

(No Model.)

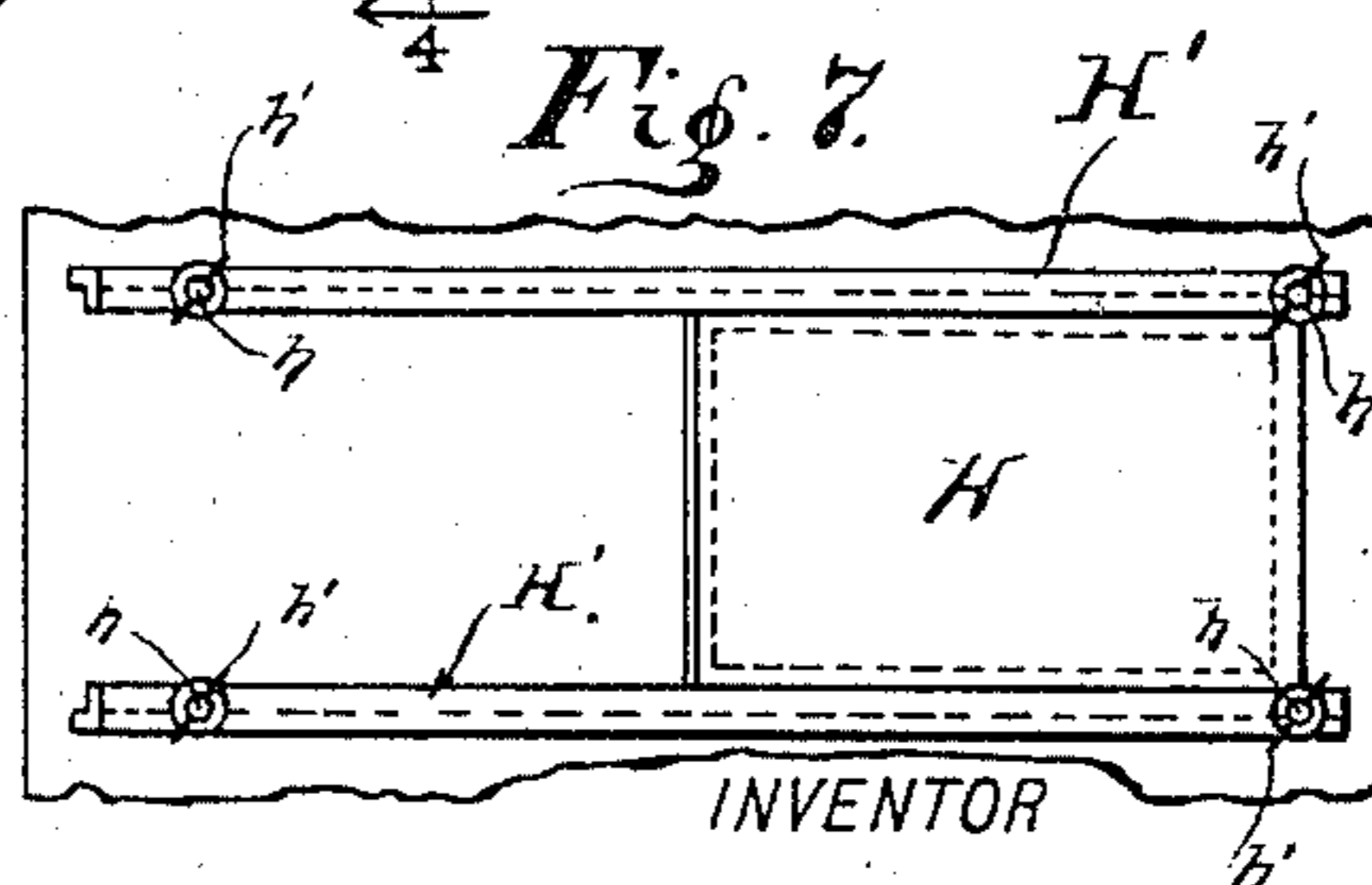
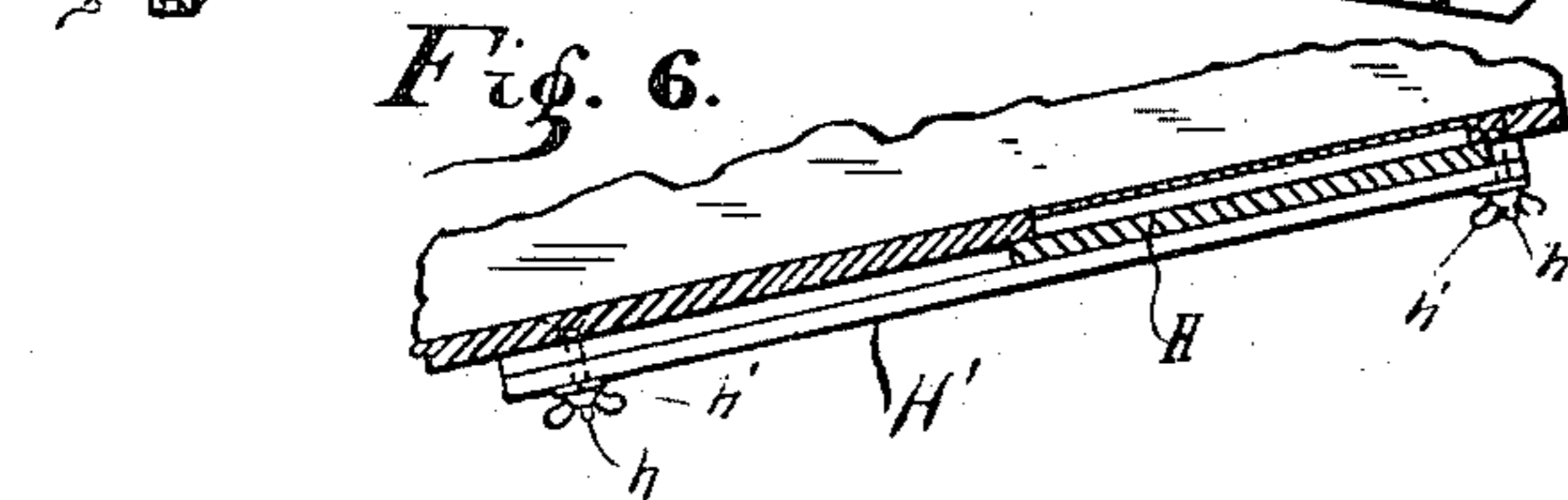
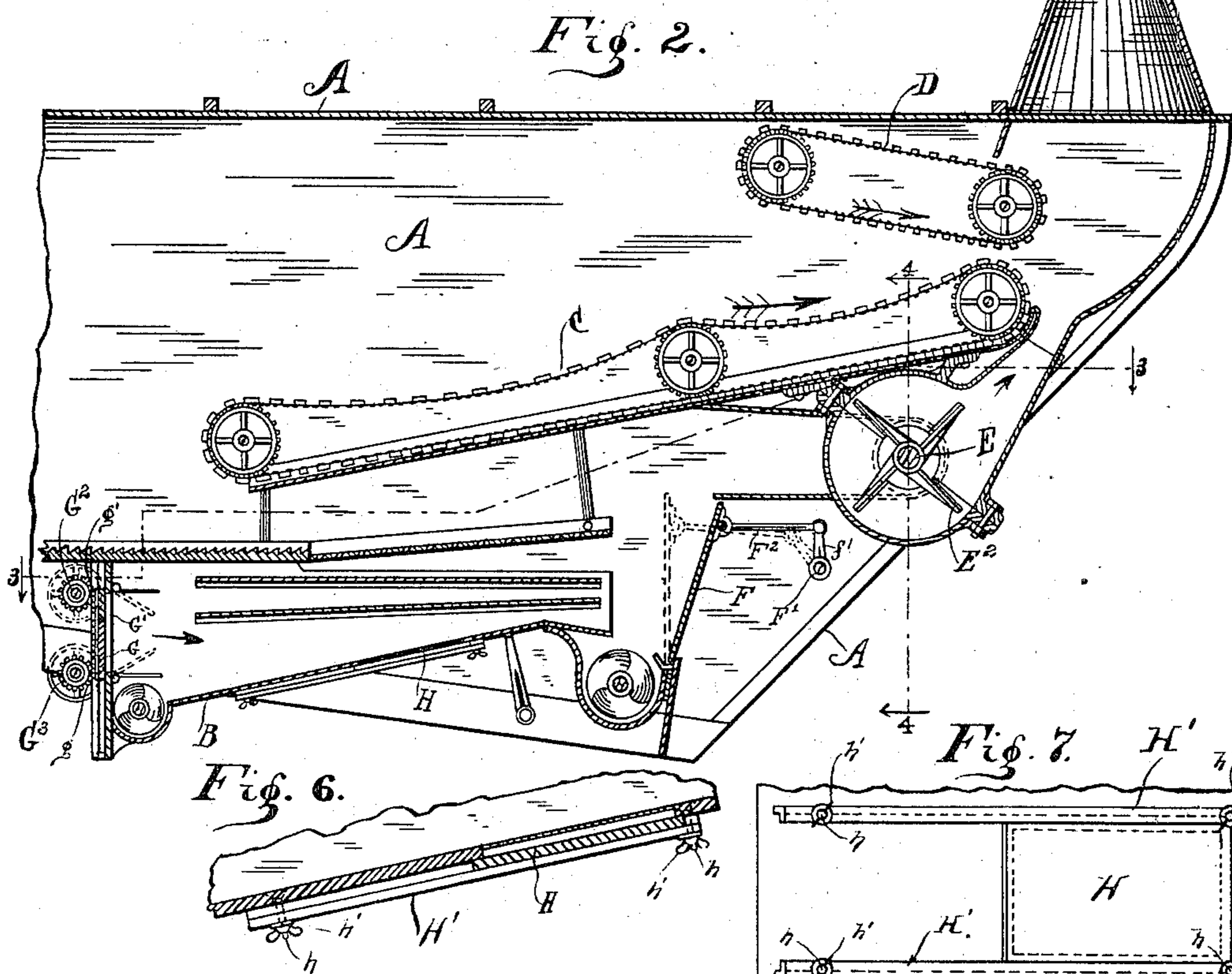
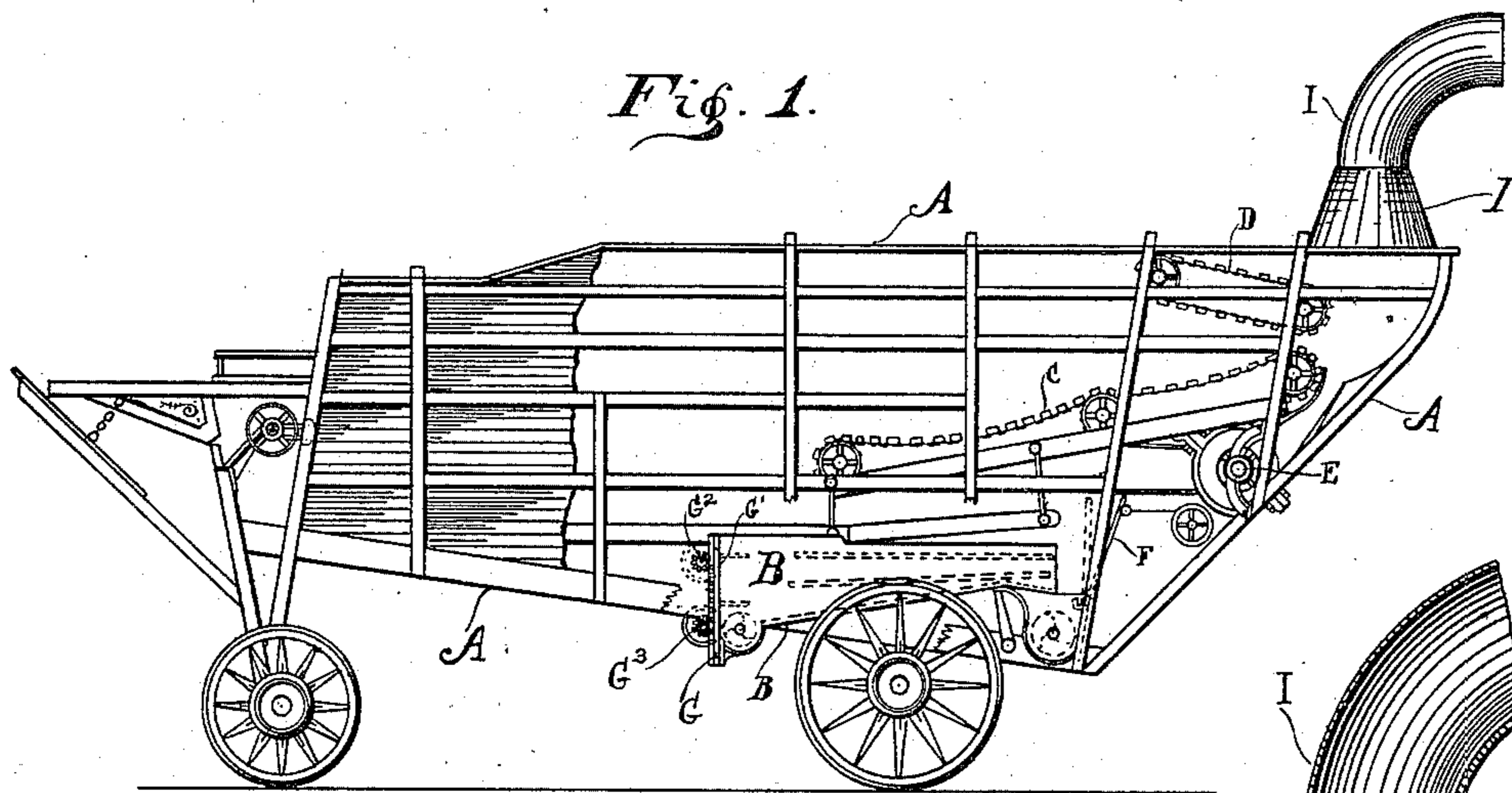
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S. BUFKIN.

THRESHING AND SEPARATING MACHINERY.

No. 566,494.

Patented Aug. 25, 1896.



WITNESSES:

Albert S. Courtwright.
J. M. Walsh.

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Samuel Bufkin.
BY
Chester Bradford,
ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

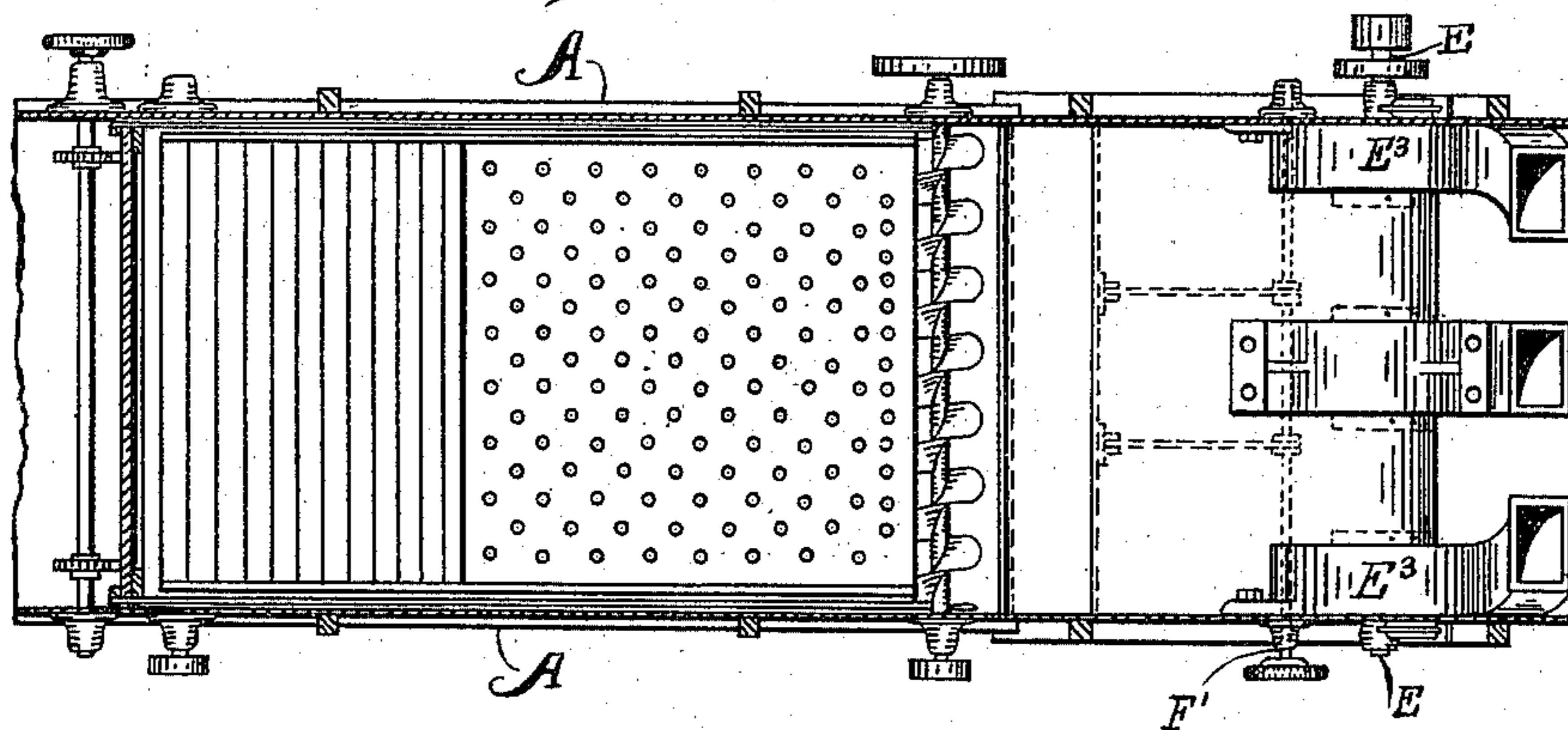


Fig. 4.

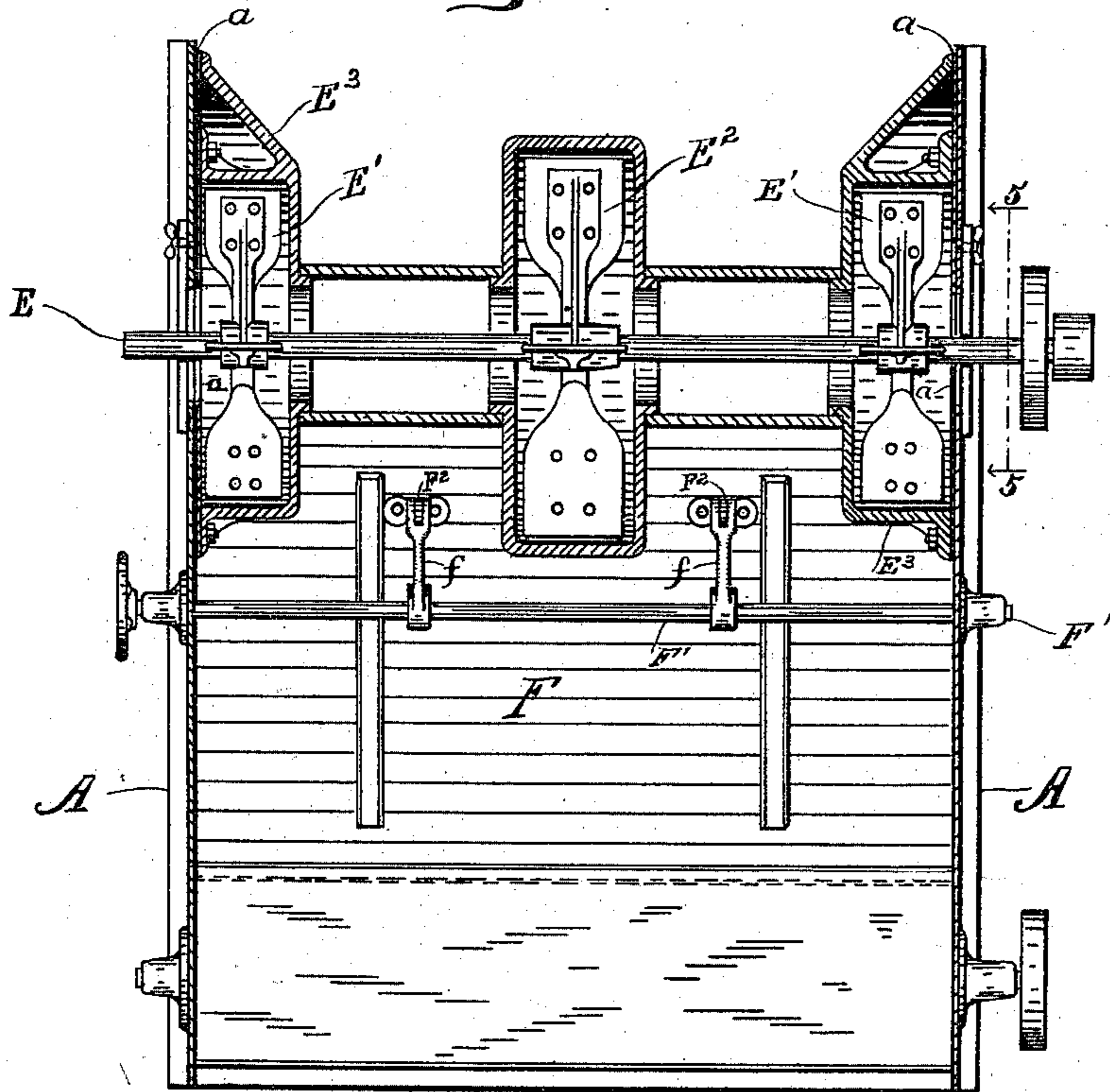
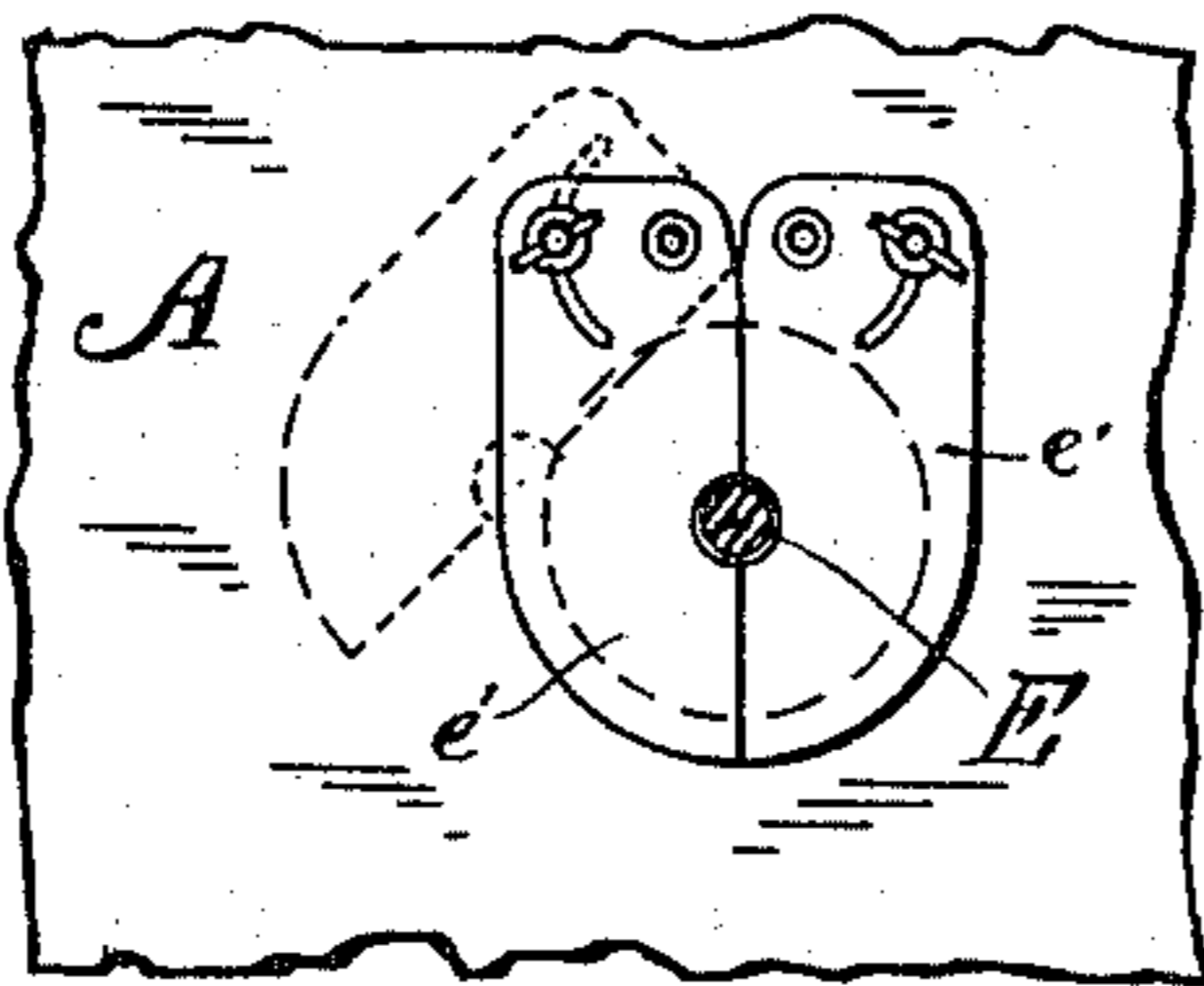


Fig. 5.

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UNITED STATES PATENT OFFICE.

SAMUEL BUFKIN, OF INDIANAPOLIS, INDIANA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE INDIANA MANUFACTURING COMPANY, OF SAME PLACE.

THRESHING AND SEPARATING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 566,494, dated August 25, 1896.

Application filed September 6, 1892. Serial No. 445,158. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL BUFKIN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Threshing and Separating Machinery, of which the following is a specification.

The object of my said invention is to produce a machine wherein a considerable portion of the power usually required may be saved; and it mainly consists in so locating a single fan-shaft bearing one or more fans that it will serve all the purposes of all the fans which have heretofore been used for gathering the straw, chaff, dust, and other refuse incident to the operation of threshing and expelling them from the machine.

I regard my invention as especially applicable to machines which embody a combined threshing-machine and pneumatic straw elevator and stacker; but it may be employed to advantage with other threshing machinery. I have illustrated and will describe it in connection with a machine of the character just mentioned.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of a threshing-machine and pneumatic straw-elevator with the outside casing of the threshing-machine broken away, showing the interior thereof and the mechanism therein, including my fan-shaft and fans; Fig. 2, a central sectional view of the rear portion thereof on a larger scale; Fig. 3, a horizontal sectional view looking downwardly from the dotted line 3 3 in Fig. 2; Fig. 4, a vertical sectional view looking toward the left from the dotted line 4 4 in Fig. 2; Fig. 5, a detail elevation of the gates covering the outside eyes of the end fans as seen from the dotted line 5 5 in Fig. 4; Fig. 6, a detail sectional view of the under side gate to the shoe similar to a portion of Fig. 2, but on a larger scale; and Fig. 7, a detail under side plan view of the same.

In said drawings the portions marked A represent the frame of a threshing-machine; B, the cleaning mechanism, consisting usually of a shoe carrying shaking-screens; C, a traveling belt or riddle; D, a second travel-

ing belt; E, the fan-shaft; F, an air-gate positioned behind the shoe or other cleaning mechanism; G G', adjustable air-gates located behind the shoe or cleaning mechanism; H, an adjustable air-gate located underneath the cleaning mechanism and attached to the frame thereof, and I the pneumatic straw-stacker. (Shown as attached to the machine.)

The threshing-machine frame, the cleaning mechanism, and the traveling apron C are or may be of any usual or desired construction and are not substantially different in construction from similar parts in well-known machines.

The traveling belt D is located in the upper rear part of the machine and is set to travel on a downward inclination toward the extreme rear of said machine. As the belt C travels upwardly this leaves a wedge-shaped opening between the two, into which the straw from the machine will first enter, and thus, by means of said two riddles or belts, the straw is somewhat compressed or straightened and delivered uniformly into the space just behind them, which in my improved arrangement is just above the nozzle or nozzles of the fan or fans. The straw being delivered at this point uniformly by mechanical devices insures that it shall reach the blast steadily and not in large bunches, as is sometimes the case.

The fan-shaft E is located at the rear of the machine behind the cleaning mechanism and preferably the riddles and carries one or more fans, which may be of any appropriate construction. I prefer to use and have shown three fans E', E'', and E''' on this shaft, one near each end and one at the center, the central one E''' being larger in diameter than those at the ends. When three fans are used, of course each one may be smaller than if but a single one was employed, while the draft or suction created thereby is more uniform across the width of the machine than it would be with a single fan, while the strain on the shaft is less, as a large portion of the strain and weight is nearer the bearings. The space in which these fans are located is inclosed by the sides of the machine, so that when the covers to the fan-eyes are closed they will take all their air from the interior. Being located at the extreme rear of the ma-

chine, they draw a blast of air entirely through the machine from end to end, which carries with it all the dust, chaff, and other impurities incident to the operation of threshing and discharges them into the straw-elevator I or elsewhere as may be arranged. The principal advantage incident upon my arrangement is that I substitute for all the cleaning and discharging fans heretofore used the fan or fans located at one point on a single shaft, which perform both the work of cleaning and discharging the refuse matter. The fans upon the end of the shaft have their outer eyes extending to the outside of the machine, so that, if desired, a portion of the air may be taken directly from the outside. Such eyes have pivoted and adjustable covers e' and are adapted to be closed, so that the entire supply may be drawn from the inside when desired. The casings to these fans are made as shown in Fig. 4. A piece of galvanized or other sheet iron a is secured to the inside of the casing of the machine, and this forms the surface of the casing. A casting E^3 forms the remainder of the casing for the fan and is bolted to the casing in the machine, as shown. The casing of the machine, therefore, when protected by the piece of galvanized iron, forms a part of the casing for the fan.

At an appropriate point just in the rear of the fans I place an air-gate F , which is in the form of a swinging door. The purpose of this is that if the blast of air through the machine created by the suction of the fans should become too strong, so as to draw not only the impurities, but some of the grain this gate may be swung back somewhat, as shown by the dotted lines, thus permitting a portion of the air to enter the machine from this source and reducing the draft through the machine. As is obvious, this may be regulated with exceeding nicety, so that just the result desired may be secured. A shaft F' , having an arm f' and connected by a link F^2 to the gate F , is a preferred means of adjusting said gate.

As there is no fan in front of the "shoe" or cleaning mechanism in the machine embodying my invention, the front end of said cleaning mechanism may be left open. I am able, therefore, by placing an air-gate at this point to draw a greater or less quantity of air through over the riddles of said mechanism should that be necessary. Thus by closing the covers over the outside eyes of the end fans and the air-gate F , and opening this air-gate more or less, I can get any blast required. This air-gate preferably consists of two parts G G' , and these are arranged to move in vertical lines transversely of the rear end of the shoe, as shown in Fig. 2. By means of this construction the current of air can be taken at any height desired. By lowering the lower portion the current can be taken in near the bottom, and by raising the upper portion it can be taken in near the top, while by moving both of them slightly it can be taken in at a

central point, and thus all requirements in this particular are fully met. These parts are provided with racks g g' and are operated by pinions g^2 g^3 on shafts G^2 G^3 , which shafts may be operated by hand-wheels on the outer end or other handles, as may be desired.

In order to still further adjust the machine to all requirements, I make a portion of the bottom of the shoe perforated, preferably of finely-perforated zinc, and under this I place a gate H , which is adapted to slide over and cover the perforated portion, thus closing or partly closing the perforations therein. The gate H is mounted in ways H' , which are preferably carried by bolts h , having wing-nuts h' . These ways should be slightly less in diameter than the thickness of the gate, so that when the wing-nuts are screwed up on the bolts the ways will bear closely against said gate, binding it tightly onto the bottom of the shoe and practically forming a portion of said bottom. When it is desired to adjust this gate, a loosening of the thumb-nuts will permit it to be slid to the desired point, where it can be refastened by tightening up said nuts.

As before stated, I regard my invention as especially applicable to machines embodying a pneumatic straw elevator and stacker, such as that shown and described in the Letters Patent No. 467,476, to James Buchanan, dated January 19, 1892, as the blast of air on the nozzles of the fans can be so directed as to efficiently operate such a stacker without any further expenditure of power. So much of an objection as has heretofore existed to the use of such stackers exists in the fact that they have required more power than ordinary threshing-engines, so that larger engines than have been employed with the machines alone have been required to drive the combined machine. As I use but one fan-shaft, dispensing with all the others, it is obvious that I have overcome this objection and that a combined machine embodying my invention can be operated with the same power that an ordinary threshing-machine can. The machine as a whole is also cheapened and simplified.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a threshing-machine, the combination, of the riddles C and D , positioned respectively on opposite sides of the path of the straw with their adjacent sides both converging and traveling toward the discharge end of the machine, the fans located adjacent thereto and arranged to deliver an air-blast at or near the point of delivery of said riddles, and air-inlets toward the front of the machine from said fan provided with adjustable gates, substantially as set forth.

2. The combination, in a threshing-machine, of the usual threshing and separating mechanism, a fan or fans located at or near

the rear end and adapted to draw the supply of air through the machine and discharge it through the discharging-orifice, a hinged air-gate F positioned below and behind the fan, and mechanism, consisting of a shaft F', arms f' and link F², whereby said air-gate can be operated, substantially as shown and described.

3. In a threshing-machine, the combination, of a fan located on a shaft at the rear of the separating machinery, air-inlets with current-controlling gates located toward the front of the machine from said fan, and a pneumatic straw-elevator attached to the rear of said machine above the point of discharge of said fan, whereby a single shaft is enabled to drive and carry all the fans for both the separating and straw-elevating devices, substantially as set forth.

4. In a threshing and separating machine, the combination, of the riddles C, and D, positioned with their adjacent sides converging toward the point of discharge where they are but a short distance apart, the fan arranged with its point of discharge near and below the discharge-point of said riddles, and the pneumatic straw-elevator arranged with its inlet above said discharge, substantially as set forth.

5. In a threshing-machine, the combination, of the separating mechanism, the straw-discharging mechanism, and the fan-shaft located between said separating mechanism and said straw-discharging mechanism and carrying three fans, one at each end and one in the middle, said fans being arranged to discharge behind the separating mechanism and into the straw-discharging mechanism, and adjustable air-inlet doors in front of said fans, substantially as set forth.

6. The combination, in a threshing-machine, with the framework or casing and the other mechanism thereof, of a single fan-shaft located near the rear end and carrying three fans, the center one of which is larger in diameter than those at the ends, substantially as set forth.

7. The combination, in a threshing-machine with fans located on the ends of a fan-shaft, close to the casing of the machine, eyes opening into the interior of the machine-eyes extending through said casing, and movable covers for said eyes secured on the outside, whereby said fans are adapted to draw a portion of their air from the outside and a por-

tion from the inside of the machine, and to be adjusted at pleasure, substantially as set forth.

8. The combination, in a threshing-machine, of the threshing and separating machinery, a fan-shaft carrying fans at its ends next the outer sides of the machine, and a casing thereto composed of adjacent portions of the sides of the machine, and castings E³ secured thereto, with sheet-metal portions α interposed between the casting and the wood of the machine sides, substantially as shown and described.

9. The combination, in a threshing-machine, of a fan located at or near the rear end behind the cleaning mechanism, said cleaning mechanism, and the gate located in front of said cleaning mechanism and divided into two parts, each part being adjustable, whereby the air supply may be taken at any point across said cleaning mechanism, substantially as shown and described.

10. The combination, in a threshing-machine with a fan located at or near the rear end behind the cleaning mechanism, of an air-gate consisting of two parts G and G' located in front of said cleaning mechanism, and mechanism whereby said gate parts may be moved in vertical lines toward or from each other, substantially as shown and described.

11. The combination, in a threshing-machine, of a fan located at or near the rear end behind the cleaning mechanism, said cleaning mechanism having a bottom inclined toward the grain-discharge portion of said bottom perforated, and an adjustable gate located below said bottom and adapted to cover said perforated portion, substantially as set forth.

12. The combination, in a threshing-machine, of a fan located at or near the rear end, the cleaning mechanism, a perforated bottom to said cleaning mechanism, an adjustable gate covering said bottom, and mechanism whereby said gate may be clamped to position on the frame of said mechanism, substantially as shown and described.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 30th day of August, A. D. 1892.

SAMUEL BUFKIN. [L. S.]

Witnesses:

CHESTER BRADFORD,
JAMES A. WALSH.