

(No Model.)

N. C. BLACKBURN & E. E. HOWELL.
WHEAT STEAMER.

No. 571,638.

Patented Nov. 17, 1896.

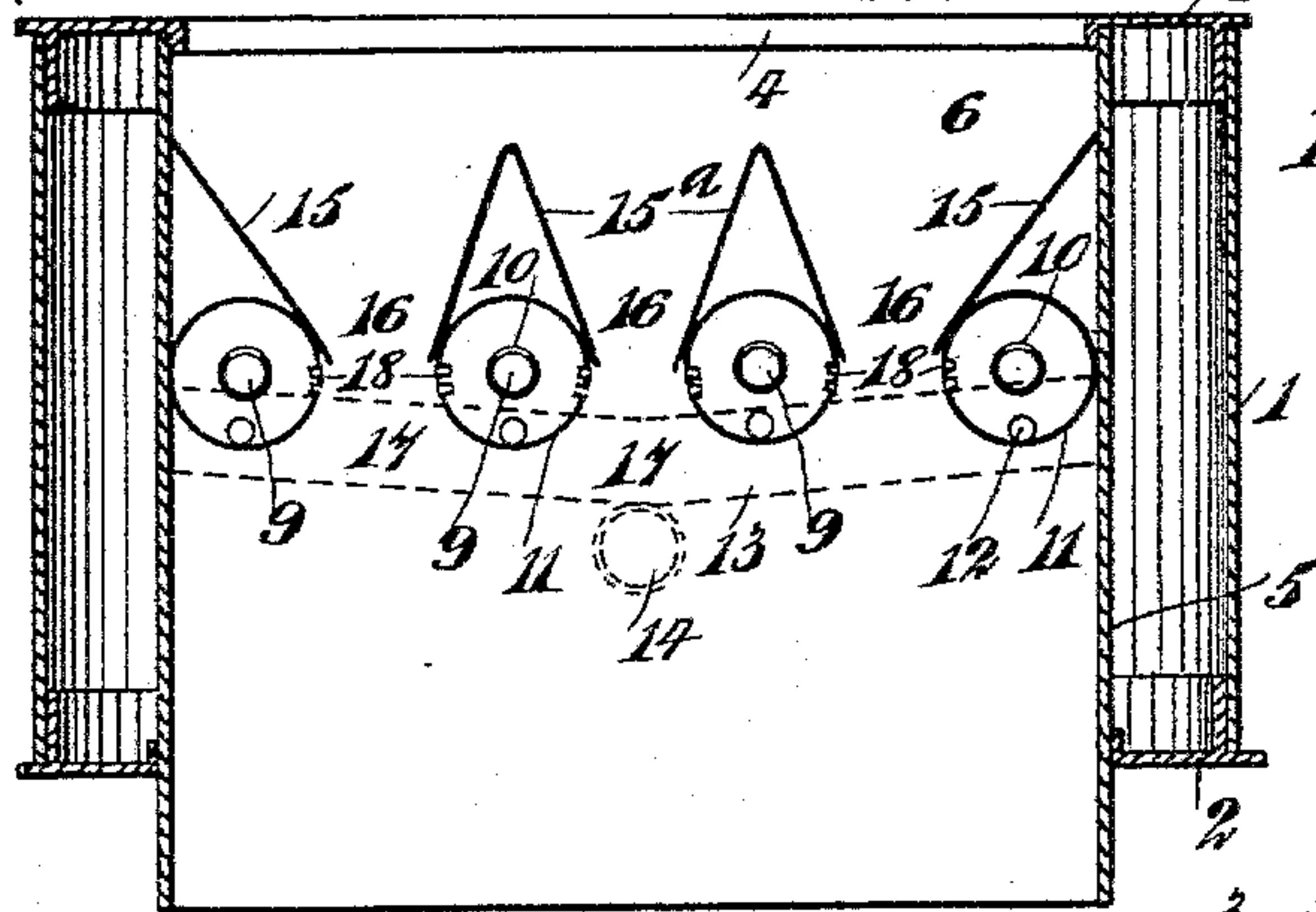


Fig. 1

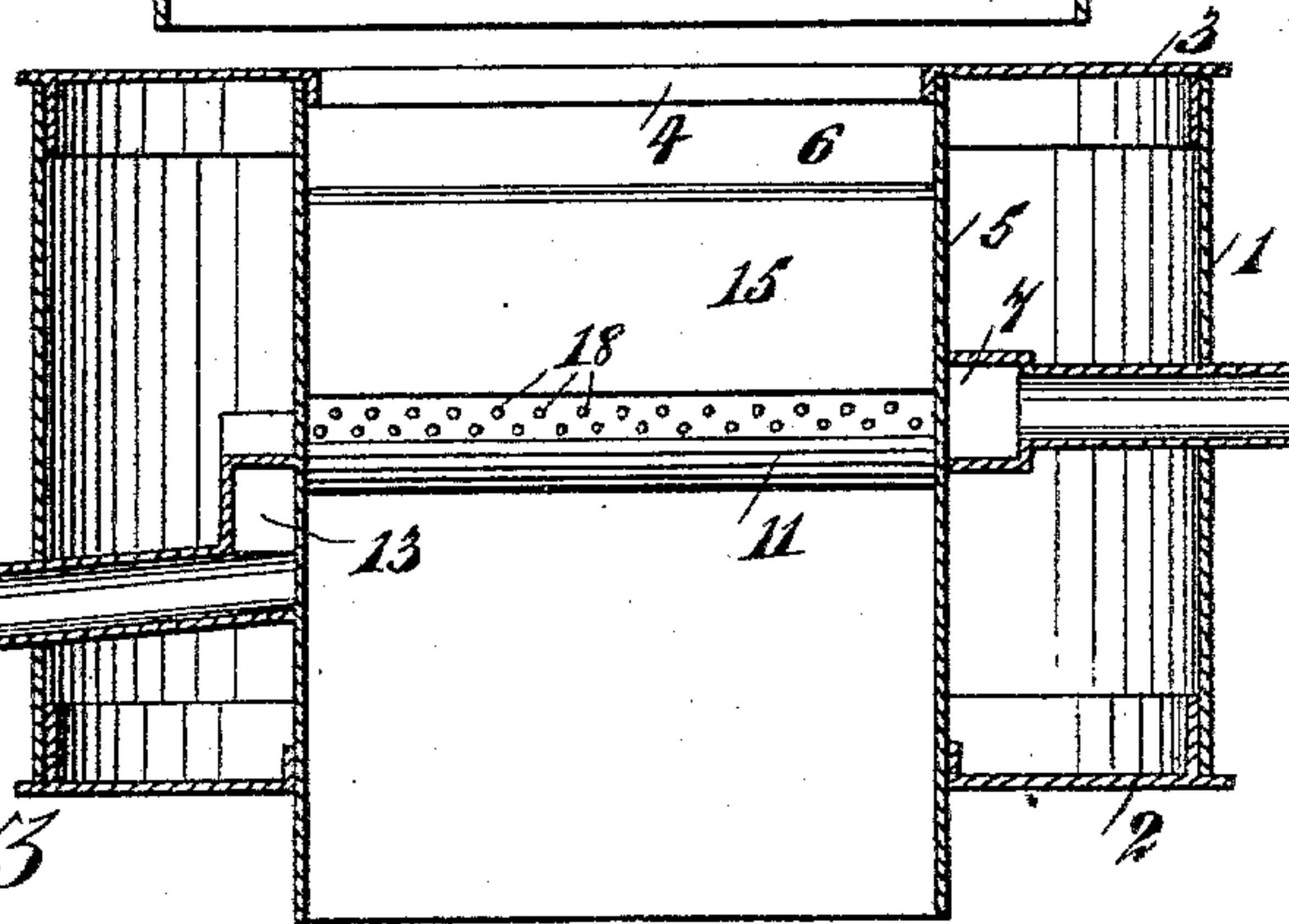


Fig. 2



Fig. 3

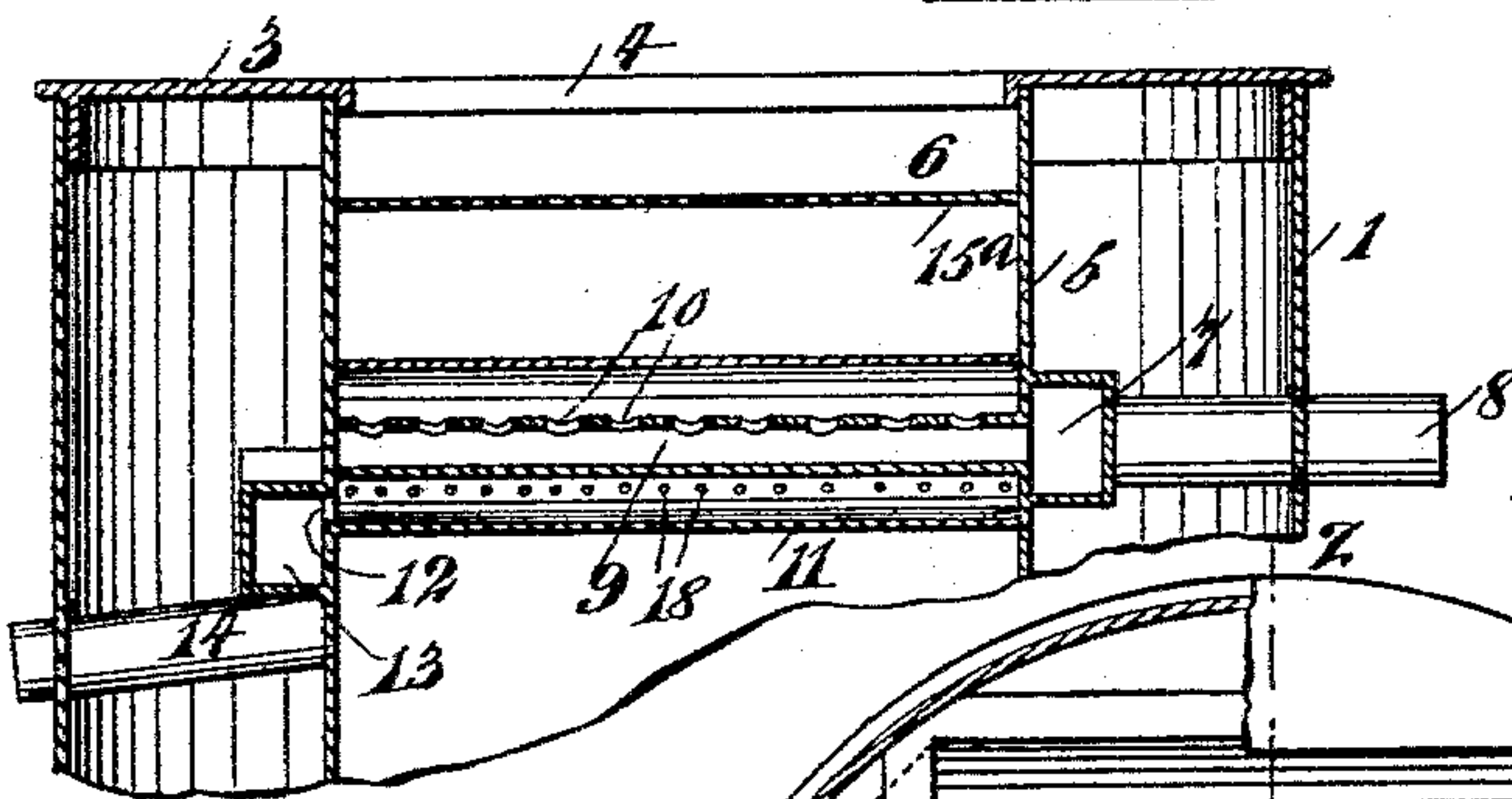


Fig. 4

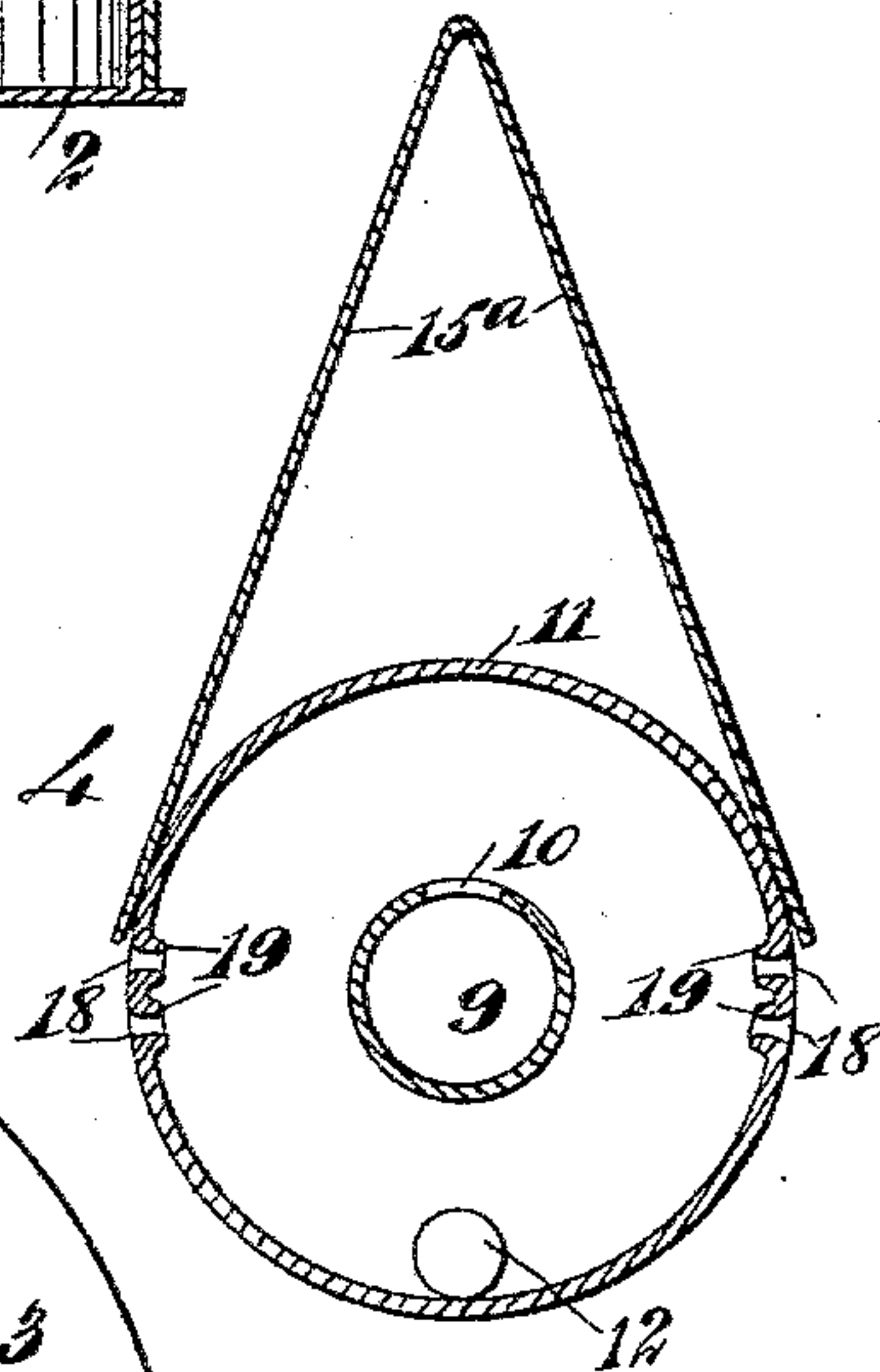
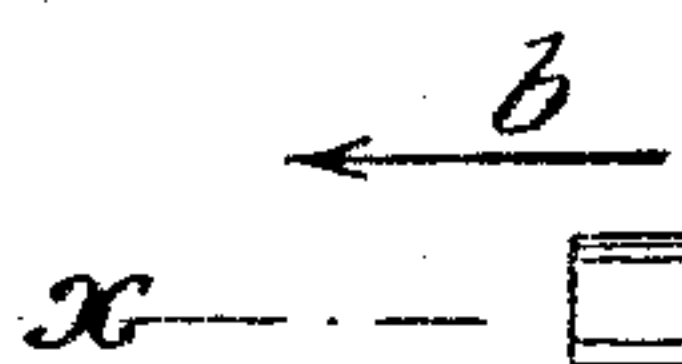


Fig. 5



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WHEAT-STEAMER.

SPECIFICATION forming part of Letters Patent No. 571,638, dated November 17, 1896.

Application filed January 15, 1896. Serial No. 575,642. (No model.)

To all whom it may concern:

Be it known that we, NATHAN C. BLACKBURN and EDGAR E. HOWELL, of Fairbury, in the county of Jefferson and State of Nebraska, have invented a new and Improved Wheat-Steamer, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in that class of devices known as "wheat-steamers," which are employed for steaming and heating the grains of wheat; and the object of the invention is to provide a device of this character of a simple and inexpensive construction which shall be adapted to operate on the wheat passing through it in such a manner that the grains of wheat will be thoroughly steamed and heated by the action of the steam without the liability of the wheat being wet.

The invention consists in a steamer having channels for the passage of the wheat, and steam-jets in said channels arranged to act on the wheat passing therethrough, the channels being enlarged at the points whereat the steam-jets are located, so that sufficient room is given for the wheat to be thoroughly and uniformly surrounded and steamed by the steam.

The invention also contemplates certain novel features of the construction, combination, and arrangement of the various parts of the improved steamer, whereby certain important advantages are attained, and the device is made simpler, cheaper, and is otherwise better adapted and more convenient for use than various other similar devices heretofore employed, all as will be hereinafter fully described. The novel features of the invention will be carefully defined in the claims.

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

Figure 1 is a vertical section taken through the steamer in the plane indicated by the line $z z$ in Fig. 4. Fig. 2 is a vertical section taken through the steamer at right angles to the plane of the section in Fig. 1, as indicated by the line $x x$ in Fig. 4. Fig. 3 is a fragmentary sectional view taken in the plane indicated by the line $y y$ in Fig. 4. Fig. 4 is a sectional plan view of the steamer, and Fig.

5 is a sectional view drawn to an enlarged scale and taken through one of the steamer-pipes to show the detailed construction thereof.

1 indicates the casing of the device, which may be of any form, being herein shown as provided with a lower head 2 and an upper head 3, said heads being formed with corresponding rectangular openings in them, and the upper head being provided with a depending flange 4, surrounding its rectangular opening and adapted to fit inside the rectangular duct 5, through which the wheat passes, said duct having its upper and lower ends open and forming a passage 6 for the wheat to descend through the apparatus.

At one side of the device a steam-pipe 8 is provided, extending through the casing 1, to which pipe the steam is admitted, as indicated by the arrow a in Figs. 2 and 4, and said pipe communicates at its inner end with a steam-chamber 7, formed inside the casing 1 and extending horizontally along the central portion of one side of the duct 5, as clearly seen in Fig. 2.

With the chamber 7 communicate a series of horizontal steam-pipes 9, extending across the rectangular opening 6 of the duct 5, being closed at their outer ends opposite to the steam-chamber 7 and provided in their upper faces with outlets 10 for the escape of the steam passing through them into drums 11, extending across the space or opening 6 of the duct 5 and surrounding said steam-pipes 9, as clearly indicated in Figs. 1, 3, and 5, the arrangement being such that one of the drums 11 surrounds each of the steam-pipes 9.

The drums 11 are, as clearly seen in the drawings, of greater diameter than the steam-pipes 9, so that a steam space or chamber is formed between the drums and the steam-pipes, and at their ends opposite to the steam-chamber 7 the drums 11 are each formed with an outlet 12, (seen in Figs. 1 and 3,) extending through the wall of the duct 5 and communicating with an outlet-chamber 13, extending along the side of said duct opposite to the steam-chamber 7, said chamber 13 being depressed at its central portion, as indicated in dotted lines in Fig. 1, and being adapted at its depressed central portion to communicate with an outlet-pipe 14, extending through the wall of the casing 1 and

adapted to convey water condensing from the steam in the drums 11 out of the apparatus.

As shown in Fig. 1, four of the drums 11 are employed, two of said drums being arranged closely adjacent to the opposite sides of the duct 5, through which the grain to be steamed passes, and over each of said drums 11 is arranged a deflecting-plate 15, held in an inclined position, being secured at its upper edge to the side of the duct 5 and having its lower edge resting on the outer side of the corresponding drum 11, or that side thereof which is adjacent to the corresponding wall of the duct 5. The inner drums 11 are each surmounted by a deflecting-plate 15^a, formed of sheet metal and bent at its central portion to a V shape, said plates being arranged in inverted positions and secured at their lower edges to opposite sides of the respective inner drums 11, as clearly seen in Figs. 1 and 5. In this way it will be seen that reduced passages 16 are formed between the drums 11, through which passages the grain to be steamed falls, and said passages 16 are, below the drums 11, expanded or made wider, as seen at 17 in the drawings.

In the side walls of the respective drums 11 are formed outlets 18 for the escape of the steam from said drums into the passages 16, said outlets 18 being somewhat staggered, as clearly seen in Fig. 2, and being arranged to discharge the steam from the said drums against the wheat or other material passing through the passages 16. Each of the openings 18 is on the inner side of the drums 11, surrounded by a projecting lip or web 19, (seen in Fig. 5,) whereby the water descending within the drums 11 in the walls thereof is prevented from passing out through said outlets 18 with the steam, whereby the wheat is prevented from becoming wet by contact with said water.

In operation the wheat is fed into the upper part of the opening 6 of the duct 5 and the steam is admitted by way of the steam-supply pipe 8 to the apparatus. As the wheat descends through the opening 6 it is divided by the deflecting-plates 15 and 15^a and caused to flow in narrow streams through the contracted passages 16, and the steam escaping from the drums 11 through the outlets 18 thereof will come into contact with the wheat passing through said passages, so as to agitate the wheat, whereby the grains of wheat will be loosened from one another and thoroughly steamed. As the outlet-openings 18 are arranged at the lower portions of the passages 16 and said passages are sharply expanded just above said outlets 18, it will be seen that space is permitted for the wheat to separate on being struck by the steam escaping from the drums 11, whereby each grain will be enveloped by the said steam. Since the outlets 18 are arranged at the sides of the drums 11, it will be seen that the water descending within the said drums is caused to collect at

the lower portions thereof below the said outlets, whence it escapes by way of the apertures 12 into the chamber 13, and is prevented from flowing through said outlets and wetting the wheat passing through the apparatus.

From the above description of our improvements it will be seen that the device is of an extremely simple and inexpensive construction and is especially well adapted for the purposes for which it is intended, and it will also be obvious that the invention is susceptible of considerable modification without material departure from its principles and spirit, and for this reason we do not wish to be understood as limiting ourselves to the exact form of the device as herein set forth.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A wheat-steamer or the like, comprising a duct, a series of drums extending across the same and provided with outlets in their sides adapted to discharge steam against the material passing through the ducts, and steam-pipes connected with a steam-supply and extending through the drums above the bottoms thereof and having openings to supply steam to the drums, the bottoms of the drums below the outlets and steam-pipes forming a channel wherein is collected the water condensing in the drums, said drums being provided with outlets for the escape of the water from their lower parts, substantially as set forth.

2. A wheat-steamer comprising a duct for the passage of the material to be steamed, a series of drums extending across said duct and forming between them passages for the material to be steamed, steam-pipes extending longitudinally through the respective drums and having openings to supply steam thereto, said drums being provided with outlets for the discharge of steam against the material flowing through said passages, and a steam-chamber having a steam-supply pipe, said chamber extending along one side of the duct and having communication with the steam-pipe of each drum, substantially as set forth.

3. A wheat-steamer, comprising a duct, a series of drums extending across the same and forming between them passages for the material to be steamed, said drums having outlets for the discharge of steam against the material passing between them, and having means for supplying steam to them, the lower portions of the drums being adapted to retain the water condensing therein, and a water-chamber extending along the side of the duct and having communication with the lower portion of each of said drums, substantially as set forth.

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