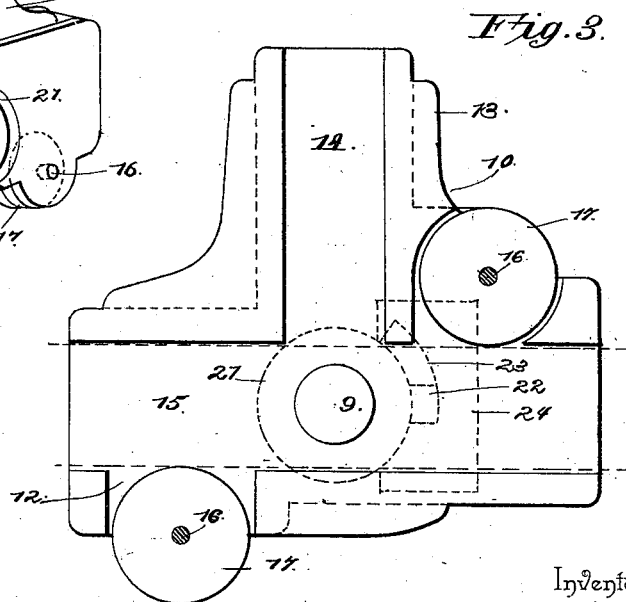
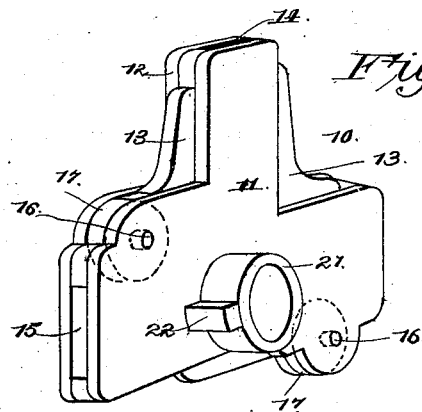
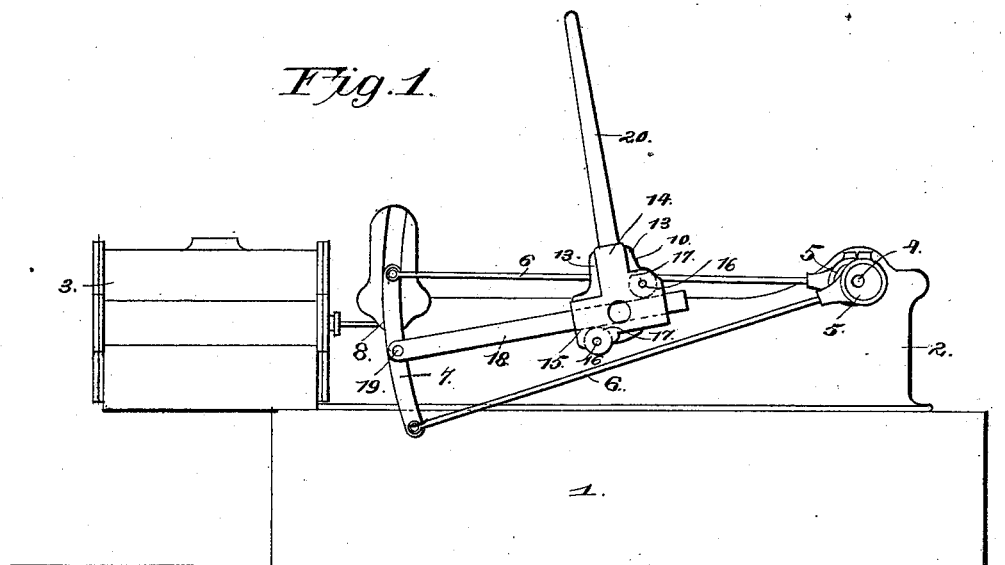


(No Model.)

T. M. SHEARER & J. W. McKEE.
REVERSING LEVER FOR STEAM ENGINES.

No. 418,760.

Patented Jan. 7, 1890.



Witnesses:

Witnesses:
M. E. Fowler
W. S. Luwall

By their Attorneys,

Inventor

*Theodore M. Shearer and
James W. McKee*

C. Snow & Co.

UNITED STATES PATENT OFFICE.

THEODORE MICHAEL SHEARER AND JAMES WILLFRED MCKEE, OF BUTLER,
PENNSYLVANIA.

REVERSING-LEVER FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 418,760, dated January 7, 1890.

Application filed May 17, 1889. Serial No. 311,148. (No model.)

To all whom it may concern:

Be it known that we, THEODORE MICHAEL SHEARER and JAMES WILLFRED MCKEE, citizens of the United States, residing at Butler, in the county of Butler and State of Pennsylvania, have invented new and useful Reversing-Levers for Steam-Engines, of which the following is a specification.

This invention has relation to reversing-levers for steam-engines, and the objects in view are to form a direct connection between the link and the reversing-lever, said connection being of such a construction as to permit the vibrations of the bar and yet be under perfect control of the lever. Other objects and advantages of the invention will hereinafter appear, and the novel features will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a side elevation of a link, its connection, and reversing-lever, constructed in accordance with our invention. Fig. 2 is a perspective of the connecting device employed between the link-bar and the reversing-lever. Fig. 3 is a longitudinal vertical section of said connecting device.

Like numerals of reference indicate like parts in all the figures.

1 represents the engine block or base, upon which is mounted the usual bed-plate 2 and the steam-cylinder 3. At the opposite end of the bed-plate is mounted a cam-shaft 4, upon which move the cams 5, and from which project toward the cylinder the cam-rods 6. At the opposite end of the cam-rods 6 are connected the usual link 7, which is of curved form and rides in a curved slot 8, all of the usual construction.

Upon the bed-plate 2 projects inwardly a stud 9, and upon the same is pivoted the connection 10. This connection consists of opposite plates 11 and 12, spaced apart by space-blocks 13 and to form a vertical way 14 and a transverse or horizontal way 15. At diagonally-opposite corners of the connection are mounted upon transverse pins 16, passing therethrough, anti-friction rollers 17, so arranged at opposite sides of the horizontal passage as to bear upon the link-bar 18, which is

mounted for movement within the passage, and to the extreme forward end of which is connected the link 7 by a pivot-pin 19.

20 represents the reversing hand-lever, the lower end of which is inserted in the vertical passage of the connection.

Upon the rear face of the rear plate 12 there projects a hollow boss or collar 21, which takes over the laterally-projecting stud 9 and oscillates thereupon. A lug 22 projects from the outer wall of the boss and into a curved slot 23, formed in a plate 24, secured to the bed-plate, the end walls of the slot serving to limit the oscillations of the lever, the connection 10, and consequently the bar 18 and link 7. By this construction it will be apparent that a positive connection between the link and lever is provided, by which the link is under complete control of the engineer, and yet the construction of the connection is such as to permit of the vibration of the link.

Having described our invention, what we claim is—

1. The combination, with a link, of a link-bar, a lever arranged at an angle to the bar, and an intermediate connection for the reception of the latter and bar, and constructed to permit of the reciprocations of the latter, substantially as specified.

2. The combination, with a link, of a link-bar pivoted thereto, a hand-lever arranged at an angle to the bar, and a connection arranged intermediate with the bar and the lever and provided with angularly-disposed slots or passages, one for the reception of the lever and one for the bar, substantially as specified.

3. The combination, with a link, of a link-bar pivoted thereto, a reversing hand-lever arranged at an angle to the bar, and an intermediate connection for the bar and lever and provided with anti-friction rollers arranged at both sides of the bar, substantially as specified.

4. The combination, with a link, of a pivoted connecting-bar connected therewith, a hand reversing-lever arranged at an angle to the bar, and a connecting device provided with passages for the bar and lever and pivoted to

the bed-plate, and a stop arranged to limit the movement of the connection, substantially as specified.

5 5. The combination, with a link, of a pivoted connecting-bar, a lever for operating the bar, an intermediate connecting device for the reception of the bar and lever provided with a bearing-boss mounted upon a stud affixed to the bed-plate, and with a laterally-projecting
10 pin or shoulder adapted for movement in a curved slot formed in a plate mounted on said bed-plate, substantially as specified.

6. The link 7, mounted in the ways 8 and connected, as at 9, with the bar 18, in combination with the connection 10, consisting of
15 the opposite plates 11 and 12, spaced to form passages for the bar and lever 20 and provided with the friction-rollers 17 and the rearwardly-projecting hollow boss 21, having the
20 shoulder 22, said boss being mounted upon the stud 9, projecting from the bed-plate,

and the plate 24, mounted on the bed-plate and formed with a curved slot 23 for the reception of the lug 22 and adapted to limit the movement of the connection, substantially as
25 specified.

7. The curved link 7, the ways 8, in which the link works, the shaft 4, the rods 6, connecting the link 7 with the shaft, the link-bar 18, connected to the link, the hand-lever
30 20, and an intermediate connection for the reception of the link-bar and lever and constructed to permit the reciprocations of the link-bar, as set forth.

In testimony that we claim the foregoing as
35 our own, we have hereto affixed our signatures in presence of two witnesses.

THEODORE MICHAEL SHEARER.
JAMES WILLFRED MCKEE.

Witnesses:

J. W. BROWN,
A. M. CORNELIUS.