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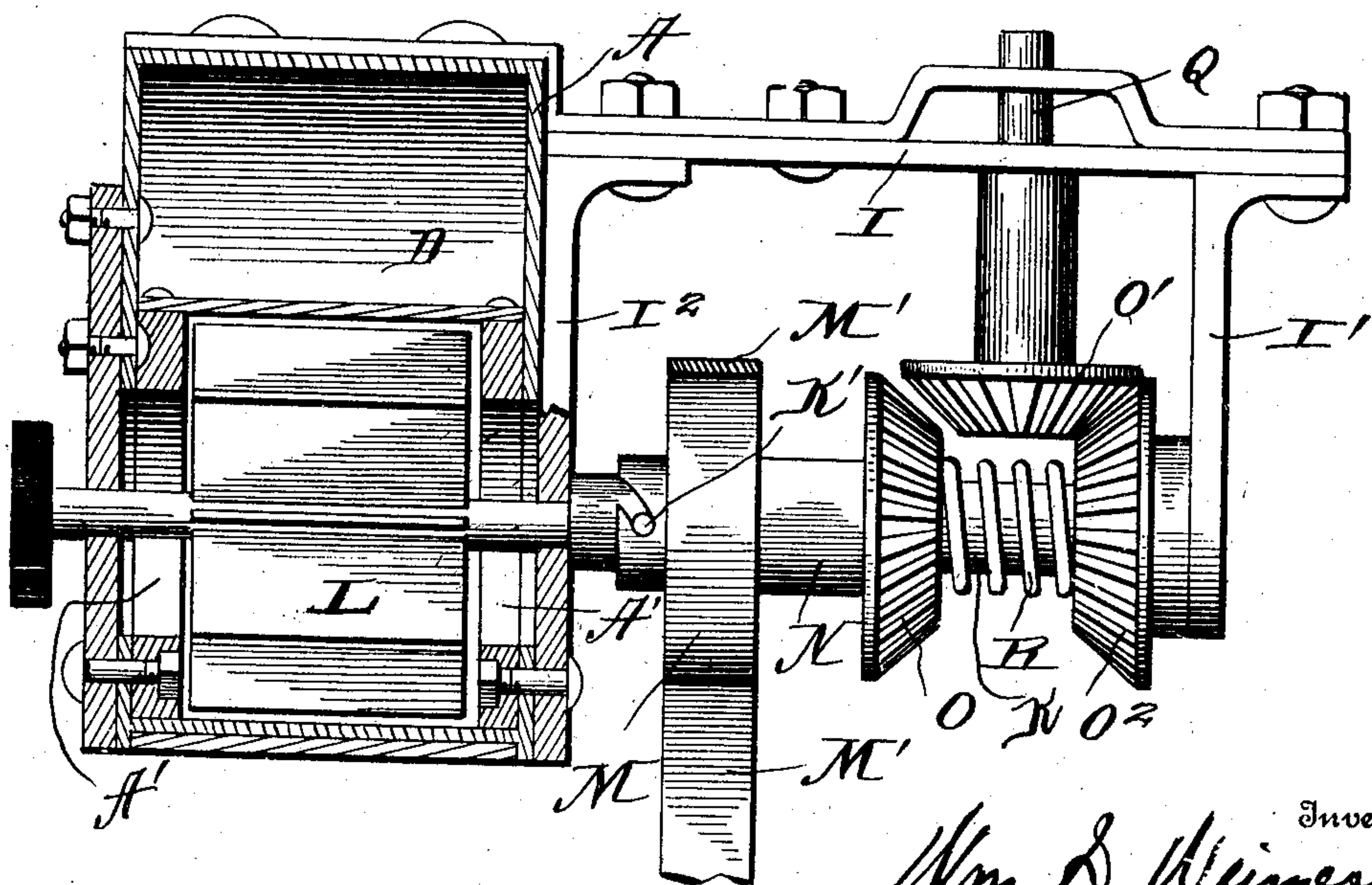
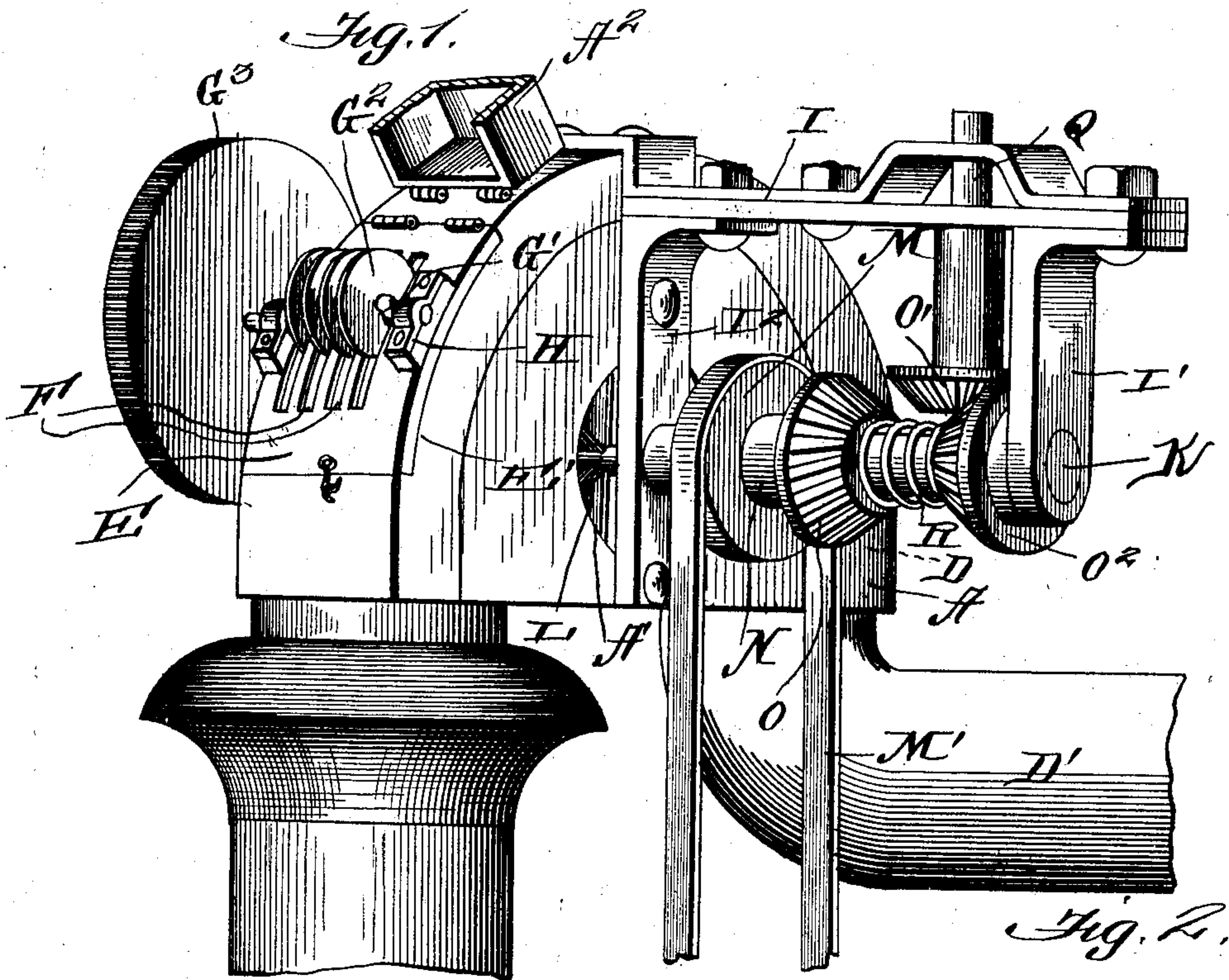
PATENTED AUG. 23, 1904.

W. S. WEIMER.
SPARK ARRESTER.

APPLICATION FILED JUNE 3, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

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Inventor

Wm. S. Weimer, Inventor

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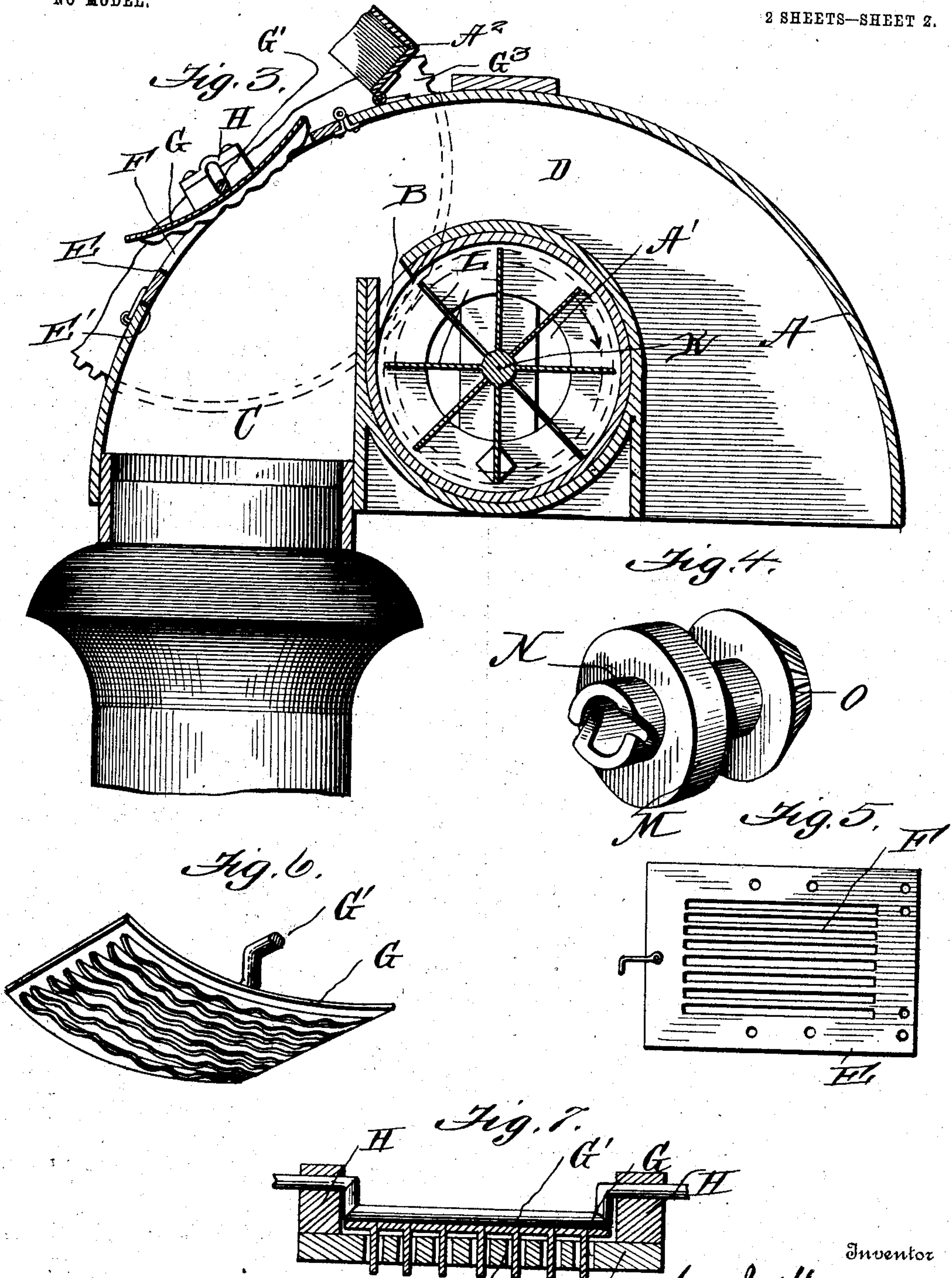
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UNITED STATES PATENT OFFICE.

WILLIAM S. WEIMER, OF PLEASANT LAKE, NORTH DAKOTA.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 768,255, dated August 23, 1904.

Application filed June 3, 1904. Serial No. 211,034. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. WEIMER, a citizen of the United States, residing at Pleasant Lake, in the county of Benson and State of North Dakota, have invented certain new and useful Improvements in Spark-Arresters; and I do declare the following to be 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in spark-arresters; and the object of the invention is to produce a simple and efficient means for preventing sparks starting fires; and it consists in the provision of a fan adapted to have connection with the driving mechanism of an engine and so arranged that when the engine is reversed the fan will continue to rotate in the same direction as when the engine is being driven forward.

The invention consists, further, in various details of construction and arrangements of parts, as will be hereinafter fully described and then specifically defined in the appended claims.

I illustrate my invention in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this application, and in which—

Figure 1 is a perspective view showing my spark-arrester as applied to a smoke-stack on an engine. Fig. 2 is a vertical sectional view through the fan-shaft and casing therefor and gear-wheel upon shaft. Fig. 3 is a sectional view transversely through the shaft, fan, and casing therefor, showing the preferred form of screen-cleaning plate. Fig. 4 is an enlarged detail view of sleeve which is mounted upon the shaft and to which a pulley is fastened for driving the shaft and through its gear connection the fan-shaft. Fig. 5 is a detail view of a screen covering an opening in the fan-casing. Fig. 6 is a detail of a cleaning device for the screen, and Fig. 7 is a detail view showing the cleaning device adjusted in connection with the screen.

Reference now being had to the details of the drawings by letter, A designates a fan-casing, which may be made of any suitable material, and said casing is provided with an air-inlet A' and an exit passage-way B, leading through the circumference of the casing A. C designates a cylindrical portion forming a part of said casing which is adapted to telescope from the top of a smoke-stack of an engine and to be securely held to said stack in any suitable manner.

About the shell of the fan-casing is a passage-way D, which communicates between the cylindrical shell C and a pipe D', which is connected to one end of said passage-way about the cylindrical shell in which the fan, as described, is positioned. E designates a lid which controls an opening E' in the roof or top of the passage-way over the fan-compartment, and positioned in said aperture or opening E' is a screen F, having longitudinal slits through which the smoke and water of condensation may pass into the atmosphere. Referring to Fig. 3, a cleaning device comprising a plate G is mounted upon a central shaft G', which is confined to the screen-frame by means of straps H, and said plate is provided upon one face thereof with a series of scalloped wings which are adapted to have a movement in said slits for the purpose of keeping the same clear of any obstruction, such as soot, &c., said movement being effected by a rocking movement of the shaft G'. Projecting from said casing is a frame I, having a downwardly-projecting end I', and K designates a shaft journaled at one end in suitable bearings in said downwardly-projecting portion I' of the frame. Said shaft K has bearings in the downwardly-projecting arms I² upon the opposite vertical faces of the casing. Upon said shaft is mounted a fan L of any suitable construction, and projecting from the shaft K are lugs K' directly opposite each other, and N designates a sleeve which is loosely journaled upon the shaft K and has fixed thereto a pulley M, about which a belt M' passes, which is adapted to be driven by an engine. (Not shown.) One end of the sleeve has spiral outlined grooves or recesses

formed therein at positions directly opposite, being adapted to engage said lugs K' to cause the shaft K to rotate with the sleeve in one direction. Integral with or secured to sleeve
 5 N is a beveled gear O, which is adapted to mesh with a similar beveled gear-wheel O' when the engine is reversed or when the pulley M is driven in the direction in which the lugs upon the shaft K are out of mesh with the spiral grooves in said sleeves. Said beveled gear-wheel O' is fixed to the shaft Q, which is rotatively mounted in the frame I, being held in suitable bearings. Fixed to the shaft K is a beveled gear-wheel O², which is continuously in mesh with the beveled gear-wheel O', and a spring R is mounted upon the shaft K and bears between the beveled gear-wheels O² and O and is provided for the purpose of throwing the spiral grooves in the sleeve N into mesh with said lugs K' when the engine is being driven forward.

By the provision of the mechanism shown and described it will be observed that when an engine is being driven forward or in the
 25 direction indicated by arrow in the drawings the spiral grooves of the sleeve N are in engagement with the lugs K' of the shaft K, thus causing the fan to rotate in the direction of the arrow; but when the pulley M is rotated in the reverse direction, as would be the case were the engine reversed, the inclined edges of the spiral grooves would cause the sleeve to be thrown out of mesh with the lugs and the beveled gear-wheel O would be thrown
 35 into mesh with the beveled wheel O², thus causing the beveled wheel O², which is fixed to shaft K, to continue a rotary movement of the latter in the same direction as the shaft would rotate if the engine were being driven
 40 forward.

In Fig. 1 of the drawings I have shown a slight modification in the apparatus for cleaning the screen door or lid, which consists in fixing a series of disks G² to the shaft G', and
 45 as the latter rotates by belted connection with a pulley G³ from any suitable source said disks will be thrown into the slots for the purpose of cleaning the soot, &c.

From the foregoing it will be observed that
 50 I provide means for causing a continuous rotary movement of the fan regardless of the rotary movement of the pulley which is being driven by the engine, and by the provision of a lid A² the smoke may be directed to the atmosphere through the passage-way D with the sparks and may be conveyed to any suitable location where it may be allowed to escape to the atmosphere.

While I have shown a particular detailed
 60 construction of apparatus illustrating the features of my spark-arresting apparatus, it will be understood that I may vary the same, if desired, as to details without departing from the spirit of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A spark-arrester comprising a fan-casing with inlet air-openings, a passage-way adapted to have connection with a smoke-stack and to an exit-pipe and with communicating aperture with said fan-casing, a shaft and fan rotating therewith and mounted within said casing, a pulley mounted upon said shaft and means for causing the shaft to make a continuous rotary motion in one direction as said pulley is driven in opposite directions, as set forth.

2. A spark-arrester comprising a fan-casing with inlet air-openings, a passage-way, one end of which is adapted to connect with a smoke-stack, the other end with an exit-pipe and into which passage-way, the air from the fan-casing enters, a shaft having a fan-wheel fixed thereto and positioned in said casing, a sleeve loosely mounted upon said shaft, and having spiral grooves in one end thereof, lugs fixed to said shaft and adapted to engage said grooves when the said sleeve is driven in one direction only, and means for causing the fan and shaft to continue its rotary movement as said sleeve is reversed, as set forth.

3. A spark-arrester comprising a fan-casing with air inlet and exit openings, a passage-way with which the exit-opening of the fan-casing communicates, one end of said passage-way adapted to connect with a smoke-stack, and the other end to an exit-pipe, a shaft mounted in suitable bearings, a fan-wheel fixed to said shaft and mounted within said fan-casing, lugs projecting from said shaft, a sleeve loosely mounted upon the shaft and having spiral grooves in one end adapted for engagement with said lugs, as the sleeve rotates in one direction, a pulley and the beveled gear-wheel fixed to said sleeve, a beveled gear-wheel fixed to said shaft and a third beveled gear adapted to communicate motion between the bevel gear-wheels upon said sleeve and shaft, when said pulley-wheel is driven in the reverse direction, as set forth.

4. A spark-arrester comprising a fan-casing with air inlet and exit openings, a passage-way with which the exit-opening of the fan-casing communicates, one end of said passage-way adapted to be connected with a smoke-stack, and the other end to an exit-pipe, a shaft mounted in suitable bearings, a fan-wheel fixed to said shaft and mounted within said fan-casing, lugs projecting from said shaft, a sleeve loosely mounted upon the shaft and having spiral grooves in one end adapted for engagement with said lugs as the sleeve rotates in one direction, a pulley and the beveled gear-wheel fixed to said sleeve, a beveled gear-wheel fixed to said shaft and a third beveled gear adapted to communicate motion between the bevel gear-wheels upon said sleeve and shaft

when said pulley-wheel is driven in the reverse direction, a spring mounted upon said shaft and bearing between said beveled wheels upon the sleeve and shaft and a spring adapted to
5 throw the spiral grooves upon the sleeve into mesh with said lugs, when the pulley is being driven forward, as set forth.

10 5. A spark-arrester comprising a fan-casing with air inlet and exit openings, a passage-way over said casing, one end of which is adapted to communicate with a smoke-stack and the other end with an exit-pipe, a lid mounted over an opening in said passage-way a screen positioned over said opening, and a movable
15 plate having wings adapted to clean said screen, a fan positioned in said casing and means for driving the same, as set forth.

6. A spark-arrester comprising a fan-casing with air inlet and exit openings, a fan within said casing, a passage-way over said casing, 20 one end of which is adapted to communicate with a smoke-stack and the other with an exit-pipe, a screen mounted over an opening in said passage-way, a rotatable crank-shaft and means for driving the same, a screen-cleaning 25 plate actuated by said crank-shaft, one face of said screen-plate having wings adapted to move in the slots of said screen, as set forth.

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

WILLIAM S. WEIMER.

Witnesses:

LINUS JOHNSON,
J. H. KELLY.