No. 637,664. Patented Nov. 21, 1899.

L. F. PORTER.

SMOKE STACK ATTACHMENT.

(Application filed Sept. 9, 1899.)

(No Model.)

Fig 1

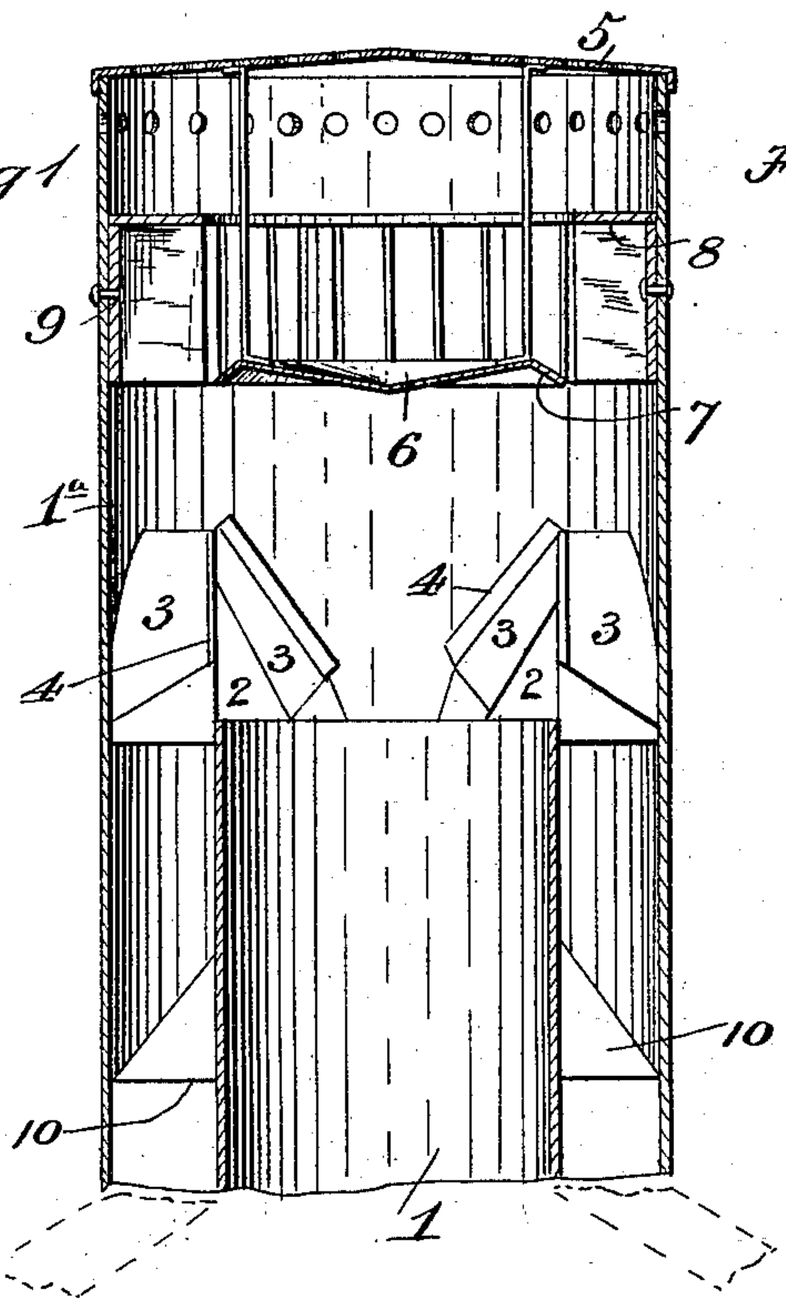


Fig. 2.

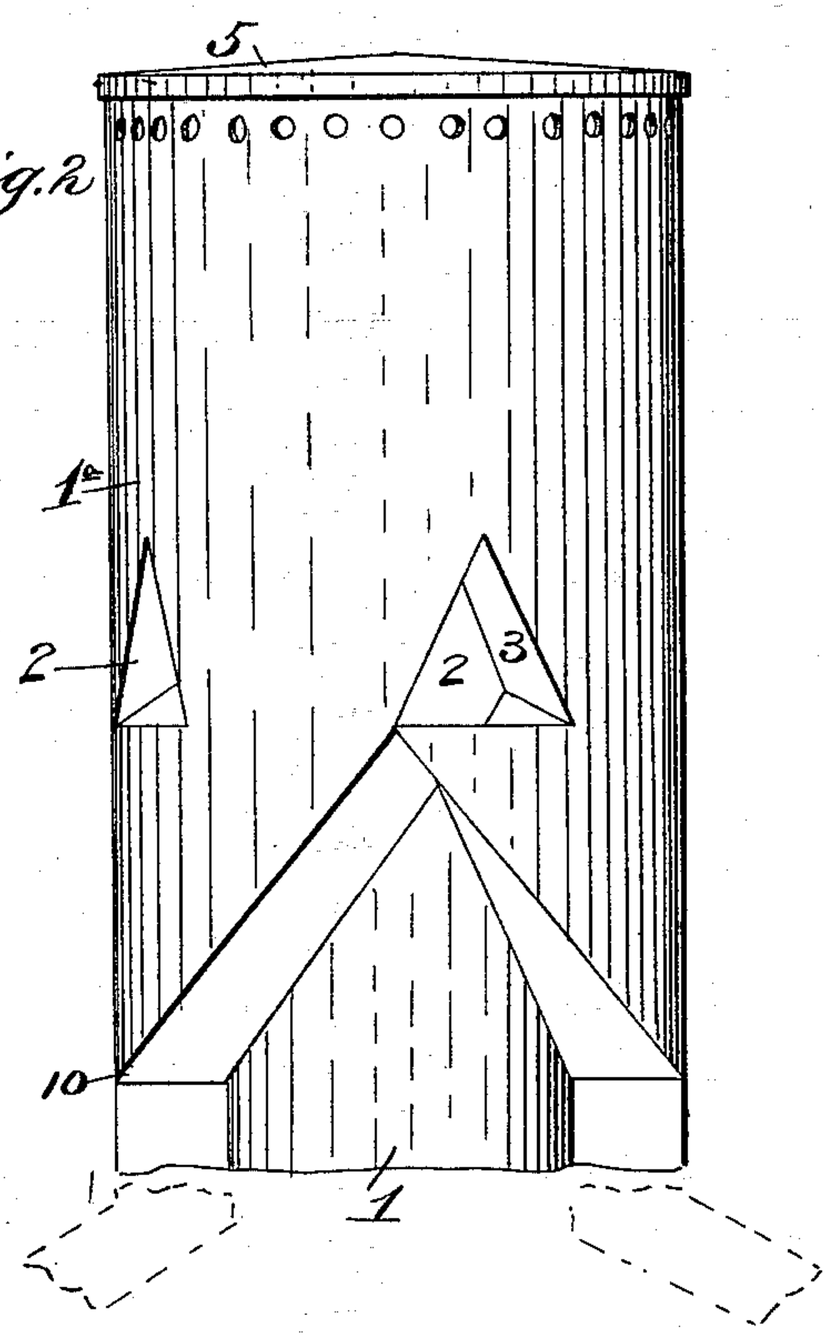


Fig 3.

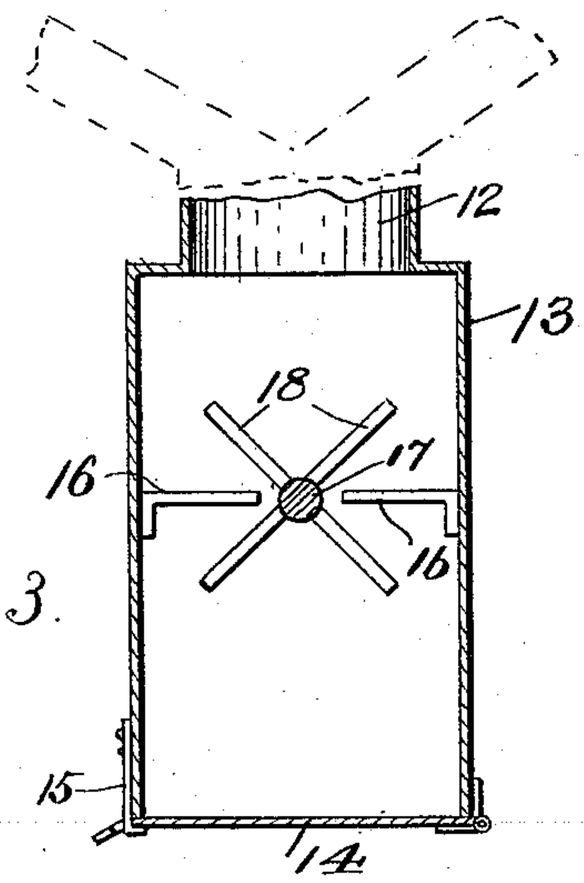
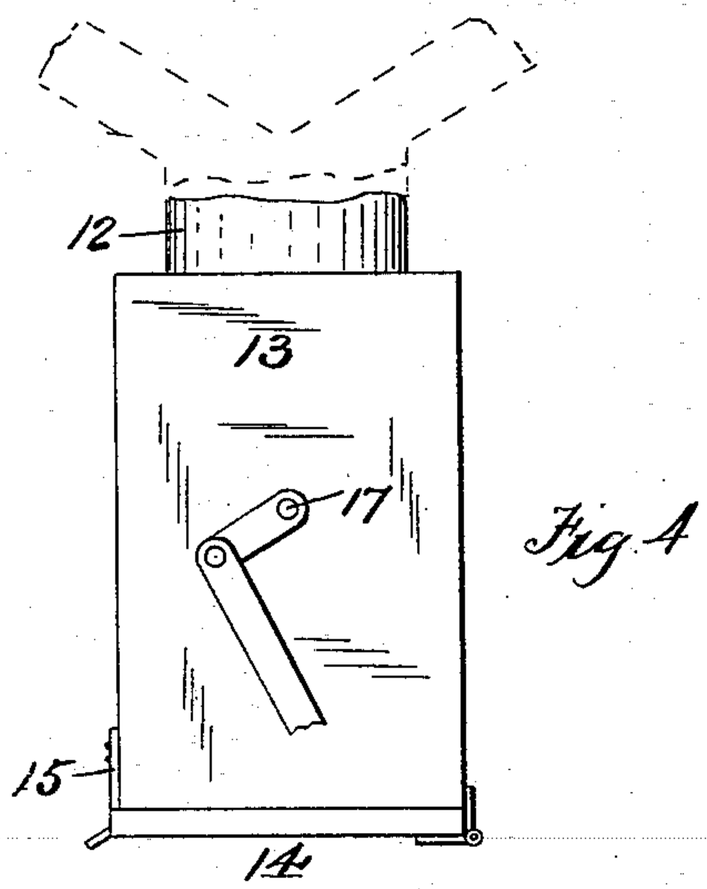


Fig 4.



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UNITED STATES PATENT OFFICE.

LLEWELLYN FREMONT PORTER, OF ELDRIDGE, NORTH DAKOTA.

SMOKE-STACK ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 637,664, dated November 21, 1899.

Application filed September 9, 1899. Serial No. 729,955. (No model.)

To all whom it may concern:

Be it known that I, LLEWELLYN FREMONT PORTER, a citizen of the United States, residing at Eldridge, in the county of Stutsman and State of North Dakota, have invented new and useful Improvements in Smoke-Stack Attachments, of which the following is a specification.

My invention relates to spark and cinder arresters for the smoke-stacks of steam-engines; and its object is to provide an improved construction of the same by which the cinders and other unconsumed products of combustion will be intercepted in the smoke-stack and carried away through suitable conveyers to a receptacle located below the engine or some other convenient point.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a central longitudinal section of a cinder or spark arrester constructed in accordance with my invention. Fig. 2 is an elevation of the same. Fig. 3 is a central vertical section of the cinder-receptacle. Fig. 4 is a side view of the same.

In the said drawings the reference-numeral 1 designates the smoke-stack of a steam-engine, having secured to its upper end a cylinder of somewhat larger diameter and formed at the lower end with a number of triangular openings 2, provided with inwardly-extending wings or plates 3, the inner edges of which are bent at right angles, forming flanges 4. These wings or plates form deflectors for guiding cinders or sparks to the conveyers, hereinafter described. The upper end of said cylinder is provided with a perforated cap or cover 5. Located in said cylinder below said cap or cover is a conical deflector 6, having its edge bent downwardly, forming a flange 7, and above this deflector is an annulus or ring 8, secured to the cylinder. Secured to the cylinder are a number of vertical angle-plates 9, which serve to break up the cinders which strike against them. Secured to the lower end of said cylinder 2 are the tapering upper ends of conveyers 10 for carrying away the cinders. The lower ends of these conveyers extend down underneath the engine and are connected by a pipe 12 with a receptacle 13, having a hinged bottom 14, provided with a catch 15 for holding it in its closed position. Secured to the interior of said receptacle are a number of stationary teeth or blades 16, and journaled to said receptacle and located therein is a rotatable shaft 17, connected with some moving part of the engine by which it is rotated. This shaft is provided with a number of blades or teeth 18.

The operation is as follows: The smoke from the furnace will escape at the top of the smoke-stack into the cylinder 2, carrying with it the cinders and sparks. It will then strike the conical deflector, escaping around the edge thereof to and out through the perforated top. The cinders and sparks carried up with the smoke as the latter strikes the conical deflector will be deflected downward and will strike the deflecting-wings, which will throw them into the upper tapering ends of the conveyer. The cinders will now be conducted by the conveyers into the receptacle below, where they will be caught between the rotating and stationary blades and be broken up. Any cinders carried up with the smoke above the conical deflector will be broken up by the ring and angle-plates and will fall into the conveyers. The cinders in the receptacle can be removed by opening the hinged bottom.

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

1. The combination with a smoke-stack, the enlarged cylinder connected with the upper end thereof, having triangular openings therein provided with inwardly-extending wings, the perforated cap and the conical deflector, of the conveyers having tapering upper ends connected with the lower end of said cylinder, substantially as described.

2. The combination with a smoke-stack, the enlarged cylinder having triangular openings in its lower end provided with inwardly-extending wings, the perforated cap, the conical deflector, the ring located above the same and the vertical angle-plates, of the conveyers having tapering upper ends connected with the lower end of said cylinder, substantially as described.

3. The combination with a smoke-stack, the

enlarged cylinder secured to the upper end of the same, having triangular openings in its lower end provided with inwardly-extending deflecting-wings, the perforated cap and conical deflector, of the conveyers having tapering upper ends connected with said cylinder, the receptacle connected with the lower ends of said conveyers provided with a hinged bottom, the stationary blades and the rotatable shaft provided with blades, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LLEWELLYN FREMONT PORTER.

Witnesses:
E. M. SANFORD,
RAY W. CONKLIN.