

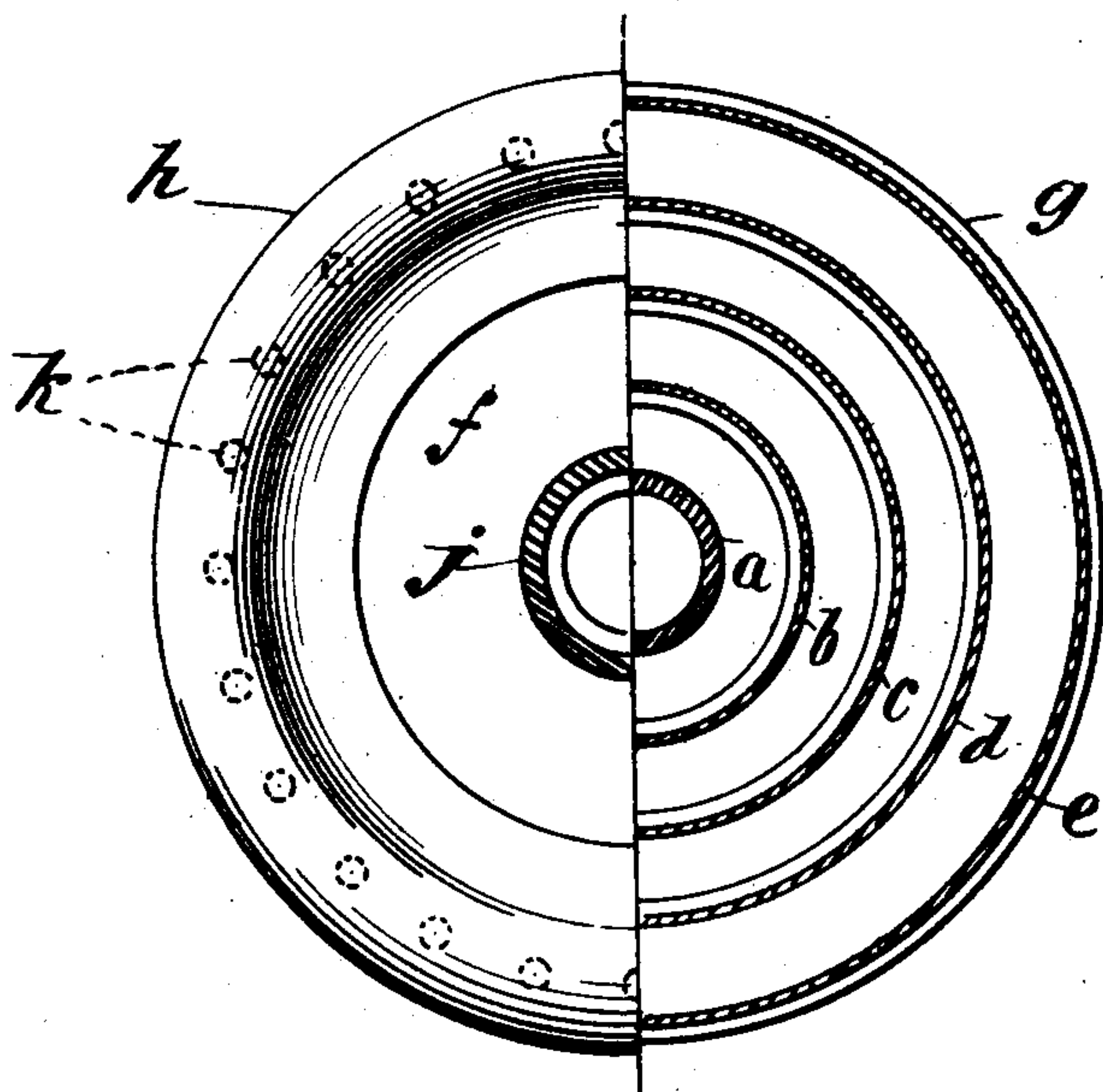
U. S. PATENT OFFICE.  
**MUFFLER FOR INTERNAL COMBUSTION ENGINES.**  
 (Application filed Oct. 28, 1901.)

(No Model.)

*Fig. 1.*



*Fig. 2.*



*Witnesses:*

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# UNITED STATES PATENT OFFICE.

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## MUFFLER FOR INTERNAL-COMBUSTION ENGINES.

SPECIFICATION forming part of Letters Patent No. 712,791, dated November 4, 1902.

Application filed October 28, 1901. Serial No. 80,192. (No model.)

*To all whom it may concern:*

Be it known that I, CARL OSCAR HEDSTROM, a citizen of the United States of America, residing at Portland, in the county of Middlesex and State of Connecticut, have invented new and useful Improvements in Mufflers for Internal-Combustion Engines, of which the following is a specification.

This invention relates to muffler constructions for internal-combustion engines, and it has special reference to mufflers adapted for use on motor-cycles. From the nature of the construction of these machines it is hardly feasible to locate the muffler anywhere except between the two wheels. Furthermore, constructors of these machines are under the necessity of keeping down the transverse dimension of the machine or the "tread," as it is called, at the lowest possible point. Therefore the delivery end of the muffler will be in close proximity to the rim of either one wheel or the other of the motor-cycle. In this position the puff of the exhaust against the tire operates to dislodge the dirt and dust adhering thereto, which is then scattered by the rotation of the wheel over the frame of the machine and the mechanism thereon.

The object of this invention is to provide means for deflecting the outwardly-projected currents of the exhaust-gases and turn these currents toward a common center or toward each other in converging lines, whereby their forces may be expended one against the other and the noise of the exhaust thereby reduced, the exhaust-gases being prevented from coming in contact with the tire of either wheel.

In the drawings forming part of this specification, Figure 1 is a longitudinal section of a muffler embodying my invention. Fig. 2 is a half-sectional view on line 2 2, Fig. 1.

Referring to the drawings, there is shown a muffler of the well-known type comprising a series of nested concentric cylinders supported between suitable heads, the central one of the cylinders being connected with the exhaust-port of the engine and first receiving the exhaust-gases, which pass through perforations in the walls of the different cylinders successively into and through the an-

nular passages between the latter, finding an exit finally at the end of the passage between the outer cylinder and the next one thereto. This is only one of various mufflers of this type to which the invention is applicable. They all discharge the gases in lines parallel with the axis of the muffler. In the construction shown the various cylinders from the center outward are lettered, respectively, *a*, *b*, *c*, *d*, and *e*. The heads are indicated by *f* and *g* and the deflecting-plate by *h*. The perforations through the walls of the cylinders are indicated by *i*, and *j* indicates the tubular connection between the muffler and the exhaust-port of the motor. The perforations through the head *f*, through which the exhaust-gases finally escape against the deflecting-plate *h*, are lettered *k*.

In carrying out my invention I apply the plate *h* (which in this case is a circular plate) over the end of the muffler, through which the exhaust-gases are finally discharged to the atmosphere. This plate is made, preferably as shown in the drawings, with a chambered portion *l*, located immediately over the discharge ports or perforations *k*, the inner edge of the plate lying parallel substantially with the surface of the edge or end of the muffler to which the said plate is attached and at some distance from the plate, whereby a narrow slit *m* is provided through which the gases after entering the chamber *l* may escape at all points, and assuming that the discharge into said chamber *l* is uniform the final escape of the gases through the said slit *m* will be in converging lines, which in their counteracting effect will tend to neutralize what little expansive force remains in said gases.

The manner of fastening the deflecting-plate *h* to the end of the muffler is immaterial, a simple means being shown in the drawings, which consists in turning a groove in the flange on the head of the muffler, then fitting this annular plate thereover, and rolling or otherwise forcing the metal into said groove. It is also immaterial which end of the muffler the plate is applied to, that being governed entirely by the location of the discharge-opening.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

5 In a muffler having closed ends and a discharge-opening in one of said ends, the combination of a deflecting-plate secured by one edge to said end, and having its opposite edge in close proximity to the surface of said

end, whereby the gases are turned from their normal line of discharge and are deflected to issue from said plate in opposing directions, in the same plane.

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