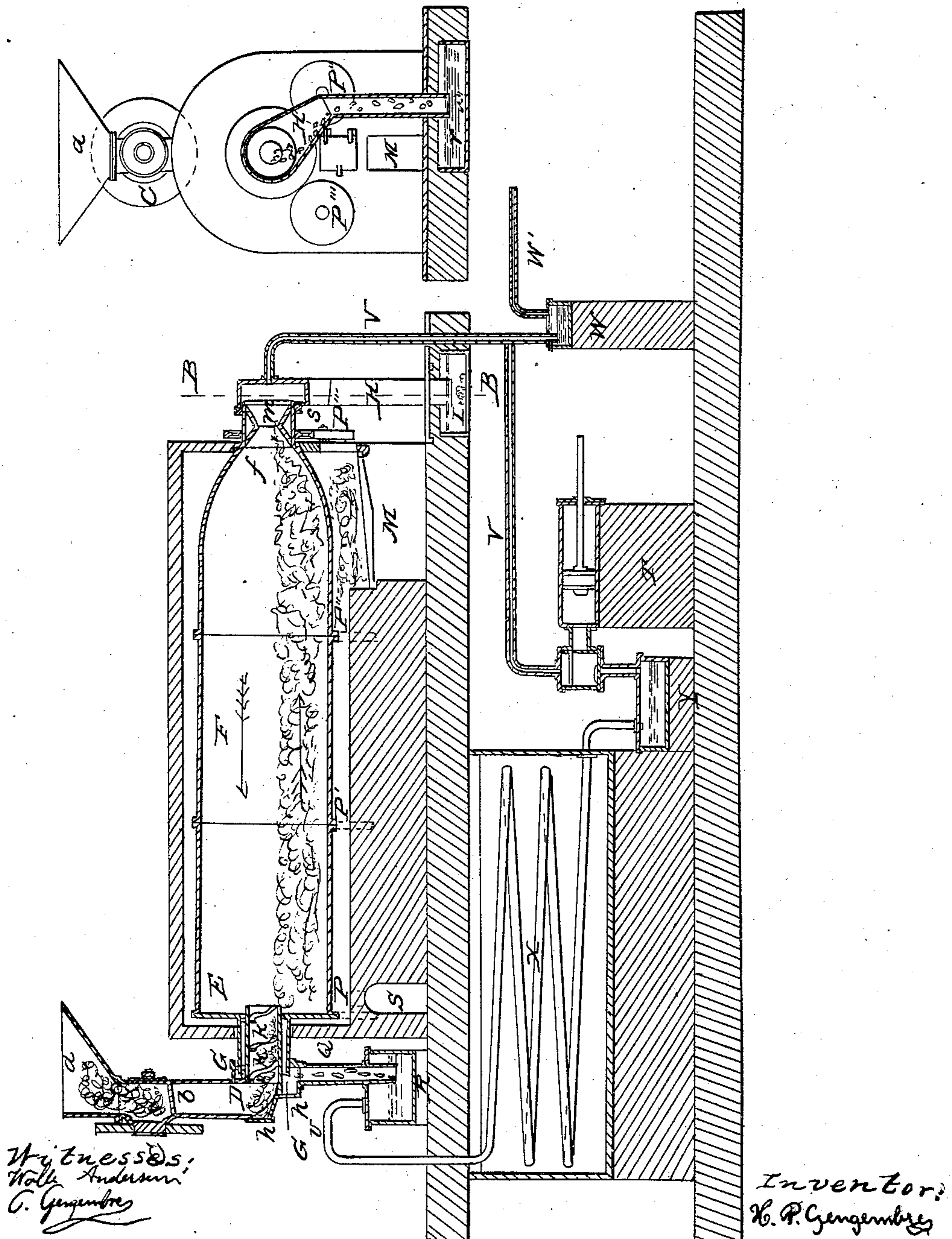


H. P. GENGEMBRE.

Distilling Apparatus.

No. 27,542.

Patented March 20, 1860.



UNITED STATES PATENT OFFICE.

H. P. GENGEMBRE, OF ALLEGHENY CITY, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR DISTILLATION OF COAL.

Specification forming part of Letters Patent No. 27,542, dated March 20, 1860.

To all whom it may concern:

Be it known that I, H. P. GENGEMBRE, of the city and county of Allegheny, and State of Pennsylvania, have invented a new and useful apparatus for the destructive distillation of coal or other bituminiferous substances for the purpose of obtaining the liquid and gaseous products therefrom; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, of which—

Figure 1 is a longitudinal section, and Fig. 2 a transverse section through B B of Fig. 1.

a is a hopper to receive the substance to be distilled.

C is a feeding-box constructed as a steam or water cock only closed at one side of the plug, as indicated at *b*. It is kept continually or occasionally rotating by the wheel *c*, operated on by pinion, pulley, and belt, as required.

D is a stationary pipe connected with the box *G*, having look-holes *h h*, closed by luted plates, for the purpose of cleaning the passages *k k*.

F is a cylindrical or polygonal retort, movable around its axis, and kept continually or occasionally rotating or oscillating. It is set slightly inclined, having the end *f* lower than the end *E*. The retort in the present drawings is represented as resting on a set of wheels or pulleys, *P P P P*, which are driven by a shaft and gearing, so that if said wheels are made to rotate the retort will revolve on its own axis. At the center of both ends of the retort *F* there are pipes or hollow journals *E f*. The pipe *E* is made double. The outside one, playing in a stuffing-box of the box *G*, is smooth inside and out. The inside pipe, *K*, is smooth outside, but inside is provided with a rib or ribs to act as an Archimedean screw on the coal or other substance under treatment, and cause it to travel from *D* to *E* by the motion of the retort itself. At *o* the pipe *E* fits with the end of the tube *D* close enough to prevent coal from falling in *q*, and yet to offer no friction between *D* and *K*.

Q is a pipe for the passage of the liquid and gaseous products of distillation into the box *R*. The tube *f* (or hollow journal) is furnished inside with a diaphragm piece, *m*, having an aperture at center of size best suited to the substance to be treated.

H is a box or tube in which the end of the pipe *f* is inserted through a stuffing-box, *s s*, and the lower end of which dips in water to exclude the atmospheric air. The coke or residuum of distillation passes off by the tube *f* into the tube *H*, and through it drops in the trough *I*, from which it is removed by hand or by mechanical means.

M is the fire-place, and *S* the smoke-flue.

U is a pipe to convey the light vapors and permanent gasses from *R* into the condensing-worm.

X is a condensing-worm, immersed in cold water, where all the vapors not condensed into liquid in the box *R* are condensed.

Y is a box to receive the liquid from such condensation.

T is the pump-fan or exhauster drawing off the permanent gases from the box *Y*, and forcing them through the pipe *V V* to the box *H*, thence through the tube *f* into the retort, hereby keeping up a circulation in the direction of the arrow *t* for the purpose of preventing any of the vapors from being condensed in the box *H*, and also to facilitate the evacuation of the oleaginous vapors from the retort through the pipe *E*.

W is a safety-valve to draw off the excess of gases, which, being compressed, can be conveyed through the pipe *w* to any place desired to be used or disposed of.

Having described my apparatus, I will proceed to indicate its mode of operation. The coal or other material to be treated, being previously broken, is thrown into the hopper *a*. The fire is kindled in the furnace, which will bring the retort to a low red heat over the fire at the end *f*, and the machinery is put in motion to act on the retort *F*, on the feeding-box *C*, and on the pump *T*. The feeding-box will introduce at regular intervals a certain portion of coal into the pipe *D*. The motion of the retort will cause that coal to be brought through the pipe *K K* into the retort, and to be carried forward gradually and regularly from the end *E* to the end *f* as the distillation goes on until, when exhausted of all its volatile matters and converted into coke or residuum, it will pass through the tube *m*, off of the retort, drop through the pipe *H* into the water in the trough *I*, from whence it is removed. The vapors and gases produced dur-

ing the process of distillation are drawn off through the tube E, box G, pipe Q. The more readily condensable vapors are converted into liquid and retained into the box R, (from which suitable means are provided to withdraw them,) while the most volatile vapors and the permanent gases are conveyed by the pipe U to the condensing-worm X, kept perfectly cold, where all the vapors are condensed and run into the box Y in the shape of liquids, and the permanent gases are pumped by the apparatus T and forced through V to the pipe H, tube *f*, and back again into the retort F, to create in said retort the current of gases, as described, and for the purpose stated.

Disclaiming all and every one of the devices I may have described for illustrating the working of my new apparatus, what I claim as my invention, and desire to secure by Letters Patent, is—

1. A cylindrical or polygonal retort having at the center of both ends a hollow journal or tube, and being susceptible of receiving a continual or occasional movement of rotation or oscillation around its own axis, for the purpose specified.

2. The construction and arrangement of the pillow-blocks, or of the friction-wheels, as described, when used for the purpose of causing the motion of the retort itself to make the substance under treatment travel from one end to the other of the retort, and said retort to charge and discharge itself automatically.

3. The charging-box, constructed and operated as described, in combination with the retort, and for the purpose specified.

4. The discharging-tube, when used in combination with the hollow journal of a movable retort, as described, for the purpose specified.

5. The gas pump, fan, or exhauster, the pipe V, the tube H, and the pipe *f*, as described, when forming part of a close circuitous conduit for returning over and over the permanent gases in the retort, substantially as specified.

H. P. GENGEMBRE.

Witnesses:

ALEXANDER HAYS,
HENRY BAKER.