

(No Model.)

A. J. PETERSON.
SPARK ARRESTER.

No. 544,865.

Patented Aug. 20, 1895.

Fig. 1.

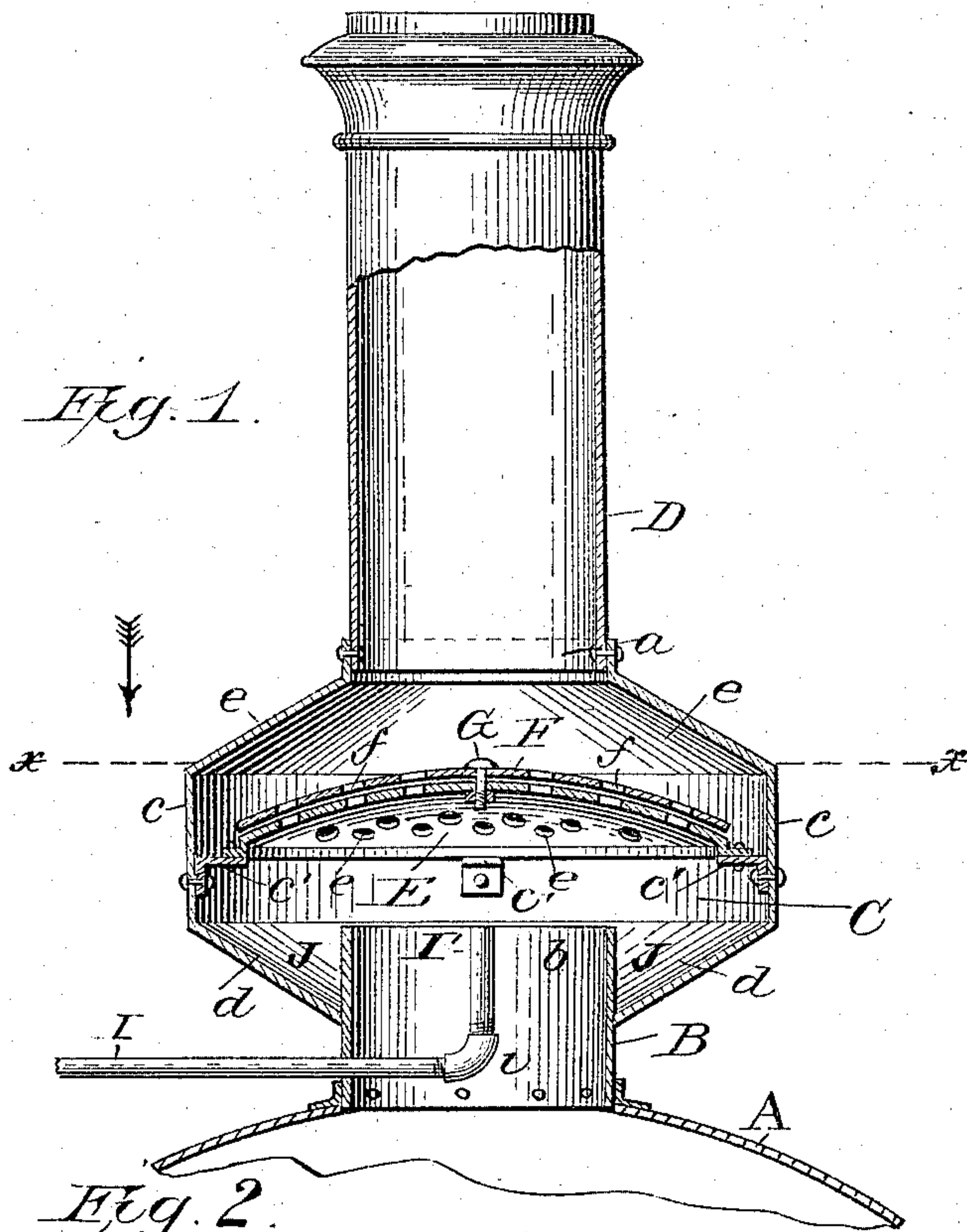


Fig. 2.

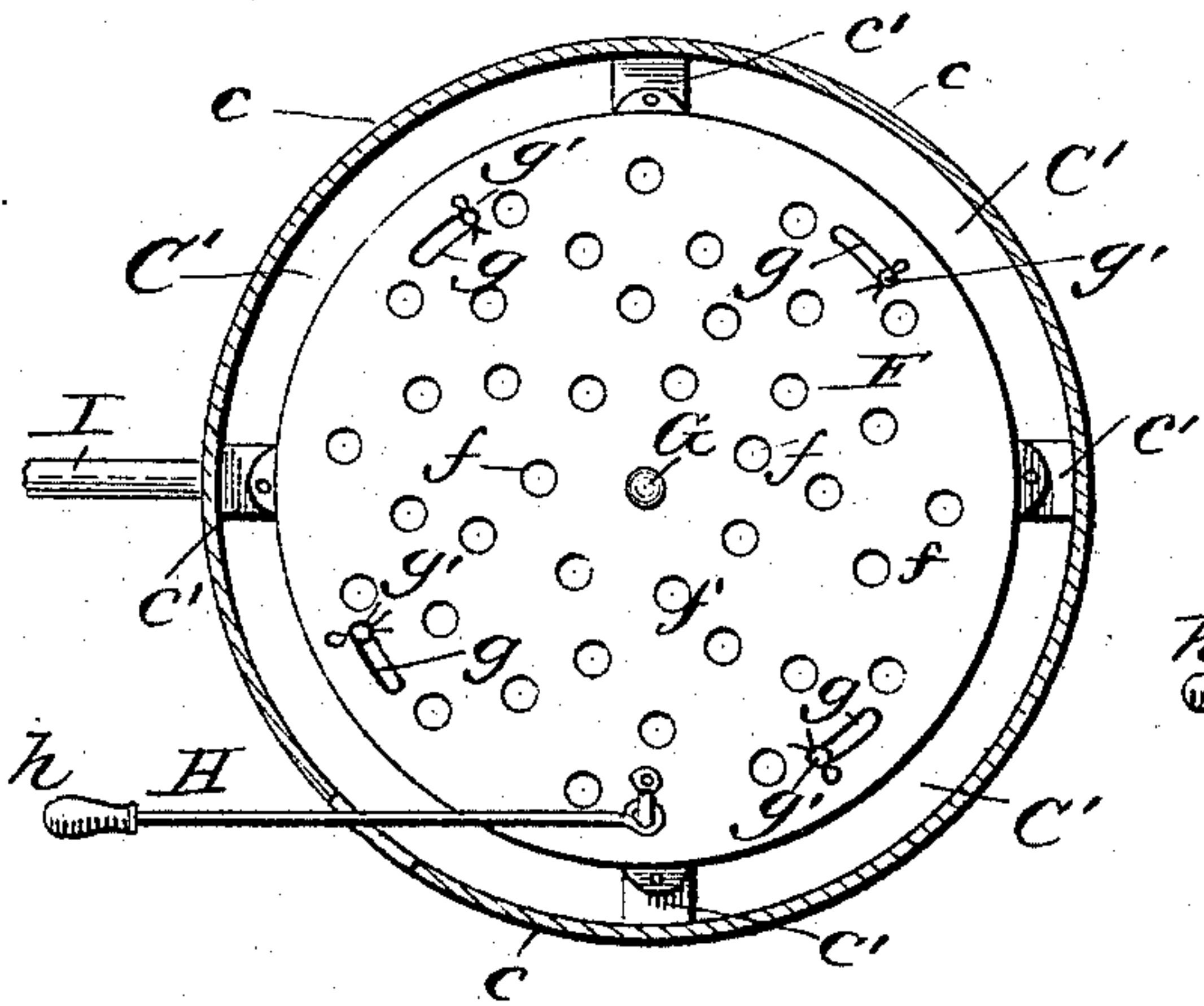
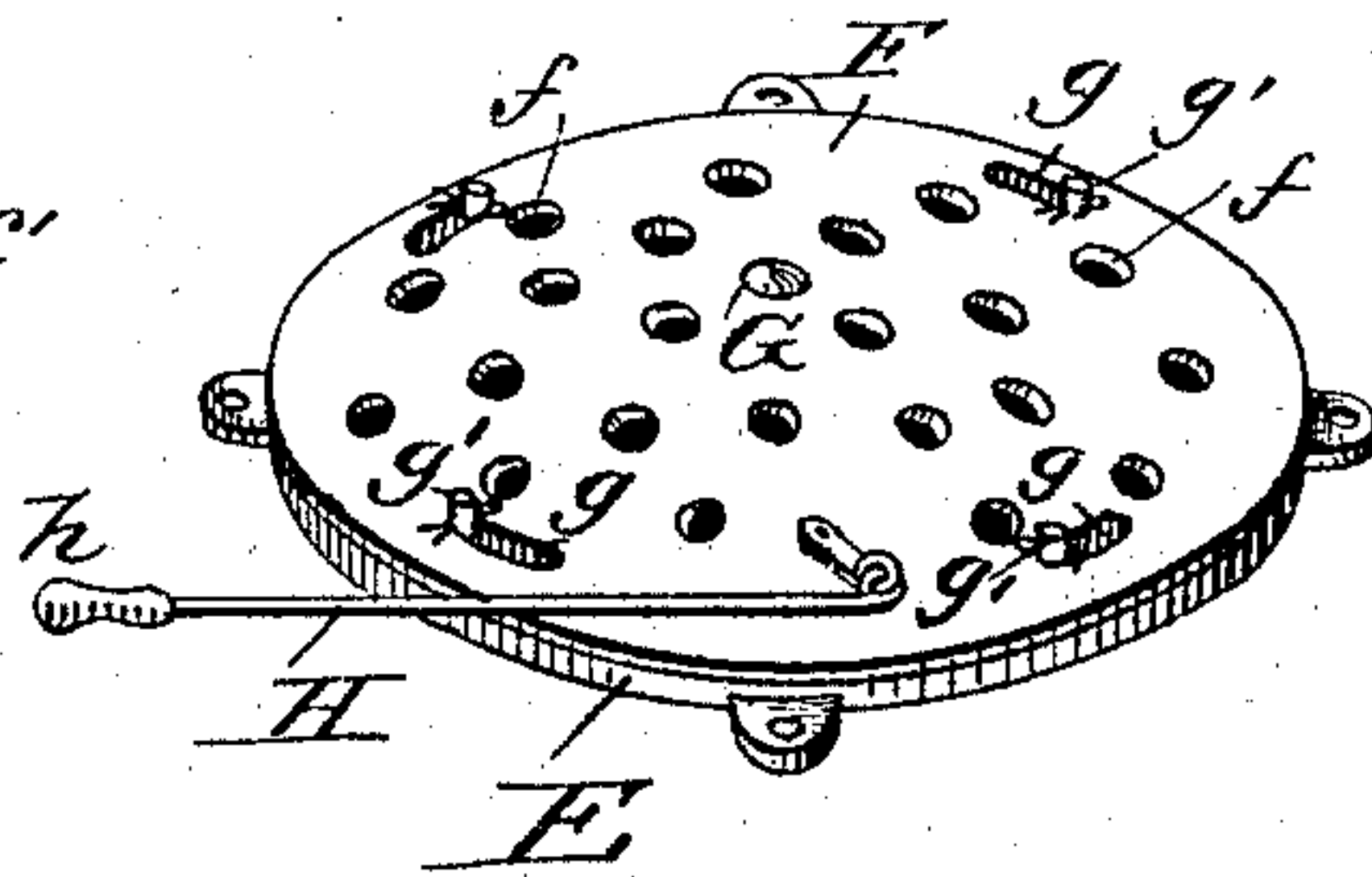


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 544,865, dated August 20, 1895.

Application filed January 24, 1895. Serial No. 536,091. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. PETERSON, a citizen of the United States, and a resident of Stroudsburg, in the county of Grant and State of South Dakota, have invented certain new and useful Improvements in Spark-Arresters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a sectional view of my improved spark-arrester on a vertical plane through the axis of the stack. Fig. 2 is a transverse sectional view on the horizontal plane through the cinder-box indicated by the broken line marked $x\ x$, looking downward in the direction of the arrow; and Fig. 3 is a perspective detail view of the compound or duplex concavo-convex deflector-plate or regulator for controlling the draft and extinguishing live cinders.

Like letters of reference designate corresponding parts in all the figures.

My invention relates to spark-arresters adapted, more particularly, for use upon or in connection with portable boilers and steam-engines used for operating agricultural machinery—thrashing machines, for example—and has for its object to construct such a device which shall be inexpensive, easy in its application, and absolutely certain and effectual in use.

With these objects in view my invention consists in the detailed and specific construction and combination of parts of the improved spark-arrester which will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, the reference-letter A denotes the upper part of the smoke-box appertaining to the boiler of a portable steam-engine (not shown), and B the lower part of the smoke stack or flue. This projects with its upper end b up into an enlargement or chamber C, of circular shape, having cylindrical sides c , a sloping bottom d , and also a sloping top or roof e , the central portion of which has a circular aperture a ,

into which is inserted the smoke-stack D in alignment with the lower smoke-flue B b .

Inside of the cinder-chamber C is located a concavo-convex plate or deflector E, the circular rim of which is fastened upon the inner side of the cylindrical wall c by means of short arms or brackets c' , so as to leave an annular open space C' , interrupted only by the equidistant brackets c' between the rim of the concavo-convex plate E and the straight side c of chamber C. The plate E is perforated with numerous holes e , arranged in circular concentric rows, and is covered by another plate F, of similar size and shape, which is also perforated with apertures f , registering with those of plate E below, and is fastened pivotally at its center upon a central stud or pivot G in the center of plate E, so that it may be turned or partly rotated upon this center in such a manner as either to cause the series of apertures e and f in the two plates to register with one another or so that the apertures e in the stationary bottom plate E will be covered and closed by the solid or imperforate part of plate F between the apertures. In this manner the draft through the smoke-flue B b D and the intersecting cinder-chamber C may be regulated at will by turning plate F upon its central pivot G by means of a rod H, which is hinged upon the upper convex side or face of the rotatable plate F and, projecting out of chamber C through a slot made in its wall on one side, has a handle h at its outer end. In order to limit or control the movements of plate F, it is provided with four or more small rectangular slots g , through which project studs or keepers g' , fastened upon the adjacent convex side of plate E below, so that the turning or rotation of plate F upon the bottom plate E is limited to a certain short distance in each direction, only sufficient to cover, or only partially cover and close, the apertures below. If it is desired to cut off the draft, plate F is turned all the way it will go to one side, so as to completely cover and close the apertures e in plate E, and all the air and products of combustion will then have to pass around and over the circular rim of the concavo-convex deflector-plates E F through

the annular open space *C'* in the cinder-chamber *C*; but if, on the other hand, the draft is to be only partially shut off plate *F* is only partially rotated, so that the apertures in the underlying plate *E* will be only partially closed. Again, if it is desired to apply the full draft, plate *F* is turned by its handle *h* *H* in the opposite direction as far as it will go, thus leaving the registering draft-apertures *e* and *f* open to their full capacity, the draft and products of combustion, except the cinders, passing in part around the edges of plates *E* *F*, through the annular side space *C'*, and in part through the registering apertures *e* and *f*. A steam-pipe *I* enters the lower smoke-flue *B* on one side and extends toward the middle of the same, where it is bent in an upward direction, as shown at the elbow *i*, terminating, or having its outlet at *I'*, in horizontal alignment with the upper rim of the interior smoke-flue *B* *b* and below the center of the perforated concavo-convex hood or deflector *E*. The exhaust-steam from the engine or engines is carried through this pipe *I* into the smoke-flue, so that a jet of steam will be thrown up against the inner concave side of plate *E*, where, intermingling with the sparks and live cinders coming from the smoke-box *A* below, it will effectually extinguish these. The greater part of the dead sparks and cinders will be deflected by the concave under side of the deflector-plate *E* either down into the smoke-box *A* or down into the annular space *J*, formed by the sloping bottom *d* of the cinder-box *C*, between it and the circular-raised rim *b* of the inner smoke-flue *B*, from which annular compart-

ment they may be emptied or removed at suitable intervals through a door made in the sloping bottom *d*. (Not shown.)

From the foregoing description, taken in connection with the drawings, the operation of this device will readily be understood without further explanation. All solid products of combustion which escape from the smoke-box *A* in an ignited state will be effectually extinguished in the intermediate compartment *C*, which is filled with exhaust-steam, the steam escaping into the compartment through pipe *I* *I'* not only extinguishing the live cinders, but also assisting in producing a draft which can be easily regulated by means of the rotatable and centrally-pivoted plate *F*.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

The combination with the smoke-flue *B* *b* *D* and intersecting cinder-chamber *C*, of the exhaust-steam pipe *I* *i* *I'*; stationary concavo-convex apertured plate *E* located within the circular cinder-box so as to leave an annular open space, *C'*, between it and the inside wall of said box; and the centrally pivoted, rotatable, apertured concavo convex plate *F*, provided with the hinged handle *H* *h*; substantially as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

ANDREW J. PETERSON.

Witnesses:

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