

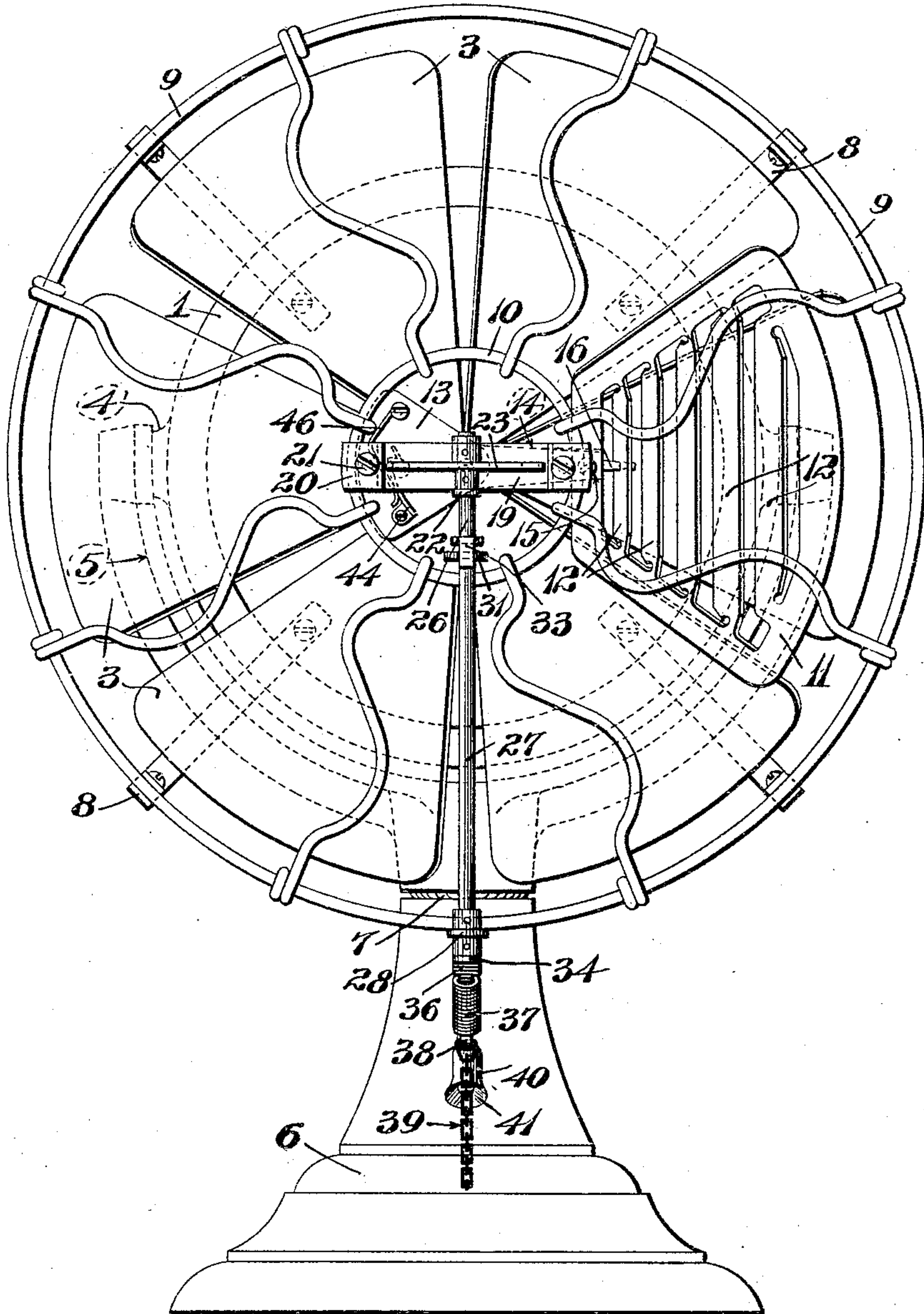
A. RUBIN.
OSCILLATING FAN.
APPLICATION FILED NOV. 22, 1909.

955,209.

Patented Apr. 19, 1910.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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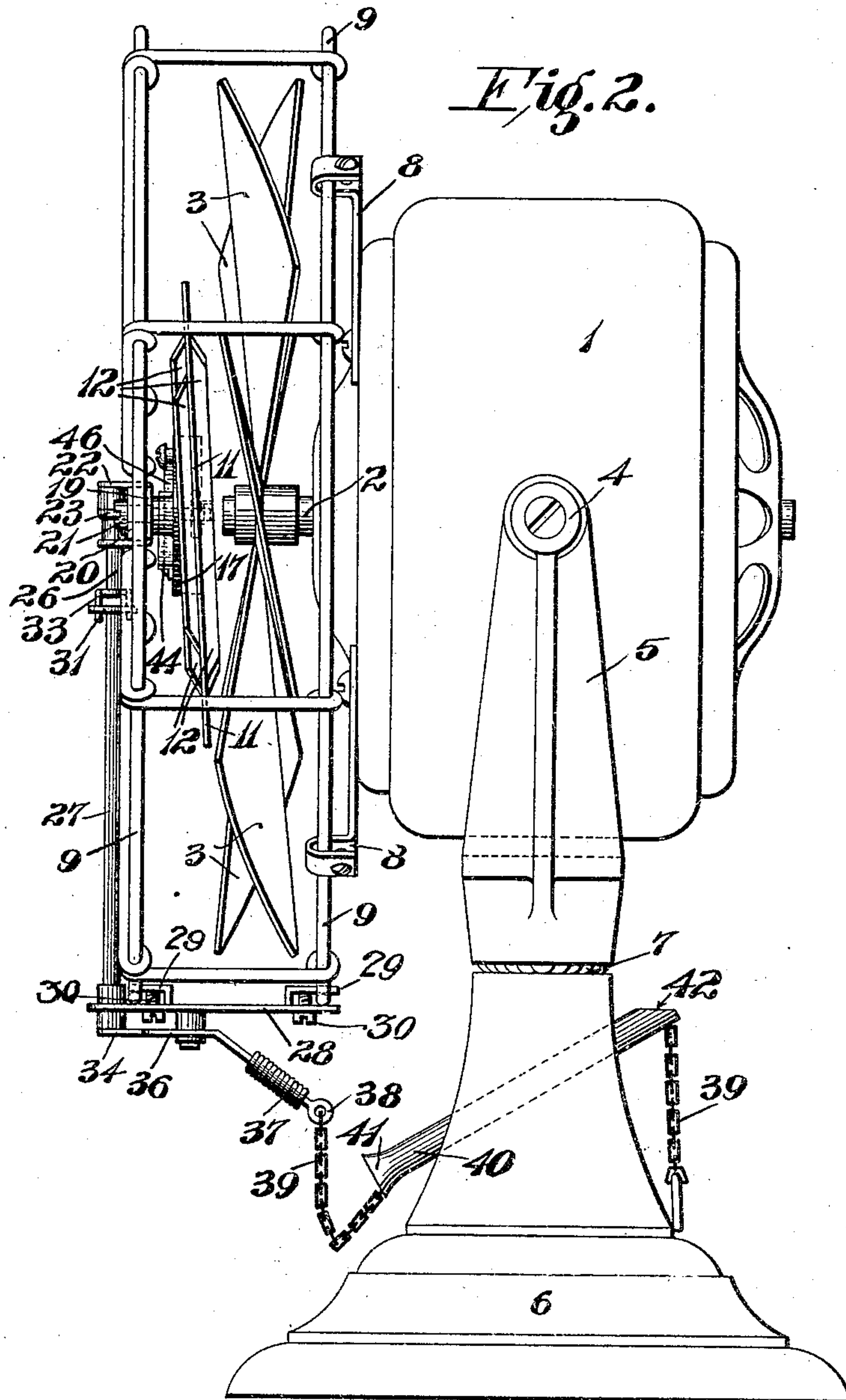
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 3.

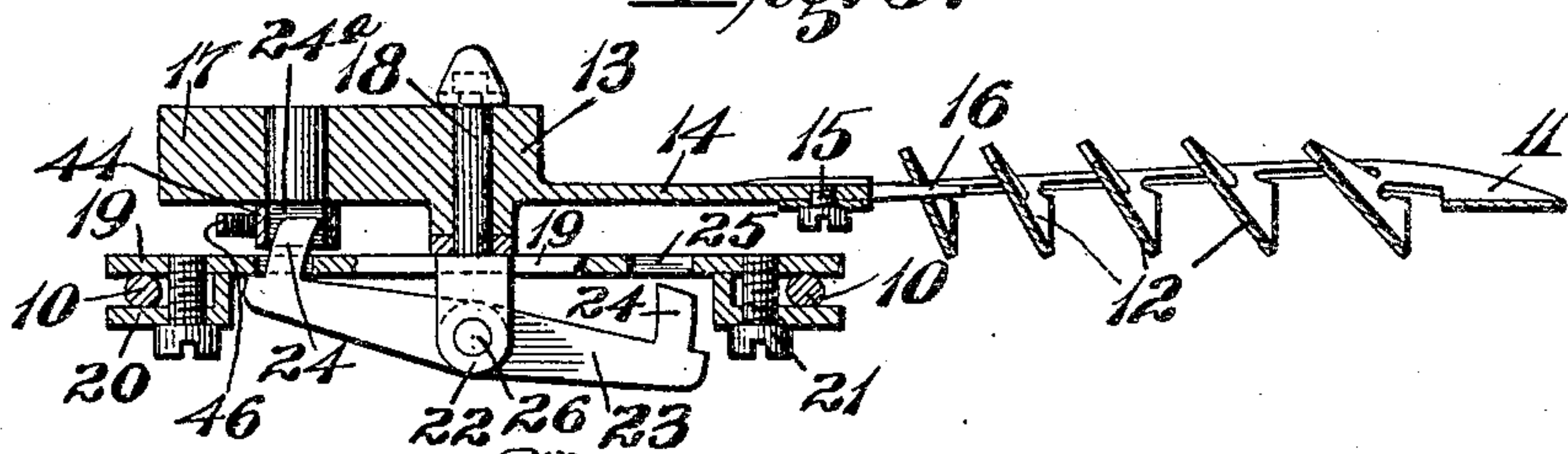


Fig. 4.

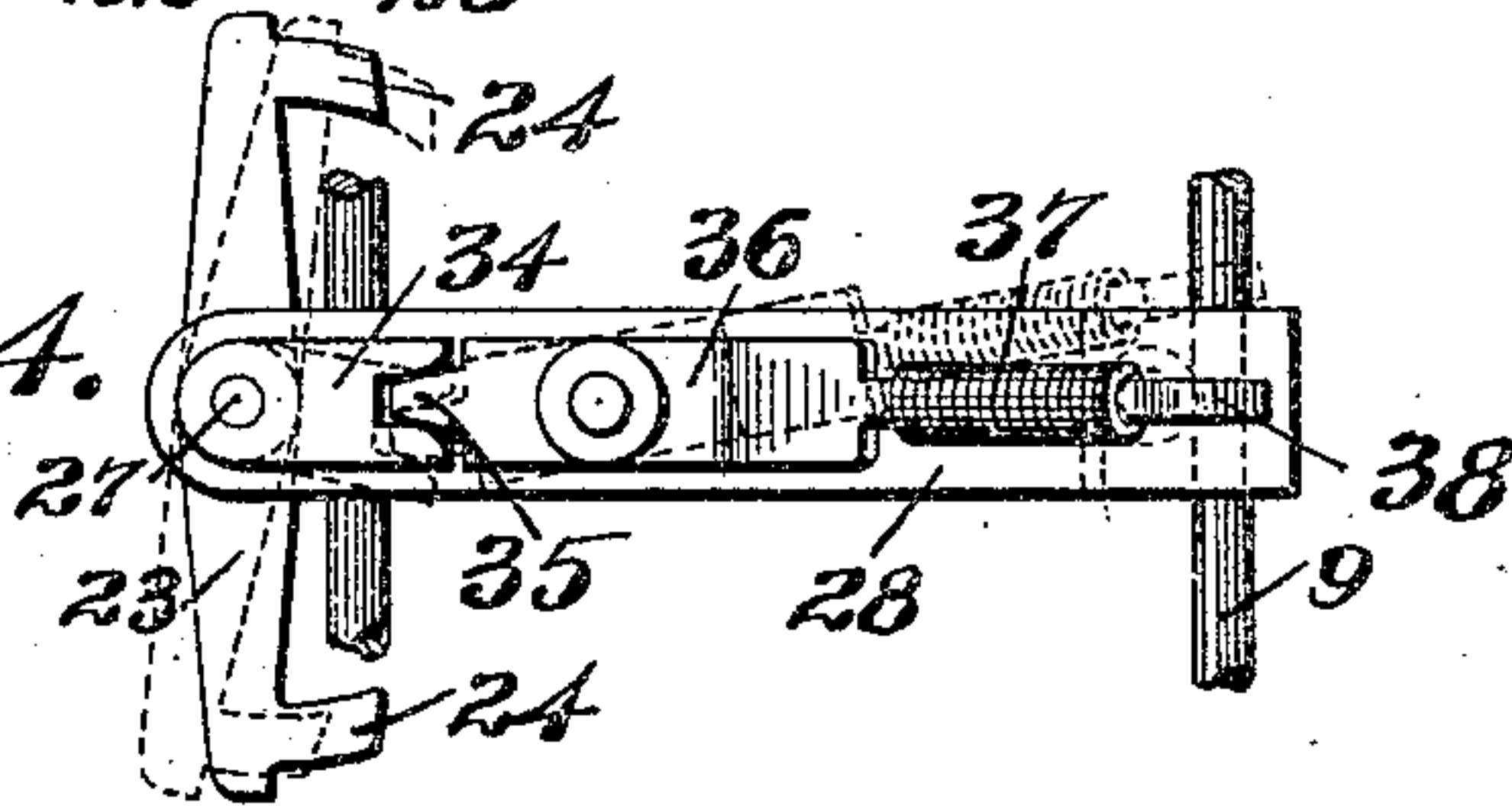


Fig. 5.

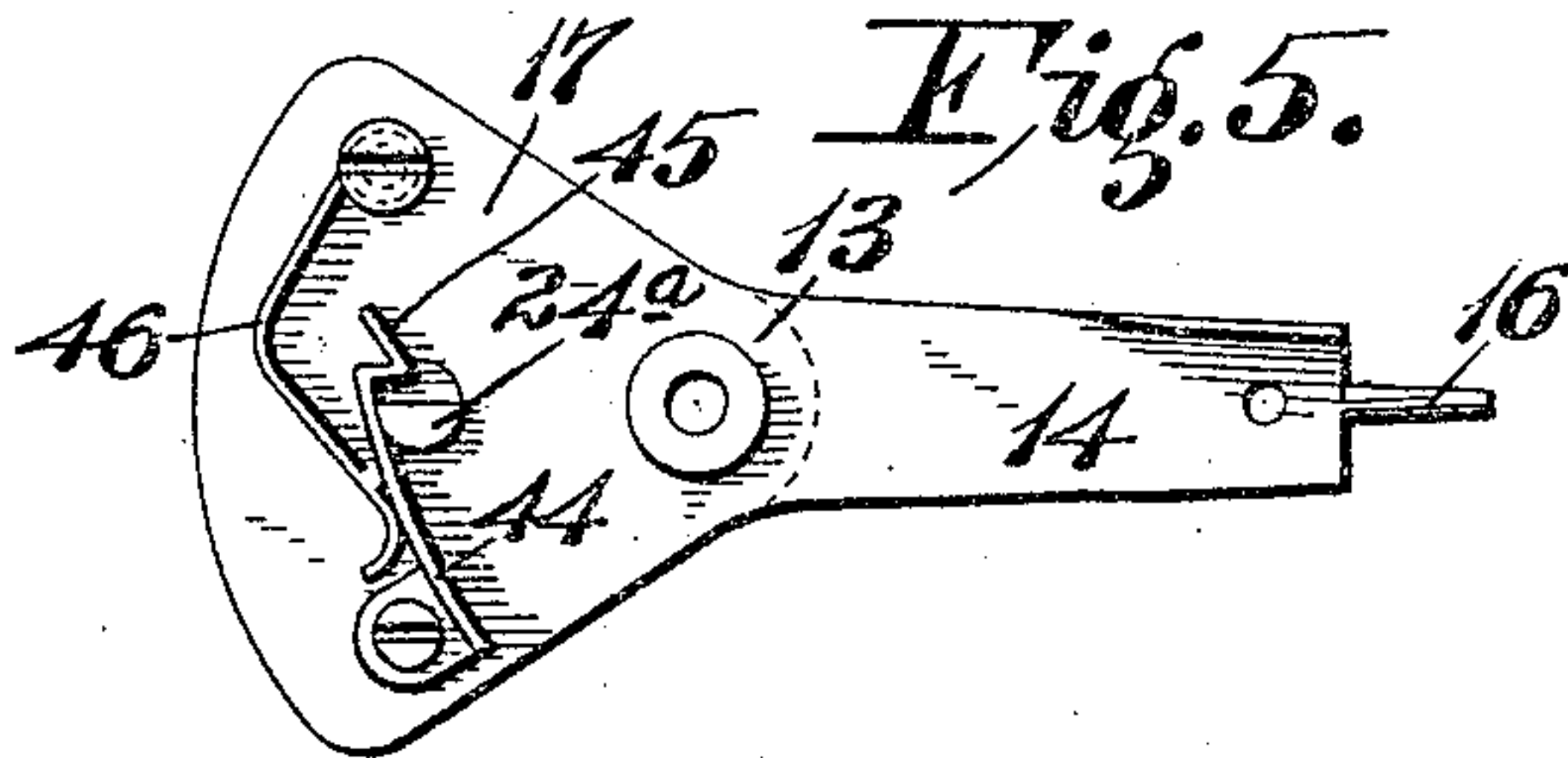


Fig. 6.

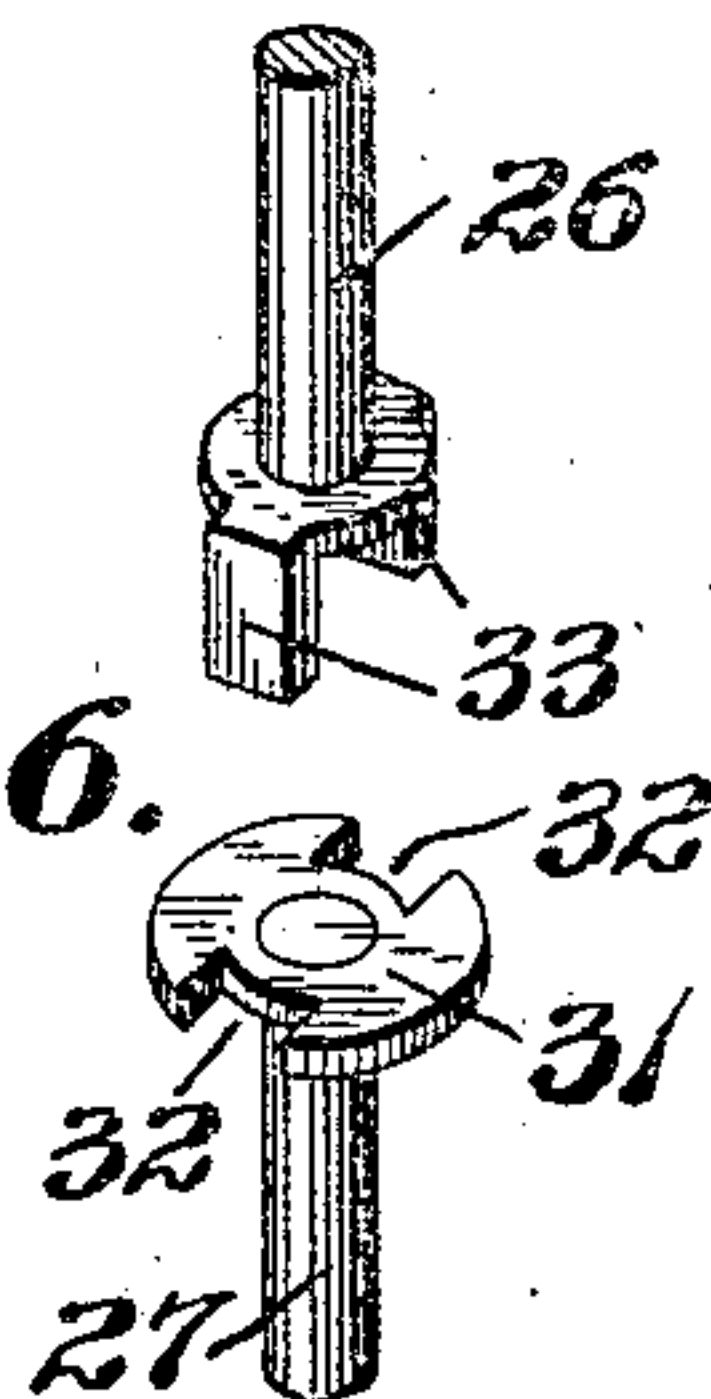


Fig. 7.

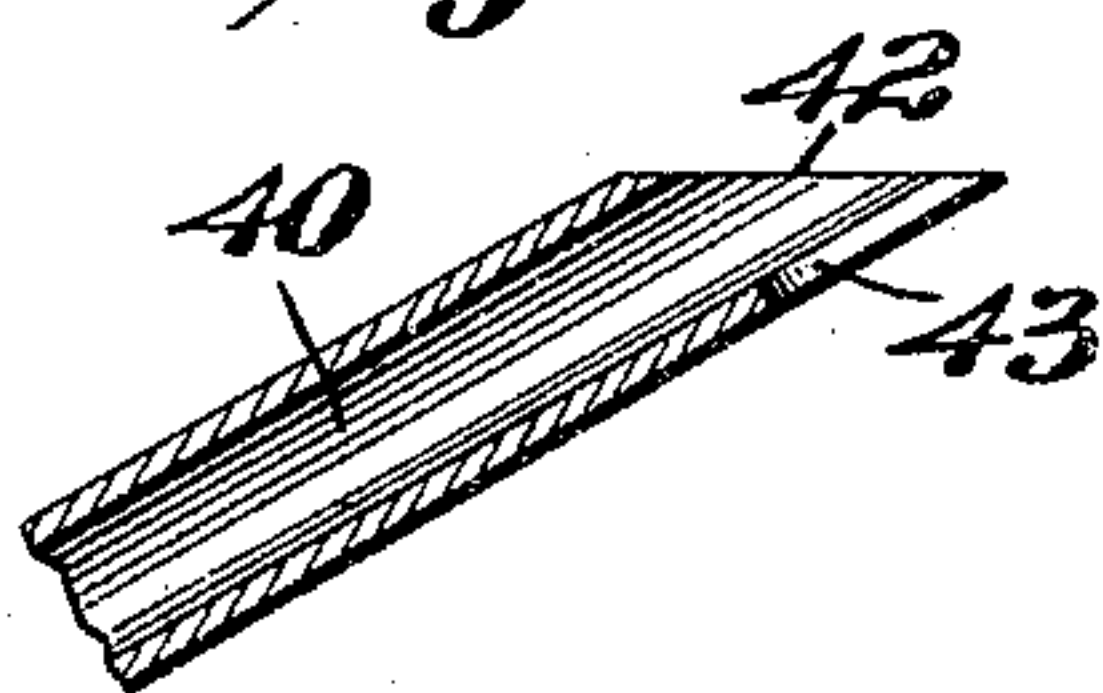
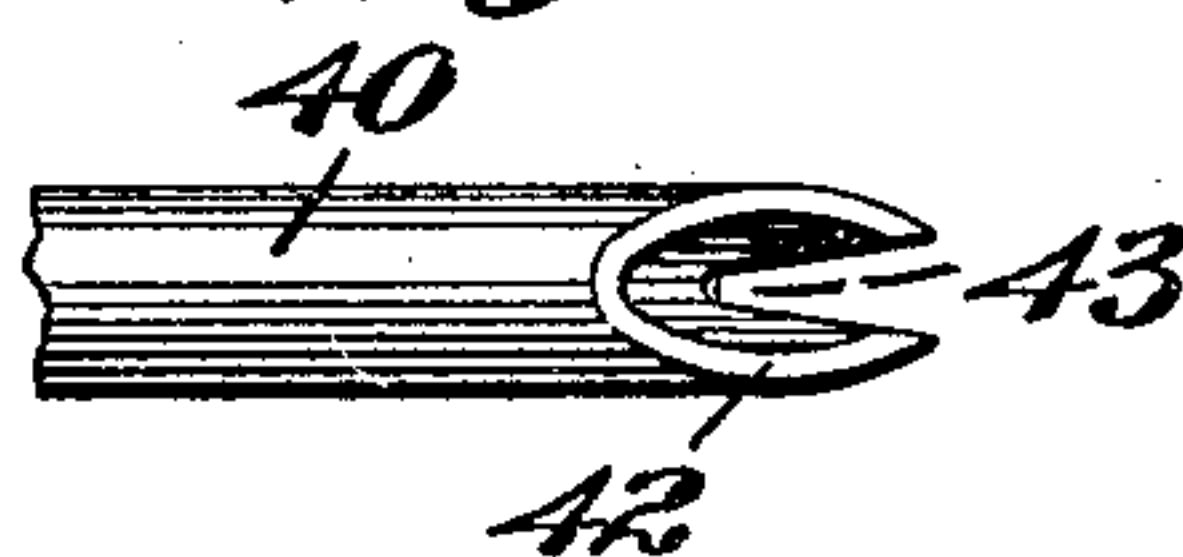


Fig. 8.



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UNITED STATES PATENT OFFICE.

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OSCILLATING FAN.

955,209.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed November 22, 1909. Serial No. 529,173.

To all whom it may concern:

Be it known that I, ADOLPH RUBIN, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Oscillating Fans, of which the following is a specification.

This invention relates to oscillating fans, and it has for its principal objects to produce a device which can be applied to a swiveled fan of ordinary construction to effect the automatic oscillation of the same; to provide for the positive actuation of the device; and to attain certain other advantages hereinafter more fully appearing.

The invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings which form part of this specification and wherein like symbols refer to like parts wherever they occur, Figure 1 is a front elevation of an electric fan with my invention applied thereto; Fig. 2 is a side elevation of the same; Fig. 3 is a horizontal section through the resisting element and the portion of the latch mechanism which coöperates therewith; Fig. 4 is an inverted plan view of the latch mechanism; Fig. 5 is a front elevation of the rotatory carrier for the shifting vane; Fig. 6 is a fragmentary detail view of the members of the flexible coupling of the latch mechanism, detached; Fig. 7 is a fragmentary longitudinal section of the securing device for the tripping chain; and Fig. 8 is a plan view of the part shown in Fig. 7.

In the drawings I have shown an ordinary electric fan comprising a motor (not shown) which is mounted in a casing 1. On the shaft 2 of the motor is mounted an ordinary fan wheel or blades 3. The casing 1 is provided with lateral trunnions 4 which are pivotally mounted or swiveled on the ends of a yoke or forked member 5 whereby the fan may be tilted when desirable. The member 5 is in turn swiveled upon a base 6 whereby the fan may be turned laterally. A suitable ball-bearing or other anti-friction device 7 is preferably provided between the yoke 5 and base 6.

Secured to the casing of the motor by members 8 is a guard frame 9. The outer portion of the guard frame is provided with a central ring member 10 to which the inner

ends of the radial members of the frame are secured.

Rotatably mounted in front of the fan wheel 3 with respect to the axis thereof, is a blade or vane 11. This vane is set at an inclination, so that the blast from the fan blades will cause the same to rotate on its pivot in one direction. Provision is made, however, for the intermittent actuation of this vane; that is, a device is provided for arresting the vane alternately on either side of a vertical line through the axis of the fan swivel. By this arrangement, the fan will be oscillated on its vertical pivot during the time the fan wheel 3 is in motion. The vane 11 is preferably interrupted in its rotation at diametrically opposite points horizontally on each side of the axis of the fan wheel. To secure a maximum benefit of the blast upon the vane, the vane is slitted transversely of a line through its middle so that slats or cross members 12 may be provided and set obliquely. The several slats are preferably set at different angles which are in radial planes with respect to the vertical axis of the swivel connection between the yoke 5 and the base 6 when the vane is at either of its diametrical positions of rest. By this arrangement, the action of the blast from the fan blades 3 upon the inner side of the vane 11, tends to swing the vane when arrested in a circular arc. So, too, the blast driven through the spaces between the slats 12, creates a suction on the outer faces of the slats, thereby increasing the power of the device. By this arrangement, also, the vane does not block off or deflect the blast from the fan blades as would be the case if the vane 11 were a plain flat blade. The vane 11 is mounted on a member 13. This member 13 is provided with an arm which is secured to the inner end of the vane by a screw 15, and to fixedly hold the vane with respect to the arm 14, said arm is provided at its end with a pin or projection which extends through a perforation in the innermost slat 12 of the vane, as shown in Figs. 1 and 3. The member 13 is provided with a weighted wing 17 which is arranged and adapted to counterbalance the vane 11. The member 13 is pivoted on a stud which projects inwardly from a horizontally disposed supporting plate 19. This supporting plate is secured at its opposite ends to

the ring member 10 of the guard frame so that the pivot stud 18 is in axial alinement with the axis of the motor shaft 2 on which the fan blades 3 are mounted. The plate 19 may be detachably secured to the ring 10 in any desirable manner, but preferably by angular clips 20 which are secured to the plate by screws 21, whereby the same is clamped upon the ring.

Pivotally mounted between two outwardly projecting horizontal lugs 22 on the plate 19 is a rocking member 23 having inwardly projecting lugs 24 at its opposite ends. The lugs 24 are adapted to alternately project through slots 25 in the plate when said member 23 is rocked, so as to lie in the path of a stop 24^a on the weighted portion 17 of the rotatory member 13. The rocking member 23 is provided with a downwardly projecting stub shaft or stem 26 which is connected by a flexible coupling to a rod or shaft 27. The lower end of the rod or shaft 27 is swiveled in a plate 28 which is secured to the guard frame by clips 29 and screws 30 in a manner similar to the plate 19. Any suitable flexible coupling may be provided for the rods 26 and 27, but preferably the rod 27 is provided on its upper end with a diametrically notched disk 31 in the notches 32 of which the downwardly projecting prongs 33 on the end of the shaft 26 loosely fit. On the lower end of the rod 27 is secured an arm 34 whose end is forked or bifurcated so as to cooperate with a tooth or projection 35 on one end of a rocking lever 36 which is pivoted on the under side of the plate 28. The inner end of the lever 36 is attached to one end of a coiled spring 37 whose opposite end is provided with an eye or loop 38. A cord or chain 39 is attached at one end to the eye or loop 38 and its opposite end is preferably adjustably secured to the base, so that when the fan is oscillated thereon, the cord or chain will be drawn taut at the predetermined limit of the movement of the fan in either direction and the rocking lever 36 will be moved to rock the arm 34 which is secured to the rod 27.

To provide for the adjustment of the rod or chain 39, a tube 40 is preferably extended through the base 6 at an inclination as shown, the inclination being downwardly from the rear to the front of the base. The front end portion of the tube is preferably flared as shown at 41 and the rear end of the tube is preferably cut off on a bevel as at 42. The bottom of this end portion is notched as at 43. The cord or chain is threaded through this tube 40 and the portion of the cord or chain extending beyond the rear of the tube is fastened in the notch 43. The chain is preferably used as the same is not liable to wear or break as easily as the cord and the links will catch more

readily in the notch 43 which would have to be more nearly pointed at its bottom if the cord is used.

The shifting vane 11 is held against rotation as long as one of the projections 24 on the rocking member 23 is engaged by the stud or projection 24^a on the member 13. For example, when the vane is in the position as shown in Figs. 1 and 3, the projection 24 to the left lies in the path of the stop 24^a. Therefore, if the fan wheel is rotated, the effect of the blast upon the vane will be to rotate the fan to the left. The angle of oscillation or the sweep of the fan having been predetermined, the cord or chain is adjusted accordingly. The fan will move to the left until the cord is drawn taut, whereupon the lever 36 will be rocked on its pivot and the member 23 will be simultaneously actuated to withdraw the projection 24 on the left from engagement with the stop 24^a and move the projection 24 on the right into the path of said stop 24^a. As soon as the stop 24 on the left is withdrawn from engagement with the stop 24^a on the member 13, the vane will be rotated until the stop 24^a contacts with the stop 24 on the right, in which position the vane will be diametrically opposite the position shown in Fig. 1. In this position of the vane, the fan will be swung to the right until the cord or chain 39 becomes taut, whereupon the respective stops will be released as above mentioned and the vane will again move to the position as shown in Fig. 1. This intermittent rotation continues as long as the fan blades continue to rotate. To prevent the vane from rebounding as its stop 24^a contacts with the respective stops 24, a catch 44 is pivotally mounted on the member 13 and it has a beveled hook 45 adapted to snap over the respective projections 24 at the instant the stop 24^a contacts therewith. A spring 46 is provided to yieldingly hold the catch member in operative position.

The device can be readily applied to any ordinary fan which is swiveled on its base or support and it is positive in its action. Should the fan be interrupted in its oscillatory movement at any time it is moving in either direction and before the cord or chain 39 is drawn taut, it will continue its movement in the same direction as soon as it is relieved of the retarding resistance until the cord or chain is drawn taut and thereby trips or relieves the projection 24 which is holding the vane from rotation. The spring connection 37 between the cord or chain 39 and the lever 36, relieves the device from shock when the cord or chain is drawn taut at the end of the movement and the reaction of the spring assists in starting the movement of the fan in the opposite direction. The object of providing the universal coupling between the shaft 27 and

the shaft 26 is to permit of an easy movement of the shafts under conditions where it is impossible to locate the same in true axial alinement, or in case the guard frame becomes bent out of shape.

Obviously the device admits of considerable modification without departing from my invention, and, therefore, I do not wish to be limited to the specific construction and arrangement shown.

What I claim is:

1. The combination with a support, of a fan swiveled thereon, said fan comprising a rotatory fan wheel, a resisting element rotatably mounted in the path of the blast from said fan wheel, the pivot of said resisting element being in axial alinement with the axis of said fan wheel, and said resisting element being adapted to be actuated by the force of the blast from said fan wheel, and means for intermittently stopping said resisting element alternately on opposite sides of the axis of the swivel of said fan, whereby said fan is oscillated on its support.

2. The combination with a support, of a fan swiveled thereon, said fan comprising a rotatory fan wheel, a resisting element rotatably mounted in the path of the blast from said fan wheel, the pivot of said resisting element being in axial alinement with the axis of said fan wheel, and said resisting element being adapted to be actuated by the blast from said fan wheel and tending to move in a given direction, and an intermittently movable device arranged to arrest said rotatable resisting element alternately on opposite sides of the swivel of said fan, whereby said fan is oscillated on its support.

3. An oscillatory fan comprising a support, a fan swiveled thereon, said fan comprising a rotatory fan wheel, a resisting element rotatably mounted in the path of the blast from said fan wheel, said resisting element being pivoted centrally of said fan wheel and comprising a vane having a plurality of slots therein, said vane being arranged and adapted to be actuated in a given direction by the blast from said fan wheel.

4. An oscillatory fan comprising a support, a fan swiveled thereon, said fan comprising a rotatory fan wheel, a resisting element rotatably mounted in the path of the blast from said fan wheel, said resisting element being pivoted centrally of said fan wheel and comprising a vane which is slotted transversely to provide a plurality of slats which are inclined, said vane being set so as to be actuated by the blast from said fan wheel in a given direction and the respective slats being set at different angles which are in radial planes with respect to the axis of the swivel of said fan when said vane is in a position on either side of said axis, and means for arresting said resisting element

alternately on opposite sides of the swivel of said fan, whereby said fan is oscillated on its support.

5. An oscillatory fan comprising a support, a fan swiveled thereon, said fan comprising a rotatory fan wheel, a resisting element rotatably mounted in the path of the blast from said fan wheel with its pivot central with respect to said fan wheel, said resisting element being adapted to be rotated in a given direction by the blast from said fan wheel, a device arranged to arrest said rotatable resisting element on opposite sides of the swivel of said fan, whereby said fan is oscillated on its support, and a connection between said arresting device and said support whereby said device is actuated when said fan reaches the limit of its movement in either direction during the oscillation thereof.

6. An oscillatory fan comprising a support, a fan swiveled thereon, said fan comprising a rotatory fan wheel, a resisting element rotatably mounted in the path of the blast from said fan wheel, said resisting element being pivoted centrally of said fan wheel and adapted to be actuated in a given direction by the blast therefrom, an intermittently-actuated device arranged to arrest said rotatory resisting element alternately on opposite sides of the swivel of said fan, whereby said fan is oscillated on its support, and a connection between said arresting device and said support whereby said device is actuated when the fan reaches the limit of its movement in either direction during its oscillation, said connection being adjustable so as to vary the sweep of the fan during its oscillation.

7. An oscillatory fan comprising a support, a fan swiveled thereon, said fan comprising a rotatory fan wheel, a resisting element rotatably mounted in the path of the blast from the fan wheel, said resisting element being pivoted centrally of said fan wheel and adapted to be actuated in a given direction by the blast therefrom, an intermittently-actuated device arranged to arrest said rotatory resisting element alternately on opposite sides of the swivel of said fan, whereby said fan is oscillated on its support, and a resilient connection between said arresting device and said support, whereby said device is actuated to release said resisting element when the fan reaches the limit of its movement in either direction during its oscillation.

8. An oscillatory fan comprising a support, a fan swiveled on said support, said fan comprising a rotatory fan wheel, a rotatory resisting element mounted in the path of the blast from said fan wheel, said resisting element being pivoted centrally of said fan wheel and adapted to be actuated in a given direction by the blast therefrom, a

device arranged to arrest said rotatory resisting element alternately on opposite sides of the swivel of said fan, whereby said fan is oscillated on its support, said arresting device comprising a rocking member arranged to intermittently engage said resisting element, and a connection between said rocking member and said support whereby said member is actuated when the fan reaches the limit of its movement in either direction during its oscillation.

9. An oscillatory fan comprising a support, a fan swiveled thereon, said fan comprising a rotatory fan wheel, a resisting element rotatably mounted in the path of the blast from the fan wheel, said resisting element being pivoted centrally of said fan wheel and adapted to be actuated in a given direction by the blast therefrom, a device arranged to resist said rotatory resisting element alternately on opposite sides of the center of said fan wheel, whereby said fan is oscillated on its support, said arresting device comprising a horizontal rocking member having projections at its opposite ends adapted to be alternately moved into arresting position on opposite sides of the pivot of said rotatory resisting element, a stop on said rotatory resisting element arranged to contact with either of the projections on said rocking member when the same is in arresting position, and means for actuating said rocking member to release said rotatory resisting element when the fan reaches the limit of its movement in either direction during its oscillation.

10. An oscillatory fan comprising a support, a fan swiveled thereon, said fan comprising a rotatory fan wheel, a rotatory resisting element mounted in the path of the blast from said fan wheel, said resisting element being pivoted centrally of said fan wheel and adapted to be actuated in a given direction by the blast therefrom, a device arranged to arrest said rotatory resisting element on opposite sides of the center of said fan wheel, whereby said fan is oscillated on its support, said arresting device comprising a horizontal rocking member having projections at its opposite ends adapted to be alternately moved into arresting position, a stop on said rotatory resisting element arranged to contact with the projection on the rocking member which is

in arresting position, a spring catch arranged to cooperate with a stop on said resisting element to prevent said element from rebounding, and a connection between said rocking member and said support whereby said rocking member is actuated to release said rotatory resisting element when the fan reaches the limit of its movement in either direction during its oscillation.

11. The combination with a support, of a fan swiveled thereon, a resisting element rotatably mounted in the path of the blast from said fan and adapted to be rotated in a given direction by the direct force of said blast, and means for intermittently stopping said resisting element alternately on opposite sides of the swivel of said fan, whereby said fan is oscillated on its support.

12. The combination with a support, of a fan swiveled thereon, said fan comprising a transversely journaled rotatory fan wheel, a resisting element comprising a vane rotatably mounted in the path of the blast from said fan wheel, the pivot of said vane being located centrally of the axis of said fan wheel and said vane being arranged and adapted to be rotated by the direct force of said blast, and means for intermittently stopping said vane alternately on opposite sides of the swivel of said fan, whereby said fan is oscillated on its support.

13. An oscillatory fan comprising a support, a fan swiveled thereon, said fan comprising a rotatory fan wheel, a resisting element rotatably mounted in the path of the blast from said fan wheel and adapted to be actuated in a given direction by said blast, said resisting element comprising a vane which is slotted transversely.

14. An oscillatory fan comprising a support, a fan swiveled thereon, said fan comprising a rotatory fan wheel, a resisting element rotatably mounted in the path of the blast from said fan wheel and adapted to be actuated in a given direction by said blast, said resisting element comprising a vane having a multiplicity of transverse slats which are set obliquely.

Signed at St. Louis, Missouri, Nov. 19, 1909.

ADOLPH RUBIN.

Witnesses:

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J. B. MEGOWN.