No. 880,442. PATENTED FEB. 25, 1908.

K. M. COLQUHOUN.

SPARK ARRESTER.

APPLICATION FILED MAY 22, 1907.

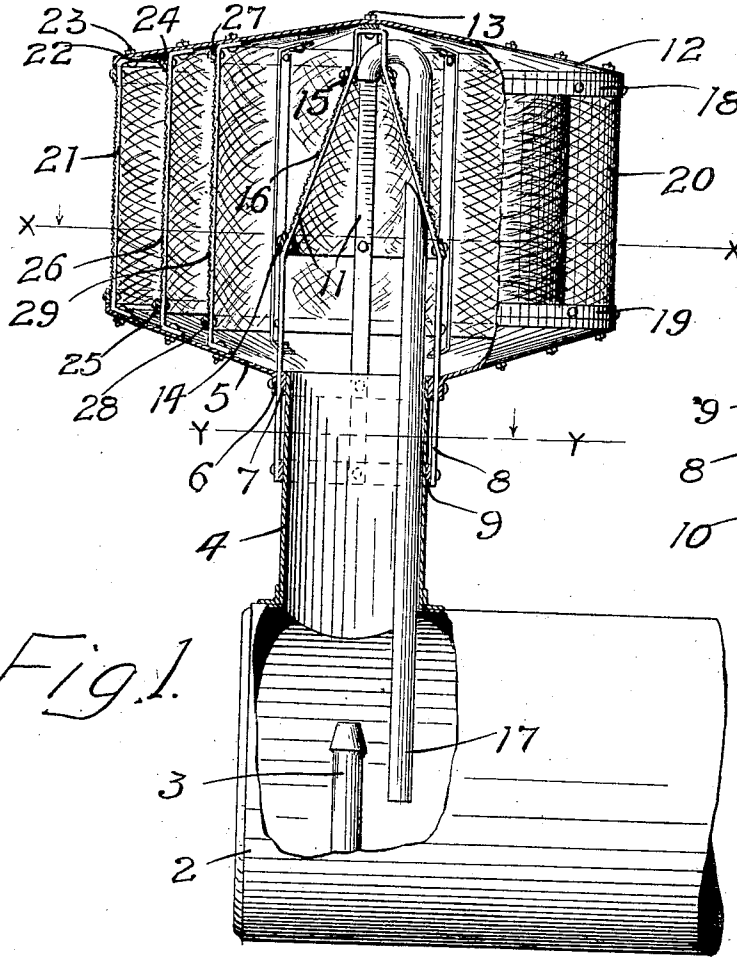

Fig. 1.

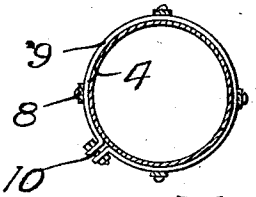

Fig 3.

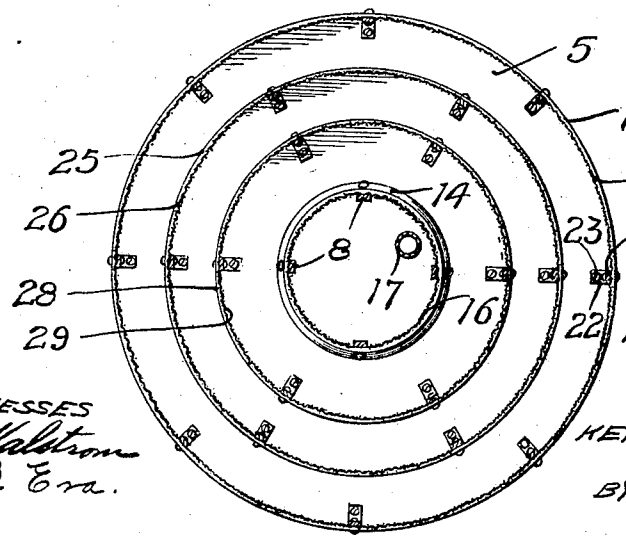

Fig 2.

WITNESSES

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KENNETH M. COLQUHOUN, OF OWATONNA, MINNESOTA.

SPARK-ARRESTER.

No. 880,442. Specification of Letters Patent. Patented Feb. 25, 1908.

Application filed May 22, 1907. Serial No. 375,162.

To all whom it may concern:

Be it known that I, KENNETH M. COLQUHOUN, of Owatonna, Steele county, Minnesota, have invented certain new and useful Improvements in Spark-Arresters, of which the following is a specification.

My invention relates to spark-arresters applicable to the smoke stacks of boilers generally but particularly adapted for use on threshing machine engines and where lignite coal or straw is used for fuel.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation partially in section, of a boiler and stack with my invention applied thereto. Fig. 2 is a sectional view on the line x—x of Fig. 1. Fig. 3 is a sectional view on the line y—y of Fig. 1.

In the drawing, 2 represents a boiler having an exhaust nozzle 3, and a stack 4.

5 is a circular plate having a central opening to receive the top of the stack and having a depending flange 6 around said opening between which flange and the top of the stack a ring 7 is secured. Straps 8 extend up beside the stack upon the flange 6 and the ring 7, and the lower ends of said straps are connected by a ring 9, the ends of which are provided with a clamp device 10 for operating the ring snugly around the stack. The straps 8 extend above the top of the stack and have inwardly inclined upper portions 11 which cross one another at the top of the arrester and are secured to the imperforate top plate 12 by a bolt 13. A ring 14 of substantially the same diameter as the top of the stack, is secured to the straps 8 and at the base of their inwardly inclined portions, and a second ring 15 is provided near the top of the said straps, and between these rings a wire mesh 16 is secured, forming a cone or hood over the top of the stack. A pipe 17 has its upper end curved in to overhang the opening in the upper end of the cone and said pipe extends down beside the cone and into the stack, and has an open lower end near the nozzle 3. A considerable portion of the cinders blown up through the stack will pass into the cone and from thence be directed down the pipe 17 into the cinder box provided at the forward end of the boiler. The cover 12 is convex in form and between it and the bottom plate 5 I provide a series of circular screens spaced from one another and of sufficiently fine mesh to prevent the sparks or burning particles of coal or straw from being blown out of the stack while the engine is in operation. I may provide any suitable number of these screens. In this case I have shown three arranged one within another. The outer screen consists of an upper ring 18 and lower ring 19 connected by a filler 20 of suitable wire mesh. Vertical straps 21 connect the rings at intervals and have ears 22 formed on their ends that are detachably secured to the top and bottom of the arrester by bolts 23.

Within the outer screen, rings 24 and 25 are provided connected by a screen 26 and secured to the top and bottom of the arrester in the same manner as described with reference to the first screen. The third screen is located within the second one and comprises rings 27 and 28 connected by a screen 29 and secured to the plates 5 and 12 in the same manner as the other screens. The outer screen is permanently mounted, preferably, while the inner ones are capable of convenient attachment according to the character of the fuel that is being burned and the danger of fire from flying sparks. The rings 25 and 28 are adjusted a sufficient distance above the plate 5 so that any material passing through these screens and dropping down upon the plate will slide thereover under the rings and into the open top of the stack. The screens may be made of different mesh and by removing the top plate access may be had to them for removal or repairs.

This arrester is of very simple construction and can be readily applied to any type of stack and will positively prevent the discharge of sparks or burning embers and thereby eliminate all danger of fire around a threshing engine.

I claim as my invention:

1. A spark-arrester comprising a plate having an opening to receive the top of the stack and forming the bottom of the arrester, an imperforate plate corresponding substantially in size to said bottom plate and forming the top of the arrester, rings arranged in pairs between said plates, and straps connecting the lower rings with the corresponding ones above them, said straps having ears formed thereon at their ends, and bolts detachably securing said ears to said plates and said lower rings being raised

above the bottom plate to form an unobstructed passage on said plate into the stack, a wire mesh arranged between each of the pairs of rings and secured thereto and said rings being arranged one within another on said plates and spaced apart and forming with the wire mesh a series of screens between the top of the stack and the peripheries of said plates, and the detachable character of said screens permitting the number of them to be increased or decreased according to the character of the fuel used, substantially as described.

2. The combination, with a stack, of a plate having a central opening to receive the top of said stack, a second plate arranged above and spaced from said first named plate, and a series of screens arranged at intervals between said plates and between the top of said stack and the periphery of said first named plate, and said screens being detachable whereby the number in use may be increased or decreased at will, substantially as described.

3. The combination, with a stack, of a plate having an opening to receive the top of said stack, a cone-shaped hood having a screen and supported over the open top of said stack, said hood having an open upper end, a pipe having a curved end fitting within the open upper end of said hood and extending down within said stack, a plate covering the top of said hood, and screens interposed between said first and second named plates and inclosing said hood, substantially as described.

4. The combination, with a boiler having an exhaust nozzle and a stack, of a plate having a central opening to receive the top of said stack, a second plate, straps secured to the top of said stack and extending above the same and having inwardly inclined upper portions that are secured to said second plate, a screen inclosing the inwardly inclined portions of said straps and forming a cone shaped hood over said stack, a pipe leading from the top of said hood downwardly and terminating near said exhaust nozzle, and a series of removable screens located between said first and second named plates and at intervals between the top of said stack and the peripheries of said plates, substantially as described.

In witness whereof I have hereunto set my hand this 15th day of May, 1907.

KENNETH M. COLQUHOUN.

Witnesses:
RICHARD PAUL,
J. B. ERA.