

(No Model.)

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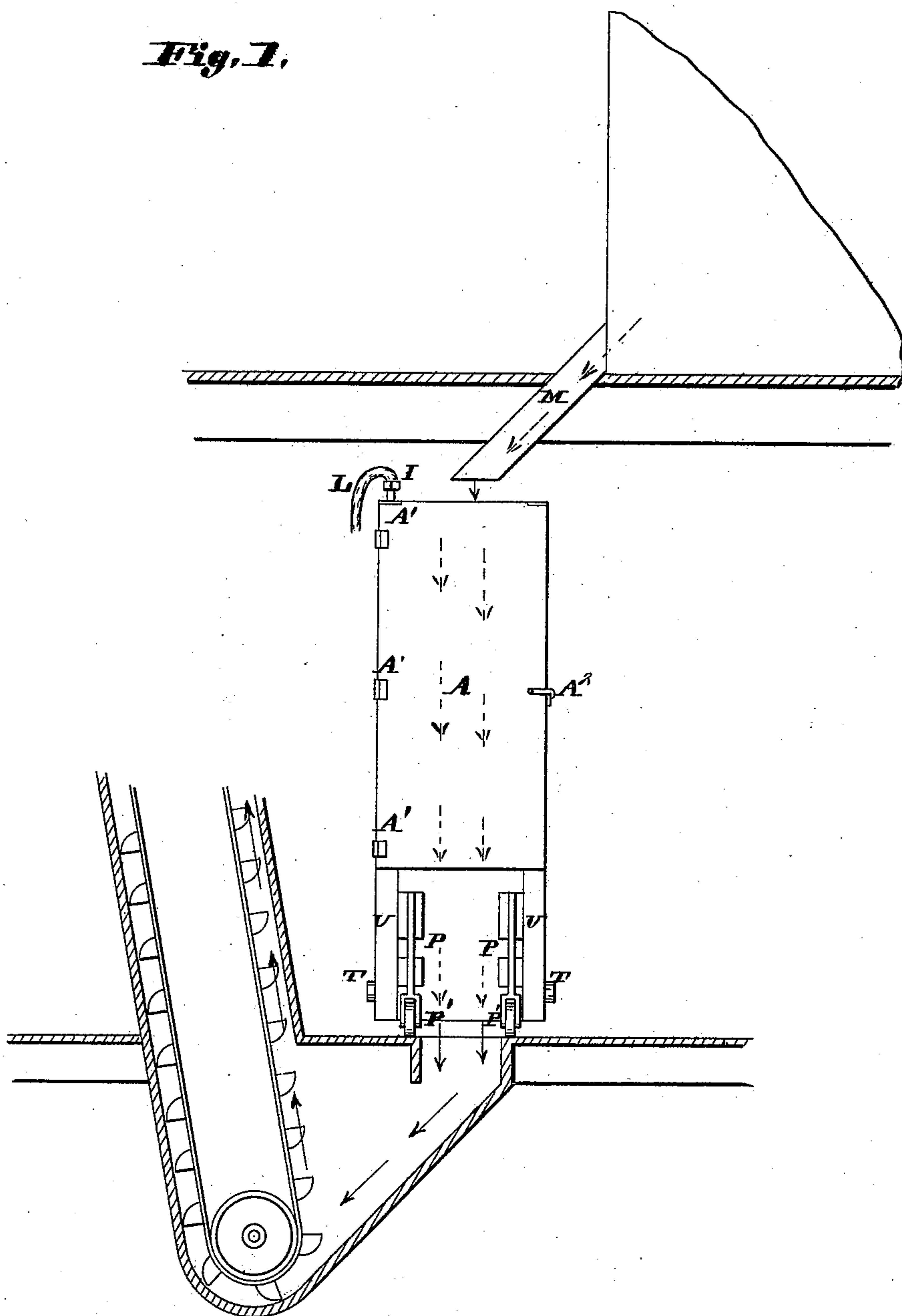
C. EHLERMANN & C. G. MAYER.

GRAIN DRIER.

No. 336,905.

Patented Mar. 2, 1886.

Fig. 1.



Attest

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Geo. S. Wheelock

Inventor:

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By Knights Bros
attys.

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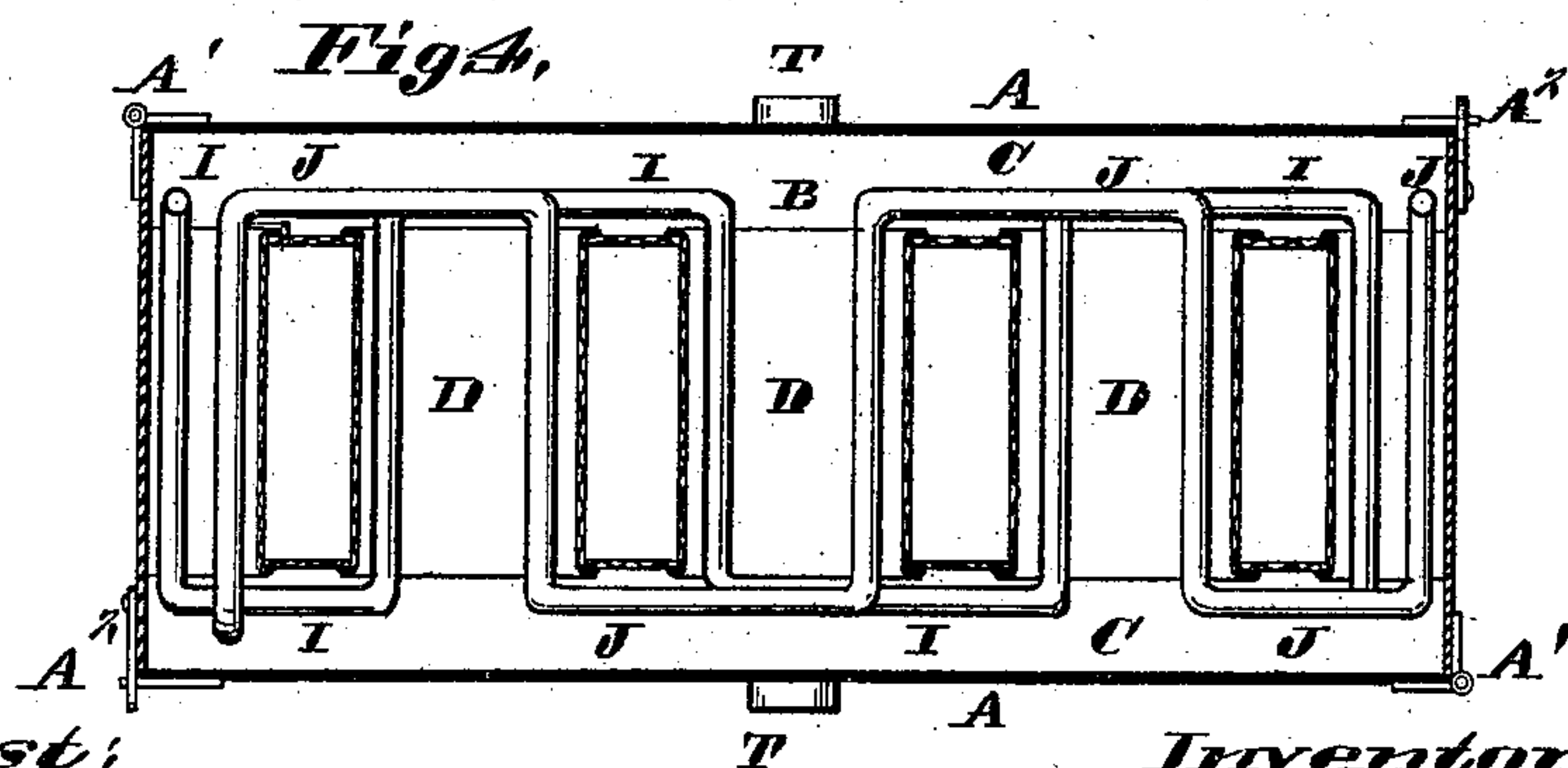
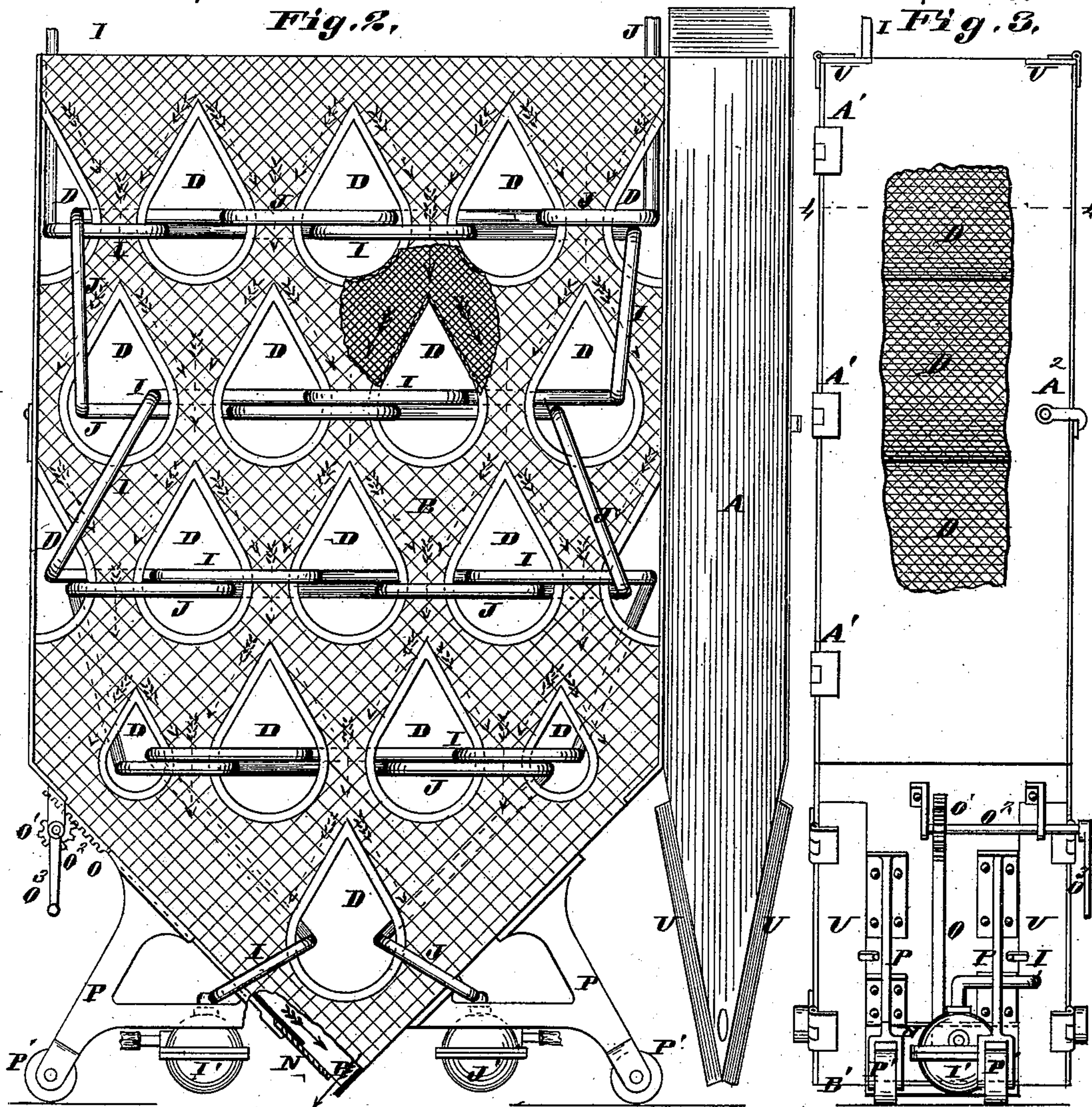
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UNITED STATES PATENT OFFICE.

CHARLES EHLERMANN, OF ST. LOUIS, MISSOURI, AND CHARLES G. MAYER,
OF NAUVOO, ILLINOIS.

GRAIN-DRIER.

SPECIFICATION forming part of Letters Patent No. 336,905, dated March 2, 1886.

Application filed February 2, 1885. Serial No. 154,634. (No model.)

To all whom it may concern:

Be it known that we, CHAS. EHLERMANN, of St. Louis, Missouri, and CHAS. G. MAYER, of Nauvoo, Hancock county, Illinois, have
5 invented a certain new and useful Improvement in Grain-Driers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in
10 which—

Figure 1 is an end view of the drier and a section through two floors of a building or elevator, showing a chute for discharging grain into the drier and the boot of an elevator into
15 which the grain falls from the drier. Fig. 2 is an elevation of the drier with the door of the jacket open. Fig. 3 is an enlarged end view. Fig. 4 is a horizontal section taken on line 4 4, Fig. 3.

20 Our invention relates to an improved apparatus for drying grain; and our invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, A represents an
25 outer jacket or case, within which is a wire-gauze or perforated case, B, an air-chamber C, being left between them, one on each side. The sides of the outer jacket are hinged to its ends at A', so that they can be opened, as
30 shown in Fig. 2, to permit access and the passage of air to the inner casing when desired. They are held closed by suitable catches, A².

D represents a number of air-flues in the case B, that preferably taper upward to a sharp
35 edge, as shown, being round or circular at their lower portions. They are so located that those of one series will break joints with or lie in a vertical plane between those of the series above, (see Fig. 2,) so that the grain in
40 passing down will be caused to travel laterally, as indicated by the arrows.

I J represent steam or hot-air pipes woven through the flues, to heat the atmosphere and dry the grain as it passes through the appa-
45 ratus. The flues are perforated or consist of wire-gauze, so that the hot air can pass freely through them. The discharge ends of the pipes are preferably provided with steam-traps I' J', respectively, and their ends have
50 flexible connections L. (See Fig. 1.)

The grain is discharged into the apparatus from a chute, M, or other suitable source, and may fall from the apparatus into the boot of an elevator, the lower end of the case B tapering to a point or edge, B', where it is provided
55 with a slide or valve, N, to regulate the flow or passage of the grain through the apparatus. The slide may be operated by any suitable means. We have shown a rack, O, secured to the slide, a pinion, O', meshing into the rack, 60
a shaft, O², on which the pinion is secured, and a crank, O³, secured to the shaft, and by which it is turned to move the slide or valve.

The apparatus is supported on legs P, provided with rollers P', by which means the
65 apparatus can be easily and conveniently moved from one chute M to another.

T represents blast-pipes, through which hot air may be forced into the chamber C, from where it passes into the interior of the case B
70 through the perforated walls and flues. If hot air is not used, a circulation of cold air may be had by opening small doors U, hinged to the sides and top of the jacket.

We are aware that it is not new to construct
75 the heating-tubes of grain-driers of triangular form and arrange them in horizontal series in such a manner that the pipes of one series will break joints with or lie in vertical planes between those of the next series above or be-
80 low, and also that the inner casing which supports the ends of such pipes has been apertured beneath them, so as to permit as much as possible of the vapors arising from the grain to escape into the vertical air-passage between
85 the double walls of the casing. This is an imperfect means of accomplishing one of the chief objects of our invention, the difficulty arising from the fact that the heated vapors arising from the center of the mass of grain
90 will have a strong upward tendency, and, by reason of the size of the apertures and the resistance with which the vapors would meet in passing horizontally between the bottom of the tube and the surface of the grain, a greater
95 part will follow this upward tendency, thoroughly permeating the whole mass of grain and escaping at top. The device in question is designed to have its drying-chamber constantly packed with grain, the only vacant 100

space being the small passages immediately beneath the respective heating-tubes. It is impossible, therefore, when using the device in the manner intended by the inventor to increase the size of the apertures referred to, for the reason that it would allow the grain to escape. Again, if it is attempted to use the apparatus in the manner in which we use ours—*i. e.*, with a constant and rapid flow of grain therethrough—the apertures will be of little or no use, for the reason that the side walls of the passages which conduct the vapors to them are formed by the packed grain; hence without the packed grain there will be no guiding-passages and the vapors will rise freely. In our device the horizontal air-passages may be of any size, and the ascending vapors coming in contact with their broad bottoms pass through and are exhausted therefrom by reason of the continual efflux of air from the vertical chambers. The current of grain which is continually passing over the upper surfaces of the perforated tubes forms a barrier and aids materially in preventing the vapors from passing straight upward. Aside from this the air heated by the pipes I and J will be lighter than the damp vapors arising from the grain, and will of course occupy the upper portion of the tube D.

30 We claim as our invention—

1. In a grain-drier, the case through which

the grain passes, in combination with the series of upwardly-tapering perforated air-flues, those of one series being arranged to break joints with or lie in vertical planes between those of the series above, as specified. 35

2. The combination, with the outer case, A, of the inner case, B, the chambers C between said cases, and the perforated air-flues D, connecting said chambers, substantially as set forth. 40

3. The combination, with the outer case, A, the inner case, B, and the chambers C, of the open-ended tubes D, connecting said chambers, and the heating-pipes I J, passed through said tubes D, as set forth. 45

4. The combination of the outer case, A, pipes T, inner case, B, chambers C, perforated flues D, connecting said chambers, and the heating-pipes I J, passed through said flues D, substantially as set forth. 50

5. The combination, with the case through which the grain passes, of a series of perforated air flues extending across said case and heating-tubes passed through said flues, substantially as set forth. 55

CHARLES EHLERMANN.
CHARLES G. MAYER.

In presence of—

GEO. H. KNIGHT,
SAM'L. KNIGHT.