(No Model.)

# M. HASTINGS.

## BED PLATE FOR STEAM ENGINES.

No. 409,198. Patented Aug. 20, 1889.

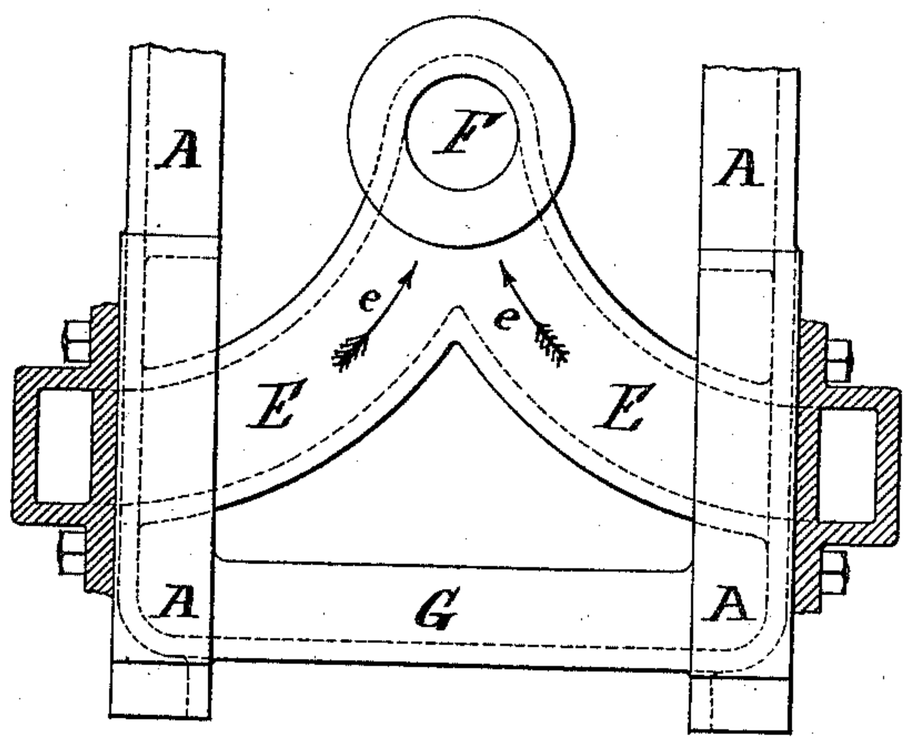


Fig. 1.

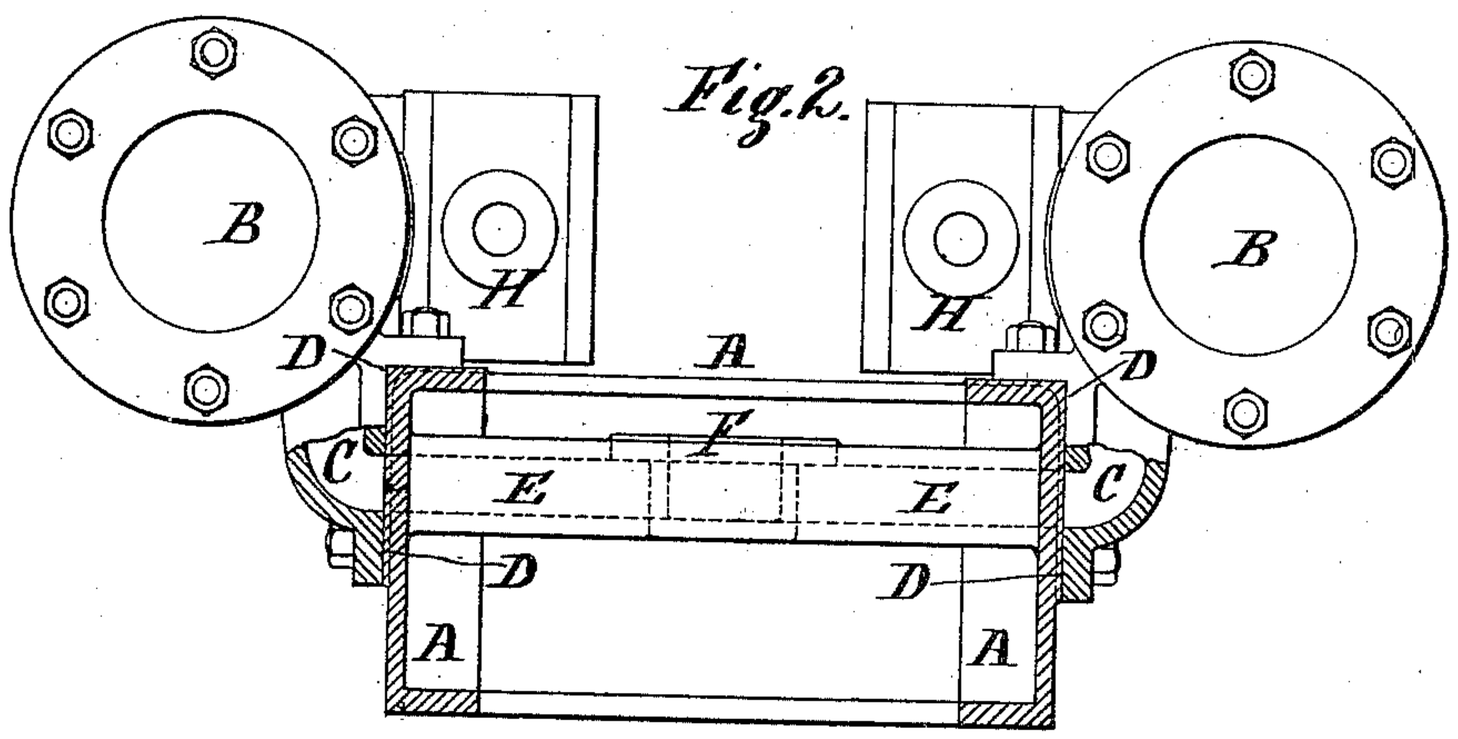


Fig. 2.

Witnesses:-
Wm. H. Weightman
Manuel Rodriguez.

Inventor:-
Michael Hastings

# UNITED STATES PATENT OFFICE.

MICHAEL HASTINGS, OF BROOKLYN, NEW YORK, ASSIGNOR TO THOMAS W. WILLIAMS AND CHARLES A. WILLIAMS, OF NEW LONDON, CONNECTICUT.

## BED-PLATE FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 409,198, dated August 20, 1889.

Application filed March 9, 1889. Serial No. 302,598. (No model.)

*To all whom it may concern:*

Be it known that I, MICHAEL HASTINGS, a citizen of the United States, residing in Brooklyn, Kings county, and State of New York, have invented certain new and useful Improvements in Bed-Plates for Steam-Engines, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates specially to bed-plates for two-cylinder engines in which the exhaust-passages of the two cylinders connect with special passages in the bed-plate, which themselves come together and form a single exhaust-outlet for both.

In ordinary practice the admission or exhaust passages being formed within the bed-plate and connecting directly across render the steam-cylinder end, as a whole, susceptible to the varying changes of expansion and contraction arising from varying heats of the steam passing through, to, or from the cylinders.

The object of my improvements is to overcome this troublesome feature; and the invention consists in the arrangement and construction of the joint passages to or from the two cylinders within the bed-plate or forming part thereof, and leading from the cylinder-bolting faces in a direction curved as they move from the locality of said faces and uniting centrally to form a joint exhaust-nozzle for both cylinders, as hereinafter shown and described.

Referring now to the drawings, Figure 1 represents a plan view showing the steam-cylinder end of a two-cylinder bed-plate embodying my improvements with a section of steam-cylinder passages shown in place and bolted thereto. Fig. 2 represents a sectional elevation of bed-plate and connecting-passages and an external view of two cylinders in place.

The letter A designates steam-cylinder end of bed-plate, and B the two cylinders bolted thereto. As a connection between the cylinder steam-passages, the portions C of the cylinders are carried downward and are bolted fast to bed-plate at face D to form joint for such connection as well as the means for supporting said cylinders. From the bolting-faces D project inwardly the passages E, continued in a curved line toward the central portion of bed-plate A until they meet and form the joint-nozzle F. By such special curving of these passages E the tendency of movement of expansion due to heat passing through is in the direction defined by the arrows *e e*, moving the joint-nozzle F in that direction instead of having the effects of expansion acting to spread the cylinder-bolting faces from each other and thereby throwing the cylinders out of line with the rest of the engine. The engine being adjusted and lined up while all parts are cold, the advantage of this curved control of the effects of expansion upon the adjustment of the engine is quite evident. The portion G, forming an end or cross-rib of the bed-plate, is kept free and clear from the heat effects due to the passage of steam to or from the cylinder, and acts as a tie between the cylinder-bolting faces D, and throws all the expansion effects upon the passages E to move the nozzle F in direction of the arrows. Of course the supply of live steam to the engines may pass in through joint-nozzle F, or the exhaust from the engine may pass out.

H designates the chest-nozzle.

What I claim as new, and desire to secure by Letters Patent, is—

In a bed-plate for two-cylinder engines, a pair of passages leading from the cylinder-bolting faces of said bed-plate in a direction curved from said faces and uniting to form one central nozzle, in combination with a cross-rib of said bed-plate constructed and formed independent of and free from the temperature effects of said passages, as and for the purposes set forth.

MICHAEL HASTINGS.

Witnesses:
WM. H. WEIGHTMAN,
MANUEL RODRIGUEZ.