

No. 889,544.

PATENTED JUNE 2, 1908.

W. F. PLASS.
SASH OPERATING MECHANISM.
APPLICATION FILED APR. 13, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

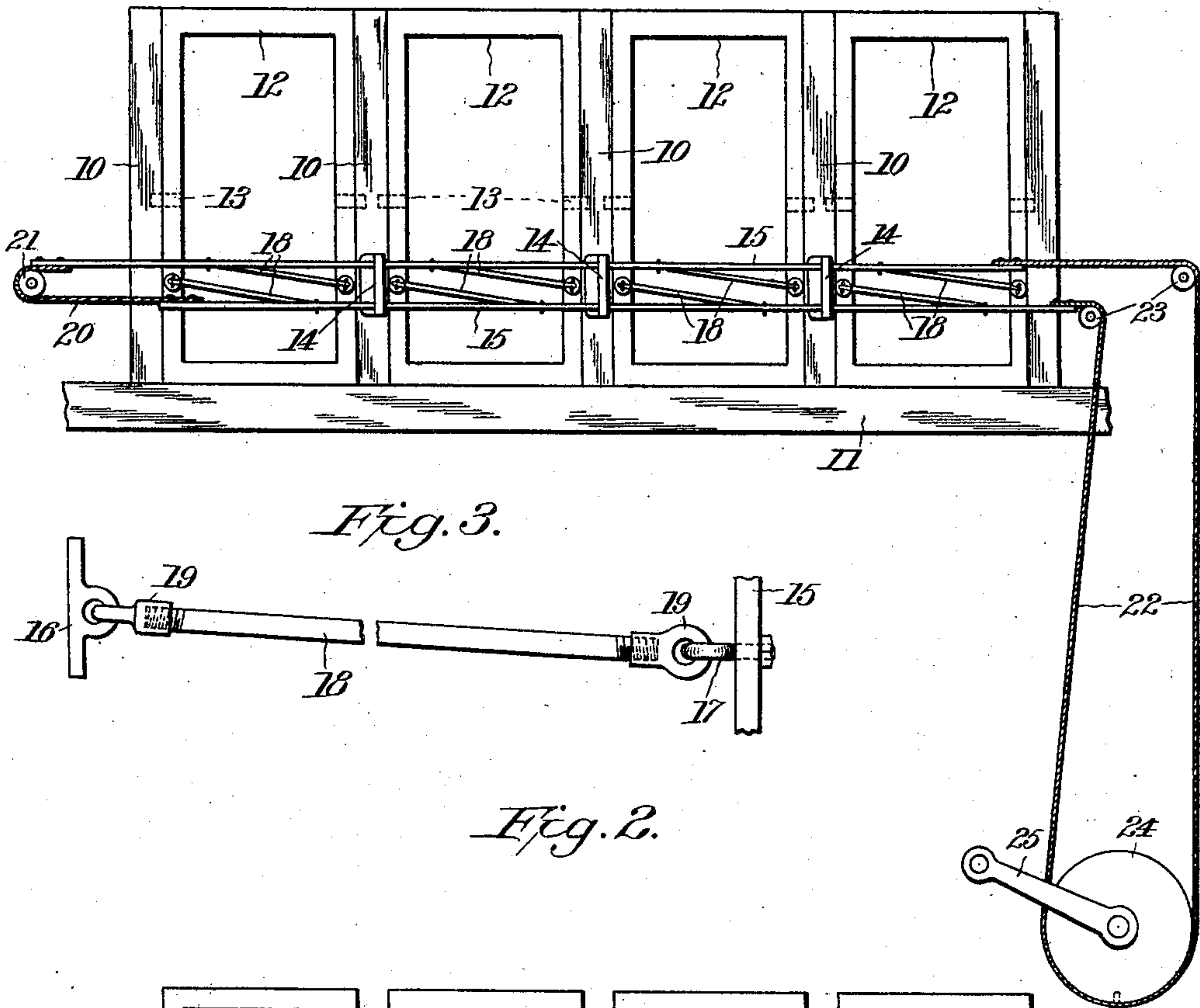


Fig. 3.

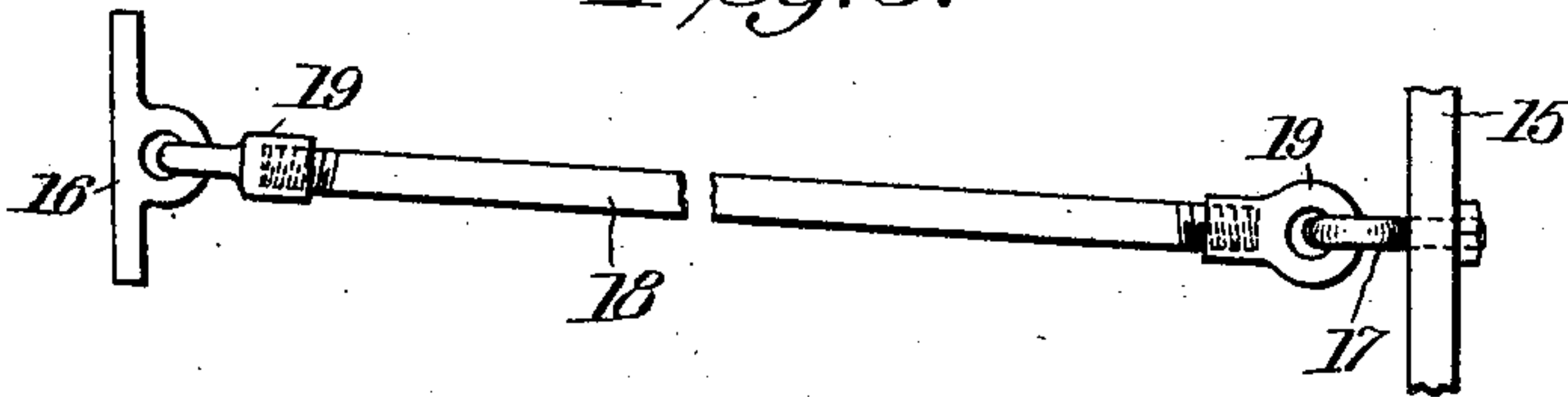
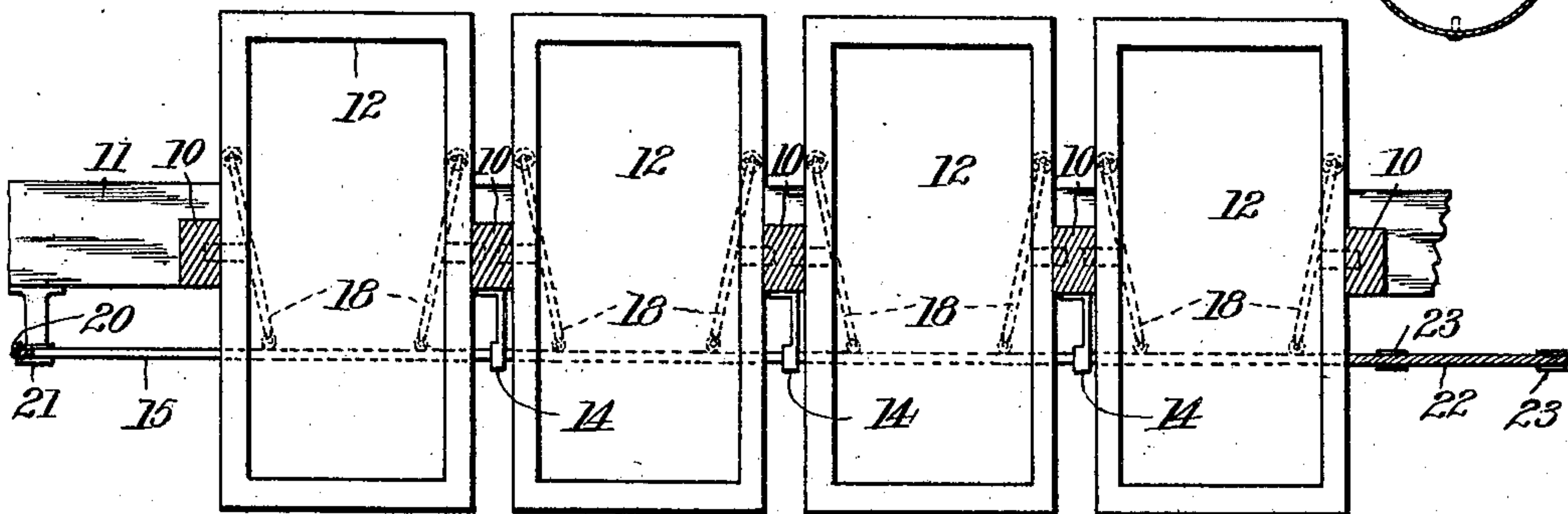


Fig. 2.



Inventor

Witnesses

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By

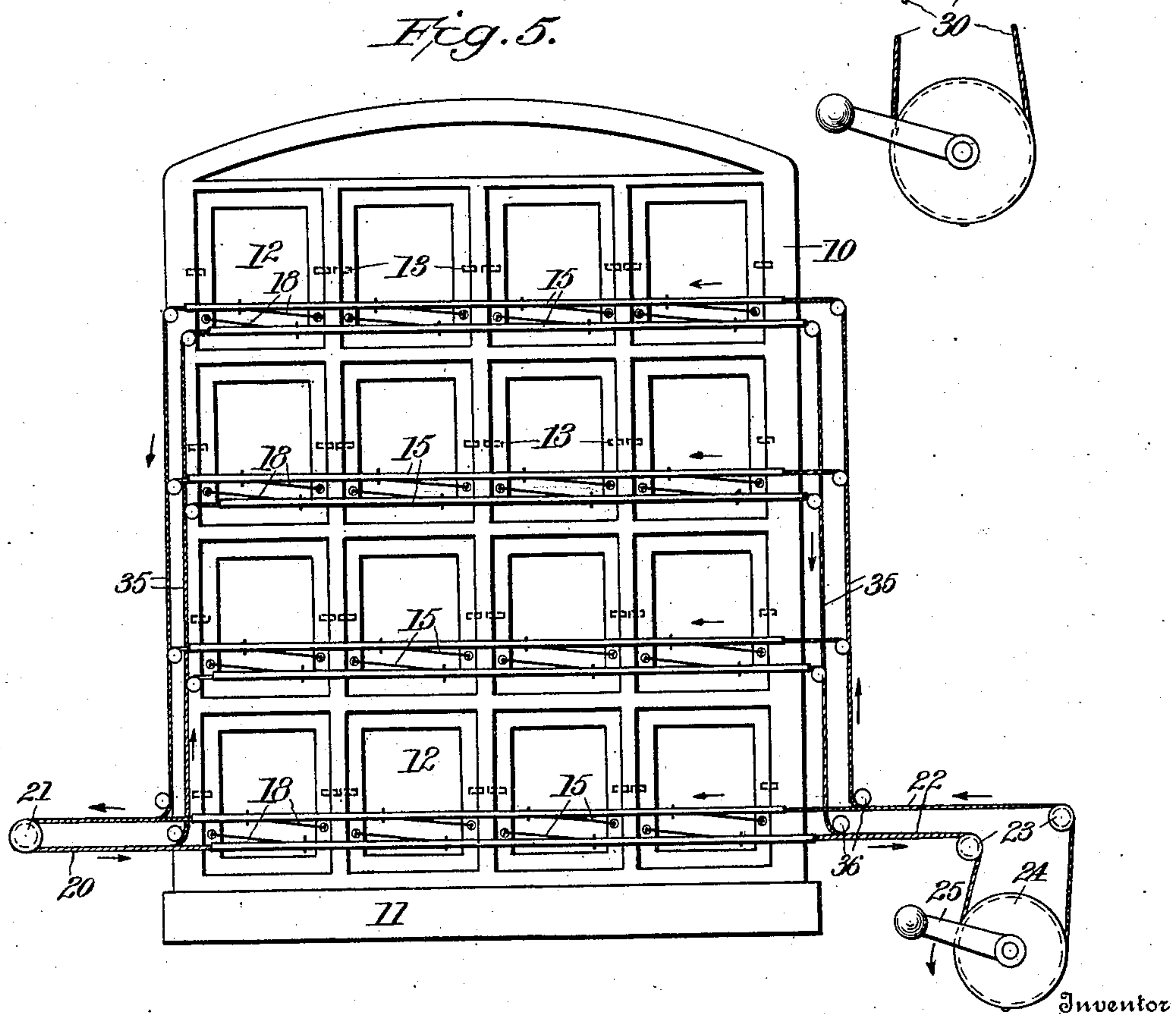
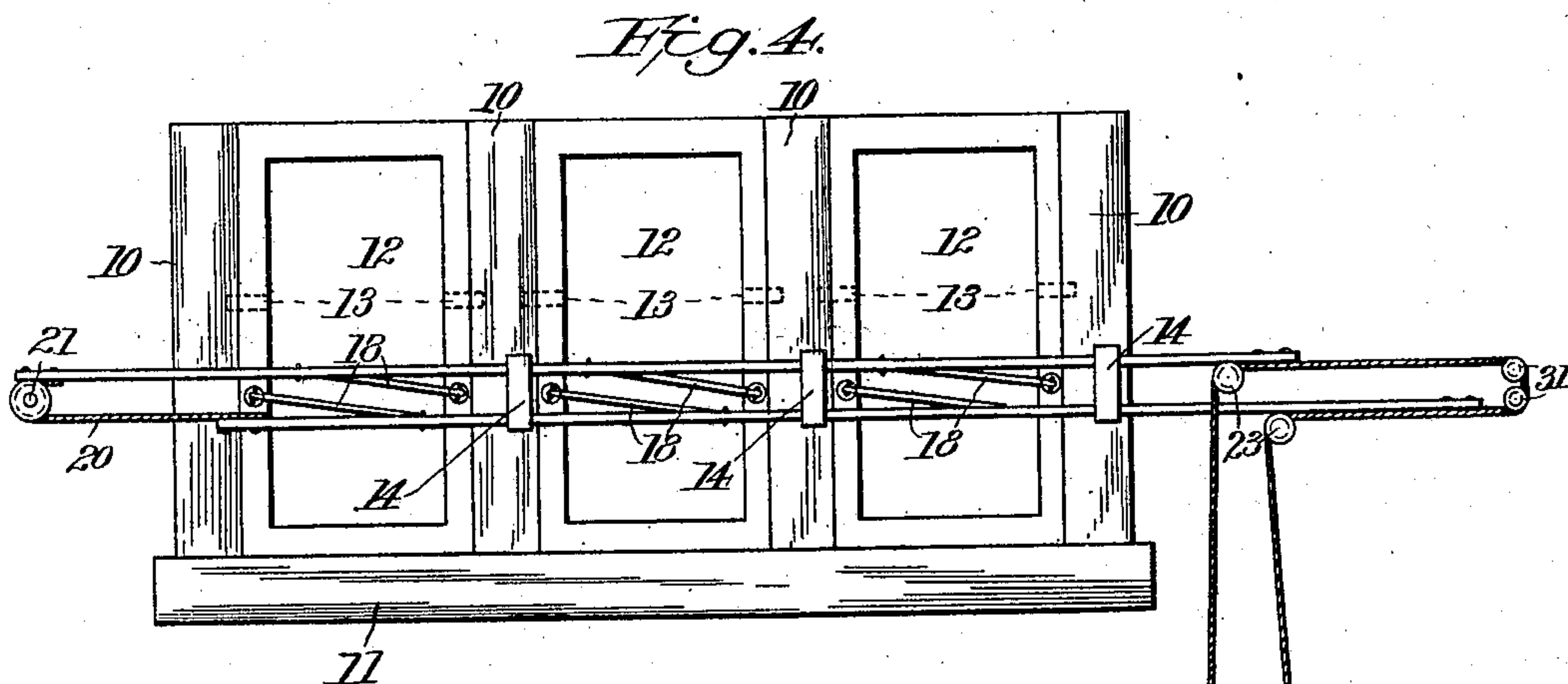
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM F. PLASS, OF NEW YORK, N. Y.

SASH-OPERATING MECHANISM.

No. 889,544.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed April 13, 1907. Serial No. 367,930.

To all whom it may concern:

Be it known that I, WILLIAM F. PLASS, of New York, in the county of New York and State of New York, have invented certain
5 new and useful Improvements in Sash-Operating Mechanism, of which the following is a specification.

This invention relates to sashes, windows, shutters and the like, particularly of the piv-
10 oted and balanced type such as are frequently arranged in long rows in a large building and in locations inconvenient of access for direct manual opening and closing.

One of the objects of my present invention
15 is to provide operating means including two parallel reciprocating members which are connected to the sashes by links, which reciprocating members are always operated by a pulling movement, and never requiring a
20 pushing movement, thereby enabling said reciprocating members to be made of exceedingly light material.

Another object of the invention is to provide operating mechanism adapted to simul-
25 taneously operate the sashes of a plurality of rows or long lines.

Other objects are to provide simple durable and efficient means for operating sashes or equivalent devices, said means being es-
30 pecially adapted to be actuated from any point that may be found most readily accessible.

To these ends my invention consists of the construction and combination of parts
35 substantially as hereinafter described and claimed.

Of the accompanying drawings:—Figure 1 is an elevation of several windows or sashes in a row having my improved operating
40 mechanism, in one of its embodiments, connected to said sashes or windows. Fig. 2 represents a section of line 2—2 of Fig. 1, all the sashes being shown opened. Fig. 3 is a detail view of one of the links employed for
45 connecting the reciprocating members with the sashes. Fig. 4 is a view similar to Fig. 1, illustrating a modification hereinafter referred to. Fig. 5 is another view similar to Fig. 1, but showing the invention as applied
50 to a plurality or series of rows of sashes, one above another, all of the sashes being adapted to be simultaneously operated from one readily accessible point.

Similar reference characters indicate the same or similar parts in all of the views. 55

Referring first to Figs. 1, 2 and 3, the sash or window frames are indicated at 10, the sill thereof being shown at 11. The sashes 12 are pivoted in the frames by trunnions or pivot-journals 13, in an ordinary and well
60 known manner. Suitable brackets 14 are employed for the parallel rods 15 which are, in practice, arranged as closely together as can conveniently be done and permit of the movement of the links hereinafter described. 65
Said rods are practically inflexible in that they do not bend materially when strain is brought upon them by the links presently described, in the act of closing or opening the sashes, said rods remaining straight and in
70 alinement with their bearings in the brackets 14.

Two eye-plates 16 are secured to each sash, said eye-plates being connected to eye-bolts 17 which are secured to the rods 15, by links
75 comprising connecting rods 18 which are threaded at their ends and fitting eye-terminals 19, the latter engaging the eyes of the plates 16 and 17 respectively. Preferably
80 the threads at the ends of the connecting rods 18 are right and left so that by rotating the rods 18 the length of the links may be adjusted so as to cause the sashes to be
firmly seated when closed, without requiring any adjustment of the connection with the
85 reciprocating members 15 longitudinally of the latter. Therefore, the connection between the links and the reciprocating members may be permanent so as to avoid wear and disarrangement of adjustment during
90 operation.

It will be readily understood that, by shifting the reciprocating rods or members 15 in
opposite directions, the sashes will be opened and closed by swinging on their pivots, in a
95 well known manner. To effect the reciprocating movements of said rods or members, they are connected at one end by a flexible connection 20 such as a chain or wire rope, said connection 20 being in the same vertical
100 plane as the rods and passing over a suitably mounted guide pulley 21. The other ends of the reciprocating rods or members 15 are connected by a flexible connection 22 which
105 may also be a chain or wire rope, said connection being also in substantially the same ver-

tical plane as the rods and passing over guide pulleys 23 to a drum or wheel 24, which may be suitably mounted in any location that will be most convenient of access when it is desired to open or close the sashes. The drum or wheel 24 is actuated by means of a lever or crank 25. It will be readily understood that the actuating device comprises one form of lever, and that the drum or wheel 24 might be omitted and the flexible connection 22 directly connected with a lever at opposite sides of its fulcrum.

By operating the lever 25 in either direction, one or the other of the reciprocating members 15 will be pulled and, through the flexible connection 20, the other reciprocating member will also be pulled but in the opposite direction. Therefore, no pushing strain is ever imparted to either reciprocating member 15, and consequently, said members 15 may be made of exceedingly light material. Moreover, since the power required to close the sashes is always a pulling one, there is no tendency of the links to impart a torsional movement or strain upon the reciprocating members 15.

The construction as shown in Fig. 1 practically constitutes an endless cable or chain for simultaneously opening and closing all of the sashes of a row or series, the reciprocating members 15 being regarded simply as long links of such endless cable or chain. As shown in Fig. 4, however, the reciprocating members 13 are connected to stretches of an endless chain or cable 30, which stretches extend in a direction away from the ends of the said reciprocating members and pass over an outer guide pulley or pulleys 31, the latter being mounted at any suitable point. This construction shown in Fig. 4 operates in practically the same manner as that shown in Fig. 1, excepting that the reciprocating members 15 do not constitute portions of the same endless chain or cable which passes over the pulleys 31.

In Fig. 5, which is somewhat diagrammatic, several rows or series of sashes are shown, one above another, this arrangement being one that is frequently required where the amount of glazed surface is very great, such as where the sashes are required to extend from the ground floor to near the roof of a building. Heretofore, so far as I am aware, when sashes have been arranged in such superimposed rows, the sashes of each row have been separately actuated. But with my improved operating mechanism, I can employ branch or shunt connections 35, spliced or otherwise connected to the flexible connections 20 and 22, said branch or shunt connections passing over suitably mounted guide pulleys 36 and connected to the reciprocating members 15 of the different rows. In said Fig. 5, the arrows show the move-

ments of all of the reciprocating members 65 and the flexible connections when the lever 25 is moved downward. Obviously, by moving the lever in the opposite direction, the initial pull will be imparted to the flexible connection 22, which is shown as the upper one, so as to shift it, and all of the connected parts, in the direction opposite that indicated by the arrows.

It is to be understood that by the term "sashes" employed in the above description and in the appended claims, I do not restrict myself to window sashes of the form illustrated, since the same may be shutters, or other pivoted closures for openings in buildings.

It is also to be understood that the flexible connections may be of any suitable material, whether chain links or wire rope, or other practicable material.

It is also to be understood that, with the structure shown in Fig. 4, it will not always be necessary to employ the idler or pulley 21 and the flexible connection 20 at the left. In some locations it may prove difficult to use said idler and flexible connection for lack of room. When the members referred to are omitted, of course reciprocation of the rods 15 is obtained in one direction by a pulling movement and in the opposite direction by a pushing movement. In this case, the rods will usually be of heavier and stronger material than would be necessary when the connections at the other end are employed.

Having now described my invention, I claim:

1. Sash operating mechanism comprising parallel substantially inflexible reciprocating rods, links connecting them with the sash, a flexible connection between the two reciprocating rods at each end thereof, one of said connections being in the same vertical plane as the rods, and a guiding support for each of said flexible connections.

2. Sash operating mechanism comprising parallel substantially inflexible reciprocating rods, links connecting them with the sash, a flexible connection between the two reciprocating rods at each end thereof, one of said connections being in the same vertical plane as the rods, a guiding support for each of said flexible connections, and means for actuating one of said flexible connections to pull the reciprocating rods in opposite directions.

3. Sash operating mechanism comprising parallel reciprocating members, a link connecting each of said reciprocating members with the sash, the connection with the sash being at opposite sides thereof, said links being adjustable in length, and fixedly connected with the reciprocating members, and means for actuating said reciprocating members in opposite directions.

4. Sash operating mechanism comprising

parallel reciprocating members, a link connecting each of said reciprocating members with the sash, the connection with the sash being at opposite sides thereof, said links being adjustable in length and fixedly connected with the reciprocating members, a flexible connection between the two reciprocating members at each end thereof, a guiding support for each of said flexible connections,

and means for actuating one of said flexible connections to pull the reciprocating members in opposite directions.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WILLIAM F. PLASS.

Witnesses:

E. C. PAULUS,
ADOLPH PLASS.