

G. SPENST.
GRAIN SEPARATOR.
APPLICATION FILED OCT. 9, 1906.

996,155.

Patented June 27, 1911.

3 SHEETS—SHEET 1.

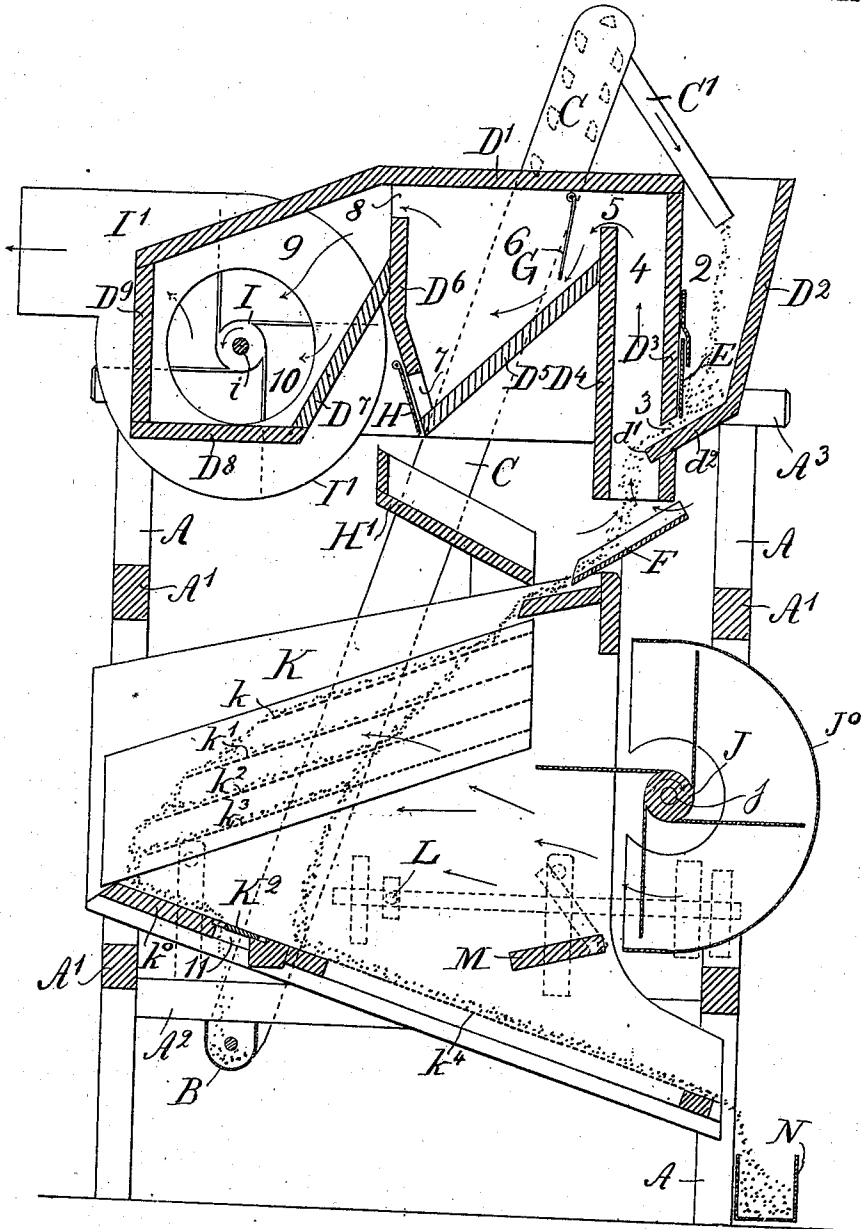


Fig. 1.

Witnesses:

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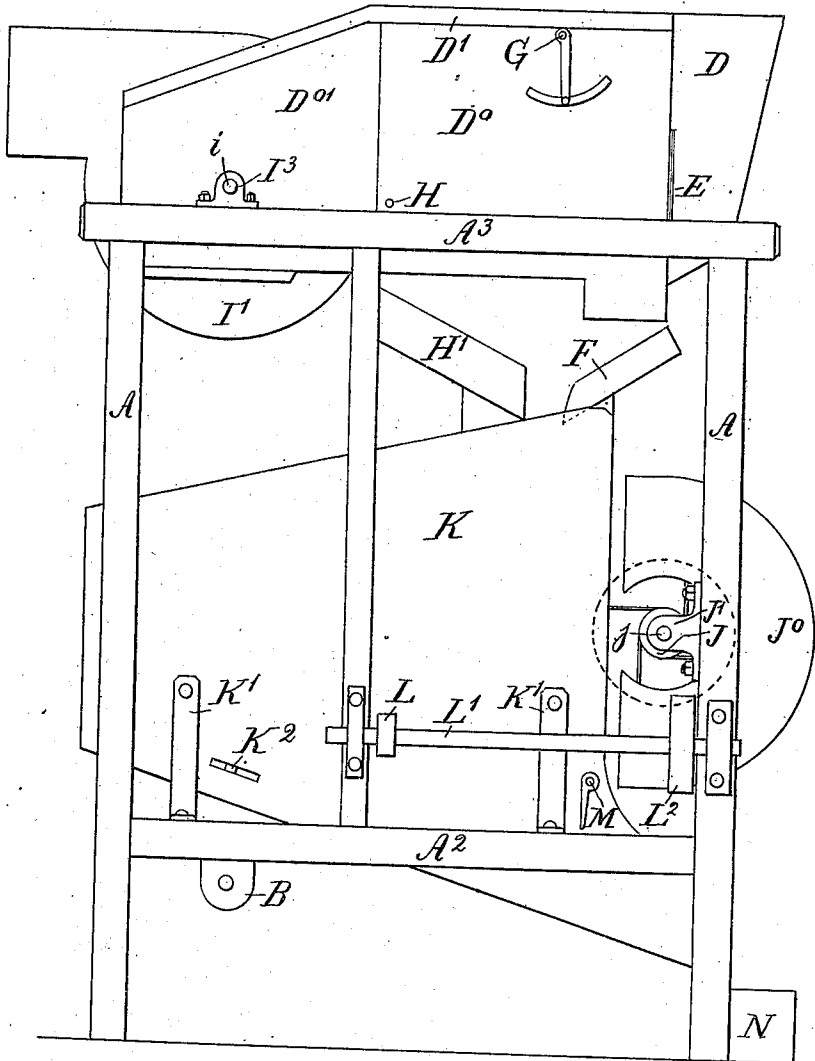


Fig. 2.

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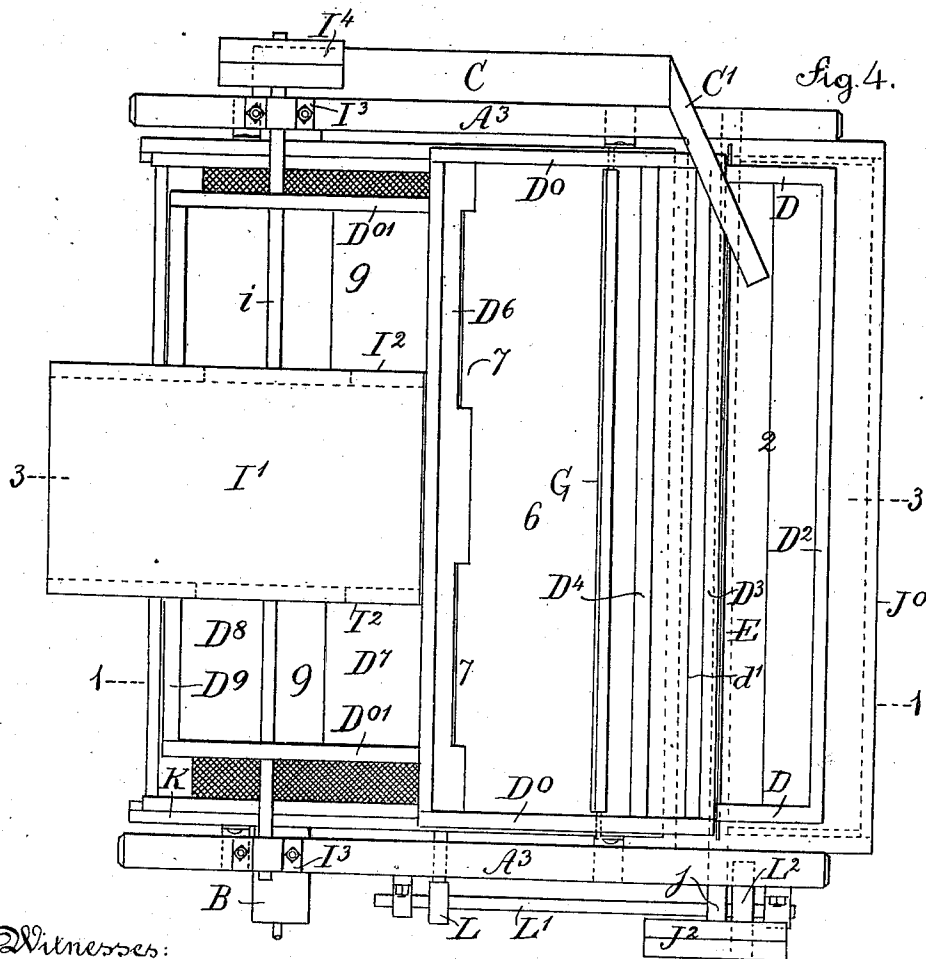
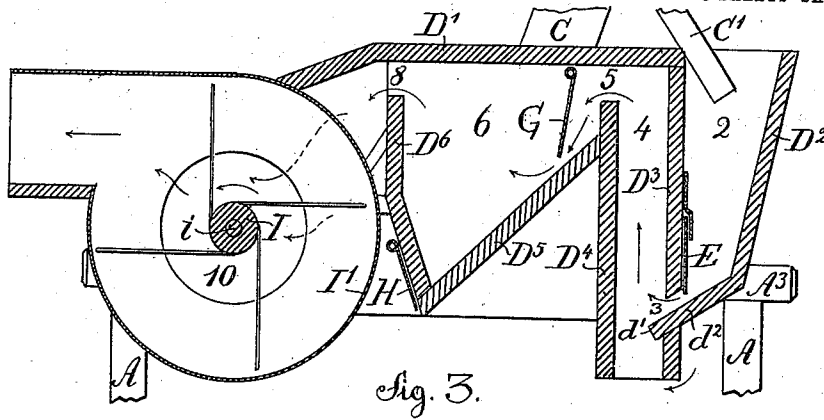
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3 SHEETS--SHEET 3.



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UNITED STATES PATENT OFFICE.

GERHARD SPENST, OF GRETNA, MANITOBA, CANADA.

GRAIN-SEPARATOR.

996,155.

Specification of Letters Patent. Patented June 27, 1911.

Application filed October 9, 1905. Serial No. 281,966.

To all whom it may concern:

Be it known that I, GERHARD SPENST, residing at Gretna, Province of Manitoba, and Dominion of Canada, have invented new and useful Improvements in Grain-Separators, of which the following is a specification.

My invention which will be hereinafter fully set forth relates to machines for separating dust, light grain and other impurities from wheat and other grain.

The object of my invention is a machine specially adapted for mills, grain warehouses and elevators where grain is handled in considerable quantities and is designed to remove both the light and heavy impurities from grain in one operation.

Figure 1 is a vertical longitudinal section of my improved separator, on line 1—1, Fig. 4. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical longitudinal section of the upper portion of the same, on line 3—3, Fig. 4 and Fig. 4 is a top view of the same, with the top (cover) removed.

A frame is constructed of four posts A and rails A' A² and A³, to accommodate the operating parts of the machine, as shown in Figs. 1 and 2. The lower longitudinal rails A² support an open conveyer, B, receiving partly purified grain and feeding it to an elevator, C, which discharges by a spout C', in conjunction with the main feed from the feed spout C², into a hopper, 2, at the top and rear of the machine and formed of the sides D, a back D², partition D³ and sloping bottom d². This sloping bottom extends with a projecting lip, d', through the partition D³ into a vertical draft passage, 4, said partition having a discharge slot, 3, immediately over the said bottom and carrying a slide, E, over the slot acting as a regulator. The lip d' and slot 3 are near the bottom of the passage 4 which is formed of the sides D⁰ and partitions D³ and D⁴ and its lower mouth is above a spout, F, secured to and feeding the shoe. The partition D⁴ is short on top, so as to leave a slot, 5, between it and the cover D', which extends forward from the partition D³. The passage through the slot 5 into the space 6 (which may be termed a settling chamber) is regulated by an adjustable flap valve, G. A bottom, D⁵, slopes from near the top of the partition D⁴ downward and forward to another partition, D⁶, the lower part of which is a little inclined from the vertical

and has a discharge slot, 7, on each side of the central portion, each fitted with an outside flap valve, H. The central part, forward of the partition D⁶, is occupied by the casing, I', I², of a suction fan, I. The sides I² of said casing have openings, 10, communicating with the space 9 or side-chamber at each side and which are in communication with the space 6 through an opening, 8, above the edge of the partition D⁶; the spaces 9 being formed by the sloping back D⁷ abutting on the partition D⁶, the bottom D⁸ and front D⁹, besides the common top D' and sides D⁰¹ and the sides I² of the fan casing. The fan spindle, i, journaled in the bearings I³, is driven by a pulley I⁴.

Below the above described suction part is the usual fanning mill arrangement with the feed spout F, blast fan J, in casing, J⁰, shoe K with graduated sieves k k' k² k³, a fine screen k⁴ and shaker L on shaft L' having pulley L², (Figs. 1 and 2). The blast fan spindle j, journaled in the bearings J', carries pulleys J² and the direction of the blast may be regulated by an adjustable pivoted blade M. K' are the hangers carrying the shoe. In the solid upper part k⁰ of the fine screen k⁴ is a slot, 11, over the conveyer B, covered by an adjustable slide K².

The grain brought by the conveyer B is raised by the elevator C and discharged by the spout C' into the hopper 2. Here a moderate accumulation is permitted, in order that the grain may be evenly discharged through the slot 3 throughout its length or width, the stream being controlled by the slide E. Over the lip d' the grain drops on the spout F and this discharges it upon the shoe K.

The suction fan I draws its current through the discharge mouth of the passage 4 and through the falling grain between the spout F and the said discharge mouth, its volume being regulated by the valve G. The current, in the direction of the arrows, carries with it the light particles, such as dust, oats and other light material; this passes through the settling chamber 6, where the heavier parts, being directed downward by the valve G, that cannot rise to the opening 8 at the top, drop and accumulate against the flaps H, whence they are intermittently dropped upon a discharge spout H' secured to the shoe and discharged at the side of the machine. The

portion that passes over the top of the partition D^c is drawn into the spaces 9 at each side of the fan case and through the openings 10 into the latter and discharged by the fan I—this portion consists of dust, chaff and the like.

The grain discharged upon the spout F, already partly cleaned, is subjected to the shaking motion of the shoe and the screening action and air blast of the blast fan J. The lighter and bulkier part passes over the sieves and what is not blown away drops upon the inclined solid part $\frac{1}{2}$ the slot 11, in which is so adjusted that small grain passes through it and into the conveyer B and is passed through the same operation again, for the larger grains that may escape with the smaller while the clean uniform grained wheat is discharged over the fine screen $\frac{1}{4}$ into the trough or other receptacle N.

Some of the lighter grain will pass through the lower portions of the screens of the shoe K and fall upon the portion $\frac{1}{2}$ and slide K² so that by adjusting the said

slide, more or less of this grain will be caught by the slide and caused to pass over the screen $\frac{1}{4}$. The material falling on the portion $\frac{1}{2}$ above the slot 11 will pass through said slot. 30

I claim as my invention:

A grain separator comprising a shoe, a hopper for feeding grain thereto, means for subjecting the grain to an air blast, a screen under the shoe having a reverse slope and having its upper portion solid with a slot therein, an adjustable slide for more or less covering the lower portion of the slot to catch the lighter grain falling from the shoe and direct it onto the screen, a conveyer under the slot and an elevator for receiving the material from the conveyer and returning it to the hopper. 35 40

In testimony whereof I affix my signature, in presence of two subscribing witnesses. 45

GERHARD SPENST.

Witnesses:

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A. C. ROSENOW.