C. B. GINN.

AIR BLAST COTTON GIN.

APPLICATION FILED NOV. 21, 1914.

1,168,493.

Patented Jan. 18, 1916.

2 SHEETS—SHEET 1.

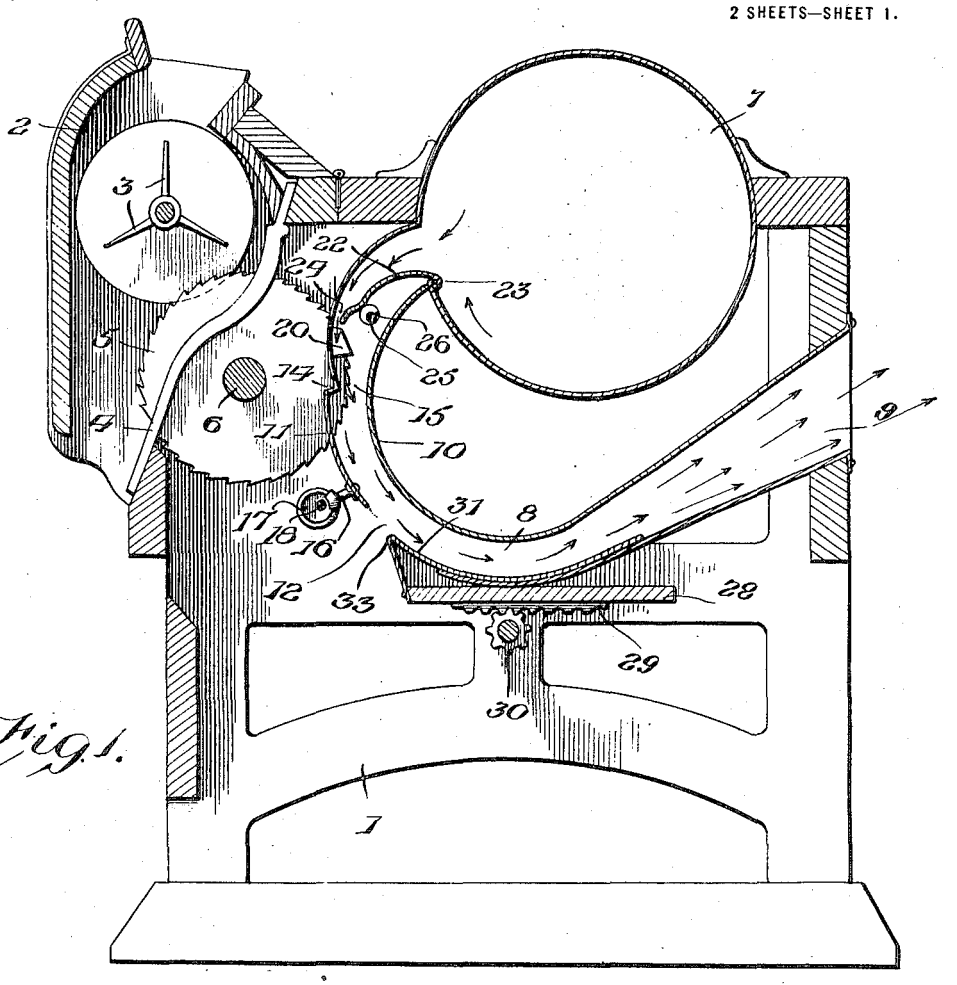


Fig. 1.

Fig. 5.

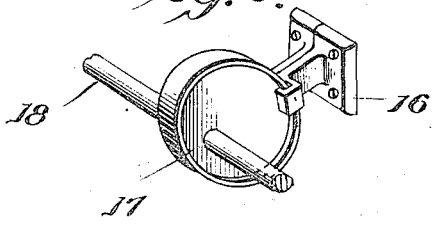
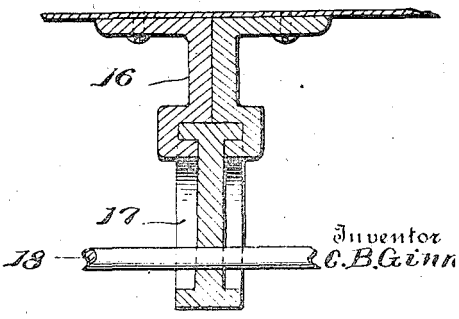


Fig. 6.



Witnesses

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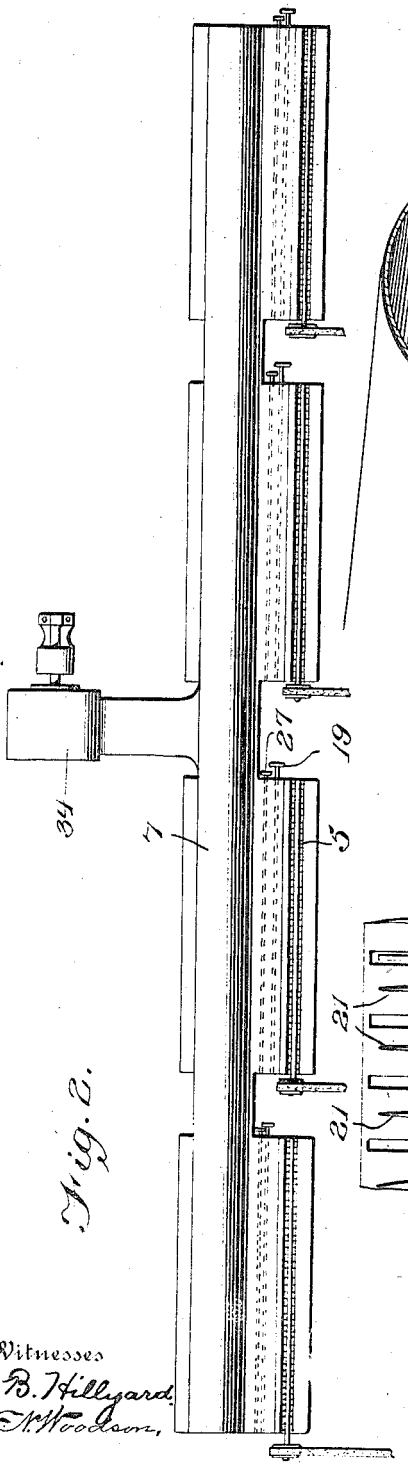

Fig. 2.

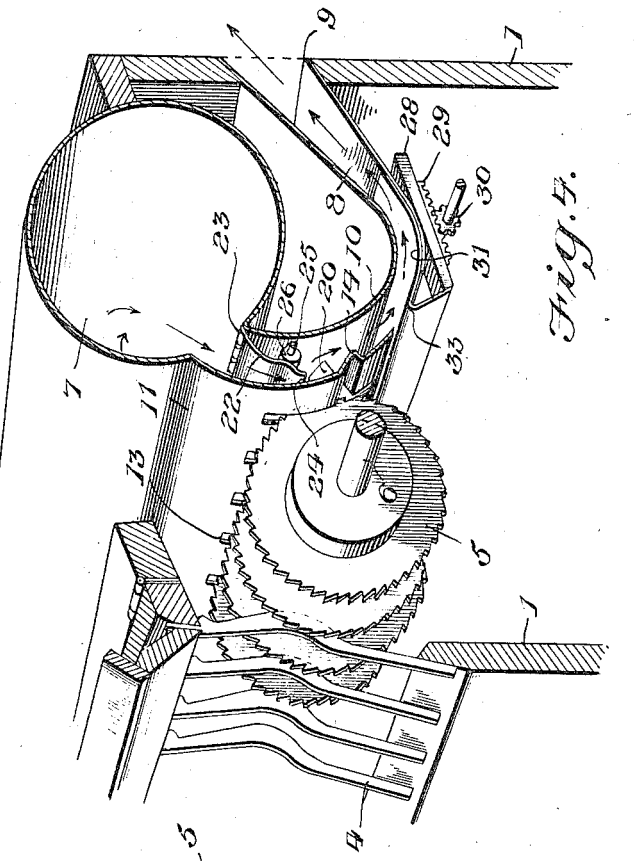

Fig. 4.

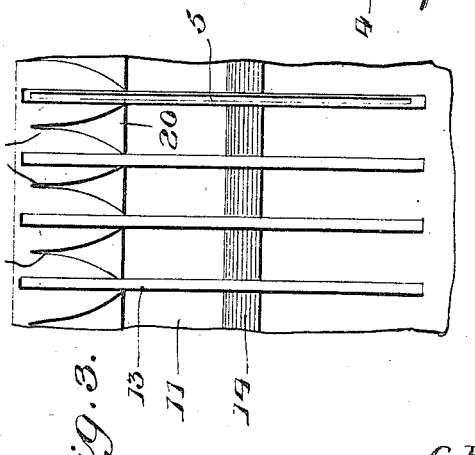

Fig. 3.

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UNITED STATES PATENT OFFICE.

CARROLLVERNON B. GINN, OF BRENHAM, TEXAS, ASSIGNOR OF ONE-HALF TO PAUL D. GINN, OF BRENHAM, TEXAS.

AIR-BLAST COTTON-GIN.

1,168,493. Specification of Letters Patent. Patented Jan. 18, 1916.

Application filed November 21, 1914. Serial No. 873,353.

To all whom it may concern:

Be it known that I, CARROLLVERNON B. GINN, citizen of the United States, residing at Brenham, in the county of Washington and State of Texas, have invented certain new and useful Improvements in Air-Blast Cotton-Gins, of which the following is a specification.

Machines of the type for ginning cotton generally employ a brush for removing the lint from the teeth of the rotary gin elements or saws. It has been found objectionable to use rotary brushes as means for stripping or doffing the lint from the gin mechanism because of the trouble experienced by such brushes getting out of balance and becoming dismembered because of the high speed at which they are required to be run and, furthermore, because of the heating of the bearings.

The present invention provides novel means for utilizing an air blast for doffing or stripping the lint from the teeth of the rotary gin elements, such air blast being further utilized as means for conveying the lint to the required point of discharge, or to other mechanism for forming the lint into a bat, or for other desired purposes.

The invention provides novel means for utilizing an air blast as doffing or lint stripping means in the manner herein before indicated, said means being applicable to cotton gins, linters, regins or bollers, and said means embodying devices for regulating and directing the air blast according to the condition of the material to be ginned or to the conditions requiring adjustment of the working parts.

A further purpose of the invention is the provision of means for concentrating and directing the air blast upon the teeth of the rotary gin member so as to effectively strip the lint therefrom and enable the work to be effectively performed with a minimum amount of air and a consequent small expenditure of power.

The invention also has for its object the provision of a mechanism of the character herein before stated embodying a lint flue in which is formed a discharge for motes, said discharge being adjustable and such lint flue having a portion of its wall adjustable to regulate the effective size of the air passage thereby adapting the mechanism to varying conditions.

The invention further aims to provide a cotton gin having a lint flue formed with a contracted portion opposite the gin saws, said flue being enlarged in the rear of the contracted portion to provide ample clearance for the stripping of the lint from the gin saw teeth.

A further purpose of the invention is the provision of a lint flue through which a blast of air is caused to travel, said lint flue having a valve made adjustable for regulating the effective passage or throat through which the air is forced, thereby enabling the air blast to be controlled and utilized to the best possible advantage.

The invention has for its object furthermore to provide an air blast cotton gin embodying novel features which hereinafter will be more particularly set forth, subsequently claimed and illustrated in the drawings hereto attached, in which:—

Figure 1 is a vertical longitudinal section of an air blast cotton gin embodying the invention; Fig. 2 is a top plan view of a gang of gins having an air supply pipe in common; Fig. 3 is a detail view of a portion of the inner wall of the lint flue showing more clearly the deflectors for concentrating the air upon the sides of the gin saws; Fig. 4 is a detail perspective view of a portion of the gin showing more clearly the relative arrangement of the parts; Fig. 5 is a detail perspective view of the means for adjusting the movable portion of the front wall of the lint flue; Fig. 6 is an enlarged sectional view of the parts illustrated in Fig. 5.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

The main frame of the gin is indicated generally by the reference numeral 1 and may be of any construction according to the type or character of gin to which the invention is applied.

The numeral 2 designates the cotton chamber which receives the material to be ginned. The picker roll 3 arranged within the cotton chamber 2 is of ordinary construction. The grid or breast 4 at one side of the cotton chamber serves to separate the seed from the lint. The gin saws 5 are mounted upon a mandrel 6 and are arranged to operate through the bars comprising the grid or breast 4.

The parts herein referred to may be of any construction and arrangement well understood in the operation of cotton gins.

An air pipe 7 is mounted upon the frame 1 and extends parallel with the cotton chamber 2 and axis of the gin saws. The pipe 7 in practice is supplied with air under pressure from any suitable source. A flue 8 leads from a side of the air pipe 7 and is of involute form, as shown most clearly in Fig. 1. The delivery end of the flue 8 is enlarged, as indicated at 9, to facilitate the separation of the air from the lint. The flue 8 receives both a blast of air from the pipe 7 and the lint from the ginning mechanism. In the preferable arrangement the lint flue 8 connects with the air pipe 7 at the side facing the ginning mechanism, the portion of the lint flue adjacent the ginning mechanism curving forward so as to present a convex portion facing the gin saws. The receiving end portion of the lint flue embodies a rear wall 10 and a front wall 11, the latter being adjustable to vary the space formed between the two walls. An opening 12 is formed in the front wall of the lint flue a short distance below the ginning mechanism for the escape of motes or specks. The opening 12 is made adjustable and is located about in line with the vertical portion of the lint flue so that the motes or specks may be discharged therethrough by the momentum or impetus imparted thereto by the combined action of the air blast and the rotation of the gin saws.

A plurality of slots or openings 13 are formed in the wall 11 of the lint flue to receive the toothed portions of the gin saws. An offset or bend 14 is formed in the wall 11 about in line with a horizontal plane passing through the axis of the gin saws thereby forming a contracted passage 15 in the lint flue. This contracted passage 15 concentrates the blast of air so as to insure thorough stripping or doffing of the lint from the gin saws. Below the offset portion 14 or constricted part 15 of the lint flue the latter is enlarged thereby affording ample clearance for the doffing of any lint that may tend to cling to the toothed edge of the saw and be carried thereby through the opening 13 and back into the cotton chamber 2. The lower end of the wall 11 bordering upon the opening 12 is movable forwardly and rearwardly thereby admitting of the receiving portion of the lint flue being enlarged or contracted adjacent the opening 12 and the toothed portion of the gin saws extending into the lint flue. While any means may be provided for effecting adjustment of the wall 11 the means illustrated are preferred, the same consisting of one or more brackets 16 and an eccentric 17 secured to a shaft 18 arranged parallel with the mandrel 6 and supported in suitable bearings provided upon the frame 1. One end of the shaft is provided with a hand wheel 19 or other manually operable part to admit of rotation of the shaft to effect adjustment of the wall 11 when required. The eccentric 17 has positive engagement with the bracket 16 to effect positive movement of the wall 11 in either direction. As indicated most clearly in Fig. 4 the eccentric 17 is formed in opposite faces near its outer edge with grooves which engage inwardly facing extensions at the outer end of the bracket 16.

Deflectors 20 are located upon the inner side of the wall 11 adjacent the upper ends of the openings or slots 13 and are disposed in a horizontal line intermediate adjacent openings 13, as shown most clearly in Fig. 3. Opposite faces or sides of the deflectors 20 incline upwardly, preferably at like inclinations so that the angle formed between either face or side 21 and a vertical plane passing through the adjacent opening or slot 13 is equal, with the result that the blast of air is divided and directed downwardly and outwardly at the sides of a deflector 20 with equal force. This action concentrates the force of the air blast upon the sides of the toothed edge portions of the gin saws projecting into the lint flue with the result that the lint is loosened and detached from the teeth of the saws. The crests of the deflectors 20 incline downwardly and rearwardly from the wall 11 thereby facilitating the doffing of the lint. It is noted that the deflectors 20 are disposed above the constricted portion 15 of the lint flue and opposite the upper ends of the portions of the gin saws extending into the lint flue, thereby serving the better to loosen and effect a stripping of the lint from the saws.

The valve 22 is located at the receiving end of the lint flue and consists of a flap or apron which is hinged at 23 to the pipe 7 or upper end of the rear wall of the lint flue. The lower end of the valve 22 is free and is adapted to move forward or backward between the walls 10 and 11 so as to regulate the throat or discharge 24 of the air blast. The lower end of the valve 22 terminates adjacent the upper ends of the deflectors 20 thereby concentrating the air blast and directing the same into the angular spaces formed between the oppositely inclined faces or sides 21 of adjacent deflectors. Suitable means may be employed for effecting adjustment of the valve 22. As indicated, a shaft 25 is disposed within the upper portion of the lint flue in the rear of the valve 22 and one or more eccentrics 26 are mounted thereon and engage with the valve 22. Rotation of the shaft 25 causes the turning of the eccentrics 26 and a corresponding adjustment of the valve 22. The shaft 25 pro-

jects at one end and is provided with a hand wheel 27 or like manually operable part to admit of the shaft 25 being turned with facility when desired.

The discharge opening 12 for the motes or specks may be regulated in any manner and as indicated a mote-board 28 is provided and is mounted for longitudinal adjustment. A rack bar 29 attached to the mote-board 28 is adapted to coact with a pinion 30 and the latter is rotatable in any manner to effect a shifting of the mote-board either forward or rearward. A section 31 of the wall of the lint flue is carried by the mote-board 28 and fits close against the fixed wall of the lint flue and is movable thereover so as to maintain a close fit and prevent the formation of any space for the escape of lint or air. The forward end of the adjustable wall section 31 curves upwardly and forwardly and the upper end 33 may be adjusted to a position more or less in vertical line with the upper portion of the lint flue so as to effect a separation of the motes or specks which are forced toward the front wall 11 of the lint flue by centrifugal action due to the forward convexity or curvature of the lint flue, as indicated most clearly in Fig. 1.

It is to be understood that the invention may be used in connection with a single cotton gin or a plurality of cotton gins. Fig. 2 illustrates an arrangement of four cotton gins disposed in series, or gang, and in such arrangement the air pipe 7 is common to all of the gins and is adapted to receive a blast of air from a fan 34. When a plurality of cotton gins are arranged in series so as to receive a blast of air from a pipe 7 common thereto the advantage of the valve 22 and adjustable wall section 11 is apparent and such parts provide for regulating a blast of air so that each gin may receive a blast of air of like force, or the parts 11 and 22 may be so adjusted to admit of different gins receiving a blast of air of varying force according to the nature or condition of the cotton or the material being ginned.

An advantage resulting from the construction disclosed is that damp or wet cotton or like material may be effectively ginned, the valve 22 and adjustable front wall section 11 providing for delivery of the blast of air in such a manner as to insure a doffing or stripping of the lint from the gin saws.

It is to be understood that the invention is of such a nature as to be readily adapted to cotton gins, linters, regins or bollers and operates with equal effectiveness in either adaptation. While it is preferred to embody the air pipe 7 and lint flue 8 as an essential part of the machine it is to be understood that such parts may be applied to cotton gins of any make and in use or upon the market.

While the lint flue 8 serves as an essential part of the doffing or stripping mechanism it also serves the purpose of a conveyer to direct the lint to the required point of discharge, or to other machinery, for subsequent treatment of the lint as the same is discharged from the gin.

In the operation of the invention the cotton or other material to be ginned is placed in the chamber 2 in the manner well understood and the lint removed from the seeds is carried through the grid or breast 4 into the lint flue by the action of the gin saws 5 in the manner well understood. The instant the lint enters the lint flue it is subjected to a blast of air delivered through the throat 24, such blast of air being concentrated by the combined action of the valve 22 and oppositely inclined faces 21 of the deflectors 20. It is to be understood that the blast of air must be of such force and of such high velocity as to detach the lint from the toothed portions of the saws 5 and direct the same through the flue 8. The forwardly curved portion of the receiving portion of the lint flue serves to effect a separation of the motes or specks from the lint by centrifugal action, such motes or specks escaping through the opening 12, whereas the lint being light is carried along through the flue by the blast of air. When the nature of the material is such as to require variation in the size of the throat 24, the lower end of the valve 22 is adjusted by rotary movement of the shaft 25 in the manner stated. Adjustment of the lower end of the wall 11 varies the size of the constricted portion 15 of the flue and also effects adjustment of the deflectors 20 with reference to the parts of the saws 5 extending into the lint flue. Forward adjustment of the lower end of the wall 11 enlarges the constricted portion 15 of the lint flue and at the same time admits of a larger portion of the saws 5 projecting into the lint flue. Rearward adjustment of the lower end of the wall 11 contracts the passage 15 and causes a smaller portion of the saws to project into the lint flue.

While the drawings illustrate the preferred embodiment of the invention it is to be understood that in the practical adaptation thereof to meet varying conditions changes in the form, proportion and minor details of construction may be resorted to within the scope of the invention as claimed without departing from the essential features thereof.

Having thus described the invention, what is claimed as new is:—

1. In an air blast cotton gin and in combination with the gin saws, a flue having a section of its wall adjustable toward and from the opposite wall and having the gin saws extending therethrough, means for

causing a blast of air to pass through the flue, and means for adjusting the movable section of the flue.

2. In an air blast cotton gin having openings in a wall thereof to receive the gin saws and having a discharge opening below the saw receiving openings, the portion of the wall of the flue above the discharge opening and containing the saw receiving openings being adjustable toward and away from the opposite wall of the flue, means for adjusting the movable portion of the flue wall, and means for causing a blast of air to pass through the flue.

3. In an air blast cotton gin, a flue comprising approximately vertical and horizontal portions and having a discharge opening in the outer wall at or near the juncture of the vertical and horizontal portions and having the section of the wall above the discharge opening formed with saw receiving openings and laterally adjustable at its lower end toward and away from the rear wall of the flue and a second section of wall immediately below the discharge opening adjustable horizontally, means for adjusting the upper section of the flue wall above the discharge opening, and other means for adjusting the second section of the flue wall below the discharge opening.

4. In an air blast cotton gin, a flue having a section of its wall adjustable toward and away from the opposite wall and formed with saw receiving openings and provided with an internal offset intermediate the ends of the saw receiving openings, and means for adjusting the movable wall section of the flue.

5. In an air blast cotton gin, a flue having a wall formed with saw receiving openings and having an internal offset in the wall intermediate the ends of the saw receiving openings, and deflectors arranged upon the inner side of the wall above the offset thereof about in line with the upper ends of the saw receiving openings and between the same, such deflectors having their opposite faces inversely inclined to concentrate and direct the blast of air against the sides of the saws.

6. In an air blast cotton gin, a flue having a section of one of its walls made adjustable and formed with saw receiving openings and having an offset or bend intermediate the ends of such openings.

7. In an air blast cotton gin, a flue having a section of one of its walls made adjustable and formed with saw receiving openings and having an offset or bend intermediate the ends of such openings, and deflectors disposed upon the inner side of the adjustable wall section above the offset portion thereof and about in line with the upper ends of the saw receiving openings and between the latter, with their faces oppositely inclined to concentrate the blast of air against the sides of the saws.

8. In an air blast cotton gin, a flue having a wall formed with saw receiving openings, a swinging valve disposed in the flue above the saw receiving openings to form a throat or passage, and means for adjusting the lower end of the valve toward or from the wall having the saw receiving openings to regulate the size of the throat or passage to control the blast of air.

9. In an air blast cotton gin, a flue provided with saw receiving openings in a wall thereof, a valve arranged in the upper portion of the flue above the saw receiving openings and having its upper end fixed and its lower end adjustable toward and away from the wall of the flue having the saw receiving openings, and means for adjusting the lower end of the valve to regulate the size of the passage between such valve and the wall of the flue formed with the saw receiving openings.

10. In an air blast cotton gin, a flue having a wall provided with saw receiving openings, a valve disposed within the flue above the saw receiving openings and having its upper end touching the rear wall of the flue and its lower end adjustable toward or away from the wall of the flue having the saw receiving openings, and means arranged within the flue between the valve and the rear wall to effect adjustment of the valve at its lower end to regulate the size of the passage between such valve and the wall of the flue having the saw receiving openings.

11. In an air blast cotton gin, a flue of involute form arranged with one portion approximately vertical and the lower portion horizontal, an air pipe having connection with the upper end of the flue, saw receiving openings formed in the front wall of the vertical portion of the flue and a valve disposed in the upper portion of the flue with its upper end in contact with the rear wall of the flue and its lower end adjacent the front wall of the flue and terminating about in line with the upper ends of the saw receiving openings, and means for adjusting the lower end of the valve toward or away from the front wall of the flue.

12. In an air blast cotton gin, a flue of involute form arranged with one portion approximately vertical and the lower portion horizontal, an air blast pipe having connection with the upper end of the flue, saw receiving openings formed in the front wall of the vertical portion of the flue, a valve disposed in the upper portion of the flue with its upper end in contact with the rear wall of the flue and its lower end adjacent the front wall of the flue and terminating about in line with the upper ends

of the saw receiving openings, means for adjusting the lower end of the valve toward or away from the front wall of the flue, and deflectors disposed upon the inner side of the front wall of the flue immediately below the valve and between the upper ends of the saw receiving openings, the sides of such deflectors being oppositely inclined to concentrate and direct the blast of air against the sides of the saws.

13. In a cotton gin, the combination of a flue receiving an air blast at its upper end and having an offset on its front wall at an intermediate point of its height, and gin saws extending through said front wall and the offset thereon.

14. In a cotton gin, the combination of a flue having its front wall provided with saw-receiving openings and receiving an air blast at its upper end, gin saws extending through said openings, means at the upper end of the flue for delivering the blast to the saws in a thin stream, and means on the front wall of the flue at the sides of the saws to deflect the blast against the saws.

15. In a cotton gin, the combination of a flue receiving an air blast at its upper end and having its front wall provided with saw-receiving openings, the flue being further provided with a lateral outlet and a mote discharge at the entrance to said outlet, gin saws projecting through said saw-receiving openings, and means below the saw-receiving openings to direct air and lint into the lateral outlet and permit dirt and motes to pass through the mote discharge.

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

CARROLLVERNON B. GINN. [L. S.]

Witnesses:
T. G. Show,
Ollie B. Zernial.