L. H. BELL.

HEATER FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED SEPT. 23, 1918.

1,311,206. Patented July 29, 1919.

2 SHEETS—SHEET 1.

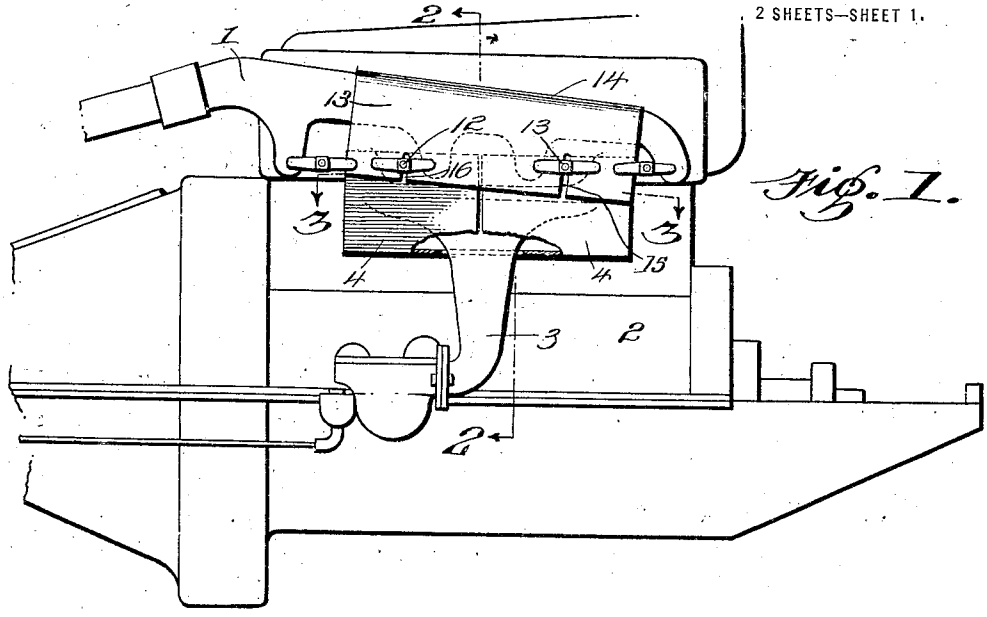


Fig. 1.

Fig. 2.

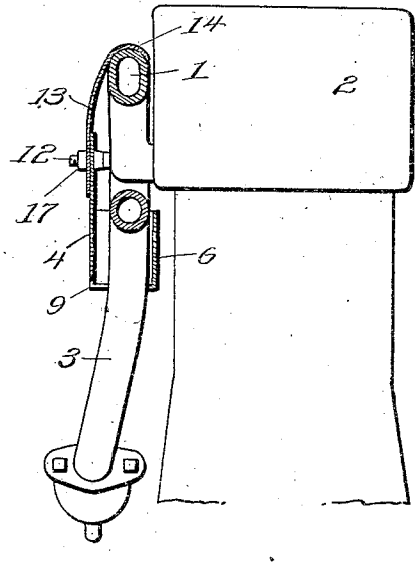
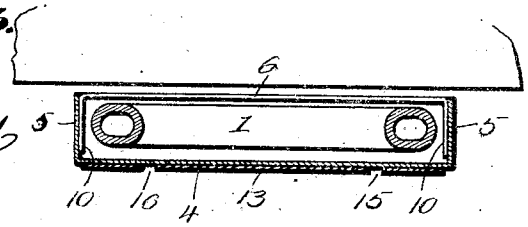


Fig. 3.



WITNESSES

H. Woodard

INVENTOR

L. H. Bell

BY Munn & Co

ATTORNEYS

L. H. BELL.

HEATER FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED SEPT. 23, 1918.

1,311,206.

Patented July 29, 1919.

2 SHEETS—SHEET 2.

Fig. 4.

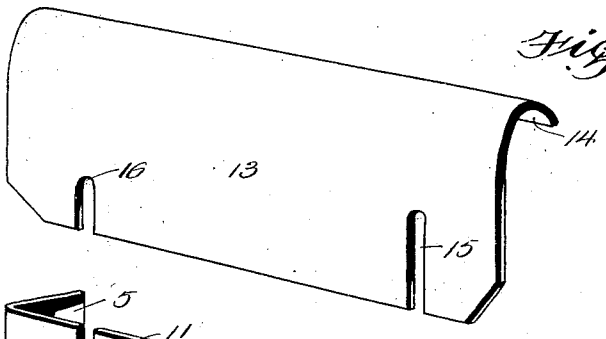


Fig. 5.

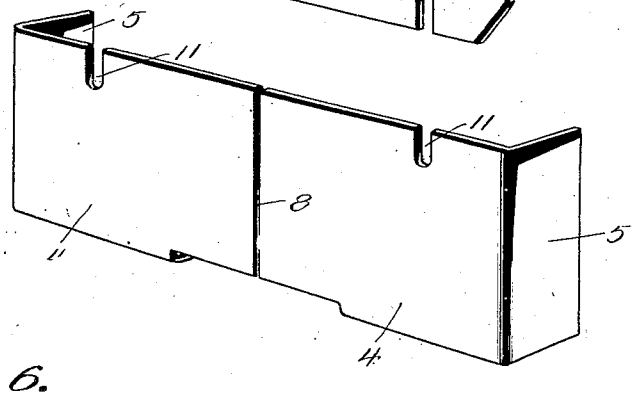


Fig. 6.

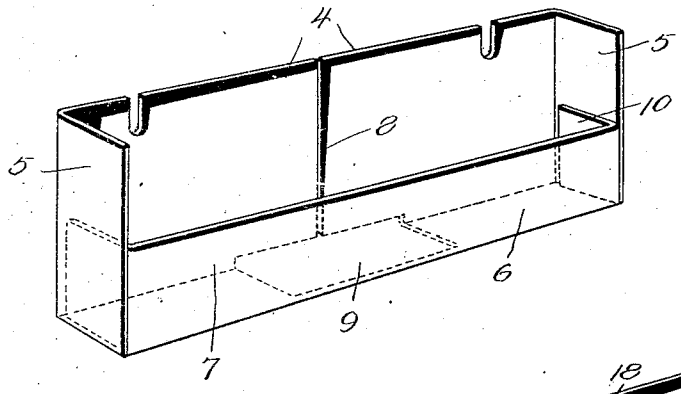
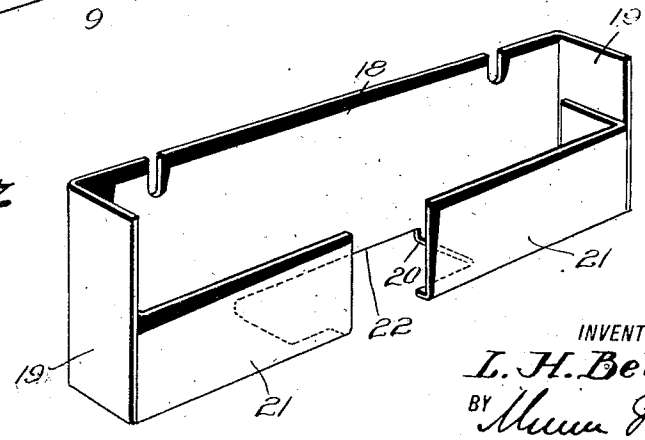


Fig. 7.



WITNESSES

H. Woodard

INVENTOR

L. H. Bell.,

BY Munn & Co.,

ATTORNEYS

UNITED STATES PATENT OFFICE.

LESLIE H. BELL, OF PAULLINA, IOWA.

HEATER FOR INTERNAL-COMBUSTION ENGINES.

1,311,206. Specification of Letters Patent. Patented July 29, 1919.

Application filed September 23, 1918. Serial No. 255,231.

To all whom it may concern:

Be it known that I, LESLIE H. BELL, a citizen of the United States, and a resident of Paullina, in the county of O'Brien and State of Iowa, have invented certain new and useful Improvements in Heaters for Internal-Combustion Engines, of which the following is a specification.

My invention is an improvement in heaters for internal combustion engines, and has for its object to provide a device of the character specified capable of attachment to the manifold of the engine and inclosing the exhaust pipe for deflecting the air surrounding the exhaust pipe and heated thereby downwardly on to the manifold.

In the drawings:

Figure 1 is a front view of an engine provided with the improved heater;

Figs. 2 and 3 are sections on the lines 2—2 and 3—3, respectively, of Fig. 1, each view looking in the direction of the arrows adjacent to the line;

Fig. 4 is a perspective view of the upper portion or hood of the heater;

Fig. 5 is a similar view of the lower portion or body of the heater;

Fig. 6 is a similar view looking at the opposite side;

Fig. 7 is a view similar to Fig. 6, showing a modified arrangement.

The embodiment of the invention shown in Figs. 1 to 6, inclusive, is shown in connection with the exhaust pipe 1 of an internal combustion engine 2 of ordinary type, the heater inclosing a portion of the exhaust pipe 1 and a portion of the manifold 3.

The improved heater comprises a lower section or body and an upper section or hood, the said sections being adjustably and detachably connected together. The lower portion may be formed as shown in Figs. 5 and 6 from a sheet of suitable material cut and bent to form an outer wall 4, end walls 5, a bottom wall 6 and an inner wall 7. The outer wall 4 is divided by a vertical cut 8 into two portions and the bottom wall 6 has an opening 9 with which the cut 8 communicates, the said opening being adapted to receive the manifold and permit the passage thereof.

The inner wall 6 has flaps 10 at its ends which are bent at a right angle to the wall and abut the inner faces of the end walls 5. Each section of the outer wall 4 is notched at its upper edge and intermediate its ends as indicated at 11, and these notches are adapted to receive the bolts 12 which hold the exhaust pipe to the engine casing. The upper section or hood 13 has a hooked portion 14 for engaging over the exhaust pipe, as shown more particularly in Fig. 2, and at its lower edge the said hood or upper section is notched, as shown at 15 and 16, the notches registering with the notches 11 when the sections of the heater are in place. It will be noticed that the notch 15 is of greater length than the notch 16, so that the hook portion 14 of the hood may follow the inclination of the exhaust pipe. These notches 15 and 16 are adapted to receive the same bolts 12 that are received in the notches 11, and nuts 17 engage the bolts to hold the casing sections in place.

If desired, the lower section may take the form shown in Fig. 7, wherein the said section consists of an integral outer wall 18, end walls 19, a bottom wall 20 and a sectional inner wall 21. The wall 20 has the opening 22 corresponding to the opening 9 for permitting the passage of the manifold, and the adjacent ends of the sections of the wall 21 are spaced apart far enough to permit the passage of the manifold into the opening 22. In the construction of Fig. 4, the adjacent ends of the sections of the wall 4 are bent outward to permit the manifold to enter the opening 9, after which they are straightened into substantial alinement.

In either construction the air which surrounds the exhaust pipe and is heated thereby is held by the hood and is deflected downwardly around the manifold, to heat the mixture as it passes from the carbureter to the engine.

The improved heater is simple and inexpensive, capable of application to any engine, and by its use permits a greater amount of mileage to be made from the same amount of gas. No changes are required in the engine structure.

I claim:

1. In combination with the exhaust pipe and the intake manifold of an internal combustion engine, of a casing detachably connected with the pipe and the manifold and partially inclosing the same for the purpose specified, said casing being sectional and consisting of a lower or body portion engaging the manifold and a hood or cover engaging the exhaust pipe, the hood being a plate having a hooked portion for engag-

ing over the manifold and having notches at its lower edge for engagement by the bolts securing the exhaust pipe in place, said notches providing adjustment between the sections.

2. A heater for internal combustion engines, consisting of a lower section for engaging the manifold and a hood or cover section for engaging the exhaust pipe, the hood having a portion for hooking over the exhaust pipe and having notches at its lower edge, the lower section having openings registering with the notches and said notches and openings being adapted for engagement by the bolts holding the exhaust pipe in place.

LESLIE H. BELL.

Witnesses:
W. A. JOHANNSEN,
W. M. SUTTER.