

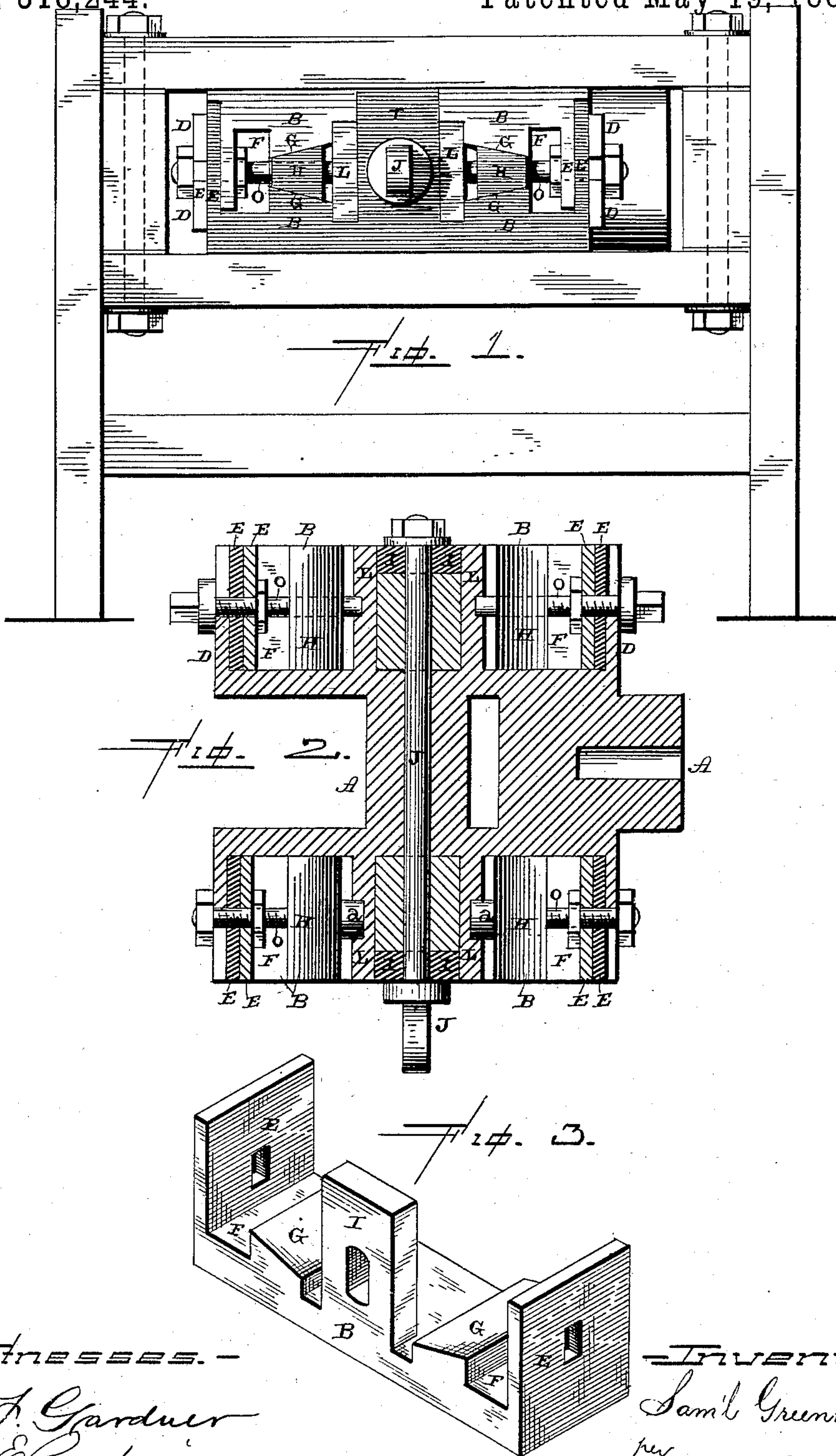
(No Model.)

S. GREENHALGH.

CROSS HEAD FOR STEAM ENGINES.

No. 318,244.

Patented May 19, 1885.



Witnesses.

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UNITED STATES PATENT OFFICE.

SAMUEL GREENHALGH, OF PORT JERVIS, NEW YORK.

CROSS-HEAD FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 318,244, dated May 19, 1885.

Application filed April 9, 1885. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL GREENHALGH, of Port Jervis, in the county of Orange and State of New York, have invented certain new and useful Improvements in Cross-Heads for Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in cross-heads for locomotives and other engines; and it consists in, first, the combination of the cross-head with two movable wings, which are adjusted equally in opposite directions by means of wedges which are moved by means of screws; second, the combination of the cross-head with two movable wings connected thereto and loosely connected together, so as to always keep in line with each other, wedges which are placed between the wings, and operating-bolts connected to the wedges, the wedges being centered in position by suitable means, as will be more fully described hereinafter.

The object of my invention is to construct a cross-head in which the wings are adjusted equally in both directions, and connected together so as to prevent any endwise or lateral movement, and in which the parts are new, simple, and very durable.

Figure 1 is a side elevation of a cross-head embodying my invention. Fig. 2 is a horizontal section of the same. Fig. 3 is a perspective of one of the wings.

A represents the cross-head, which will be made single or double, according to the use to which it is to be applied. To each side of the cross-head are attached two wings, B, which may be made wholly of cast-iron, or may have brasses secured to their outer edges, as may be desired. These two wings are placed in between the slotted end pieces, D, which are secured to the cross-head for the purpose of preventing the wings from moving endwise. Each wing has at each end a slotted extension, E, formed as a part of it, and each one has a recess, F, formed in its inner side inside of the extension. Each one also has a beveled sur-

face, G, against which the wedge H bears. One of the wings is provided with a guide, I, at or near its center, and the other wing is correspondingly recessed to receive the end of this guide, which extends across the face of both wings. This guide helps to keep the two wings in position, and at the same time serves as a bearing for the bolt J, which is passed horizontally through the cross-head, and to one end of which is attached the pump-rod. Formed as a part of the cross-head, and projecting out in between the two wings, are the bearings L, which have their outer ends to come flush with the outer faces of the wings and to catch upon opposite sides of the guide I.

The wedges H may either have bearing projections *a* formed upon their inner vertical sides to catch in the bearing-pieces L, for the purpose of centering the wedges in position, or the screws O, by means of which the wedges are operated, may pass directly through the wedges and have their inner ends centered in the bearing-pieces. When either the screws are turned, as where they pass through the wedges, or where the nuts are turned upon the screws, as when the screw is formed as a part of the wedge, the wedges act upon the inclined surfaces of the wings, and either force the two wings equally apart in both directions, or the wedge is forced inward so as to allow the wings to be made to approach each other to any desired degree. Jam-nuts are applied to the screws in either case for the purpose of preventing the wedges from working loose. When either the wings or the brasses connected thereto become worn, they can be tightened against the guides by simply turning upon either the head of the screw or the nut which is applied thereto.

When the piston-rod is connected to the cross-head, and the pump-rod is connected to the end of the screw-bolt K, and the wings are tightened against the guide, the head is always held in a direct line with the center of the cylinder, so that the piston will freely work back and forth without any binding or unnecessary friction.

Having thus described my invention, I claim—

1. In a cross-head, the combination of the two wings, having inclined surfaces formed

upon their inner sides, with the wedges, which are placed between the inclined surfaces, and the operating-screws for moving the wedges, the wedges being centered in position so as to cause them to move straight, substantially as shown.

2. In a cross-head, the combination of two wings provided with inclined surfaces and the guide I for holding the wings in line with each other, substantially as described.

3. The combination of the wings provided with the extensions on their ends, and having inclined surfaces, with the wedges, and the screws by means of which the wedges are operated, the screws being made to pass through the slotted extension on the wings, substantially as set forth.

4. The combination of the cross-head pro-

vided with the bearings L, which extend through the wings and serve to center the wedges in position, with the wings having inclined surfaces, the wedges, and the screws by means of which the wedges are moved.

5. The combination of the cross-head provided with the end pieces between which the wings are placed, and the bearings L, which extend through the wings, with the wedges and the screws for operating them, substantially as shown and described.

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

SAMUEL GREENHALGH.

Witnesses:

F. A. LEHMANN,

B. LEWIS BLACKFORD.