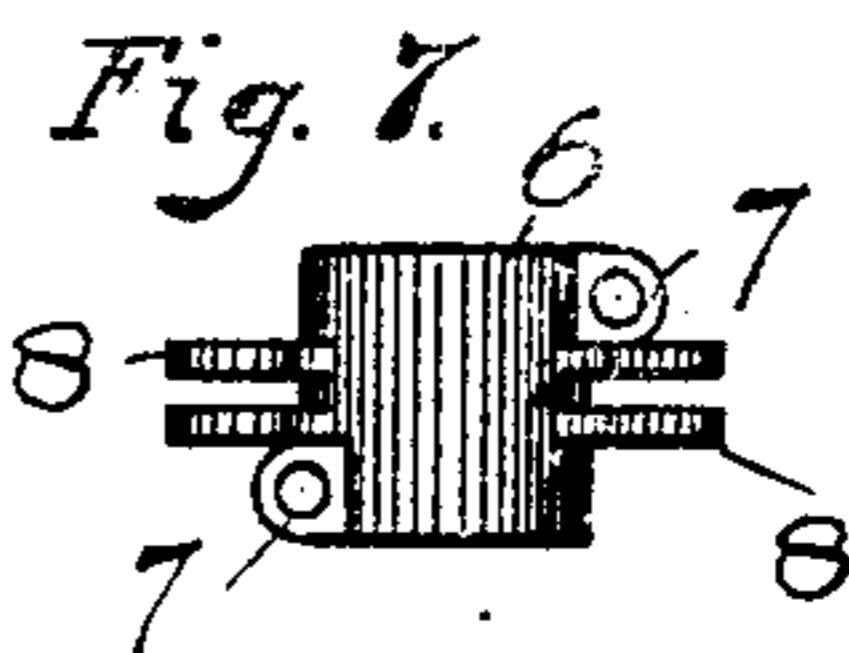
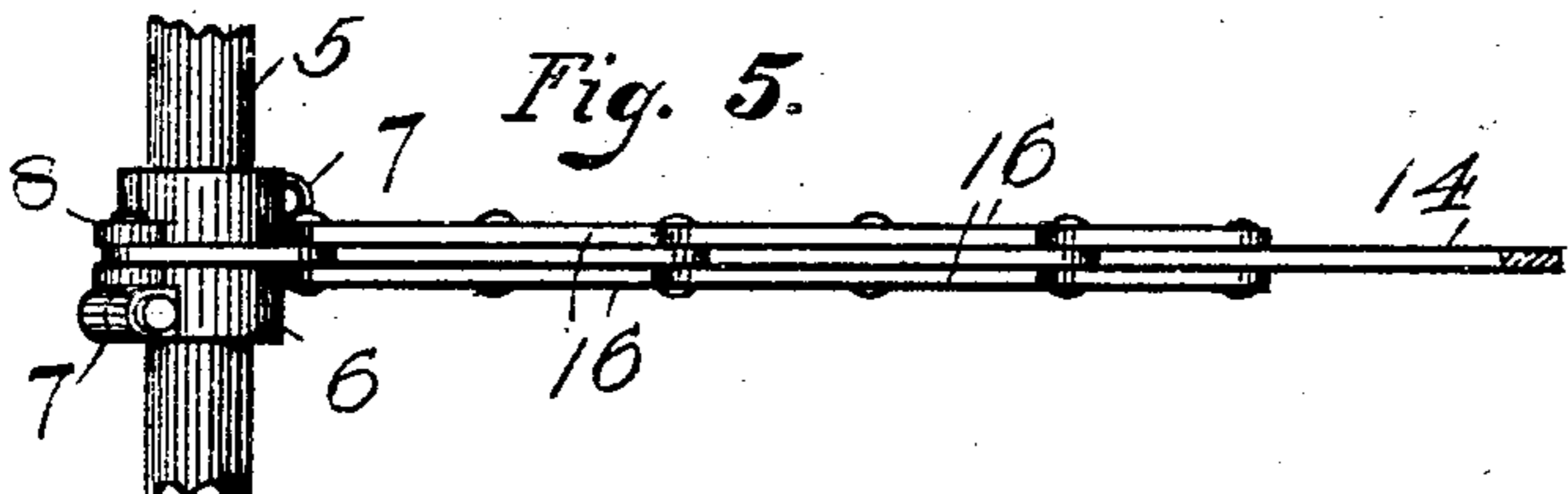
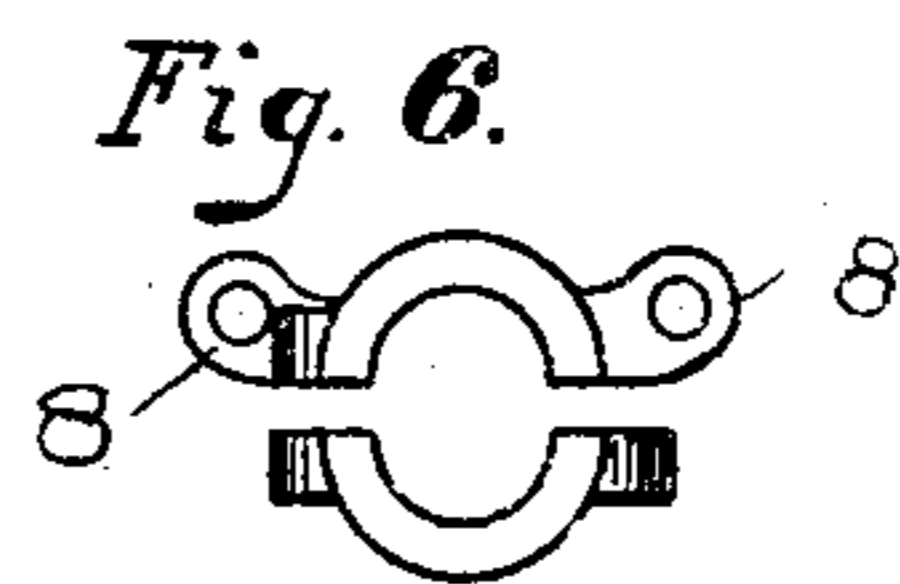
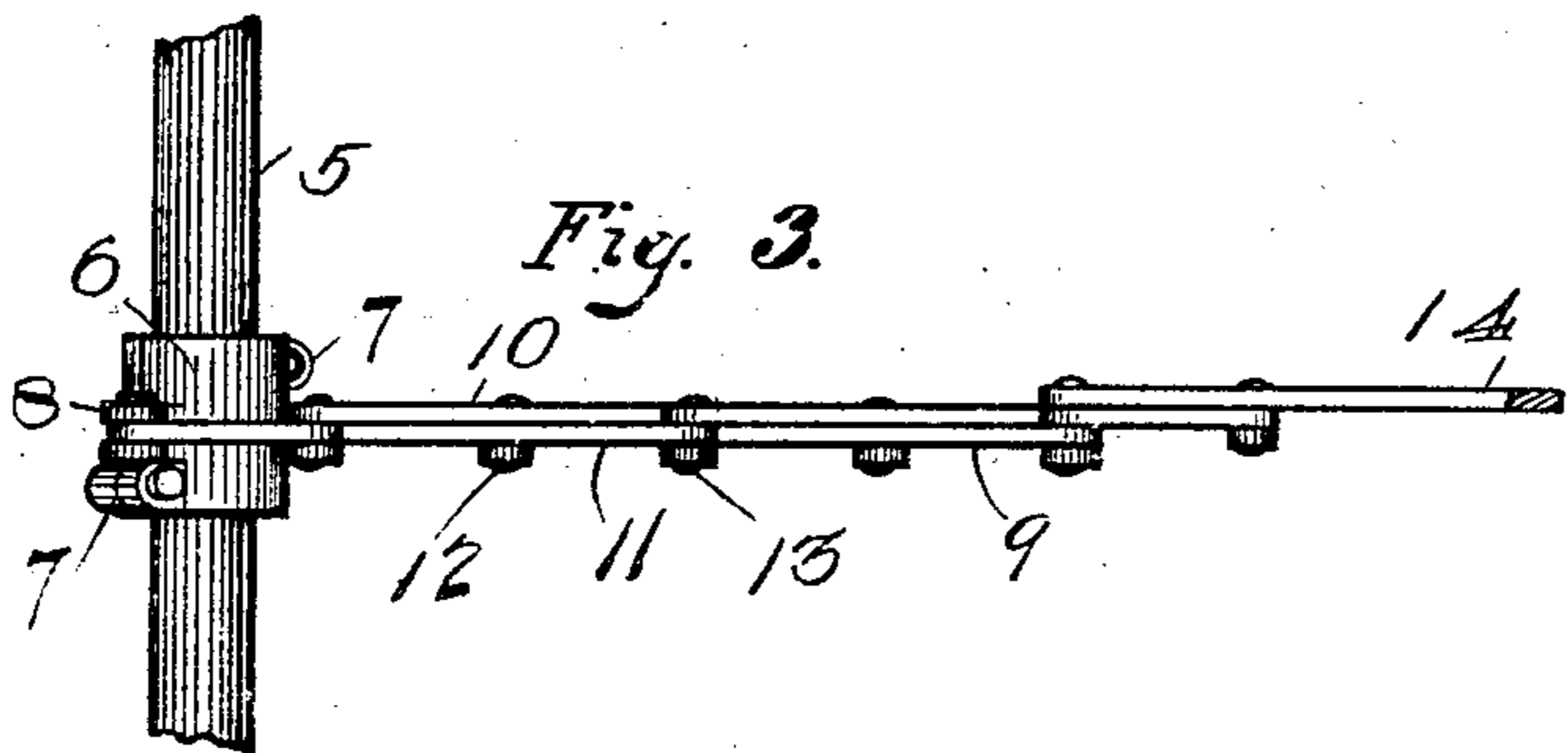
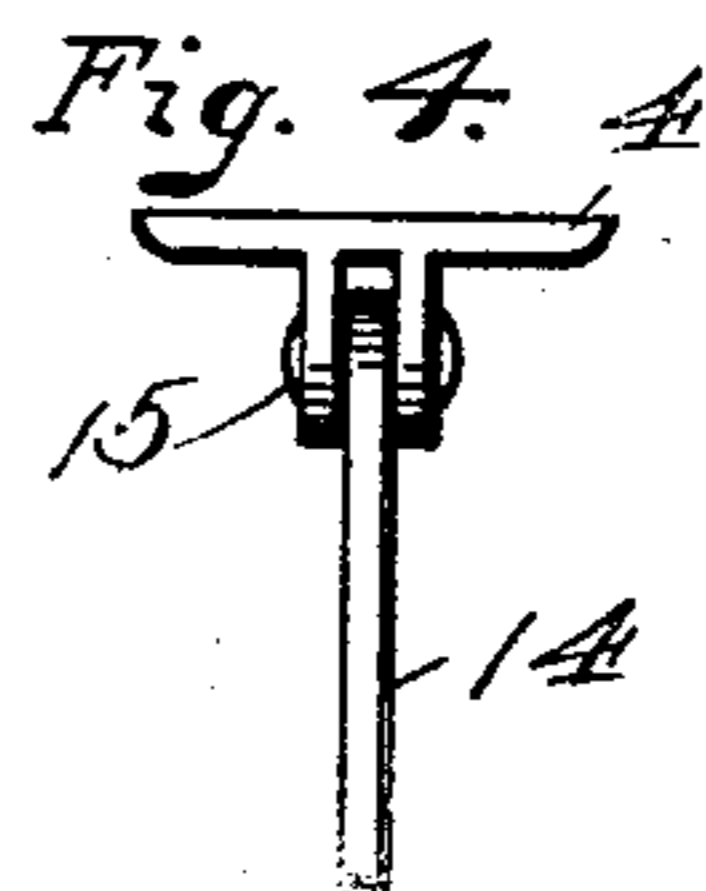
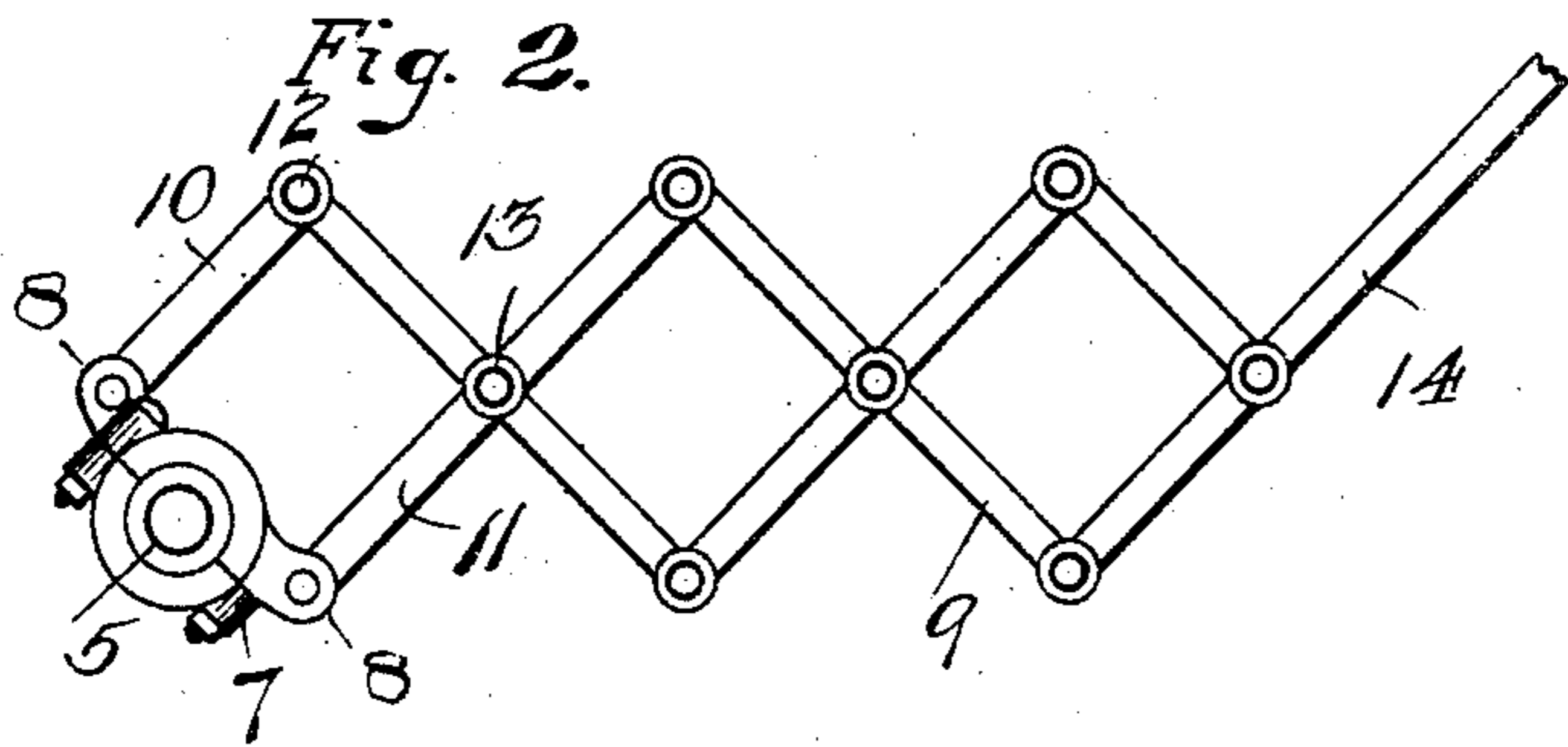
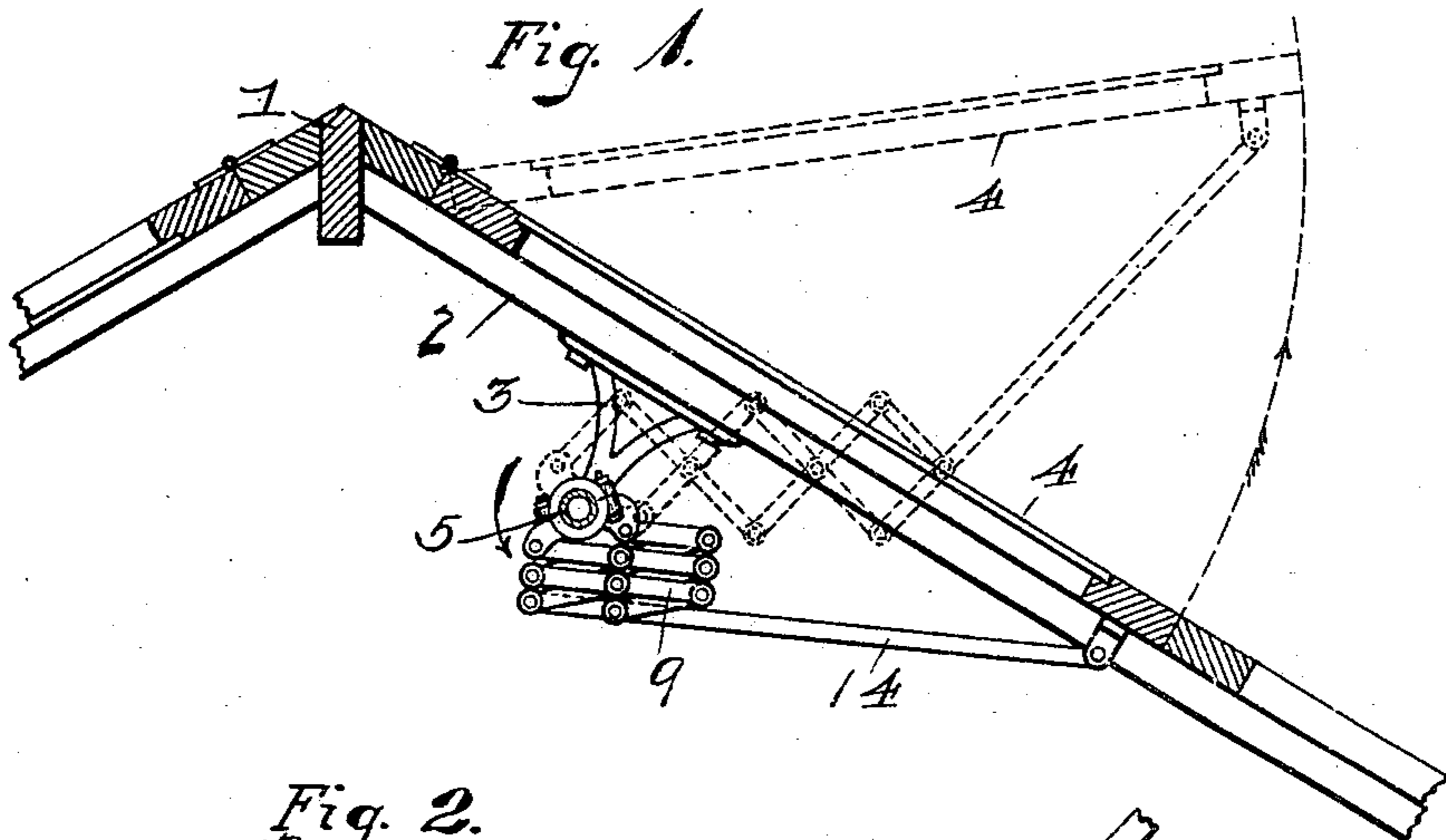


No. 843,881.

PATENTED FEB. 12, 1907.

N. R. EVANS.
WINDOW LIFTER.
APPLICATION FILED MAY 27, 1905.



WITNESSES:

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WINDOW-LIFTER.

No. 843,881.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed May 27, 1905. Serial No. 262,604.

To all whom it may concern:

Be it known that I, NEWTON R. EVANS, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Window-Lifters; and I do hereby 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.

My invention relates to window, skylight, transom, &c., lifters. Its object is to provide a device for raising or lowering windows, ventilators, and similar structures in which the power may be immediately applied within a limited space, which shall be composed of parts readily assembled and dismembered, and shall be so simple in construction that any part may be made at small cost, and therefore easily replaced in case of breakage.

This invention is, in fact, within the principle of my invention as disclosed in my application, Serial No. 250,588, filed March 17, 1905, for a window-lifter, in which I have described a window-lifter having the power applied through two links to different points of a connecting-arm, so that I secure a combined pushing and pulling effect.

In the form disclosed in this application I intervene between a connecting-arm attached to a window, ventilator, or similar structure a lazy-tongs; one arm of which is attached to one side of the hub in the power-shaft, while an opposite arm is attached to the opposite side of the hub. Of the two arms which join the lazy-tongs to the hub the upper arm in the form illustrated in Figure 2 and lettered 10 is shorter than the lower arm, which is lettered 11 in said Fig. 2. The fulcrum-point is, however, at the same distance from the hub in each case.

In the drawings, Fig. 1 is a side elevation with the operation of the parts indicated, the full lines showing the ventilator closed and the parts inactive. Fig. 2 is a detail side elevation showing the lazy-tongs extended to lift the ventilator. Fig. 3 is a plan view of Fig. 2. Fig. 4 is a detail of the ear attachment for the connecting-arm. Fig. 5 is a plan view of a modified form. Fig. 6 is a side elevation detail of the hub. Fig. 7 is a plan view of the hub.

In the drawings, 1 represents a beam,

gable, or other suitable support to which the object to be lifted may be hinged. In this case the illustration may be, for example, supposed to represent the ventilator of a greenhouse.

2 represents the frame of the greenhouse, and 3 the usual hanger-bracket, in which the power-shaft is journaled, there being of course any desired number of said brackets, depending upon the size of the structure and the number of ventilators.

4 represents a hinged ventilator to be operated by my lifter.

5 is a pipe-shaft journaled in brackets, of which 3 is an example. The shaft may have an operating gear or lever at one or both ends, it being understood that this pipe-shaft is merely one form of operating-shaft which may be used for transmitting power. At the point of application of my lifter the power-shaft 5 is surrounded by a hub 6, preferably formed in parts, or, as in the illustration, in halves.

7 are both receiving-offsets to secure the two parts of the hub about the shaft.

One part of the hub, in the form illustrated the inner part of the hub, bears two ears 8 to receive the initial arms of the lazy-tongs.

9 represents a lazy-tongs which has two arms, in the form shown in Fig. 2, 10 and 11, connecting, respectively, with the upper and lower ears 8 of the hub 6. The arm 10 is shorter than the arm 11; but the distance from the ear 8 to the first fulcrum of the arm 10 at 12 is the same as the distance on the arm 11 to the first fulcrum 13.

14 is a connecting-arm pivoted to an ear 15 on the ventilator 4.

In the form illustrated in Fig. 5 I have shown the side arms of the lazy-tongs duplicated, as indicated at 16. In this case the connecting-arm 14 is embraced by the last of the sections of the lazy-tongs. As will be observed from the illustration of Fig. 1, when power is applied to the shaft 5 said power will be transmitted through the lazy-tongs to the connecting-arm 14 by the medium of the initial arms 10 and 11. The upper short arm 10 will thus be pulled downward and backward, while the initial arm 11 will be pushed inward and upward, and this leverage effect thus combining a pushing and pulling action will be carried throughout the lazy-tongs to the connecting-arm, thus securing the ap-

plication of a great part of the power exerted upon the shaft. As the ventilator moves up the lazy-tongs also moves with the ventilator up and out of the way. It will be seen that the manner in which I have applied the lazy-tongs enables me to compactly locate the operating devices and to have them even more out of the way when in action than when the window or sash is closed. I find this of decided advantage in many locations—as, for example, in a shop or factory where such an apparatus as a traveling crane must pass close by the ventilating devices. In this device, as in that illustrated in my preceding noted application, I apply, as stated, a lifting and pulling effect, whereby the whole movement of the ventilator is made with a minimum application of power and with no possibility of a dead-center.

20 Having fully described my invention, what I claim is—

1. In a window or other lifter, the combina-

tion of a power or operating shaft, a hub on the shaft, a lazy-tongs having arms engaging the hub on opposite sides, and a connecting-arm to which the lazy-tongs is pivoted. 25

2. In a window or other lifter, the combination of a power or operating shaft, a hub on the shaft having opposite ears, a lazy-tongs having a short arm engaging one ear, a longer arm engaging the other ear, and a connecting-arm to which the lazy-tongs is pivoted. 30

3. In a window or other lifter, the combination of a power or operating shaft, a hub on the shaft, a lazy-tongs whose arms are pivoted to the hub, one pulling, the other pushing, and a connecting-arm to which the lazy-tongs is pivoted. 35

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

NEWTON R. EVANS.

Witnesses:

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NICHOLAS P. MILLER.