

No. 883,834.

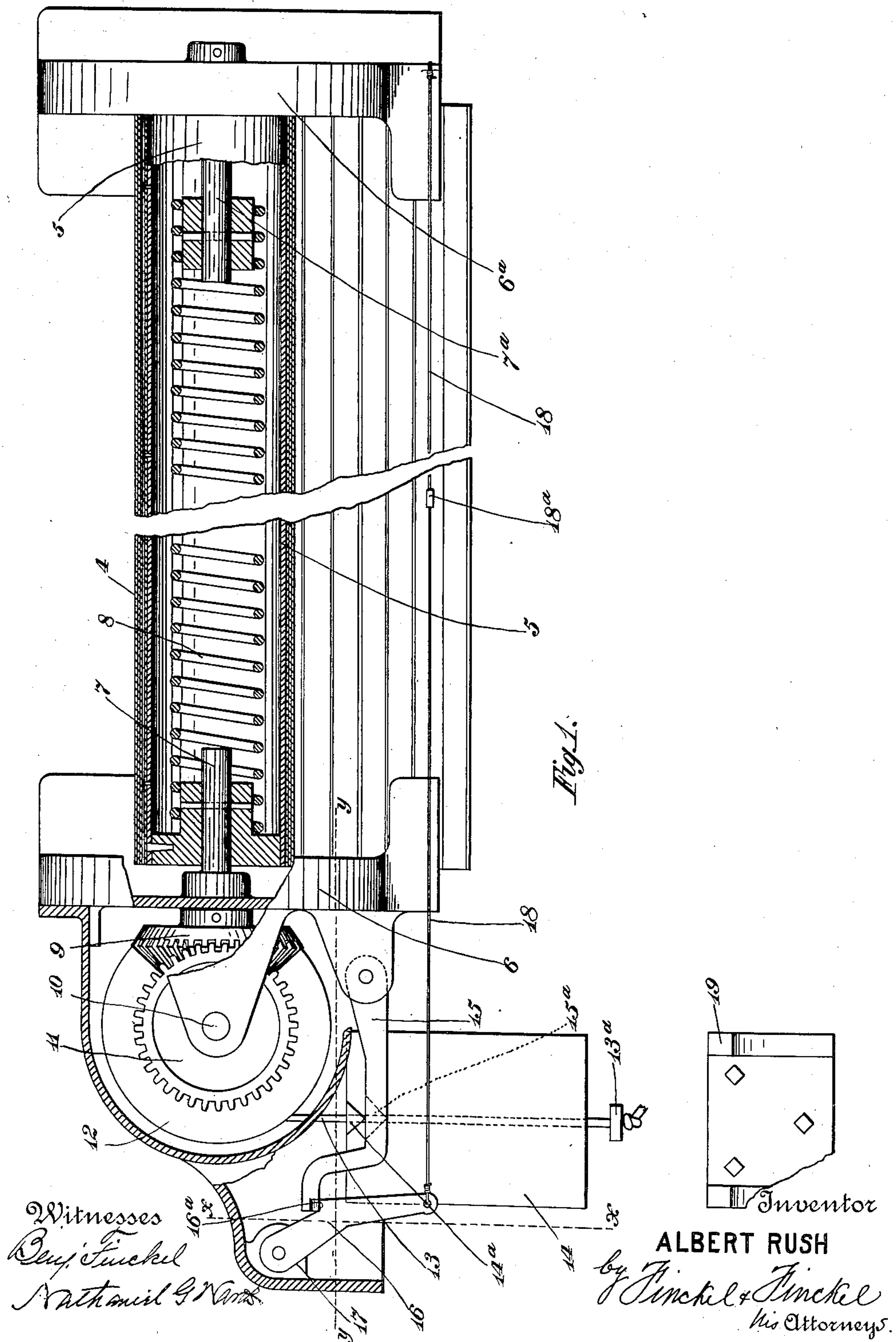
PATENTED APR. 7, 1908.

A. RUSH.

FIRE RESISTING SHUTTER OR CURTAIN.

APPLICATION FILED MAY 31, 1907.

2 SHEETS—SHEET 1.



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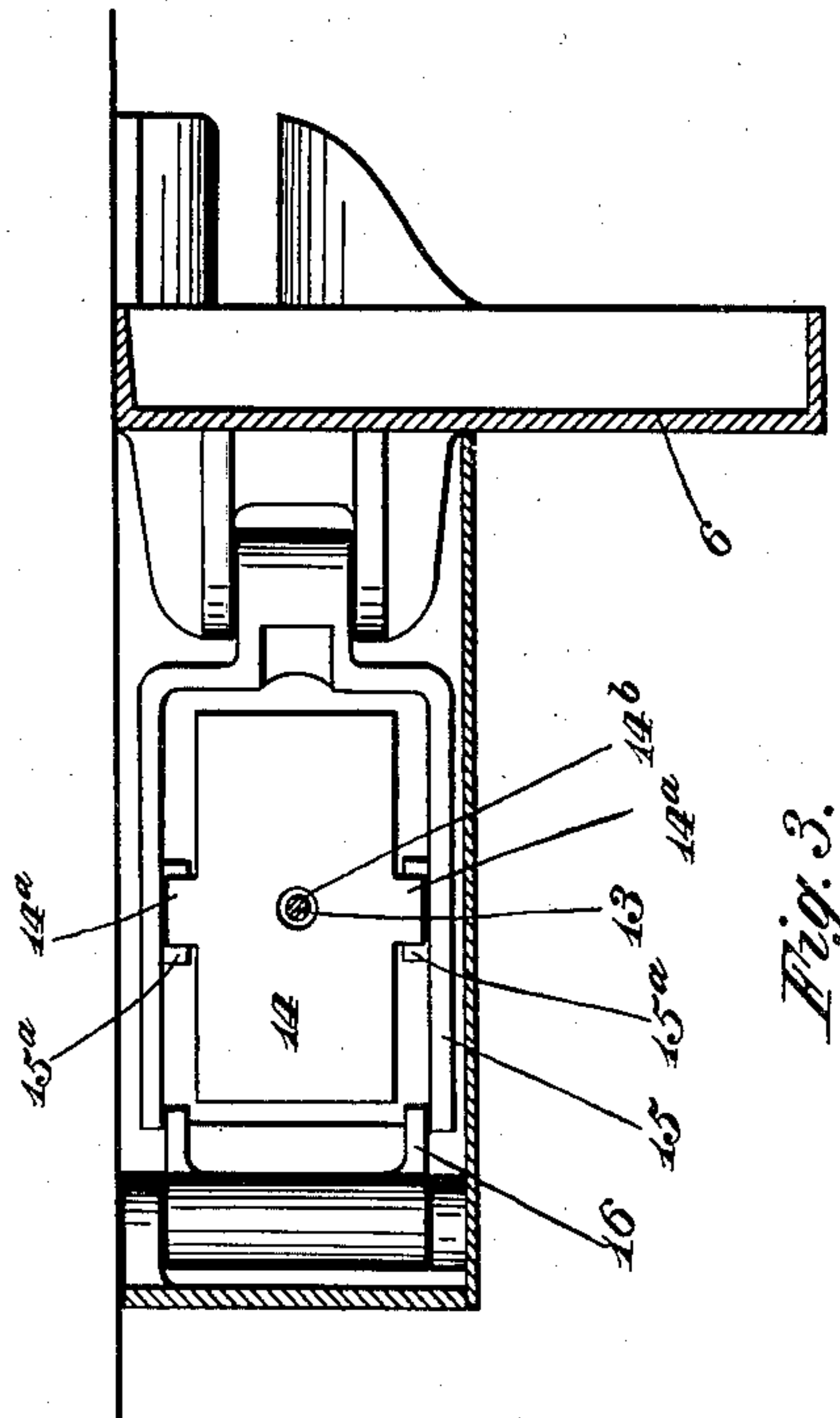


Fig. 3.

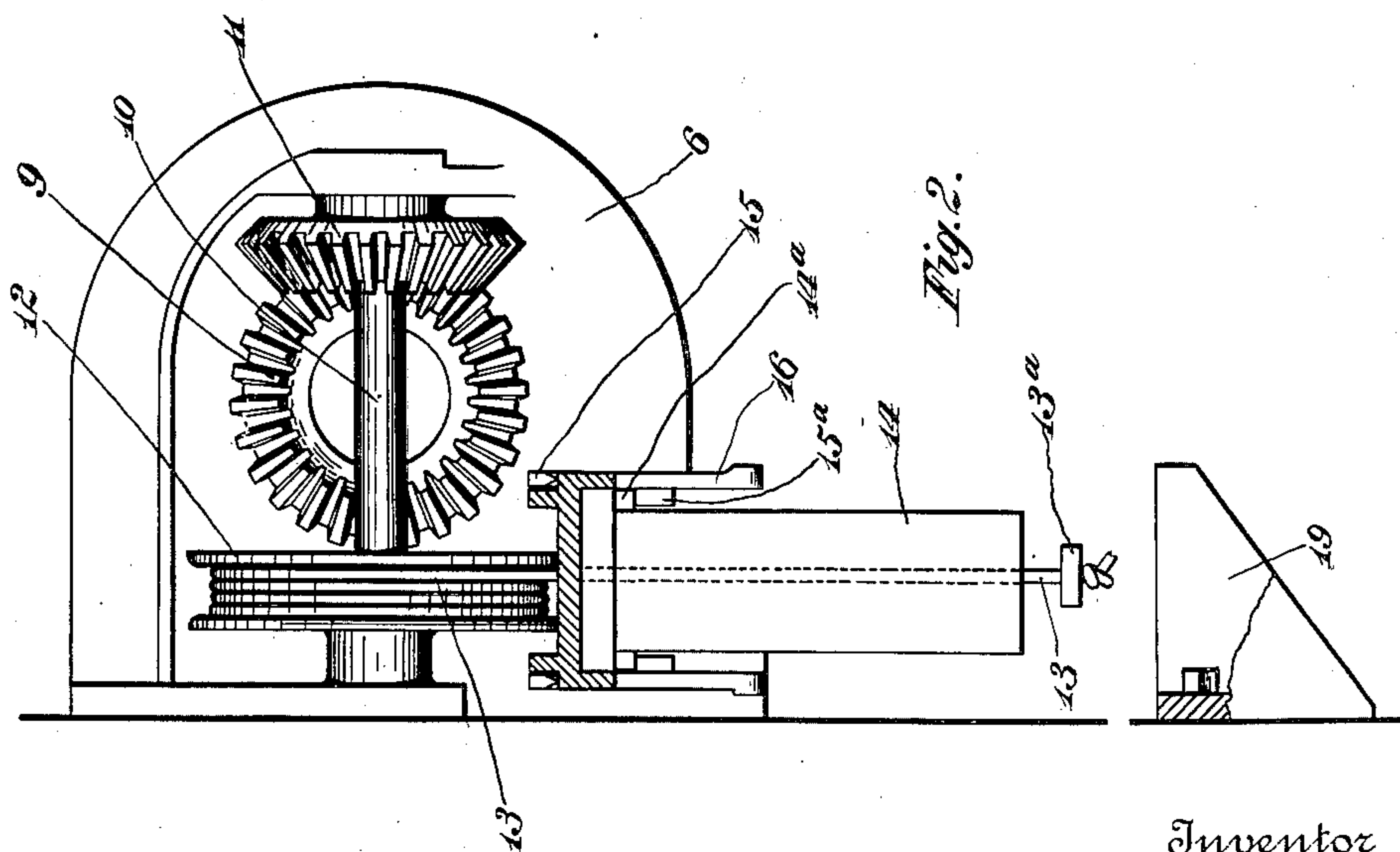


Fig. 2.

Witnesses  
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# UNITED STATES PATENT OFFICE.

ALBERT RUSH, OF COLUMBUS, OHIO.

## FIRE-RESISTING SHUTTER OR CURTAIN.

No. 883,834.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed May 31, 1907. Serial No. 376,503.

*To all whom it may concern:*

Be it known that I, ALBERT RUSH, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Fire-Resisting Shutters or Curtains, of which the following is a specification.

The main object of the invention is to provide an improved flexible shutter or curtain counterbalanced by a spring roller, which curtain or shutter may be raised or lowered at will with means whereby it may be automatically lowered in case of fire.

The invention is embodied in the construction hereinafter described and claimed and shown in the accompanying drawings, the invention not being confined to the specific instance illustrated.

In said drawings—Figure 1 is an elevation of a shutter (broken out) equipped with the present invention; Fig. 2 is an end view and section looking from the plane indicated by the line  $x-x$  Fig. 1; Fig. 3 is a horizontal section on the plane indicated by the line  $y-y$  Fig. 1.

In the views 4 designates a suitable flexible metallic shutter secured to be wound on a suitable drum 5. The roller is mounted between suitable end brackets 6 and 6<sup>a</sup>. The shaft 7<sup>a</sup> supporting the roller on the right-hand end bracket is fixed, while the shaft 7 in the left-hand end bracket is rotatable, being secured, as shown, to turn with the drum. The spring 8 is fixed at one end to the fixed shaft 7<sup>a</sup> and at its other end to the drum so as to be wound and unwound by it as the curtain is wound and unwound.

The progressive variation of the tension of the spring as the curtain is wound or unwound tends to compensate for or counterbalance that portion of the curtain which is exposed and makes the curtain easy to operate. The shaft 7 is extended beyond the left-hand end bracket and is provided with a miter gear 9.

Journaled in suitable bearings beyond the end bracket 6 and at right angles to the axis of the roller is an auxiliary shaft 10 on one end of which is fixed a miter gear 11 meshing with the aforesaid gear 9, the other end of said shaft containing fixed thereto a sheave 12. Attached at one end to the rim of the sheave 12 is a cord 13 the free end of which winds and unwinds with the winding and unwinding of the curtain.

14 designates a weight having at the opposite sides of its upper end V-shaped projections 14<sup>a</sup>.

15 designates a bifurcated lever pivoted at its shank end to the outer side of the end bracket 6. The tangs of the bifurcated lever 15 are provided with inwardly extending V-shaped bearings 15<sup>a</sup> upon which the corresponding projections of the weight rest when the latter and the lever 15 are properly adjusted and supported. The lever 15 is held up in weight-supporting position by means of a gravity latch 16 pivoted in suitable eyes 17 beyond the end of the lever. The gravity latch 16 is provided with two suitable off-set shoulders 16<sup>a</sup> to afford bearings for the ends of the bifurcated weight-supporting lever 15, and the bearing ends of said bifurcated lever can be made V-shaped or pointed so as to more surely slip off when the gravity latch is released. The gravity latch is held in raised position to support the weight in ready-to-operate position by means of a wire composed of sections united at points by fusible solder as at 18<sup>a</sup>, said wire being connected to the gravity latch and stretched, in the instance shown, across the front of the shuttered opening and attached to a fixed point on the opposite end bracket 6<sup>a</sup>. The weight 14 is provided with a vertical opening 14<sup>b</sup> through which the cord 13 passes, said cord being provided with a stop button 13<sup>a</sup> to catch and hold the weight on the cord when the latter is released.

19 is a bracket placed a foot or two above the lower end of the window or door opening to arrest the weight before the curtain has completely descended. The advantage of this weight-arresting bracket is that without it the momentum imparted to the curtain by the weight might be so great as to damage the curtain, and further it is important that the curtain be easily raised or lowered at least at its lower portion after its automatic closure in case of fire, for the purpose of affording egress of persons within the building, or on the other hand, of access of firemen to the interior of the building.

In the normal operation of the shutter, the normal position being that indicated in Fig. 1, the cord 13 simply moves freely up and down through the hole in the weight when the shutter is raised and lowered.

In case of nearby fire the solder at 18<sup>a</sup> fuses and releases the gravity latch 16 and



liberates the weight. The weight is of such size that when added to that of the unrolled portion of the curtain it overbalances the spring and therefore unwinds the curtain.

5 It should be such that the momentum of the curtain can be relied upon to send the curtain to closed position after the weight has been arrested in its descent.

10 What I claim and desire to secure by Letters Patent is:—

1. The combination with a flexible fire resisting curtain or shutter and roller therefor and means adapting the curtain to be raised and lowered; of means operated by a dangerous rise of temperature for automatically lowering the curtain if in elevated position, and means for arresting the operation of said automatically operated lowering means prior to the complete descent of the curtain, 15  
20 said means for raising and lowering the curtain being unaffected by the means for automatically lowering the curtain.

2. The combination with a flexible fire resisting curtain or shutter and roller therefor and means adapting the curtain to be raised and lowered, of means, for automatically lowering the curtain if in elevated position, said last mentioned means including a weight and means for supporting the weight in inoperative position, means operated by a dangerous rise of temperature for releasing the weight to operate on the curtain, and means for arresting the operation of the weight prior to the complete descent 25  
30 of the curtain.

3. The combination with the roller of a flexible fire resisting curtain or shutter, of a sheave operative by said roller, a cord on said sheave, a weight, and means to release the weight to engage the cord and operate the curtain upon the occurrence of nearby fire, and means for arresting the operation of the weight on the cord prior to the complete descent of the curtain. 35  
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4. The combination with the roller of a flexible fire resisting curtain or shutter and means for counterbalancing the curtain or shutter as it is unrolled, of a sheave operative by said roller, a cord on said sheave, a weight, and means to release the weight to engage the cord and operate the curtain upon the occurrence of nearby fire, and means for arresting the operation of the weight on the cord prior to the complete descent of the curtain. 45  
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5. The combination with the roller of a flexible fire resisting curtain or shutter provided with a spring for counterbalancing the curtain or shutter as it is unrolled, of a sheave operative by said roller, a cord on said sheave, a weight, and means to release the weight to engage the cord and operate the curtain upon the occurrence of nearby fire. 60

6. The combination with a fire resisting curtain or shutter and a roller therefor, of a 65

sheave operative by said roller, a cord on said sheave, a weight to act on said cord, means for suspending said weight comprising a lever and a latch to hold said lever, and means fusible by a dangerous rise of temperature to hold said latch. 70

7. The combination with a fire resisting curtain or shutter, and a roller therefor, of a sheave operative by said roller, a cord on said sheave, a weight to act on said cord, means for suspending said weight, means for releasing said suspending means comprising a stretched wire and a connection for said wire fusible by a dangerous rise of temperature, and means for arresting the operation of the weight on the cord prior to the complete descent of the curtain. 75  
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8. The combination with a fire resisting curtain or shutter, a cord, means in connection with the shutter for operating the cord, and a weight to act, when released, on the cord to draw down the curtain or shutter, means for suspending the weight, said weight provided with an opening through which the cord moves in the normal operation of the curtain or shutter. 85  
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9. The combination with a fire resisting curtain or shutter, means adapting it to be raised and lowered, a cord, and means in connection with the shutter or curtain for raising and lowering said cord with the raising and lowering respectively of the shutter or curtain, a weight and means for suspending said weight operative to be released by a dangerous rise of temperature, and means whereby said weight becomes attached to said cord when released. 95  
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10. The combination with a fire resisting curtain or shutter, means adapting it to be raised and lowered, means for automatically lowering the curtain or shutter if in elevated position operative by a dangerous rise of temperature, and means for arresting the operation of the automatically lowering means prior to the complete descent of the curtain. 105  
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11. The combination with a fire resisting curtain or shutter, means adapting it to be raised and lowered, a weight, means for suspending said weight, said weight when released adapted to engage said curtain or shutter to lower the same, and means for arresting said weight prior to the complete descent of the curtain or shutter. 115

12. The combination with a flexible fire resisting curtain or shutter and counterbalancing roller therefor and means adapting the curtain to be raised and lowered, of means for automatically lowering the curtain if in elevated position; said last mentioned means including a weight and means for supporting the weight in inoperative position, means operated by a dangerous rise of temperature for releasing the weight to operate on the curtain, and means for arresting the 120  
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operation of the weight prior to the complete descent of the curtain.

13. The combination with a counterbalancing spring roller for a flexible fire resisting curtain or shutter, said roller having a shaft turning with said roller, an auxiliary shaft journaled near the roller shaft, gearing between the roller shaft and the auxiliary shaft, a sheave on said auxiliary shaft, a cord on said shaft, a weight and means for suspending it near said sheave, means whereby said weight upon its release may be engaged with said cord, means rendered operative by a dangerous rise of temperature to release said weight.

14. The combination with a counterbalancing spring roller for a flexible fire resisting curtain or shutter, said roller having a shaft turning with said roller, a gear wheel on said shaft, an auxiliary shaft journaled near said roller shaft, a gear wheel on said auxiliary shaft engaged by the gear wheel on said roller shaft, a sheave on said auxiliary shaft, a cord on said sheave, a weight and means for sus-

pending it in proximity to said sheave, and means whereby said weight when released is adapted to engage said cord, and means operative by a dangerous rise of temperature to release said weight.

15. The combination with a counterbalancing spring roller for a flexible fire resisting curtain or shutter, said roller having a shaft turning with said roller, a beveled gear on said shaft, an auxiliary shaft arranged and journaled near said roller shaft and at right angles thereto, a beveled gear on said auxiliary shaft engaged by the beveled gear of the roller shaft, a sheave on said auxiliary shaft, a cord on said sheave, a weight and means for suspending it in proximity to said sheave, and means whereby said weight when released is adapted to engage said cord, and means operative by a dangerous rise of temperature to release said weight.

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Witnesses:

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