

(No Model.)

2 Sheets—Sheet 1.

A. R. HAMLIN & J. B. GONYEAU.
AMALGAMATOR.

No. 547,116.

Patented Oct. 1, 1895.

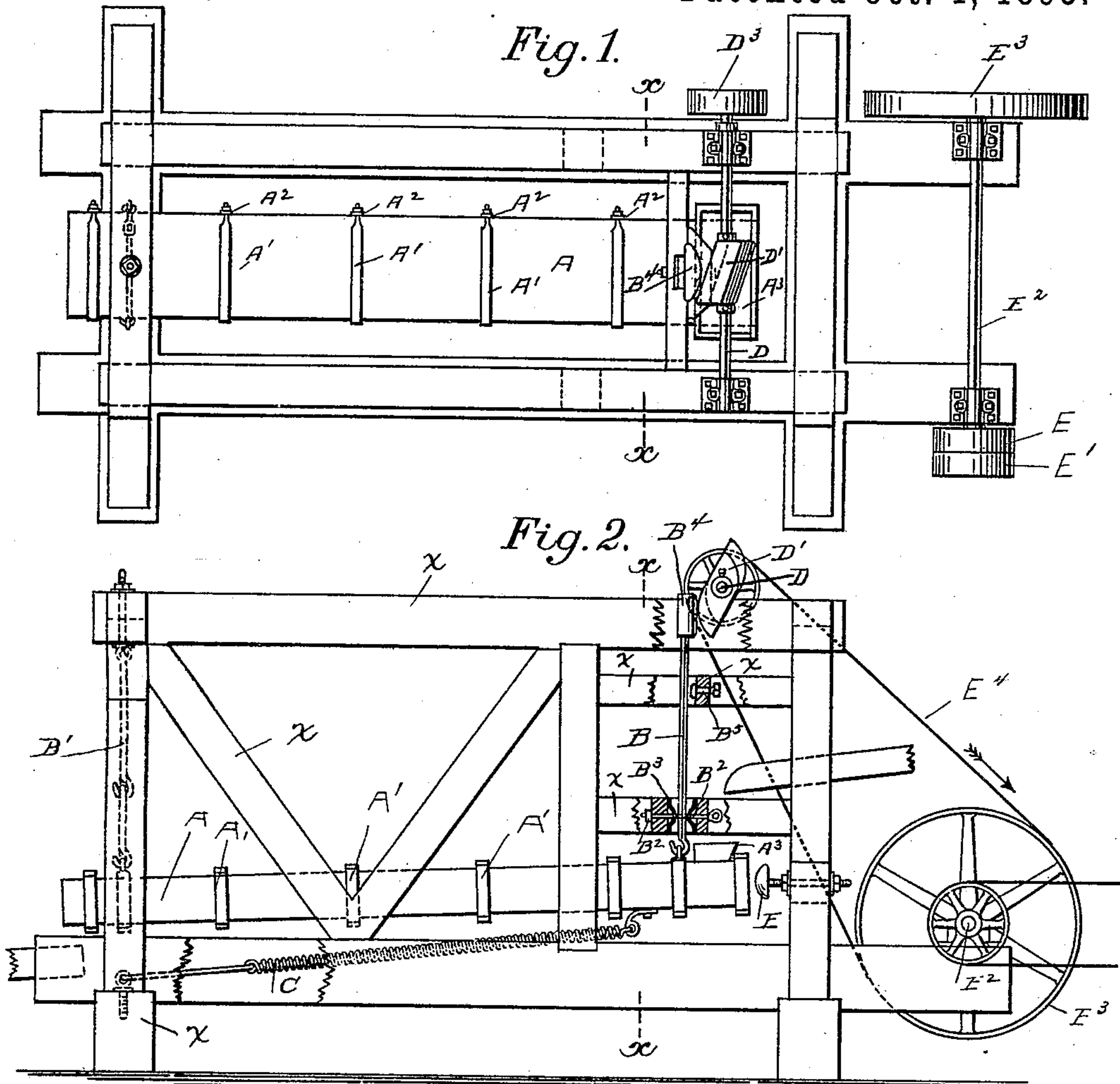
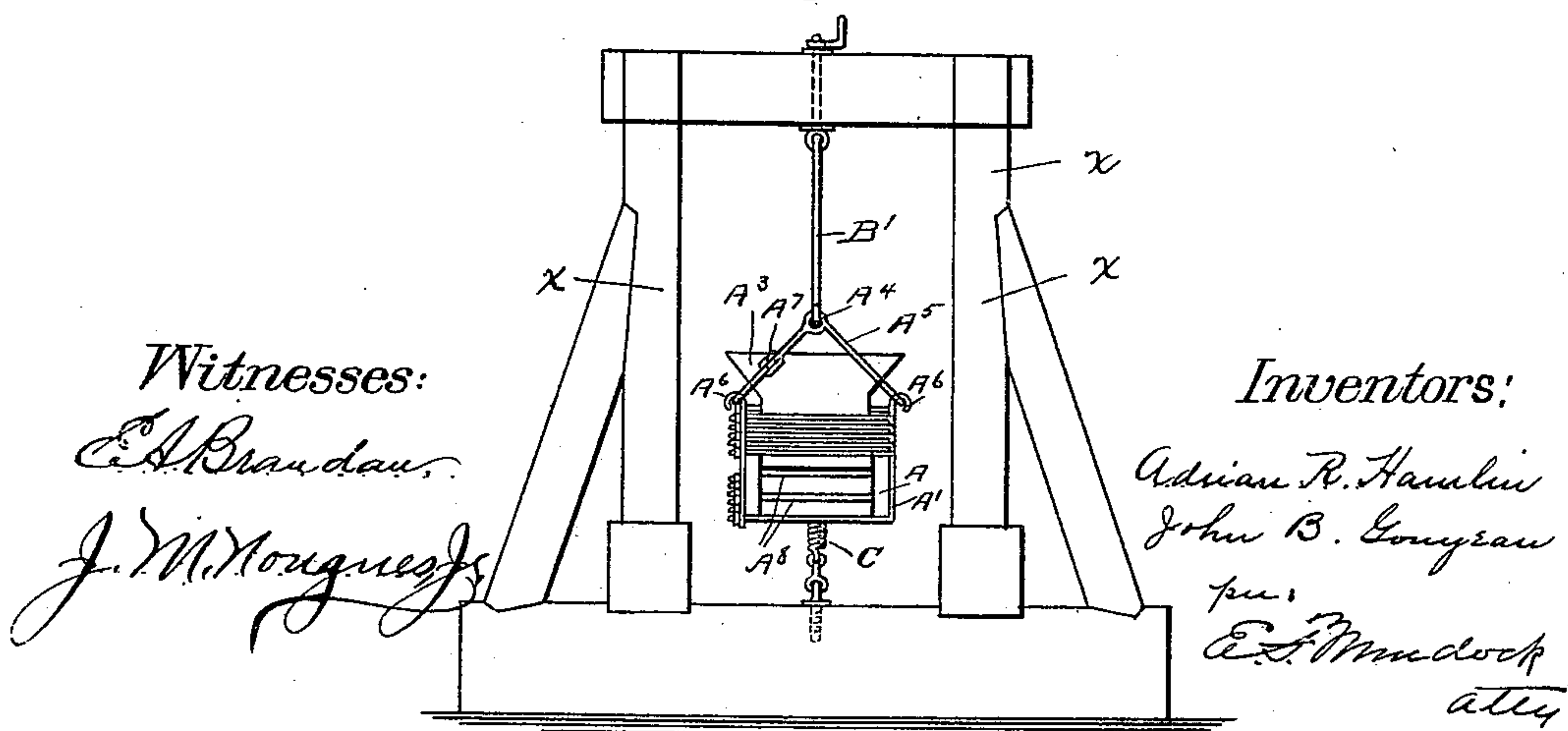


Fig. 3.



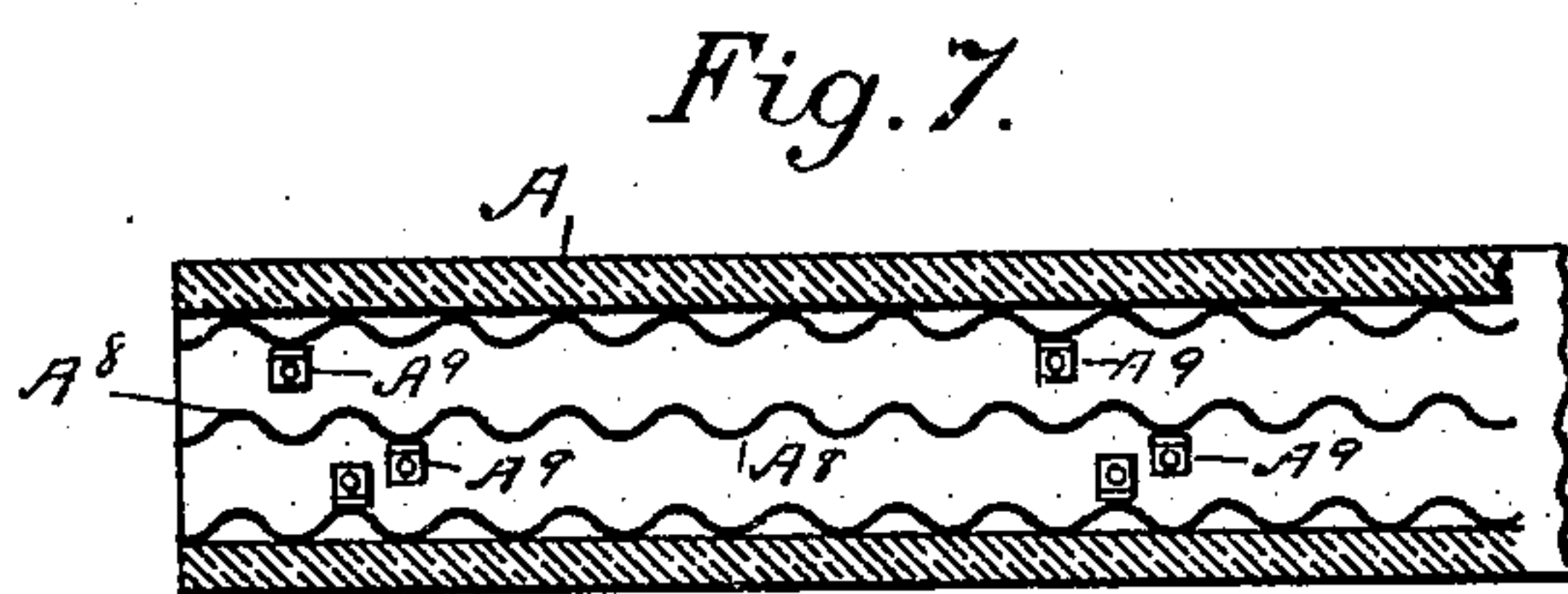
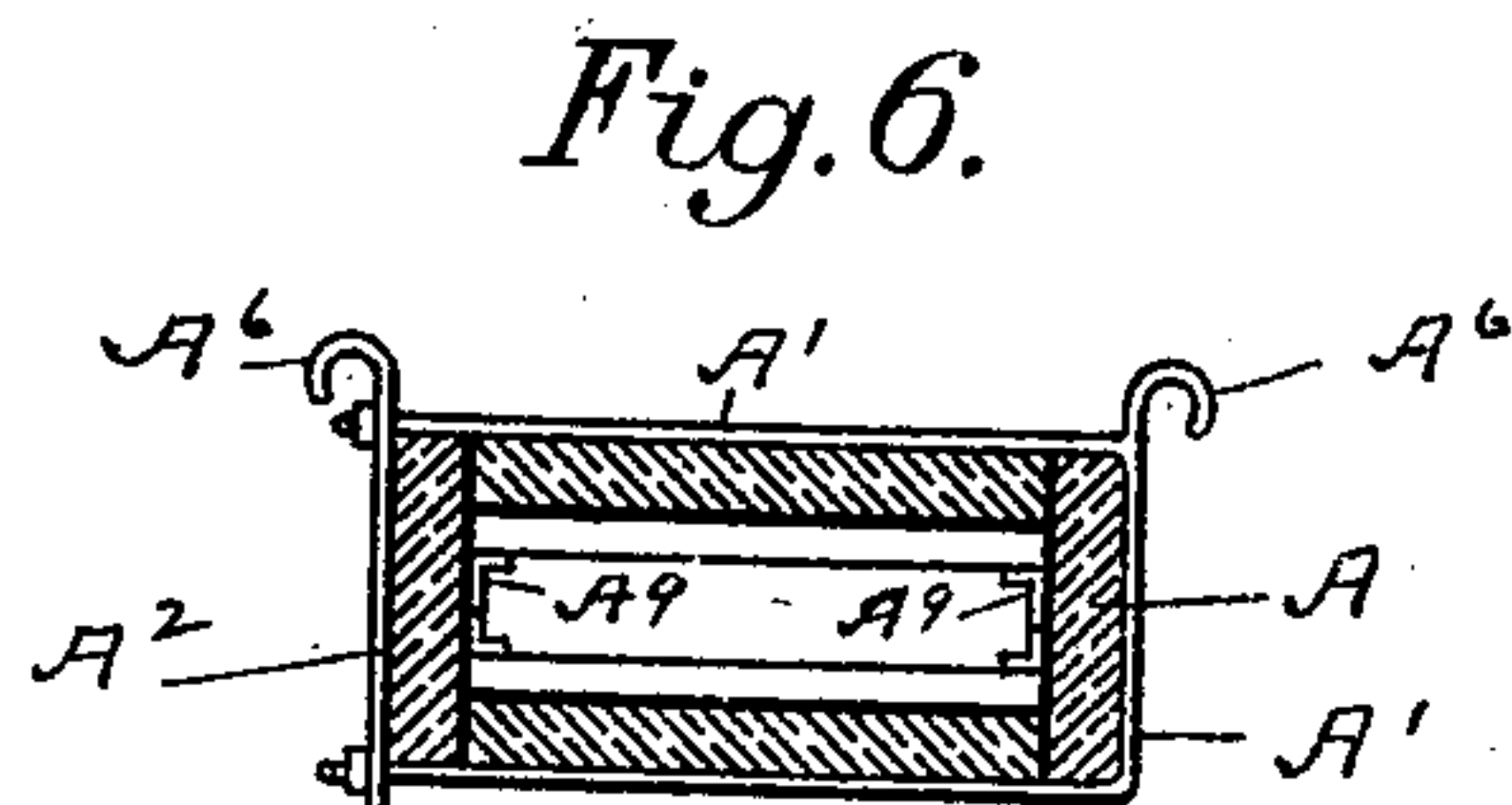
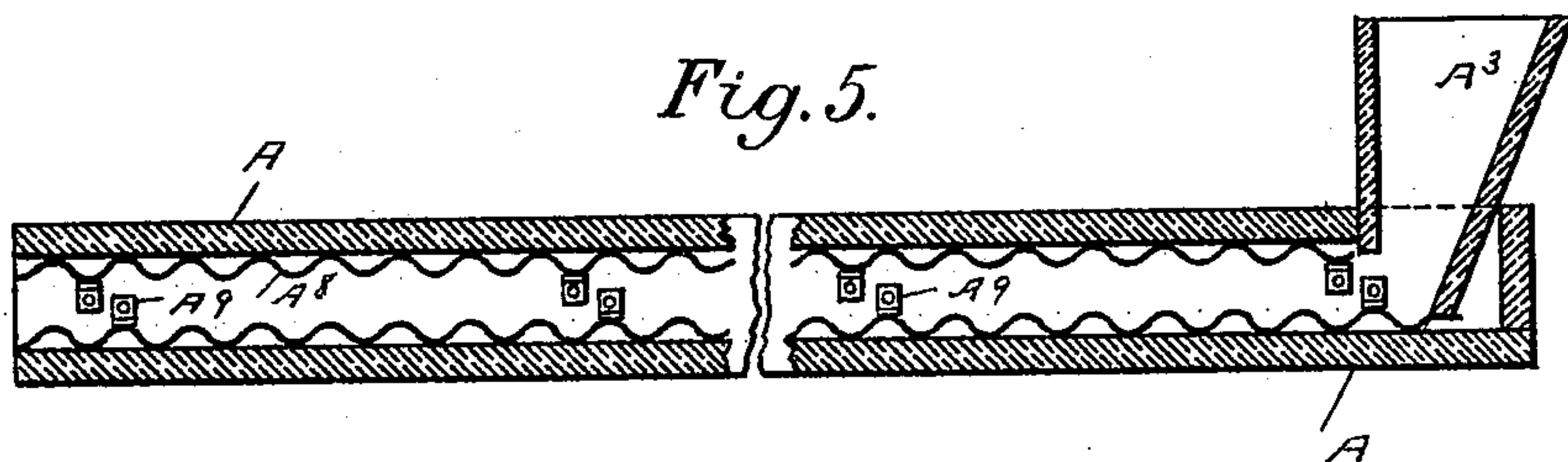
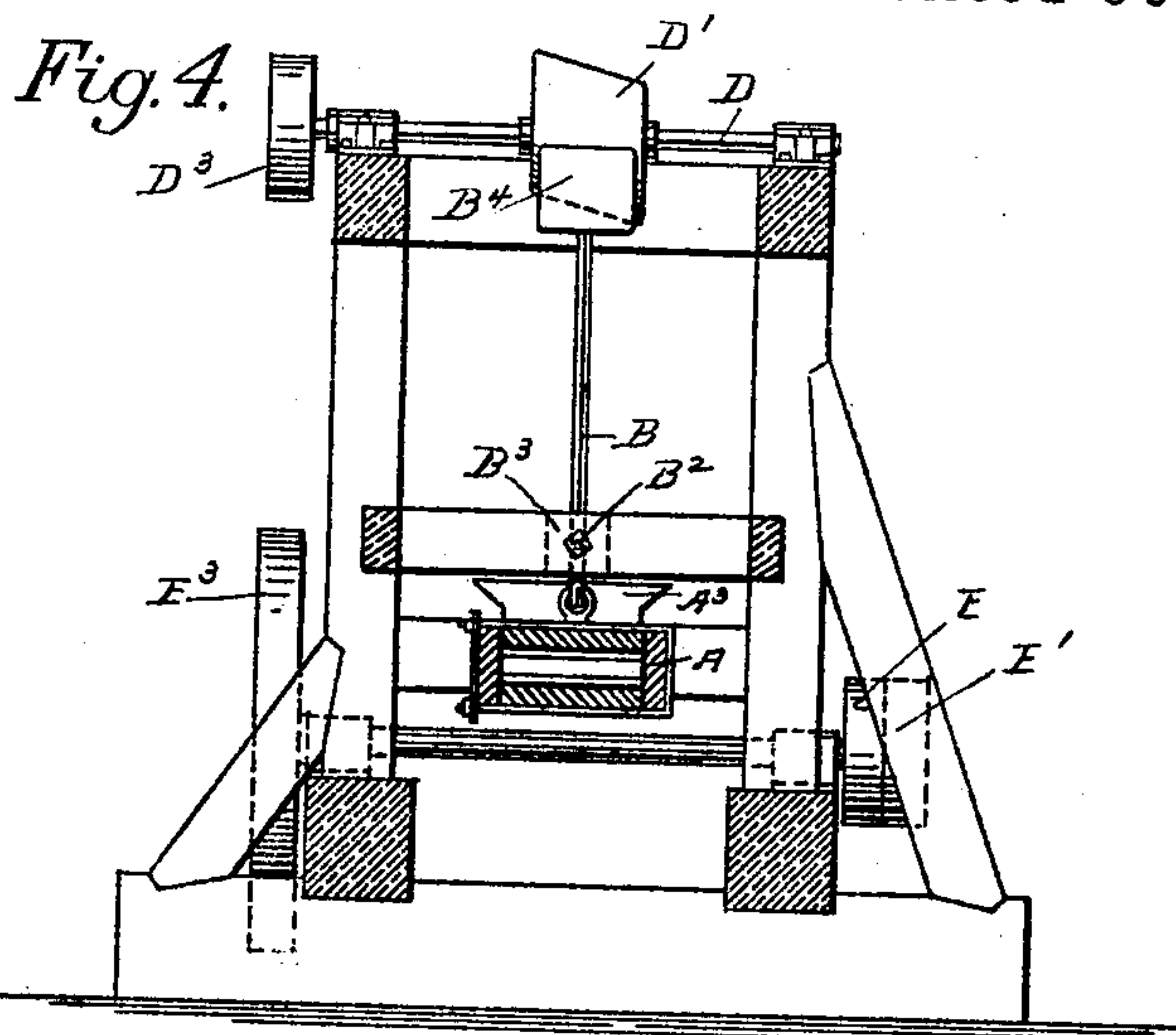
(No Model.)

2 Sheets—Sheet 2.

A. R. HAMLIN & J. B. GONYEAU.
AMALGAMATOR.

No. 547,116.

Patented Oct. 1, 1895.



Witnesses:

E. A. Brandau
J. M. Nougues, Jr.

Inventors:

Adrian R. Hamlin
John B. Gonyeau
per E. A. Mudock
att'y.

UNITED STATES PATENT OFFICE.

ADRIAN R. HAMLIN AND JOHN B. GONYEAU, OF SAN FRANCISCO,
CALIFORNIA.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 547,116, dated October 1, 1895.

Application filed June 8, 1895. Serial No. 552,124. (No model.)

To all whom it may concern:

Be it known that we, ADRIAN R. HAMLIN and JOHN B. GONYEAU, citizens of the United States, residing at San Francisco, in the
5 county of San Francisco and State of California, have invented certain new and useful Improvements in Amalgamators; and we do hereby declare the following to be a full, clear, and exact description of said invention, such
10 as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in amalgamators; and it consists in the novel
15 construction and arrangement of the parts whereby the débris and gold are thoroughly separated and the various particles subjected to the amalgamating influences.

In the drawings, Figure 1 is a plan view of
20 the invention. Fig. 2 is a side elevation of the same. Fig. 3 is an elevation of the delivery end. Fig. 4 is a section taken on the lines X X of Figs. 1 and 2. Fig. 5 is a longitudinal section of the amalgamating-trough. Fig. 6
25 is a cross-section of the amalgamating-trough. Fig. 7 is a longitudinal section, in detail, of the amalgamating-trough to show the manner of insertion of extra amalgamating-plates.

The letter A designates the amalgamating-
30 trough. This trough is formed of the top, bottom, and two sides loosely placed together and held in position by means of the straps A'. The straps A' enfold the sides of the trough and terminate on one side with thread-
35 ed ends, over which a perforated plate A² extends. (See Fig. 6.) The purpose of this construction exists in the ease and simplicity which it affords in the adjustment of the top and intermediate plates. This is accomplished
40 by easing up on the top bolt-nuts, which releases the top of the trough and allows it to be forced down nearer the bottom plate or raised away from it, as the case may be. The top and bottom are provided with corrugated cop-
45 per-plate faces, the corrugations extending crosswise of the trough, and the corrugations of the top interlapping those of the bottom plate. By means of this interlapping of the plates any approximation of the plates
50 may be attained. At the upper end this trough is provided with the hopper A³, the

front of which is adjusted to admit of its being lowered to follow the top of the trough. This hopper is so placed as to receive the tail-
ings from a mill or the loose sand or dirt, 55 when that class of material is treated. The trough A is swung in the frame X, upon the lever B and rod B', the latter of which is secured to the eye A⁴ of the yoke A⁵. The yoke A⁵ engages the hooks A⁶ on one of the lower straps. 60 This yoke has its sections connected by sleeves A⁷, designed to permit of the leveling of the trough by accordingly adjusting the sleeve at one or the other side, as circumstances may require, said sleeves, it may be, being gotten 65 up on the turnbuckle principle, as well understood. The rod B' is secured in the top of the frame by means of a threaded end which passes through a metal plate let in the frame. A nut screwed on the threaded end and 70 jammed against the plate serves to lock the rod in position. This construction permits the trough to have free play while maintaining it level.

At the upper end of the trough is attached 75 the lever B. This lever is axially mounted or fulcrumed on the pin B², which passes through the said lever very near the end of the lever having the hook. The fulcrum B² is supported by the plates B³, which are mounted on the 80 frame X, as shown at Fig. 2. The upper end of the lever extends to the top of the frame X, and is provided with the rounded shoe B⁴. Near the upper end, set in a cross-piece of the frame X, is the bumper B⁵. This bumper is a 85 bolt, which may be advanced, thereby limiting the forward stroke of the lever B. It is mounted in a threaded plate or socket in the cross-piece of the frame X, before mentioned.

The trough A is provided with the spring C, 90 securely attached to the said trough and to the discharge end of the frame X. This spring may be of any suitable description, its office being to throw the trough forward toward the discharge end until the motion is arrested by 95 reason of the lever B striking the bumper B⁵.

Extending across the top of the frame is the driving-shaft D, mounted on suitable journals, substantially as shown in Fig. 1. Mounted in the center of said shaft in the path of the shoe 100 B⁴ is the double-ended obliquely-faced cam D'. These cams are oppositely arranged and

double in their action, the purpose of which is to give to the shoe B^4 on the lever B a backward and sideward movement with each stroke of each end of the double cam D' . For that purpose the cams are arranged substantially as shown in Figs. 1, 2, and 4, where it will be seen that the different ends strike upon the different sides of the shoe B^4 , and by reason of their cam-shape in the two opposite directions they give to the said shoe alternately different sidewise thrusts, while by reason of their lengthwise shape said shoe is forced backward by each. In the operation of this double cam against the said shoe it will be observed that the end of the lever having the shoe is alternately thrown backward and to either side of the center of these cams in rapid succession as the driving-shaft D is rotated. The operation against the upper end of the lever operates against the spring C, which acts to throw the end of the lever having the shoe B^4 back into the path of the next succeeding cam after each impulse. It will now be observed that by this action the trough is violently jerked back and forth, while at the same time a sidewise motion is imparted thereto, resembling the action of a miner's pan or cradle.

The driving-shaft is driven by any suitable motive power, that shown in the drawings being intended to receive the power from a steam-engine onto the drums $E E'$ and transmit through the shaft E^2 the power to the pulley E^3 , and thence by means of the belt E^4 to the pulley D^3 on the driving-shaft D.

In order to further impart to the trough A the shaking action, we have placed at the upper end in the frame X the buffer E, against the head of which the end of the trough strikes when it is thrown in that direction by the action of the cam D' on the lever B.

When it is desired to augment the capacity of the trough A, we provide for this purpose the corrugated plates A^8 , as shown in Fig. 7. These plates rest upon the little brackets A^9 , secured in the sides of the trough A. The corrugations on these plates are arranged as above described with reference to the bottom and top plates, so that the corrugations will nest together. In its amalgamating action the amalgam rests in the bottoms of the cor-

rugations of the various plates. By reason of the shaking action above described and the incline which is given to the trough the material being treated is gradually carried from one corrugation to the other, passing through the bottom of each corrugation over the crest of the rise between it and the next in its progress toward the delivering end of the trough. In this way the segregated particles of the tailings or dirt are subjected to the amalgamating influence of the quicksilver contained in the depressed corrugations. To insure the contact of all of the material being treated and to prevent any fluffing over the filled corrugations, we provide the means for bringing the plates closely together, as above described.

Having thus described this invention, what we claim is—

1. In an amalgamator, the combination of the trough, suitably suspended at its discharge-end and suspended at its opposite or receiving end by the axially pivoted or fulcrumed rod or lever carrying at its upper end a rounded shoe, the double-ended and obliquely-faced cam, adapted to engage said shoe, means for carrying and rotating said cam, and a spring adapted to return said lever to its former position after engagement with said cam, substantially as set forth.

2. In an amalgamator, the combination of the trough having suitable, corrugated amalgamating plates, the suspending rod connected to a yoke receiving the hooks secured to one end of said trough, the axially pivoted or fulcrumed rod or lever connected to the opposite end of said trough and armed at its upper end with a rounded shoe, the rotatable shaft carrying the double-ended, obliquely faced cam adapted to engage said shoe, and the spring adapted to return said trough and axially pivoted lever to their normal position after the engagement of said lever by said cam, substantially as set forth.

In testimony whereof we have hereunto set our hands this 16th day of April, 1895.

ADRIAN R. HAMLIN.
JOHN B. GONYEAU.

Witnesses:

E. F. MURDOCK,
JOSEPH R. POWER.