

*Explosion of the Boiler of the Steamboat Citizen.* 161

	Miles.
<i>Canal</i> from Richmond to Covington,	239
<i>Railroad</i> from Covington to Loup Creek Shoals on the Great Kanawha,	138
<i>Steamboat navigation</i> from Loup Creek to mouth of Great Kanawha,	88
Total length,	465

By the plan of 1841, the James and Kanawha improvement would consist of

	Miles.
<i>Canal</i> from Richmond to Covington,	239
<i>Turnpike</i> from Covington to Greenbrier bridge,	27
<i>Steamboat</i> navigation from Greenbrier bridge to the mouth of the Great Kanawha,	204
Total length,	470

From the report of Mr. Gill, the surveying Engineer, sanctioned by the approbation of Benjamin Wright, Esq., their distinguished Engineer in chief, it appears that the estimated expense of executing the plan of 1841, does not exceed that of 1838, as formerly projected and estimated.

Inclusive of the charges of *freight, toll, and transhipment*, Mr. Gill estimates the expense of transporting *one ton* of agricultural productions from the confluence of the Ohio and Kanawha, to tidewater on the seaboard, by three different routes, as follows:

1. *To Richmond*, via. steamboat navigation on the Kanawha, turnpike portage, and James River Canal, \$ 15 18
2. *To Philadelphia*, via. steamboat navigation on the Ohio to Pittsburgh, and thence by Canal and two railway portages through Pennsylvania, \$ 22 82
3. *To New York*, via. Ohio Canal, Lake Erie, Erie Canal, and Hudson river, \$ 24 78

If these calculations should be found correct in practice, the extraordinary fact will be developed, *that the cheapest line of transportation for the carriage of heavy freight, between the valley of the Ohio and the sea, lays through the interior of Virginia.*

FOR THE JOURNAL OF THE FRANKLIN INSTITUTE.

*On the Explosion of the Boiler of the Steamboat Citizen.* By  
THOS. EWBANK, Esq.

TO THE COMMITTEE ON PUBLICATIONS.

On Monday, the 7th inst., as the steamboat *Citizen* was preparing to tow a packet ship from one of the docks of this city, her boiler exploded; according to some persons present it was blown into "a thou-

sand pieces." Of them a solitary fragment is all that is left, the rest fell into the water. The boiler was placed fore and aft upon the deck, and with the exception of the engine and smoke pipe, every thing connected with it, including the deck, was swept overboard. Three or four persons were wounded, two seriously, but none killed.

Supposing you might wish to add this explosion to the list kept by the Institute, I have sent the annexed sketches of the boiler, taken from plans in possession of the maker. It will be seen that its construction was similar to that of the Ohio, Gibbon, and New England. It was made of one quarter inch American iron, was about three years old, and had recently been thoroughly repaired. The *immediate* cause of the disaster is said to have been a deficiency of water. The engine was not in motion at the time. The usual strength of steam employed was fifteen inches; but on some previous occasions it had been raised to forty inches. The Engineer was a fresh hand, having been on board but a few days. From the effects produced, there can be little doubt that the steam was pretty *high*; and from the construction of the boiler and lack of water, the vertical flue within the steam chimney was most likely overheated and collapsed.

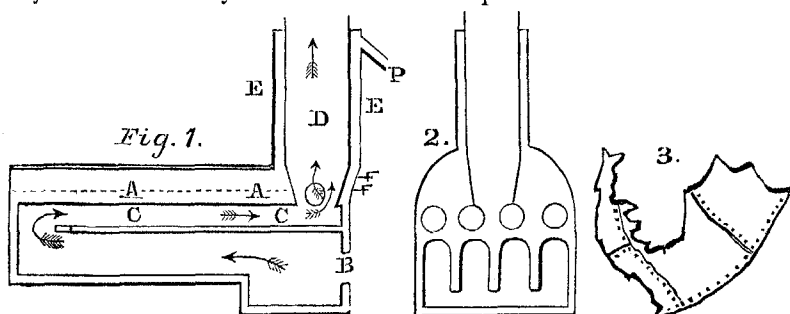


Fig. 1, is a longitudinal section. B, one of the openings for the fire doors. C, C, a horizontal flue terminating in the vertical one D, which was surrounded by the steam chimney E, E. The arrows show the direction of the smoke and flame. A, A, the water line. P, the steam pipe. There were four return flues all terminating in the vertical one.

Fig. 2, a section across the front end of the boiler.

Fig. 3, the only part of the boiler left. It does not exceed five or six feet in any direction. Some patches are on it and part of two new plates, recently put in. No part seems much worn. Two or three interior braces remain attached. The boiler was about sixteen feet long and eight feet wide. The horizontal flues were cylindrical and about sixteen inches diameter.

This is another proof of the correctness of the opinion of the Committee on Explosions respecting such boilers, and I am afraid many more will yet have to be recorded.

Very respectfully,

THOS. EWBANK.

New York, February 10th, 1842.