

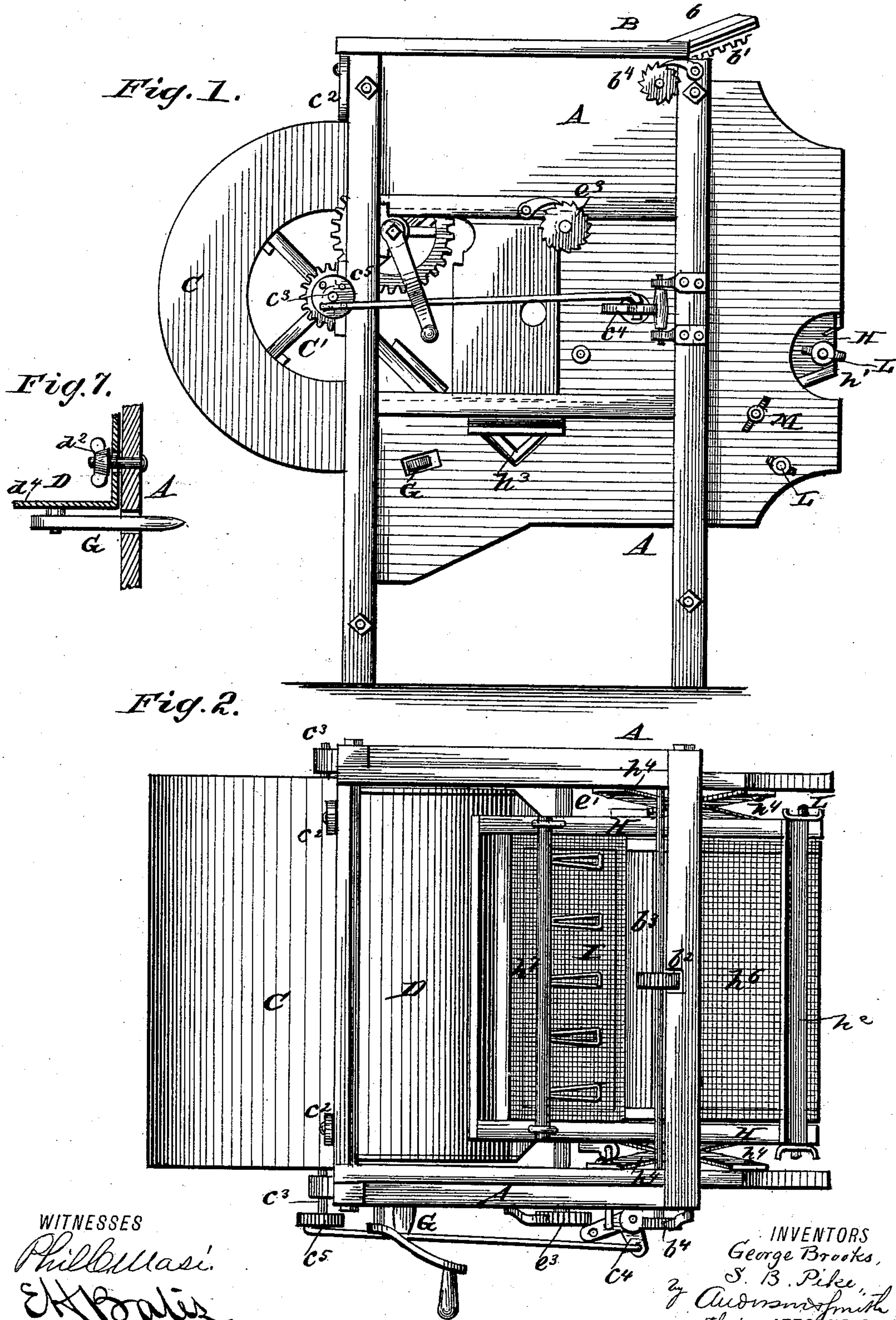
(No Model.)

2 Sheets—Sheet 1.

G. BROOKS & S. B. PIKE.
GRAIN SEPARATOR.

No. 324,454.

Patented Aug. 18, 1885.



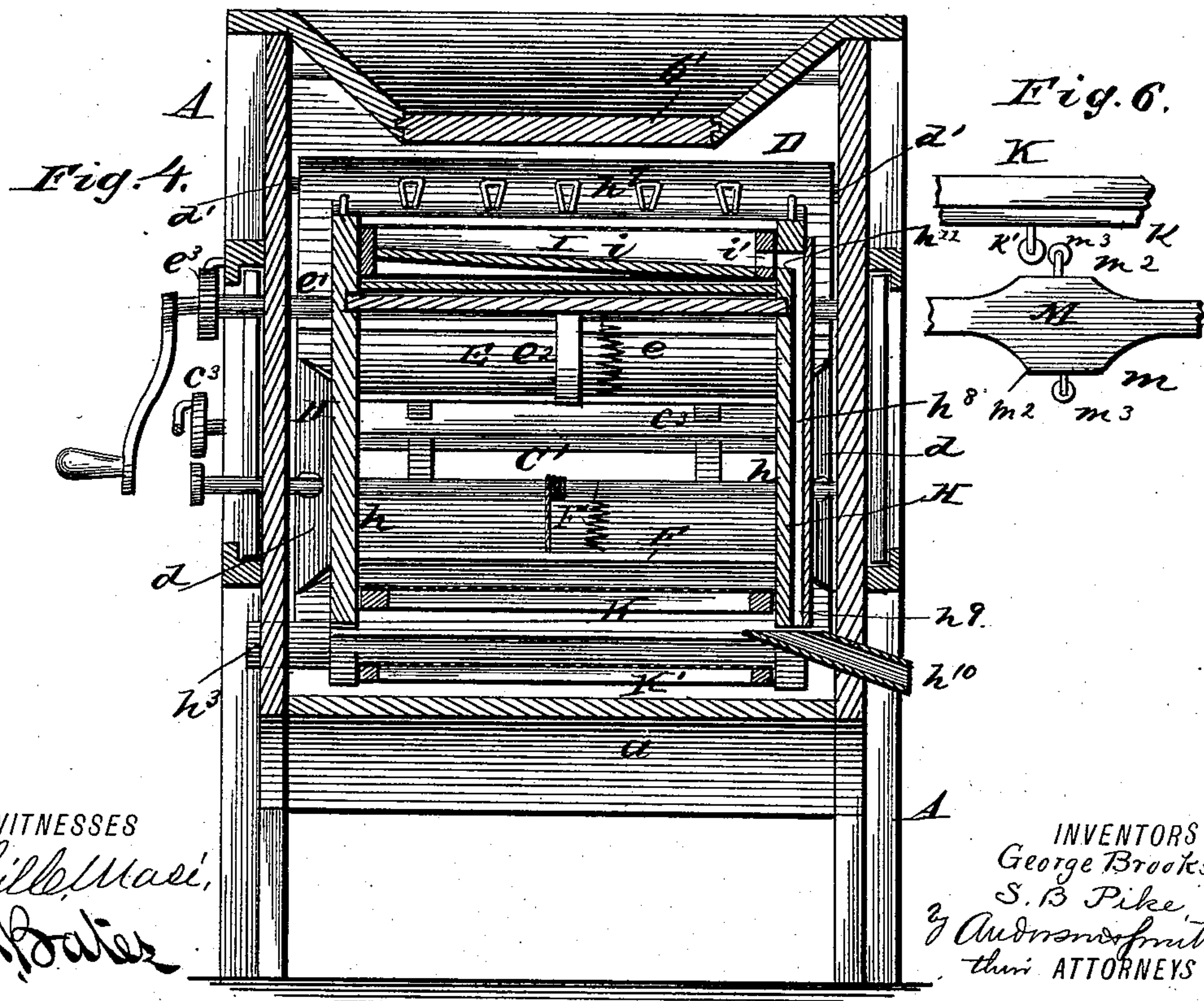
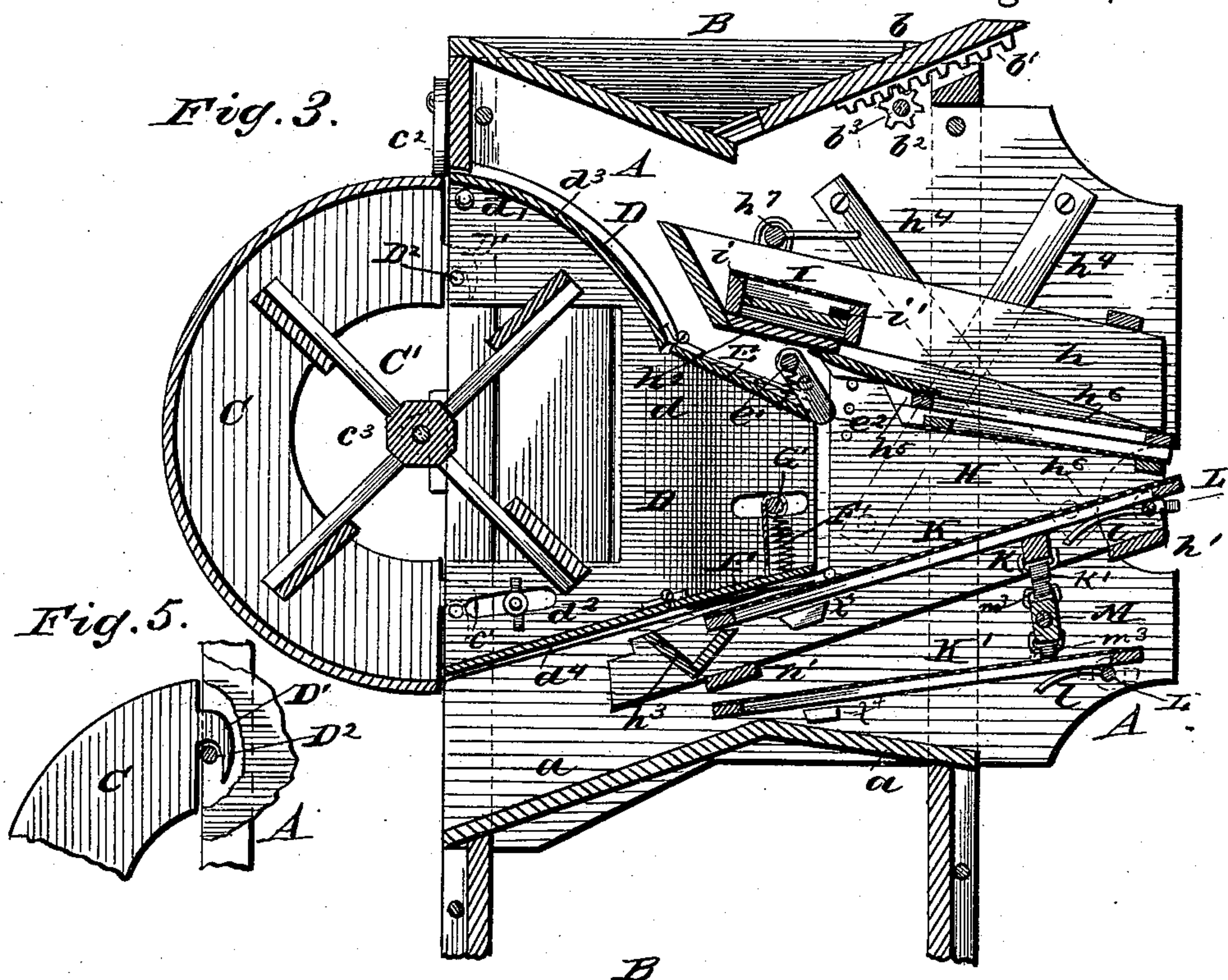
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UNITED STATES PATENT OFFICE.

GEORGE BROOKS AND SOLOMON B. PIKE, OF DETROIT, MICHIGAN.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 324,454, dated August 18, 1885.

Application filed June 12, 1884. (No model.)

To all whom it may concern:

Be it known that we, GEORGE BROOKS and SOLOMON B. PIKE, citizens of the United States, resident at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Grain-Separators; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side view of our device. Fig. 2 is a top view. Fig 3 is a vertical sectional view. Fig. 4 is a transverse section; and Figs. 5, 6, and 7 are detail views.

This invention has relation to improvements in grain-separators; and it consists in the construction and novel arrangement of devices, as will be hereinafter more fully set forth, and particularly pointed out in the appended claims.

In the accompanying drawings, A represents the frame of the mill, to which are properly attached the hopper B, the drum C for the fan C', the wind-conveyer D, and the screen frame or shoe H.

a is an inclined plane, of wood, running backward and upward from the front of the frame A to a point just below the lower front end of the screen-frame H. The rear wall of the hopper B is a rectangular door, b, sliding in ways to open and close the vent, the said door having fixed to its outer surface the rack b', moving over the pinion b² on a transverse rod, b³, which has bearings in the frame of the machine. The end of said rod is furnished with a proper head, by which it is turned and the door moved, the latter being held in any desired position by the ratchet-wheel b⁴ on the end of the rod outside of the frame, controlled by a proper pawl or detent attached to the latter. The drum C has on its top and bottom inner edges the depending hooks D' D', which fit over pins or other proper supports, D² D², fixed in the frame, and the pins or detents c² c², pivoted to the outer surface of the frame above the drum and bearing down upon its upper surface to hold it in position. The fan-shaft

c³ is driven in the usual manner by a crank-handle and gearing, or by other proper means, and is connected with the crank-lever c⁴, which vibrates the screen-carrier by an eccentric, c⁵, and connecting-rod, as usual.

D is the wind or blast conveyer, the sides d d of which fit loosely against the inner surfaces of the sides of the frame, with their front edges flush with the front of the same, so that one-half of the fan, when at rest, lies between them. Each side d is pivoted at its upper front corner at d' to the frame A and has, near its lower front corner, the downward inclined slot d², through which passes a set-screw, which enters the inner surface of the frame to control the movement of the said side d.

d³ d⁴ represent the top and bottom of the conveyer, respectively, which converge from front to rear, and are constructed as follows: The top d³ is divided into two parts—a front portion, fixed between the upper edges of the sides d d, and a movable rear portion, hinged to the rear edge of the former, and forming a transverse rectangular flap or door, E, which is held up by a spiral or other proper spring, e, depending from a transverse rod, e', having bearings in the frame A above the level of the door. A finger, e², fixed at right angles to said rod, serves to depress the door, which may be held in any desired position by a ratchet-wheel, e³, on the rod outside the frame controlled by a pawl fixed to the latter. The bottom d⁴ is likewise divided into two parts—a front portion, fixed between the lower edges of the sides, and a transverse rectangular or flat door, F, hinged to the rear edge of the same. The door F is supported by the up-turned lower front corners of the sides, and is raised by a spring, F', suspended from a rod, G', similar to that above mentioned.

G is a horizontal lever passing through a slot in one side of the frame A. The slot has the same inclination as the bottom d⁴, and the inner end of the lever extends under and is fixed to the latter. By this lever the conveyer may be turned on the pivots d' d' to any desired position, and secured by the set-screws and slots d² d² in its sides.

H is the screen-frame, composed of the sides h h, the rectangular inclined piece h² between its upper front corners, and the inclined spout

h^3 between its lower front corners. The screen-frame is hung within the frame A by the X-shaped leaf-springs h^4 h^4 , having their upper ends attached to the latter and their lower ends to the former, and the front edges of the sides h h are cut away centrally to give room for the doors E and F of the conveyer, which is situated immediately in front of the screen-frame.

10 h^5 h^5 are ways made in the inner surfaces of the sides h h for the insertion of the upper screens, h^6 h^6 , inclining slightly downward from front to rear.

15 h^7 is a picker-bar fixed transversely across the screen-frame in such manner that its attached points enter the bend of the hopper.

20 h^8 is a vertical channel made in one of the sides h of the screen-frame, its lower end, h^9 , opening from the lower edge of said side immediately above the mouth of an outward and downward inclining spout, h^{10} , inserted in the side of the frame A. The upper end, h^{11} , of the channel h^8 opens on the inner surface of the side immediately adjacent to one end of the seed-box I. The mouth of the spout h^{10} extends far enough within the frame A to be always under the lower end of the vertical channel h^8 , in whatever part of its vibrations the screen-frame may be. The spouts h^3 and 30 h^{10} discharge on opposite sides of the machine.

I is the box for grass and other small seed, the top of which is covered with a fine screen, the bottom i and sides being closed. The bottom has its inside surface inclined lengthwise, the lowest end of it being flush with a hole, i' , through the side of the box. The box I fits tightly between the sides of the screen-frame below the picker-bar, and its bottom rests upon the inclined piece h^2 . When the 40 seed-box is in place, the hole i' corresponds with the opening h^{11} , so that the seed are discharged through the vertical channel h^8 to the spout h^{10} . All grain coming from the hopper must pass over this box, and, as its closed bottom and sides protect its upper surface from the blast from the fan, all seed small enough will sift into it.

K is a screen inserted between the sides h h of the screen-frame, inclining downward from rear to front and delivering into the spout h^3 . 50

K' is a similar screen, lower than and parallel to the screen K, and delivering upon the inclined plane a . The screen K is supported at its lower end by the lugs f^3 , extending from the inner surface of the sides h of the screen-frame, and its opposite or upper end is supported by the bar M, which is journaled at opposite ends in the main frame. The screen K' is supported at its lower end in a similar 60 manner by lugs f^4 , and at its opposite end by the transverse rod L.

L is a transverse horizontal rod, with its end passing through the screen-frame, near the rear end of the same, and having a finger-hold 65 on one or both ends, the said rod being threaded where it passes through the sides h h .

l l are arms projecting from the rod L, one from near each end, just within the sides of the screen-frame. The said arms curve forward and downward and rest under the sides of the frame of the screen K or K'—for instance K. 70 By having the finger-hold on either side, the arms l l may be turned and the rear end of the screen K raised or lowered accordingly. When in position, it is secured by a proper nut, 75 which may be made to turn by hand. The screen K has a transverse bar, k , fixed across its frame, and provided on its central portion with a small roller, k' , transverse to the bar, and secured to the lower surface thereof in 80 any proper manner.

M is a transverse rod running through the frame A at a proper distance below the screen K.

m is the enlarged central portion of the rod 85 M, having two longitudinal flat sides, m^2 m^2 , opposite each other and parallel to the rod, one being farther from the center than the other. Each of these sides carries a roller, m^3 , similar to the roller k , which, when the 90 face is turned upright, is immediately above the former. As the screen-frame vibrates, the upper roller passes over the lower, thus giving the screen K a bouncing motion in addition to its lateral vibration. It will be perceived 95 that by having one of the sides m^2 at a greater distance than the other from the center of the bar M the bouncing movement of the screen K may be varied by simply turning the said bar I in its bearings to present the rollers m^3 , 100 respectively, to the roller K'.

The description of the drum makes the manner of securing it to and releasing it from the frame A evident, and the description of the grass-seed box I shows that such seed pass 105 from the box through the channel h^8 to the spout h^{10} to be discharged.

In regard to the conveyer: When it is desired to direct the blast from the fan higher, the conveyer is rotated inward on its pivot-points d' d' and fixed, where desired, by means of the slots d^2 d^2 and accompanying set-screws. The reverse is done to direct the blast to a lower point.

To lessen the exit for the blast the doors E 115 and F are brought together by the described mechanism, and the said doors are separated by the same to widen said exit. The screen of the grass-seed box is of necessity the one that has the finest meshes, as it has to transmit the 120 finest seed. Below that the screens increase in fineness downward, as usual. The screens h^6 h^6 discharge the coarsest grain by way of the tail of the machine. The screen K discharges a finer grade by the spout h^3 , and the 125 finest grade is discharged by the screen K' upon the inclined plane a at the front of the mill.

The operation of the rollers k' and m^3 and of the rods L to change the elevation of the rear 130 ends of the screens K and K' have been heretofore sufficiently described.

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

1. In a fanning-mill, the combination, with
5 the frame A, of the drum C, provided with the hooks D' D' , fitting over the pins D^2 D^2 , fixed to the frame, and the detents c^2 c^2 , pivoted to the front of the said frame above the drum and engaging the upper surface of the
10 said drum, substantially as specified.

2. In a grain-separator, the combination, with the frame A, drum C, fan C' , screen-frame H, and mechanism for actuating the same, of the blast-conveyer pivoted within the
15 frame, the springs e and F' , and the doors E and F, substantially as specified.

3. In a grain-separator, the combination, with the frame A, drum C, fan C' , screen-

frame H, and mechanism for actuating the same, of the lever G, the pivoted blast-con- 20
veyer D, the set-screw d^2 , the doors E and F, the springs e and F' , and the rods e' and G' , substantially as specified.

4. In a fanning-mill, the combination, with the screen-frame H, vibrated laterally, of the 25
screen K, having fixed to its lower surface the bar k , provided with the roller k' , and the rod M, provided with a similar roller or rollers, m^3 , substantially as shown and described.

In testimony whereof we affix our signatures 30
in presence of two witnesses.

GEORGE BROOKS.

SOLOMON B. PIKE.

Witnesses:

CLAUDE E. WILSON,

JNO. B. CORLISS.