

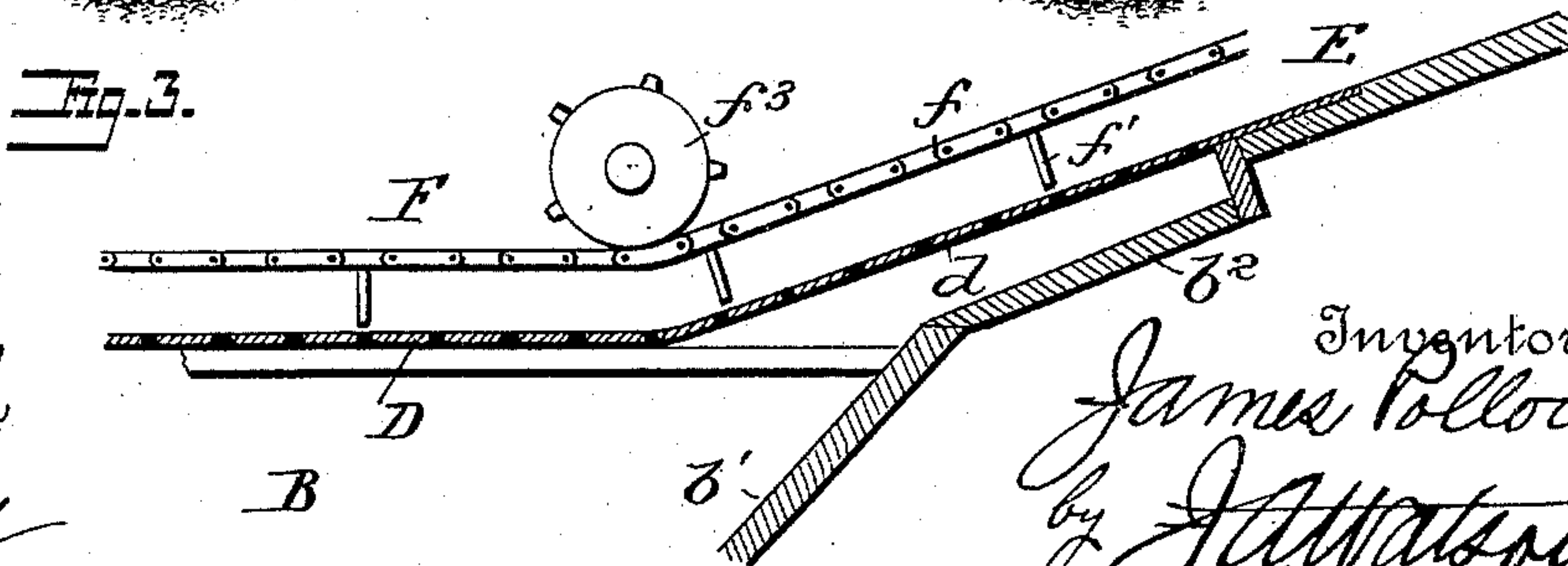
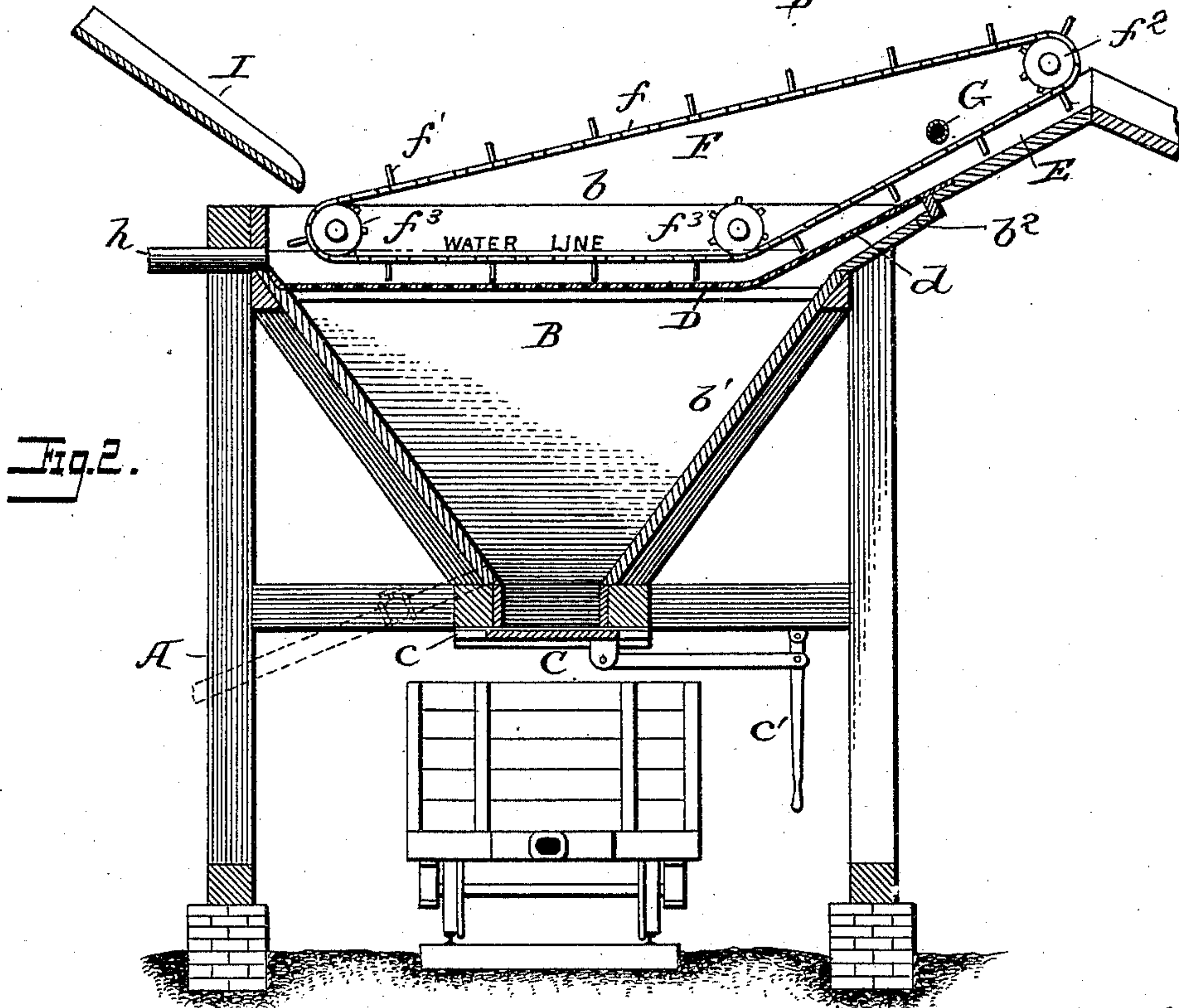
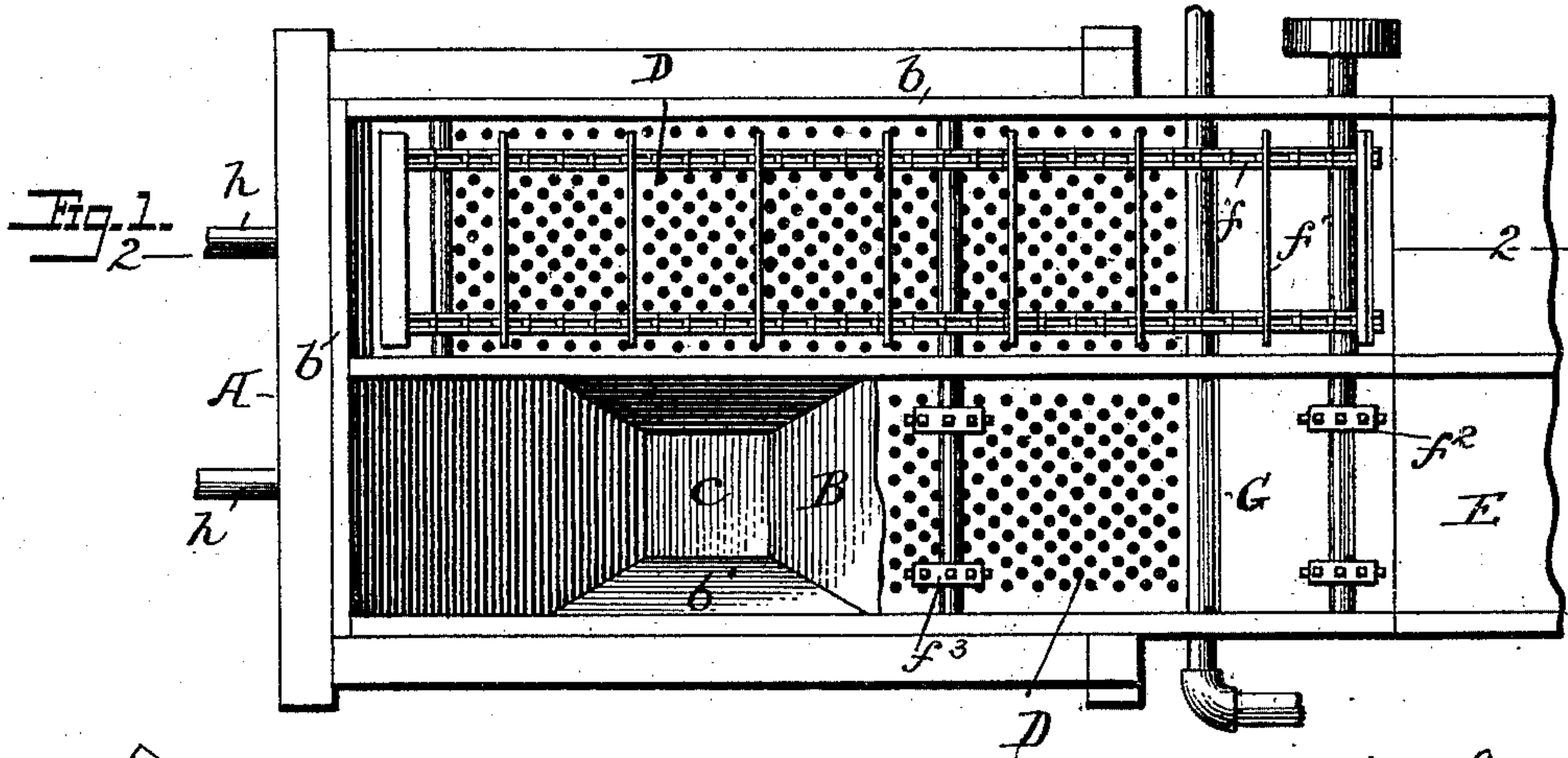
(No Model.)

J. POLLOCK.

COAL WASHING AND SEPARATING MACHINE.

No. 473,957.

Patented May 3, 1892.



Witnesses
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JAMES POLLOCK, OF WILKES-BARRÉ, PENNSYLVANIA.

COAL WASHING AND SEPARATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 473,957, dated May 3, 1892.

Application filed November 28, 1891. Serial No. 413,385. (No model.)

To all whom it may concern:

Be it known that I, JAMES POLLOCK, a citizen of the United States, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Coal Washing and Separating Machines, of which the following is a specification.

My invention relates to an improved coal washing and separating machine; and it consists in an apparatus which is particularly designed for treating the culm or waste which has accumulated at coal-mines. This culm consists, chiefly, of fine dirt, which is of little value, and small sizes of coal, which are now marketable and may be used in various ways.

With the improved apparatus which is hereinafter described I am enabled to wash and separate out the coal from the dirt rapidly and economically, leaving the dirt to be disposed of in any way convenient.

In the accompanying drawings, Figure 1 is a plan view of two of the machines arranged side by side in a common frame-work, parts being broken away to show the internal construction. Fig. 2 is a sectional view on the line 2 2 of Fig. 1; and 3 is a part of Fig. 2, enlarged.

In the drawings, A indicates the frame-work for sustaining the various parts of the machine. This frame-work I prefer to construct so as to sustain a series of the machines side by side, as shown in Fig. 1.

In the further description of my invention I shall confine myself to a single machine, it being understood that they are all alike and that I may use them singly or in series, as desired.

B indicates a tank, which is rectangular in plan and has at its upper part vertical sides and ends *b* and below inwardly-inclined sides and ends *b'* in the form of a truncated pyramid. This tank is water-tight and is provided at its bottom with an outlet closed by a valve or gate C. As shown, the gate C consists of a plate *c*, sliding in guides and operated by a lever *c'*, which is hinged to the frame-work at one side thereof. The parts above described may be constructed of wood or other suitable material, the frame-work and tank being preferably of wood and the gate of iron.

In the upper part of the tank B, at or near

the junction of the vertical with the inclined sides, is a substantially flat and horizontal metal plate D, connected at its edges and at one end to the inner walls of the tank. At the opposite end the plate is inclined upward at *d* and projects out of the tank, connecting with a trough E. This plate is of suitable thickness to sustain a considerable quantity of material and it is filled with small perforations or holes punched therein, the size depending upon the smallest grade of coal which it is desired to separate from the dirt. Below the inclined portion of the plate *d* is a space communicating with the tank and inclosed by a water-tight extension thereof *b²*.

An endless conveyer F, consisting of chains *f* and flights or boards *f'*, attached thereto, is mounted upon wheels *f²* *f³*. The wheels *f³* are located within the tank in such position as to cause the flights to travel over and upon or close to the perforated plate D, one pair of said wheels being located at each end of the tank. The wheels *f²*, which are preferably used as the drive-wheels, are located above the trough E, so as to cause the flights, after leaving the horizontal portion of the plate D, to travel up the inclined portion *d* and along the trough E to its upper end. From the upper end of the trough E, the coal after it is washed may be delivered to screens to be sized or fall directly into a car or other suitable receptacle.

Water may be admitted to the tank in any desired way. Where a supply of running water is available, I prefer to admit a moderate amount continuously through a perforated spray-pipe G, which is located across the tank between the upper and lower parts of the conveyer and at the upper edge of the inclined portion *d* of the perforated plate. The overflow trough or pipe *h* is arranged at the opposite end of the tank. The height of the overflow is such that the water-line will be considerably above the main portion of the perforated plate D and intersect the inclined portion *d* about midway of its length. I wish it understood, however, that I may operate my invention without a constant supply of water, one filling of the tank being sufficient to enable the washing and separating to go on successfully for a considerable period of time. The culm is supplied to the tank by

means of a chute I, which preferably deposits it at the back shaft of the conveyer. As shown in Fig. 2, a track is arranged below the machines, upon which cars may be run to receive the dirt which accumulates in the bottom of the tanks.

The operation is as follows: The tank being filled with water up to the indicated water-line, the conveyer is driven at a moderate rate of speed in the direction of the arrows and culm is supplied continuously at the rear end of the tank from the chute I. This culm falls into the water and is moved along and thoroughly stirred up and tumbled over and over upon the perforated plate D by the conveyer-flights. In this operation the fine dirt, which is of greater specific gravity than the water, sinks through the perforations, as through a sieve, and falls into the bottom of the tank, while the coal is thoroughly washed and moved along the bottom and up through the inclined trough E to be delivered to screens or other receptacles, as desired. Any dirt which remains in the coal as it leaves the horizontal part of the perforated plate is thoroughly washed out as it travels over the inclined portion *d* by the backward movement of the water, which is also carried up the incline by the conveyer. The dirt which accumulates in the bottom of the tank may be discharged into cars periodically, it being in the form of a black mud. If ordinary care be taken, most of the dirt may be discharged without permitting the water to escape.

In the above specification I have described the preferred embodiment of my invention; but it is to be understood that in various minor details the construction and operation may be changed without departing from the spirit of the invention. For instance, where there is a supply of running water available I may allow a portion of it to run off continuously through a small opening or pipe in the lower part of the tank, as shown in dotted lines in Fig. 2, thus carrying away the dirt automatically to any desired depositing place. Furthermore, my invention might be used to separate other materials which are similar to coal-culm, such as crushed ores, clay, and the like.

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim—

1. The combination of the water-tank, the substantially flat perforated plate extending across the tank below the water-line, and the

endless-chain conveyer having flights arranged to travel upon or close to the upper side of said plate, substantially as described.

2. The combination of the water-tank, the substantially flat perforated plate extending across the tank below the water-line and having an inclined perforated extension extending above the water-line, and the endless-chain conveyer located partly above and partly below the water-line and having flights arranged to travel upon or close to the upper surface of said plate, substantially as described.

3. The combination of the water-tank, the substantially flat perforated plate extending across the tank below the water-line, the trough E, inclined upward from said plate, and the endless-chain conveyer having flights arranged to travel upon or close to said plate and up said trough, whereby the material to be cleaned may be carried across and out of the tank, substantially as described.

4. The combination of the water-tank, the substantially flat perforated plate extending across the tank below the water-line, the trough E, connecting with the perforated plate, the endless-chain conveyer arranged to travel upon or close to the plate and through the trough, and means for drawing off the dirt deposited beneath the plate, substantially as described.

5. The combination of the water-tank, the substantially flat perforated plate extending across the tank below the water-line and having an extension extending above the water-line, an endless-chain conveyer having flights arranged to travel close to the upper side of said plate, a water-supply pipe at one end of said tank, and an overflow-pipe at the other, substantially as described.

6. The combination of the water-tank, the substantially flat perforated plate extending across said tank, the trough E, connecting with said plate, the endless-chain conveyer having flights arranged to travel along said plate and trough, a chute for delivering culm at the back shaft of the conveyer, the spray-pipe, the overflow-pipe, and the gate or valve at the bottom of the tank, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES POLLOCK.

Witnesses:

CHAS. SHONLIN,
C. W. KULP.