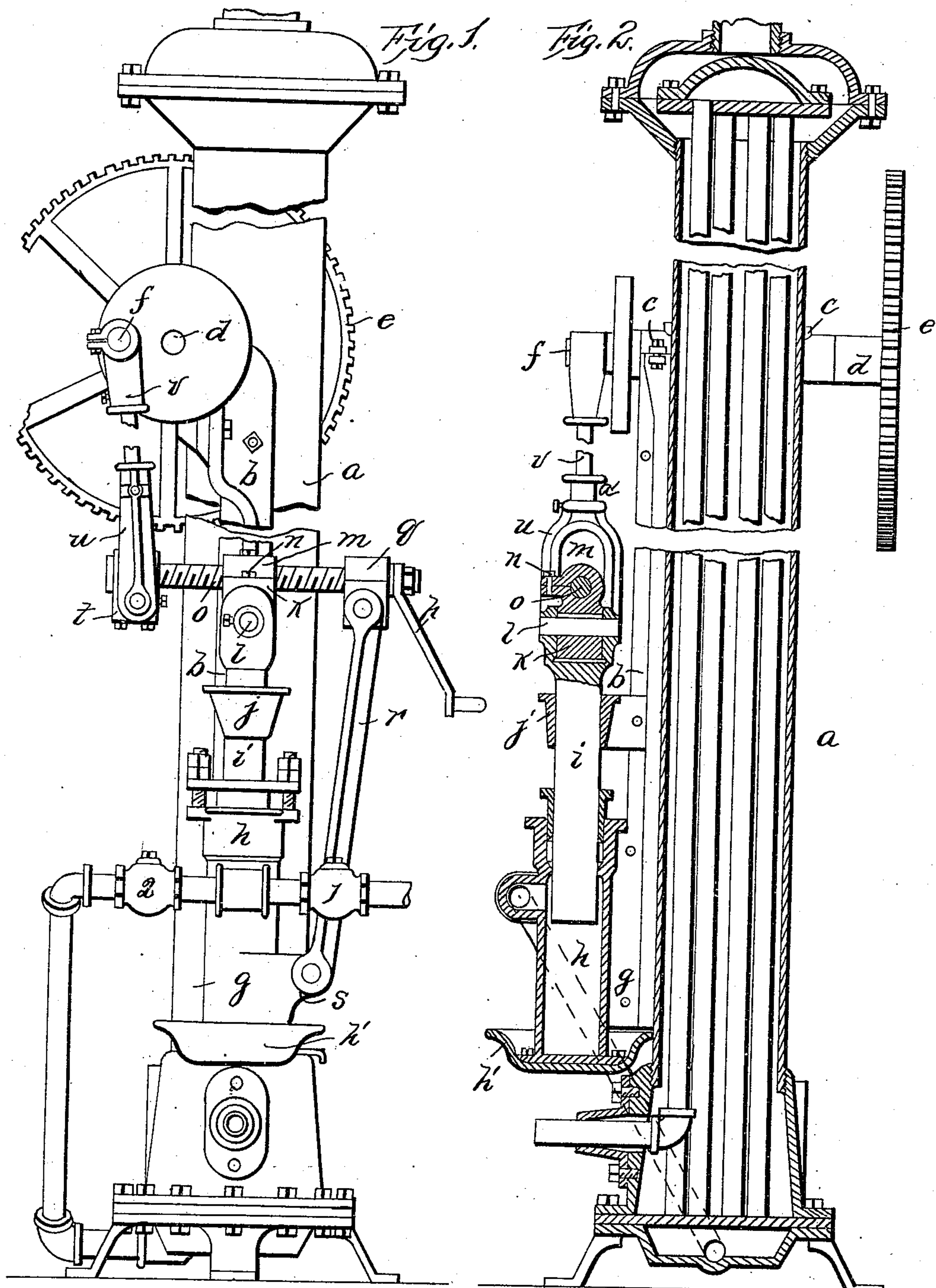


(No Model.)

W. E. MOFFATT.  
PUMP.

No. 552,387.

Patented Dec. 31, 1895.



Witnesses  
E. C. Duffy  
Chas. M. Herle

Inventor  
W. E. Moffatt  
E. C. Duffy  
Attorney



# UNITED STATES PATENT OFFICE.

WILLIAM ERSKINE MOFFATT, OF CHARLOTTE, NORTH CAROLINA.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 552,387, dated December 31, 1895.

Application filed September 12, 1894. Serial No. 522,830. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM ERSKINE MOFFATT, of Charlotte, in the county of Mecklenburg and State of North Carolina, have invented certain new and useful Improvements in Pumps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in pumps.

The object of the invention is to provide an improved variable operating-gear for pumps exceedingly durable, economical and simple in construction and effective in action and whereby the stroke of the pump can be easily and quickly varied as desired.

The invention consists in certain novel features of construction and in combinations of parts more fully and particularly described and pointed out hereinafter.

Referring to the accompanying drawings, Figure 1 is an elevation of a feed-water heater provided with the improved pump and operating means. Fig. 2 is a vertical section.

In the drawings, *a* is the vertical feed-water heater comprising the elongated vertical tank or cylinder suitably supported.

*b* is a strong rigid supporting and spacing frame longitudinally and rigidly secured on the exterior of the tank and extending approximately throughout the length thereof. The upper end of the frame is enlarged to fit the upper portion of the tank and is bolted thereto and is extended laterally to receive the journal-boxes *c c* at opposite sides of the vertical center of the tank for the horizontal drive-shaft *d*, extending transversely across the side of the tank. This shaft is provided with driving means, as wheel *e*, and at one end with the crank *f*.

The lower end *g* of the frame is enlarged and formed to fit the tank to which it is bolted. The enlarged ends of the frame are connected by the vertical spacing-bar. This entire frame can be formed integral, if desired. *h* is the vertical pump-cylinder secured to the lower

portion of said frame, preferably to the flange, rib, or web thereof, and having the drip-pan *h'*. This cylinder has valved outlet and inlet pipes 1 2.

*i* is the reciprocating piston of the pump having its rod working through guide *j*, secured on the spacing-bar.

The upper end of the piston-rod is forked to receive the rocking head or block *k*, pivoted in said fork on the pin *l*. The upper end of this rocking block is provided with a transverse threaded opening or bearing *m*. This bearing is preferably split, substantially as shown, and provided with ears and a clamping-bolt *n*, so that the internal diameter of the threaded bearing can be varied. *o* is a fulcrum-bar externally screw-threaded and fitted in and longitudinally adjustable through the opening *m* of said rocking block. One end of this bar is provided with turning means, as handle *p*, attached to one end thereof. The fulcrum end of this bar *o* is provided with a block *q*, to which the upper end of fulcrum-link *r* is pivotally joined. The lower end of this link is pivotally joined to ears *s* from the pump-cylinder. The fulcrum-link is thus pivotally joined so as to swing in a vertical plane parallel with the plane in which the fulcrum-bar moves. The opposite end of the fulcrum-bar is provided with a block *t*. A fork *u* partially embraces and is journaled to said block and forms a part of the pitman or link *v*, at its lower end adjustably clamped in the socket *a'* in the upper end of said fork. The upper end of this pitman is pivotally joined to the crank of the drive-shaft. It will thus be seen that as the drive-shaft revolves the pitman is reciprocated, swinging the fulcrum-bar vertically on the fulcrum-link as a pivot and reciprocating the pump-plunger.

The stroke of the pump-plunger can be varied at any time by turning the fulcrum-bar and moving the same longitudinally through the rocking block, and thereby increasing the distance between the fulcrum of said bar and the rocking block in the piston-rod and increasing the stroke, or decreasing the distance between said block and the fulcrum-point and decreasing the strokes.

The construction is very strong and durable, yet simple and effective. The support-

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ing-frame properly braces and spaces the parts. The peculiar arrangement of links distributes and equalizes the strain.

Having thus fully described my invention,  
5 what I claim as new, and desire to secure by Letters Patent of the United States, is—

A vertical support and spacing frame *b*,  
having lateral aligned bearings *c c*, at its upper end, a pump cylinder secured to the lower  
10 end of the frame and having side projections *s*, the piston rod forked at its upper end, the rocking block *k* therein and having split threaded bearing *m*, provided with tightening means, the bar *o* in said bearing and  
15 threaded continuously in one direction, and having turning means, block *q* journaled on

one end thereof, the link *r* at its upper end pivoted to said block and at its lower end pivoted to projection *s*, block *t*, on the other end of bar *o*, fork *u*, pivoted to said block, the  
20 drive shaft in said bearings and the link *v* secured to the fork and eccentrically connected with the shaft, all combined as set forth and shown.

In testimony that I claim the foregoing as  
my own I affix my signature in presence of two  
25 witnesses.

WILLIAM ERSKINE MOFFATT.

Witnesses:

C. A. SPRATT,  
L. F. OSBORNE.