F. D. MOON.

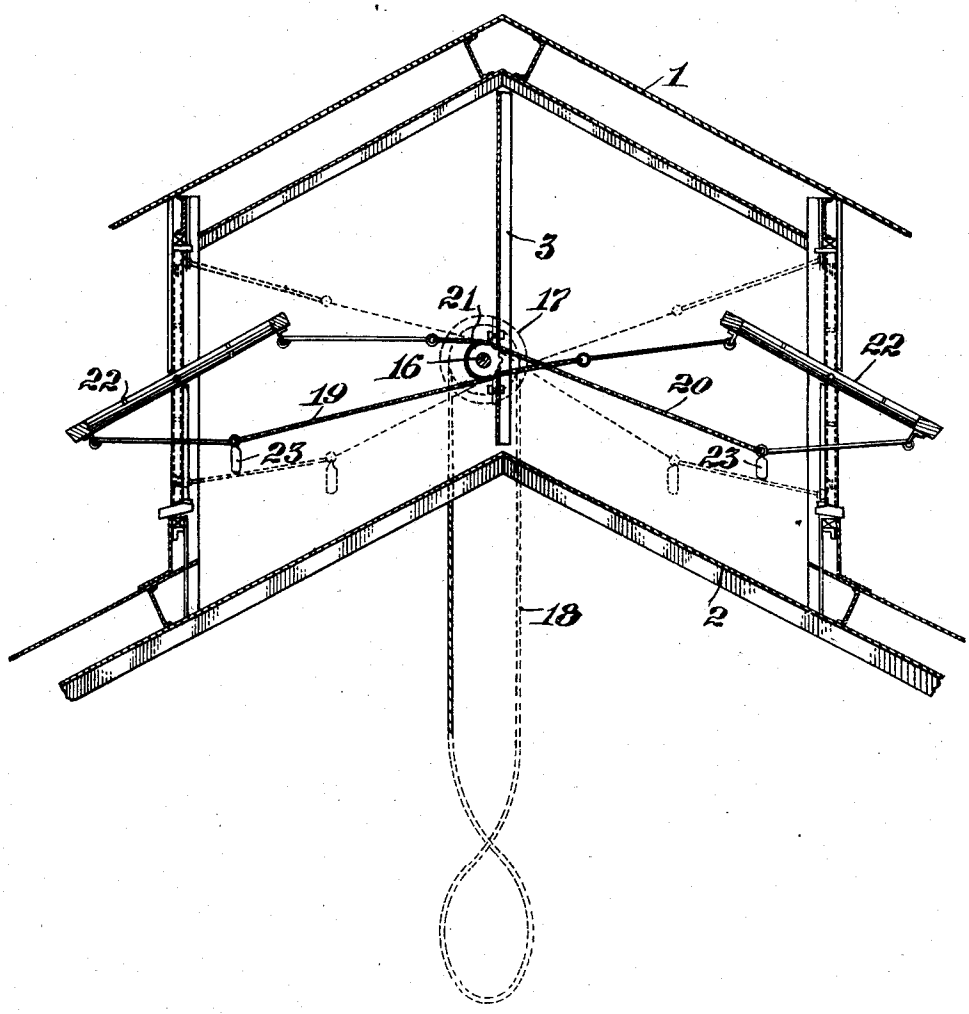
VENTILATOR SASH MECHANISM.

APPLICATION FILED JAN. 18, 1907.

901,544. **Patented Oct. 20, 1908.**

2 SHEETS—SHEET 1.

Fig. 1.



Attest:

C. Mitchell

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by

Inventor:

Frank D. Moon

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F. D. MOON.

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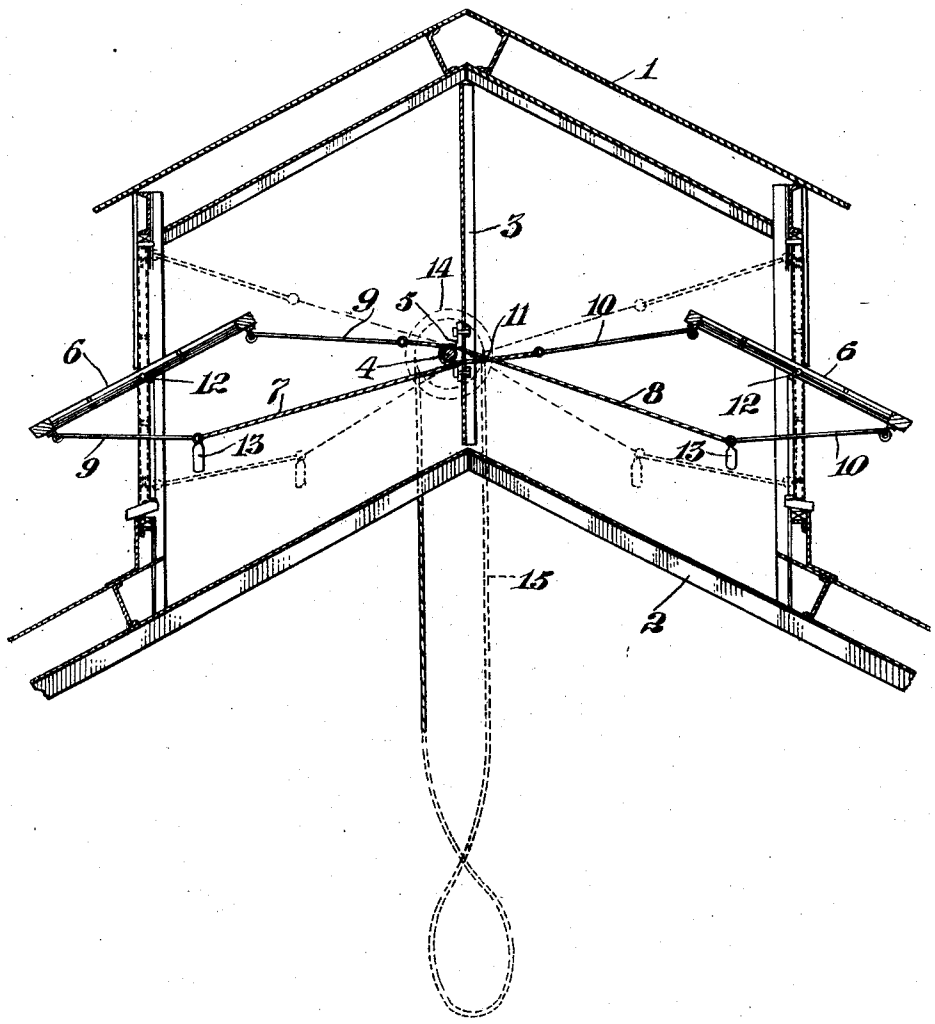
2 SHEETS—SHEET 2.

Fig. 2.



Attest:

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M. L. Hart

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UNITED STATES PATENT OFFICE.

FRANK D. MOON, OF EDGEWATER, NEW JERSEY.

VENTILATOR-SASH MECHANISM.

No. 901,544. Specification of Letters Patent. Patented Oct. 20, 1908.

Application filed January 18, 1907. Serial No. 352,957.

To all whom it may concern:

Be it known that I, FRANK D. MOON, a citizen of the United States, residing at Edgewater, in the county of Bergen and State of New Jersey, have invented a new and useful Ventilator-Sash Mechanism, of which the following is a specification.

My invention relates to improvements in mechanism for opening and closing a continuous line or continuous lines of ventilating or other windows or sashes, and the objects thereof are to provide means by which said lines of windows may be operated from a single shaft, and from a convenient point on the floor of the building; to provide means for operating a part or all of said windows simultaneously, to provide for the tight closing of said windows and further to provide automatic tensioning means which will insure the operation of the mechanism from the shaft.

Other objects and advantages of my invention will appear from a description of the particular embodiments thereof illustrated in the accompanying drawings in which—

Figure 1 is a transverse sectional view of a monitor roof provided with the mechanism; and Fig. 2 is a similar view showing a different form of the invention.

In the drawings, Fig. 1, my device is shown as applied to a so called monitor roof 1 such as is commonly employed for the ventilation and lighting of a factory building and which extends along the main roof 2 of the building. Upon the central truss members 3 of the monitor roof is mounted a central operating shaft 4 journaled in suitable bearings 5 on said truss members. At intervals along the shaft, and in line with each pair of opposite ventilating windows 6, cords or wire ropes 7 and 8 extend between the sashes and around the shaft 4, preferably in several turns, which by means of metal rods 9, 9, and 10, 10 are connected respectively to the upper and lower rails of the sashes as shown, although it is to be understood that the rods may, if desired, be omitted and the ropes extend to and be fastened directly to the sashes.

To provide for the simultaneous opening and closing of the sashes on opposite sides of the roof, the cord 7 passes from the rod 9 attached to the upper end of the sash over and around the shaft and to the rod 9 attached to the lower end thereof, whereas cord 8 passes from the rod 10 attached to the upper end of its sash, beneath and around the shaft and to the rod 10 attached to the lower end of the sash, the free parts of the cord 8 crossing at 11 whereby revolution of shaft 4 in one direction will cause the simultaneous opening of the opposite sashes, while opposite rotation of the shaft will close the sashes.

To maintain the proper tension on the operating cords to hold the sashes steady, the lower parts of the cords are provided, preferably at the junction with the rods 9 and 10, with weights 13, attached thereto in any suitable manner, by means of which the slack is taken up and the cords maintained at an equal and uniform tension. These weights moreover cause the lower ends of the sashes to be drawn tightly into their frames when the sashes are closed. A further function performed by the weights 13 is to maintain the coils of the cords tight upon the drum 4 in order to insure positive operation of the sashes under normal conditions.

The tension of the cords around the shaft is such, however, that should one or more of the sashes be prevented from moving by the clogging of snow or otherwise, the cords thereof may slip upon the shaft thus permitting the shaft 4 to rotate at all times to open and close the remaining sashes.

To operate the mechanism from any convenient point, such as the floor of the building, the shaft 4 is provided at either end, and if desired at intermediate points, with pulleys 14 around which pass hand operating ropes or chains 15 which may extend to the floor or other convenient point of operation.

In the form of my invention illustrated in Fig. 2 of the drawings, the arrangement of the shaft 16, pulley 17, and hand rope 18 may be the same as that shown in Fig. 1. In this form of the invention however the sashes are operated by means of chains 19 and 20 respectively which pass around sprocket wheels 21, arranged upon the shaft 16 opposite each pair of sashes 22 to be operated. The arrangement of the chains is similar to that of the cords in the former constructions to insure simultaneous opening and closing of the opposite sashes. To avoid interference of the free parts of the chains 20 at the point of crossing, the ends thereof may be attached to the upper and lower ends of the sashes at points slightly out of vertical alinement. In this construction also the weights 23 are provided to insure the tight closing and uniform movement of the sashes in opening and closing.

Various changes may be made in the arrangement of the parts without departing from the spirit and scope of the invention.

Claims.

1. In ventilator sash operating mechanism, the combination of a rotatable shaft and means to operate the same, flexible connections between said shaft and sash and automatic tensioning means on said flexible connections to maintain uniform tension on said connections and to insure uniform opening and closing movement, and the tight closing of said sash.

2. In ventilator sash operating mechanism, the combination of a rotatable shaft and means to operate the same, flexible connections between said shaft and sash and weight attached to said flexible connections to maintain uniform tension on said connections and to insure uniform opening and closing movement, and the tight closing of said sash.

3. In ventilator sash operating mechanism, the combination of a plurality of sashes and an operating shaft common thereto of flexible connections between said sashes and shaft, automatic tensioning means on said connections to maintain uniform tension on said connections, said connections also adapted and arranged to permit one or more of said sashes to remain stationary while the others are moved to open or closed positions.

In testimony whereof I affix my signature in the presence of two witnesses.

FRANK D. MOON.

Witnesses:
M. D. HART,
RALPH C. POWELL.

Corrections in Letters Patent No. 901,544.

It is hereby certified that in Letters Patent No. 901,544, granted October 20, 1908, upon the application of Frank D. Moon, of Edgewater, New Jersey, for an improvement "Ventilator-Sash Mechanism," errors appear requiring the following corrections: In the drawings forming a part of said patent "Fig. 1" should read *Fig. 2*, and "Fig. 2" should read *Fig. 1;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of November, A. D., 1908.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.