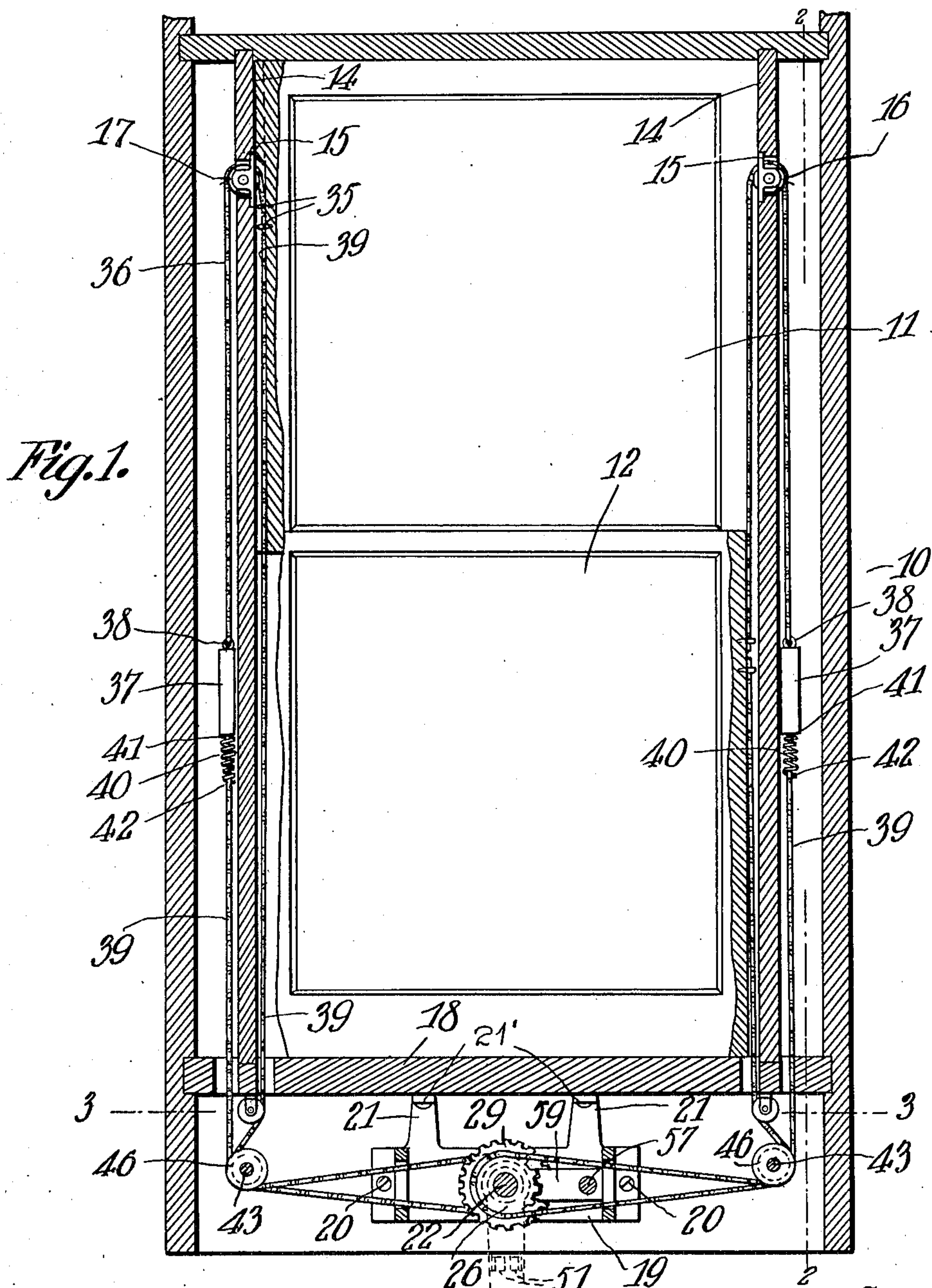


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PATENTED JULY 16, 1907.

J. L. BEST.
SASH OPERATING MECHANISM.
APPLICATION FILED DEC. 22, 1906.

3 SHEETS—SHEET 1.



Witnesses
C. E. Smith.
C. H. Griesbauer.

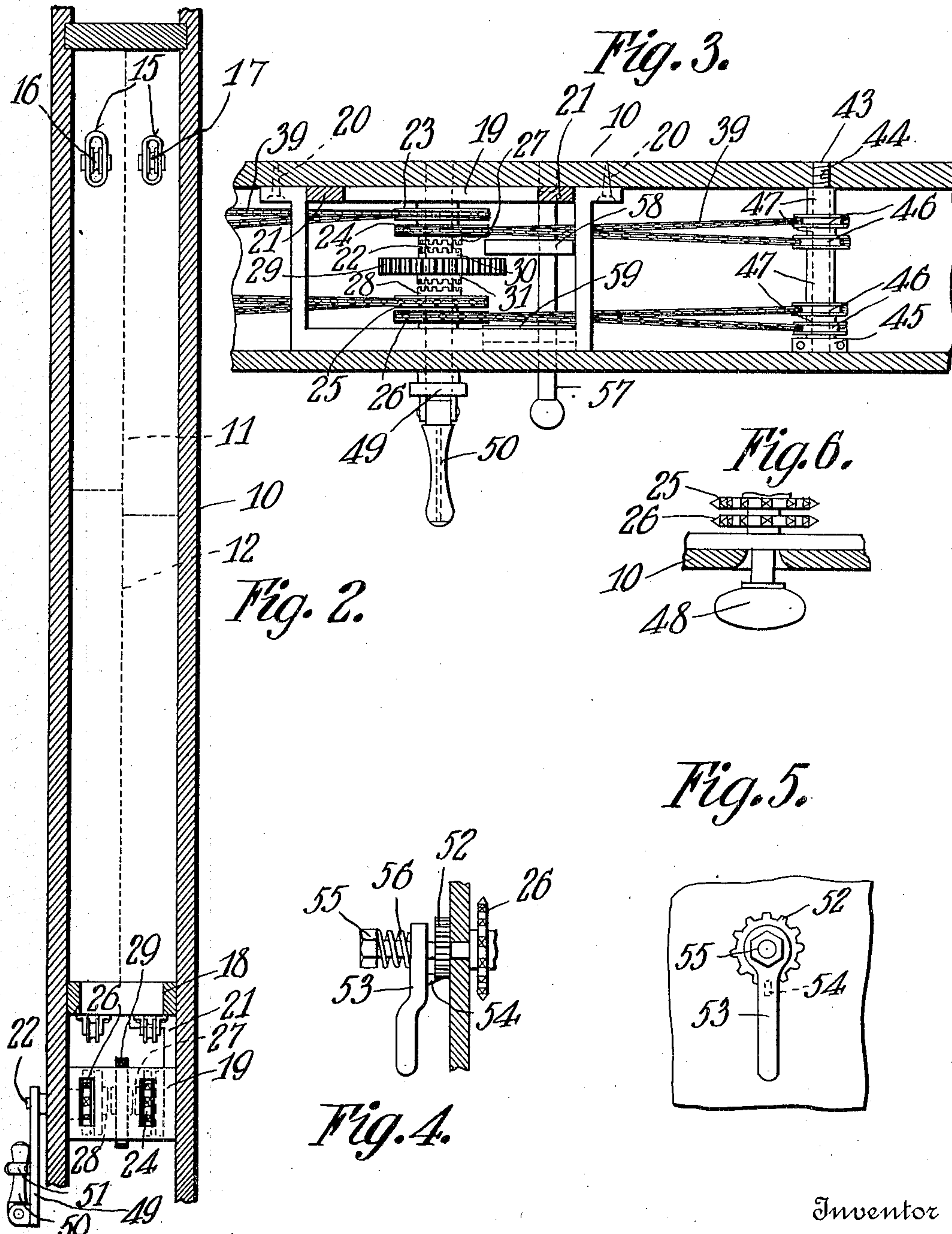
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3

Fig. 7.

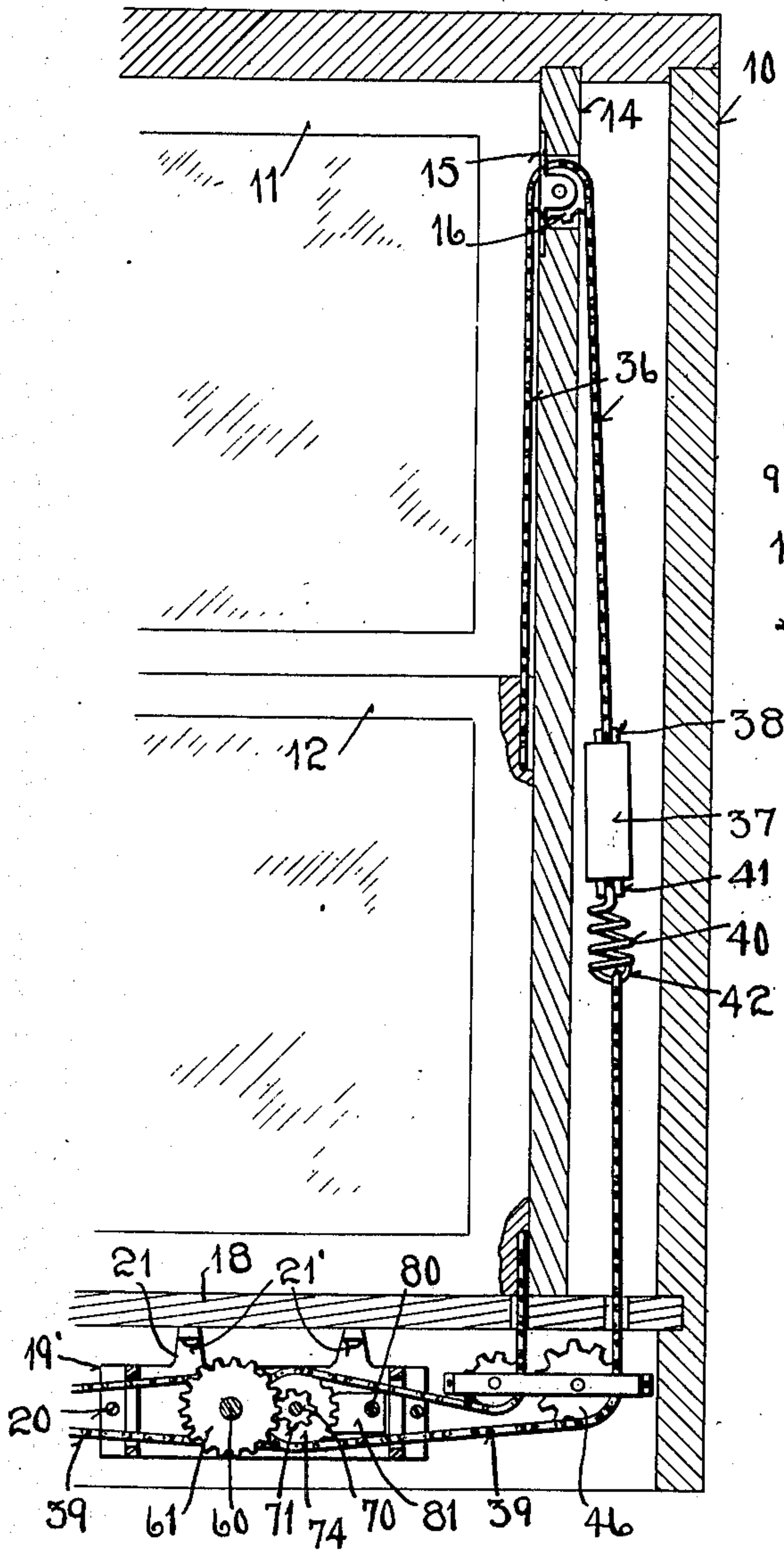


Fig. 8.

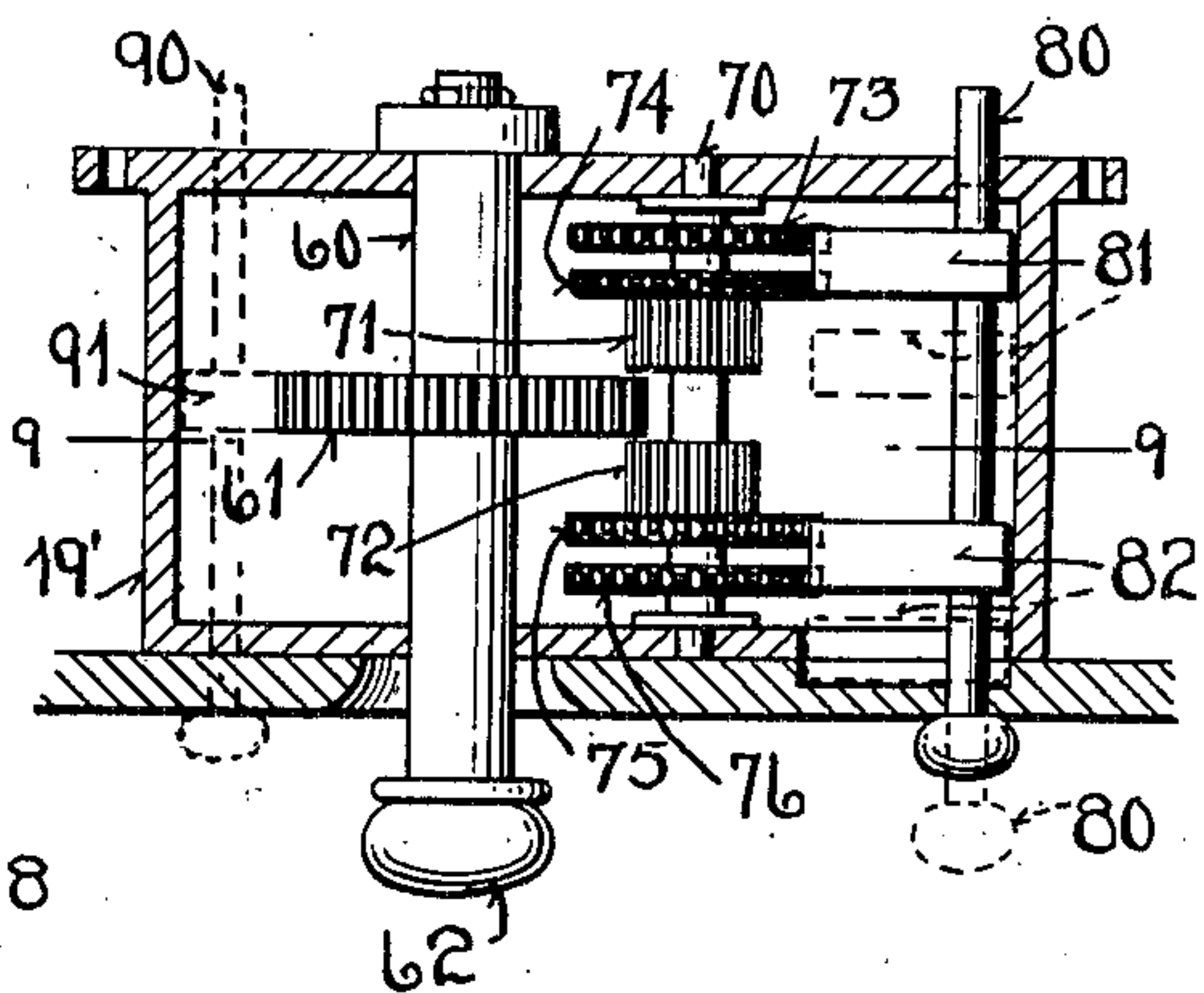
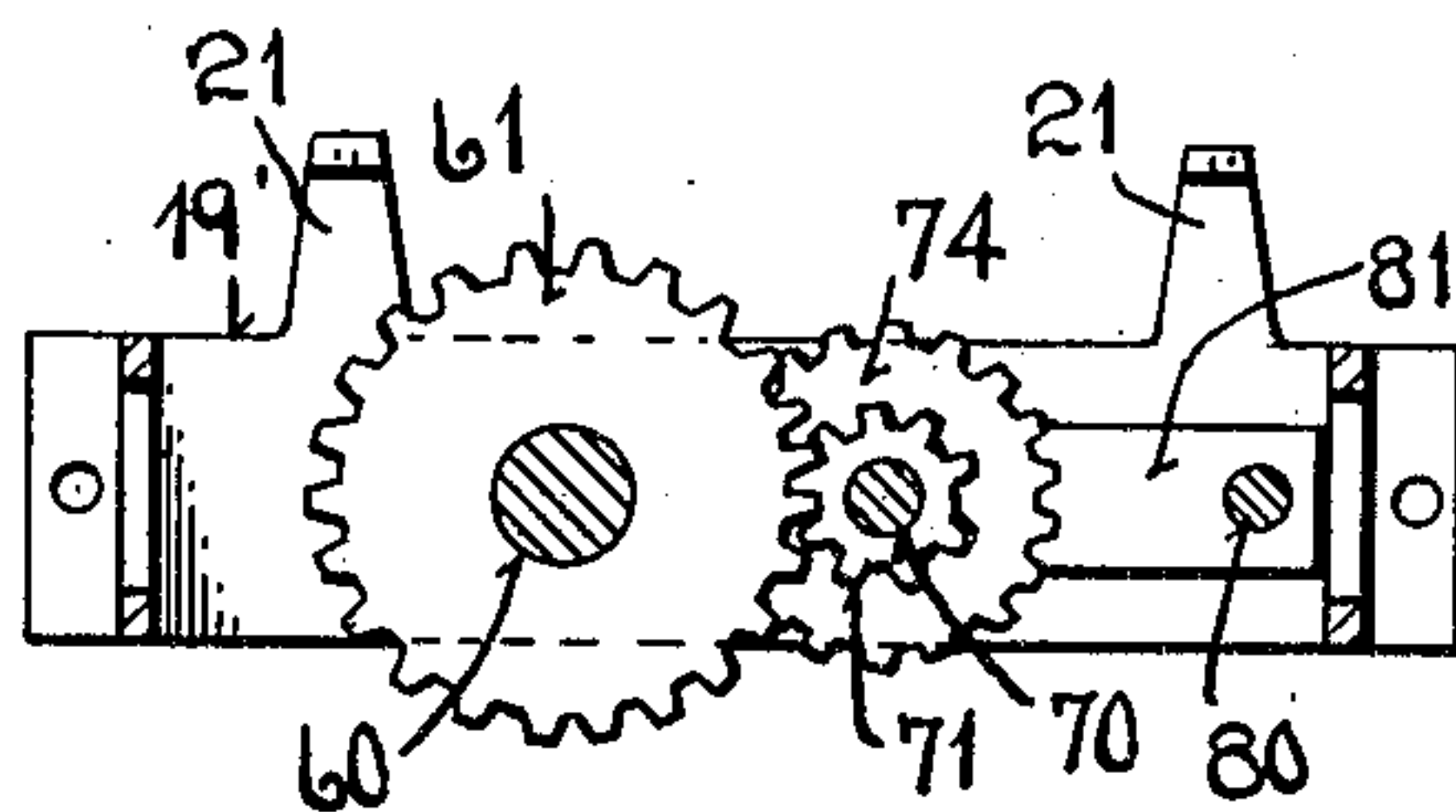


Fig. 9.



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UNITED STATES PATENT OFFICE.

JAMES L. BEST, OF BREMERTON, WASHINGTON.

SASH-OPERATING MECHANISM.

No. 860,518.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed December 22, 1906. Serial No. 349,192.

To all whom it may concern:

Be it known that I, JAMES L. BEST, a citizen of the United States, residing at Bremerton, in the county of Kitsap and State of Washington, have invented certain new and useful Improvements in Sash-Operating Mechanisms; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to devices for operating window sashes, and has for its object to improve the construction and increase the utility and efficiency of devices of this character.

With these and other objects in view, the invention consists in certain novel features of construction, as hereafter shown and described and as specifically pointed out in the claims.

In the drawings illustrating the invention, is shown the preferred embodiments of the same capable of carrying the invention into practical operation in which

Figure 1 is a sectional elevation of a window frame and the sash arranged therein showing one embodiment of the invention applied thereto; Fig. 2 is a section taken on the line 2—2 of Fig. 1; Fig. 3 represents an enlarged section taken on the line 3—3 of Fig. 1; Fig. 4 is a side view; Fig. 5 is a front view of a modified construction of the sash operating mechanism; Fig. 6 is a detail showing the sash operating knob; Fig. 7 represents a vertical longitudinal section of a portion of a window frame showing another embodiment of my invention applied thereto; Fig. 8 represents a horizontal section through the lower portion of the frame showing a top plan view of the device shown in Fig. 7; Fig. 9 represents a longitudinal section taken on line 9—9 of Fig. 8.

The improved device may be applied to any size of window having sashes arranged in pairs and slidable past each other, in the ordinary manner within the frame, the frame being represented as a whole at 10, the upper sashes at 11 and lower sash at 12, the sash being arranged to slide between the pulley stiles 14. Mounted in the pulley stiles are brackets 15, each carrying a pulley 16 and 17 arranged for the respective sashes.

In the form shown in Figs. 1 to 3, a supporting frame 19 is arranged below the stool or sill portion 18 of window frame and is secured to the frame by screws 20. This frame 19 is provided with standards 21 having lateral arms 21' for securing it by screws to the lower face of the stool 18. Journaled in the frames 18 and 19 is a shaft 22, adapted to be moved longitudinally to a limited extent, and also rotatable, for a purpose hereafter described. Mounted for rotation upon the shaft 22 is a plurality of chain wheels preferably arranged in pairs, the pair 23—24 being coupled together, and the other pair 25—26 being coupled together. The

coupled wheels 23—24 have a clutch member 27 upon the inner face of their hub and the coupled pair of wheels 25—26 have a clutch member 28 upon the inner face of their hub shown in Fig. 3. Rigidly connected to the shaft 22, is a gear 29 the hub of which is provided with clutch members 30—31 upon its opposite faces and adapted to be alternately engaged with the clutch members 27—28 when the shaft is moved longitudinally. Thus when the shaft 22 is moved in one direction, the clutch member 30 will be engaged with the clutch member 27 and the chain wheels 23—24 rotated with the shaft, and when the shaft is moved longitudinally in the opposite direction, the clutch member 31 will be connected with the clutch member 28 and the chain wheels 25—26 rotated with the shaft. It will also be obvious that when the shaft 22 is disposed with the gear 29 in its central position, the clutch members 30—31 will be disconnected from both of the chain wheel clutch members, and may rotate independently of said members.

Located within the frame at a point below the pulley stile 14 is a shaft 43, threaded at one end as at 44 for engaging one of the frame members, and supported at the other end by a bracket 45 secured to one of the frame members. Mounted for rotation upon the shaft 43 are a plurality of guide sheaves 46, the sheaves maintained in spaced relation upon the shaft by sleeves or collars 47. Attached at one end at 35 to the upper sash 11 is a chain 36, extending thence over the guide pulley 17 and downwardly to a weight 37 to which it is attached at its other end at 38. Another chain 39 is connected at the same point 35 to the upper sash 11 and extends thence over the guide pulley 46 and thence around one of the sprocket wheels 23 or 24 and thence around another of the guide pulleys 46 and thence to a spring 40, the latter connected at its ends 41—42 respectively to the weight 37 and chain 39. The spring serves as a means for maintaining a constant strain upon the chain 39. By this arrangement, it will be obvious that when the shaft 22 is coupled by its clutch member 30 to the clutch member 27 of the sprocket wheels 23—24 and rotated in one direction, motion will be imparted to the chains 36—39 in one direction, and thus move the sash 11 upwardly or downwardly, as required. The lower sash 12 is provided with a similar system of chains, guide sheaves, weights, and tension springs, the lower chains of the upper sash being connected respectively with the coupling chain pulleys 25—26, so that when the shaft 22 is disposed with the clutch member 31 connected to the clutch member 28, and rotated, the lower sash 12 will be actuated in the same manner as the upper sash, as will be obvious. By this means, it will be obvious that either sash may be actuated to any extent required by simply shifting the shaft 22 into the required position when rotating it. The shaft 22 may be provided with a knob 48 as shown in Fig. 6, or pro-

vided with a crank 49, the latter provided with a swinging handle 50 adapted to be held by a spring catch 51 when folded and not in use as represented in Fig. 2.

A modified shaft operating mechanism is shown in Figs. 4 and 5 consisting of a rotating toothed wheel 52 attached to the shaft 22, and having an arm 53 mounted to rotate on the shaft 22 and provided with a pawl or stud 54 adapted to engage the teeth of the wheel 52 one at a time when the arm 53 is disposed in one position, and to be disconnected therefrom when the arm is disposed in another position. The shaft 22 is provided with a head 55 at its outer end and with a spring 56 disposed between the head and the arm 53, the spring maintaining the arm yieldably in with its stud 54 in engagement with the member 52. By this means, if the arm 53 be rotated upon the shaft 22, its stud will form a coupling means between the arm and shaft and cause the latter to be rotated with the arm, then by drawing the arm outwardly against the spring 56, the stud will be disconnected from the toothed member and permit the arm to be rotated intermittently to any required extent. Slidably mounted in the frame 19 parallel to the shaft 22 is a rod 57 having thereon toothed locking members 58-59 adapted to be engaged with the teeth of the chain wheels 24 and 26 when in one position and disconnected therefrom when in another position. By this simple means, it will be obvious, that when the chain wheels are locked in position, the sash will be correspondingly locked from movement. The sash may thus be held in either closed or open position, or at any intermediate point.

The apparatus is simple in construction, readily applied, and all of the parts are concealed except the operating means of the shaft 22, and this is located in the drop member below the stool within the room, and in the least conspicuous place under the window.

In the form of sash operating device shown in Figs. 7, 8 and 9 a casing and frame of metal 19' similar to the frame 19 is secured to the sill 18 of the window frame by screws passing through the arms as 21'. Journaled and movable longitudinally in this casing is a shaft 60 having a gear wheel 61 fixed thereon, and with one end projecting through the apron of the sash and provided with an operating knob or handle 62. A shaft 70 is spaced from the shaft 60 and journaled in said casing. Spaced pinions 71 and 72 are rotatably mounted on the shaft 70 and on their outer ends are provided with spaced sprocket wheels 73, 74 and 75, 76 on which sash moving sprocket wheels 39 are disposed. The shaft 60 is movable longitudinally to engage and disengage the gear wheel 61 with the pinions 71 and 72 respectively to manipulate the upper or lower sashes as desired. Slidably mounted in the casing 19' is a locking rod 80 having toothed segments 81 and 82 mounted thereon to engage with the chain gears or sprockets 73, 74 and 75, 76 to lock them against turning and so hold the sash in adjusted position.

It is to be understood that wire, rope or any other suitable material may be used instead of the chain and pulleys may take the place of sprockets when desired. Ball bearings may also be used if desired for the various parts. A rod 90 is slidably mounted in the

casing 19' on the opposite side from the rod 80 and is provided with a toothed segment 91 to engage the gear 61 and lock the shaft 22 against turning when pulleys 65 instead of sprockets are used.

Having thus described the invention, what is claimed is:—

1. The combination with a window including the frame and sliding sashes, of spaced guiding devices in said frame, a shaft mounted for rotation and movable longitudinally relative to said frame, a collar fastened upon said shaft with clutch members upon its opposite faces, chain sheaves rotative upon said shaft at opposite sides of said collar and provided respectively with clutch members for alternate engagement with the clutch members of said collar, flexible elements connected at one end to said sashes and leading over one set of said guide devices and connected at the other end to a balance weight, and flexible elements connected at one end to said sashes and leading from said guiding devices and around said chain sheaves and connected to the opposite end of said balance weights.

2. The combination with a window including a frame and sliding sashes, of spaced guiding devices in said frame, a shaft mounted for rotation and movable longitudinally relative to said frame, a collar fastened upon said shaft and with clutch members upon its opposite faces, chain sheaves rotative upon said shaft at opposite sides of said collar and provided respectively with clutch members for alternate engagement with the clutch members of said collar, a rod slidably disposed relative to said shaft and parallel therewith, toothed lock members carried by said rod and adapted to be alternately engaged with and disconnected from said chain wheels, flexible elements connected at one end to said sashes and leading over one set of said guide devices and connected to a balance weight, flexible elements connected at one end of said sash and leading from said guide devices and around said chain sheaves and connected to the opposite ends of said balance weights.

3. The combination with a window including a frame and sliding sashes, of spaced guiding devices in said frame, a shaft mounted for rotation and movable longitudinally relative to said frame, a collar fastened upon said shaft and with clutch members upon its opposite faces, chain sheaves rotative upon said shaft at opposite sides of said collar and provided respectively with clutch members for alternate engagement with the clutch members of said collar, a toothed member carried by said shaft, an arm swinging upon said shaft and movable longitudinally thereon and provided with a stud adapted for engagement with said toothed member, and a spring operating to maintain said arm with its stud yieldably in engagement with said toothed member, flexible elements connected at one end to said sashes and leading over one set of said guide devices and connected to a balance weight, and flexible elements connected at one end to said sashes and leading over said guiding devices and around said chain sheaves and connected to the opposite end of said balance weights.

4. The combination with a window frame having sliding sashes, of spaced guiding devices in said frame, a rotatable shaft slidably mounted in said frame, a clutch member mounted on said shaft, chain sheaves disposed in said casing and provided respectively with clutch members for alternate engagement with the first mentioned clutch member, flexible elements connected at one end to said sashes and leading over one side of said guiding devices and connected to a balance weight, and flexible elements connected with said sashes and leading from said guiding devices around said chain sheaves and connected with the balance weights.

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

JAMES L. BEST.

Witnesses:

WILLIAM O. PREGNALL,
CLARENCE H. ALLTNO.