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# JAMES N. BETHUNE.

## Improvement in Motive Power.

No. 119,260. Patented Sep. 26, 1871.

*Fig. 1.*

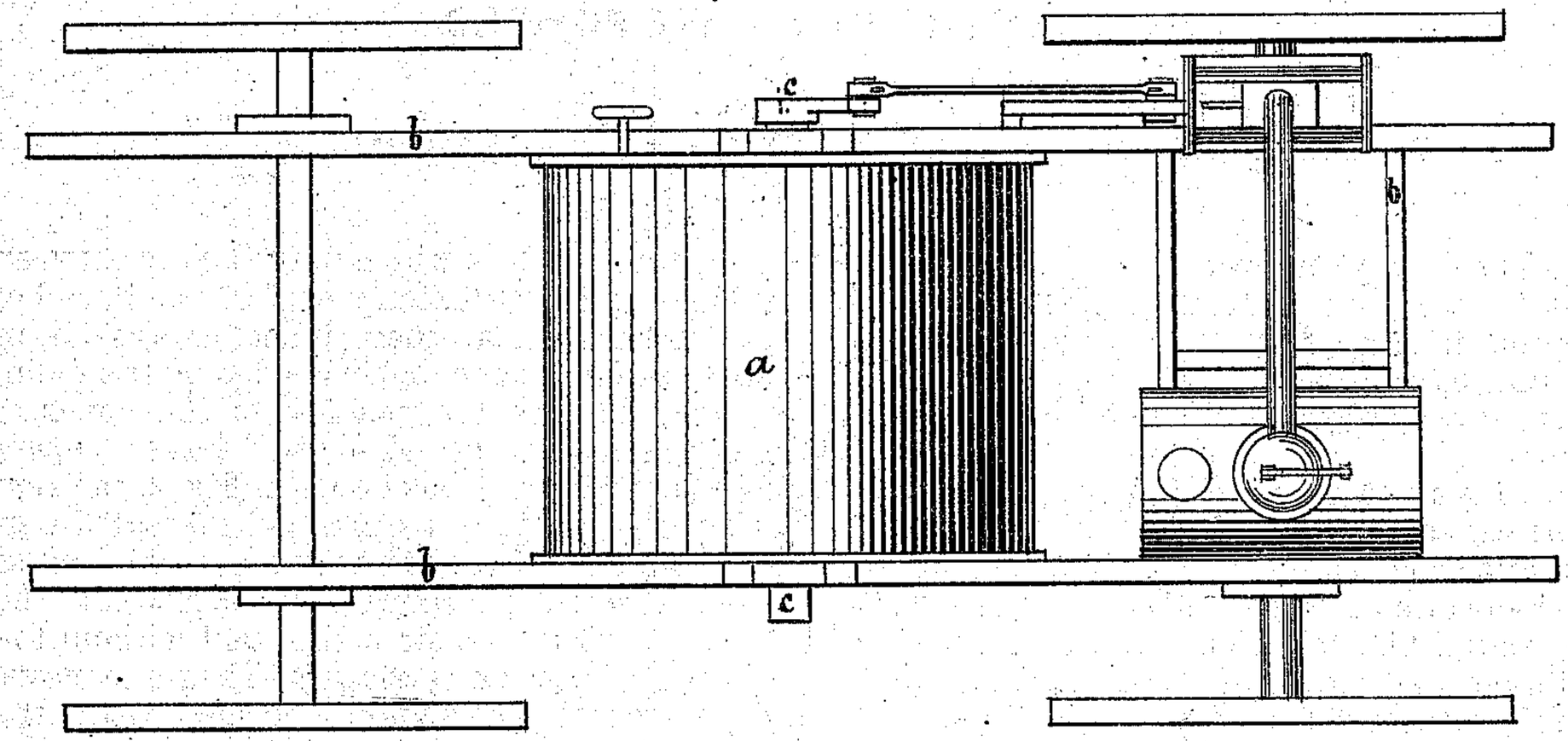
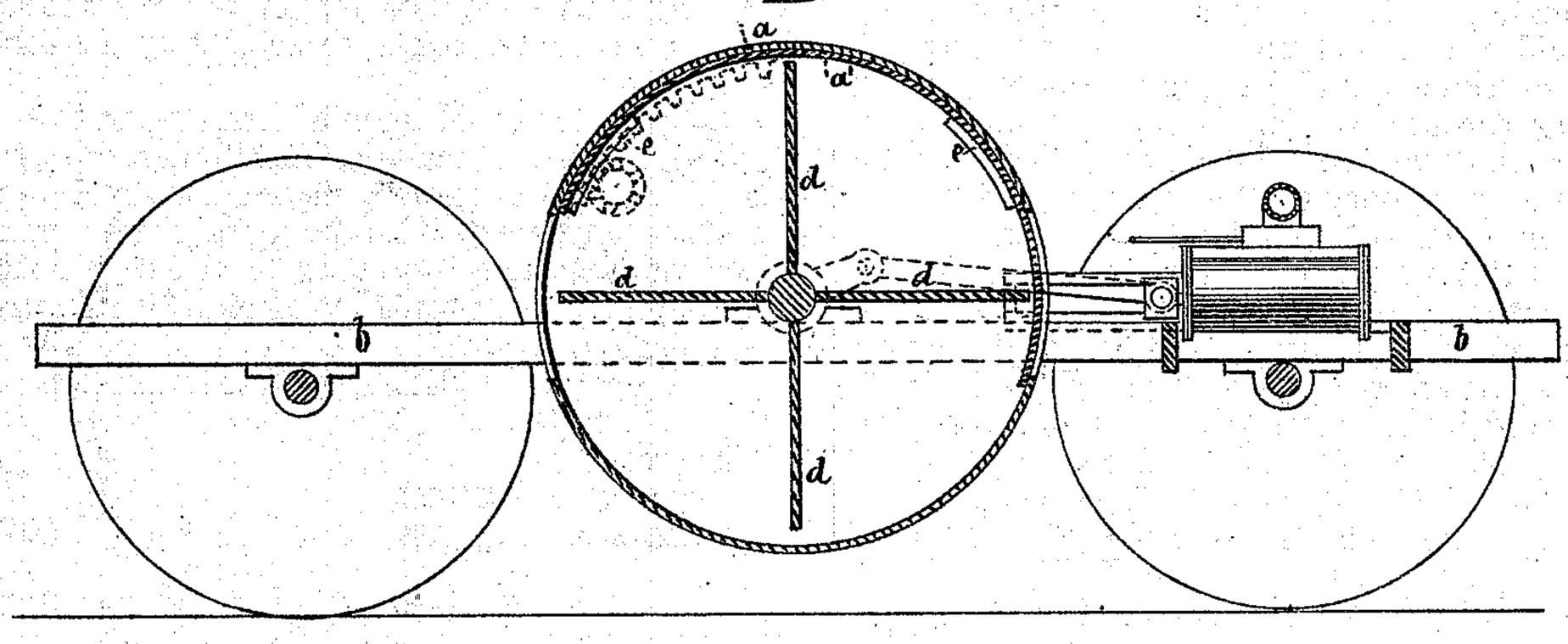



*Fig. 2.*

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# UNITED STATES PATENT OFFICE.

JAMES N. BETHUNE, OF WARRENTON, VIRGINIA.

## IMPROVEMENT IN MOTIVE POWERS.

Specification forming part of Letters Patent No. 119,260, dated September 26, 1871.

*To all whom it may concern:*

Be it known that I, JAMES N. BETHUNE, of Warrenton, in the county of Fauquier and State of Virginia, have invented certain Improvements in Motive Power, of which the following is a specification:

Figure 1 is a top view, and Fig. 2 is a longitudinal vertical section.

This invention relates to a cylinder mounted transversely on a carriage, and containing a shaft bearing radial blades which stand lengthwise of the cylinder, and whose office is, when the shaft is rotated with sufficient rapidity, by means of an engine located without the cylinder, upon the carriage to expel the air from within the cylinder through an opening in the side thereof, by the atmospheric resistance, to which expulsive motions of the blades an initial movement will be imparted to the carriage, which motion will be continued and accelerated by the pressure of the air against the blades after the vacuum is formed.

Referring to the drawing, *a* is the cylinder aforesaid, the same being mounted transversely of the carriage *b*, and having a central shaft, *c*, running through it longitudinally, which shaft bears radial blades *d*, which extend nearly to the ends and periphery of the cylinder. The construction of the blades *d* must be such as will enable them to revolve at a very high rate of speed without yielding either to centrifugal force or atmospheric resistance. Its details, however, form no part of my present invention. The shaft is revolved by connecting it with a steam-engine mounted on the carriage *b*. The upper part *a'* of the barrel of the cylinder is made sliding within guides *e* at the ends of the cylinder. The part *a'* or cover is of less width than the arc between the edges of the stationary part of the barrel of the cylinder, so that there must always be an opening either at one or both sides of the cylinder, according to the position of the cover *a'*. When the cover is moved so as to leave an opening at one side only, as shown in Fig. 2, the revolution of the blades *d* will expel thereat the air within the cylinder. The resistance afforded to the blades *d* while forming a vacuum within the cylinder, both by the air within and without the same, will cause the carriage *b* to begin to move, and, as soon as the vacuum is formed within the cylinder, the pressure of the outside air upon the blades *d* at the rate of fifteen pounds to the square inch will impel the carriage at a speed proportioned to the area of the blades. By shifting the cover *a'*, so as form the opening at the other side of the cylinder, the motion of the carriage will be reversed without reversing the motion of the blades.

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

A cylinder mounted upon a carriage, and having a central shaft bearing radial blades, the carriage being furnished with means for revolving said shaft, and the cylinder being furnished with means for forming an opening at either or both sides thereof, all substantially as and for the purpose specified.

JAMES N. BETHUNE.

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