

No. 698,475.

Patented Apr. 29, 1902.

P. EBNER.
FIRE SHUTTER.

(Application filed Nov. 5, 1900.)

(No Model.)

2 Sheets—Sheet 1.

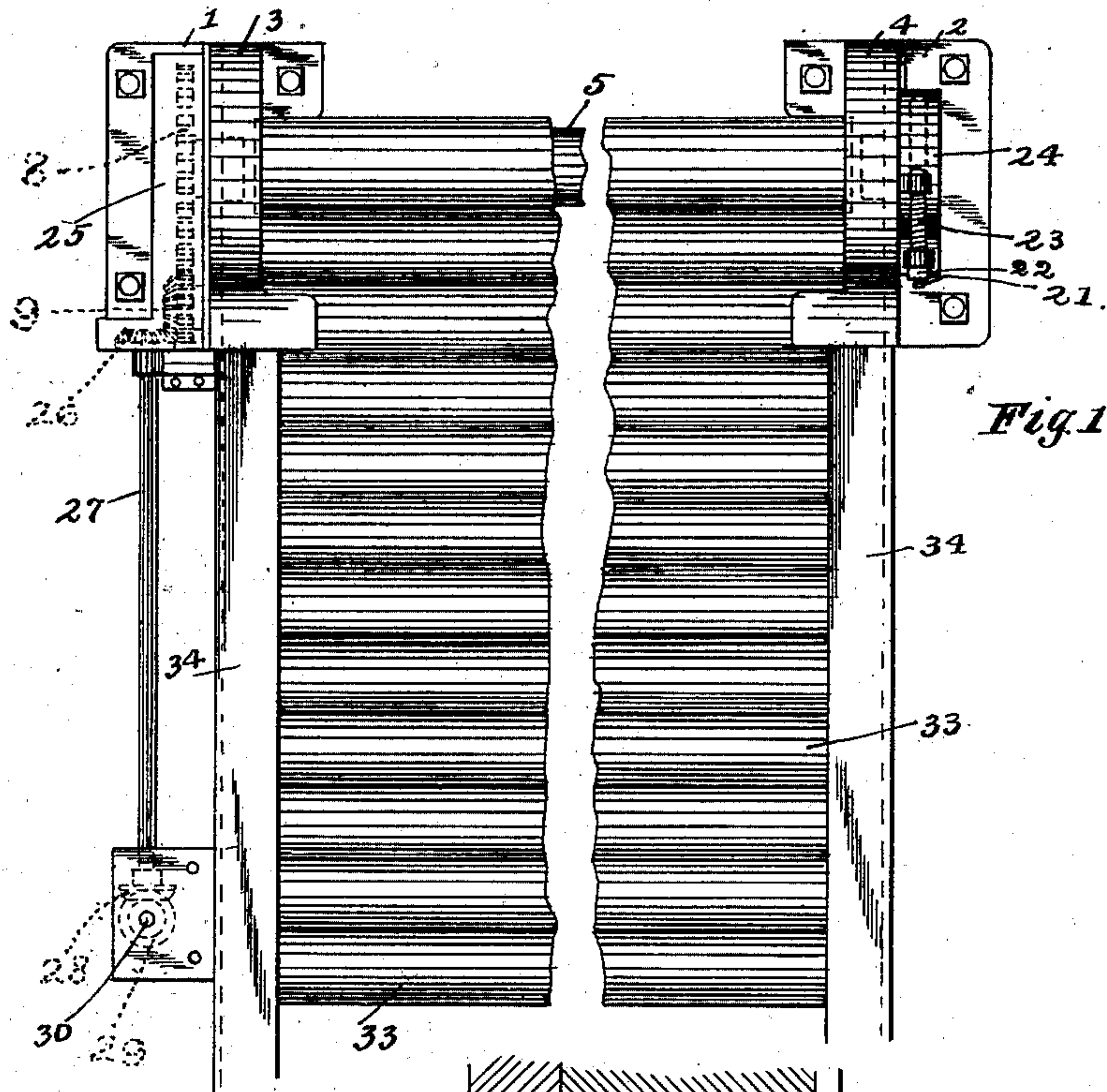


Fig. 1

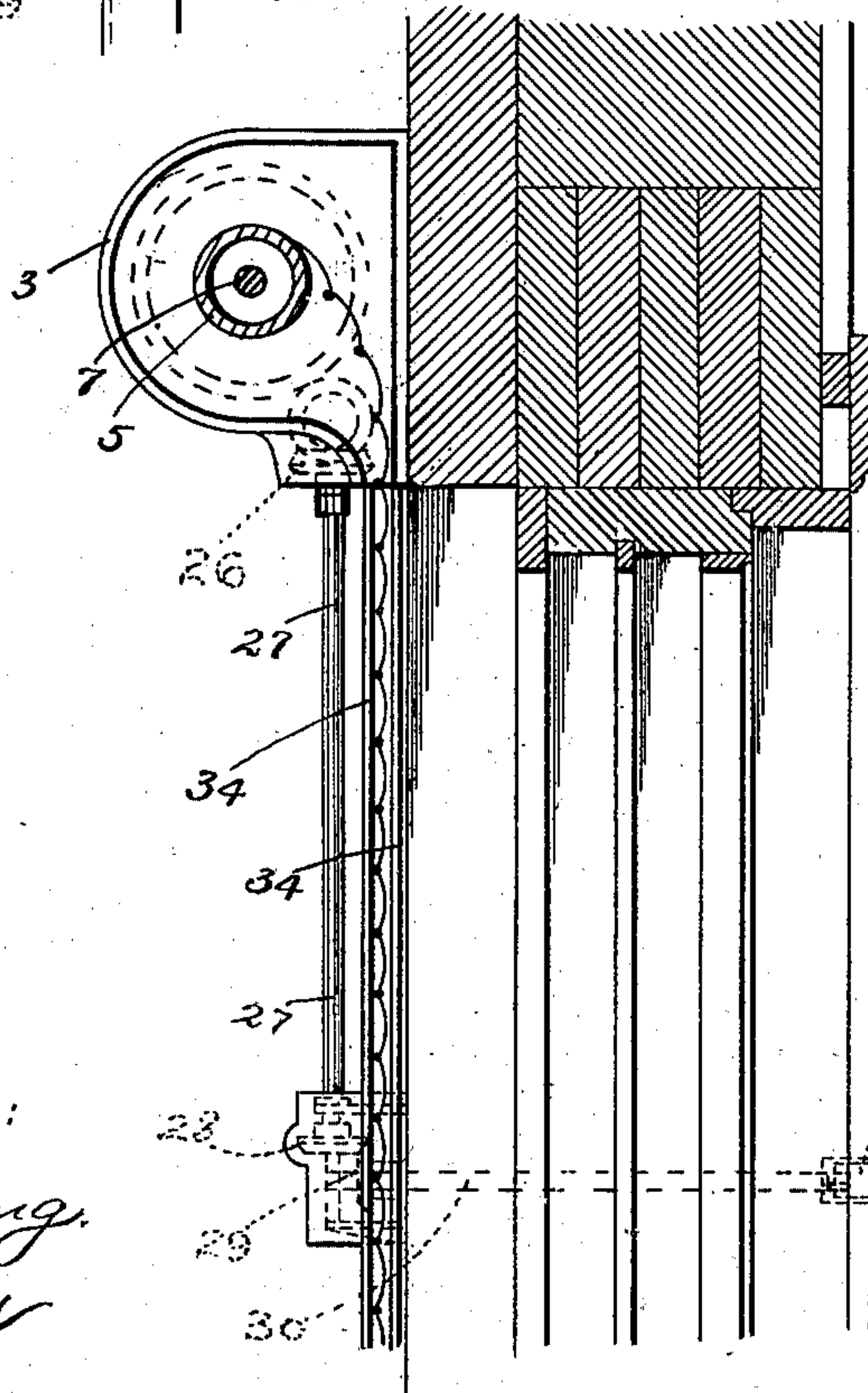


Fig. 2

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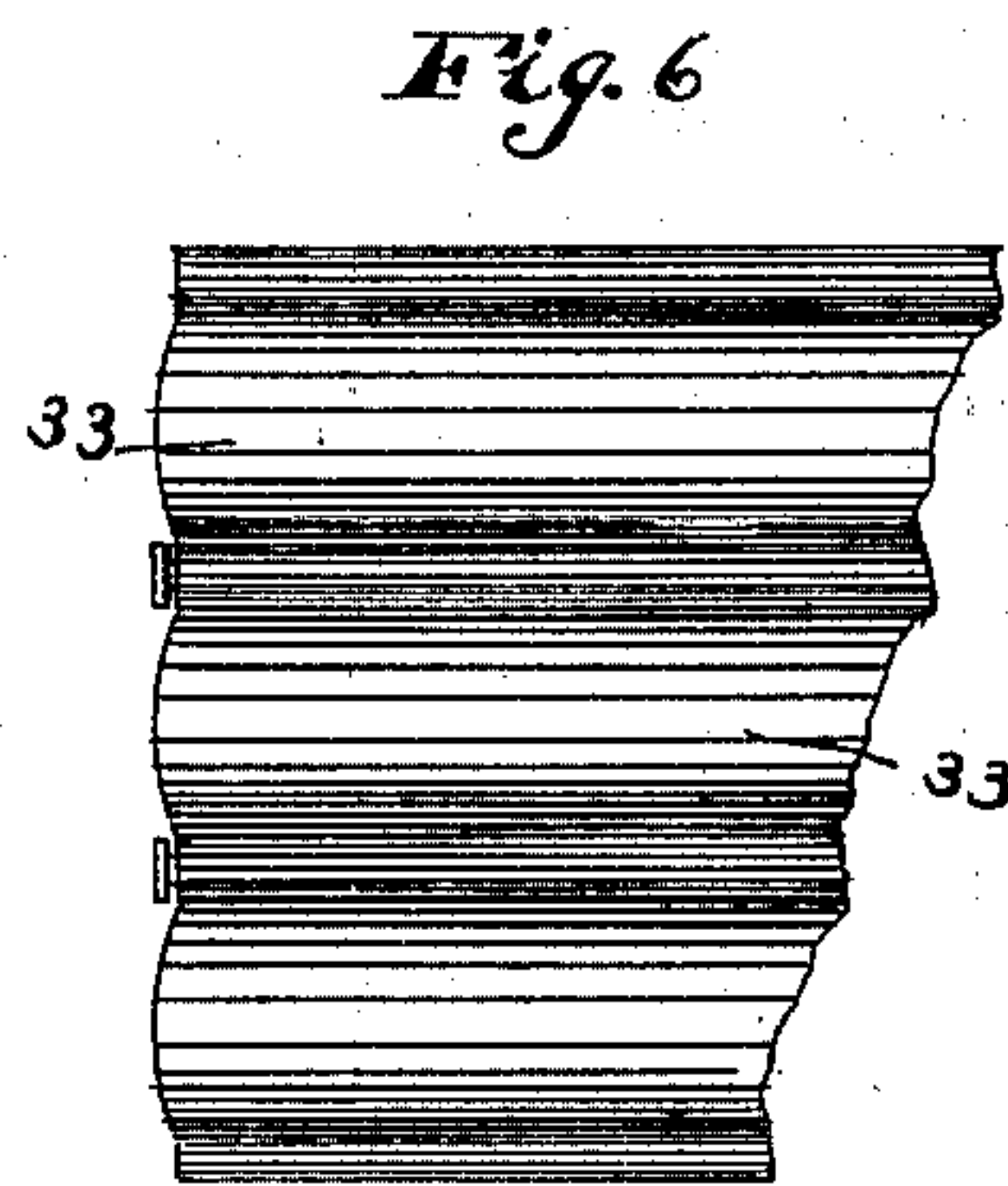
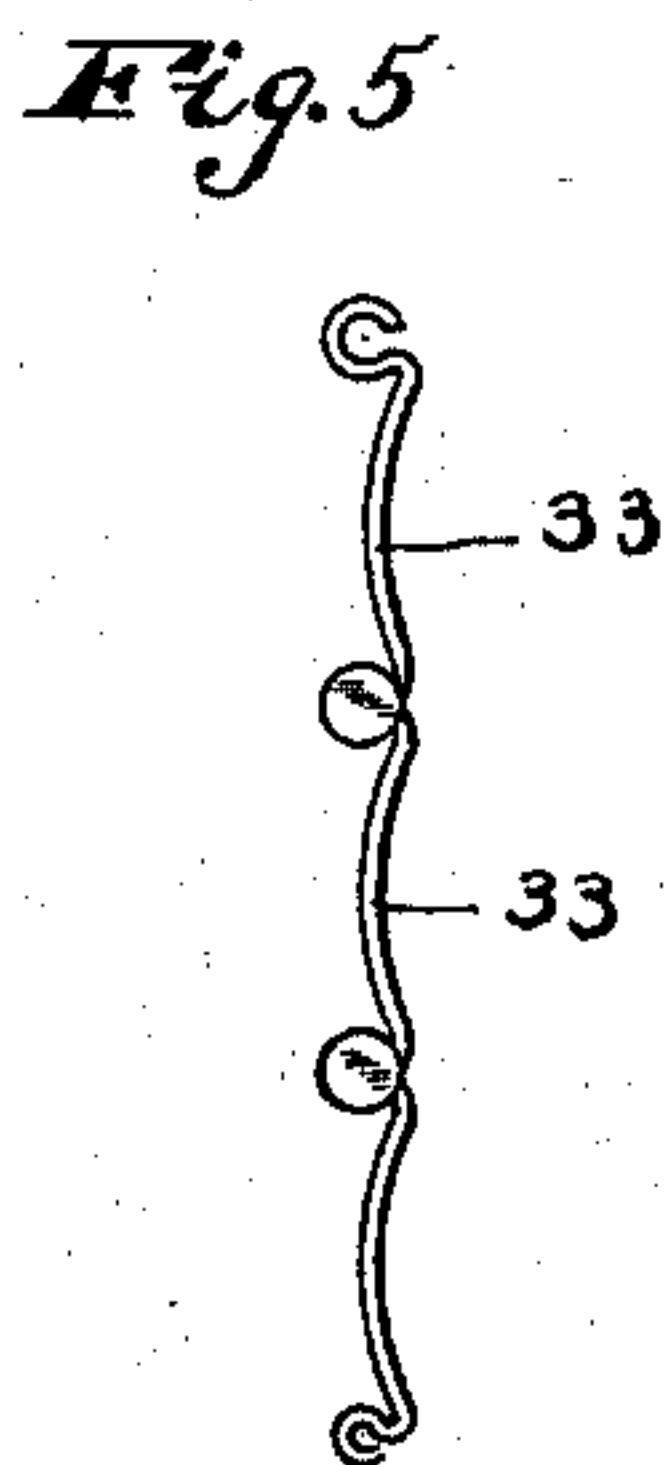
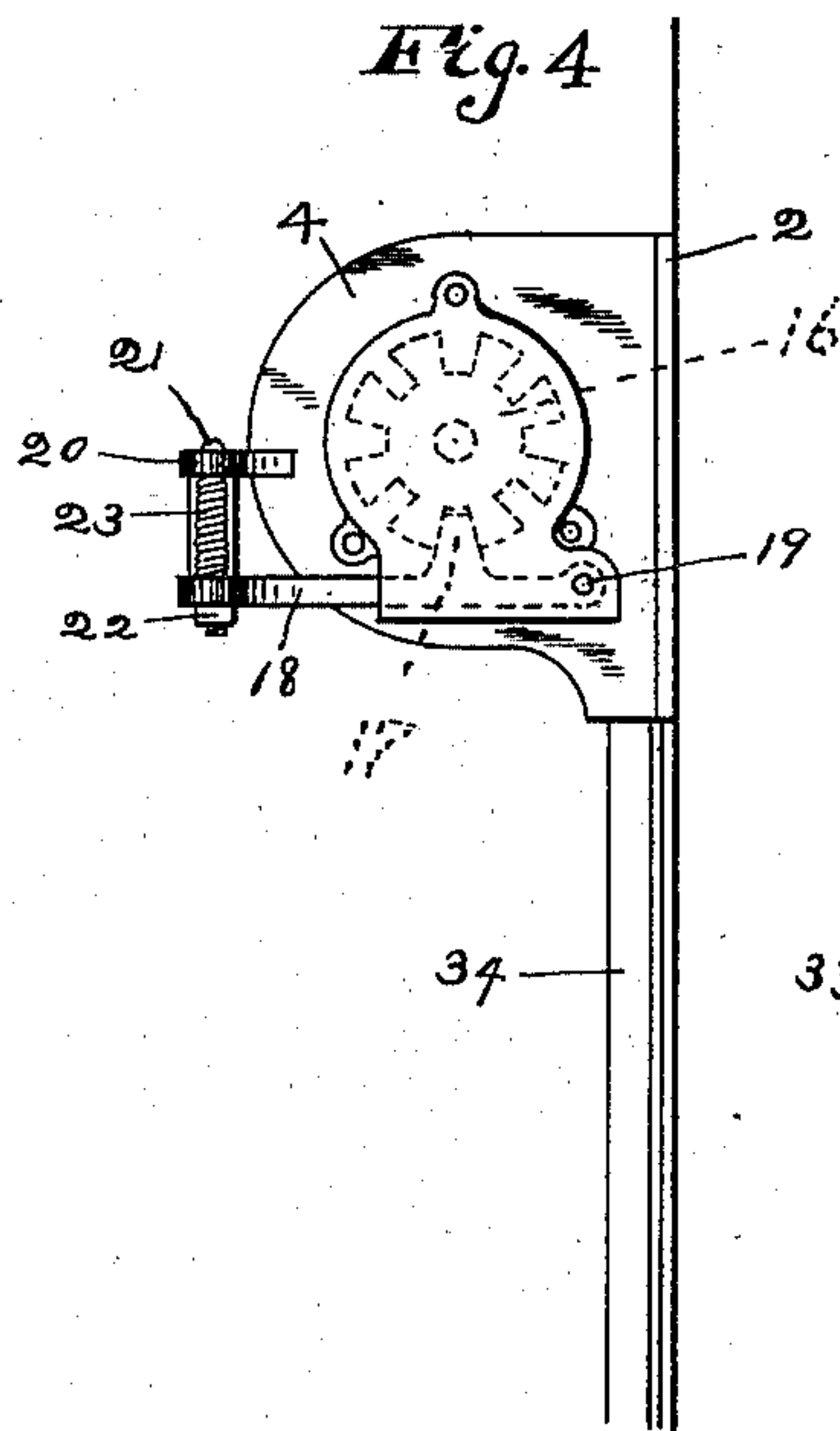
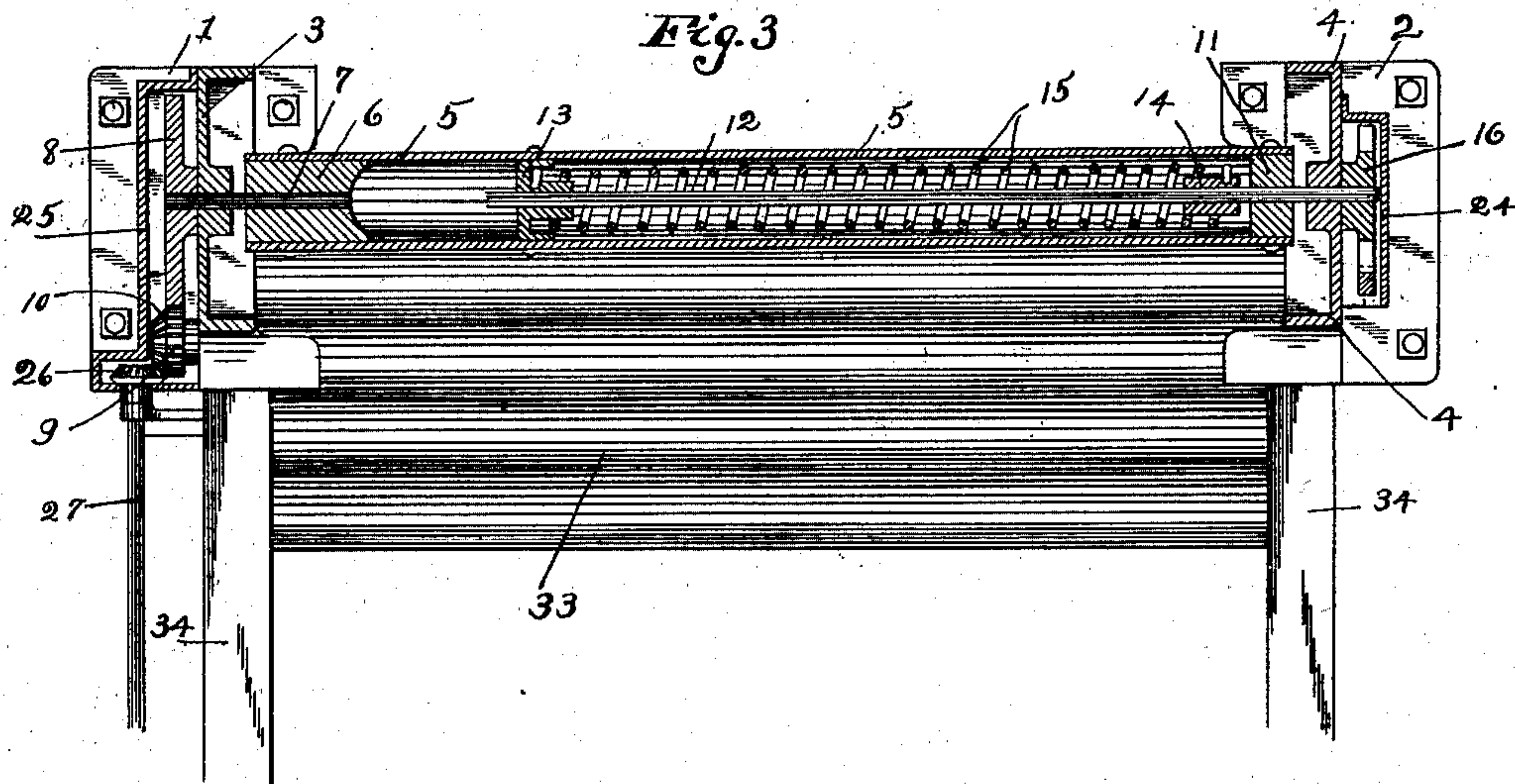
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UNITED STATES PATENT OFFICE.

PETER EBNER, OF COLUMBUS, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO HOWARD BLACK, OF PLAIN CITY, OHIO.

FIRE-SHUTTER.

SPECIFICATION forming part of Letters Patent No. 698,475, dated April 29, 1902.

Application filed November 5, 1900. Serial No. 35,443. (No model.)

To all whom it may concern:

Be it known that I, PETER EBNER, 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-Shutters, of which the following is a specification.

My invention relates to the improvement of sectional fire-shutters, and has particular relation to that class of fire-resisting shutters or curtains which are adapted to coil upon a spring-actuated roller.

The objects of my invention are to provide an improved fire-shutter construction of this class of simple and reliable construction, to provide in conjunction therewith improved means for raising and lowering the shutter or curtain from the inside of a building, to provide improved means for placing and retaining the spring-actuated roller under tension and in conjunction therewith improved mechanism for automatically releasing the tension of the roller and permitting the curtain to drop, and to produce certain other improvements in details of construction and arrangement of parts, which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is an outer side view of one of my improved fire-shutters, the same being broken centrally for convenience in illustration. Fig. 2 is a sectional view through a portion of the casing of a window having one of my improved shutters thereon. Fig. 3 is a central longitudinal section through the actuated roller and its bearings. Fig. 4 is an end elevation of the roller-bracket, illustrating the means of retaining the roller under tension. Fig. 5 is a side elevation or edge view of a portion of the sectional shutter which I employ, and Fig. 6 is a face view of the same.

Similar numerals refer to similar parts throughout the several views.

1 and 2 represent, respectively, roller-bearing brackets, which are designed to be secured to the outer wall of a building on the outer sides of a window frame or opening. The bracket 1 has formed therewith an outwardly-projecting bearing-cap 3, while a similar bearing-cap 4 is employed on the bracket 2.

Extending horizontally between the brackets is a cylindrical roller 5, said roller being provided in one end with a rigid suitable plug 6, from which extends centrally a fixed spindle 7, the latter having a rotary bearing in the central hub of the bracket-cap 3 and carrying on the outside of said bracket-cap a gear-wheel 8. The lower side of this gear-wheel gears with a journaled pinion 9, the latter being in the nature of a combined straight and bevel pinion, its bevel-gear portion projecting outward, as indicated at 10. Within the opposite end of the cylindrical roller 5 from that which employs the spindle 7 I provide a fixed plug 11. Through this plug extends within the cylindrical roller to a desirable distance a shaft 12, the inner end portion of this shaft having a rotary bearing in an internal plug or bearing-ring 13, which is rigidly connected with the roller 5. The shaft 12 has connected therewith, preferably near the plug 11, a fixed collar 14. Loosely surrounding the shaft 12 is a coiled spring 15, one end of which is rigidly engaged with the collar 14 and the remaining end of which is similarly connected with the internal plug 13. The outwardly-projecting end portion of the shaft 12 bears loosely in the bracket-cap 4 and on the outside of the latter a toothed or pocket wheel 16. As indicated in Fig. 4 of the drawings, one of the pockets or spaces between the teeth on the wheel 16 is adapted to be engaged by the projecting finger 17 of a pawl-arm 18, the latter being pivoted at one end, as indicated at 19, and being normally retained in a horizontal position by its connection with an arm 20 of the bracket 2 through the medium of a bolt 21 and nut 22. In making this connection, however, I preferably cause the bolt between the arms 20 and 18 to be surrounded by a normally compressed spring 23, and in producing the nut 22 the same is preferably formed of a material which is readily fusible. As indicated at 24 and 25, the wheels 16 and 8 are provided with suitable casings. With the bevel-gear portion of the pinion 9 gears a bevel-pinion 26, which is mounted upon the head or upper end of a vertical shaft 27, the latter being provided with suitable bearings and extending downward alongside the window-opening to a desirable distance.

On its lower end this shaft 27 carries, as indicated in dotted lines in Fig. 2 of the drawings, a bevel-pinion 28, the teeth of which mesh with those of a corresponding pinion 29 on the outer end of a horizontal shaft 30, this shaft 30 extending through the outer wall of the building and through the window-frame and casing and having its inner portion terminating within a socket 31, formed in the window-casing on the inner side of the room. This socket may be covered by a suitable swinging or removable cover-plate 32.

33 represents the transverse metallic sections of which the shutter or fire-curtain is formed, these sections being jointedly connected at their longer edges and the shutter thus formed having one end connected with the roller 5 and adapted to be wound thereon. The edge portions of this shutter are adapted to run loosely in suitable side guide-strips, such as are indicated at 34.

In order to insure such natural rolling action of the roller 5 as will tend to draw the shutter upward and coil the sections thereof about said roller, the roller is first placed under spring tension by removing the nut 22 and allowing the pawl-arm 18 to drop downward until its finger 17 is out of engagement with the teeth of the wheel 16. This wheel is now rotated in any suitable manner until through the rotation of the shaft 12 the desired tension has been imparted to the spring and roller 5. This being accomplished, the pawl-finger 17 is dropped into one of the teeth, recesses of the wheel 16 and the spring 23 and nut 22 fixed in the position shown in Fig. 4.

When it is desired to lower the shutter over the window-opening, a suitable key is inserted within the inner window-frame socket 31 and made to engage the squared end of the shaft 30. The key being turned, rotary motion is imparted through said shaft 30 and pinions 29 and 28 to the shaft 27 and through the pinions 26 and 9 to the gear-wheel 8, the rotation of the latter imparting the desired rotary movement to the cylindrical roller 5.

I am aware that mechanism within a room of a building has been employed for operating a fire-shutter which is located on the outer side of the window; but this has ordinarily been accomplished by running the operating devices through the upper portion of the window-frame and imparting a rotary motion to the latter through a depending chain. From

the construction which I have herein shown and described it will be seen that simple and desirable means are provided whereby the mechanism for operating the shutter from the inner side of the room is practically concealed and whereby such operation is rendered exceedingly simple and a comparatively neat appearance imparted to the inner window-casing.

In case of a fire occurring and a shutter being left in a rolled condition, it is obvious that when sufficient heat has been generated to melt the comparatively soft metallic nut 22 the pawl-arm 18 would drop downward, being assisted in such action by the spring 23, thereby causing a release of the pawl-finger 17 and the wheel 16, removing the tension from the spring and roller and permitting the curtain to drop.

It will be observed that the construction herein shown and described is simple and inexpensive and that the parts are so arranged as to insure the same against readily getting out of order.

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

1. In a fire-shutter, the combination with a spring-actuated roller comprising a journaled cylindrical body 5, bearing-shafts 12 and 7 and a spring having one end connected with said shaft 12 and its remaining end connected with the cylindrical roller, of a toothed wheel 16 on the shaft 12, a pivoted pawl-bar having a finger adapted to project into a tooth-recess of the wheel 16 and a detachable connection between the pawl-bar and a fixed part, substantially as specified.

2. In a fire-shutter, the combination with a journaled spring-actuated roller and a sectional fire-shutter adapted to be coiled thereon, said roller comprising a cylindrical body 5, end bearing-shafts and a spring connecting one of said shafts with said roller-body, of a toothed tension-wheel on said spring-shaft, a pivoted pawl adapted to engage said toothed wheel, a bolt connection between said pawl and a fixed part, a spring about the bolt and a fusible nut on said bolt, substantially as specified.

PETER EBNER.

In presence of—

C. C. SHEPHERD,
A. L. PHELPS.