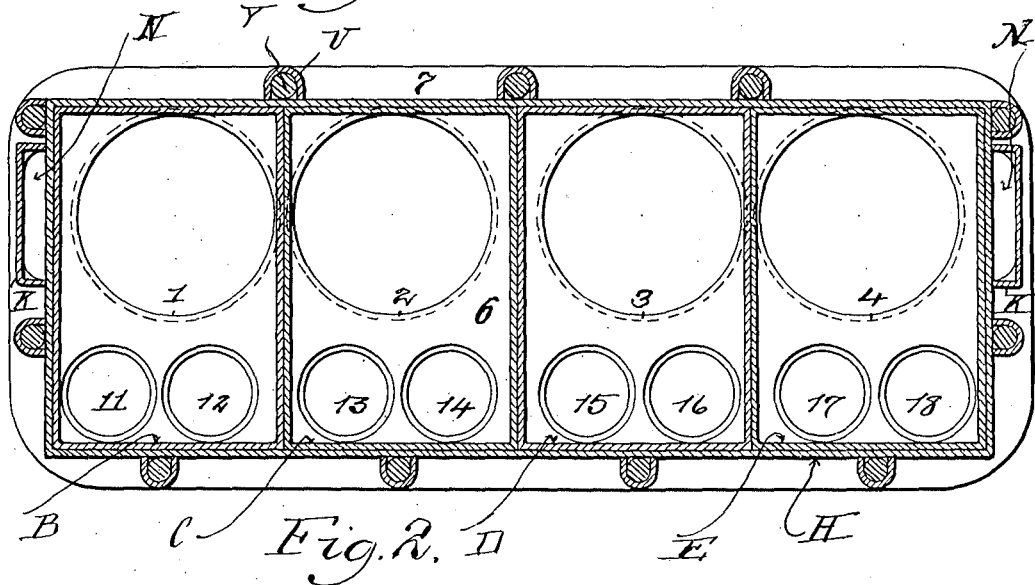
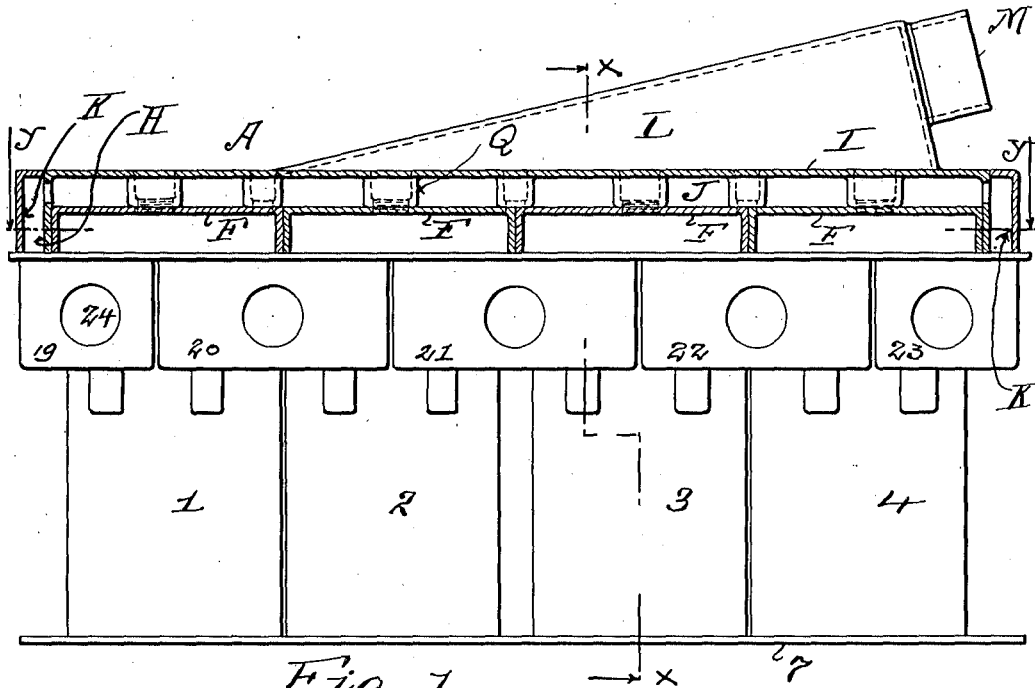


T. E. MURRAY.  
ENGINE HOUSING.  
APPLICATION FILED JAN. 10, 1917.

1,270,044.

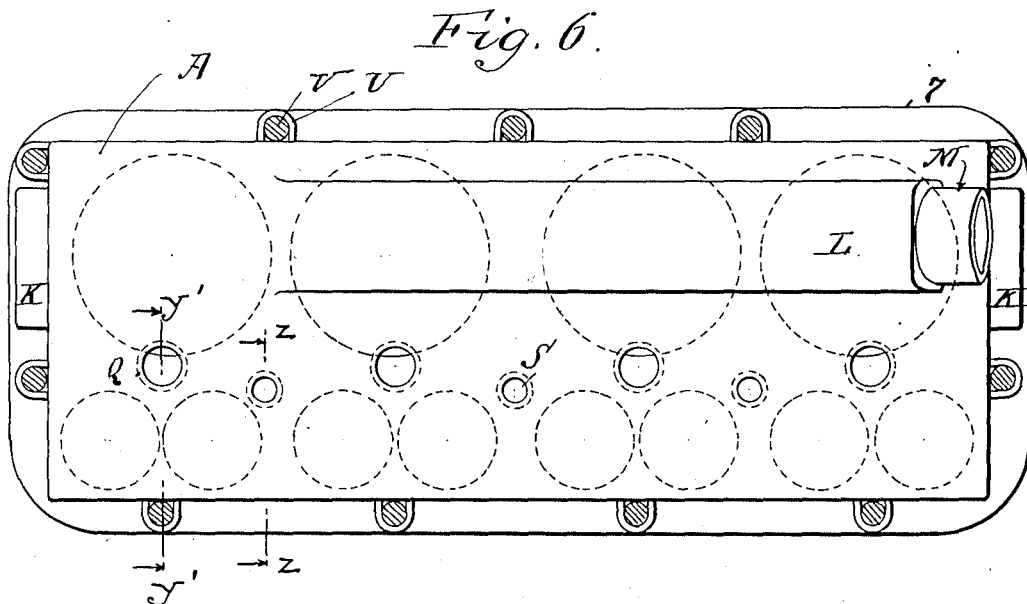
Patented June 18, 1918.  
2 SHEETS—SHEET 1.



INVENTOR  
Thomas E. Murray  
BY *Ray Benjamin*  
his ATTORNEY

1,270,044.

Fig. 3. Fig. 4. Fig. 5. Technical drawings of a mechanical device. Fig. 3 is a side elevation showing a vertical frame (3) with a horizontal beam (15) and a vertical rod (9). A cylindrical component (1) is mounted on the beam, with a handle (H) and a spring (S). A vertical rod (9) passes through the beam and is secured by a nut (N) and a washer (W). Fig. 4 is a cross-sectional view of the device, showing the internal components and the arrangement of the rods and beams. Fig. 5 is another cross-sectional view, showing the device from a different perspective, highlighting the internal structure and the arrangement of the rods and beams.



Inventor  
Thomas E. Murray  
By his Attorney  
A. B. Deussen

# UNITED STATES PATENT OFFICE.

THOMAS E. MURRAY, OF NEW YORK, N. Y.

## ENGINE-HOUSING.

1,270,044.

Specification of Letters Patent. Patented June 18, 1918.

Application filed January 10, 1917. Serial No. 141,548.

*To all whom it may concern:*

Be it known that I, THOMAS E. MURRAY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Engine-Housings, of which the following is a specification.

The invention is an engine housing more particularly designed for gas engines, and consists in the construction hereinafter set forth, whereby the parts are made of struck up, stamped or pressed sheet metal, and where permanently united, connected by electrically welded joints. The object is to simplify and cheapen the construction.

In the accompanying drawings—

Figure 1 is an elevation of my housing, showing the cover in vertical longitudinal section. Fig. 2 is a horizontal section on the line  $y, y$  of Fig. 1. Fig. 3 is a transverse section on the line  $x, x$  of Fig. 1. Fig. 4 is a detail section on the line  $y', y'$  of Fig. 6. Fig. 5 is a detail section on the line  $z, z$  of Fig. 6, and Fig. 6 is a top view—the fastening bolts being in section.

Similar letters and numbers of reference indicate like parts.

1, 2, 3, 4 are cylinders of a gas engine, having their ends preferably electrically welded, as shown at 5, (Fig. 3), to circular flanges surrounding openings in plates 6 and 7. 8 is an elongated cup-shaped water jacket, having circular openings in its bottom, through which pass the cylinders 1, 2, 3, 4. Said openings are flanged, as shown at 9, Fig. 3, and the flanges are welded to said cylinders. The upper edge of the jacket 8 is outwardly flanged, as shown at 10, and this flange is welded to the under side of plate 6.

In the plate 6 are a number of circular openings 11, 12, 13, 14, 15, 16, 17, 18, which form seats for the engine valves—one of which valves is shown at X, Fig. 3. A box 19 covers the opening 11; a box 20 covers the openings 12, 13; a box 21 covers the openings 14, 15; a box 22 covers the openings 16, 17, and a box 23 covers the opening 18. These valve boxes are all electrically welded at their upper edges to the under side of plate 6. In their outer walls are openings 24, Fig. 1, for the usual gas and exhaust ducts.

A cover, generally designated by A, is

placed upon the plate 6, and is constructed as follows: B, C, D, E are four similar quadrangular inverted boxes of sheet metal placed side by side and preferably electrically welded together at their meeting faces. Each box or compartment covers a cylinder opening and the two valve openings associated therewith (as the cylinder opening at 1, Fig. 2, and the associated valve openings 11, 12) and its upper wall F forms a head for the cylinder so covered, an upper closure for the valve chamber above plate 6, and in coöperation with plate 6, a passage G from said valve chamber to said cylinder (see Fig. 3).

Inclosing all of the inverted boxes B, C, D, E is a single inverted box H, the vertical end walls of which may be electrically welded to the walls of the end boxes B, E. Between the upper walls F of boxes B, C, D, E and the upper wall I of box H is a space J which communicates, through openings in its end walls, with the ducts K. These ducts have each a top wall registering with the top walls of boxes B, E and end and side walls. The bottoms of said boxes are open and come immediately above openings N in plate 6, which openings communicate with water jacket 8.

In the top wall I of box H is an elongated opening, covered by an upward extension L, in one inclined side of which is a tube M. Water admitted to the jacket 8, as by pipe P, Fig. 3, fills the said jacket and ducts K, passes to the space above boxes B, C, D, E, and then escapes by extension L and tube M, to which tube a pipe for conducting away said water may be attached.

In the wall I, I form downward tubular projections Q, which are internally threaded and shouldered to receive spark plugs—one shown in dotted lines at R, Fig. 4. I also form in said wall smaller tubular downward openings S, Fig. 5, for the reception of headed bolts T, said bolts passing through openings in the top walls I, F of the boxes B, C, D, E, and being threaded at their ends to engage in plate 6. Said bolts serve to bind the boxes together and to the plate 6.

The cover A is detachably secured upon plate 7 by lugs U on the ends and sides of box H and bolts V passing through said lugs and entering plate 7.

It is now to be noted that the cover A is made of sheet metal—preferably steel—

with all its parts produced by stamping, striking up or pressing, and that where said parts are united, this is done by electrical welding, so that the entire cover is homogeneous in material. Thus the several parts are (a) the boxes B, C, D, E, which may be all alike and each stamped out of a single piece of sheet metal—(b) the inclosing box H, with its flanged openings S and Q and upward extension L. This also may be stamped from a single piece of sheet metal. And lastly (c) the ducts K, which are alike and each also stamped from a single piece of sheet metal.

The cylinders 1, 2, 3, 4 are simple tubes. The plates 6, 7 with their openings, as described, can each be stamped from a single flat plate. The water jacket 8 may also be stamped from a single piece of sheet metal, and so may each of the valve boxes 19 to 23, inclusive.

The cover A is secured on plate 6 by bolts, so that it can be removed as desired to afford access to the parts; but, if desired, it may be permanently attached to plate 6 by electrically welding to said plate the edges of the several boxes and ducts K.

By reason of this construction, I can produce the whole housing from tough sheet steel, at small expense and with accuracy, and without any machining. Where a number of housings are made, the several parts may be interchangeable and produced in large quantities, and assembled as desired.

I claim:

1. An engine housing, comprising a plate having an opening for a cylinder, a cylinder secured to said plate and registering with said opening, and an inverted box-shaped cylinder head secured upon said plate and covering said cylinder opening; the said plate and cylinder head being each struck up from sheet metal and electrically welded together.

2. An engine housing, comprising a plate having an opening for a cylinder, a cylinder secured to said plate and registering with said opening, an inverted box-shaped cylinder head secured upon said plate above and covering said cylinder opening, and a jacket secured on said cylinder head; the said plate, cylinder head and jacket being each struck up from sheet metal and electrically welded together.

3. An engine housing, comprising a cylinder, a supporting plate therefor, an inverted box-shaped cylinder head secured upon said plate and covering said cylinder, and a jacket on said head; each of said parts being struck up from sheet metal and electrically welded together.

4. An engine housing, comprising a plate having a plurality of openings, cylinders secured to said plate and registering with said openings, and an inverted box-shaped

cover upon said plate and covering said cylinder, the said cover having compartments closing corresponding ends of said cylinders; the said plate and cover being formed of sheet metal struck up into shape.

5. An engine housing, comprising a plate having a plurality of openings, cylinders secured to said plate and registering with said openings, an inverted box-shaped cover on said plate having compartments closing corresponding ends of said cylinders, and a compartment forming a jacket for said first-named compartments; the said plate and cover being formed of sheet metal struck up into shape.

6. An engine housing, comprising a plate having a plurality of openings, cylinders secured to said plate and registering with certain of said openings, valve boxes secured to said plate and registering with certain other of said openings, and an inverted box-shaped cover on said plate having compartments, each closing a cylinder opening and certain openings in a valve box; the said plate and cover being formed of sheet metal struck up into shape.

7. An engine housing, comprising a plate having an opening for a cylinder and a valve seat opening, a cylinder secured to said plate and registering with said first-named opening, a valve box secured to said plate and inclosing said valve seat opening, and an inverted box-shaped cylinder head on said plate and extending over said cylinder opening and said valve seat opening; the said plate, cylinder head and valve box being each struck up from sheet metal.

8. An engine housing of sheet metal, comprising a cylinder, a supporting plate therefor having an opening registering with said cylinder, an inverted box-shaped cylinder head upon said plate and covering said cylinder, a box-shaped jacket inclosing said head, and inlet and outlet ducts communicating with said jacket; the said head and jacket being struck up from sheet metal and electrically welded together.

9. An engine housing of sheet metal, comprising a cylinder, a supporting plate therefor having an opening registering with said cylinder, an inverted box-shaped cylinder head upon said plate and covering said cylinder, a box-shaped jacket inclosing said head, and inlet and outlet ducts communicating with said jacket; the said plate, head and jacket being struck up from sheet metal and electrically welded together.

10. An engine housing of sheet metal, comprising a cylinder, a supporting plate therefor having an opening registering with said cylinder, an inverted box-shaped cylinder head upon said plate and covering said cylinder, a box-shaped jacket inclosing said head, an inlet duct communicating with said jacket, and an outlet duct communicating

and integrally formed with said jacket; the said head and jacket being struck up from sheet metal and electrically welded together.

11. An engine housing, comprising a cylinder, a sheet metal plate welded to the end of said cylinder and having an opening registering with said cylinder, an inverted sheet metal box on said plate and covering said cylinder opening, a second inverted sheet metal box superposed on and inclosing said first-named box, there being a space between the top walls of said boxes, inlet and outlet ducts communicating with said space, and means for securing said boxes upon said plate.

12. An engine housing, comprising a cylinder, a sheet metal plate welded to the end of said cylinder and having an opening registering with said cylinder and a valve seat opening, an inverted sheet metal box on said plate and covering said cylinder opening and said valve seat opening, a second sheet metal box superposed on and inclosing said first-named box, there being a space between the top walls of said boxes, inlet and outlet ducts communicating with said space, and means for securing said boxes upon said plate.

13. An engine housing, comprising a cylinder, a sheet metal plate welded to the end of said cylinder and having an opening registering with said cylinder and a valve seat opening, an inverted sheet metal box on said plate and covering said cylinder opening and said valve seat opening and having an opening in its top wall, a second sheet metal box superposed on and inclosing said first-named box, there being a space between the top walls of said boxes, a tubular downward projection on the top wall of said outer box communicating with the opening in the top wall of said inner box, inlet and outlet ducts communicating with said space, and means for securing said boxes upon said plate.

14. An engine housing, comprising cylinder,

a sheet metal plate having valve seat openings and openings for receiving corresponding ends of said cylinders, and a cover comprising a plurality of quadrangular inverted boxes placed in juxtaposition and respectively covering said cylinder openings and the valve openings associated with each cylinder opening, a single quadrangular inverted box superposed upon and inclosing said first-named boxes, there being a space between the top wall of said single box and the top walls of said plurality of boxes, and inlet and outlet ducts communicating with said space.

15. An engine housing, comprising cylinders, a jacket having in its bottom openings receiving said cylinders, a plate closing said jacket and having valve seat openings and openings for corresponding ends of said cylinders, a cover comprising a plurality of quadrangular inverted boxes placed in juxtaposition and respectively covering said cylinder openings and the valve openings associated with each cylinder opening, a single quadrangular box superposed upon and inclosing said first-named boxes, there being a space between the top wall of said single box and the top walls of said plurality of boxes, a duct connecting said space with said jacket, and inlet and outlet ducts respectively communicating with said jacket and said space.

16. An engine housing, comprising a plate having an opening for a cylinder, a cylinder secured to said plate and registering with said opening, an inverted box-shaped cylinder head on said plate and covering said cylinder opening, and a jacket in inverted box form covering said head, the said jacket and the said head being welded at their edges to said plate.

In testimony whereof I have affixed my signature in presence of two witnesses.

THOMAS E. MURRAY.

Witnesses:

GERTRUDE T. PORTER,  
MAY T. MCGARRY.