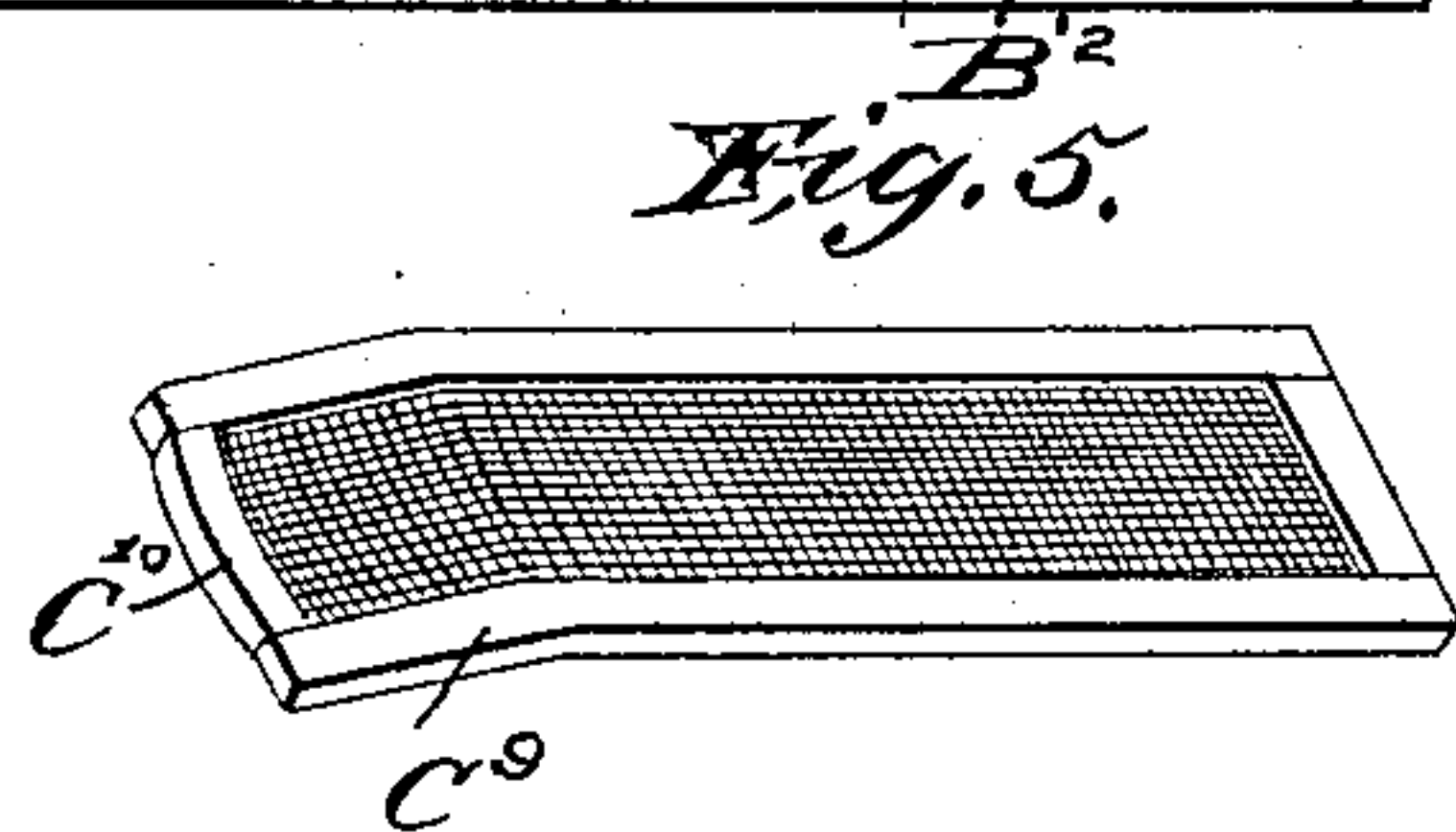
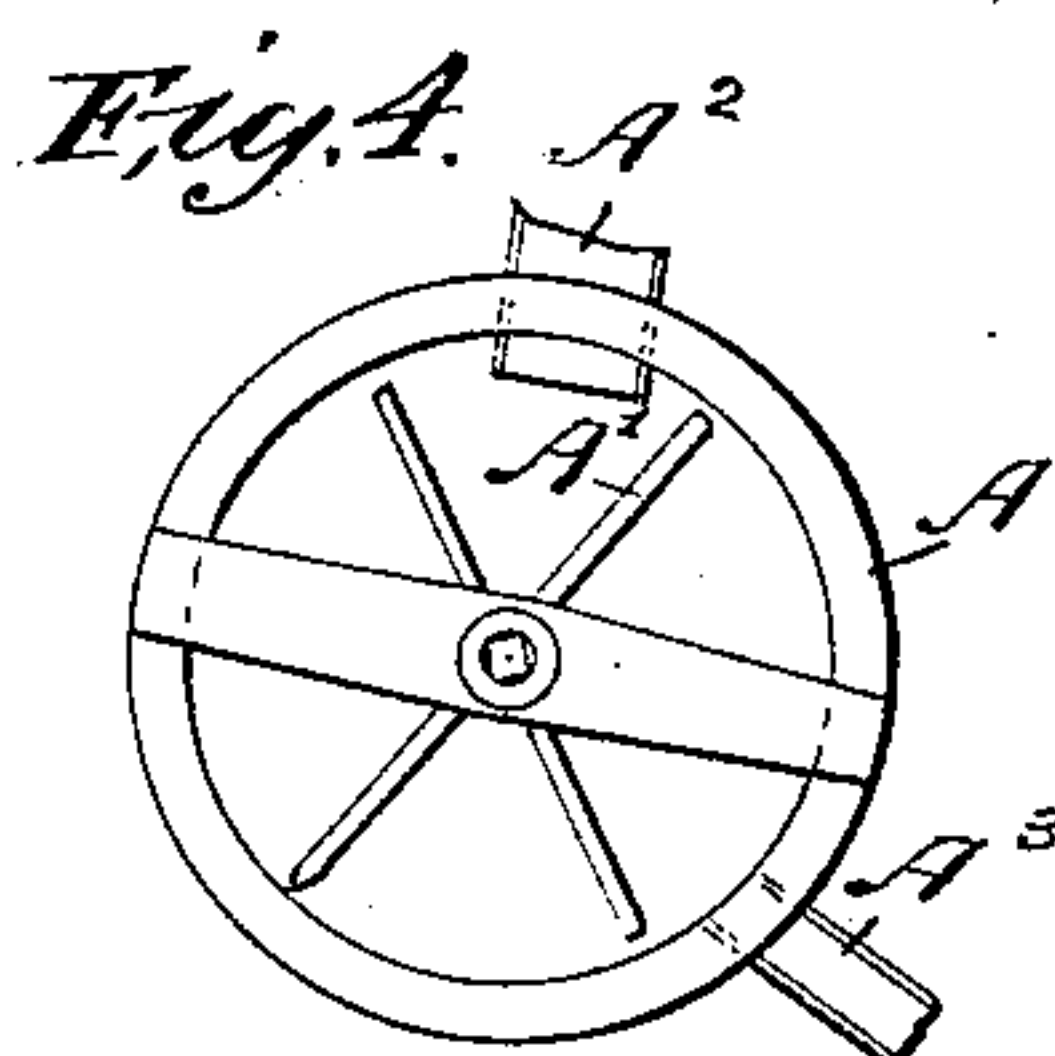
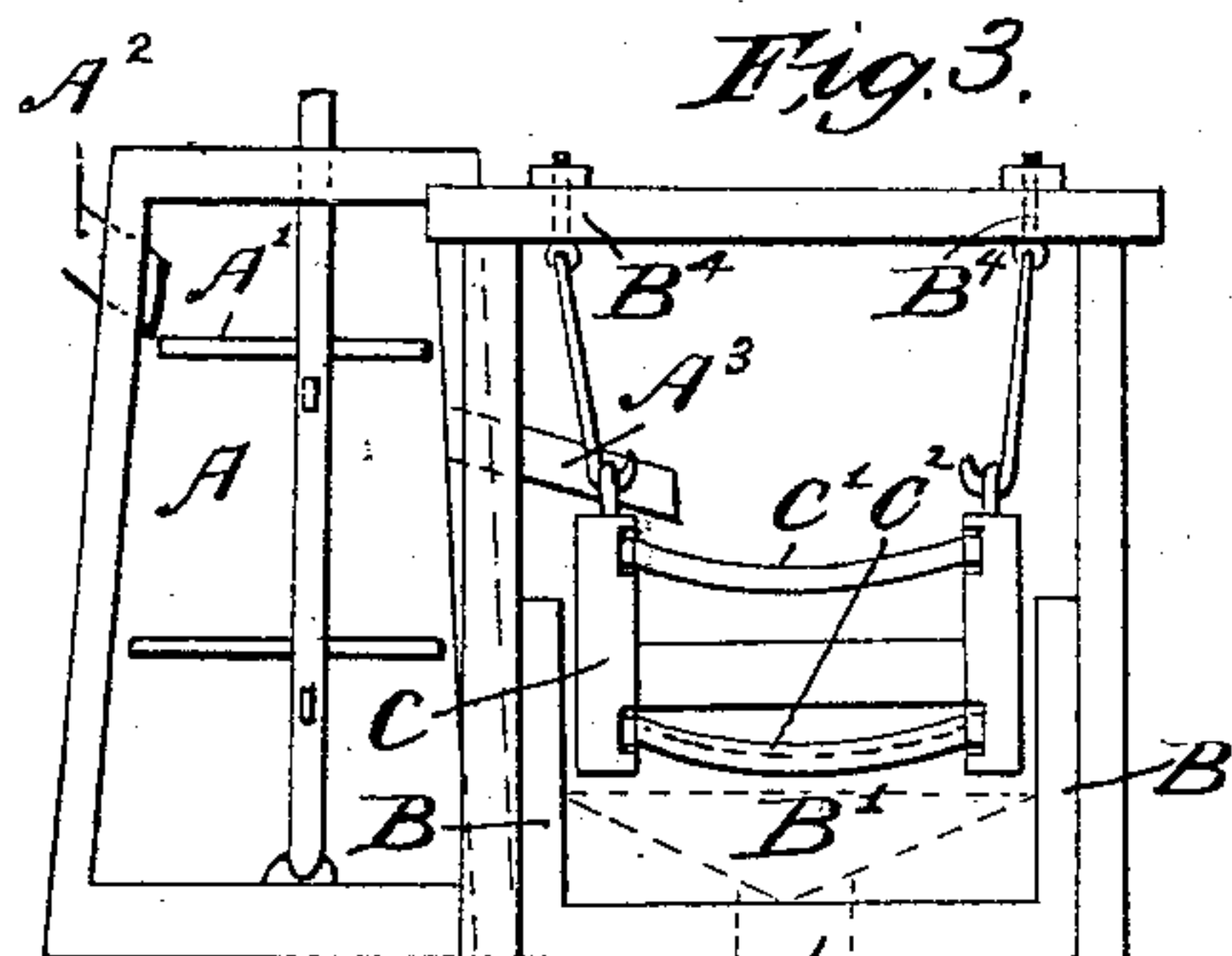
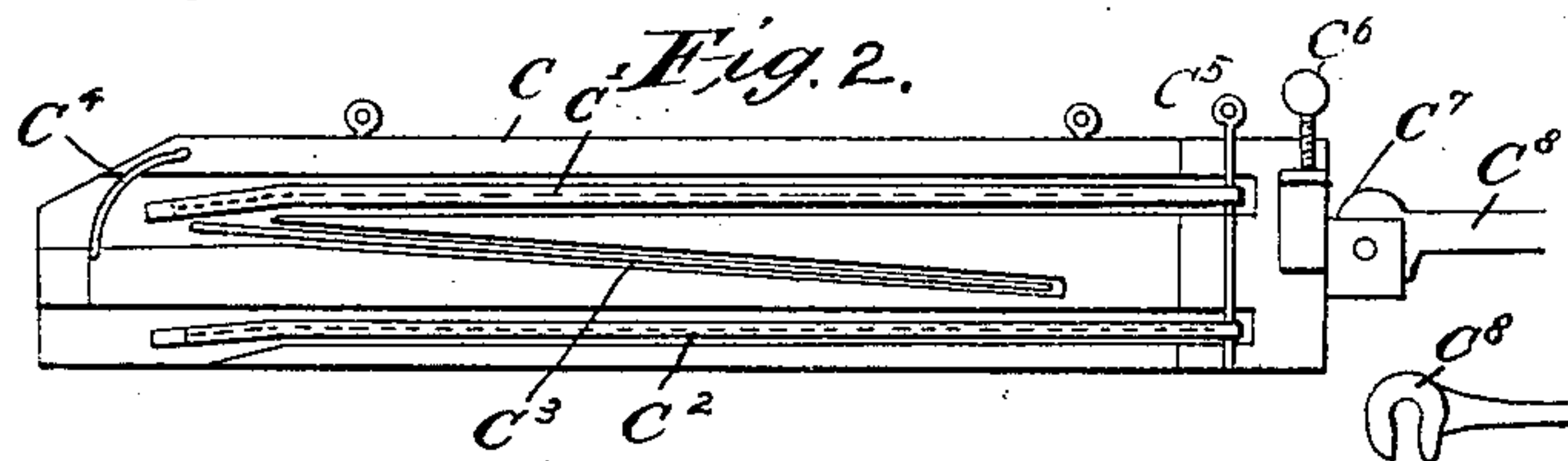
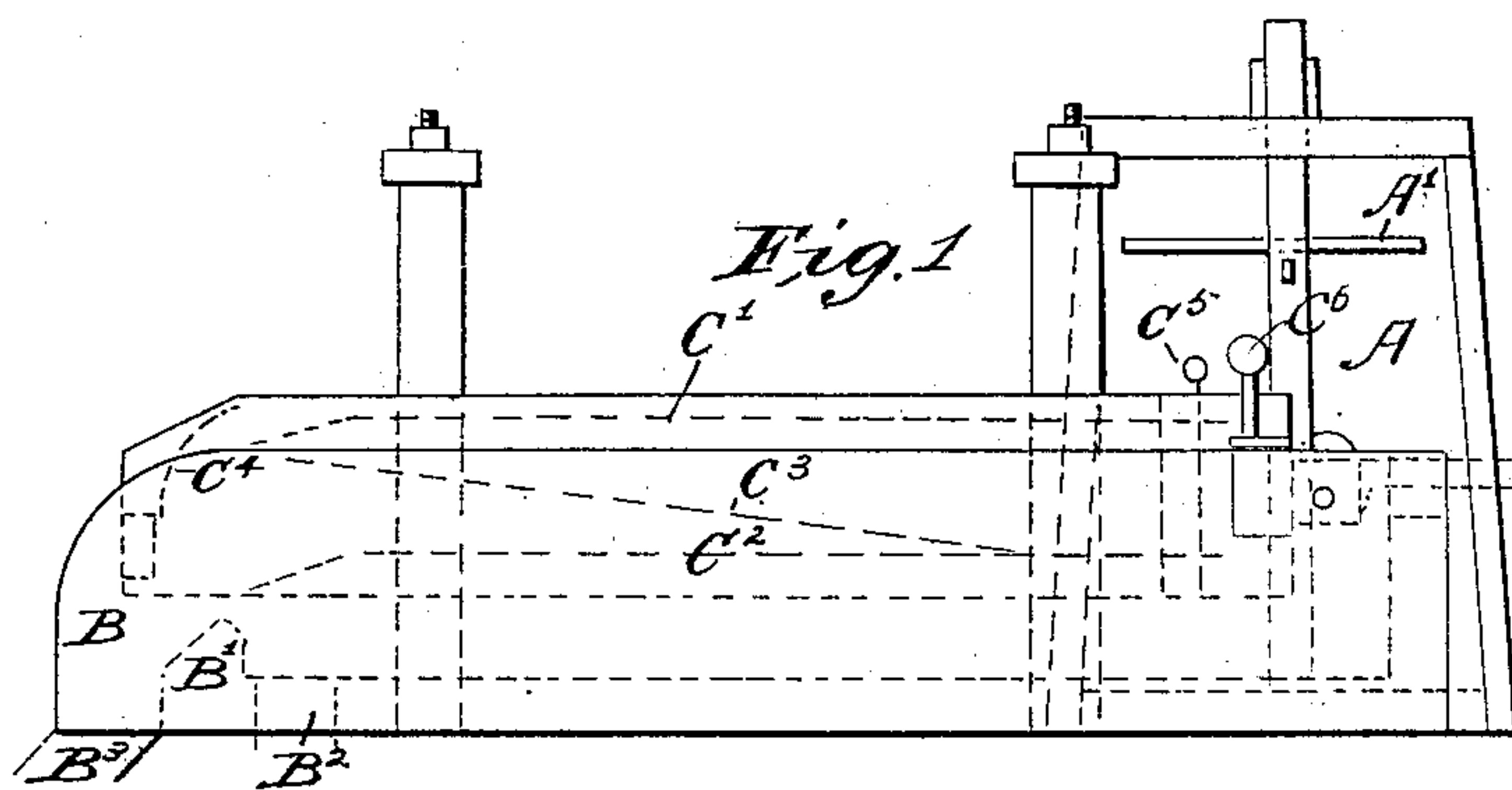


J. A. OWENS.

APPARATUS FOR THE MANUFACTURE OF STARCH.

No. 73,259.

Patented Jan. 14, 1868.



Witnesses.

Henry Green

John B. Green

Inventor.

John A. Owens

United States Patent Office.

JOHN A. OWENS, OF LITTLE FALLS, NEW YORK, ASSIGNOR TO HIMSELF
AND HENRY I. PETRIE.

Letters Patent No. 73,259, dated January 14, 1868.

IMPROVED APPARATUS FOR THE MANUFACTURE OF STARCH.

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, JOHN A. OWENS, of Little Falls, in the county of Herkimer, and State of New York, have invented new and useful Improvements in the Manufacture of Starch; 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 annexed drawings, making a part of this specification, in which—

Figure 1 represents a side view of the apparatus.

Figure 2, a sectional view of the screen.

Figure 3, a front view of the apparatus.

Figure 4, a top view of the agitating-tank.

Figure 5, a perspective view of one of the sieves.

A is the agitating-tank; A¹, the agitating-shaft and arm; A², a spout from the grinding-stones; A³, a spout to the screen; B, the frame in which the screen is hung; B¹, a bridge in the bottom thereof, to prevent the starch from running down the spout B³; B², a spout for carrying off the screened stock; B³, a spout for the bran and offal; B⁴, hook and rods for suspending the screen. C is the frame of the screen; C¹ is the upper sieve; C², the lower sieve; C³, an inclined plane between; C⁴, a guide for turning the bran from the sieve C¹ into the spout B³; C⁵, a pin for holding the sieves in place; C⁶, a screw for pressing on; C⁷, an India-rubber packing, with metallic plate on the top for holding in place; C⁸, the pitman, for agitating the screen; C⁹ is the bend in the side of the sieves; and C¹⁰, the curved end.

The nature of my invention consists in passing the ground grain through an agitator before it is screened or bolted, and in the peculiar construction of the screen. As practised by others, the ground grain is conveyed directly from the stones to the screen or bolt by a spout, and the first effort to separate the bran from the starch is in the screen or bolt. This I find not to work perfectly. Sufficient water cannot be kept on it while screening; it cannot be sufficiently agitated, and the operations follow one another too rapidly, and consequently there is a loss of starch. Again, the screens or bolts used by others consist of a single fine silk cloth. This receives the whole of the grain, as well as foreign matter, which clogs it, and it is injured by the silicious parts of the grain, while the sharp, hard parts cut the silk. These also cause a loss of starch, as well as delay and trouble in cleaning the bolt or screen. I obviate all these objections by my invention.

The agitating-tank A may be an ordinary circular tank or cistern, having a central vertical shaft, with horizontal arms, which shaft may be turned by any convenient power. The tank has a spout, A², leading from the millstones, which conduct the grain as ground into the tank, into which is also run a sufficiency of water to well mix and wash the ground grain, while the agitating-shaft is kept constantly rotating. This, by heating and stirring the grain thoroughly, separates the starch from the bran or husk. When the mass in the tank has risen up to the pipe A², it commences to run into the screen C, where the coarser bran and husk and foreign matter are separated from the stock. This screen C is composed of a frame, into which are inserted, in grooves in its side, two or more sieves, C¹ and C², with an inclined plane, C³, between them, which may be of sheet metal. The upper sieve, C¹, I make of wire bolting-cloth, as better calculated to stand the wear of the silicious matter of the bran and foreign substances which may be mixed with the grain. The gluten, too, does not so readily adhere to it, and much of it passes off with the bran. The lower sieve, C², is of the usual fine silk bolting-cloth. The stock which passes the upper sieve slides down the inclined plane C³ and falls upon the upper end of C², and as it has none of the coarse bran or offal or foreign matter, the sieve operates more freely, and allows the stock to pass through more readily, and there is less liability to clog. Water, of course, is kept running upon the screen while in operation, as in the ordinary process. All the bran or other matter which does not pass both sieves is carried off by the spout B³, while all that passes both falls down to the sloping bolter of the frame B, and is conveyed by the spout B² to the proper receptacle below for the further usual treatment. The screen is shaken in the usual way by a pitman, C⁸, attached to the screen by a hook or slot in the end, and held in place by the India rubber in the end of the screen, when pressed down by the screw C⁶, while the other end is attached to a link. Each of the sieves C¹ and C² is formed in a peculiar manner. The frame, for a short distance at the front end, is bent down, C⁹, and the front end of the frame is also curved, C¹⁰. The object of these changes is

to allow the bran and offal to pass over the end of the sieves freely, and the curved end accommodates itself to the sagging of the cloth. When the sieve is straight, or there is a sag in the cloth, as there always will be when the sieve is made in the usual manner, the tendency is for the bran to lodge, which retards and renders the work less perfect. But by bending the sides and curving the end, as described, there can be little or no sagging at the front end, and the bran passes off freely.

I do not claim to have invented the agitating-tank constructed as described, for they are in common use for various purposes, but I claim it as an additional instrument in the manufacture of starch, for the special purpose of washing out and separating the starch from the other parts of the grain, after grinding and before screening, as described.

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

1. The tank A, with the shaft and arms A¹, constructed and operating as described, and for the uses and purposes mentioned.
2. The screen C, constructed of the sieves C¹ and C², and the inclined plane C³, substantially as described, and for the uses and purposes mentioned.
3. Forming the front end of the sieves C¹ and C² with the angle C³, substantially as described, and for the uses and purposes mentioned.
4. Forming the end of the sieves C¹ and C² with a curve, substantially as described, and for the uses and purposes mentioned.

JOHN A. OWENS.

Witnesses:

HENRY GREEN,
JOHN G. CROCKER.