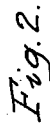
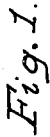


APPLICATION FILED SEPT. 17, 1909.

Patented Nov. 1, 1910.

2 SHEETS—SHEET 1.



Witnesses

Margaret M. Beigle

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Paystment

Inventor

Bert C. Ball

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Attorney

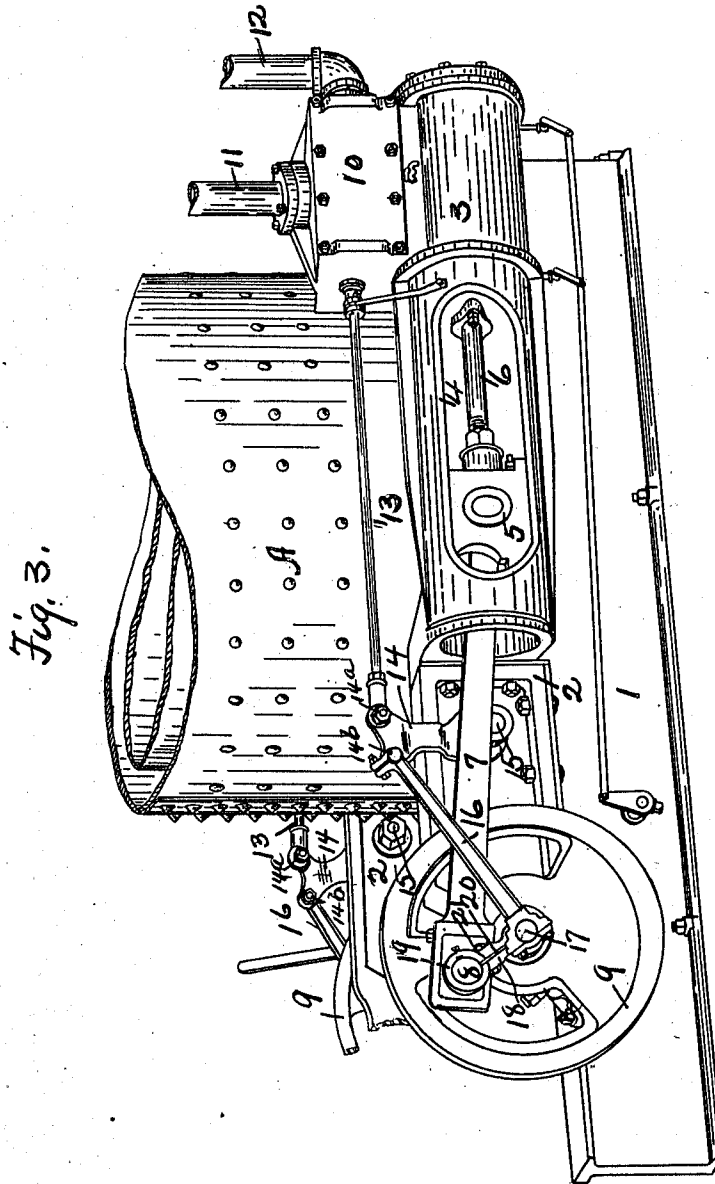
B. C. BALL.
STEAM ENGINE.

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974,546.

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2 SHEETS—SHEET 2.



Witnesses
Margaret M. Beagle
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Inventor
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UNITED STATES PATENT OFFICE.

BERT C. BALL, OF PORTLAND, OREGON.

STEAM-ENGINE.

974,546.

Specification of Letters Patent.

Patented Nov. 1, 1910.

Application filed September 17, 1909. Serial No. 518,212.

To all whom it may concern:

Be it known that I, BERT C. BALL, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented new and useful Improvements in Steam-Engines, of which the following is a specification.

This invention relates to steam engines, and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

More particularly, the invention relates to a steam engine particularly adapted for use in logging, or such a steam engine as is commonly known as a logging engine.

The invention is illustrated in the accompanying drawing as follows:

Figure 1 shows a side elevation of one of the engines of the logging engine; Fig. 2 a section on the line 2—2 in Fig. 1; Fig. 3 a perspective view of the logging engine.

1 marks the base which is ordinarily made up of I-beams; 2 marks the engine frame. This is secured to the I-beam.

3 marks the engine cylinder; 4 the cross head guide; 5 the cross head; 6 the piston rod; 7 the connecting rod; 8 a crank pin; 9 the crank disk; 10 the steam chest, 11 and 12 the steam inlet and exhaust pipe from the steam chest.

These engines are commonly mounted at each side of a boiler "A." It is particularly desirable to have the engine so formed that its frame can be readily secured to the frame supporting the boiler, and also so that the working parts may be readily accessible.

In the present construction the steam chest 10 is arranged above the cylinder. This is a desirable arrangement of the steam chest in this class of engine independent of the convenience of attaching the engine frame to the base. In the present construction it has the added advantage that the engine frames may be arranged closer together with the interposed boiler.

In carrying out the invention, the valve rod 13 extends from the steam chest to a rocker arm 14. It is connected with the rocker arm by means of a pin 14^a. The rocker arm 14 is pivotally mounted on a pin 15. Pin 15 is mounted in the frame 2. A valve actuating connecting rod 16 is also connected to the rocker arm 14, a pin 14^b being provided for this purpose. The connecting rod 16 is also journaled on the crank pin

17. The valve actuating crank 18 is mounted on the crank pin 8. It is preferably formed with the collar 19, split arm 20, and clamping bolts 21, so that it may be readily fixed on the crank pin 8, and when it is desirable to remove it, may be conveniently removed. The valve connecting rod 16 is connected to the rocker arm 14 by a pin 14^b, while the valve rod 13 is connected to the rocker arm 14 by a pin 14^a, the rod 13 being on the inside of the rocker arm 14 as is clearly shown in Fig. 2. By this mounting the movement is carried from the plane passing through the pin 17,—which is outside of the plane of the valve rod 13,—to the plane of the valve rod 13, the movement being carried over the connecting rod 7 and actuating parts. This construction of valve actuating mechanism is particularly desirable with any engine having the steam chest above the cylinder, but it is particularly desirable in a logging engine in that the valve gear is readily accessible, and is so placed as to permit of a compact mounting of the engine. Ordinarily an upright cylindrically shaped boiler is used in this combination. With this construction of valve mechanism, the cylinder on the engine can be placed at one side of the radial plane of the boiler, at right angles to the axis of the cylinder, and the crank at the opposite side of said radial plane, thus permitting the engine to be set very close to the boiler walls, the boiler walls following in a way the outline of the engine. In this way the total width of the machine may be decreased, and this is quite a consideration in this type of engine. This bringing in of the engine also simplifies the frame, and strengthens the mounting.

What I claim as new is:

1. In an engine, the combination of a frame; an engine cylinder secured to the frame; a steam chest on the top of the cylinder; a cross head guide; a cross head arranged in the guide; a piston rod extending from the cylinder to the cross head; an engine connecting rod connected to the cross head; a crank on which the connecting rod is journaled; a valve actuating crank mounted on the engine crank; a valve rod extending from the valve above the cross head guides; a connecting rod extending from the actuating crank and connected with the valve rod above the cross head guide; and an upright cylindrically shaped boiler, the en-

gine frame being mounted at the side of the boiler with the engine cylinder at one side of a plane in which the axis of the boiler lies and extending radially from the boiler and at right angles to the axis of the cylinder and with the engine crank at the opposite end of said plane.

2. In a logging engine, the combination of a base frame; an engine cylinder secured to the frame; a steam chest on the top of the cylinder; a cross head guide; a cross head arranged in the guide; a piston rod extending from the cylinder to the cross head; an engine connecting rod connected to the cross head; a crank on which the connecting rod is journaled; a valve actuating crank mounted on the engine crank; a valve rod extending from the steam chest; a rocker arm arranged inside the connecting rod, and pivotally mounted on the frame with its pivot below the valve rod; a valve connecting rod journaled on the valve actuating crank, and extending outside of the engine connecting rod, and connected with the rocker arm; means for connecting the valve rod with the rocker arm; and an upright cylindrically shaped boiler, the engine frame being mounted at the side of the boiler with the engine cylinder at one side of the plane in which the axis of the boiler lies and extend-

ing radially from the boiler and at right angles to the axis of the cylinder, and with the engine crank at the opposite side of said plane.

3. In a logging engine, the combination of a base frame; an engine cylinder secured to the frame; a steam chest on the top of the cylinder; a cross head guide; a cross head arranged in the guide; a piston rod extending from the cylinder to the cross head; an engine connecting rod connected to the cross head; a crank on which the connecting rod is journaled; a valve actuating crank mounted on the engine crank; a valve rod extending from the steam chest; a rocker arm arranged inside the connecting rod, and pivotally mounted on the frame with its pivot below the valve rod; a valve connecting rod journaled on the valve actuating crank, extending outside the engine connecting rod, and connected with the rocker arm above the engine connecting rod; and means for connecting the valve rod with the rocker arm.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

BERT C. BALL.

Witnesses:

W. N. CORBETT,
C. W. BAILE.