

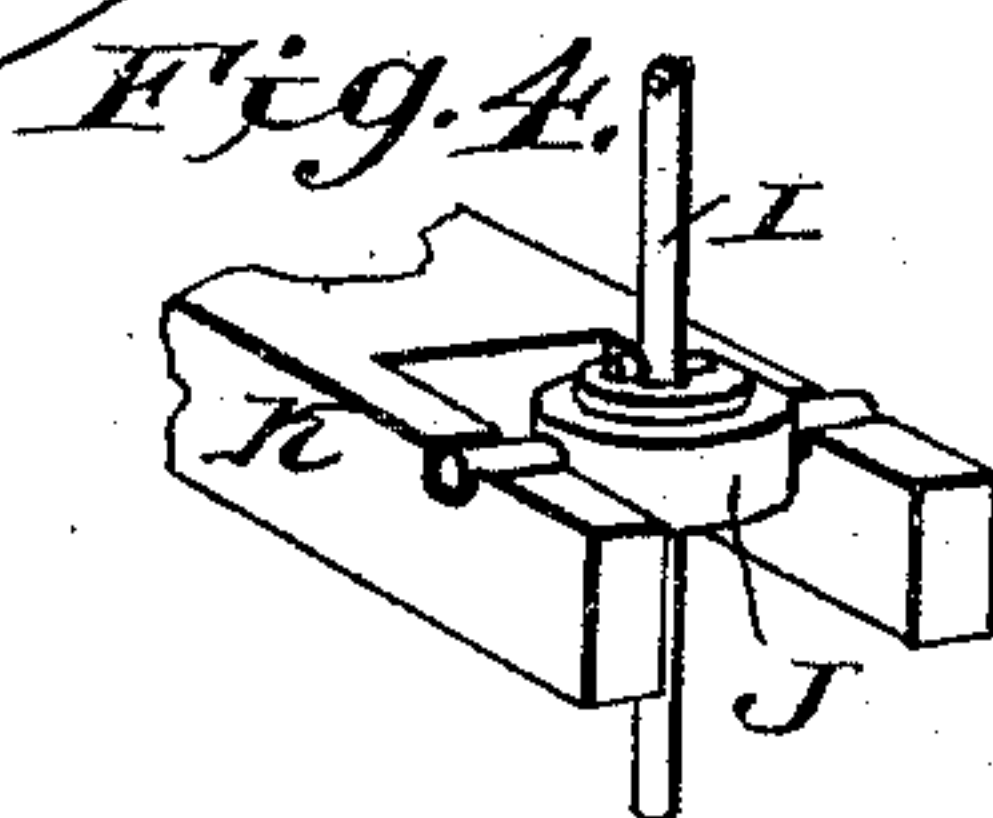
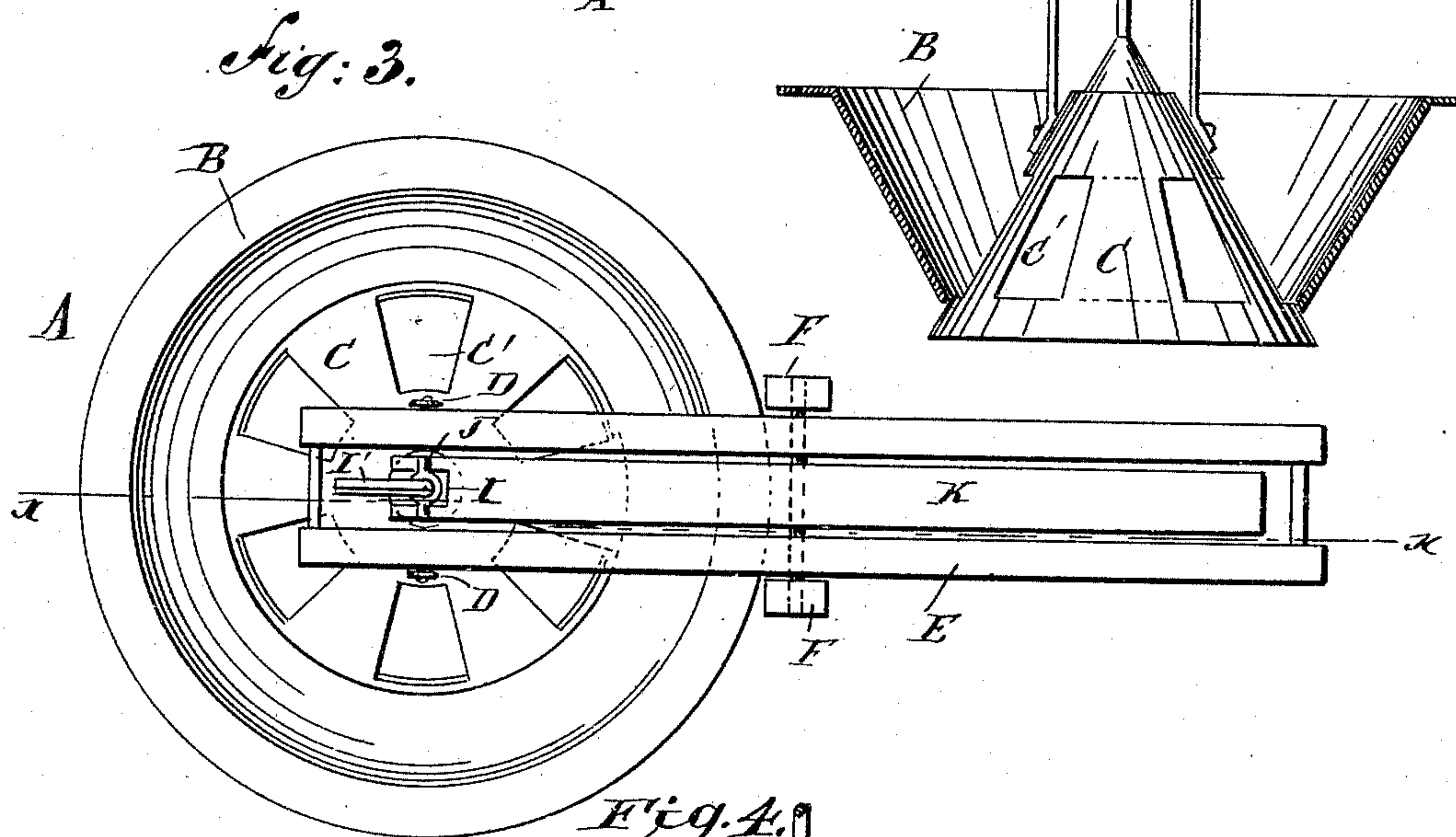
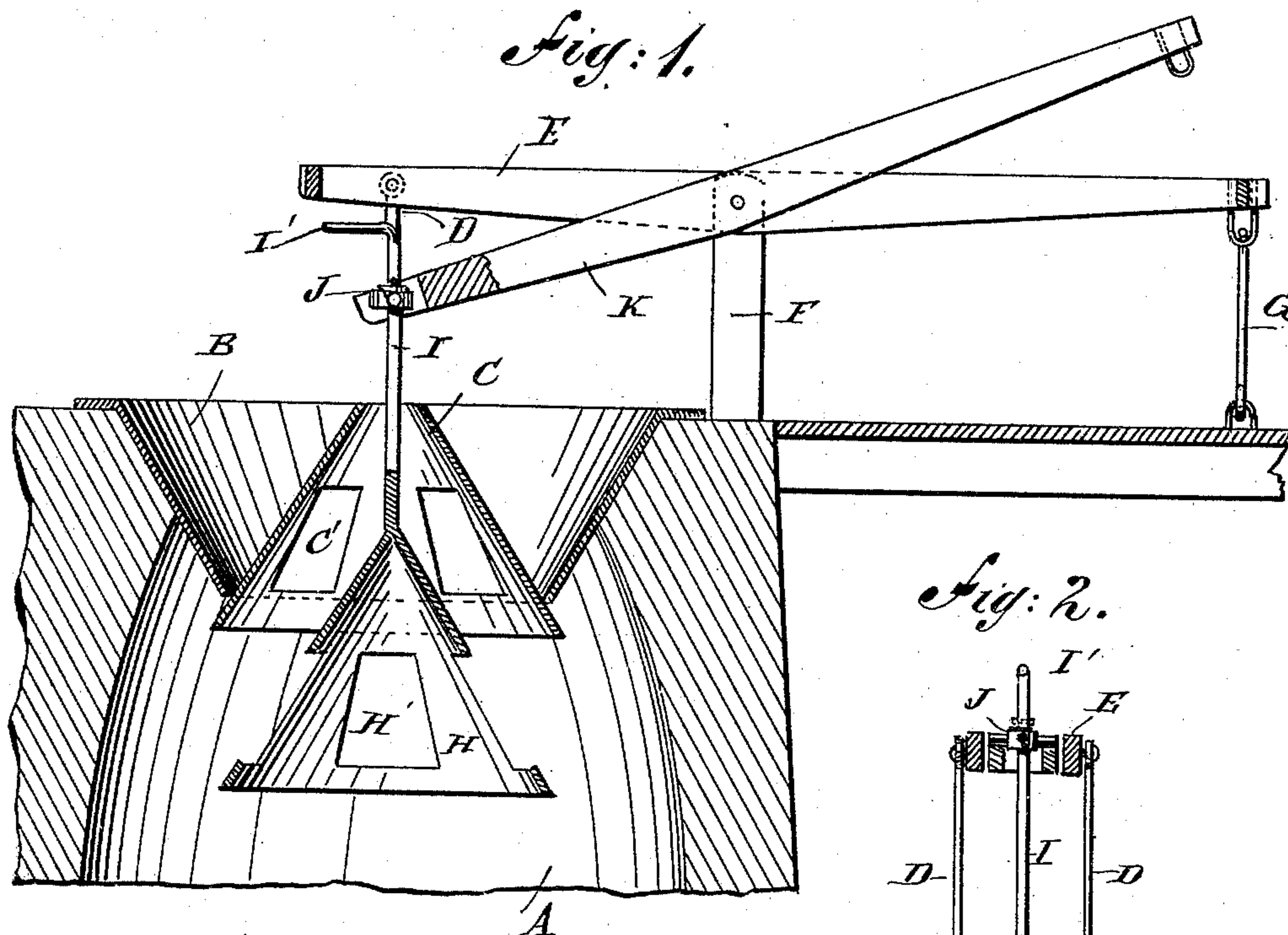
(No Model.)

B. F. CONNER.

BELL AND HOPPER FOR BLAST FURNACES.

No. 445,850.

Patented Feb. 3, 1891.



WITNESSES:

Chas. Nida.
E. M. Clark

INVENTOR:

B. F. Conner
BY Munn & Co
ATTORNEYS

UNITED STATES PATENT OFFICE.

BENJAMIN FRANKLIN CONNER, OF COLUMBIA, PENNSYLVANIA.

BELL AND HOPPER FOR BLAST-FURNACES.

SPECIFICATION forming part of Letters Patent No. 445,850, dated February 3, 1891.

Application filed August 30, 1890. Serial No. 363,515. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN FRANKLIN CONNER, of Columbia, in the county of Lancaster and State of Pennsylvania, have invented a new and Improved Bell and Hopper, of which the following is a full, clear, and exact description.

My invention is an improvement in bell-and-hopper mechanism, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement on the line xx of Fig. 3. Fig. 2 is a transverse section of the improvement, showing the bells in a closed position, and Fig. 3 is a plan view of the improvement. Fig. 4 is a perspective view illustrating a detail.

The stack-furnace A supports at its upper end the usual cone-shaped hopper B, adapted to be closed at its small end by a bell C, having in its wall a series of openings C' and provided at the small end on top with an opening. The bell C is supported by bars D from the beams E, pivoted on a post F, arranged on top of the furnace A, the said beams being adapted to be locked by a suitable mechanism G, so as to hold the bell closed in the small end of the hopper B.

Into the bell C is adapted to pass a second bell H, also provided in its wall with openings H' , arranged in such a position with relation to the openings C' that when the two bells are closed, as shown in Fig. 2, the two sets of openings do not register with each other. From the apex of the bell H extends upward to the top opening of the bell C a rod I, passing through a bearing J, pivoted on a lever K, also fulcrumed on the post F, and adapted to be locked to the outer end of the beams E by a suitable mechanism, so that the lever and beams can be moved together or separately, as desired.

The upper end of the rod I is provided with a handle I' for conveniently turning the said rod I in its bearing J. By manipulating the handle I' the bell H may be so moved that its openings H' register with the openings C' in the bell C.

The operation is as follows: When the lever K and the beams E are locked together and

extend horizontally, as illustrated in Fig. 2, then the bell H is inclosed within the bell C and the two sets of openings H' and C' do not register with each other, and at the same time the bell C closes the small end of the hopper B. When the hopper B is now charged in the usual manner with the charging material, then the operator unlocks the lever K from the beams E and permits the bell H to swing downward, whereby the charging material in the hopper B passes through the openings C' of the bell C onto the bell H, so that part of the charging material passes over the sides of the bell H and part through its openings H' , so that the entire charging material is evenly distributed in the furnace. When it is desirable to have the charging material thrown to the walls of the furnace for the purpose of burning off scaffolds, then the two bells C and H are let down together, so that the charging material passes from the hopper B over the bell C to the walls of the furnace, and when the necessary quantity has been deposited on the walls the operator takes hold of the handle I' and gives the same a quarter-turn, so as to turn the bell H one-quarter of a revolution within the bell C. The openings H' then register with the openings C' , and the remainder of the charge in the hopper D passes to the center of the furnace without lowering the bell H below the bell C.

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

1. The combination, with the hopper, of the two bells, one being adapted to fit within the other, which latter is provided with openings, as specified, and means for operating said bells independently, substantially as shown and described.

2. The combination, with a hopper, of two bells, located one within the other and each provided with openings, the inner bell being mounted to turn within the outer bell, so as to register the openings of the said two bells with each other, and means for operating both bells and rotating the inner one, substantially as shown and described.

B. FRANK. CONNER.

Witnesses:

ED. G. HOLDEN,
GEORGE THOMAS.