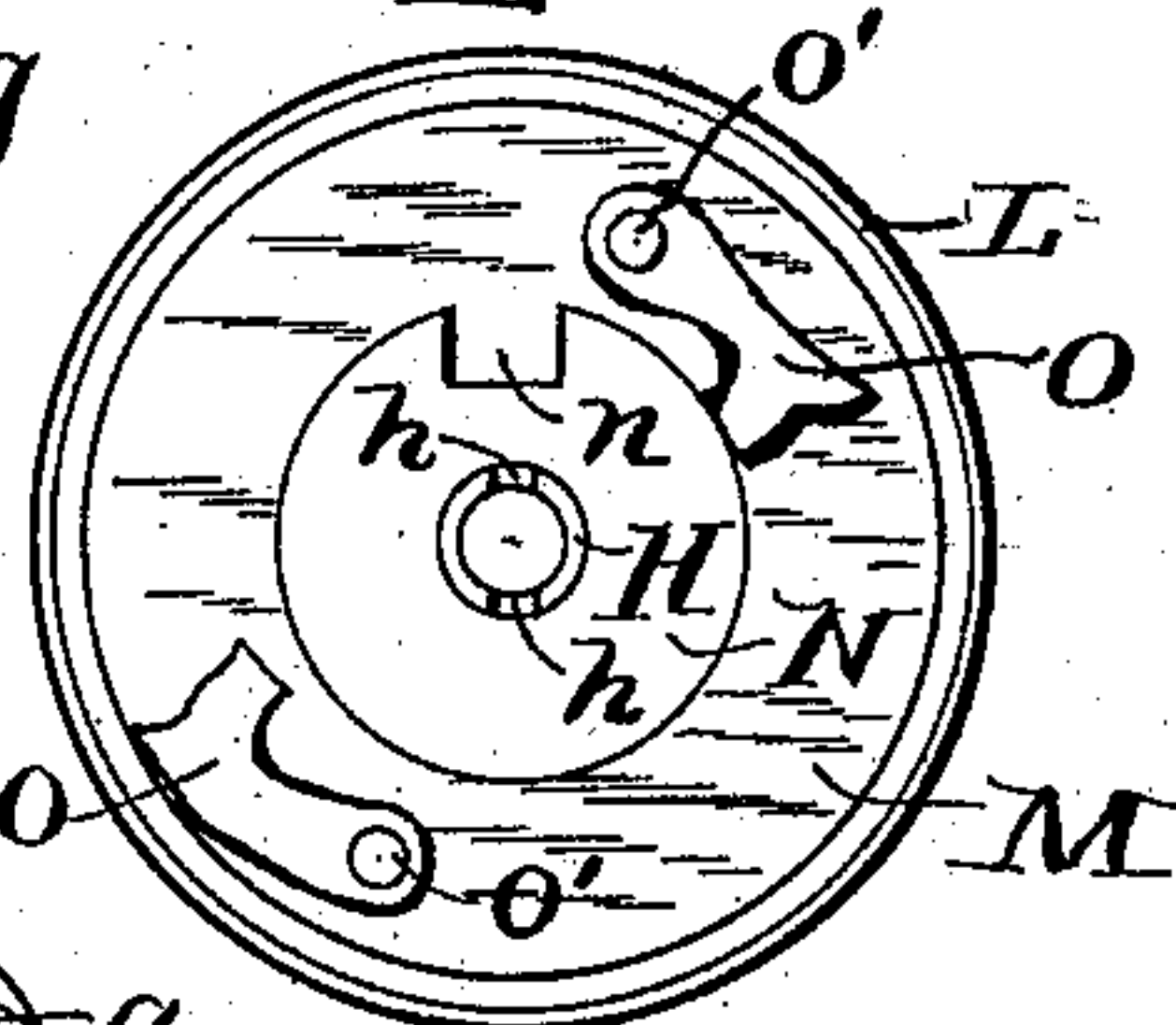


Fig. 9.

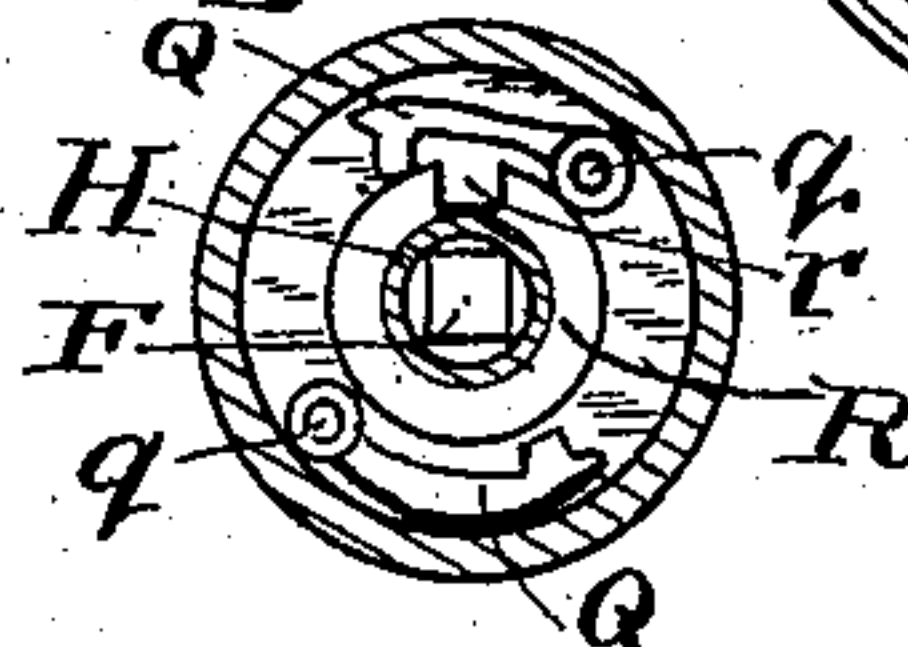
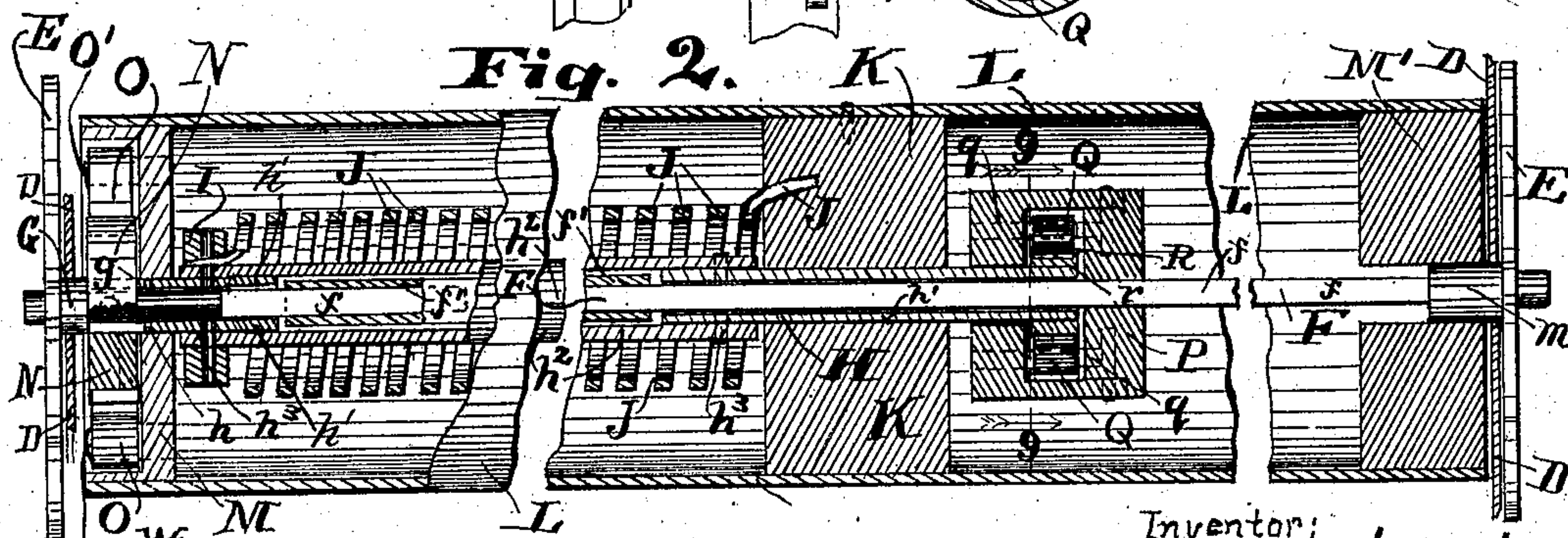


Fig. 2.



O' Witnesses;

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UNITED STATES PATENT OFFICE.

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WINDOW-SHADE FIXTURE.

No. 815,621.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed September 16, 1904. Serial No. 224,715.

To all whom it may concern:

Be it known that I, JOHN M. MURDOCK, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Window-Shade Fixtures, of which the following, when taken in connection with the drawings accompanying and forming a part hereof, is a full and complete specification sufficient to enable those skilled in the art to which it pertains to understand, make, and use the same.

The object of this invention is to obtain a good-appearing and durable window-shade fixture whereby a window-shade or window-curtain may be automatically wound on a spring-roller in the same manner as on the ordinary spring shade-roller and by means of which the position of such spring-roller may be changed laterally (and by means of a single cord or other flexible connection) by a person not particularly skilled in the use thereof, as by a child in a school-room.

In order to accomplish the purpose sought by me, the spring-roller used is constructed in the ordinary way so far as relates to a pawl at one end thereof and a spring one end whereof is non-rotatably secured in place and the other end whereof is connected to the roller around which the curtain may be wound. I further construct the spring-roller embodying this invention so that a shaft may extend longitudinally there-through, such shaft being extensible and rotatable within the spring-roller. Further, I construct the roller so that the same is a thin shell, preferably tin or other sheet metal, which may be readily adjusted at one end thereof, so that such shell will be of the proper length to fit the window before which the shade is to be hung. The extensibility of the central shaft of the roller is to provide means for the adjustment thereof to correspond with the determined length of the shell, and the rotatability of such central shaft is to provide means for the lateral movement of the curtain-roller by means of a cord attached to one end thereof. I further provide means whereby the rotation of the central shaft is automatically stopped—that is, such shaft is locked in a non-rotatable position, whereby lateral movement of the curtain-roller is prevented, and I further provide additional means of locking the central

shaft from rotation, such means constituting what may be termed an "emergency-lock" intended to automatically operate when the person changing the lateral position of the curtain-roller wilfully or accidentally loses control thereof, as by letting go of the string provided to control the position of the curtain-roller and the parts attached thereto.

In the drawings referred to, Figure 1 is a front elevation of the upper section of a window provided with a curtain-fixture embodying this invention attached thereto and a shade or curtain thereon. Fig. 2 is a vertical sectional view longitudinally of the spring-roller, showing the several movable parts of the device and with the shell or casing covering the toothed wheel at the ends of the fixture removed to expose such wheels to view. Fig. 3 is a front elevation of the shell or casing covering the toothed wheel at the left-hand end of the device as the same is viewed in Figs. 1 and 3 of the drawings, together with the fingers on such shell, whereby a hollow tube and one end of the spiral spring of the device are non-rotatably held. Fig. 4 is a side elevation of the shell illustrated in Fig. 3 with the front plate thereof removed therefrom to expose to view the toothed wheel and emergency-catch therefor. Fig. 5 is a front elevation of the track with which the toothed wheel shown in Figs. 2 and 4 engage. Fig. 6 is an end view of the toothed track shown in Figs. 1, 4, and 5. Fig. 7 is an end elevation of the spring-roller, showing the ordinary pawls and recessed wheel of spring curtain-rollers and showing the non-rotatable tubular shaft to which one end of the coiled spring of the device is attached. Fig. 9 is a cross-section of the inner end of a non-rotatable tube and of a rotatable shaft in such tube on line 9-9 of Fig. 2 viewed in the direction indicated by the arrows, showing a recessed hub secured to the tube, a hub secured to the rotatable shaft to turn therewith, and pawls on such rotatable hub to engage with the recess on the non-rotatable hub.

A reference-letter applied to designate a given part is used to indicate such part throughout the several figures of the drawings wherever the same appears.

A is a window-frame. B designates tracks which are secured to the window-frame A adjacent to the opening wherein the sash C is placed. The track B preferably consists of a

rectangular tube provided with holes $b\ b$ and having one corner thereof cut away, as is well shown in Figs. 6 and 8, the cuts required to remove the corner being made substantially

on lines $b' b^2$.

$D\ D$ are shells or casings engaging with the tracks B , as by the hooked fingers $d\ d$, and arranged to be moved up and down on such tracks. Each of the shells $D\ D$ is provided with a cog-wheel E , the teeth $e\ e$ of such cog-wheels respectively engaging with the holes b in track B . Wheels $E\ E$ are therefore rotated by the upward and downward movement of the shells or casing $D\ D$ on the track B .

F is a square shaft connecting wheels $E\ E$. Shaft F comprises square rods $f\ f$, which are respectively rigidly secured in the wheels E , and a square tube f' , into the ends whereof square rods $f\ f$ are inserted when the several parts of the device are assembled.

G is a non-rotatable hollow hub rigidly secured on the shell or casing D , and $g\ g$ are fingers on hub G . Projection G is hollow, and the rod f , on which the wheel E , which is adjacent thereto, is rigidly secured, (such rod f forming part of shaft F), extends through and rotates therein, as is shown in Fig. 2 of the drawings. In Fig. 2 a portion of the casing D is shown in cross-section to illustrate the manner in which hub G is attached thereto when not integral therewith.

H is a non-rotatable tube the end whereof adjacent to the hub G is provided with recesses $h\ h$, into which the fingers $g\ g$ extend. The square shaft F extends through the hollow tube H and is rotatable in such tube. The hollow tube H consists of two parts—the end parts $h' h'$ and the central part or portion h^2 . The internal diameter of the part h^2 of tube H is the same as the external diameter of parts $h' h'$, so that such parts $h' h'$ may be, respectively, inserted a short distance into part h^2 and there secured, as by the pins $h^3 h^3$, respectively. The part h^2 of the non-rotatable tube H is somewhat longer than the part f' of the square shaft F , and the ends of the parts $h' h'$ which are inserted in such part h^2 (and adjacent to the ends of the part f' of the square shaft F) are so near thereto that such part f' is not permitted much longitudinal movement, although the same may rotate freely. The parts $f\ f$ may therefore be inserted into the part f' a variable distance to suit the exact width of the window and may be withdrawn from such part f' and again inserted therein as often as desired. The end of the part h' of the tube H which is adjacent to the non-rotatable hub G is non-rotatably held by the fingers $g\ g$ in recesses or slots $h\ h$.

I is a hub or collar rigidly secured on the non-rotatable tube H , as by the pin h^3 , and J is the spiral spring of the curtain-roller, one

end whereof is secured to the non-rotatable tube H by such hub or collar I and the other end whereof is secured to the hub or collar K , which is rotatably mounted on the non-rotatable tube H .

L is the shell of the spring-roller of the apparatus.

M is a hub or collar rotatably mounted on the non-rotatable tube H adjacent to one end of the shell L , and M' is a hub or collar rotatably mounted on the non-rotatable hollow hub m of the shell D at the other end of the shell L .

N is a hub or collar non-rotatably mounted on the non-rotatable tube H adjacent to the hub G . Hub N is provided with the recess n therein, into which recess the dogs $O\ O$ enter and engage when adjacent thereto and not held therefrom by centrifugal force obtained by the rotation of the hub or collar M .

$O' O'$ are the pivots on which the dogs $O\ O$ are respectively mounted, such pivots being secured in the collar or hub M , as is illustrated in Figs. 2 and 7 of the drawings. The end of the part h^2 of the non-rotatable tube H which is adjacent to hub or collar M , together with the non-rotatable hub N on such tube H , prevents lateral movement of the rotatable hub or collar M .

The action of the dogs $O\ O$ relative to the non-rotatable hub N and slot or recess n therein is the usual action of corresponding parts in the ordinary spring-roller curtain-fixture.

A connection similar to the last-above-described connection, consisting of hub or collar M , non-rotatable hub N with recess n therein, and dogs O , is made between the end of the non-rotatable tube H which is adjacent to the rotatable hub or collar K and the rotatable shaft F by means of the casing P , which is rotatably mounted on the tube H and non-rotatably mounted on the square shaft F , dogs $Q\ Q$, pivotally secured in the casing P , as by means of the pivots $q\ q$, and hub R , provided with slot r , which is rigidly secured on non-rotatable tube H , except that such last-named connection is made oppositely to the first-named one—that is, if the connection consisting of the dogs O , engaging in slots n , (see Fig. 7,) be considered a "right-hand" connection the connection formed by the dogs Q , engaging in slot r , would be called a "left-hand" connection.

The emergency-stop hereinbefore referred to preferably consists of the spring S and dog T , pivotally mounted on pivot t in shell D , and the pin t' at one end of the dog T , such pin extending through recess T' in shell D , so that the spring or flexible connection U may be attached thereto, as is illustrated in Fig. 1 of the drawings. The dog T is yieldingly held by the spring S , so that the end thereof

which is adjacent to the cogs *e e* of the wheel E will engage with such cogs when the wheel is moved to the left—that is, in a contrary direction to the movement of the hands of a clock. When the wheel E is moved to the right—that is, in the direction in which the hands of a clock move—the end of the dog T which is adjacent to the cogs *e e* will be forced to one side thereby against the resiliency of the spring S, and when the weight of the apparatus embodying this invention is wholly or partially suspended by the flexible connection U the end of the dog T in which the pin *t'* is secured is brought to the upper end of the slot T', and thereby the dog T is positioned so that the end thereof adjacent to the cogs *e e* will not come in contact therewith when the cog-wheel E is turned either to the right or left. The flexible connection U extends from the dog T upward and over the roller V. W is the cord attached to the curtain W'.

When the curtain W' is to be wound on or unwound from the spring-roller of the device, the operation is the same as in other well-known spring-roller curtain-fixtures, the unwinding of the curtain or shade from the shell L of the spring-roller winding the spring J, such spring being maintained in a wound position by one of the dogs O O engaging with recess *n* on the non-rotatable hub N and such curtain being rewound on such shell by unwinding it slightly to disengage the dog from the recess and the permitting the spring to so rapidly wind the curtain as to maintain the dogs out of engagement with the recess by centrifugal force.

When the curtain-fixture embodying this invention is to be operated to move the curtain-roller and the casings D D at the ends thereof up or down on the track B, the flexible connection U is pulled downward until such movable parts of the apparatus are suspended thereon and the lever T is in position not to engage with the cogs *e e* of the wheel E in the rotation of such wheel, and such movable parts are then raised or lowered. In the raising or lowering of the shell D in which the lever T is mounted the wheel E therein is turned by engagement of the cogs *e e* thereof in the holes *b² b²* of track B, and by the turning of such wheel E the square shaft F is turned and the remaining wheel E (on the other end of such square shaft) is of course also turned in unison with the first-named wheel E.

When the movable parts of this curtain-fixture are to be lowered, the one of the dogs Q Q which is in engagement with the slot *r* in hub R, (thereby holding the fixture from falling or dropping by locking the square shaft F to the non-rotatable tube H, and thereby preventing the rotation of such square shaft,) it will be found necessary to slightly raise such

movable parts to disengage such dog, after which the movable parts are lowered so rapidly as to maintain the dogs Q out of engagement with recess or slot *r* by centrifugal force, the operation being substantially the same as is the operation of the locking device between the curtain-roller shell L and the non-rotatable tube H, which is illustrated in Fig. 7 and hereinbefore described.

The weight of the shade-roller and shade produces much greater tension on the flexible connection U than does the spring S when lever T is retracted by means of such flexible connection and the casing and shade-roller (with the shade) are raised sufficiently to draw the dog Q in slot *r* out therefrom, and in practice the rate of descent of the casing, shade-roller, and shade is not retarded by exerting sufficient pull on cord (flexible connection) U to prevent engagement of the dog T with teeth *e e* of cog-wheel E.

When the movable parts of the device have been raised or lowered by means of the flexible connection U, as hereinbefore described, to a desired position, such movable parts are held stationary until one of the dogs Q Q has settled into and engaged with the recess or slot *r*, thereby locking the square shaft F to the non-rotatable tube H. When the shaft F cannot rotate, cog-wheels E are non-rotatable, and the shells or casings D D with the curtain-roller cannot fall.

When the movable parts of the fixture are raised, the one of the dogs Q Q which is in engagement with recess *r* in hub R is drawn therefrom out of engagement therewith.

The upward and downward movement of the movable parts of this apparatus on tracks B B necessarily produces rotation of the shaft F and of the cog-wheels E E thereon, as the teeth of such cog-wheels engage in the hole *b²* of track *b b*, and I am therefore enabled to raise and lower both ends of such movable part by fastening the flexible connection U to one of the shells D D, (at one end of the spring-roller of the apparatus,) and I do not require any connection to the remaining shell D, (at the other end of the spring-roller.) The dog T, contained in the shell D, and to which dog the flexible connection is attached, is of course omitted from the shell D at the opposite end of the spring-roller.

If at any time in the raising or lowering of the movable parts of the curtain-fixture embodying this invention the flexible connection U is released, either accidentally or willfully, before one of the dogs Q Q is in engagement with the recess *r*, the spring S automatically forces the end of the dog T which is adjacent to the cogs *e e* into position to engage with such cog, and wheel E is thereby prevented from turning, and the movable parts are thereby locked from falling. This emergency feature is particularly of use where the

apparatus is placed in a school-room and is operated by a child.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fixture provided with a curtain-roller, a rotatable shaft extending through the roller, cog-wheels secured to the shaft to turn therewith, tracks with which the cog-wheels engage to rotate as the shaft is moved longitudinally along the tracks, means to maintain the cog-wheels in engagement with the tracks and means to prevent rotation of the shaft; substantially as described.
2. In a curtain-fixture provided with a spring-roller, a rotatable shaft extending through the spring-roller, tracks, casings attached to the tracks to move longitudinally thereon, cog-wheels in the casings, such cog-wheels secured to the shaft to turn therewith and placed in the casings to engage with the tracks and rotate as the shaft is moved longitudinally, means to automatically secure the shaft to prevent rotation thereof, and means to raise and lower the casing at one end of the rotatable shaft; substantially as described.
3. In a curtain-fixture, tracks, casings movably mounted on the respective tracks, cog-wheels in the casings; a non-rotatable tube secured to one of the casings, a rotatable shaft journaled in the casings and extending through the non-rotatable tube, the cog-wheels secured to the shaft to turn therewith, means to connect the shaft and the non-rotatable tube, to prevent rotation of the shaft, and means to raise and lower the casing to which the non-rotatable tube is secured; substantially as described.
4. In a curtain-fixture provided with a spring-roller, tracks, casings mounted on the tracks to move longitudinally thereover, cog-wheels in the casings, a tube non-rotatably attached to one of the casings, a rotatable shaft journaled in the casings, such shaft extending through the tube and through the spring-roller, and such cog-wheels placed in the casing and secured to the shaft to turn therewith and to engage with the tracks and rotate as the casings are moved on the tracks, a recess extending longitudinally of the tube on the end thereof, a collar mounted on the tube adjacent to the recess, such collar attached to the shaft to turn therewith, dogs on the collar to engage with the recess on the tube, and means to raise and lower the casing to which the tube is non-rotatably attached; substantially as described.
5. In a curtain-fixture provided with a spring-roller, a rotatable shaft extending through the spring-roller, tracks, casings attached to the tracks to move longitudinally thereon, cog-wheels in the casings, such cog-wheels secured to the shaft to turn therewith and placed in the casings to engage with the tracks and rotate as the shaft is moved longi-

tudinally, a collar secured to the shaft to turn therewith, pawls on such collar, a tube non-rotatably secured to one of the casings, such tube provided with a recess, as by means of a rigidly-secured recessed collar thereon, at the end thereof adjacent to the collar which is provided with pawls with which recess the pawls on the collar may engage, and means to raise and lower the casing to which the tube is attached; substantially as described.

6. In a curtain-fixture the combination of tracks, casings movably attached to the tracks, a hub provided with fingers on one of the casings, a tube provided with a slot at one end thereof, in which slot the fingers on the hub extends, such tube provided with recesses thereon, as by means of a rigidly-secured recessed collar thereon, a rotatable shaft journaled in the casings and extending through the casings and through the tube, cog-wheels in the casings such cog-wheels attached to the shaft to turn therewith and to engage with the tracks, a collar on the shaft secured to turn therewith, dogs on the collar arranged to engage with the recess in the rigidly-secured collar on the tube, a cylindrical shell, collars rotatably mounted on the tube adjacent to the ends thereof, such collars fitting in the cylindrical shell to turn therewith, dogs on one of such collars arranged to engage with the recess in the rigidly-secured collar on the tube, a collar on the rotatable shaft attached to turn therewith, dogs on such collar arranged to engage with the recess in the rigidly-secured collar on the tube, a spiral spring, attached at one end thereof, to the tube as by means of the hub I and at the other end thereof attached to the shell and means to raise and lower one of the casings; substantially as described.

7. In a curtain-fixture, the combination of tracks, casings movably attached to the tracks, a hub provided with fingers on one of the casings, a tube provided with a slot at one end thereof, in which slot the fingers on the hub extend, a collar rigidly secured to such tube such collar provided with a recess therein, a rotatable shaft journaled in the casings and extending through the casings and through the tube, cog-wheels in the casings such cog-wheels attached to the shaft to turn therewith and to engage with the tracks, a collar on the shaft secured to turn therewith, dogs on the collar arranged to engage with the recess in the rigidly-secured collar on the tube, a cylindrical shell, collars rotatably mounted on the tube adjacent to the ends thereof, such collars fitting in the cylindrical shell to turn therewith, dogs on one of such collars arranged to engage with the recess in the rigidly-secured collar on the tube, a collar on the rotatable shaft attached to turn therewith, dogs on such collar arranged to engage with the remaining recess on the tube, a spiral spring, means to attach one end

thereof to the tube and means to attach the other end thereof to the shell, a pulley and a flexible connection, one end whereof is attached to one of the casings, such flexible connection extending upward to and over the pulley and down; substantially as described.

8. In a curtain-fixture provided with a spring-roller, a rotatable shaft extending through the spring-roller, tracks, casings attached to the tracks, to move longitudinally thereon, cog-wheels in the casings, such cog-wheels secured to the shaft to turn therewith and placed in the casings to engage with the tracks and rotate as the shaft is moved longitudinally, a dog in one of the casings, a spring in such casing arranged to yieldingly hold one end of the dog in the path of the teeth of the cog-wheel, a flexible connection attached to the dog in the casing and a guide for the flexible connection, such flexible con-

nection extending upward and over the guide; substantially as described.

9. In a curtain-fixture, tracks, casings movably mounted on the respective tracks, cog-wheels in the casings, a non-rotatable 25 three-part tube secured to one of the casings, a rotatable three-part shaft journaled in the casings, and extending through the non-rotatable tube, one of the parts of the shaft longitudinally movable in the part adjacent 30 thereto, the cog-wheels secured to the shaft to turn therewith, means to connect the shaft and the non-rotatable tube, to prevent rotation of the shaft, and means to raise and lower the casing to which the non-rotatable tube is 35 secured; substantially as described.

JOHN M. MURDOCK.

In presence of—

CHARLES TURNER BROWN,
CORA A. ADAMS.