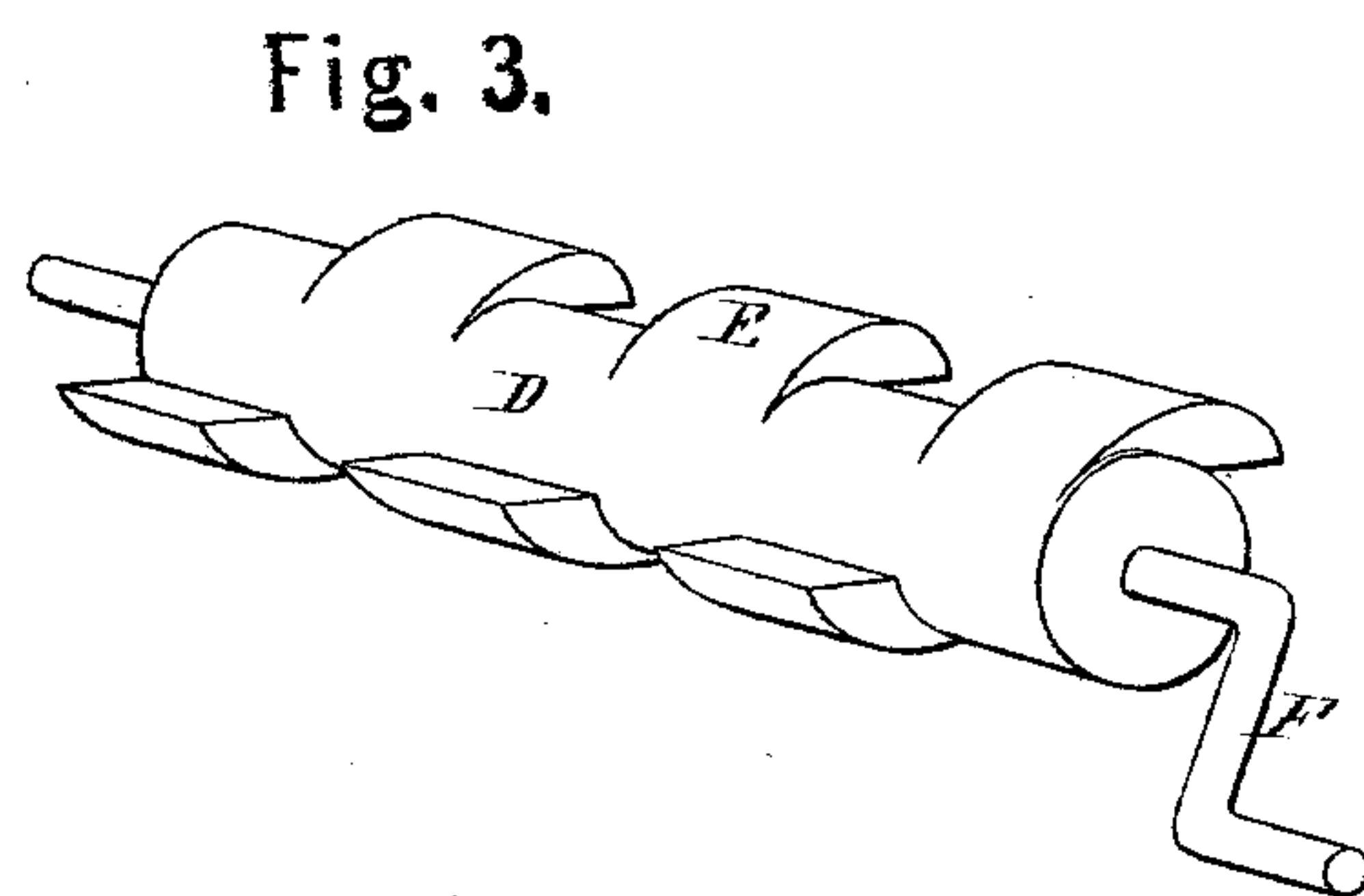
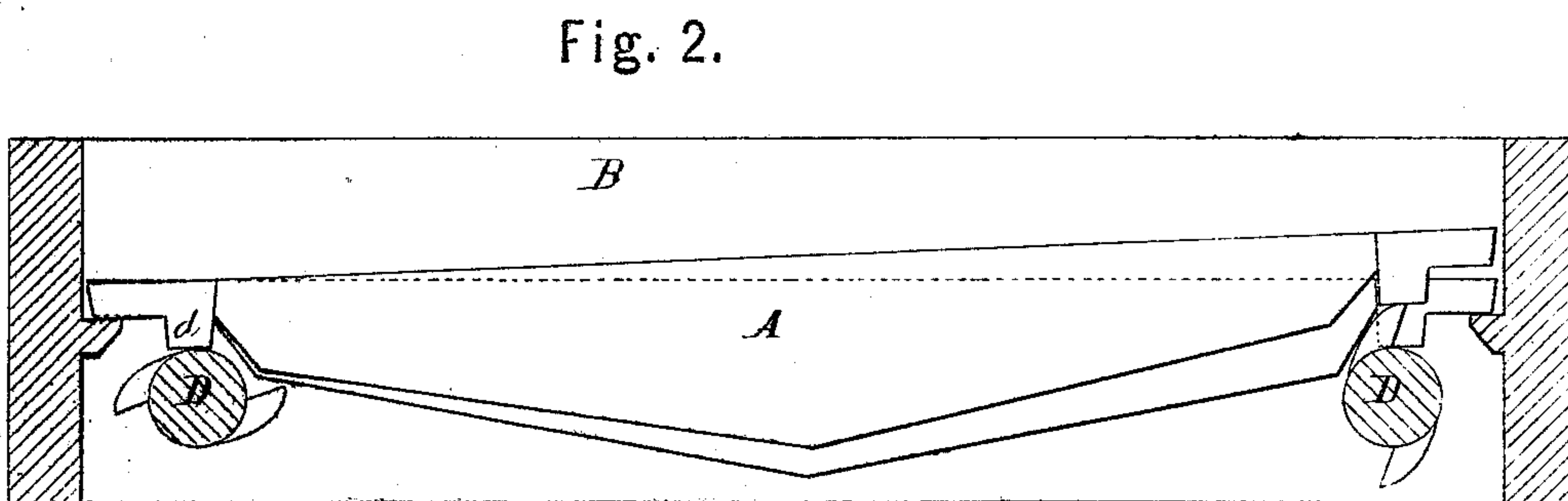
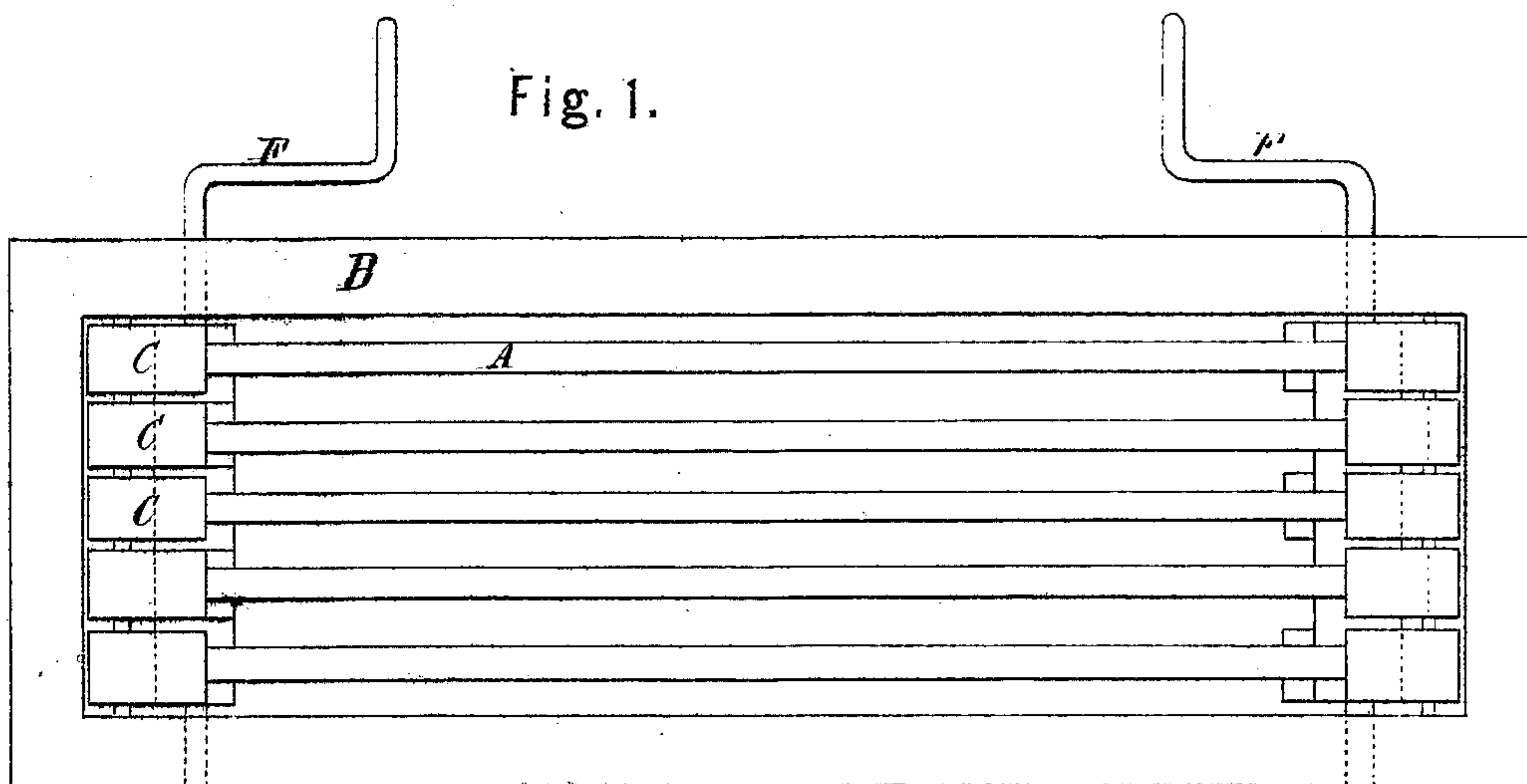


ROBERT C. GRAVES.

Improvement in Furnace-Grates.

No. 126,285.

Patented April 30, 1872.



WITNESSES.

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UNITED STATES PATENT OFFICE.

ROBERT C. GRAVES, OF BARNESVILLE, OHIO.

IMPROVEMENT IN FURNACE-GRATES.

Specification forming part of Letters Patent No. 126,285, dated April 30, 1872.

To all whom it may concern:

Be it known that I, ROBERT C. GRAVES, of Barnesville, in the county of Belmont and State of Ohio, have invented a new and valuable Improvement in Grates; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a plan view of my grate. Fig. 2 is a vertical longitudinal section of the same.

My invention has relation to fire-grates; and consists in the construction and novel arrangement of the grate-bars and of rotary cams used in connection therewith, as hereinafter described. The object of my invention is to provide means for gradually lifting the grate-bars with their load and letting them fall suddenly and alternately as the cams are rotated, thus producing a sufficient agitation of the coal-bed without the exercise of undue strength in turning the cam-shaft.

Referring to the accompanying drawing illustrating my invention, A represents a number of parallel grate-bars laid loosely within the fire-box or furnace B, their ends resting on cleats or ledges *b*. The grate-bars are constructed with rectangular enlargements C at their ends, and with projections *d* near the in-

ner ends or shoulders and on the under sides of said enlargements. D represents shafts journaled transversely near the ends of the grate-bars, and constructed with the wipers E, arranged on opposite sides and in the alternate order shown in Fig. 3. These shafts are operated by cranks F.

At every half revolution of one shaft the adjacent end of every alternate bar is raised and tripped, all the bars being raised and dropped at every full revolution. In the rotation of the wiper-shaft the rounded part of the wipers come in contact with the projections *d*. The bars, when not in motion, rest on the cleats *b*. It is intended to rotate one of the shafts at a time only.

The enlargements C serve to keep the bars apart and to prevent the ashes or clinkers from getting between their ends and clogging the operation of parts.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The loose grate-bars A, having the enlargement C and projections *b*, in combination with the wiper-shafts D, having the alternate curved cam projections terminated by abrupt shoulders, as and for the purpose specified.

R. C. GRAVES.

Witnesses:

JOHN SCOLES,
THOMAS GALLAGHER.