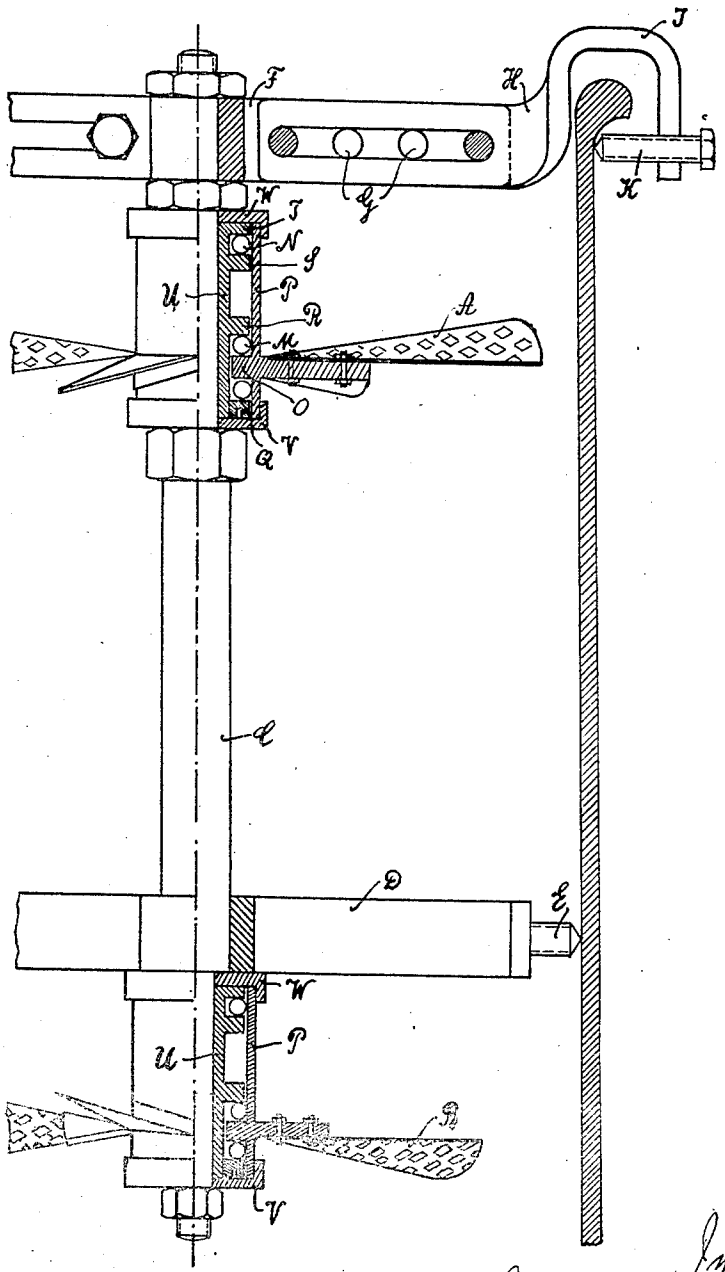
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L. KUJAWA ET AL

REGULATOR FOR AIR OR GAS CURRENTS

Filed Jan. 9, 1923



Inventors

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By A. Lazar, Atty

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UNITED STATES PATENT OFFICE.

LORENZ KUJAWA AND OTTO KOOK, OF MAGDEBURG, GERMANY.

REGULATOR FOR AIR OR GAS CURRENTS.

Application filed January 9, 1923. Serial No. 611,669.

To all whom it may concern:

Be it known that we, LORENZ KUJAWA and OTTO KOOK, citizens of Germany, and residents of Magdeburg, Germany, Kleine Junkerstr. 4 and Knochenhauerufer 46ª, have invented certain new and useful Improvements in Regulators for Air or Gas Currents, for which we have applied for the following patent, Germany K. 80101 V/24ᵉ from 6 December, 1921; and we do hereby declare that the following is a full, clear, and exact specification, reference being had therein to the accompanying drawing.

The invention relates to a device for regulating currents of air or gas which flow with varying velocities, and a special use consists in the application with the chimneys of locomotives for avoiding unequal blowing of the fire and for extinguishing the sparks.

It is known to use a guiding spiral and two fans or blade wheels having perforated blades and arranged on a common axis inside an enlarged chimney part, and driven by the gas current in inverse sense, but a mischief consisted therein, that either the current was too hardly throttled or the sparks were not extinguished and such devices need an enlargement of the chimney, which cannot be provided in the short chimneys of modern locomotives. The invention consists in providing exclusively two inversely rotating fans, the blades of which cover the whole diameter of the chimney and are provided with perforations to such an extent that a good spark destroying and current regulating action is obtained without much throttling the current. Further special ball bearings are provided which allow of extremely high numbers of revolutions of the blade wheels without suffering by the dust and heat in a chimney.

The invention is shown by way of example in the accompanying drawing, which is a side view, partly in section, the chimney or flue being indicated at Z in dotted lines.

Two blade wheels A and B are rotatably held on an axially disposed rod C and secured against axial displacement. The upper blade wheel A has seven blades of a great breadth, as shown in the drawing, so that the diameter of the funnel or chimney is nearly covered by the blades and every passing air part or spark is hurt by them with great certainty. For avoiding too hard throttling of the current and a too quick revolution of the blade wheel the blades are perforated by rhombic holes, so as to be similar to an equally perforated sieve, by which neither sparks of some size nor explosive gases in mines are allowed to pass uncooled.

The lower blade wheel B is constructed in the same manner with the exception that it is somewhat smaller and has only five blades, for influencing firstly the greater passing bodies.

The sense of pitch of the under blade wheel is inverse to that of the upper, so that no circulating or spiral movement of the air current arises, and all its parts are surely hurt by the both combined blade wheels.

The fastening device for holding the regulator in a funnel consists in an arm cross D secured to the lower part of the rod C, and containing pressure screws E, and a similar device may be provided at the upper end, in case that the regulator is destined to be fastened in the interior of a funnel. In the shown example the upper end of the rod C is provided with an arm cross F having screw holes G, and slotted outer arms H are held by screws inserted in some of the said holes so as to furnish the desired adaptability of length. These adaptable arms H are provided at their upwardly bulged ends I with inwardly directed pressure screws K. Hereby the regulator may be attached at sheet metal funnels by mounting the upper arm cross over the funnel edge and setting it under tension by aid of the screw bolts K screwed against the outer funnel face.

The ball bearings consist of three sets of balls L, M and N, and one ball race ring O of the hub P of the blade wheel is interposed between two ball sets L and M, whilst further ball race rings Q, R, S and T are held at a sleeve U, fixed on the rod C, so as to include the balls. Thereby the ball sets L and M act as a double thrust bearing and simultaneously as a radial bearing, and the ball set N acts as a second radial bearing. Caps V and W are so fastened at both ends of the sleeve U, that they nearly touch the outer face of the hub P and thereby protect the whole ball bearing against dust and excessive heat from the gases passing outside.

In use with locomotive chimneys the new

current regulator has proven of surprising advantage in so far as it not only extinguishes the sparks by shattering them, but moreover causes the blowing up of the fire growing so equal that practically no unburnt coal parts fly up from the grate to the smoke box and chimney, and thereby a remarkable saving of coal is reached.

What we claim is:

1. A regulator for air and gas currents comprising a pair of elements mounted for rotation independently of each other and arranged to be placed in a flue, each of said elements having fan plates provided throughout their extent with perforations, the plates of one of said elements being reversely shaped to those of the other element so that said elements are caused to rotate in reverse directions, the lower element being of less diameter than the upper element and the diameter of the upper element being nearly equal to that of the flue.

2. A regulator for air and gas currents comprising a vertical shaft, independently revoluble elements on said shaft each having perforated fan plates, the plates of one element being of reverse shape to those of the other element, and the diameter of the lower element being somewhat less than that of the upper element, and means to which said shaft is secured and arranged to mount the said revoluble elements and said shaft in a flue.

In witness whereof we affix our signatures.

LORENZ KUJAWA.
OTTO KOOK.