

(No Model.)

2 Sheets—Sheet 1.

W. H. KING.  
WINDOW CURTAIN FIXTURE.

No. 516,603.

Patented Mar. 13, 1894.

Fig. 1.

Fig. 2.

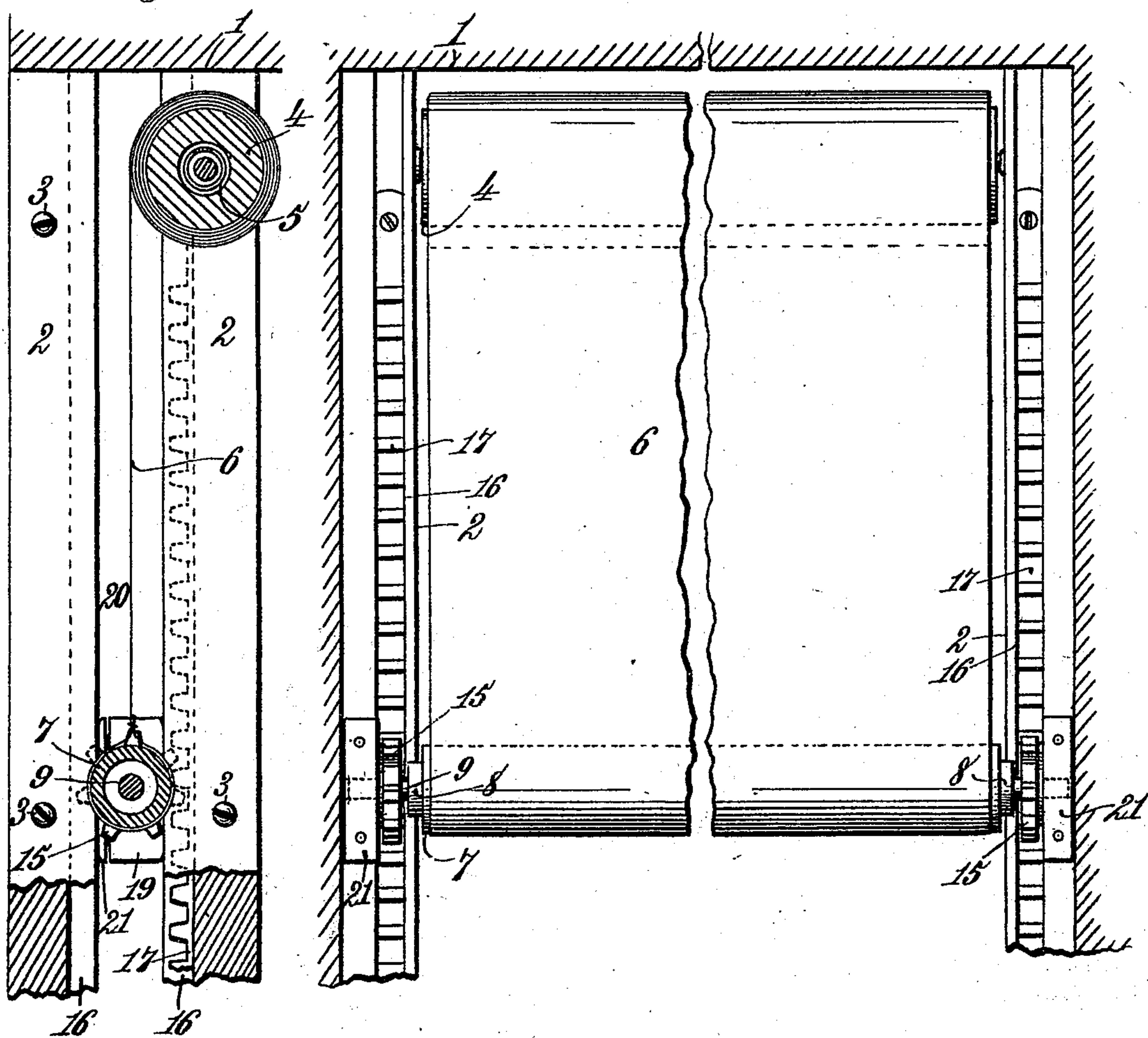
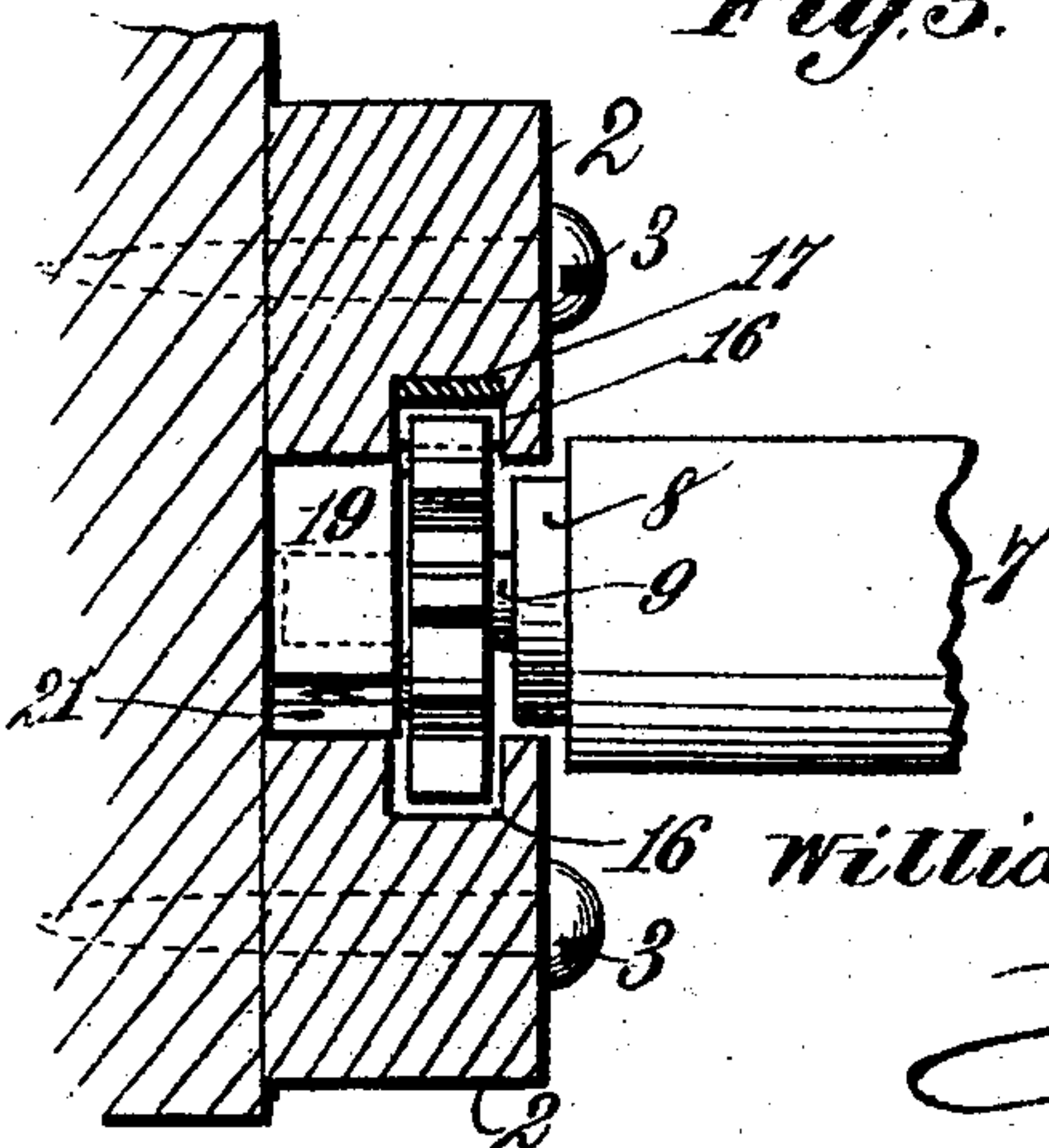


Fig. 3.



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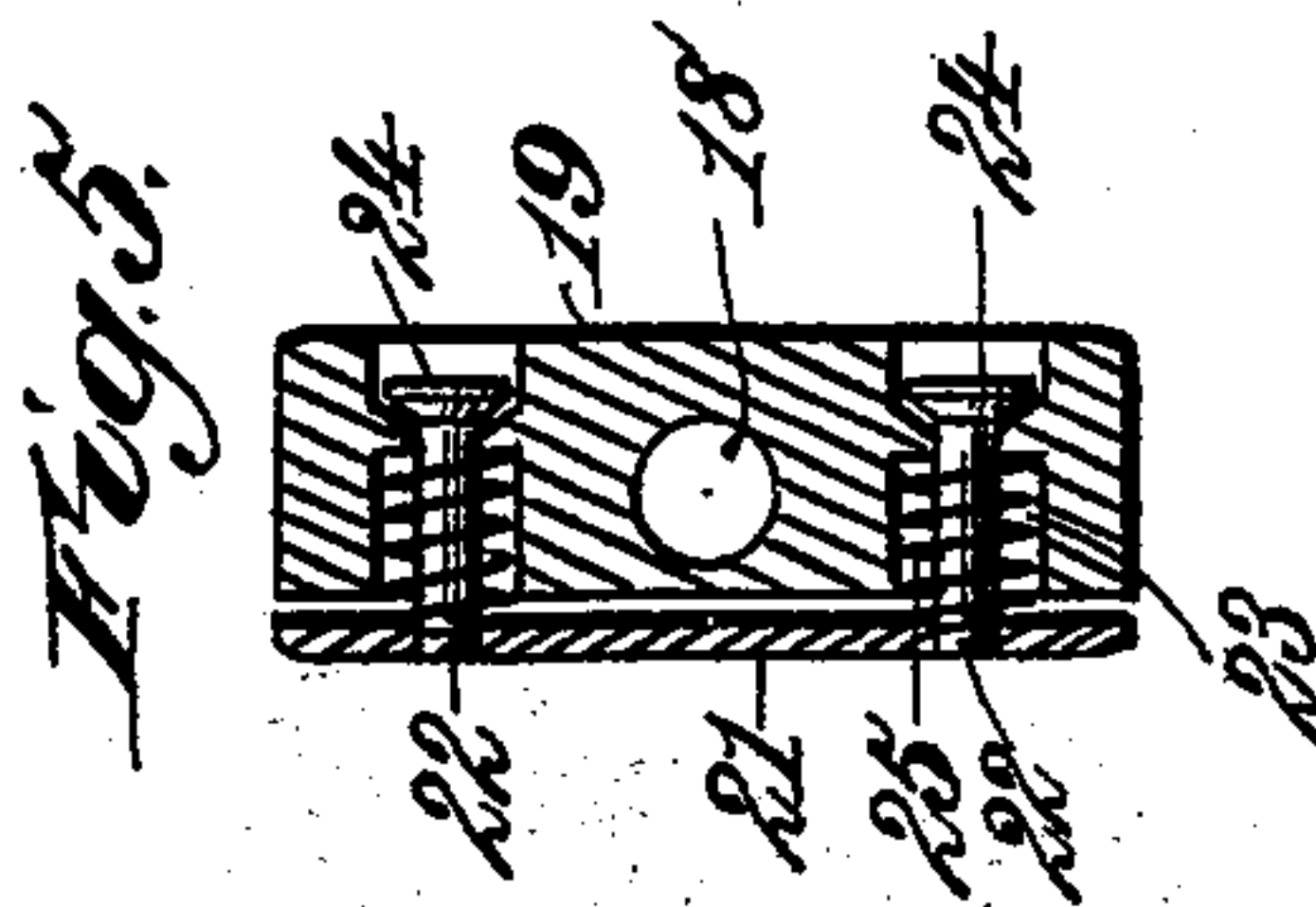
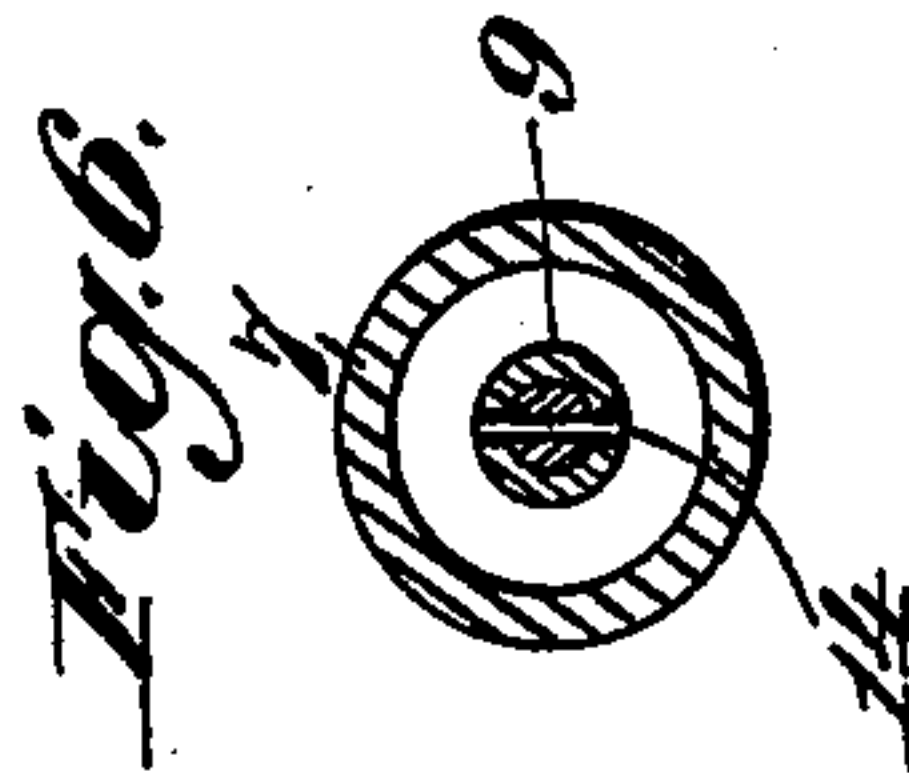
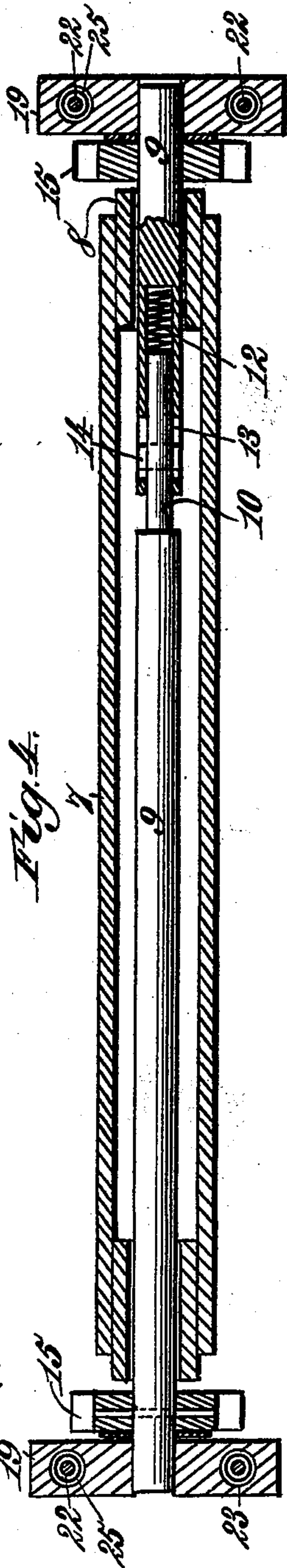
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2 Sheets—Sheet 2.

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Witnesses,  
*Robert Smith.*

G. W. Rea.

Inventor,  
*William Haskell King.*  
By *James L. Norris.*  
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# UNITED STATES PATENT OFFICE.

WILLIAM HASKELL KING, OF NEW HAVEN, CONNECTICUT.

## WINDOW-CURTAIN FIXTURE.

SPECIFICATION forming part of Letters Patent No. 516,603, dated March 13, 1894.

Application filed January 4, 1894. Serial No. 495,707. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM HASKELL KING, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented new and useful Improvements in Window-Curtain Fixtures, of which the following is a specification.

My invention relates to window-curtain fixtures, and especially to those employed upon steam and street railways, steam-vessels, and conveyances of all kinds in which such fixtures are required.

It is the purpose of my invention to provide a novel, simple and economical window-curtain fixture which may be readily raised, or lowered, by merely applying a comparatively small force to the lower end of the curtain, without regard to the point at which the required force is applied thereto, the construction and arrangement being such that the curtain must, under all circumstances, wind upon, or unwind from, the roller evenly and uniformly, while its lower end is maintained in substantial parallelism with said roller at every point of adjustment, even when the force exerted in raising or lowering it is applied wholly at either extreme edge, instead of in the center, as has usually been necessary, heretofore.

It is a further purpose of my invention to provide a window-curtain fixture which shall be wholly free from binding in the lateral guides in which the roll, or rod, at the lower end of the curtain moves, and which may be raised and lowered with perfect ease by applying a slight force at any point between the ends of the lower curtain-rod, or roll, provision being made for a perfect and simple compensation for all irregularities, or inequalities, in the distance between the opposite guides at different points, and for maintaining said curtain at any point to which it may be adjusted without the necessity of using the dogs, or stop-pawls, which ordinarily form part of every spring-actuated curtain-roller.

My invention also comprises simple means whereby the length of the lower roll, or rod, may be adjusted automatically to curtains, of different widths, whereby the pinions which control and equalize the movement of

the opposite ends of said roll, or rod, shall be held at all times in uniform mesh with their racks.

It is my purpose, also, to provide means whereby, a degree of friction shall be at all times produced sufficient to hold the curtain at any point to which it may be adjusted and enable it to resist the constant jar, and movement of the car, vessel, or other conveyance in which it is used.

My invention consists in the several novel features of construction and new combinations of parts hereinafter fully described and then particularly pointed out in the claims which form part of this specification.

To enable others skilled in the art to which my said invention pertains to understand and to make, construct and use the same, I will describe said invention in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section upon the line 1—1, in Fig. 2. Fig. 2 is a sectional elevation of a window, provided with a curtain-fixture constructed in accordance with my invention, the window-casing being in section. Fig. 3 is a horizontal section upon a slightly enlarged scale, the section plane passing through one end of the lower roll or rod of the curtain. Fig. 4 is a central longitudinal vertical section of the lower curtain-roll, or rod. Fig. 5 is a detail section of one of the friction boxes, with which the ends of the lower curtain-roll, or rod, are connected. Fig. 6 is a transverse section of the same, upon the line 6—6, Fig. 4.

In the said drawings the reference numeral 1 indicates an ordinary window-casing, which is provided with lateral, vertical guides 2, applied to said casing in any suitable manner, as, for example, by screws 3.

At the upper end of the casing 1, supported in bearings suitable for the purpose, is the curtain-roller 4, which is of any known, or preferred type, its take-up movement being imparted by a spring 5, in any known, or preferred manner, said roller differing from those in common use merely in having no dogs, or stop-pawls, whereby the action of the spring is arrested and the curtain held at any point to which it may be adjusted.

In the lower edge of the curtain 6, which



hangs from the roller 4, is formed a pocket in which is inserted a tube, or cylinder, 7, having a length substantially equal to or a little greater than, the width of the curtain.

5 In the ends of this tube are inserted bushings 8, which form bearings for a shaft 9, which passes through the whole length of said tube and projects at both ends thereof. This shaft is preferably made extensible in  
 10 any suitable manner, as, for example, that shown in Fig. 4, in which it is divided into two parts, the diminished end 10 of one of said parts being inserted in a chamber in the other part and extended, or pressed outward, by a  
 5 coiled spring 12, lying in said chamber. In the chambered portion of the shaft is formed a central longitudinal slot 13, in which lies a key 14 which enters a suitable aperture in the diminished end 10 of the other part of  
 10 the shaft, said slot being of such length as to permit the maximum extension, or contraction, of the shaft that will be required.

Upon the projecting ends of the shaft 9 are mounted pinions 15, which lie in chan-  
 5 nels 16 in the vertical guides 2 and mesh with racks 17, arranged in said channels upon one side thereof. The extremities of the shaft, which project beyond the pinions 15, lie in bearings 18, formed in friction-boxes 19, the  
 10 latter being arranged in channels 20 in the vertical guides 2.

The friction-boxes 19 are each formed in two parts, one consisting of the main body, indicated by the numeral 19, in which the  
 5 ends of the shaft have bearing, and the other part consisting of a smaller portion, or plate 21, which is connected with the part 19 by small bolts 22, which pass through openings 23 in the main body-portion 19 and have their  
 10 ends rigidly connected to the plate 21. Between the heads 24 of these bolts and the plate 21 to which they are attached, are interposed springs 25, by which a constant and uniform pressure is exerted upon the plate to  
 15 push it away from the main portion 19 of the friction box. The two parts composing each friction-box lie against the opposite, vertical walls of the channel 20 in which said friction-box moves, and are pressed against said walls  
 20 by the expansion of the springs 25. By this construction not only are the ends of the shaft 9 maintained at all times in the same relation to the racks 17, and the pinions 15 thereby retained in accurate and uniform  
 25 mesh therewith, but sufficient friction is exerted upon the walls of the channels in which the friction-boxes move to enable the latter to act as an efficient brake to the curtain and maintain the latter at any point to which it  
 30 may be adjusted. It should be noted that by these means I dispense with the necessity of using dogs, or stop-devices of any kind, upon the curtain-roll. By properly adjusting the weight of the tube 7 and shaft 9, so  
 35 as to suitably counterbalance the force of the spring 5 in the curtain roller, the frictional resistance of the boxes 19 may be reduced to

a minimum. I prefer to extend the ends of the tube 7 far enough beyond the edges of the curtain to enable them to enter the chan- 70  
 nels in the vertical guides 2, as shown in Fig. 3.

My invention is not restricted to the use of a spring-actuated curtain-roller, as I may employ any known or preferred means for 75  
 imparting revolution to said roller.

Heretofore, and prior to my invention, much difficulty has been experienced in providing window-curtain fixtures for public conveyances, such as street-cars, steam railway cars, 80  
 steamers and other vessels. As these fixtures are constantly operated by persons who are either wholly ignorant of, or but little acquainted with their use.

In lowering, or in raising the curtain, it is 85  
 a common practice to apply a strong, sudden, downward traction, or an upward lift, to the lower end of the curtain at, or near, one side thereof, by which it is either thrown to one side, or the other, on the curtain-roller, or, if 90  
 a lower rod, or roll, is mounted in the end of the curtain, it is almost always caused to bind in the guide-channels in which its ends move, and the rough efforts to overcome this tendency frequently increase the difficulty or re- 95  
 sult in serious damage to, or destruction of, the entire device. Moreover, the means heretofore employed for holding the curtain at different heights either require an expert manipulation, like the centrifugal dog, or pawl, 100  
 commonly used in spring shade-rollers, or if other forms are used it is not uncommonly the case that they yield slowly to the jar and movement of the vehicle and fail to hold the curtain permanently at the point to which it 105  
 is adjusted. By my invention all these difficulties are avoided. It is immaterial at what point the drag, or lift, is applied to the lower end of the curtain, or how sudden and violent the force may be, since neither end of the 110  
 shaft 9 can rise, or fall, without an equal movement, in unison, of the other side. The pinions on said shaft being held by their bearings in the friction-boxes 19 in uniform and proper relations to the racks in which they 115  
 mesh, they must travel smoothly therein and with equal play on both sides, all tendency to bind, or move with difficulty, being removed. By the use of the friction-boxes, in which the ends of the shaft have bearing, I am not only 120  
 able to maintain this proper meshing engagement, but I provide an effectual brake by which the curtain will be permanently held at any point, and I am able to dispense with the centrifugal dogs, or other automatic stops, 125  
 heretofore used in connection with the curtain-roll. By adapting the weight of the tube and shaft, inserted in the pocket in the lower end of the curtain, to the force of the spring in the curtain-roller, I am also able to mate- 130  
 rially reduce the frictional resistance of the boxes 19, and thereby enable the curtain to be raised and lowered by the exertion of a comparatively small degree of force. I make pro-



vision, also, for an automatic compensation for any irregularity in the width of the window-casing at different points, which is often liable to take place in cars and vessels in which the frame is subjected to constant strain.

What I claim is—

1. In a window-curtain fixture, the combination with an automatically-actuated curtain-roller, of a shaft lying in supports attached to the lower end of the curtain, pinions mounted on the projecting ends of said shaft, racks arranged in vertical guides and engaging said pinions, and friction-boxes mounted upon the extremities of the shaft and moving in channels in said vertical guides, substantially as described.

2. In a window-curtain fixture, the combination with an automatically-actuated curtain roller, of an extensible shaft lying in supports upon the lower end of the curtain, pinions mounted upon the ends of the shaft, vertical racks with which said pinions have mesh, friction devices on the ends of the extensible shaft, and guides with which the friction devices engage for holding the curtain at different points of adjustment, substantially as described.

3. In a window-curtain fixture, the combination with an automatically actuated curtain-roller of a shaft mounted in supports upon the lower end of the curtain, pinions fixed upon the projecting ends of said shaft, racks arranged in channels in vertical guides and engaging the pinions, and friction-boxes lying in separate channels in said guides, said boxes being composed of two parts which are separated by spring-pressure, substantially as described.

4. In a window-curtain fixture, the combination with an automatically-actuated curtain-roller of a shaft lying in bearings supported on the lower end of the curtain, pinions mounted on the projecting ends of said shaft, racks meshed by said pinions and lying in channels in vertical guides, friction boxes formed in two parts, the body parts thereof receiving the ends of the shaft and the other parts being adjustably connected to the body parts, and springs interposed between the two to separate said parts, substantially as described.

5. The combination with a curtain roller, and a curtain, of guide-ways, racks, a shaft having pinions engaging the racks and arranged at one end portion of the curtain, and friction brakes mounted on the ends of the shaft and engaging the guide-ways for holding the lower end portion of the curtain at

different points of adjustment, substantially as described.

6. The combination with a curtain roller, and a curtain, of a tube connected with the lower end of the curtain, an extensible shaft extending through the said tube and supported by bearings at the ends thereof, vertical racks, pinions mounted on the extensible shaft and engaging the racks, vertical guide-ways, and friction-brake-boxes forming bearings for the ends of the extensible shaft and engaging the vertical guide-ways for holding the lower end portion of the curtain at different points of adjustment, substantially as described.

7. In a window curtain fixture, the combination with an automatically actuated curtain roller, and a curtain, of a tube arranged on the lower end portion of the curtain and having bushings at its ends, an extensible shaft extending through the said tube and supported by the bushings at the ends thereof, pinions fixed upon the extensible shaft, and vertical racks with which said pinions engage, substantially as described.

8. In a window curtain fixture, the combination with an automatically actuated curtain roller, and a curtain, of a tube arranged at the lower end portion of the curtain and having bushings in its ends, an extensible shaft extending through the said tube and supported by the bushings in the ends thereof, pinions fixed upon the extensible shaft, vertical racks with which said pinions engage, vertical guide-ways, and friction brakes arranged upon the ends of the extensible shaft and engaging the vertical guide-ways for holding the curtain at different points of adjustment, substantially as described.

9. In a window curtain fixture, the combination with an automatically operated curtain-roller, and a curtain, of a tube arranged at the lower end portion of the curtain and having bushings in its ends, a telescopic extensible shaft extending through the said tube and supported by the bushings at the ends thereof, a spring acting on the parts of the shaft to extend the same, pinions mounted respectively on the said parts of the shaft, and racks with which said pinions engage, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

WM. HASKELL KING. [L. S.]

Witnesses:

JAMES L. NORRIS,

G. W. REA.