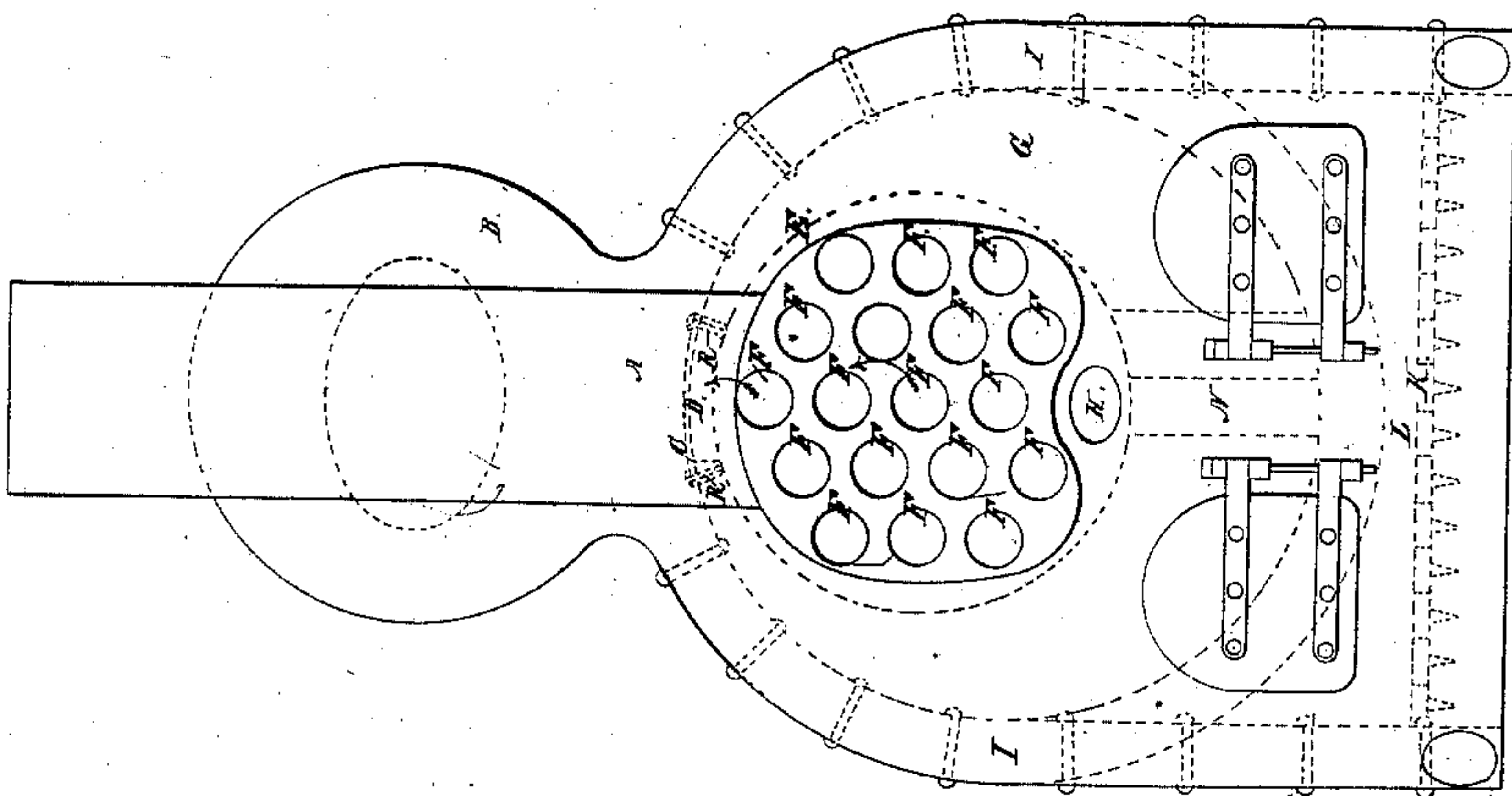
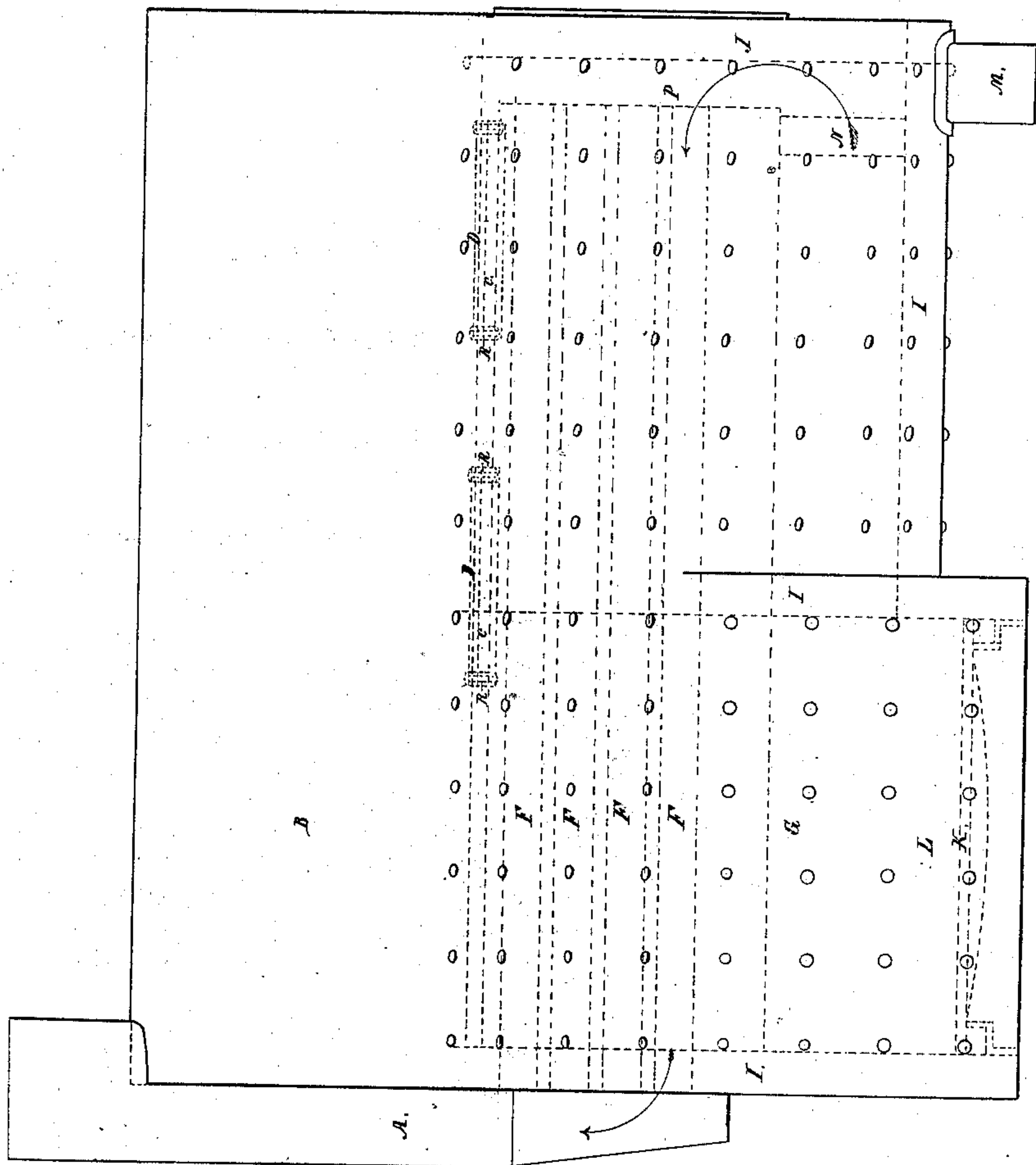


W. Barnhill,
Steam-Boiler Water-Circulator,
No. 8,768, *Patented Mar. 2, 1852.*



UNITED STATES PATENT OFFICE.

WILLIAM BARNHILL, OF PITTSBURG, PENNSYLVANIA.

IMPROVED ARRANGEMENT OF STEAM-BOILERS.

Specification forming part of Letters Patent No. 8,768, dated March 2, 1852.

To all whom it may concern:

Be it known that I, WILLIAM BARNHILL, of the city of Pittsburg, in the county of Allegheny and Commonwealth of Pennsylvania, have made and invented a new and Improved Mode of Constructing Steam-Boilers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the annexed drawings and letters marked thereon, forming part of this specification.

A cylindrical boiler, E, is suspended from the inner rim of the large or outside boiler, G, as represented in the front and side elevations shown in the annexed drawings. The forward end of the cylindrical boiler E rests upon the side of the forward water-chamber, I, of the large boiler G. The back end and middle of the cylinder or boiler E are connected with the rim of the large boiler G at the openings C by plates or rings D and bolts R. The inner cylindrical boiler, E, contains flues F, extending from the back end of the boiler E to the forward end of the large or outside boiler, G. Through the back end of the boiler G is an opening, S, with a door, T, opposite to the end of the inner boiler, E, to afford access to the flues F to clear or replace them when they become foul or worn out. The fire-place is in the interior of the large boiler G, between the water chambers or spaces

I. The flame or heat from the fire passes along between the inner rim of the large boiler G and the outside surface of the boiler E to the back end of the latter, thence along the passage P between the back end of the boiler E and the water-chamber at the back end of the large boiler G, and thence returns through the flues F to the chimney at the forward end of the large boiler G.

I am aware that it is not new to locate a cylindrical water-vessel in the flue of a boiler, and also that such vessel sometimes contained flues; but these flues were in this instance direct flues, and the fire-box was placed outside of the boiler proper.

What I claim, therefore, as my invention, and desire to secure by Letters Patent, is—

The arrangement of the cylindrical boiler having return-flues therein within the flue of the main boiler in such manner that the front end of said cylindrical vessel extends over the fire-grates, and so that nearly its whole outer surface is exposed to the action of the flames, gases, &c., which after their passage through the annular flue proceed to the chimney through the small flues in said cylindrical vessel.

WM. BARNHILL.

Witnesses:

WM. WILLSON,
B. B. CAMPBELL.