

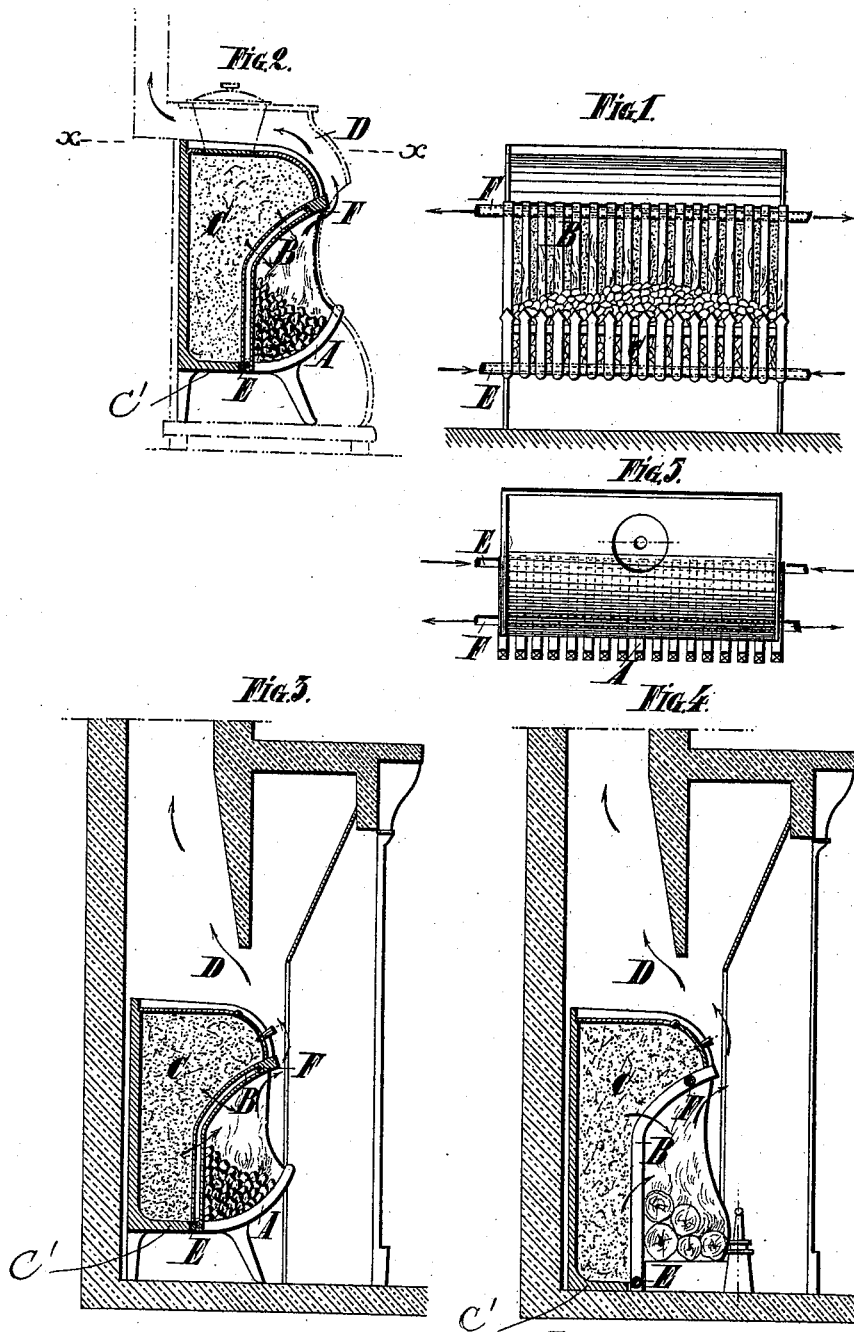
(No Model.)

2 Sheets—Sheet 1.

P. MANCHERON.  
HEATING APPARATUS.

No. 491,806.

Patented Feb. 14, 1893.



Witnesses

E. B. Bolton

E. H. Stuart

Inventor:

Philippe Mancheron

BY

Richardson  
his Attorneys

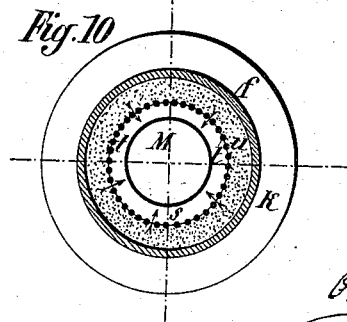
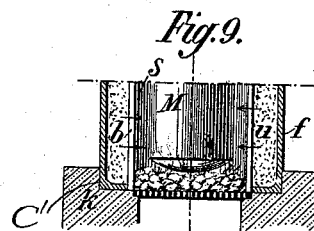
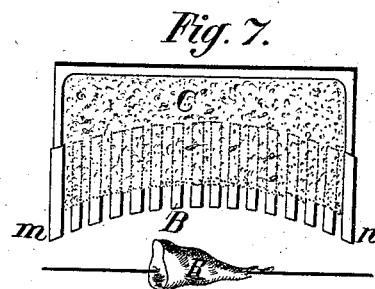
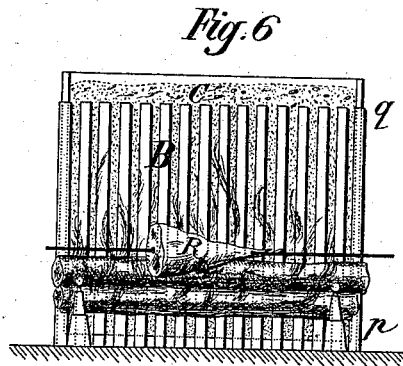
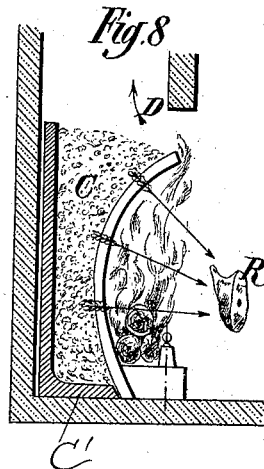
(No Model.)

2 Sheets—Sheet 2.

P. MANCHERON.  
HEATING APPARATUS.

No. 491,806.

Patented Feb. 14, 1893.



Witnesses:

E. B. Bolton  
E. H. Sturtevant

Inventor:  
Philippe Mancheron

By *Richardson*  
his Attorneys.

# UNITED STATES PATENT OFFICE.

PHILIPPE MANCHERON, OF NEVERS, FRANCE.

## HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 491,806, dated February 14, 1893.

Application filed April 11, 1892. Serial No. 428,747. (No model.)

*To all whom it may concern:*

Be it known that I, PHILIPPE MANCHERON, a citizen of the Republic of France, residing at Nevers, France, have invented certain improvements in Stoves or Grates, of which the following is a specification.

My invention has reference to certain improvements in stoves or grates, whereby I am enabled to use different combustibles at the same time, thereby securing efficient combustion and utilize a poor quality of fuel.

In the accompanying drawings forming part of this specification, Figure 1 is a front view of an open grate embodying my invention, Fig. 2, is a vertical section through the same, dotted lines illustrating the relation of the draft thereto. Figs. 3 and 4 are vertical sections of a fire place with my improved grate applied thereto, the first figure representing the form shown in the previous figures, while Fig. 4 illustrates an adaptation of my improvements in connection with a grate for burning wood. Fig 5 is a plan view on line  $x-x$  of Fig. 2. Figs. 6, 7 and 8 are a front plan and vertical section of a grate constructed on a slightly different form but embracing my improvements, and Figs. 9 and 10 are a detail vertical section and a horizontal plan view respectively, of a construction showing my improvements adapted for the heating of cylindrical vessels and the like.

A fuel of good quality such as coke, wood, peat, &c., is placed in the front grate A, and rests against the front of a specially formed grating B, constituting the front of the chamber C, which when containing burning fuel, acts as a reflector grate.

Within the chamber C is placed a fuel of little value, such as coal dust, siftings, &c. When the fuel in the grate A undergoes combustion, the flames pass through the grate B, and communicate the combustion to the fuel in the chamber C. When the combustion of fuel in grate A and chamber C, is well under way the flames pass outwardly, and the products of combustion escape through chimney D. The bars of the grate B being subjected to such an undue heat, are consequently heated to a very high degree. To therefore prevent these bars from becoming burned out,

they are made hollow to secure a circulation of air from the base to the top. The lower transverse duct E communicates both with the atmosphere, and with all the bars at their base, while an upper transverse duct F is likewise connected with all the bars, but adjacent to their top, and serves as a discharge for the heated air. The reflector character of the grate B and chamber in the rear of the same, serves to radiate a large volume of heat of the room or compartment in which the device may be located. The device is economical, as the reflector character of the grate B and chamber C, serves to retard the too great circulation of the air, and hence the flame remains longer in the area of the fire place.

It will be quite obvious that the use of my improved device is economical from a further consideration; thus, it will be seen that after the combustion of the cheap fuel in the receptacle C is well under way, the combustion of the fuel in the grate A need not be maintained, and hence therefore a comparatively small quantity of higher grade fuel need be used at the outset.

In Figs. 4 and 5, I have shown my improved device, modified for the purpose of burning wood. In the grate A, the principle of operation is the same.

Figs. 6, 7, and 8, show the device further modified for the purpose of open hearth roasting; in this construction the bars of the grate B, being curved throughout their lengths  $pq$ , so as to concentrate the heat upon the article R being roasted.

In Figs. 9 and 10, I have shown my improvements in connection with an apparatus adapted for heating large vessels. In said figures M designates the vessels surrounded by a series of vertical grate bars T, having a bottom horizontal grate  $g$ , located beneath the same. A surrounding shell  $f$ , forms a space  $u$ , beyond the grate bars T. The fuel of higher grade is consumed on the grate  $g$ , while that of little value undergoes combustion in the annular space  $u$ . The grate bars it will be noticed are set on end and serve mainly as a confining or dividing wall. They are not subjected to the weight of the mate-

rial comprising the filling as this rests mainly on the bottom C' of the supplemental receptacle which is independent of the grate bars.

I claim:—

5 1. In combination, the fire place, a supplemental receptacle C, extending vertically adjacent to the fire place adapted to receive the filling and having a bottom C' to support the same, and the dividing wall between the  
10 fire place and supplemental receptacle consisting of the grate bars set on end and extending vertically with spaces between them whereby the vertical face of the filling in the supplemental receptacle is exposed between the  
15 vertical grate bars thus forming a vertical reflecting wall, substantially as described.

2. In combination the open hearth fire place, a series of curved grate bars forming the back wall thereof and extending up from  
20 the main bars and forwardly over the said open hearth, and the supplemental receptacle on the opposite side of the said grate bars, adapted to receive the filling and leave

the front part of the same exposed between the grate bars to form a reflecting back wall, 25  
said supplemental receptacle extending vertically adjacent to the open fire place and having an independent bottom C' for supporting the said filling substantially as described.

3. In combination on the open hearth fire place, a series of grate bars set on end forming the back of the same, said bars curving vertically and being arranged in relation to each other to form a wall curved from side to 30  
side, and the supplemental chamber on the opposite side of the said grate bars, having a bottom C' independent of the grate bars, substantially as described.

In testimony whereof I have signed this 4c  
specification in the presence of two subscribing witnesses.

PHILIPPE MANCHERON.

Witnesses:

EDWARD P. MACLEAN,  
JOSEPH TOURNIER.