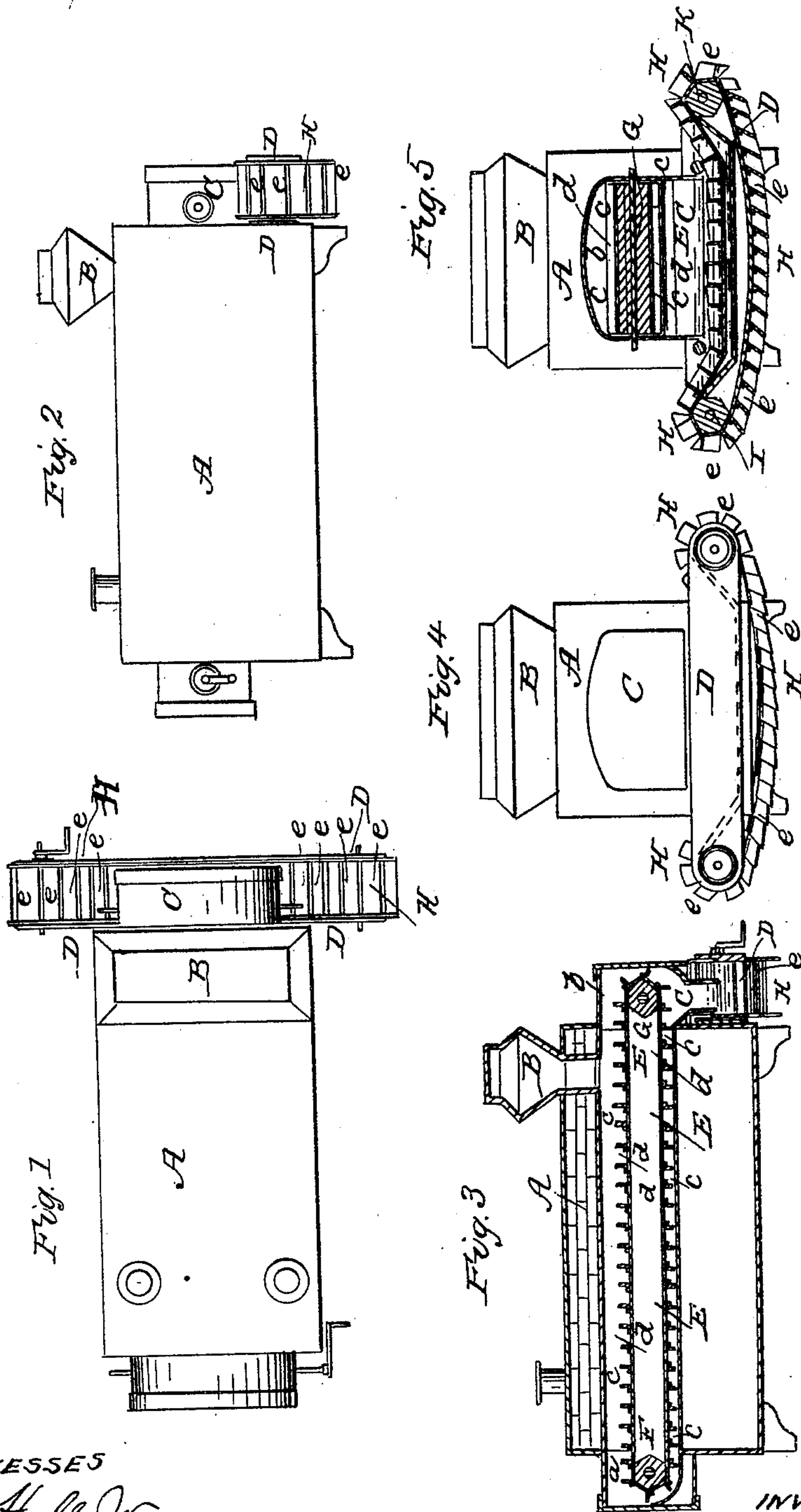


J. L. STEWART.

Oil Still.

Patented June 28, 1859.

No. 24,587.



WITNESSES

J. P. Hall Jr  
Orlhouse Hill

INVENTOR

J. L. Stewart



# UNITED STATES PATENT OFFICE.

JOHN L. STEWART, OF EAST BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN RETORTS FOR DISTILLATION OF COAL.

Specification forming part of Letters Patent No. 24,587, dated June 28, 1859.

*To all whom it may concern:*

Be it known that I, JOHN L. STEWART, of East Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Retorts for the Destructive Distillation of Coal or other Matter of Like Character; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a side elevation, Fig. 3 a vertical and longitudinal section, and Fig. 4 a front end view, of my improved retort. Fig. 5 is a vertical section, taken through its elevating spout or trough and endless carrier for receiving the discharged coke or products and carrying them away from the retort.

The nature of my invention consists in an improved "revolving web retort" constructed with its induction and eduction openings arranged at or near one end of it, and within an endless or other proper carrier made so as to operate in such manner as to receive at or near one end of the retort the coal or other matter to be distilled, and carry or force the same toward the other end of such retort, and next backward toward the front or front end, and there discharge such out of the retort, the same causing the coal or product to be distilled to pass twice through the retort in order that it may be more thoroughly subjected to the action of the heat thereof, and particularly of that of the bottom of the retort, than is the case when the induction and eduction openings are arranged at opposite ends of the retort, and the revolving web passes into one end and out of the other, and thence flows under the retort and back to the front end of it.

My invention further consists in combining, with the retort or its discharging-mouth, a water-receiving reservoir or trough and an endless carrier for receiving the discharged coke or products and carrying them away from the retort.

In the drawings, A denotes a retort constructed of any suitable material, and having a filling-opening, B, and a discharging-opening, C, arranged at or near one end of it, as shown in Fig. 3. The discharging opening or throat C is formed like a pipe and bent down-

ward into a cistern or trough, D, arranged underneath it and in front of the retort, as shown in the drawings.

Within the retort an endless carrier or web, *e*, is disposed, and so as to be supported by and work around two prismatic drums or rollers, F G, placed at opposite ends of the said retort or in throats *a b* thereof, as shown in Fig. 3. The said endless web has a scraper, *c*, extending at a right angle or thereabout from each section or hinged plate *d* of it, such scrapers being made, while passing along the bottom of the retort, to operate close to such bottom, so as to scrape or move along the same and toward the eduction-opening C whatever coal or products to be distilled may fall on such bottom.

The cistern or trough D, when supplied with water, so seals the mouth of the discharging-opening that no gas or vapor from the retort can escape into the atmosphere through such mouth, the coke and refuse products of the retort being free to fall out of the mouth and upon an endless carrier, H, formed of a series of buckets or vessels, *e e e*, united together by hinges and extending around two supporting rollers or prisms, I K, and into the trough D, as shown in the drawings. The carrier passes into and out of the water of the trough, and underneath the discharging-mouth of the retort, so as to receive and carry away from such mouth the coke or matters which may be discharged through it by the action of the endless web or carrier within the retort. During the passage of each bucket *e* around one of the prismatic rollers such bucket will be turned over, so as to discharge its contents.

While the retort is in operation the two endless carriers are to be put in movement, such being effected by any suitable motor or means.

The induction-opening of the retort may be supplied with any proper device or devices for feeding it with coals or matters to be distilled, and it may also have any proper means of sealing it, so as to prevent the escape of gas or vapor from the retort except through its usual eduction or stand pipe. For instance, it may have a hopper whose top may be secured by a luted cover or by a water-joint, and this hopper may contain a feeder or some device by which the coal may be de-



livered from it in regular quantities in given times, and allowed to fall on the endless web or carrier within the retort.

All the processes connected with this retort, including the charging it with coal and emptying it of coke, may be carried on by machinery without the aid of manual labor.

The advantage of my improved retort over the revolving web retort so constructed that the coil is made to pass only once through it from end to end will be readily seen by gas-workers, as well as by persons concerned in the manufacture of oils from coal, shales, or other bituminous matters by their destructive distillation. In general, a retort constructed on my plan of half the length of one of the ordinary revolving web-retorts will do as much or more work in the same time, take up much less room, and cost less in its erection. Furthermore, the employment of the water-trough in connection with its discharging-mouth causes more or less vapor of water to be formed when the coke is discharged into the trough. Such vapor or steam passing into the retort operates to good advantage with respect to the distillation of the coal or the matter within it.

I do not claim a revolving web-retort wherein the coal or matter to be distilled or converted into either gas or oily vapors is led into one end, carried toward and discharged out of the other end of such retort, the movement of the coal or matter to be distilled being effected in the retort by a revolving web entering it at one end and passing out of

its other or opposite end; nor do I claim the combination of a water-sealing trough with a retort; but

What I do claim is—

1. My improved revolving web-retort constructed not only with its induction and education openings arranged at or near one end of it, but with an endless or other proper carrier made so as to operate to receive the coal or matter to be distilled from or near one end of the retort and carry or force the same toward the opposite end thereof, and from thence backward toward the front end, and there discharge such, the same causing the coal or matter to be distilled to pass twice through the retort or carbonizing-chamber in manner and for securing advantages, as specified.

2. In combination with the retort or its discharging-mouth, a water-sealing trough, and an endless carrier to operate in such trough, substantially as specified, and to receive or carry away from the retort the discharged coke or products, the water of the trough under such application of it to the discharging-mouth serving to furnish vapor or steam to the retort in manner and to effect an advantage in the distillation of the coal or matter therein, as specified.

J. L. STEWART.

Witnesses:

R. H. EDDY,  
F. R. HALE, Jr.