

(No Model.)

2 Sheets—Sheet 1.

H. GUELS.
STEAM MUFFLER.

No. 419,940.

Patented Jan. 21, 1890.

Fig. 1.

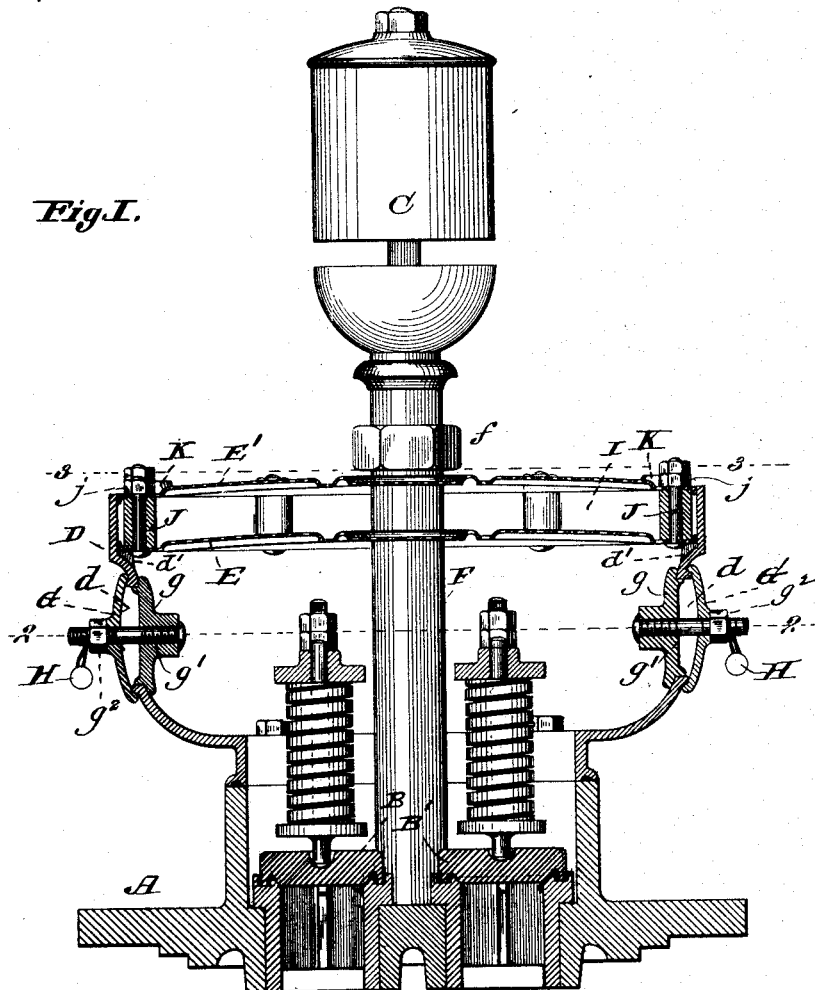
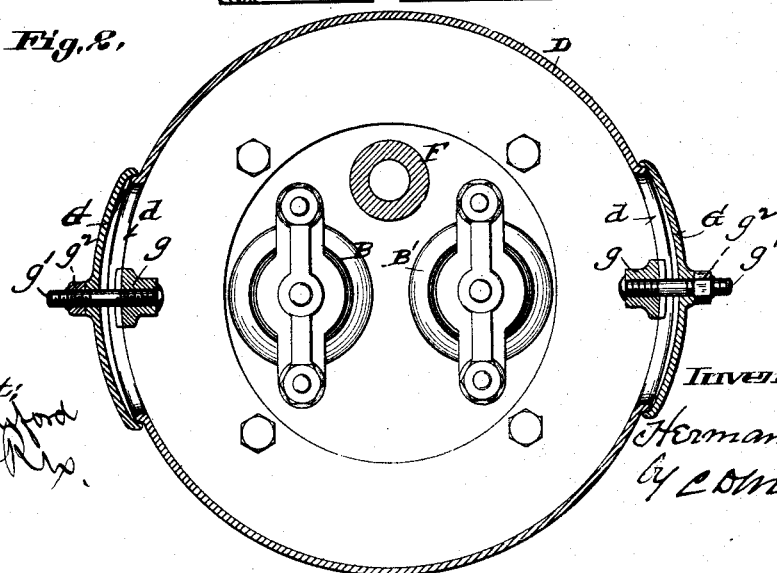


Fig. 2.



Attest:
G. M. Bayford
R. F. N. P.

Inventor:
Herman Guels
by E. D. Moody
att'y

(No Model.)

2 Sheets—Sheet 2.

H. GUELS.
STEAM MUFFLER.

No. 419,940.

Patented Jan. 21, 1890.

Fig. 3.

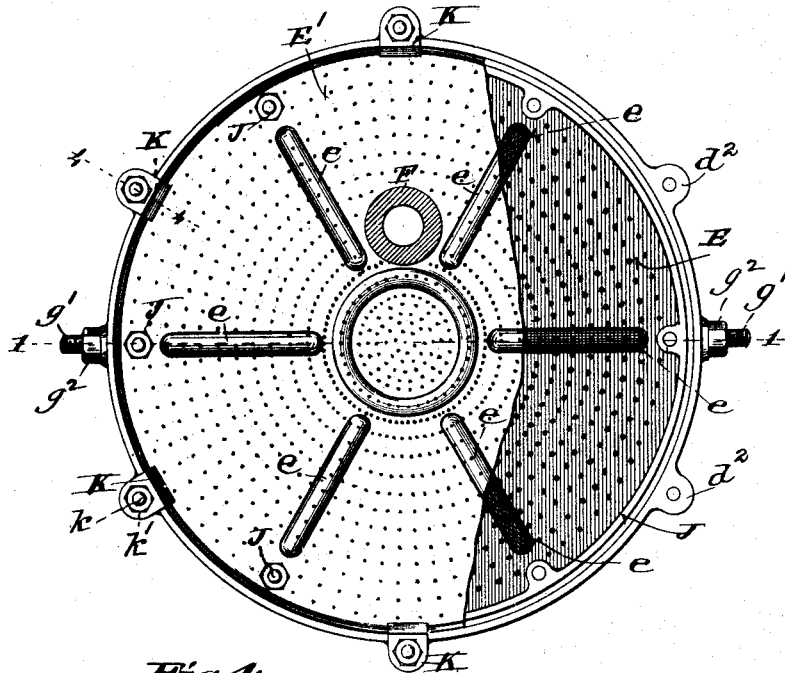
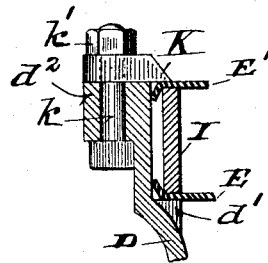


Fig. 4.



Attest,
Wm. A. Sanford
By

Inventor,
Herman Guels
by C. W. Moody
att.

UNITED STATES PATENT OFFICE.

HERMAN GUELS, OF ST. LOUIS, MISSOURI.

STEAM-MUFFLER.

SPECIFICATION forming part of Letters Patent No. 419,940, dated January 21, 1890.

Application filed December 10, 1888. Serial No. 293,184. (No model.)

To all whom it may concern:

Be it known that I, HERMAN GUELS, of St. Louis, Missouri, have made a new and useful Improvement in Steam-Mufflers, of which the following is a full, clear, and exact description.

The improvement is related to a construction described in Letters Patent No. 195,003, granted to me September 11, 1877, and having for its object the suppression of the sharp hissing incident to the escape of steam from confinement, as past the safety-valves of a boiler.

The leading feature of the construction referred to is finely-perforated plates extending across the path of the escaping steam, and in passing which the steam is rendered practically noiseless. In the present improved construction the safety-valves are similarly inclosed by means of an imperforate bowl and the perforated plates, the bowl at its lower edge being fitted steam-tight to the boiler-dome top and extending thence upward above the level of the safety-valves, and the perforated plates, one above the other, being extended across the bowl above the safety-valves, substantially as in the original construction, saving as such construction is modified or supplemented by the present improvement, which consists, mainly, in the means for attaching the perforated plates to the bowl, thereby leaving the space within the bowl freer of obstructions than is the interior of the bowl in the original construction; in the mode of constructing the perforated plates, whereby they can be made more readily and strongly, all substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, in which—

Figure 1 is a vertical section on the line 1 1 of Fig. 3 of the improved muffler; Fig. 2, a horizontal section on the line 2 2 of Fig. 1; Fig. 3, a horizontal section on the line 3 3 of Fig. 1; and Fig. 4, a vertical section, on an enlarged scale, on the line 4 4 of Fig. 1.

The same letters of reference denote the same parts.

A represents the boiler-dome top; B B', the safety-valves; C, the whistle; D, the bowl, and E E' the perforated plates.

F represents the whistle-stem. In the shell of the bowl are one or more hand-holes *d*, which, by means of the plate G, bridge *g*, bolt *g'*, and nut *g''*, are closed, as shown, when the muffler is in use; but by removing these parts access is had to the interior of the bowl and to the valves. To prevent improper access to the valves a seal H can be applied to the bolt *g'*, as shown in Fig. 1. In the place of securing the plates E E' in position by means of bolts extending through the plates downward to the bottom of the bowl, as before, they are attached as follows: The plates are laid, respectively, against the under and the upper edge of a ring I, Figs. 1, 3, and 4, and are secured thereto by means of bolts J and nuts *j*, which bolts are passed through the plates and ring and secured by the nuts *j*. The plates and ring thus united are placed within the upper edge of the bowl and supported upon a ledge *d'* of the bowl. The parts are contrived so that the upper plate E' comes even, or thereabout, with the upper edge of the bowl, and they (the plates and ring) are fastened in position by means of clamps K, Figs. 1, 3, and 4, which are, by means of the bolts *k* and nuts *k'*, secured to the lugs *d''* upon the bowl, and so applied as to cause the clamps to project above the plate E', as shown. The lower plate E is held closely to the ledge *d'*, and the plates and ring are bound closely together, and all so that the steam cannot escape at these points so as to frustrate the working of the muffler. To remove the plates E E', the clamps K are loosened and turned around to be clear of the plates, whereupon the plates and the interposed ring are free, saving as they may be confined by the shoulder *f* upon the whistle-stem, which part can be withdrawn in the ordinary manner.

The improvement embodied in the plates E E' is of material value, in that thereby the construction of the plates is considerably cheapened as well as strengthened. The feature of these plates is the numerous fine perforations therein. In the lower plate E a large number of quite fine perforations are employed, and in the upper plate E' the perforations are finer and naturally more numerous. As the perforations are in practice formed by punching, it is obvious that con-

siderable time is consumed in the operation. It is also apparent that the work is largely directly proportioned to the thickness of the plate being punched. To lessen the work of forming the perforations, I employ plates considerably thinner than the plates originally used, and instead of having them flat, as was previously the case, they are corrugated, by which means any deficiency in strength due to the thinness of the plate is compensated for, and in many instances the plate is actually stronger. The corrugations also not only permit of the bowl being made of larger diameter and the plates correspondingly enlarged, but they also, in bowls of a certain diameter, operate to increase the outlet for the steam, which is an advantage, as thereby provision is made for a wider diffusion of the steam in its escape. Moreover, in making the plates thinner the perforations are shortened, and thereby a freer exit provided for the escaping steam. The corrugations *e* may be variously introduced into the plates. The style shown is a desirable one—a circular one at the central portion of the plate, and, without such central corrugation, others arranged radially, as shown more distinctly in Fig. 3.

The improvement can be partly carried out

by corrugating one only of the perforated plates. 30

I claim—

1. The combination of the bowl, the clamps, the ledge, the perforated plates, the ring between the plates, and the bolts for uniting the plates and the interposed ring, substantially as described. 35

2. In a steam-muffler, the combination of the plates *E E'*, the ring *I*, the bolts *J*, and nuts *j*, substantially as described.

3. In a steam-muffler, the combination of the plates spaced apart from each other and united by means of the bolts and interposed ring, substantially as described, with the bowl, dome-top, and safety-valves, said plates being secured to the bowl at the upper edge thereof, substantially as described. 40 45

4. In a steam-muffler, the combination of the dome-top, safety-valves, bowl, and perforated plates, said plates being thinned and corrugated, as and for the purpose described. 50

Witness my hand this 8th day of December, 1888.

HERMAN GUELS.

Witnesses:

C. D. MOODY,

D. W. A. SANFORD.