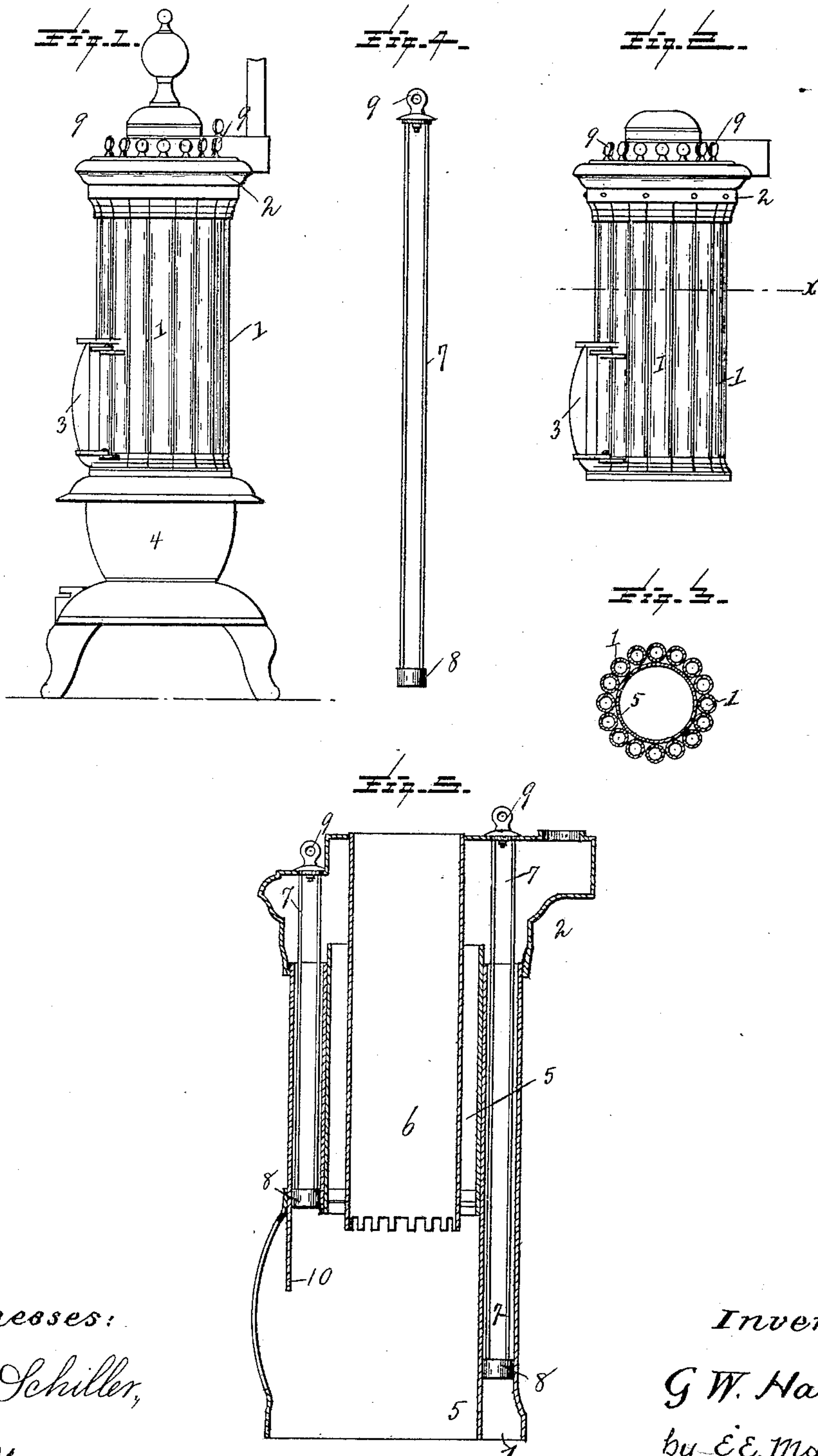


(No Model.)

G. W. HARRIS.
HEATER.

No. 461,017.

Patented Oct. 13, 1891.



Witnesses:
C. C. Schiller,
J. J. Masson

Inventor:
G. W. Harris,
by E. E. Masson
associate atty.

UNITED STATES PATENT OFFICE.

GEORGE W. HARRIS, OF MOUNT ZION, ILLINOIS.

HEATER.

SPECIFICATION forming part of Letters Patent No. 461,017, dated October 13, 1891.

Application filed February 26, 1891. Serial No. 382,990. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. HARRIS, of Mount Zion, in the county of Macon and State of Illinois, have invented certain new and useful Improvements in Heaters, of which the following is a specification.

This invention is designed to form a part of a stove in which anthracite or bituminous coal is burned; but it may also be used in conjunction with a vapor-burner or with other fuel.

The object is to increase the efficiency of the fuel by exposing a large heating-surface; and the invention consists in the construction of the heating-drum and in the devices used to clean the flues of the same, as will hereinafter appear from the detailed description and claims.

In the drawings accompanying and forming a part of this specification, Figure 1 is a representation of a stove embodying my invention. Fig. 2 shows the heater detached. Fig. 3 is a cross-section on broken line X in Fig. 2. Fig. 4 shows a tube-cleaner. Fig. 5 is an enlarged central vertical section of Fig. 2.

A set of tubes 1 is arranged concentrically around a drum 5, and both tubes and drum are open at their ends and connect at their upper ends with head-cavity 2 and at their lower ends with the fire-pot. A door is shown at 3. The fuel-pot is seen at 4. In Fig. 5 a magazine is shown at 6.

The tube-cleaners consist each of parallel bars 7, adapted to the inner circumference of the tubes, a head 9, which closes the tube-opening and by means of which the cleaner is turned in the tube, and a ring 8, to which the ends of the parallel bars are secured. The bars are formed of one piece bent at its center and secured by a bolt to head 9.

The heating-drum is to be placed over the fire-pot, and the heat passes through the tubes and the drum to the head 2, from which the products of combustion, as carbonic oxides and acids, pass through the flue.

As a result of the construction of the heater a great amount of surface is exposed, so using the fuel advantageously and economically, and at the same time an attractive design may be easily produced.

In case of the use of bituminous coal, the magazine may be omitted, and with other fuels and under other circumstances the form of the heater may be varied.

The cleaners do not interfere with the usefulness of the tubes, and when it becomes necessary the tubes may be cleaned of soot, &c., by turning the bars around or by raising the ring up and down, the head 9 being shaped to readily permit such operation.

The number of the tubes or the manner of connecting them with the head and base may be varied without affecting the principle of my invention, which consists in—

1. The combination of drum 5, tubes 1, head 2, and tube-cleaners composed of bars 7, rings 8, and heads 9, as set forth.

2. A tube-cleaner for tubes of heaters, comprising bars 7, formed of a single bar bent at the center, head 9, to which the bars are bolted, and ring 8, secured to the ends of the bars, as set forth.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

G. W. HARRIS.

Attest:

WILLIAM GRAHAM,
I. D. WALKER.