(No Model.)

W. COOPER.

VENTILATOR FOR BUILDINGS.

No. 594,727. Patented Nov. 30, 1897.

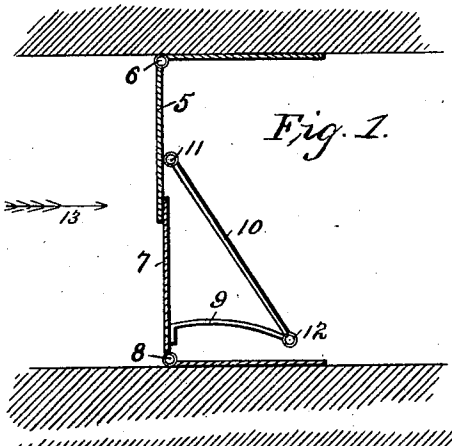


Fig. 1.

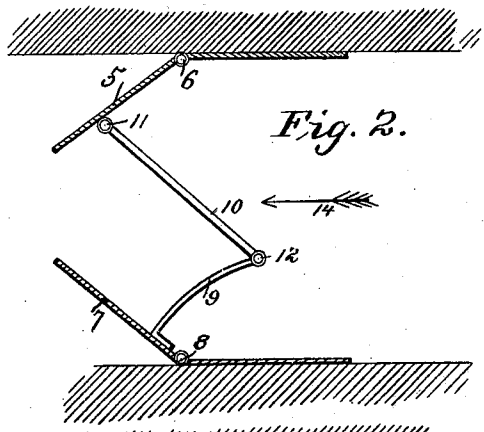


Fig. 2.

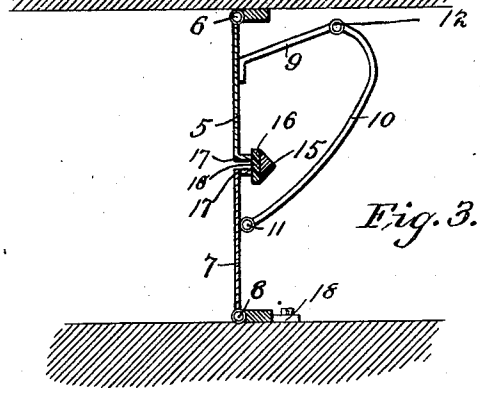


Fig. 3.

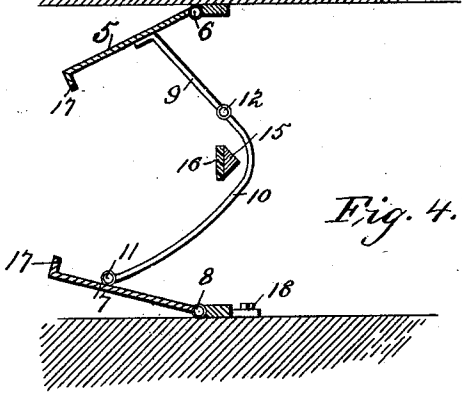


Fig. 4.

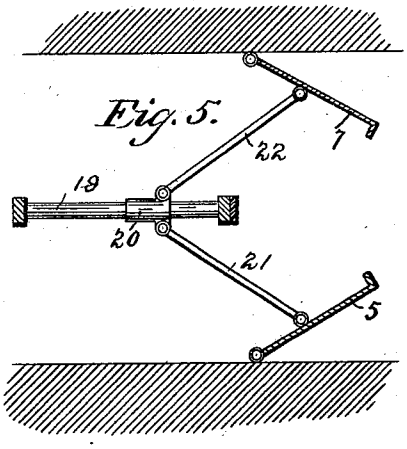


Fig. 5.

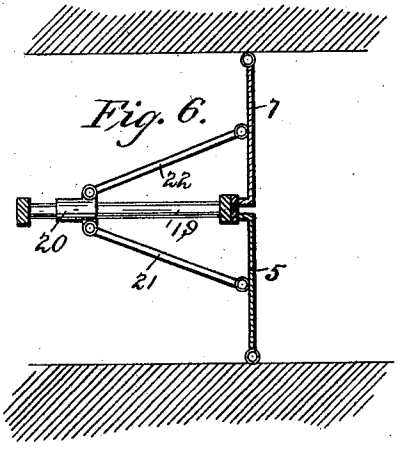


Fig. 6.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM COOPER, OF FARNWORTH, ENGLAND.

VENTILATOR FOR BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 594,727, dated November 30, 1897.

Application filed December 28, 1896. Serial No. 617,225. (No model.) Patented in England July 22, 1893, No. 14,192.

To all whom it may concern:

Be it known that I, WILLIAM COOPER, of Farnworth, county of Lancaster, England, have invented a new and Improved Construction of Ventilators for Buildings and other Structures, (for which I have obtained Letters Patent in Great Britain, No. 14,192, dated July 22, 1893;) and I do hereby declare that the following is a full and exact description thereof.

The nature of my invention consists in fitting two or more hinged or pivoted flaps coupled together by levers, rods, or other equivalents, so that their action will be synchronal. The flaps are so proportioned and arranged as to be almost balanced, by which their to-and-fro actions will be effected with the least possible current of air. The flaps may be of equal or unequal sizes, the movements being effected by means of levers and rods of suitable proportions. The whole arrangement may be mounted in a frame or otherwise, as required; and in order that my said invention may be particularly described and ascertained reference is hereby made to the accompanying drawings, in which similar figures of reference indicate corresponding parts.

Figure 1 is a sectional elevation illustrating one means of carrying out my invention, showing the flaps closed. Fig. 2 is a sectional elevation of the arrangement shown in Fig. 1, showing the flaps open. Figs. 3 and 4 illustrate another form of carrying out my invention, Fig. 3 showing the flaps closed and Fig. 4 showing them open. Figs. 5 and 6 illustrate another modification.

Referring to Figs. 1 and 2, 5 is the upper flap, hinged at 6, and 7 is the lower flap, hinged at 8. 9 is a bracket or arm rigidly fixed to the flap 7. 10 is a connecting-rod one end of which is pivoted to 5 at 11, the other end being pivoted to the bracket-arm 9 at 12. The positions of the pivoted centers 11 12 and the curves traversed thereby relatively to each other and to the centers 6 and 8 are such that the two flaps 5 and 7 very nearly balance each other, so that even a weak current of air in the direction of the arrow 13 will instantly close the flaps, as shown in Fig. 1, and a similar current of air in the direction of the arrow 14 will instantly open the flaps, as shown in Fig. 2.

Referring to Figs. 3 and 4, the position of the connections is shown reversed, the bracket 9 is rigidly fixed to the upper flap 5, and a curved connecting-rod 10 is pivoted to the flap 7 and arm 9, as shown. The effect of this arrangement is exactly similar to that shown by Figs. 1 and 2, the flaps very nearly balancing each other. 15 is a transverse bar fitted with an elastic facing 16, against which the turned edges 17 of the flaps impinge and render the joint air-tight when the flaps are closed. These turned edges and elastic facings are also provided at the sides for the same purpose.

By slight alterations of the centers upon which the several elements forming the kinematic chain revolve the flaps may be arranged so as only to partly close to a certain "set open" position. Thus if the center 8 is shifted to the point 18 or between 8 and 18 the flaps will not entirely close the passage, but will remain partly open.

Referring to Figs. 5 and 6, 19 is a fixed guide-rod, which serves as a guide to the slide-block 20. This slide-block carries the pivoted ends of two connecting-rods 21 22, the other ends of the rods being pivoted to the flaps 5 and 7, whereby the angular motions of the flaps are rendered synchronal. The rod 19 may be screw-threaded to receive a screw-nut, or it may be a ratchet-bar to receive a pawl, or a bar formed with pin-holes for the purpose of setting open the flaps, if required. It is evident that the pivotal points or distances between the same can be changed or varied.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with an air or ventilating shaft or passage-way, of a draft-regulator comprising oppositely-arranged flaps, and a jointed connection between the flaps.

2. The combination with a ventilating-shaft or passage-way, of a draft-regulator comprising oppositely-arranged flaps, and a pivoted and jointed link connection between the flaps.

3. An automatic draft-regulator for ventilators, comprising oppositely-swinging flaps or doors, and a jointed balancing connection between the flaps or doors.

4. A draft-regulator for ventilators, comprising oppositely-swinging flaps or doors, and a connection between the flaps consisting of arms one of which is fixedly secured to one door, and the other pivotally secured to the other door, one of said arms being longer than the other, and a pivotal connection between the arms.

5. An automatic draft-regulator for ventilators consisting of oppositely-swinging flaps or doors, a fixed arm on one flap, and a connection between the arm and opposite flap.

6. An automatic draft-regulator for ventilators, consisting of hinged flaps oppositely arranged, and means for uniting and balancing the flaps comprising arms and a joint connection between the arms, substantially as described.

7. An automatic draft-regulator for ventilators, consisting of oppositely-swinging pivotal flaps, and an eccentrically-jointed bar connection between the flaps.

8. An automatic draft-equalizer, comprising oppositely-swinging flaps, of means for connecting and balancing the flaps, and adjustable means for varying the movement of the flaps to permit the same to either partially or fully close the ventilating-opening.

9. An automatic draft-equalizer for ventilators, consisting of oppositely-arranged flaps or doors suitably hinged to move in opposite directions, a jointed connection between the flaps, and means for adjusting the hinged connection of one of the flaps.

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

WILLIAM COOPER. [L. S.]

Witnesses:

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JOHN W. THOMAS.