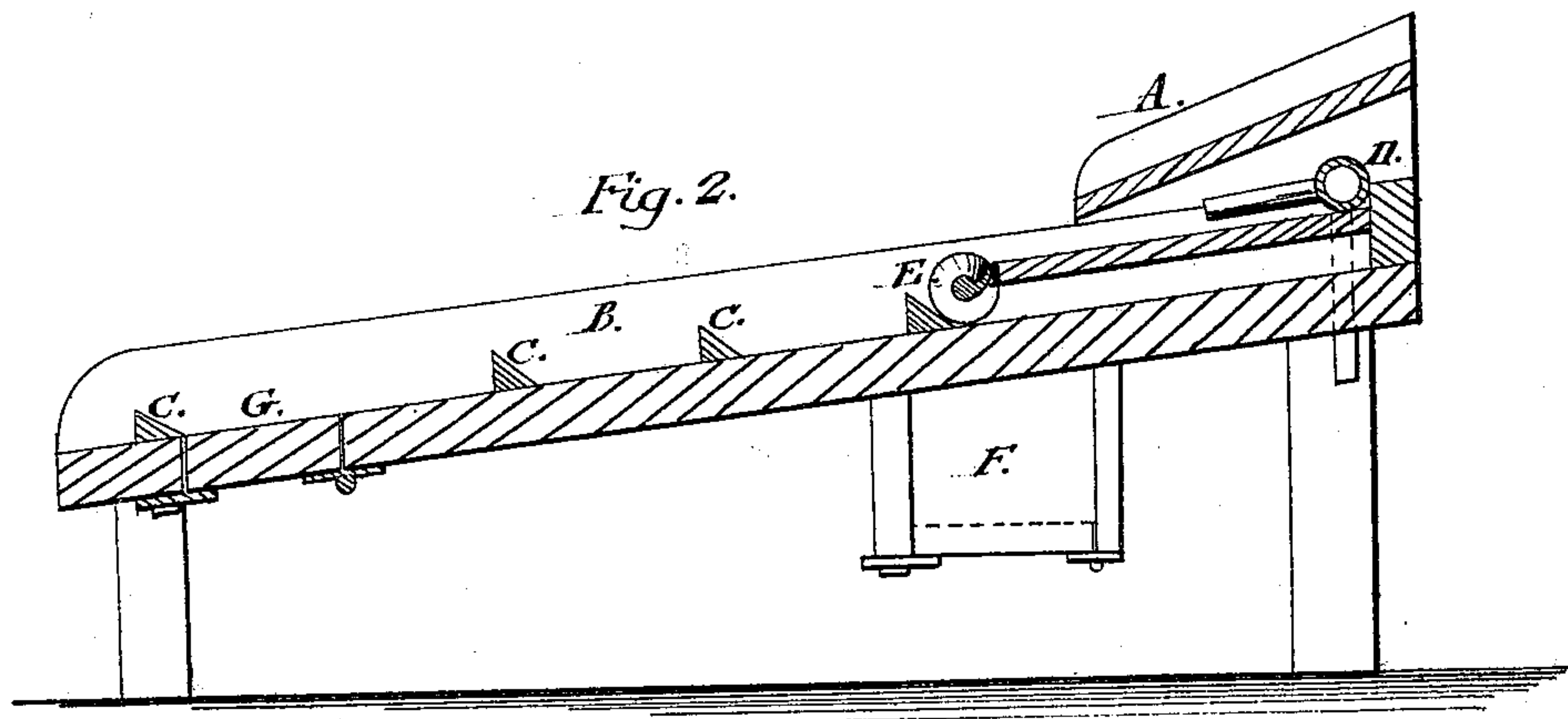
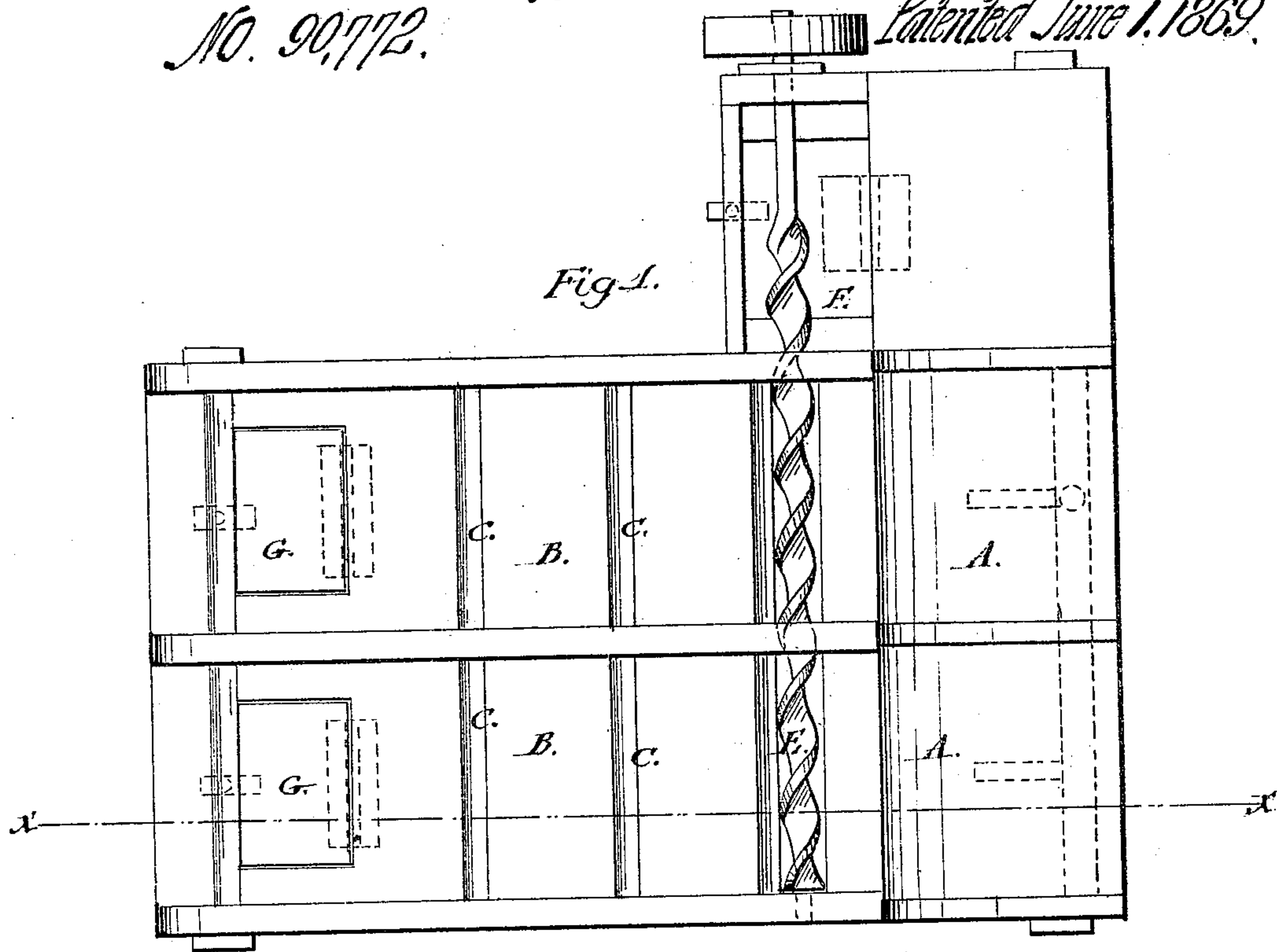


J. Morgan,

Purifying Coal.

No. 90,772.

Patented June 1, 1869.



Witnesses:
Geo. Brooks
O. Hutchinson

Inventor:
J. Morgan
by Munn & Co.
Attorneys

United States Patent Office.

DAVID MORGAN, OF HAMMONDSVILLE, OHIO.

Letters Patent No. 90,772, dated June 1, 1869.

IMPROVED MACHINE FOR DESULPHURIZING BITUMINOUS COAL.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, DAVID MORGAN, of Hammondsville, in the county of Jefferson, and State of Ohio, have invented a new and useful Improvement in Desulphurizing Bituminous Coal; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to an improvement in separating sulphur from bituminous coal, and thereby rendering it more suitable for the purposes for which it is used; and consists in washing the coal and separating the sulphur therefrom, by means of one or more inclined troughs, with bars or cleats therein.

In the accompanying drawing—

Figure 1 represents a top or plan view of an apparatus, by means of which I carry out my invention.

Figure 2 is a vertical section of fig. 1, through the line *x x*.

Similar letters of reference indicate corresponding parts.

It is well known that bituminous coal frequently contains so much sulphur, that it is unfit for many purposes, especially for welding in blacksmiths' work, and it is therefore a great desideratum to separate it from the coal.

I have discovered that this can be done by washing, as the sulphur is heavier than the coal. For this purpose I construct the apparatus represented in the drawing.

A is a chute, over which the combined crushed coal and sulphur is conveyed.

B B are troughs having transverse bars or cleats, *c*, on their bottoms, more or less in number.

D represents a water-pipe beneath the chute, through which a current of water is discharged, which floods the troughs to a greater or lesser extent, and washes down the coal, while the sulphur, being of greater specific gravity than the coal, sinks, and is detained principally by the revolving spiral conveyer E, which conveys it into the box or receptacle F.

A portion is washed along by the water, and lodges against the bars *c*, while the clean coal is carried over at the end of the trough.

The bars or cleats *c* are removable, so that the troughs may be washed clean of the sulphur, which is dropped through the trap-doors G G, as it is forced down by the water. The coal is thus separated from the sulphur and deposited from the ends of the troughs in a heap by itself.

The operation is greatly facilitated by the spiral conveyer E, but the use of it is not indispensable, as excellent results are obtained from the use of the bars or cleats alone.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. Desulphurizing bituminous coal by washing with water, substantially in the manner described.

2. The inclined troughs B, one or more, with the cross-bars or cleats *c*, substantially as and for the purposes herein shown and described.

3. In combination with the troughs B B, or either of them, the spiral conveyer E, substantially as and for the purposes set forth.

The above specification of my invention, signed by me this day of , 1869.

Witnesses:

L. H. BASHAND,
WM. D. REESE.

DAVID MORGAN.