J. BRANDON.

Steam-Engine for Rock-Drills.

No. 163,631. Patented May 25, 1875.

Fig. 3.

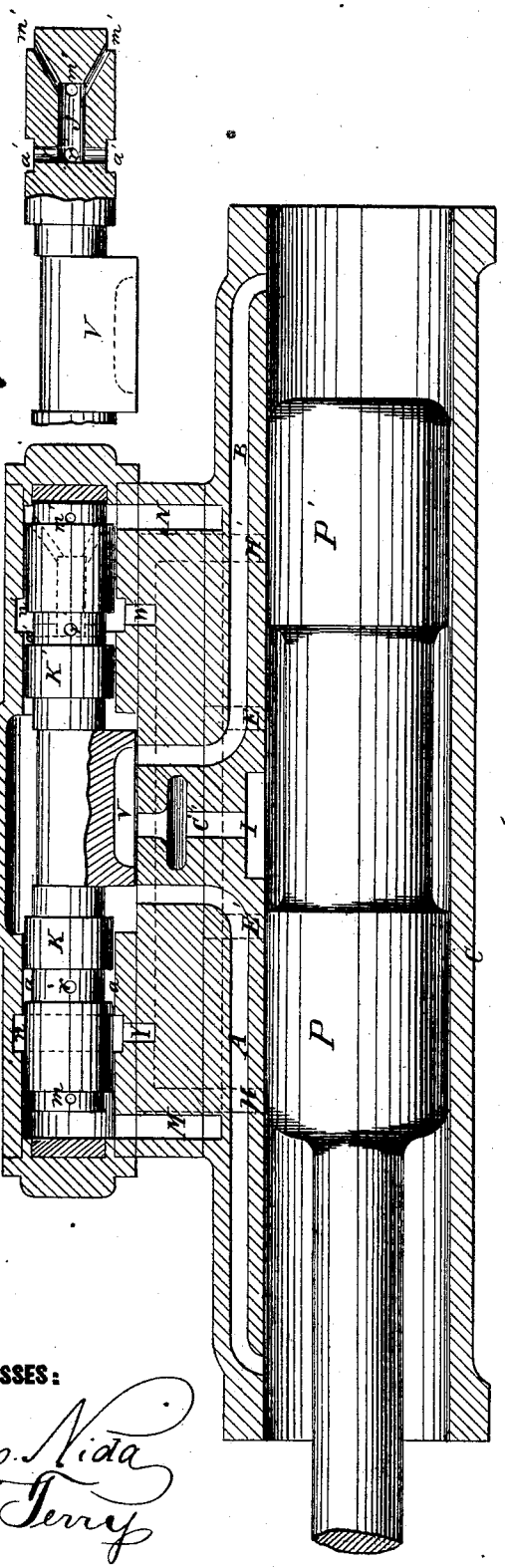
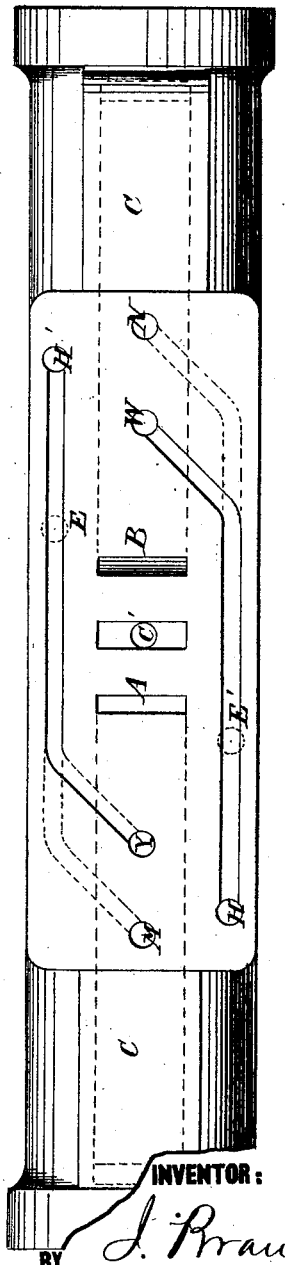


Fig. 1.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES BRANDON, OF NEW YORK, N. Y.

IMPROVEMENT IN STEAM-ENGINES FOR ROCK-DRILLS.

Specification forming part of Letters Patent No. **163,631**, dated May 25, 1875; application filed October 31, 1874.

To all whom it may concern:

Be it known that I, JAMES BRANDON, of the city, county, and State of New York, have invented a new and useful Improvement in Steam-Engines for Rock-Drills, of which the following is a specification:

This invention relates to the construction of engines for driving rock-drills, more especially, but which may be applied to other purposes; and consists in the arrangement of the steam passages and ports in the steam-chest.

Figure 1 is a vertical longitudinal section of an engine constructed according to my invention. Fig. 2 is a top view of the steam-chest with the valve taken off. Fig. 3 is a detail, showing the mode of introducing steam into the chest for operating the valve.

Similar letters of reference indicate corresponding parts.

C is the steam-cylinder. A and B are steam-passages. C′ is the exhaust-port. P P′ represent the main piston. L is the steam-chest, having its ends accurately bored out and two plugs or pistons, K K′, fitted to the same, and forming the valve V. The steam-chest L has grooves turned out of the bore, as shown at *n n′*. The pistons K K′ have grooves *a a′*, having communications or passages *m r* and *m′ r′*. H is a passage communicating with the interior of the main cylinder, and terminating in the steam-chest at W. E′ is a steam-passage which communicates with the interior of the main cylinder, and terminating in the steam-chest at N. H′ is a passage which communicates with the interior of the main cylinder, and terminates in the steam-chest at Y. E is a steam-passage which communicates with the interior of the main cylinder, and terminates in the steam-chest at M.

With this arrangement of the ports and steam-passages, we will assume that the piston P P′ is passing from left to right, and that it has passed far enough to just commence to open the passage H, the part P of the main piston being just long enough to close the passage E′. The steam will now pass through the passage H W, and, through *r′ j′ m′*, will move the valve piston K K′, carrying with it the slide-valve V. The exhaust from the other end of the steam-chest will pass through M E into the main cylinder, along between the parts P P′ of the main piston to I, and will exhaust at C′. The grooves *n n′* in the steam-chest are so arranged in connection with the grooves *a a′* in the valve-piston that when the slide-valve V is just over the ports A and B the small piston will have passed so far that the communication between the groove *n′* in the steam-chest and the groove *a′* in the valve-piston K′ will be just closed at the same time the groove *a* of the passage *n* will be just opening. Now, it will be seen that the steam passing through H W will have full pressure until the piston K′ closes the passage by its own movement. The steam cannot pass out through N E′, the part P of the main piston having covered E′; consequently the valve-piston K K′ will still have the expansion of the steam to carry it over; nor can the steam escape until the passage E′ is opened by the main piston P, as it moves back from right to left, and in a similar manner when the piston passes in the other direction.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The valve-piston K K′, having grooves *a a′* and passages *m m′ r r′*, combined with a steam-chest, L, having grooves *n n′* M N W Y and passages H H′ E E′, as and for the purpose specified.

JAMES BRANDON.

Witnesses:
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