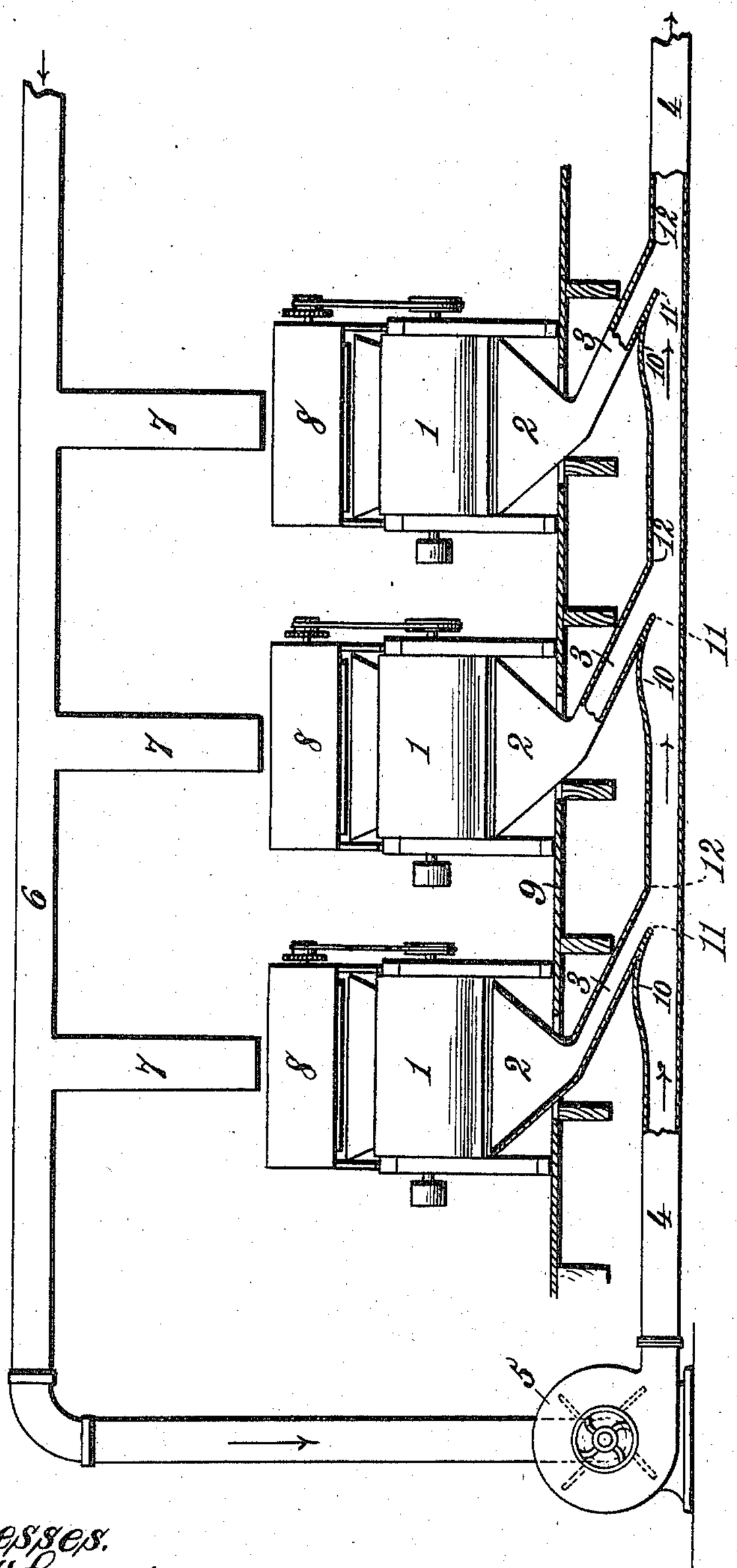
(No Model.)

# H. W. GRABER.

## COTTON SEED CONVEYER.

No. 584,634. Patented June 15, 1897.

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# UNITED STATES PATENT OFFICE.

HENRY W. GRABER, OF DALLAS, TEXAS.

## COTTON-SEED CONVEYER.

SPECIFICATION forming part of Letters Patent No. 584,634, dated June 15, 1897.

Application filed June 11, 1896. Serial No. 595,174. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY W. GRABER, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Cotton-Seed-Conveyer Systems, of which the following is a specification.

It is the object of my invention to provide an efficient and economical cotton-seed-conveyer system for the removal of cotton-seed from gins or linters by the exclusive and unimpeded action of an air-blast through the exhaust-flue of the fan that is ordinarily employed in connection with the usual elevator for conducting cotton into the gin-feeders.

Heretofore in removing cotton-seed from gins or linters a screw conveyer or belt carrier has been most commonly used to convey the seed directly from under the gins or linters to the exhaust discharge-flue of a fan that is employed to elevate cotton from the cotton-seed house or a wagon and thence convey it through the elevator-flue into the gin-feeders. The employment of a screw conveyer or belt carrier is objectionable on account of frequent choking at the point of connection with the exhaust-pipe from the fan, besides requiring additional power to propel them and the employment of additional pulleys and belts to transmit the power to the said conveyer or belt carrier, all of which are extremely liable to get out of order. These objections and imperfections render it desirable to avoid the use of screw conveyers and belt carriers in removing cotton-seed from gins and linters. To this end it has been proposed to remove the seed by means of an air-blast mechanism designed to blow the seed through a horizontal flue, into the top of which open the straight or vertical seed-chutes leading from the gins, and to prevent the air-blast from passing up into the chutes the flue has been provided with gates or valves attached to the top of the flue by hinges or otherwise, so that when in operation they will be raised by the blast of air passing beneath them to an angle sufficient to prevent the air-current from entering the seed-chute; but this plan is very objectionable in practice, because it obstructs a free and full operation of the air-blast, and as it is practicable to only partially raise these gates or valves in order that room may be afforded for the seed to pass over them into the flue they unavoidably cause an obstruction to the free flow of the air through the flue, besides greatly diminishing the cross-sectional area of the exhaust-flue, which proportionately diminishes the capacity of the fan in supplying the seed-cotton to the gins, thereby deranging the entire working of the gin plant and interfering with the high perfection required at this day in the art of handling seed-cotton and removing its seed.

For the purpose of avoiding the several objections and difficulties hereinbefore referred to as incident to the removal of cotton-seed from gins or linters by the means usually employed my invention consists in the features of construction and novel combination of parts in an apparatus for removing cotton-seed from gins or linters, as hereinafter more particularly described and claimed.

The annexed drawing is a partly-sectional elevation illustrating my invention as applied to a battery of gins or linters.

In the drawing the reference-numeral 1 designates a gin-breast. The invention may be applied to a battery of gins, as shown, or to one gin only. Beneath each gin or linter is a seed-hopper 2, having its outlet through a seed-chute 3, leading into a blast flue or pipe 4, which is connected with the exhaust of a fan 5, the suction of which is employed to draw the seed-cotton into the usual elevator-flue 6 from the seed-cotton house or from a wagon, as may be most convenient. This elevator-flue 6 may communicate with the gins or linters 1 through ducts 7 and feeders 8, as usual.

The gin, the fan, and the elevator-flue may be of any suitable or ordinary construction and need not be particularly described, as they form, of course, no part of my invention, except in combination with the means that I have devised for removing cotton-seed from the gins or linters by the exclusive and unobstructed action of the exhaust-blast from the fan and without the employment of any valve or gate or any screw conveyer or belt and accompanying driving mechanism.

The seed-hopper 2 is made with a long opening at the top corresponding in length with the width of the gin-breast and located just

below the usual seed-board, so that the seed discharged by the gin will fall into the opening at the top of the hopper and pass thence to the chute 3, which diverges from the bottom of the hopper at an inclination as great as possible and in the direction of the air-blast from the exhaust of the fan. While the seed-chute 3 is thus inclined, it retains, however, sufficient fall to allow the cotton-seed to slide freely down to the blast-flue 4 by gravity.

It will be observed that the lower end or outlet of the seed-chute 3 connects with the blast-flue 4 at such an angle as to prevent the air current or blast from turning up into said chute.

The blast-flue 4 has a cross-sectional area not less than that of the fan-exhaust and is extended parallel with and below the gin-stand, preferably under the floor 9, which will then be provided with openings for passage of the seed-chutes. One end of the blast-flue 4 is connected with the exhaust of the seed-cotton-elevator fan 5 or any other suitable fan or blower, and the other end of said blast-flue is to be extended to the place of delivery for the cotton-seed.

It is highly important that the area of the fan-exhaust should be maintained throughout the length of the blast-flue 4 in order to preserve the suction efficiency of said fan in connection with the operation of the seed-cotton elevator. For this reason the blast-flue 4 is made single or undivided throughout its entire length, with no restrictions or obstructions at any point and absolutely valveless. It is also very important that the air-current through the blast-flue 4 should be prevented from rushing into the several seed-chutes and thereby obstructing the free discharge of the cotton-seed. In order to accomplish this result without the employment of valves or gates that would reduce the cross-sectional area of the passages for the blast and the seed, I provide for diverting the air blast or current downward and away from or beyond the seed-chute outlet in such manner as to effect a suction that will immediately draw the seed into the air-blast in the direction of the air-blast movement and at the same time prevent any considerable entrance of air into the seed-chute. The means by which I accomplish these important results consists in arching or curving the top of the air-blast flue 4 longitudinally at suitable intervals, each arch or curve 10 being located immediately in rear of the point of connection between a seed-chute and the blast-flue. The curve or arch 10 directs the air-current downward at the point or farther extremity 11 of each arch and diverts it away from the chute-outlet or flue-opening and beyond the point 12 at the forward side of the chute-outlet. By thus diverting the air-blast from the outlet of the forward-inclined seed-chute a suction is produced in said chute in such manner as to draw the cotton-seed forcibly into the air-blast, and by reason of the seed-chute being so inclined as to discharge the seed in the direction that the air-blast is moving it is obvious that the seed will be freely propelled through the blast-flue without any possibility of clogging.

It will be seen that by my invention the cotton-seed will be at once carried from the gins or linters into the blast and thence conveyed by the air-blast to any point desired without any obstruction or back pressure of the fan-exhaust or any interference with the proper working of the fan-suction in operating the cotton-elevating mechanism. The invention may be readily utilized in connection with a single gin or linter or with a battery of gins or linters, as may be desired, the operation being the same in either case.

My invention renders it possible to entirely dispense with the screw conveyer or belt carrier and the pulleys, belting, and driving power necessary for running these, thereby greatly reducing expenses and entirely avoiding the usual danger of closing the seed-passages, and by also dispensing with valves or gates in the air-blast flue a proper cross-sectional area of said flue is maintained in correspondence with the area of the fan-exhaust, and the efficiency of the fan is thereby greatly promoted in furnishing a free and uninterrupted suction for the seed-cotton elevator, whereby the operation of ginning is rendered more perfect and satisfactory.

Although the location of the blast-flue 4 under the floor 9, as shown, is generally most convenient, it will be obvious that it can be placed above the floor, if desired. The seed-hopper 2, seed-chute 3, and blast-flue 4 can be made of wood, sheet-iron, or any suitable material, wood being usually preferable. The seed-chute and the blast-flue may be made either square or circular in cross-section and of any size desired, but a rectangular cross-section of these parts is preferable.

While the drawing shows the air-blast as coming from the left, it will be obvious that the fan could be attached to the other end of the blast-flue; but in that event the seed-chutes 3 would be reversed, so as to slant to the left and discharge the seed in the same direction with the current or air-blast.

What I claim as my invention is—

1. In a cotton-seed-conveyer system, the combination with a gin or linter, a fan, a seed-hopper to receive the separated seed from the gin, and a forward-inclined and valveless seed-chute leading from said hopper, of an unobstructed and valveless air-blast flue leading from the fan and connecting with the said seed-chute to receive seed therefrom, the said air-blast flue having its top longitudinally arched immediately in rear of the point where it connects with the seed-chute and having throughout its length a cross-sectional area that is nowhere less than that of the discharge-opening from the fan, substantially as shown and described.

2. In a cotton-seed-conveyer system, the

combination with a gin or linter, the fan for elevating cotton to said gin or linter, a seed-hopper to receive the separated seed from the gin, and a valveless seed-chute leading from said hopper, of a valveless and unobstructed air-blast flue into which the seed-chute discharges, the said flue leading from the fan-exhaust and having throughont its length a cross-sectional area that is nowhere less than that of said fan-exhaust and provided with a top that is longitudinally arched immediately in rear of its point of connection with each seed-chute, substantially as shown and described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRY W. GRABER.

Witnesses:
JNO. D. HARVEY,
E. L. SNODGRASS.