

A. SPENCER, Jr. & T. C. SPENCER.

Steam Boiler Feeders.

No. 137,497.

Patented April 1, 1873.

Fig. 1.

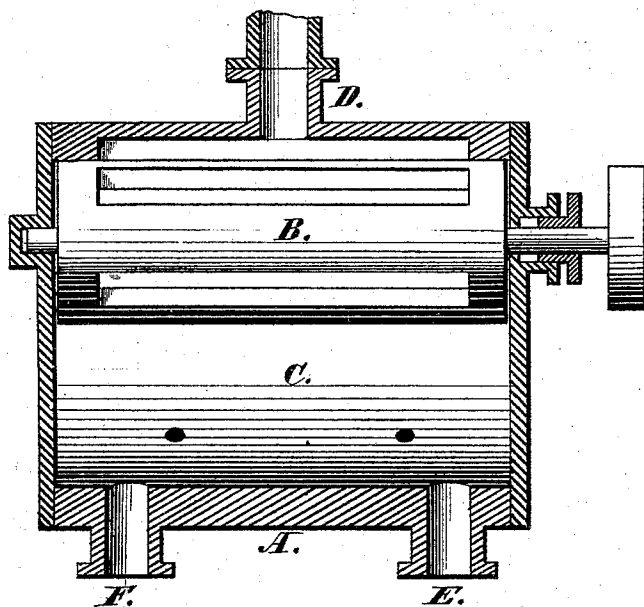
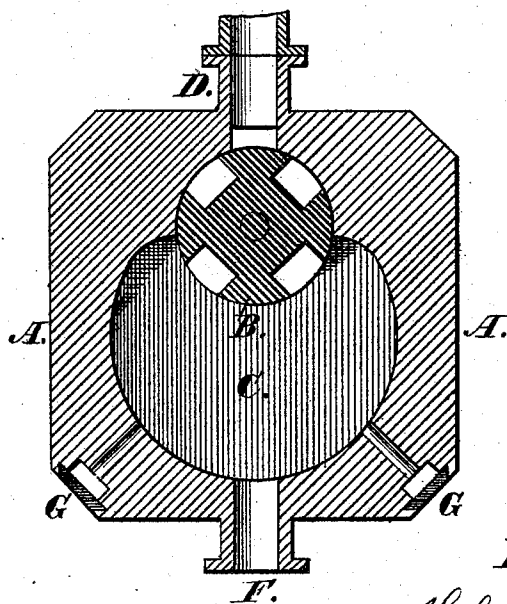


Fig. 2.



Witnesses.

John L. Lewis
Charles Ketchum.

Inventors.

Abel Spencer Jr.
Theodore C. Spencer.

UNITED STATES PATENT OFFICE.

ABEL SPENCER, JR., OF PENN YAN, AND THEODORE C. SPENCER, OF ELMIRA,
ASSIGNORS OF ONE-THIRD THEIR RIGHT TO E. M. BIRDSALL, OF PENN
YAN, NEW YORK.

IMPROVEMENT IN STEAM-BOILER FEEDERS.

Specification forming part of Letters Patent No. **137,497**, dated April 1, 1873; application filed
December 3, 1872.

To all whom it may concern:

Be it known that we, ABEL SPENCER, Jr., of Penn Yan, in the county of Yates and State of New York, and THEODORE C. SPENCER, of Elmira, in the county of Chemung and State aforesaid, have invented certain Improvements in Steam-Boiler Feeders, of which the following is a specification:

The first part of our invention relates to the construction of a steam-boiler feeder for impelling feed-water into a steam-generator or boiler in variable quantities, according to the amount required for the boiler, by the use of a vertical cylinder having cavities in it, and being revolved in a semi-cylindrical concave that is connected with the boiler, or a steam and water chamber that is connected with the boiler and is provided with the necessary induction and eduction pipes. The second part relates to the manner of applying it to the boiler and adjusting it to the water-line in the boiler, so that it may impel more water when the water is low in the boiler, and less when the water is high in the same. The third part relates to applying to the case of the feeder one or more indicators to show the height of the water in the feeder.

Figure 1 is a vertical section of the whole feeder, and Fig. 2 a horizontal section of the same.

The letters of reference refer to the same parts in each.

A is the case, that contains steam and water, also the cylinder. To it the induction and eduction pipes may be attached. The case may be made to be attached to the head or side of a boiler, and when thus attached the steam-pipe and eduction-water pipes are not needed. The holes for each will allow the steam and water to pass through. It may be made any required size or shape that will give sufficient concave surface for the cylinder and space for the steam and water. Its sides may all be made together, and be provided with bottom and top plates. There must be a journal-box provided with stuffing for the spindle of the cylinder to pass through and revolve in and prevent steam or water escaping. The other plate has a pivot-hole for the pivot on the other

end of the cylinder. In one side of this case there is a semi-cylindrical concave for the cylinder to revolve in. The concave must be made smooth, so that the cylinder may be made to fit so that steam or water cannot escape. In the concave is a channel made in connection with the hole for the induction-water pipe. This channel should be as long as the cavities in the cylinder. The vertical length of this case should be made to correspond with the distance between high and low water that is safe and proper to use in the boiler, and the case should be set or attached to the boiler so that the lower end will be near the low-water line of the boiler. B is the cylinder. It must be made round and smooth, so that it may revolve steam and water tight in the concave in the case A. It has a pivot at one end that is fitted to a pivot-hole in the plate; the other end has a spindle that passes through a stuffing-box in the plate, and at the end or any part outside the case a band or gear wheel is attached to turn the cylinder by. It may be turned by any kind of power, and may be turned by the engine that is used with the boiler to which the feeder is applied. This cylinder has one or more cavities in it nearly the whole length for receiving the feed-water when it is revolved. It should be made nearly the same length as the vertical length of the case A, so that it may act at all conditions of the water in the boiler. As one-half of the cylinder is in the chamber C, it will carry in its revolutions both steam and water, and the amount of either corresponds with the height of water in the boiler and chamber C, so that with low water it feeds more and with high water less, thus adapting the amount fed in to the want of the boiler, thus allowing the boiler to regulate its own feeder. By revolving this cylinder the cavity is filled with steam and water, which is carried around to the channel for the feed-water, where the steam in the cavity is condensed by the feed-water and its place filled with water, which is then carried around to the chamber C, where it is emptied into the chamber, and the cavity again filled with steam to perform the same operation again. The number and size of these cavities may be varied to suit the

amount of feed-water required. C is a chamber in the case that holds both steam and water. Into it the feed-water is discharged, and from it the water is discharged into the boiler, and into it steam comes from the boiler, so that the steam and water in it very nearly correspond with the same in the boiler. The size may be varied to suit the various conditions in which the feeder may be used. The feeder may be made to or with the head or side of the boiler, so that the steam and water in the boiler will perform the same operation as it does in the chamber C. D is the induction feed-water pipe. It extends through the side of the case A into the channel in the concave for the cylinder B. From the case it extends to the reservoir, which, in most circumstances, should be higher than the feeder. E is a steam-pipe that conveys steam from the boiler into the chamber C. F is the water-pipe that conveys

water from the chamber C to the boiler. The length or size of these pipes may be varied to suit the size of the feeder or the conditions in which it is used, and they may be provided with stop-cocks when desired. G is an indicator. It may be made with or attached to the case A in any ordinary manner. Its use is to allow the engineer to see how high or low the water is in the chamber C.

What we claim as our invention is—

The combination of the case A, chambered cylinder B, chamber C, pipes D E F, and one or more indicators, G, all constructed and operated substantially as and for the purposes set forth.

ABEL SPENCER, JR.
THEODORE C. SPENCER.

Witnesses:

JOHN L. LEWIS,
CHARLES KETCHUM.