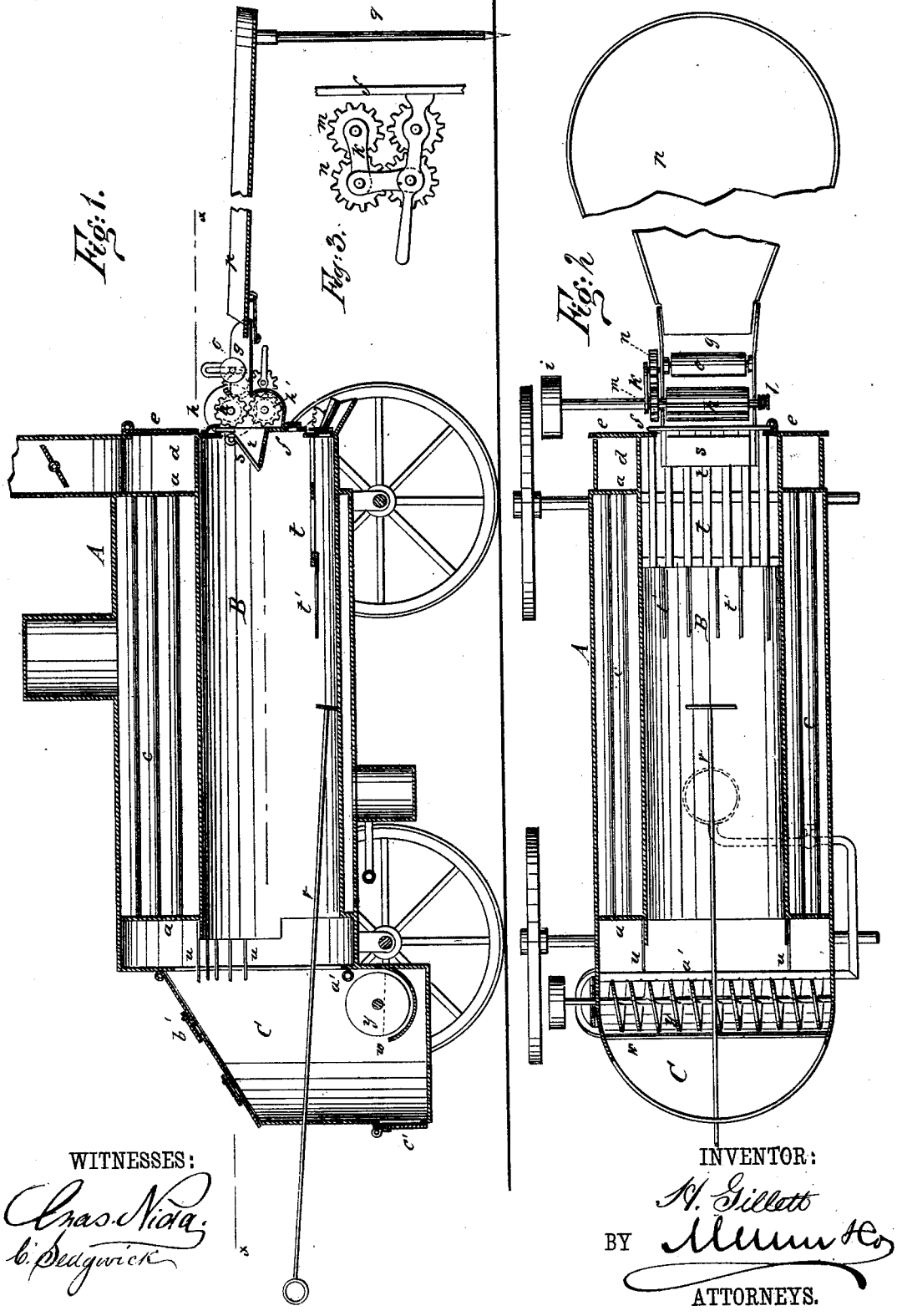
H. GILLETT.

Straw-Burner Boiler.

No. 218,515. Patented Aug. 12, 1879.



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HARRISON GILLETT, OF LAKE CITY, MINNESOTA.

IMPROVEMENT IN STRAW-BURNER BOILERS.

Specification forming part of Letters Patent No. **218,515**, dated August 12, 1879; application filed May 27, 1879.

To all whom it may concern:

Be it known that I, HARRISON GILLETT, of Lake City, in the county of Wabasha and State of Minnesota, have invented a new and Improved Straw-Burner Boiler, of which the following is a specification.

My improvements relate to steam-generators fitted for burning straw or hay; and the object of the invention is to provide a regular and uniform feed of the material without requiring the fire-doors to be opened, to prevent ashes and sparks entering the boiler-flues, and to effect the removal of ashes as fast as they accumulate.

I make use of a cylindrical boiler fitted with an inner cylindrical fire-space, smoke-box, and return-flues through the water-space. The fire-doors at the front are fitted with adjustable feed-rollers driven by gearing and a feed-table. At the rear of the fire-box ash and spark arresters are fitted, and the smoke and ash box is fitted with a pipe from the boiler for wetting down the ashes, and with a spiral conveyer for delivering the ashes to the outside, all of which I will more particularly describe in connection with the accompanying drawings, wherein—

Figure 1 is a vertical longitudinal section of a portable boiler constructed in accordance with my invention. Fig. 2 is a sectional plan view on the line *x x* of Fig. 1. Fig. 3 is a view, in side elevation, of the operative mechanism of the feed-rolls.

Similar letters of reference indicate corresponding parts.

The boiler consists of an outer cylindrical shell, A, mounted horizontally on wheels, and containing the inner cylindrical fire-box, B, that is supported by the heads *a a* of the outer shell, and projects a short distance at the front. The back end of box B opens into the smoke and ash box C, that is attached to the shell A, and the return-flues *c* pass from the rear plate *a* at the top and side of the fire-box B, and discharge through the front plate *a* into the arched base *d* of the chimney. The front of the base *d* is closed by an arched door, *e*, by which access may be had to the flues, and the front of fire-box B is closed by a separate door, *f*, that is apertured for the passage of the fuel and carries the feeding devices next described.

Upon the front of the door *f* a feed-table, *g*, is rigidly attached, in the sides of which horizontal feed-rollers *h h'* are journaled in front of the feed-opening. The lower roller, *h'*, is fixed, and is to be driven by hand or other power applied to the pulley *i* of its shaft. The upper roller, *h*, is hung at one end on a pivoted arm, *k*, and at the other end upon a vertical pin or rod, *l*, which is sustained by the table *g*, and is fitted with a spring tending to draw the roller *h* down upon roller *h'*, so that roller *h* adjusts itself to the material passing beneath it.

Upon the shaft of roller *h* a pinion, *m*, is fitted, which meshes with a similar pinion, *n*, on the fixed stud that carries the arm *k*, and by an intermediate gear meshing with a gear on the shaft of roller *h'* the roller *h* is revolved. This gearing is shown in Fig. 3.

Upon the table *g*, in front of rollers *h h'*, a third feed or pressure roller, *o*, is hung in slotted standards, so that it may adjust itself to the material on the table.

I provide an auxiliary feed or supply table, *p*, for attachment by means of a hook, as shown, or other suitable connection, to the table *g*, and supported at its outer end by removable legs *q q*, that have their ends pointed to enter the ground readily. This table is to be applied when the boiler is in operation for holding a large quantity of straw, to insure a constant delivery by the feed-rollers.

At the inner side of the feed-opening is a lip or flange, *r*, for receiving the fuel from the rollers, and above the lip *r* is a hinged flap, *s*, that will be raised by the fuel passing in, and will act to close the feed-opening when the fuel is expended, and thereby protect the feed-rollers from heat.

The fire-box is fitted with a grate, *t*, for receiving the fuel, which grate at its rear end is formed with projecting pins *t'*, and in front of box A there is a draft-opening and door beneath the grate, through which opening ashes may be removed, and in the door *f* is a draft-opening above the grate *t*.

The rear end of fire-box B is fitted with pins or wires *u*, that project into the uptake of the

box C, and act to check and break up the ashes, so that only light and fine particles will pass to the flues, and the heavier portions and sparks will be retained in the box C. The bottom of box C is below the boiler, and forms an ash-receiving space, into which the ashes collecting in the fire-box are to be drawn by means of a hoe, *v*, that is fitted to be operated from the outside by means of its handle, that passes through the side of box C.

The ashes are received in a trough, *w*, that extends across the box C to an opening at one side, which opening is covered by a flap hinged to swing outwardly. In the trough *w* is fitted a spiral conveyer, *y*, that acts to deliver the ashes through the opening mentioned, and is revolved by power applied in any suitable manner to the projecting end of its shaft.

Above the trough *w* there is fitted a perforated cross-pipe, *a'*, that connects with the water-space of the boiler, which pipe is closed by a cock, and is used to inject water into the ashes, so that they are more readily removed by the conveyer than when dry.

The top of box C is formed as a hinged cover, that can be opened to give access to the flues and ash-space, and in this cover are spy-holes *b'*, covered by slides, through which holes necessary cleaning operations can be accomplished while the apparatus is in use. The box C is also provided with an opening at *c'*, covered by a slide, which opening may be used for cleaning out the ash-pit.

By the above-described construction the straw or hay may be supplied regularly and uniformly, and in quantity regulated by the speed of the rollers, so that it will be entirely consumed. The flues and other parts will not become choked by the ashes, and they can be removed readily to prevent accumulation.

There being no necessity for opening the front doors while the boiler is in use, the flues are protected from drafts of cold air, and sparks cannot escape at the front.

I do not limit myself to the boiler exactly as described and shown, nor to the specified construction of feeding devices, as any form of feed can be used with the boiler for supplying the fuel without opening the doors.

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

1. The fire-box B, provided at its rear with end wires *u*, projecting into the uptake, as and for the purpose set forth.

2. The combination of the perforated water-pipe *a'*, conveyer *y*, and trough *w*, as and for the purpose specified.

3. The combination, with door *f*, of the feed-rolls *h h'*, the pressure-roll *o*, the lip or flange *r*, and the hinged flap *s*, to form the feeding device shown and described.

HARRISON GILLETT.

Witnesses:

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