

UNITED STATES PATENT OFFICE

JAMES E. ATWOOD, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN COMPOUNDS FOR LINING BOTTOMS OF BESSEMER OR KELLY CONVERTERS.

Specification forming part of Letters Patent No. **138,780**, dated May 13, 1873; application filed May 5, 1873.

To all whom it may concern:

Be it known that I, JAMES E. ATWOOD, of Pittsburg, Allegheny county, Pennsylvania, have invented a Compound for Tuyeres, of which the following is a specification:

This invention relates to compounds of refractory nature employed in lining the bottoms of converters used in the manufacture of Bessemer steel, commonly called "Bessemer converters." The compounds heretofore used for the bottoms of converters will last on an average of from three to five heats, when it becomes necessary to reline the bottom at the expense of time and labor, as the converter must be allowed to cool off before being relined. My invention consists, therefore, in combining a carbon—preferably plumbago in the form of old crucibles, although anthracite or bituminous coal may furnish the carbon—German or other plastic clay, old ground fire-brick, Mount Savage stone-clay, and burnt or unburnt sand, which, when ground together and dampened so as to be tamped into the mold, will form a lining that will run from twelve to twenty-four heats, or, as it is technically termed, "blows."

The proportions that I have found to answer best are: Plumbago in the form of old crucible, (or the coals above named,) twenty parts; German clay, thirty parts; ground fire-brick, thirty parts; Mount Savage stone-clay, ten parts; common sharp sand, ten parts. These I grind together and dampen with sufficient water to form a mass that can be tamped into

the mold which forms the bottom of the converter.

New plumbago may be employed instead of plumbago in the form of old crucibles; but this would be an additional expense without producing a proportionately better result.

Most of the materials used are inexpensive, being such as have been previously used in or about the works in some form or other, and this will, of course, cheapen the cost of manufacture.

The time heretofore lost in repairing converters having the old-style bottom was equivalent to about one-third of the working time, so that, where one hundred tons of steel were produced therein, converters lined by this compound will, in the same time, produce one hundred and fifty tons.

What I claim is—

1. A compound consisting of plumbago in the form of old crucibles, German clay, ground fire-brick, Mount Savage stone-clay, and burnt or unburnt sand, substantially as described, for lining the bottoms of converters.

2. A compound consisting of carbon in the form of anthracite or bituminous coal, ground fire-brick, burnt or unburnt sand, and one or more of the plastic clays, substantially as described, for the lining of converters.

JAMES E. ATWOOD.

Witnesses:

CHARLES ZIMMERMANN,
LUTHER MARTIN.