

F. A. JUST.
 SPARK ARRESTER.
 APPLICATION FILED JULY 14, 1909.

958,134.

Patented May 17, 1910.

Fig. 2.

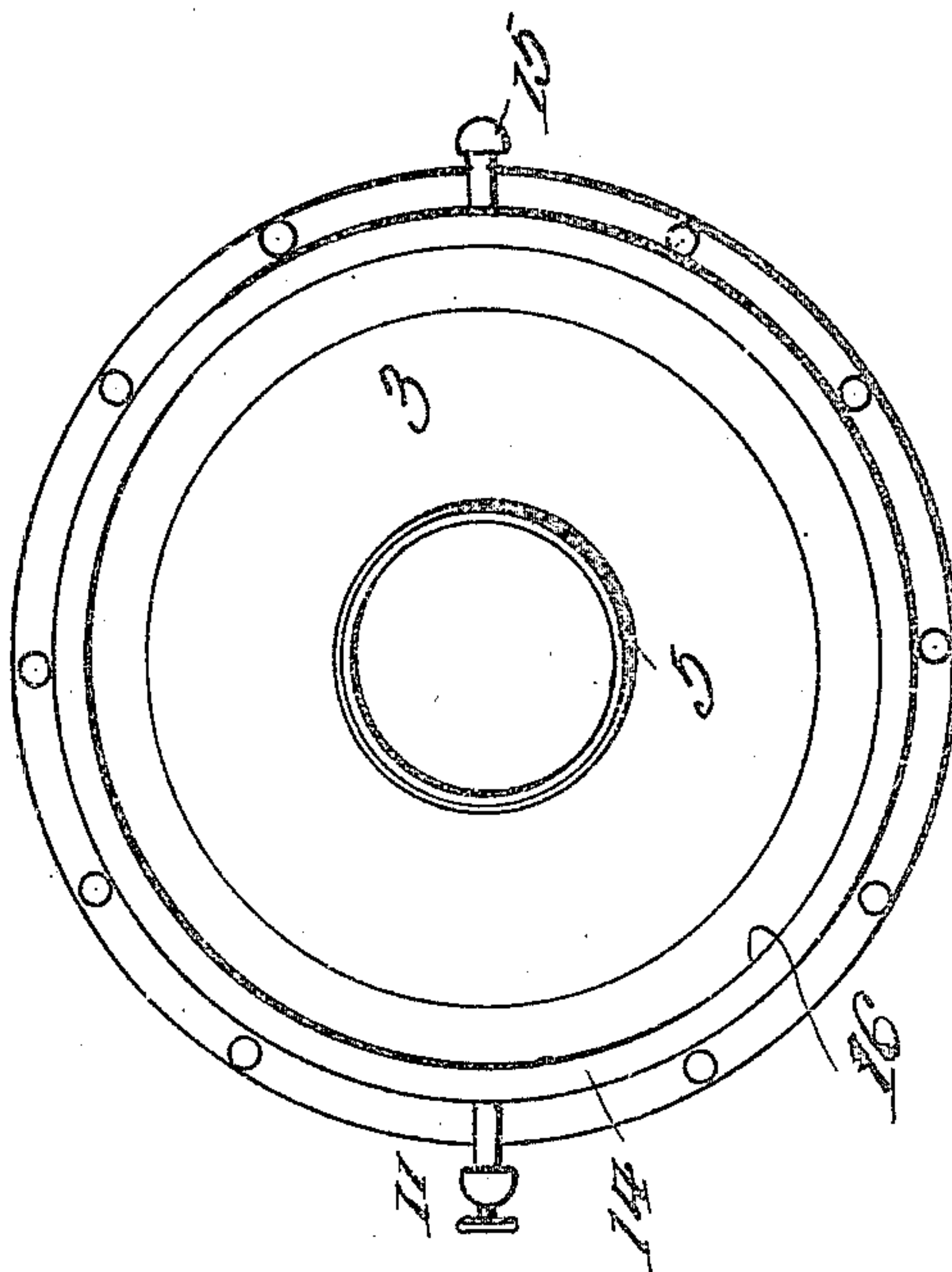
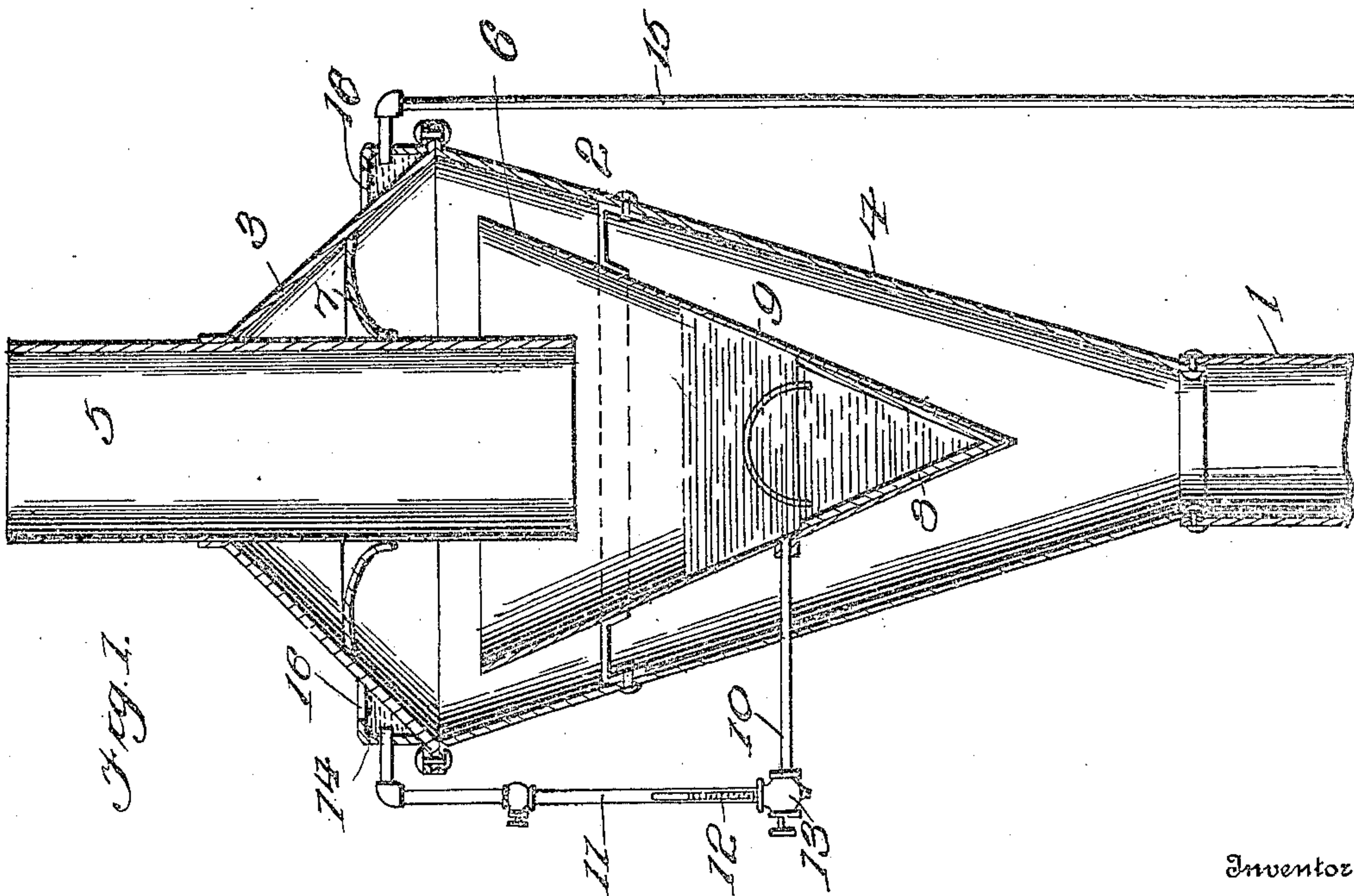


Fig. 1.



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Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK A. JUST, OF JUDSON, NORTH DAKOTA.

SPARK-ARRESTER.

958,134.

Specification of Letters Patent.

Patented May 17, 1910.

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To all whom it may concern:

Be it known that I, FREDERICK A. JUST, citizen of the United States, residing at Judson, in the county of Morton and State of North Dakota, have invented certain new and useful Improvements in Spark-Arresters, of which the following is a specification.

This invention comprehends certain new and useful improvements in spark arresters for use in connection with smoke stacks or the like, and the invention has for its object an improved device of this character which is particularly efficient in operation; which is simple and durable in construction and is capable of being readily cleaned; and which is also adapted to regulate the draft through the stack.

With this and other objects in view that will more fully appear as the description proceeds, the invention consists in certain constructions and arrangements of the parts that I shall hereinafter fully describe and then point out the novel features of in the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawing, in which:

Figure 1 is a vertical section of a spark arrester constructed in accordance with my invention; and, Fig. 2 is a top plan view thereof.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawing by the same reference characters.

Referring to the drawing, the numeral 1 designates a stack to the upper end of which is secured a laterally enlarged drum 2. In the present instance this drum is composed of upper and lower sections 3 and 4 that are of truncated conical form and have their larger ends disposed in abutting-relation and suitably secured together. An outlet pipe 5 passes through the upper section 3 of the drum and is centered with respect to the stack, the lower end of the outlet pipe extending into the drum section 4 and terminating within the upper portion of an obconic receptacle 6. This receptacle is suitably supported within the lower drum section 4 in spaced relation to the inner surface

thereof to provide an upwardly flared passage within the drum for the smoke, the receptacle being adapted to be partially filled with water with the water level spaced below the adjacent extremity of the outlet pipe 5. 7 designates an annular deflector which extends between the opposing surfaces of the upper section 3 and the pipe 5 and is arranged just above the upper end of the receptacle 6, the deflector being concavo-convex in cross section and curving inwardly and downwardly from the section 3, whereby to serve to direct the smoke ascending in the flared passage in the drum downwardly into the receptacle 6 and against the water contained therein. The sparks which are commingled with the smoke are extinguished by the water and retained therein, while the gases are afforded free escape to the atmosphere through the outlet pipe 5. For convenience an obconic inner vessel 8 is fitted within the lower portion of the water receptacle 6 for the purpose of receiving the dead cinders or other sediment collecting in the water. The inner vessel 8 is equipped with a suitable handle 9 whereby to admit of its ready withdrawal from the water receptacle to clean the same.

The receptacle 6 is furnished with water through the instrumentality of a feed pipe that comprises a horizontal section 10 which communicates with the water receptacle at a point just above the inner vessel. This horizontal section passes outwardly through the lower drum section 4 and has connection at its outer end with the lower end of a vertical section 11, which latter is preferably provided with a water gage 12 and a draw-off cock 13. Attention is particularly directed to the fact that by regulating the flow through the feed pipe, the level of the water in the receptacle 6 is controlled, whereby to effect the regulation of the draft through the stack.

The upper end of the vertical section 11 of the feed pipe preferably communicates with an annular trough 14 which is secured on the periphery of the upper drum section 3, and which receives water through a supply pipe 15 leading from an injector or pump, not shown. By referring to Fig. 1, it will be observed that the trough 14 is open at its top having one edge spaced apart

from the periphery of the upper drum section, as indicated at 16. The object of this arrangement is to cause the trough to catch any live cinders or sparks which may possibly escape through the outlet pipe 5 and fall upon the periphery of the upper section 3, the sparks being positively deflected into the trough by the section 3 by virtue of the conical formation thereof. Such an arrangement is advantageous also in that the trough is adapted to catch condensed steam or rain water, or the like, collecting on the periphery of the said drum section.

It is to be particularly noted that the inner vessel 8 is disposed in vertical alinement with the outlet pipe 5 and has a maximum diameter that is less than the internal diameter of the latter, whereby the said vessel is susceptible of being conveniently withdrawn and inserted through the outlet pipe as occasion requires, without the necessity of disturbing the other parts of the device.

Having thus described the invention what is claimed as new is:

25 1. In a spark arrester, the combination with a stack, of a drum secured to the upper end of the stack and consisting of upper and lower sections, the sections being of truncated conical form and having their larger ends secured together, an obconic water receptacle supported within the lower drum section in spaced relation to the inner surface thereof, an outlet pipe passing vertically through the upper drum section and projecting at its lower end into the upper portion of the water receptacle above the water level therein, an annular deflector mounted within the upper drum section below the upper end thereof and curving inwardly and downwardly therefrom with its inner edge fitting the periphery of the outlet pipe, the deflector being positioned above and in close proximity to the upper edge of the water receptacle to deflect the products of combustion downwardly therein and between the same and the lower end of the pipe, and an open annular water trough mounted on the periphery of the upper drum section, the upper drum section being of truncated conical form throughout its length and fitting the periphery of the outlet pipe above the deflector and the trough, as and for the purpose specified.

55 2. In a spark arrester, the combination with a stack, of a drum secured to the upper end of the stack and consisting of upper and lower sections, the sections being of truncated conical form and having their larger ends secured together, an obconic water receptacle supported within the lower drum section in spaced relation to the inner surface thereof, an outlet pipe passing vertically through the upper drum section and projecting at its lower end into the upper

portion of the water receptacle above the water level therein, an annular deflector mounted within the upper drum section below the upper end thereof and curving inwardly and downwardly therefrom with its inner edge fitting the periphery of the outlet pipe, the deflector being positioned above and in close proximity to the upper edge of the water receptacle to deflect the products of combustion downwardly therein and between the same and the lower end of the pipe, the upper end of the upper drum section fitting the periphery of the outlet pipe above the deflector, an open annular water trough mounted on the periphery of the upper drum section below the upper end thereof, a pipe for supplying water to the trough, and a feed pipe establishing communication between the trough and the water receptacle for conducting water from the former to the latter.

85 3. In a spark arrester, the combination with a stack, of a drum secured to the upper end of the stack, a stationary downwardly tapering water receptacle supported within the drum and spaced apart from the inner surface thereof, an outlet pipe passing through the upper end of the drum with its lower end of less diameter than the upper portion of the receptacle and projecting into said upper portion of the receptacle and terminating above the water level therein, and an inner vessel removably fitted within the tapered lower portion of the water receptacle for collecting sediment accumulating therein, the inner receptacle being of less diameter than the outlet pipe, whereby to be adapted to be inserted and withdrawn therethrough into and from the drum without disturbing the other parts of the device.

105 4. In a spark arrester, the combination with a stack, of a drum secured to the upper end of the stack, an outlet pipe passing through the upper end of the stack, a stationary water receptacle supported within the drum below the lower end of the outlet pipe, means provided above the water receptacle for deflecting the smoke downwardly therein to extinguish the sparks, a removable inner vessel fitting within and conforming to the contour of the lower portion of the receptacle to collect sediment accumulating therein, and a pipe supplying the receptacle with water and communicating therewith at a point above the inner vessel, the inner vessel being of less diameter than the outlet pipe and being adapted to be inserted and withdrawn therethrough into and from the drum without disturbing the other parts of the device.

125 5. In a spark arrester, the combination with a stack, of a drum secured to the upper end of the stack, an outlet pipe passing substantially vertically through the upper

end of the drum, a water receptacle supported within the drum and below the outlet pipe, means for deflecting the products of combustion into the water receptacle, and
5 an open annular trough mounted on the periphery of the drum, the drum fitting snugly to the periphery of the outlet pipe and being of truncated conical form be-

tween the same and the trough, as and for the purpose specified. 10

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

FREDERICK A. JUST. [L. s.]

Witnesses:

CHAS. F. PETERSON,

A. E. MORROW.