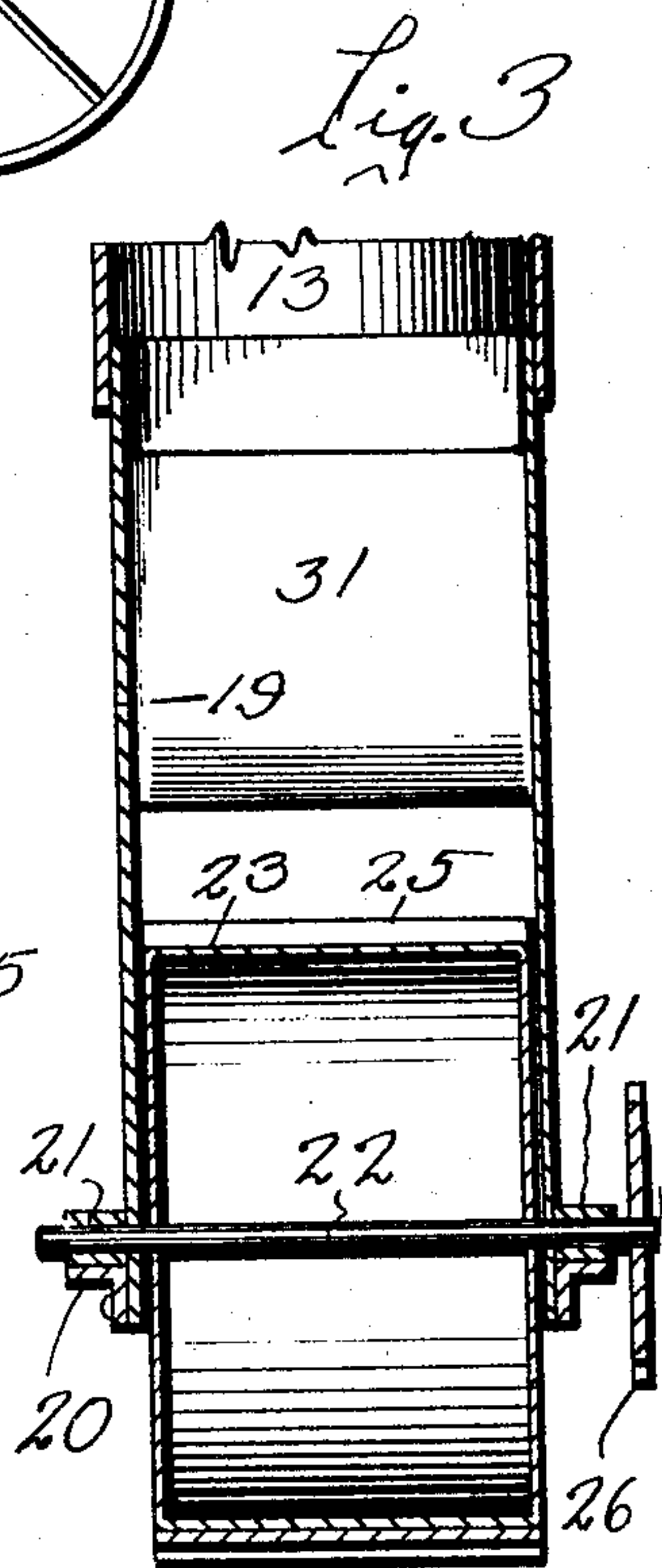
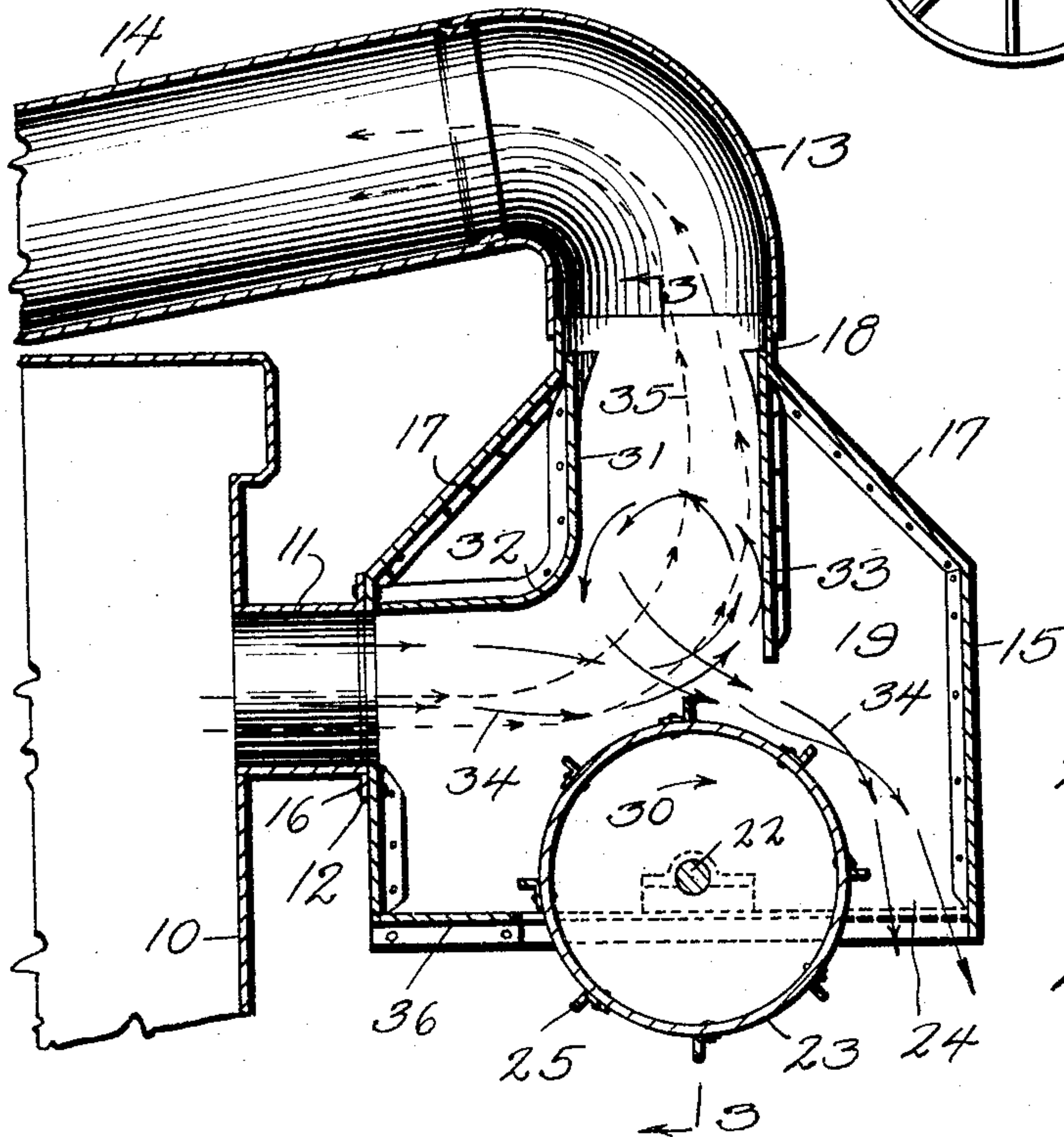
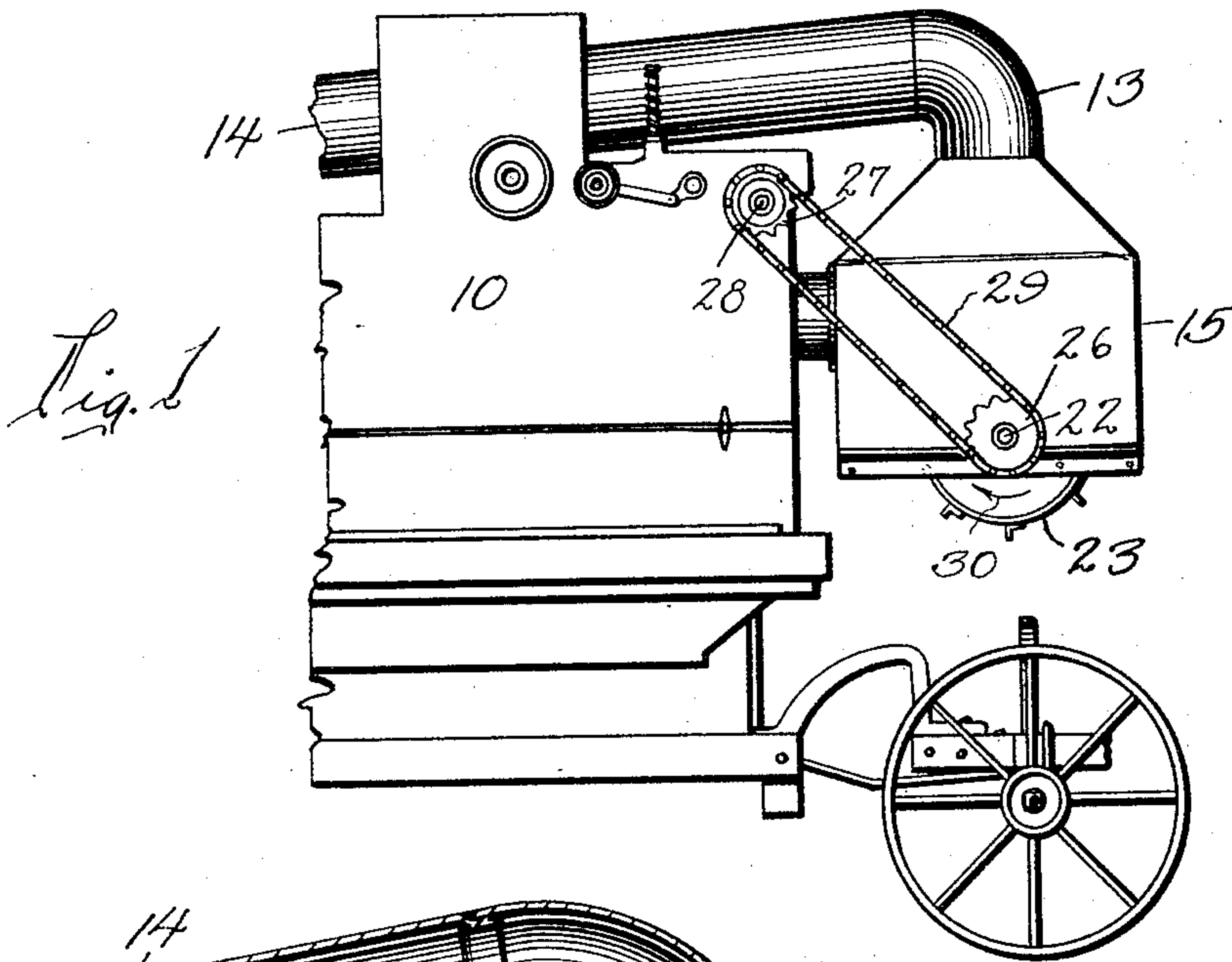


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CORN SHELLER SEPARATOR
Filed June 16, 1931

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CORN SHELLER SEPARATOR

Application filed June 16, 1931. Serial No. 544,779.

My invention relates to corn shellers and has for its object to provide a separating attachment for a sheller for cleaning and separating the husks from the cobs.

Corn cobs are used extensively for fuel purposes and have a very definite market value if comparatively free of husks, but their value is greatly decreased if they are not clean, due partly to the difficulty of handling unclean cobs and due also to the fact that husks have very little value as fuel.

The present invention aims to provide an attachment which is particularly adaptable to a type of sheller having at present an inadequate separator and which may be readily substituted for the present separator. It is constructed for attachment to a horizontal discharge neck in the body of the sheller, and for attachment to a suction pipe positioned above said horizontal discharge neck, both being elements of the present separating device.

The invention has for its object to provide a separating attachment which is attachable to these two elements without other change in the sheller than that of removing the old separator, and which has a greatly improved efficiency of separation.

With these and other objects in view my invention consists in the construction, arrangement, and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a side elevation of a portion of that type of separator to which my attachment is particularly adaptable, attachment being embodied therein,

Figure 2 is a longitudinal, sectional view through the attachment and adjacent portions of the sheller, and

Figure 3 is a transverse, sectional view through the attachment taken on the line 3—3 of Figure 2.

The type of sheller to which this invention is particularly applicable, known as the "Ottawa", includes a sheller body 10, having at its discharge end, a discharge neck 11, terminating in a flange 12 to which the prior type of

separator has been attached. This separator comprises simply a connection or casing, open at the bottom to allow the cobs to drop out, and connected at its top by means of an elbow 13 to the suction pipe 14 which leads to the blower of the sheller.

In place of the prior type of separator, I substitute the separator of my invention, having a casing 15 which is considerably larger than the casing of the prior separator.

The casing 15 is secured at 16 to the flange 12 and supported thereby, and at its upper end is tapered as at 17 to provide a neck 18 which communicates with the elbow 13.

The side walls 19 of the casing 15 are preferably made parallel from top to bottom, the casing being substantially of the same width as the neck 11 and the elbow 13. In length and depth however, the dimensions of the casing are considerably increased.

The lower edges of the side walls 19 are reinforced by angle bars 20, secured to the outer faces thereof, and mounted on the angle bars 20 are bearings 21 in which is journaled a shaft 22.

The shaft 22 is positioned substantially intermediate the end walls of the casing, and carries a drum 23, which substantially fills the casing from side to side but which is of such diameter as to leave a space 24 between it and the outer end wall of the casing, to allow discharge of the cobs.

To the periphery of the drum 23 are secured a series of slats 25, which are preferably formed from angle bars as shown.

A sprocket 26 is secured to one end of the shaft 22 in alignment with a sprocket 27, indicated in dotted lines in Figure 1, on a shaft 28 which is part of the corn sheller mechanism. A chain 29 connects the sprockets 26 and 27 and drives the drum 23 in the direction indicated by the arrow 30.

The air passage within the pipe 14 is continued downwardly into the casing 15 by means of a wall 31 extending between the side walls 19 of the casing, and secured thereto. The wall 31 extends perpendicularly in substantial alignment with the rear extremity of the neck 18 and is thence curved back as at 32 to meet the rear inclined wall 17 of

the casing. The lowermost area of the curved portion 32 is substantially on a level with the upper extremity of the neck 11.

A baffle wall 33 is secured between the side walls 19 extending vertically in substantial alignment with the forward extremity of the neck 18. The baffle wall extends considerably lower than the curved portion 32 of the wall 31 to a position rather close to the periphery of the drum 23, but spaced therefrom sufficiently to allow cobs to pass freely therebetween.

The baffle wall 33 projects into the path of movement of cobs discharged through the neck 11 as indicated by the full line arrows 34, and serves to arrest the movement of the cobs momentarily while the air currents passing upwardly to the elbow 13 withdraw from the mixture of cobs and chaff, the particles of husks, leaves, and so forth, constituting foreign material.

The path of movement of the husks is indicated by the dotted arrows 35.

The drum 23 projects upwardly into the path of movement of cobs issuing from the neck 11, and those cobs which contact with the drum will be deflected upwardly by the drum against the baffle wall 33 whereby their speed of movement will be considerably reduced. As the cobs rebound from the wall 33, they will be spread apart so as to allow the air currents to withdraw the chaff and carry it upwardly into the suction pipe 14. The weight of the cobs is sufficient to prevent any appreciable quantity thereof being carried upwardly by the air currents, and consequently they will drop back upon the drum 30, which will carry them on past the baffle wall 33 and through the opening 24.

In this connection, it is to be noted that as the cobs drop downwardly, the effect of the drum upon their movement will be to throw them through the constricted opening between the drum and the baffle wall, whereas the effect of the drum on the majority of the cobs issuing from the neck 11 is to throw them upwardly.

This is due partly to the fact that the cobs issuing from the neck 11 strike the drum further rearwardly than the position where the cobs dropping downwardly from the baffle wall 33 will strike the drum, and largely to the fact that the cobs issuing from the neck 11 strike the drum in a horizontal direction while the cobs dropping back from the baffle wall strike the drum in a vertical direction.

In both cases, the cobs are deflected from their original direction of movement at about the same angle, the different direction of impact resulting in a different direction of rebound from the drum.

The full line arrows indicate roughly the rebound of the cobs from the drum to the

baffle wall, the rebound of the cobs from the baffle wall, and their subsequent second impinging against the drum and movement or out through the discharge opening.

It will be understood that this path of movement is not the same for all of the cobs and is not definite, and that there will be considerable collision between the cobs rebounding upwardly and the cobs dropping downwardly. However, this only helps in spreading the cobs apart to allow the withdrawal of the chaff and in arresting their speed of movement so as to allow the greatest efficiency in withdrawal of the chaff.

As will have been noted from the foregoing discussion, the drum functions double to throw the cobs upwardly against the baffle wall and to eject them as they drop downwardly, through the constricted opening between the drum and the baffle wall. It is important that the opening between the wall and the drum be constricted, first, because too large an opening would allow too great a quantity of the mass issuing from the neck 11 to pass through the separator without being arrested, and secondly, because it is desirable that as much suction as possible be created in the neck 11 and the area between the neck 11 and the baffle wall 13.

This latter is desirable because the efficiency of separation is enhanced by taking hold of the chaff at as early a point in the path of its movement from the sheller as possible. By creating a suction in the region between the drum and the shoulder 32, the chaff is already given an upward pull toward the elbow 13 before it is carried upwardly by the impact of the mass of chaff and cobs against the drum 23.

A bottom wall 36 closes the space between the drum 23 and the rear end wall of the casing, so that the only opening to the exterior is the opening 24.

Some changes may be made in the construction and arrangement of the parts of my invention without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In a cob separator for a corn sheller having a cob discharge neck and a suction pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, and a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum.

2. In a cob separator for a corn sheller having a cob discharge neck and a suction pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, and a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum, said baffle wall extending downwardly below the level of the upper extremity of the discharge neck.

3. In a cob separator for a corn sheller having a cob discharge neck and a suction pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, and a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum, said drum extending upwardly above the level of the lower extremity of said discharge neck.

4. In a cob separator for a corn sheller having a cob discharge neck and a suction pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, and a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum, said baffle wall extending downwardly below the level of the upper extremity of the discharge neck, said drum extending upwardly above the level of the lower extremity of said discharge neck.

5. In a cob separator for a corn sheller having a cob discharge neck and a suction pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum, and means for transmitting rotative movement to the drum to cause it to rotate in a direc-

tion wherein the upper region of its periphery moves away from the discharge neck.

6. In a cob separator for a corn sheller having a cob discharge neck and a suction pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum, said baffle wall extending downwardly below the level of the upper extremity of the discharge neck, and means for transmitting rotative movement to the drum to cause it to rotate in a direction wherein the upper region of its periphery moves away from the discharge neck.

7. In a cob separator for a corn sheller having a cob discharge neck and a suction pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum, said drum extending upwardly above the level of the lower extremity of said discharge neck, and means for transmitting rotative movement to the drum to cause it to rotate in a direction wherein the upper region of its periphery moves away from the discharge neck.

8. In a cob separator for a corn sheller having a cob discharge neck and a suction pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum, said baffle wall extending downwardly below the level of the upper extremity of the discharge neck, said drum extending upwardly above the level of the lower extremity of said discharge neck, and means for transmitting rotative movement to the drum to cause it to rotate in a direction wherein the upper region of its periphery moves away from the discharge neck.

9. In a cob separator for a corn sheller having a cob discharge neck and a suction

pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, and a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum, the casing being entirely inclosed except for the openings connecting it with the discharge neck and the suction elbow and except for an opening provided between the drum and the forward end wall of the casing to allow discharge of cobs.

10. In a cob separator for a corn sheller having a cob discharge neck and a suction pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, and a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum, said baffle wall extending downwardly below the level of the upper extremity of the discharge neck, said drum extending upwardly above the level of the lower extremity of said discharge neck, the casing being entirely inclosed except for the openings connecting it with the discharge neck and the suction elbow and except for an opening provided between the drum and the forward end wall of the casing to allow discharge of cobs.

11. In a cob separator for a corn sheller having a cob discharge neck and a suction pipe positioned thereabove, a casing secured to said neck at one end and communicating therewith, said casing having a top opening, an elbow communicating with said top opening and with said suction pipe, a drum rotatably mounted in the casing below said top opening on an axis transverse to the axis of the neck, a baffle wall in the casing extending downwardly from the forward side of said top opening to a position spaced from but near the periphery of the drum, said baffle wall extending downwardly below the level of the upper extremity of the discharge neck, said drum extending upwardly above the level of the lower extremity of said discharge neck, and means for transmitting rotative movement to the drum to cause it to rotate in a direction wherein the upper region of its periphery moves away from the discharge neck, the casing being entirely inclosed except for the openings connecting it with the discharge neck and the suction elbow and except for an opening provided

between the drum and the forward end wall of the casing to allow discharge of cobs.

Signed at Sioux City, Iowa, this 13th day of June, 1931.

G. EMMET ELDRIDGE. 70

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