

(No Model.)

A. SILVERBERG & C. DETERING.
CARBONIZING APPARATUS.

No. 440,968.

Patented Nov. 18, 1890.

Fig. 2.

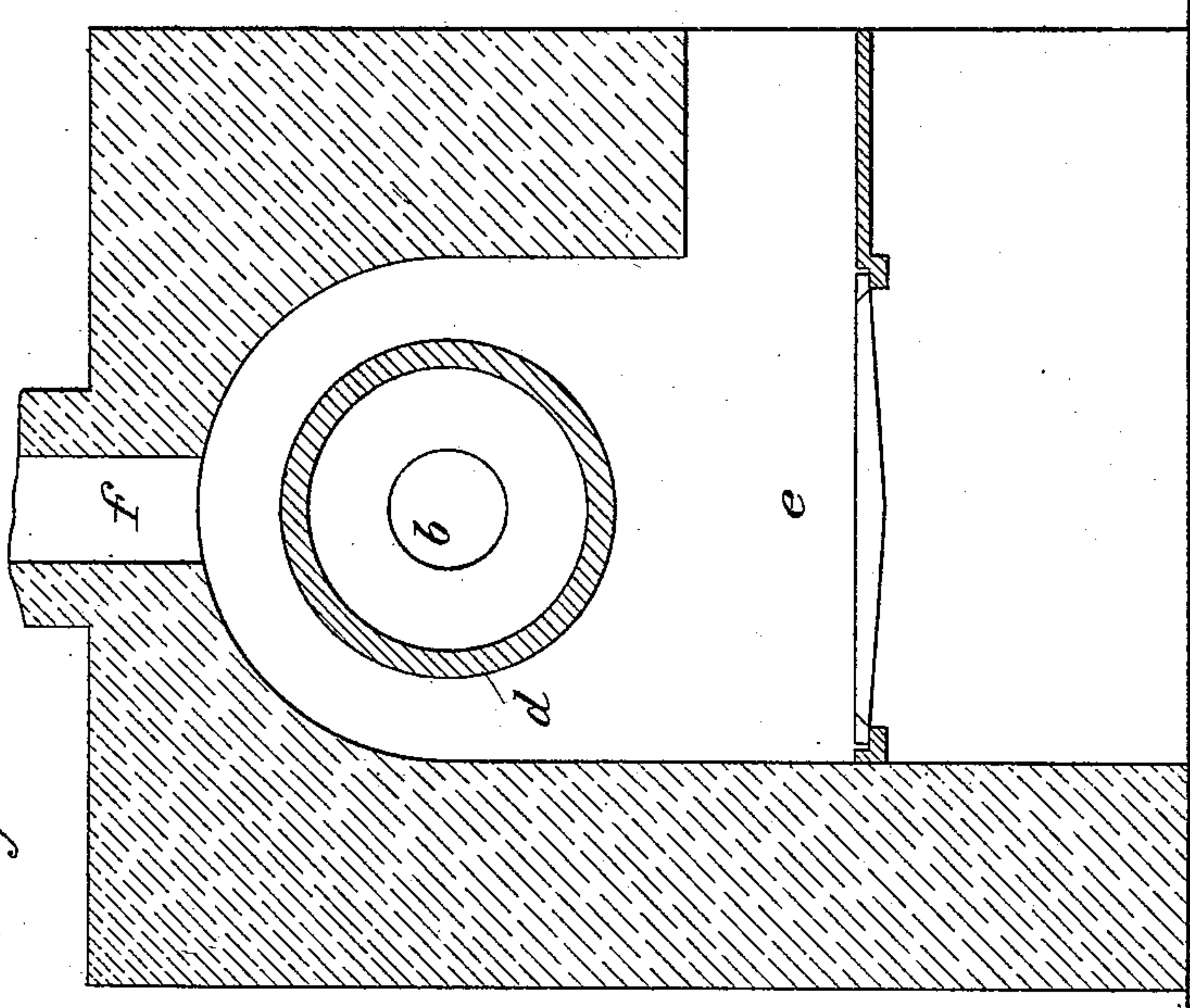


Fig. 1.

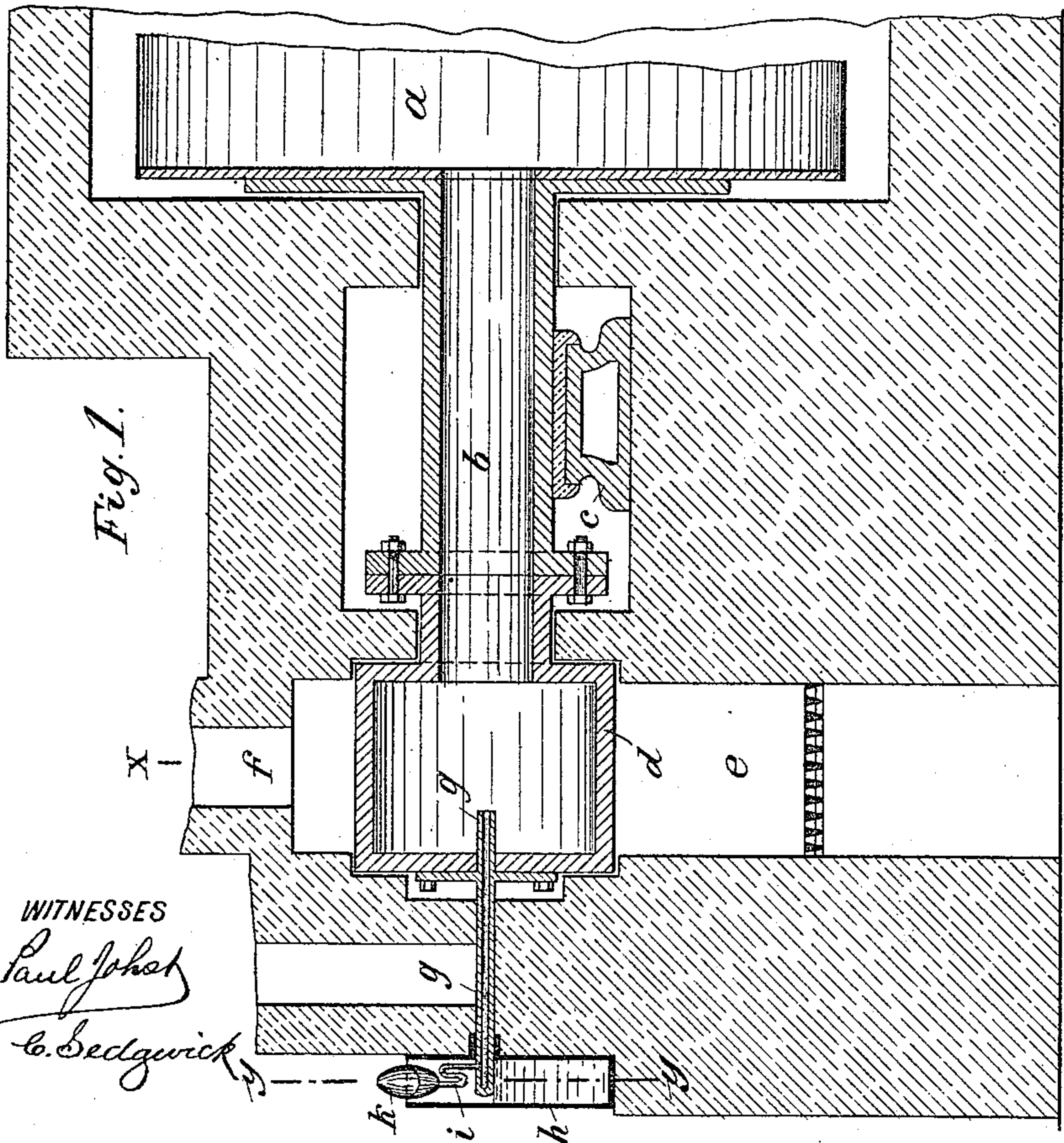
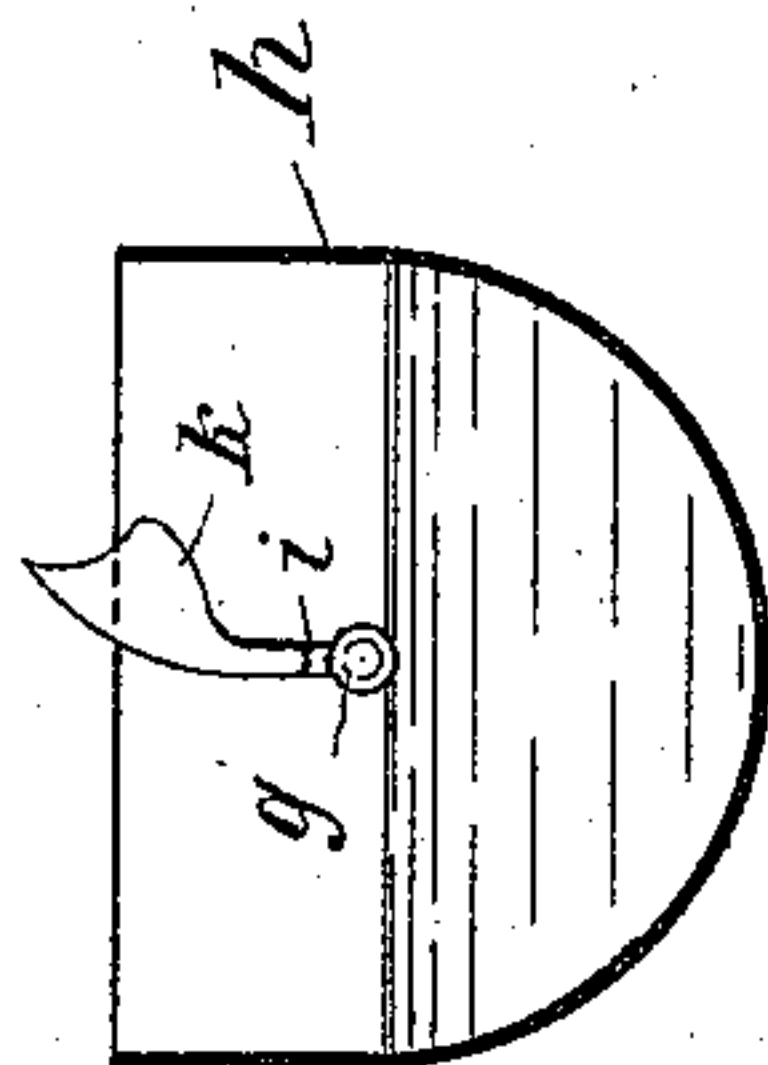


Fig. 3.



WITNESSES

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ADOLF SILVERBERG AND CUNIBERT DETERING, OF BEDBURG, GERMANY.

CARBONIZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 440,968, dated November 18, 1890.

Application filed August 2, 1890. Serial No. 360,769. (No model.)

To all whom it may concern:

Be it known that we, ADOLF SILVERBERG and CUNIBERT DETERING, both of Bedburg, in the Kingdom of Prussia, Empire of Germany, have invented a new and Improved Carbonizing Apparatus, of which the following is a full, clear, and exact description.

The various forms of apparatus hitherto used for carbonizing wool have usually been arranged in such a manner that the retorts for evaporating the acid are separate from the carbonizing drum containing the wool to be treated, the acid vapors being introduced through a clay pipe into the hollow shaft of the revolving drum. Such arrangements are open to various objections. It is very difficult to prevent large quantities of the vapors of the acid from escaping into the masonry surrounding the retort and penetrating through the easily-fractured clay pipes into the workshop. Moreover, the wear and tear of the retorts and of the masonry surrounding the same is very considerable, owing to the flames of the fire always striking against the same places. There is, furthermore, prejudicial friction on the coupling between the drum-shaft and the stationary conduit.

The object of our invention is to obviate these difficulties, which we do by connecting the retort directly with the revolving drum and providing means for introducing desired quantities of acid continuously into the retort. This construction will be hereinafter fully described, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a broken vertical longitudinal section of the apparatus. Fig. 2 is a vertical cross-section of the same, taken on the line $x x$ in Fig. 1; and Fig. 3 is a vertical cross-section of the acid-containing receptacle, taken on the line $y y$ in Fig. 1.

The carbonizing-drum a , with its hollow shaft b , is supported in the bearings c . On the end of the hollow shaft b opposite the drum is arranged the cylindrically-shaped retort d for evaporating the acid, the arrangement being such that the retort revolves with

the shaft b and the drum a . Underneath the retort is the fire-place e . The fire-gases pass uniformly over the whole circumference of the retort d when the latter is revolving, so that one part of the retort is not exposed to greater heat than another. The products of combustion escape above the retort d into the smoke-flue f , leading to the chimney.

As illustrated in the drawings, the retort is closed except where it communicates with the drum, and the continuous introduction of acid into the retort corresponding to the quantity to be evaporated takes place through the pipe g , secured to the center part of the front surface of the retort and opening into the latter, this tube also revolving with the retort. The end of the tube g is closed and extends into a vessel h . Opening from the tube g within the vessel h is a tube i , arranged perpendicularly to the tube g , and the upper end of the tube i carries a funnel or receptacle k . The vessel h is charged with acid, and when the tube g and receptacle k revolve the latter at each revolution raises a certain quantity of acid and introduces the same into the tube i , and thence through the tube g into the retort d . In order to obtain a perfectly tight closure of the retort even when the receptacle k is in its vertical position, the tube i is bent into an **S** form, as shown in Fig. 1, so as to produce in the tube a trap forming a liquid seal.

In the construction above described the vaporized acids are prevented from escaping, and the retort and the short conduit between the latter and the carbonizing-drum are completely closed. It is obvious that the quantity of acid to be introduced into the retort can be regulated by varying the size of the receptacle k , and the latter may be constructed also in such a manner that it may be easily replaced by another.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In a carbonizing apparatus, the combination of a heater, the carbonizing-drum, the closed retort, and the hollow shaft connecting the drum and retort, substantially as described.

2. In a carbonizing apparatus, the combination, with the retort, of means for the continuous introduction therein of acid, and comprising a tube *g*, connected to the front 5 of the retort *d*, and a trapped tube *i*, carrying a receptacle *k*, the said tube *i*, and receptacle being arranged to revolve in a vessel charged with acid, so that at each revolution a certain quantity of acid will be raised and introduced 10 through the tube *g* into the retort *d*, substantially as shown and described.

3. In an apparatus of the character described, the combination, with the revolving drum and the hollow shaft, of a retort fixed 15 to the hollow shaft, an acid-receptacle aligning with the retort, a tube opening from the acid-receptacle into the retort, said tube being fixed to the retort and closed at the end entering the acid-receptacle, and a laterally- 20 extending tube opening from the retort-tube

within the acid-receptacle, substantially as described.

4. In an apparatus of the character described, the combination, with the revoluble 25 retort having direct connection with the revolving drum and the acid-receptacle aligning with the retort, of a tube opening from the acid-receptacle into the retort, said tube being fixed to the retort and closed at the end 30 entering the receptacle, and a trapped tube having an open vessel fixed to its outer end, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ADOLF SILVERBERG.
CUNIBERT DETERING.

Witnesses:

GUSTAVE OELRICHS,
HERMANN VOGEL.