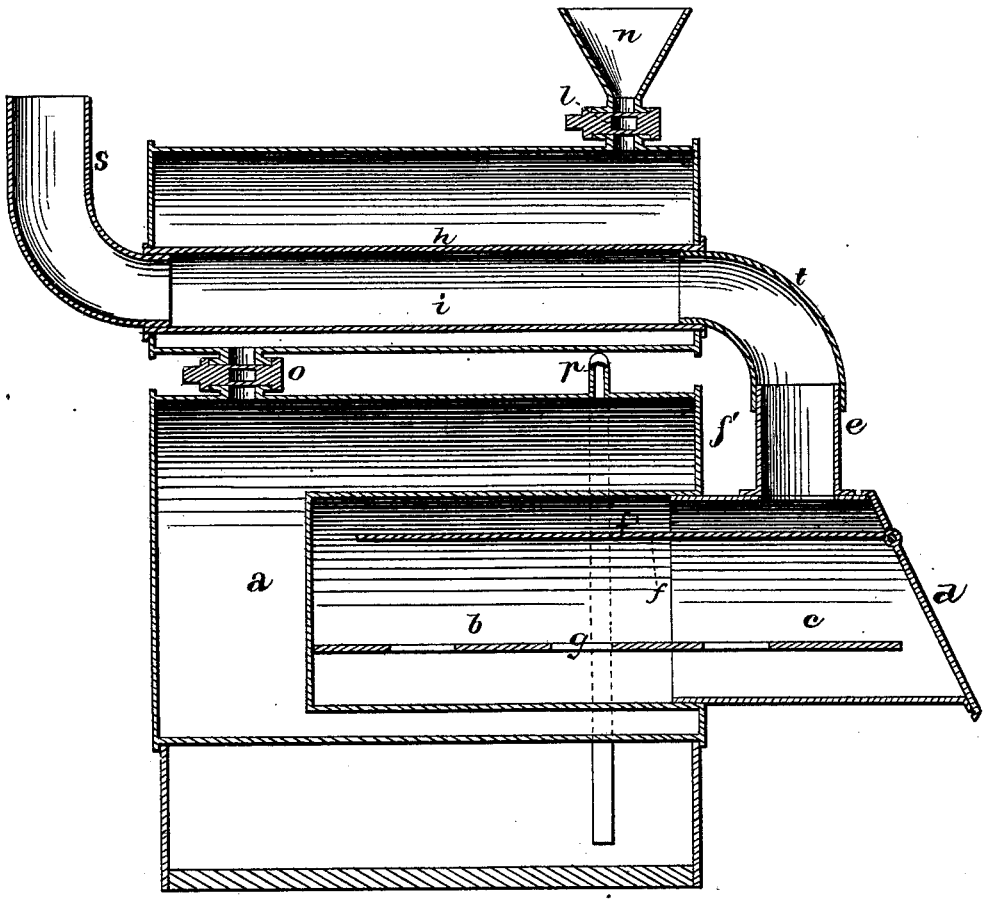
G. W. VAN BUREN, Jr.
Feed-Steamer.

No. 204,514. Patented June 4, 1878.



WITNESSES:
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UNITED STATES PATENT OFFICE.

GEORGE W. VAN BUREN, JR., OF MENDON, MICHIGAN, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEO. W. HINKLE, OF SAME PLACE.

IMPROVEMENT IN FEED-STEAMERS.

Specification forming part of Letters Patent No. **204,514**, dated June 4, 1878; application filed March 29, 1878.

To all whom it may concern:

Be it known that I, GEO. W. VAN BUREN, Jr., of Mendon, in the county of St. Joseph and State of Michigan, have invented certain new and useful Improvements in Feed-Steamers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawing, which forms part of this specification.

My invention relates to feed-steamers; and it consists in the construction and combination of parts, as will be hereinafter more fully set forth, and pointed out in the claims.

The annexed drawing, to which reference is made, represents a longitudinal vertical section of my improved feed-steamer.

a represents the boiler, of any suitable size or construction, and provided with the fire-box *b*, which extends from the front end inward for a suitable distance. The fire-box *b* is elevated above the bottom of the boiler, so as to form a water-space below the fire-box, and also at the inner end thereof, as shown, thus giving as much heating-surface as possible. The fire-box *b* is provided with a front extension, *c*, which fits in the front end of the fire-box, and is capable of being adjusted or moved out and in, as required, to accommodate the elbow-pipe, hereinafter described.

The extension *c* is provided with a door, *d*, as shown, for the admission of the fuel. *g* is the grate of the fire-box, placed as low down therein as possible. *f* is a horizontal plate secured in the extension *c*, and projecting into the upper portion of the fire-box. This plate, so to say, divides the fire-box, so as to form an upper horizontal flue, *f'*, as shown. The smoke and heat from the fuel on the grate *g* must pass to the rear end of the fire-box, and then up around the inner end of the plate *f*, and above the same to the front, and out at the exit *e* on top of the extension *c*. On top of the boiler *a* is placed the reservoir *h*, which has a flue, *i*, passing longitudinally through it near its bottom. One end of this flue is, by an adjustable elbow or elbow-pipe, *t*, connected with the exit-pipe *e* on the extension *c*.

From the opposite end of the flue *i* projects the smoke-stack *s*. The products of combustion from the fire-box *b c* are thus conveyed through the reservoir *h*, for the purpose of heating the water therein, before it is admitted into the boiler.

It will be noticed that the reservoir can be disconnected from the exit-pipe *e*, when, for any purpose, such should be desirable, by simply removing the elbow *t*, and a smoke-pipe could then be applied directly to the exit *e*. In this manner the reservoir is entirely disconnected from the smoke-pipe, so that the water therein will not be heated. To admit of this removal, and replacing of the elbow or elbow-pipe *t*, the extension *c* of the fire-box is made adjustable out and in, as above described.

The adjustable extension *c* also answers a very important purpose in the practical working of my feed-steamer.

It will be noticed that the plate *f* is attached to and moves with the extension. Hence by the adjustment of the extension *c* the space or passage between the inner end of this plate and the inner end of the fire-box can easily be regulated so as to increase or diminish the draft, which is particularly desirable according to the kind of fuel used.

The reservoir *h* is at the top provided with a funnel, *n*, with stop-cock *l*, and a short pipe and stop-cock, *o*, connects the reservoir and boiler. The stop-cocks *l* and *o* are first opened, and through the funnel and reservoir the boiler is then filled with water to any desired height, when the stop-cock *o* is closed and the reservoir filled.

A fire having been made in the fire-box, the water in both the boiler and reservoir is heated, and as the water in the boiler passes off in the form of steam into the receptacle containing the feed, through a steam-outlet pipe, *p*, hot water from the reservoir can be let into the boiler at any time when necessary by opening the stop-cock *o*. The waste-heat from the fire-box is thus utilized to heat the feed-water before it enters the boiler, thereby not interrupting the generation of steam, which is of great importance in feed-steamers.

I am aware that a feed-steamer provided with a reservoir connected with the boiler, and

having a flue through it for the passage of the products of combustion, is not of itself new, and I do not claim such, broadly, as my invention.

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

1. The adjustable extension *c*, with horizontal plate *f*, in combination with the fire-box *b*, the plate *f* forming a flue, *f'*, in the top part of the fire-box, substantially as and for the purposes herein set forth.

2. The combination, with the boiler *a*, fire-box *b*, and reservoir *h*, with flue *i*, of the adjustable extension *c*, with plate *f*, exit *e*, and the adjustable elbow *t*, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of March, 1878.

GEORGE W. VAN BUREN, JR.

Witnesses:

L. G. WOOLLEY,

G. W. HINKLE.