

S. & J. B. PICHÉ.
SPARK ARRESTER.
APPLICATION FILED MAY 29, 1911.

1,026,633.

Patented May 14, 1912.

2 SHEETS-SHEET 1.

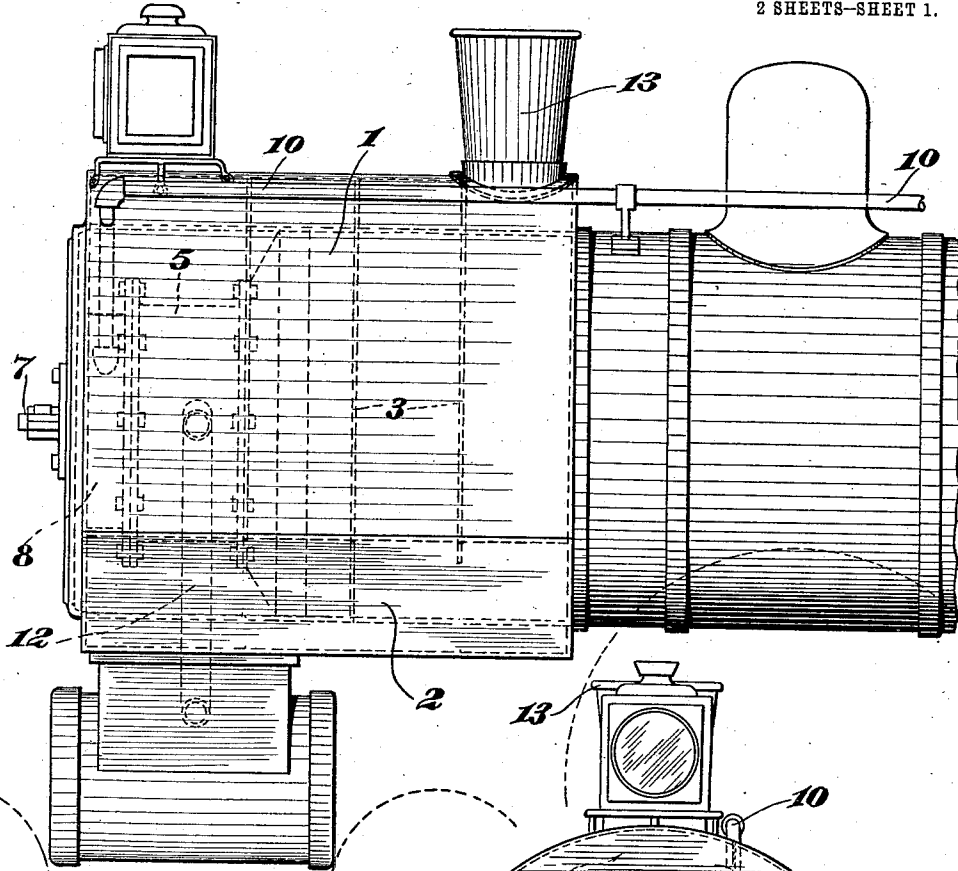
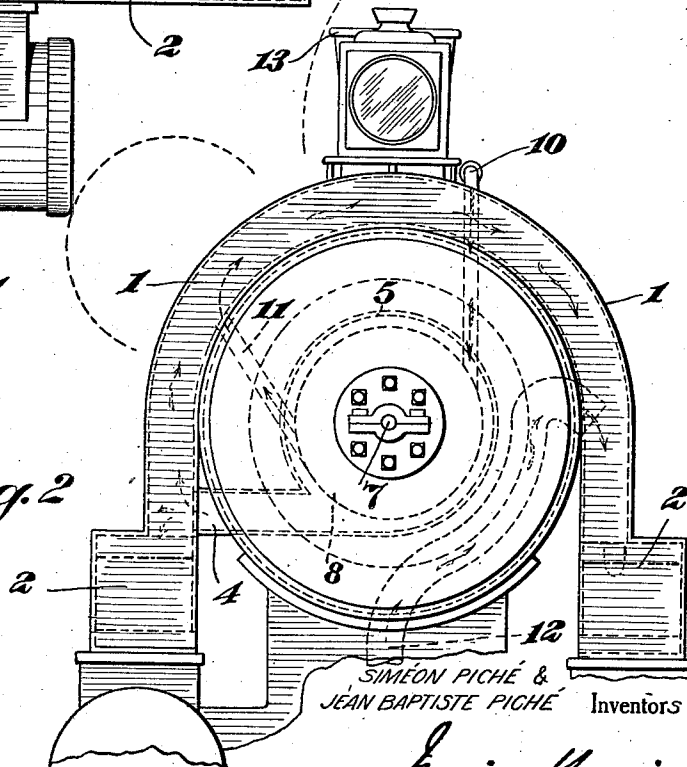


Fig. 1

Fig. 2



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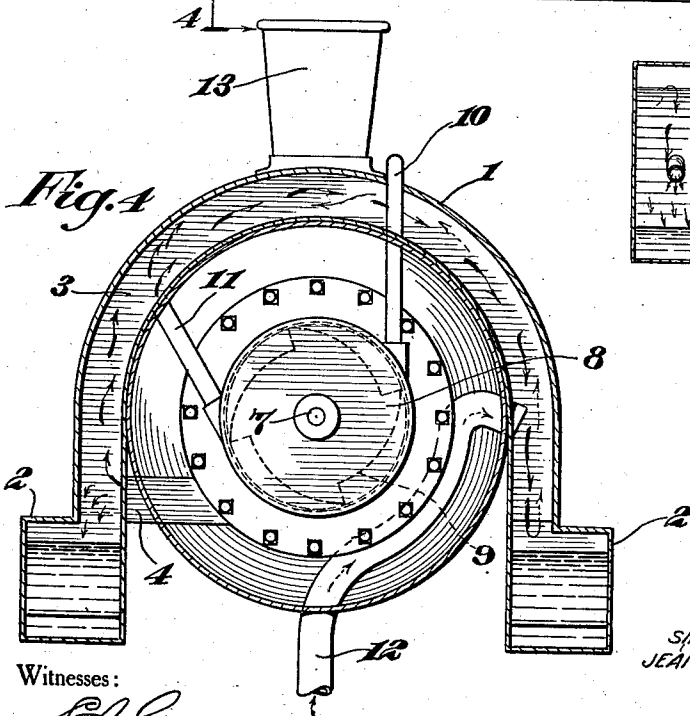
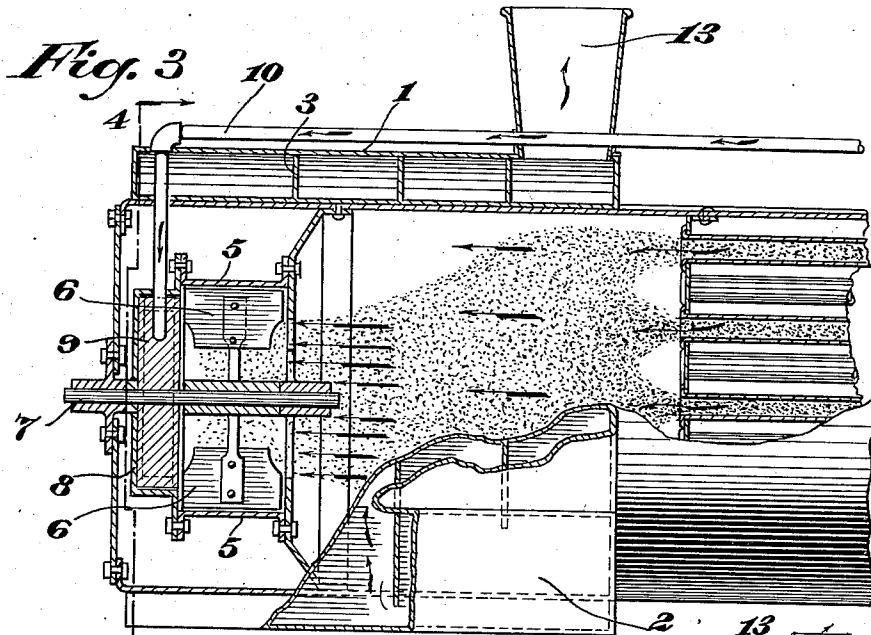
Attorneys

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UNITED STATES PATENT OFFICE.

SIMÉON PICHÉ AND JÉAN BAPTISTE PICHÉ, OF MONTREAL, QUEBEC, CANADA.

SPARK-ARRESTER.

1,026,633.

Specification of Letters Patent.

Patented May 14, 1912.

Application filed May 29, 1911. Serial No. 630,172.

To all whom it may concern:

Be it known that we, SIMÉON PICHÉ and JÉAN BAPTISTE PICHÉ, both subjects of the King of England, residing at Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Spark-Arresters; and we do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention to be hereinafter described relates to spark arresters.

In order to more clearly disclose the construction, operation, and use of the invention, reference should be had to the accompanying drawings forming part of the present application.

Throughout the several figures of the drawings like reference characters designate the same parts.

In the drawings: Figure 1 is a side elevation of a locomotive boiler, showing the invention applied thereto; Fig. 2 is a front view of the same; Fig. 3 is a view similar to Fig. 1, partly in central, vertical, longitudinal, cross section; Fig. 4 is a vertical, lateral, cross section on line 4—4 of Fig. 3, looking in the direction of the arrows; and Fig. 5 is a reduced, vertical, longitudinal, cross section through the jacket, as applied.

The main objects of the invention are to provide a simple, economical, durable, and efficient spark arrester which may be easily applied to a locomotive engine without substantially altering the appearance of the locomotive or necessitating any change in the position of the smoke stack.

Another object is to provide a spark arrester in which the exhaust steam of the engine cylinders may be readily and effectively used.

Referring to the drawings in detail, 1 indicates a jacket substantially U shaped in lateral cross section and adapted to be seated saddle-wise over the forward end of the locomotive boiler. The lower end of each side of the jacket is enlarged to form a settling tank 2. This shell or jacket is divided laterally by a series of baffle plates 3. The alternate opposite ends, only, of these plates extend, successively, beneath the surface of the water in the tanks 2. Thus, there will be a slight space between the surface of the water in one tank and the end

of one baffle plate, and a like space on the opposite side between the surface of the water in the other tank and the opposite end of the next baffle plate. &c.

In the lower forward end of one side of the jacket a passage way or opening is formed just a short distance above the surface of the water in the tank and between the forward end wall of the jacket and the first baffle plate. A smoke flue 4 leads from this opening to a blower casing 5 which communicates directly with the forward end of the boiler, just about where the usual smoke stack is ordinarily connected. In this way, the smoke sparks and other products of combustion will pass from the boiler directly into the blower casing. To create a forced draft for assisting the delivery of the products of combustion from the boiler into the first channel of the jacket (the space between the front end of the jacket and the first baffle plate), a blower 6 is revolvably mounted in the casing 5 and has its shaft 7 extended through a second casing 8 in which is mounted a steam turbine 9 keyed or otherwise solidly secured to the shaft 7. Steam for operating the turbine 9 is delivered from the boiler into the turbine casing 8 by a steam pipe 10. The exhaust from this turbine is delivered through a flue 11 and into the same channel into which the blower delivers the smoke and products of combustion, but at a point nearer the top of the jacket. The exhaust from the engine cylinders is also delivered into this same channel by means of the pipe 12, and at a point just a little above the surface of the water in tank 2, at the opposite side—see Fig. 4. The usual engine smoke stack 13 is mounted on the top of the jacket and communicates with the interior thereof, between the rear wall and the last baffle plate. The result of the above described construction is that the smoke and all of its suspended products of combustion are drawn from the boiler and delivered with considerable force into the lower forward end of one side of the jacket between the forward end of the jacket and the first baffle plate, and directly above the surface of the water in one of the tanks 2. The adjacent end of the first baffle plate extends slightly below the surface of the water in this tank 2, whereas the opposite end is spaced a slight distance above the surface of the water in the other tank 2. The result is that the smoke &c. is compelled to

follow along the channel between the end wall and this first baffle plate until it comes to this open space. The next baffle plate is arranged with its open space at the opposite side. Thus, the smoke &c. will be compelled to go around the end of the first baffle plate and recross toward the first tank 2. This recrossing back and forth continues until the smoke passes out of the smoke stack 13. At the first passage of the smoke &c. from the blower into the jacket, a great deal of matter held in suspension will be separated by impact of the current or jet on the jacket wall, as shown by arrows in Fig. 4. The steam jets from the flue 11 and pipe 12 greatly increase the draft or current. As this current of smoke &c. strikes the surface of the water in each tank 2, before passing around the end of each baffle plate, a large proportion of the solid matter held in suspension will be caught and retained in the water of the tanks. Thus, more and more of the solid matter will be caught so that the smoke and gases finally issuing through the stack 13 will be almost colorless. It will be seen from the above that the smoke is made to take a substantially alternating back and forth or serpentine spiral path across and about the upper half of the engine boiler.

It is thought that the operation and use of the invention will be clear from the preceding detailed description.

Changes may be made in the construction, arrangement, and disposition of the several parts of the invention without in any way departing from the field and scope of the same, and it is meant to include all such within this application wherein only a preferred form has been disclosed.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A spark arrester comprising, a jacket provided with an outlet, settling tanks formed in opposite sides of said jacket, means for delivering smoke into one end of said jacket, and means for causing the smoke to take a serpentine spiral path from the point of entrance back and forth from one tank to the other and rearwardly toward the aforesaid outlet.

2. A spark arrester comprising, a U shaped jacket provided with a smoke stack outlet at one end, settling tanks formed in the opposite sides of said jacket, baffle plates extending laterally across said jacket from one side toward the other, the ends of alternate plates extending into one tank and the ends of the other alternate plates extending into the other tank, and the opposite ends of all plates terminating a short distance above the tank opposite to the one into which they extend, and means for delivering smoke into said jacket.

3. A spark arrester comprising, a jacket provided with a smoke stack outlet at one end, settling tanks formed in the opposite sides of said jacket, baffle plates extending laterally across said jacket from one side toward the other, the ends of alternate plates extending into one tank and the ends of the other alternate plates extending into the other tank, and the opposite ends of all plates terminating a short distance above the tank opposite to the one into which they extend, and means for delivering smoke into said jacket.

4. A spark arrester comprising, a jacket provided with a smoke stack outlet at one end, settling tanks formed in the opposite sides of said jacket, baffle plates extending laterally across said jacket from one side toward the other, the ends of alternate plates extending into one tank and the ends of the other alternate plates extending into the other tank, and the opposite ends of all plates terminating a short distance above the tank opposite to the one into which they extend, a blower casing mounted in the forward part of said jacket and communicating direct with the forward end of the boiler, a delivery flue leading from said casing into said jacket at a point just above one of said tanks, a blower in said casing, and means for operating said blower.

5. A spark arrester comprising, a jacket provided with a smoke stack outlet above one end, settling tanks formed in its opposite sides, baffle plates extending across said jacket from one side to the other, the ends of alternate plates extending into one tank and the ends of the other alternate plates extending into the other tank, and the opposite ends of all plates terminating a short distance above the tank opposite to the one into which they extend, a blower casing mounted in the forward end of said jacket and communicating direct with the forward end of the boiler, a delivery flue leading from said casing into said jacket at a point just above one of the tanks, a blower in said blower casing, a turbine casing connected direct to said blower casing, an exhaust flue leading from said turbine casing into said jacket at a point above the connection of the exhaust flue of the blower casing, a turbine in said turbine casing, a single shaft for said turbine and said blower, and means for driving said turbine.

6. A spark arrester comprising, a jacket provided with a smoke stack outlet above one end, settling tanks formed in its opposite sides, baffle plates extending across said jacket from one side to the other, the ends of alternate plates extending into one tank and the ends of the other alternate plates extending into the other tank, and the opposite ends of all plates terminating a short distance above the tank opposite to the one

into which they extend, a blower casing mounted in the forward end of said jacket and communicating direct with the forward end of the boiler, a delivery flue leading
5 from said casing into said jacket at a point just above one of the tanks, a blower in said blower casing, a turbine casing connected direct to said blower casing, an exhaust flue leading from said turbine casing into
10 said jacket at a point above the connection of the exhaust flue of the blower casing, a turbine in said turbine casing, a single shaft for said turbine and said blower, means for

driving said turbine, and an exhaust flue leading from the steam cylinders of the engine and connected to said jacket at a point
15 just above the tank opposite the one above which the exhaust flue of the blower is connected.

In witness whereof we have hereunto set
our hands in the presence of two witnesses. 20

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."