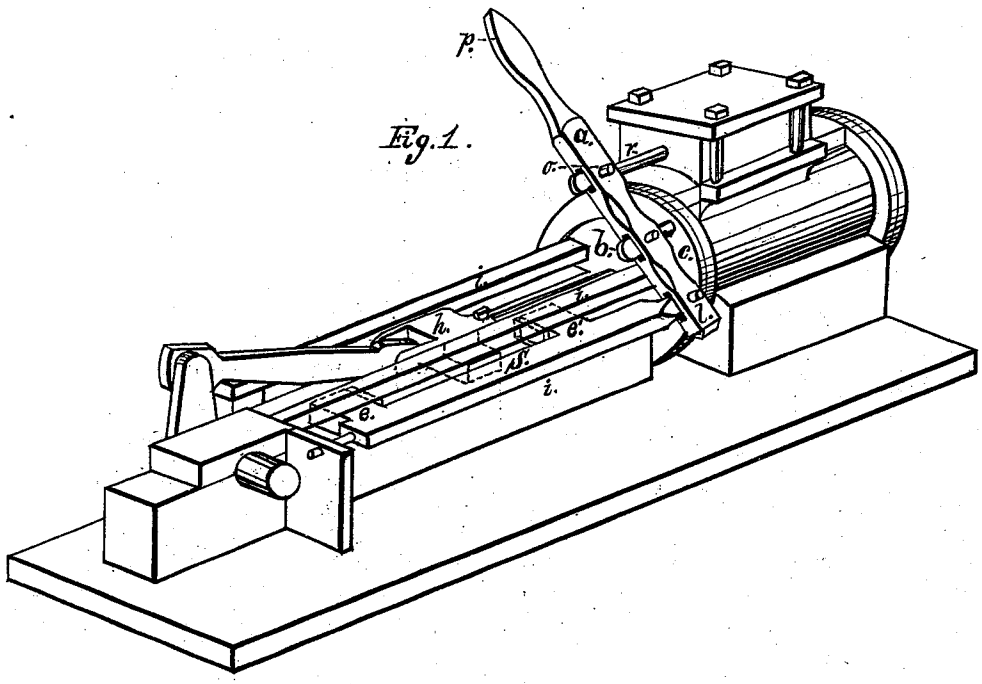
B. F. MONTAGUE.

Steam-Engine.

No. 209,974. Patented Nov. 19, 1878.

Fig. 1.



Witnesses:

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Ozni P. Hood

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UNITED STATES PATENT OFFICE.

BENJAMIN F. MONTAGUE, OF DUNREITH, INDIANA.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. **209,974**, dated November 19, 1878; application filed March 27, 1878.

To all whom it may concern:

Be it known that I, BENJAMIN F. MONTAGUE, of Dunreith, in the county of Henry and State of Indiana, have invented a new and useful Improvement in Devices for Operating Slide-Valves in Steam-Engines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of my invention is to provide a cheap and simple device for operating the slide-valve in a steam-engine, which shall be at all times under the control of the engineer, and which shall also be operated automatically. It consists in the construction and arrangement of the several parts, as hereinafter described.

In the accompanying drawings, which illustrate my invention, Figure 1 is a view in perspective, in which *a* is a lever, having its fulcrum *b* secured to the cylinder-head *c*. *s* is a sliding bar, having lugs *e e'*, which project between the slides or guide-bars *i* in the path of the cross-head *h*. The lever *a* is pivoted at the lower end, at *l*, to the sliding bar, and is also pivoted to the valve-rod *r* at *o*, above the fulcrum. The upper end of the lever terminates in a handle, *p*.

The operation of my device is as follows: The crank standing in position for starting, and steam being admitted to the steam-chest, the engineer, seizing the handle *p*, may start the engine in either direction by moving the lever *a* backward or forward. The cross-head *h*, as the piston nears the end of the stroke each way, comes alternately in contact with the lugs *e e'* of the sliding bar, thereby communicating a reciprocating motion to the valve-rod *r* through the sliding bar *s* and lever *a*, thus changing the valve at the proper time automatically. The sides of the lugs *e e'* which come in contact with the cross-head are faced with rubber, leather, or other elastic substance, for the purpose of avoiding noise.

By the use of this device, which may be easily and cheaply attached to an ordinary steam-engine, the engineer has the power to move the valve while under steam-pressure, and a slight motion of the sliding bar *s* is also sufficient to move the valve the required distance, the lever being longer from *b* to *o* than from *b* to *l*.

I am aware that steam-pumps have before been made, in which the valve-rod is operated directly by means of an arm secured to the piston-rod striking collars on the valve-rod, and I do not claim such a device; but

I claim as my invention—

1. The lever *a*, pivoted to the sliding bar *s* and valve-rod *r*, and having its fulcrum *b* secured to the cylinder-head, all constructed and arranged in the manner shown, and for the purpose set forth.

2. The sliding bar *s*, when provided with the rubber-lined lugs *e e'*, and arranged to operate the valve-rod *r* by means of the lever *a*, constructed and arranged in the manner shown.

BENJAMIN F. MONTAGUE.

Witnesses:

N. B. COOPER,

WM. R. PEARCE.