

R. L. DOWNTON.
GRAIN-SEPARATOR.

No. 178,743.

Patented June 13, 1876.

Fig. 1.

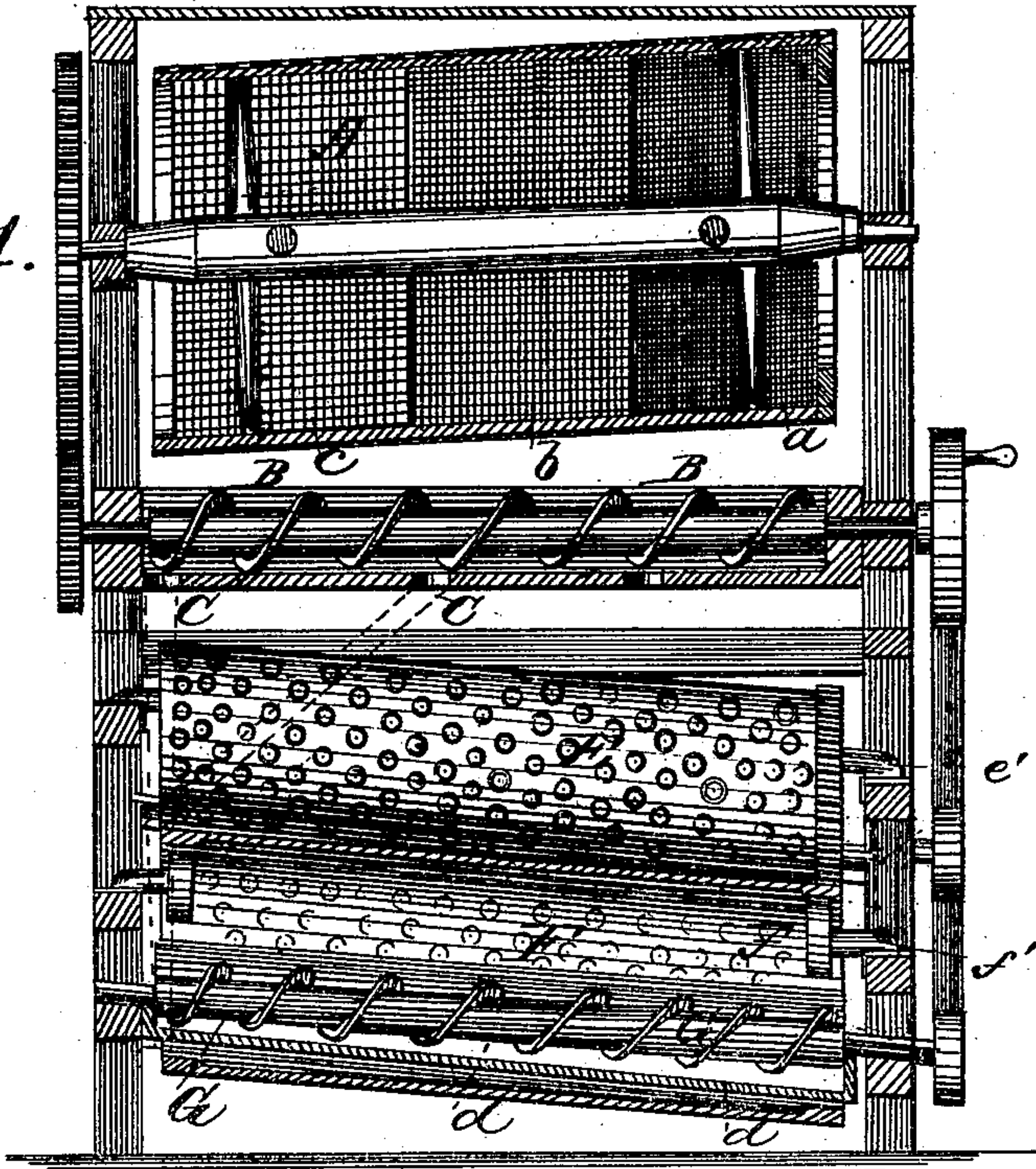
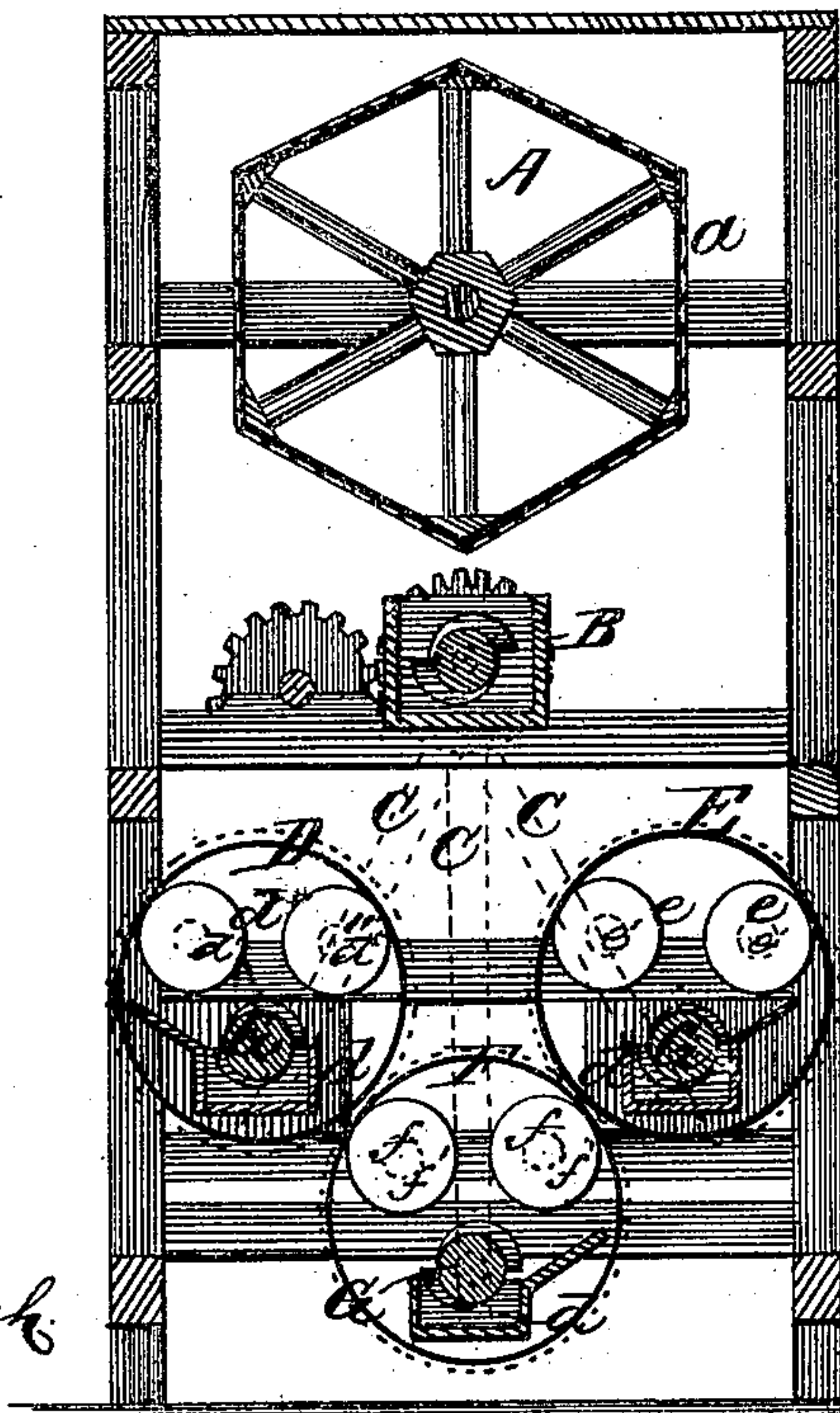


Fig. 2.



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Fig. 4.

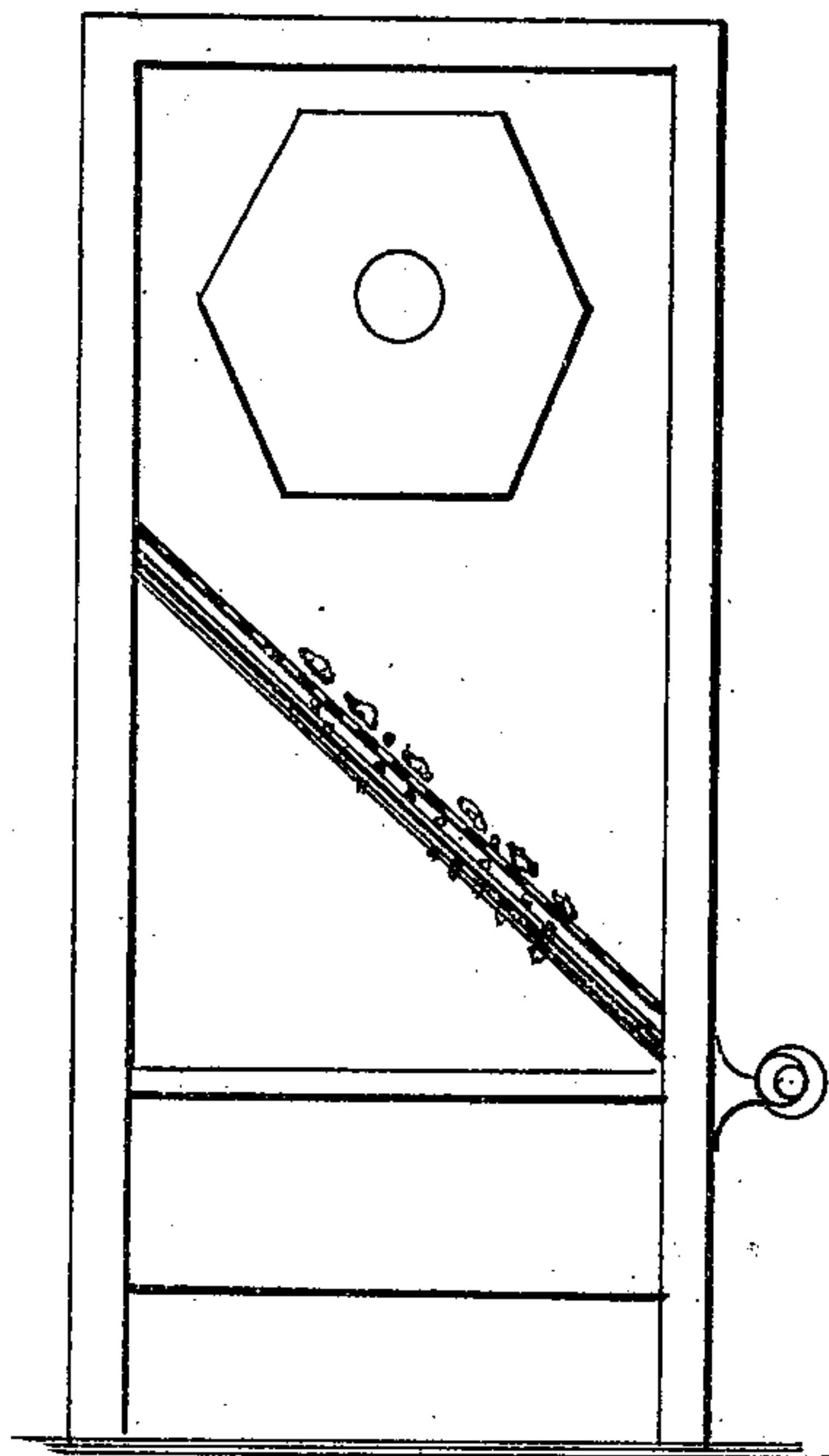


Fig. 3.

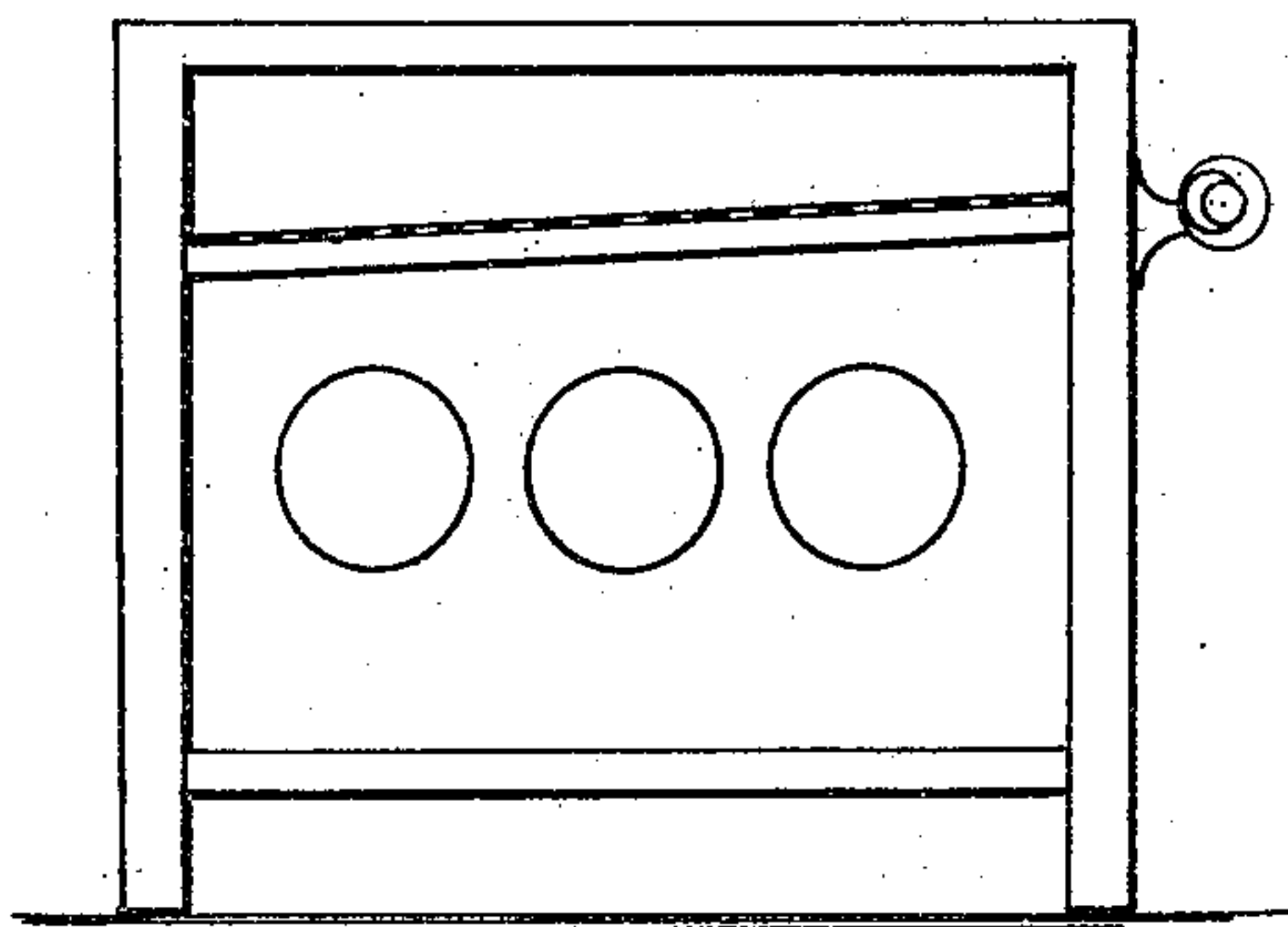


Fig. 6.

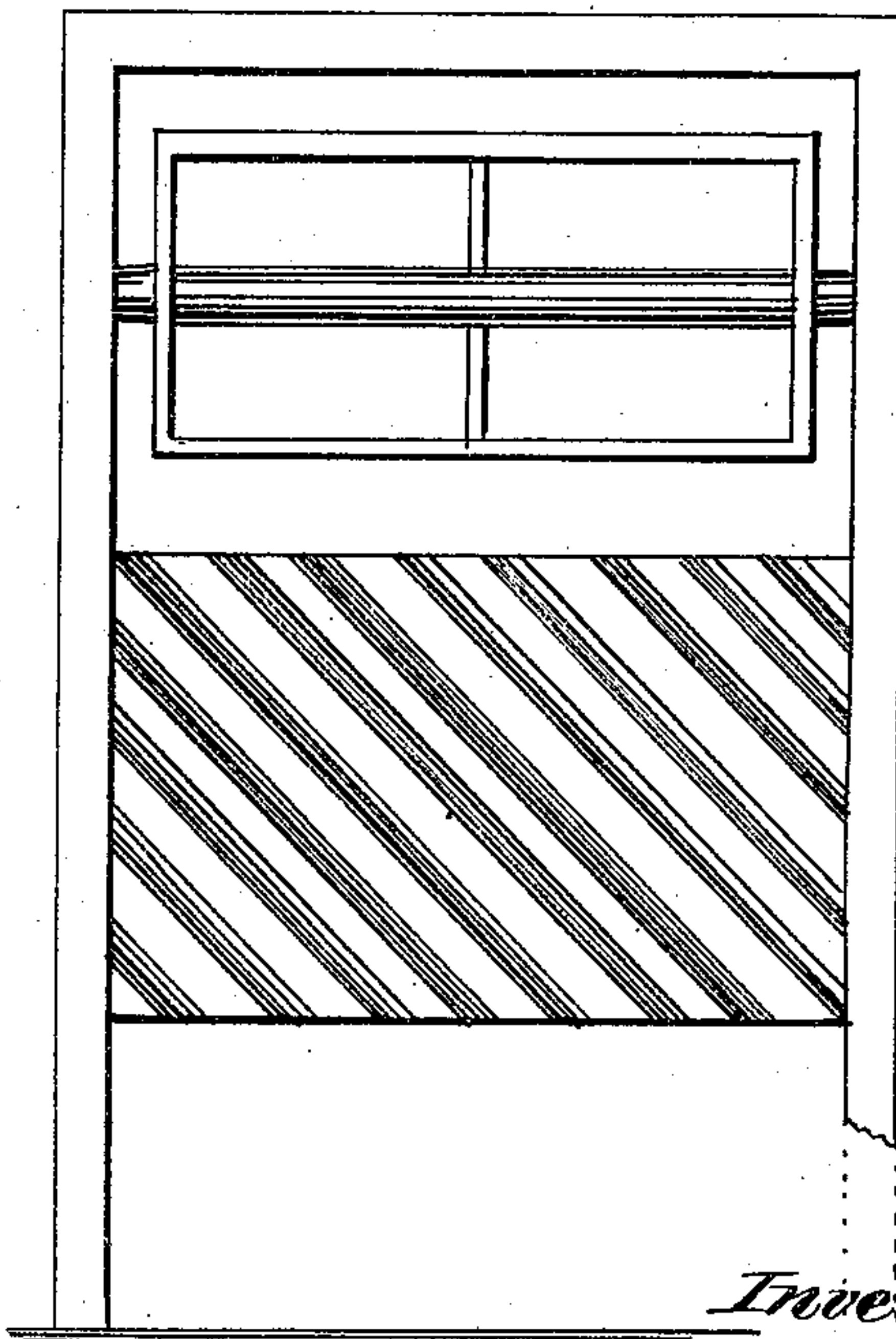
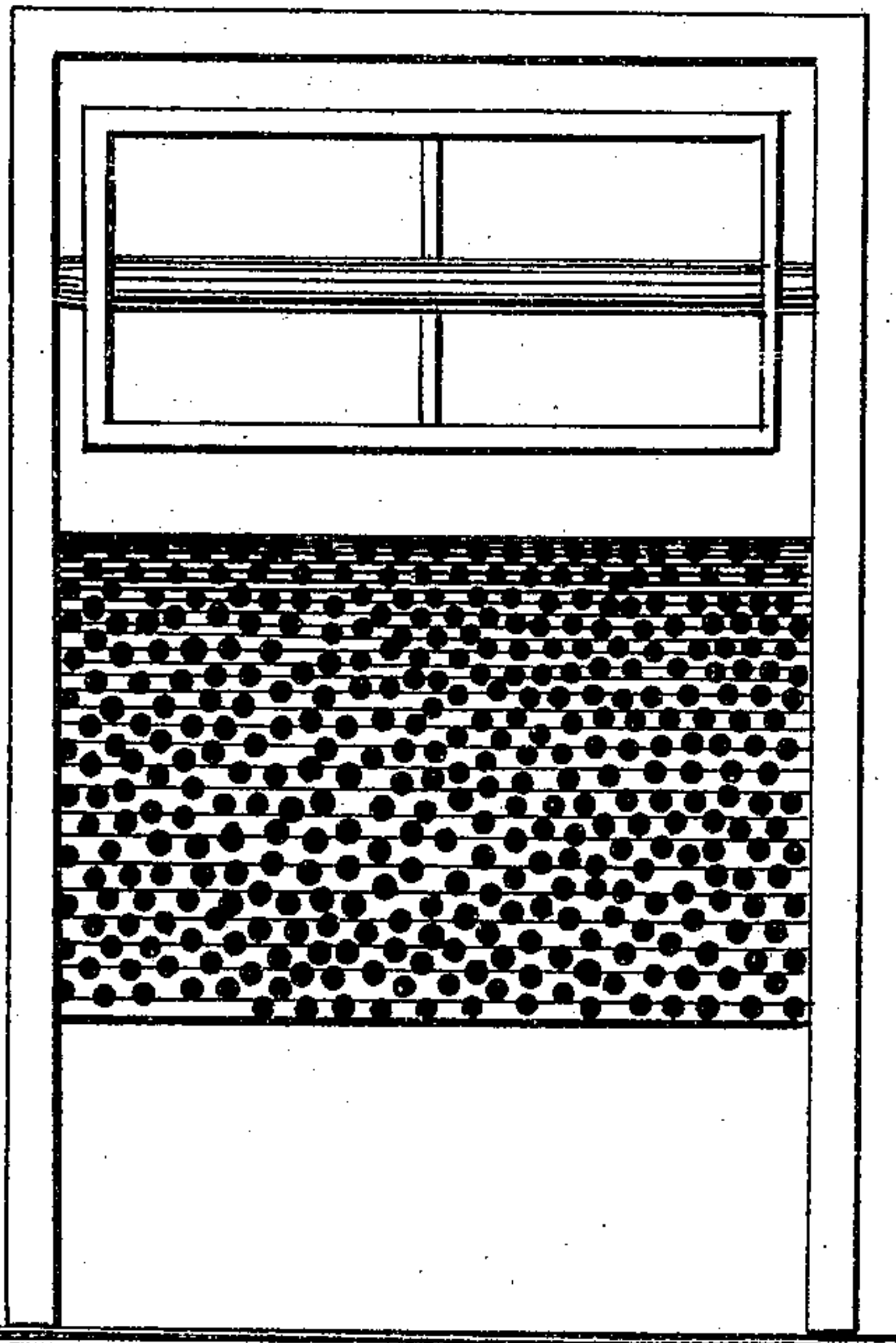


Fig. 5.



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UNITED STATES PATENT OFFICE

ROBERT L. DOWNTON, OF MILWAUKEE, WISCONSIN.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 178,743, dated June 13, 1876; application filed May 24, 1876.

To all whom it may concern:

Be it known that I, ROBERT L. DOWNTON, of Milwaukee, State of Wisconsin, have invented certain new and useful Improvements in Machines for Separating Cockle and other Foreign Substances from Wheat and other Grain, of which the following is a full, clear, and exact description, reference being made to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a longitudinal vertical section of one form of machine for carrying out my improved process; Fig. 2, a transverse vertical section. Fig. 3 is a longitudinal vertical section of another form of machine for carrying out the process, in which a graded shaker is substituted for the graded reel. Fig. 4 is a transverse vertical section of another form of machine for carrying out the process; Fig. 5, a side elevation of the same; Fig. 6, also a side elevation, with the screen removed to show the inclined troughs beneath the screen for discharging the cockle and other seed passing through the screen to one side of the machine.

The ordinary or common methods now in use for separating cockle from wheat consist in passing the material over a screen, through which the cockle passes, while the wheat passes over the end of the screen; or by the use of an inclined revolving cylinder, provided with indentations or cells on the interior thereof, the wheat and cockle being fed through the head of the cylinder, and the cockle taken up by the indentations or cells, and dropped into a trough on the inside of the cylinder, provided with a conveyer for removing it therefrom, while the wheat is discharged from the end of the cylinder. The principal objections to the above methods are that there is no way of separating the small-sized wheat from the large-size cockle, which is the object of the present invention.

The invention consists in the combination, with a grading reel or shaker, of a series of indented cylinders or their equivalents, as hereinafter fully set forth.

A, in the drawings, represents a graded reel or shaker formed from wire, punched zinc, or other suitable material, in which the small wheat and cockle are separated from the large wheat and cockle. In the present instance,

said reel or shaker is composed of three divisions, *a b c*, the small wheat and cockle passing through the first division, *a*, the medium-size wheat and cockle passing through the second division, *b*, and the large-size wheat and cockle through the third division, *c*, from which they fall into the hopper B, provided with a series of openings in the bottom thereof, communicating with suitable spouts or conveyers C, as shown in dotted lines in the drawing, which deliver the graded wheat and cockle into separate cylinders or on screens D E F, whereby the graded wheat and cockle are separated. The hopper B is provided with a conveyer, which delivers the graded material to the openings communicating with the spouts or conveyers. D E F are the cylinders for separating the graded wheat and cockle, provided with indentations or cells of the required size to receive and carry up the kernels of cockle, the indentations or cells in each cylinder being of such size as to receive and separate the graded cockle from the graded wheat—the cylinder D being adapted to separate the cockle from the wheat passing through the first division of grading reel or shaker, the cylinder E for separating the medium-size cockle from the medium-size wheat passing through the second division of grading reel or shaker, and the cylinder F for separating the large-size cockle from the large-size wheat passing through the third division of grading reel or shaker. Each cylinder is provided with a trough, *d*, into which the cockle taken up by the indentations or cells is dropped, and which is removed therefrom by a feed-screw, G, while the wheat is discharged from the end of the cylinders into spouts, which convey it to the proper receptacles. These cylinders are mounted upon rollers *d'' e f*, mounted upon short horizontal shafts *d' e' f'*, having their bearings in the frame of the machine. The several moving parts of the machine are operated by gear-wheels and belts and pulleys, whereby motion is communicated from any prime motor.

It is not necessary that the exact form of machine herein shown should be used for carrying out the process; nor is it essential that the indentations or cells should be on the inside of the cylinders, as the grading process can be

worked in connection with cylinders indented or provided with cells on their exterior surfaces; or, in lieu thereof, a graded screen or screens could be used, in which the cockle and other small seed would pass through the screen, while the wheat would be discharged over the end of the same. In Figs. 4, 5, and 6, an inclined screen is shown, in which the graded wheat and cockle are separated from each other, the wheat passing over the screen by gravity, while the cockle and other small seed fall through the screen upon an impermeate plate, provided with a series of diagonal troughs or gutters, which discharge it at one side of the machine into proper receptacles, arranged to receive it. On the grading reel or shaker I use a brush or cleaning-bar, to prevent clogging of the holes in the same.

I do not wish to limit my invention to the use of three cylinders with a grading-reel composed of three divisions, as on some wheat two cylinders, with a corresponding grading-reel, are all that is required to make the desired separation.

I claim as my invention—

The combination, with a grading reel or shaker, of a series of indented cylinders or their equivalents, substantially as herein shown and described.

ROBERT LUCAS DOWNTON.

Witnesses:

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