

No. 653,518.

Patented July 10, 1900.

S. S. MARTIN.  
SPARK ARRESTER.

(Application filed June 29, 1899.)

(No Model.)

Fig. 1

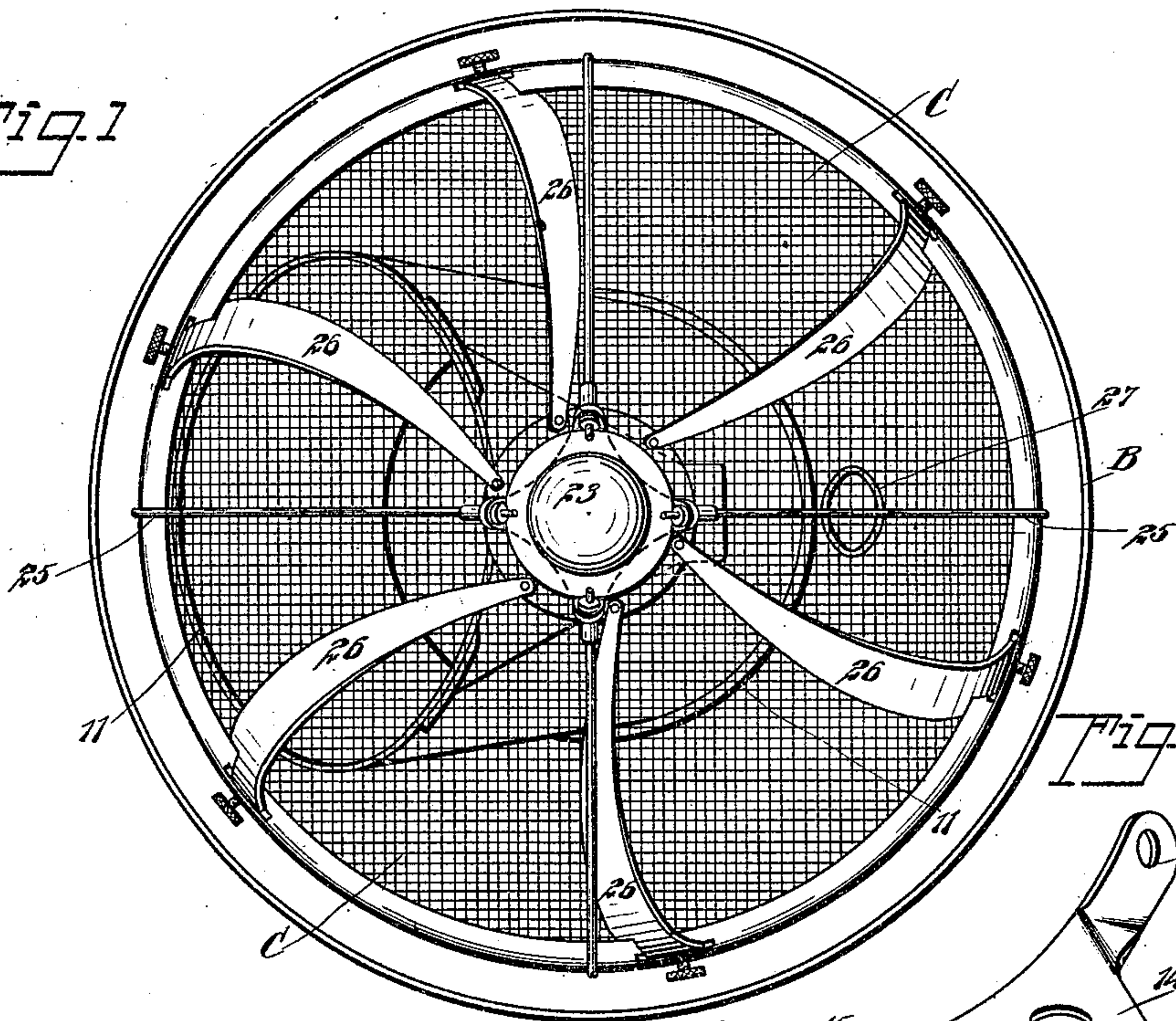


Fig. 5

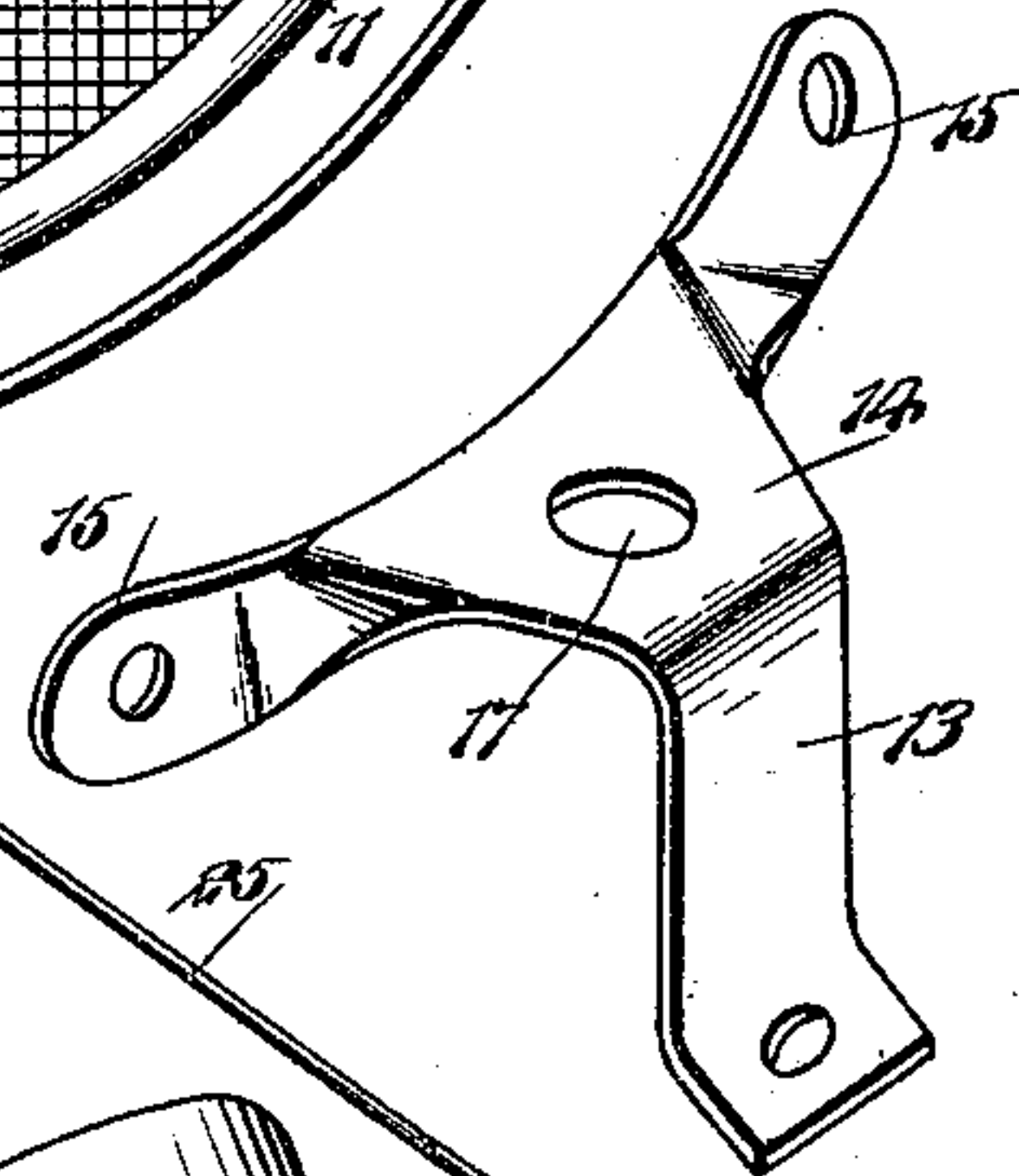
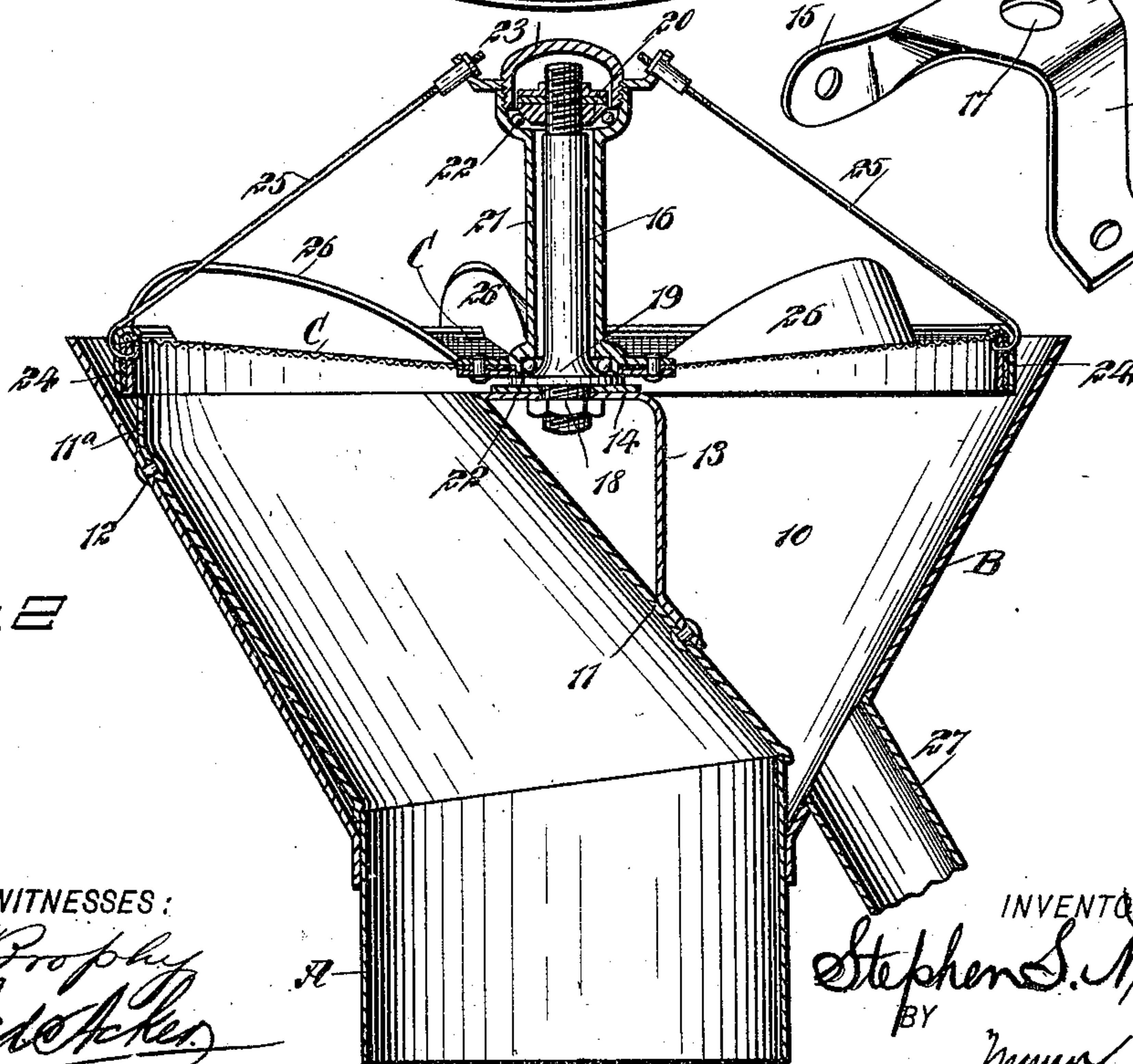


Fig. 2



WITNESSES:

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# UNITED STATES PATENT OFFICE.

STEPHEN SALSBUURY MARTIN, OF EVERGREEN, COLORADO, ASSIGNOR OF  
ONE-HALF TO JOHN WESLEY MARTIN, OF SAME PLACE.

## SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 653,518, dated July 10, 1900.

Application filed June 29, 1899. Serial No. 722,265. (No model.)

*To all whom it may concern:*

Be it known that I, STEPHEN SALSBUURY MARTIN, of Evergreen, in the county of Jefferson and State of Colorado, have invented a new and Improved Spark-Arrester, of which the following is a full, clear, and exact description.

The object of my invention is to provide a spark arrester, collector, and director complete within itself and so constructed that it may be readily attached to the top of any smoke-stack, pipe, flue, or chimney and whereby the arresting, collecting, and directing screen, kept constantly rotated by the natural or forced draft through the smoke-pipe, will cause the sparks, cinders, and escaping coal to be conveyed to a receptacle in which said products will settle and be conducted back to the fire-box or fire or to any desired point below the device.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improved device. Fig. 2 is a vertical section thereof, and Fig. 3 is a perspective view of a bracket used in the construction of the device.

The base A is in the form of a pipe and is given such shape that it may be fitted over or into a smoke-stack, chimney, or flue, and a funnel-shaped casing B is firmly secured to the upper portion of said base A, forming a receiving-chamber 10 for the cinders, coal, and sparks. The base A extends a slight distance within the bottom portion of the chamber 10, and a conducting-pipe for the waste products of combustion is attached to the upper portion of the base A. Said conducting-pipe 11 is at an angle to a line drawn perpendicularly through the center of the device, and one side of the conducting flue or pipe 11 is made to rest against a wall of the chamber 10, formed by the funnel-casing B. The upper end 11<sup>a</sup> of the conducting-flue, however, where said flue engages with the funnel-casing, is carried vertically upward, so that the upper edge of the conducting-flue 11 is parallel, or practically so, with the upper edge

of the said funnel-casing, as shown in Fig. 2. The conducting-flue is secured to the funnel-casing by means of bolts or rivets 12 or their equivalents, and a bracket is located upon the inner inclined surface of the conducting-flue. This bracket comprises an upright section 13, a horizontal table-section 14, the center of which is at the center of the funnel-casing, and wings 15, that extend from the sides of the table-section 14 and are arranged for attachment to the upper portion of the conducting-flue 11. The reduced lower end of a post 16 is made to enter an opening 17 in the table-section of said bracket, and the post is held to the bracket by means of a suitable nut 18, as illustrated in Fig. 2. The lower end 19 of the post is made tapering to form a cone 19, and a cone 20 is located at the upper end of the post 16. A sleeve 21 is loosely fitted around the post 16, and said sleeve is provided at its lower end with a cap facing the lower cone 19 of said post, and said cap carries balls 22, that travel on said cone 19, while a second cap is formed at the upper end of the sleeve, likewise carrying balls 22, that travel upon the upper cone 20, as shown in Fig. 2. The sleeve 21 is provided at the top with a cap 23, that extends over the upper end of the post 16 and the upper cone 20.

A screen C is secured in any suitable or approved manner to the bottom of the sleeve 21, and while this screen is shown as inclining from its outer edge toward the center it may be made straight, if desired. Said screen is of such dimensions that it entirely covers the upper end of the conducting-flue 11 and extends quite close to the upper portion of the funnel-shaped casing B. The screen C is provided with a downwardly-extending marginal flange 24, and braces 25 are attached to said flange and to projections from the cap 23. The said screen is provided with a series of wings or fans 26 upon its upper surface extending from its periphery to a point near the center. The lower edges of the fans engage with the screen, and the fans are curved and their inner faces are at an acute angle to the screen. Preferably the upper edges of the fans or wings at their inner ends are more or less beveled. These fans are all curved in the same direction and are so placed that as they reach the conducting-flue 11 the natural or forced draft from the said flue will strike



said fans or wings, and thus keep the screen constantly revolving. The wings or fans 26 may be stationary; but preferably they are adjustable, having bolts and nuts or set-  
 5 screws at their outer ends which will hold them firmly in place when adjusted at the right angle to impart to the screen the desired speed or number of revolutions in a given  
 10 time. The speed of the screen may be increased or diminished by placing the wings or fans in more or less of a flattened or horizontal position or in a more or less upright position.

A tube 27 enters the chamber 10 of the device at or near the bottom, and this tube is carried downward to any desired point below the device—as, for example, it may be carried to the fire-box or to the fire direct. Thus it will be observed that the application of the  
 20 natural draft or forced draft caused by the exhaust-steam from the engine entering the smoke-stack, pipe, flue, or chimney serves as a motor for the device.

As the screen revolves it carries the cinders or other waste products of combustion from the top of the stack to the surrounding chamber 10, and as the screen carries the sparks or cinders beyond the influence of the draft they naturally gravitate to the bottom of the chamber 10, in which there is practically no draft, and the arrested material will then pass into the small pipe 27 in the bottom of the chamber 10 and will be conducted back to the fire or to any other desired point. The pipe 27 is  
 35 preferably made continuous from the chamber 10 to the point where the material is to be delivered.

I desire it to be understood that instead of using ball-bearings at the upper end of the post or shaft 16 said post or shaft may be provided with a hardened-steel pivot at that point.

Having thus described my invention, I claim as new and desire to secure by Letters  
 45 Patent—

1. A spark-arrester, comprising a conducting-flue having an angular upper end, a funnel-shaped casing into which the angular upper end of the conducting-flue projects and  
 50 against the wall of which the said flue rests, the said casing extending above the top of the angular end of the conducting-flue, and having an outlet in its side at or near the lower end, a screen centrally mounted in the upper part of the casing to revolve therein and over the angular end of said conducting-flue and in close proximity thereto, and wings on the upper face of the screen, substantially as described.

2. A spark-arrester, comprising a conducting-flue having an angular upper end provided with a bracket at its end, a funnel-shaped casing surrounding the angular upper end of the conducting-flue and extending  
 65 above the same, the said casing having an outlet in its side at or near the lower end, a screen mounted on the bracket of the angular

upper end of the conducting-flue and revolving over the upper angular end of the conducting-flue and in close proximity to the same, and wings on the upper face of the screen, substantially as described.

3. A spark-arrester, comprising a conducting-flue having an inclined upper portion, the upper end of the outer wall of the flue being extended upward vertically, the said inclined end being provided with an external bracket, a funnel-shaped casing surrounding the inclined portion of the conducting-flue and secured thereto, the said casing being provided at its lower end with an outlet, a screen having a downwardly-extending marginal flange and mounted on the bracket to revolve over the upper end of the inclined portion of the conducting-flue and in close proximity thereto, and wings secured to the upper face of the screen, substantially as described.

4. In a spark-arrester, the combination with a funnel-shaped casing having an inclined flue therein and provided with an outlet at or near its bottom, said flue extending nearly to the top of the casing, of an angular bracket secured to the upper end of the flue, a post mounted in the bracket, a sleeve surrounding the post, a screen secured to the lower end of the sleeve, and wings on the upper face of the screen, substantially as described.

5. In a spark-arrester, the combination with a funnel-shaped casing having an inclined flue therein and provided with an outlet at or near its bottom, of an angular bracket secured to the upper end of the flue, a post secured to the bracket, a sleeve mounted on the post and provided with a cap, a screen secured to the lower end of the sleeve, rods secured to the margin of the screen and to the cap of the sleeve, and wings on the upper surface of the screen, substantially as described.

6. A spark-arrester, comprising a funnel-shaped casing having an outlet at its lower end, an inclined flue in said casing, a post mounted in the upper part of the casing, said post being provided with cones at its ends, a sleeve fitting loosely on the post and having caps at its ends, balls between the caps of the sleeves and the cones of the post, a screen secured to the lower end of the sleeve, wings on the upper face of the screen, a cap secured to the upper end of the sleeve over the post, and rods secured to the said cap and to the margin of the screen, substantially as described.

7. In a spark-arrester, the combination with a casing, a flue in the casing, and a screen mounted to revolve in the casing over the top of the flue, of wings on the upper face of the screen, said wings having their inner ends pivoted and their outer ends adjustably secured to the margin of the screen, substantially as and for the purpose set forth.

STEPHEN SALSURY MARTIN.

Witnesses:

WILLIAM ROSS,  
 HENRY POWER.