C. F. WRIGHT.

SHUCK FEEDING MECHANISM FOR BOX FILLING MACHINES.

APPLICATION FILED DEC 31, 1920.

1,433,328.

Patented Oct. 24, 1922.

3 SHEETS—SHEET 1.

Fig. 1.

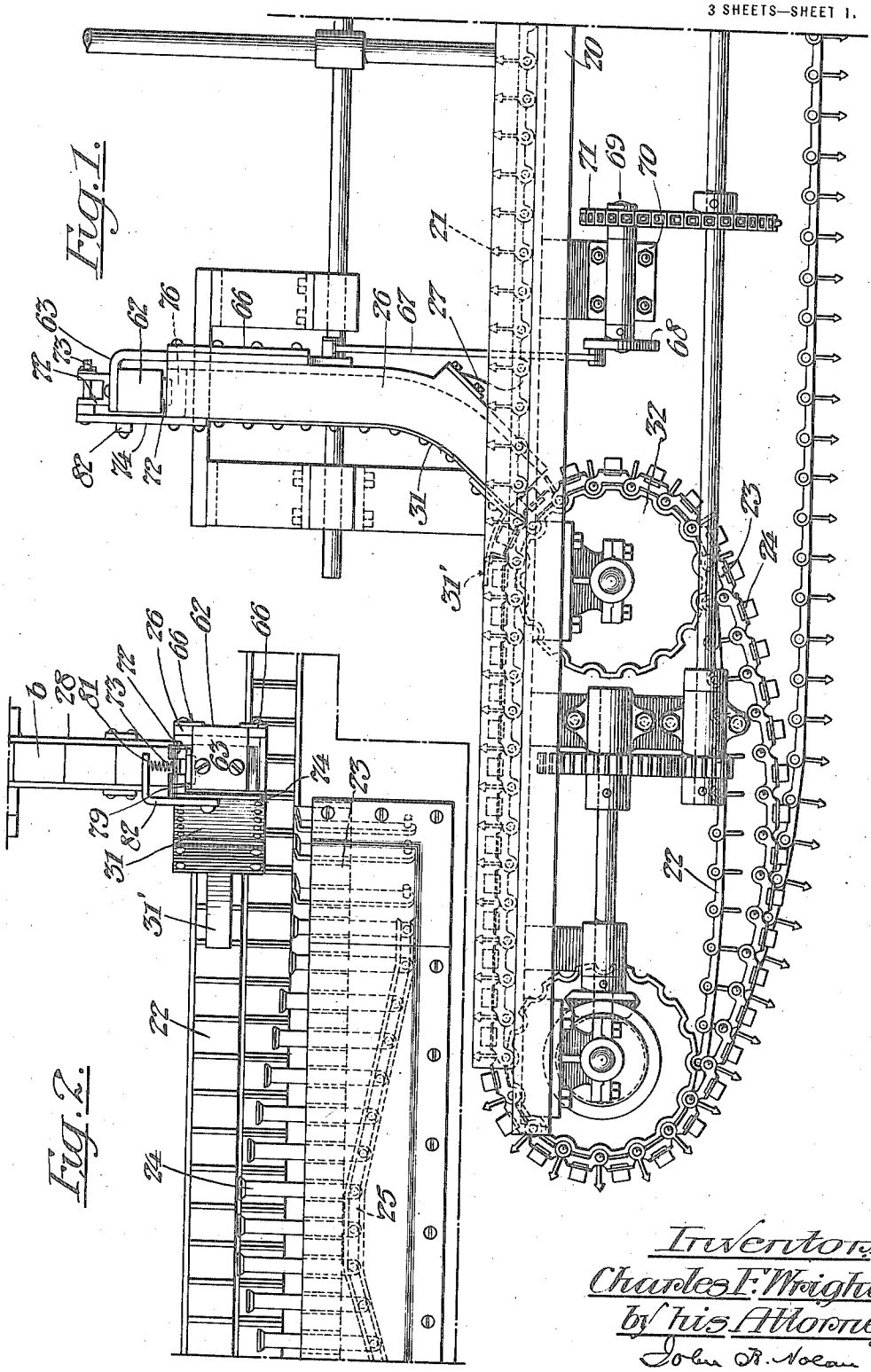


Fig. 2.

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Fig. 4.

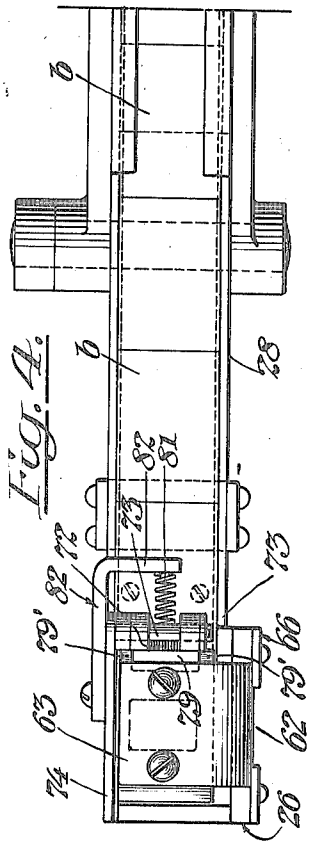


Fig. 5.

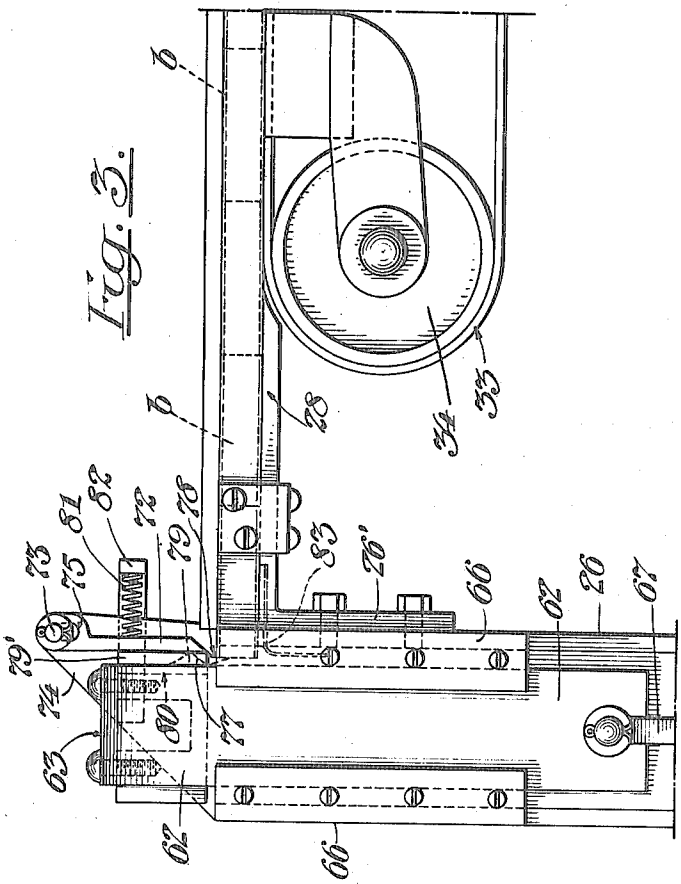


Fig. 6.

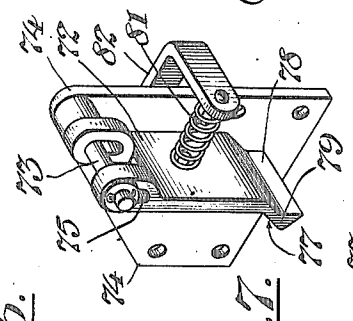


Fig. 7.

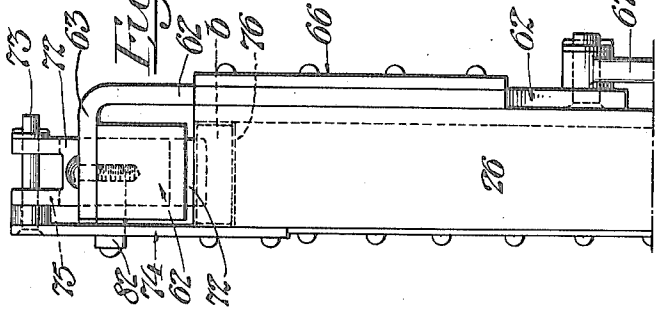
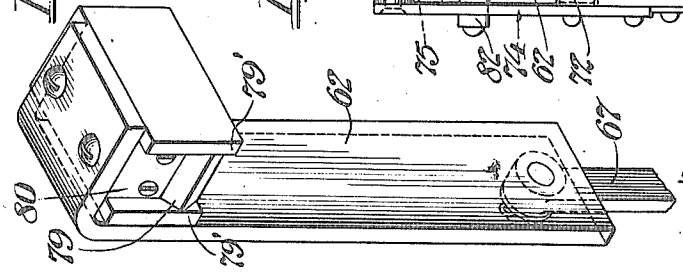


Fig. 8.



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3 SHEETS—SHEET 3.

Fig. 8.

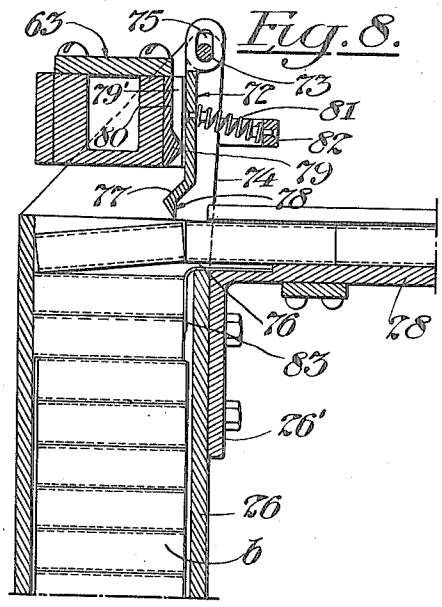


Fig. 9.

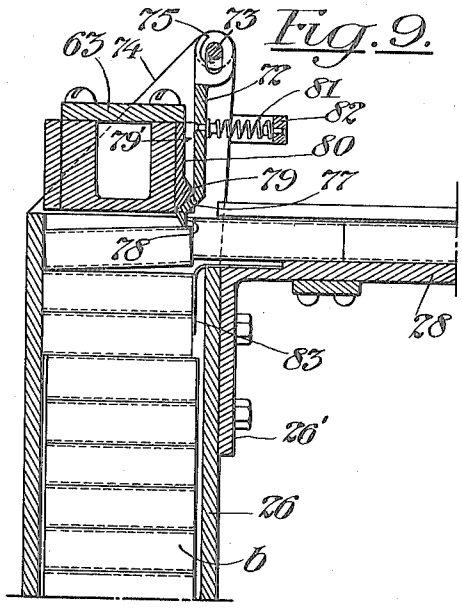


Fig. 10.

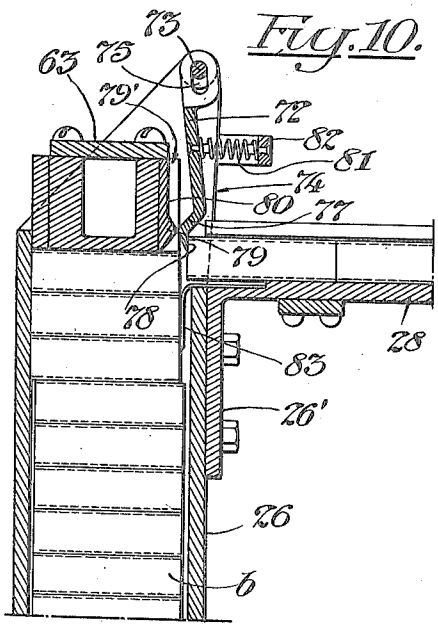
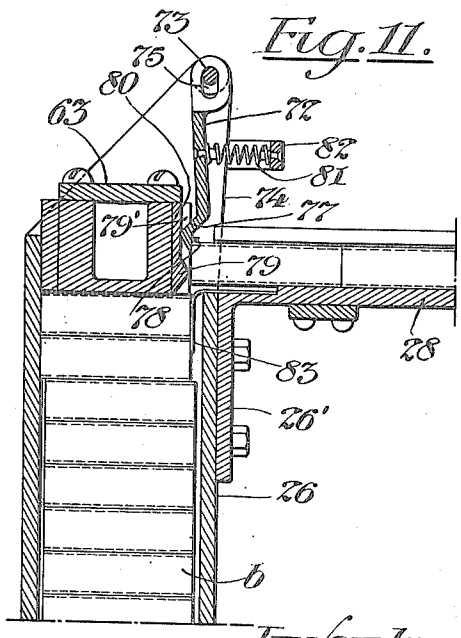


Fig. 11.



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UNITED STATES PATENT OFFICE.

CHARLES F. WRIGHT, OF AKRON, OHIO, ASSIGNOR TO THE DIAMOND MATCH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SHUCK-FEEDING MECHANISM FOR BOX-FILLING MACHINES.

Application filed December 31, 1920. Serial No. 434,177.

To all whom it may concern:

Be it known that I, CHARLES F. WRIGHT, a citizen of the United States, and resident of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Shuck-Feeding Mechanisms for Box-Filling Machines, of which the following is a specification.

This invention relates to mechanism for feeding the shucks or covers or telescopic boxes to a suitable conveyer, such, for example, as is employed in a box filling machine of the character illustrated in Letters Patent of the United States No. 1,064,452, dated June 10, 1913.

The invention may be described as an improvement on a form of shuck-feeding mechanism wherein the shucks of a row are successively delivered to a chute through which they are conducted to and positioned in an orderly manner on the shuck conveyer of the filling machine, as set out in Letters Patent of the United States No. 1,388,668, dated August 23, 1921.

My improvement particularly concerns and has for its object to provide simple and efficient means for obviating all liability of the engagement of the edges of the uppermost shuck contained in the chute with the opposing edges of the adjacent shuck of the advancing row from the source of supply; such engagement, if occurring, resulting in the rupturing or buckling of the contiguous ends of the shucks during the downward passage of the shucks within the chute.

The preferred form of embodiment of my invention will be hereinafter particularly described, and the scope of the invention then be defined in the appended claims.

In the drawings—

Figure 1 is a slide elevation of a portion of a box filling machine equipped with shuck feeding mechanism embodying the principle of my invention, only so much of the machine being shown as is necessary to illustrate the improvement.

Fig. 2 is a partial plan of the machine.

Fig. 3 is an end elevation of the upper or receiving portion of the shuck feeding chute and its associated mechanism, including the delivery end of the shuck supplying trough.

Fig. 4 is a plan of the mechanism shown in Fig. 3.

Fig. 5 is a side elevation of the same.

Fig. 6 is a perspective view of the plunger for depressing the shucks within the chute.

Fig. 7 is a perspective view of the dog member, and adjuncts, for controlling the advancement of the shucks from the trough to the chute.

Figs. 8 to 11, inclusive, are vertical sections through the chute and the delivery end of the shuck supplying trough, together with the plunger and dog member, showing said plunger and member in succeeding positions which they are caused to occupy in relation to each other and to the shucks contained in the trough and chute.

Referring to the drawings, 20 designates a horizontal bed or table supported adjacent the delivery portion of a match machine; 21 designates an endless conveyer which is arranged to travel continuously on the bed and transport a succession of box-trays across the path of the matches being discharged from the match machine, and 22 designates a conveyer which is arranged to travel adjacent to one side of and concurrently with the tray conveyer and is adapted to transport a succession of box shucks (*b*) in endwise relation to the filled trays on the tray conveyer.

23 designates a conveyer which is arranged to travel adjacent the other side of the tray conveyer and is adapted to transport a succession of plungers 24 in operative relation to a stationary cam-way 25 which successively reciprocates said plungers across the path of the tray conveyer in a manner to push the filled trays progressively into the opposing shucks on the shuck conveyer.

26 designates a vertically-disposed chute which is supported at its lower or delivery end by a bracket 27 on the bed. The upper or receiving end of the chute is bolted to a flange or bracket 26′ depending from one end of a horizontal trough 28 through which the shucks are fed end to end and delivered successively into the upper end of the chute by suitable feeding mechanism, such, for ex-

ample, as the conveyer belt 33 passing along the floor of the trough and about pulleys at or adjacent the respective ends of the trough. One of the pulleys is indicated at 34. The lower end portion 31 of the chute is curved toward the links of the shuck conveyer 22 and in proximity to their path as they pass upward to a horizontal plane when rounding the wheel 32 of the conveyer. This chute is rectangular in cross-section and is designed to feed the superposed shucks downward to and through the lower portion 31, the curvature of which portion is such as to direct the shucks consecutively toward and into the succeeding links of the conveyer. A curved guard strip 31′ secured to the lower end of the chute overhangs the adjacent links of the shuck conveyer.

62 designates a vertically reciprocating plunger having an overhanging head 63 which enters the top of the chute and depresses each succeeding shuck as rapidly as it is delivered by the belt 33, each shuck being moved a sufficient distance to permit the entry of the next succeeding shuck to the chute. The downward movement of the upper shuck similarly depresses the previously inserted shucks contained in the chute and advances them to and individually through the curved foot of the chute. The plunger is slidably mounted in vertical guides 66 at one side of the chute, and is connected by means of a link 67 with the wrist of a crank disk 68 on a short shaft 69 having its bearings in a hanger 70 below the bed 20. This shaft 69 bears a sprocket wheel 71 which is operatively connected with and driven from a shaft of the filling machine. (See Fig. 1).

The parts above described, excepting as hereinafter particularly pointed out, are similar in construction and operation to the like-named parts described in Patent No. 1,388,668 aforesaid.

72 designates a depending dog-like member which is pivotally supported at its upper end on a horizontal stud 73 projecting from an upstanding bracket plate 74 affixed to one side of the chute; the pivot holes 75 in the upper part of the dog being vertically-elongated so as to permit vertical as well as lateral movement of the dog. The location of the dog is such that its lower end depends in close relation to the top of the chute and adjacent to the lateral inlet 76 through which the shucks enter the chute, such lower end being angulated to provide a rearwardly extending V-cam 77 and a forwardly depending lip 78. The face of the plunger head 63 adjacent the dog is provided with a forwardly extending V-cam 79 conveniently formed on a plate 80 which is seated in a vertical recess in said face; such recess being of sufficient depth to afford two vertical side flanges 79′ which are substantially flush at their outer edges with the apex of the cam. This cam 79 is so disposed that during the vertical reciprocation of the plunger the cam not only contracts with the opposing plane face but also with the cam portion 77 of the dog. A spring 81 interposed between the dog and a bracket piece 82 on the plate 74 tends to maintain the dog at all times in yielding contact with the cam 79.

When the plunger is in its uppermost position, after having acted upon and depressed the uppermost shuck previously delivered to the chute, the leading shuck of the row is delivered to the chute through the lateral inlet 76, as seen in Fig. 8. The latter shuck thereupon assumes within the chute the inclined position indicated and is temporarily maintained in the position by the end thrust thereagainst of the opposing shuck of the row. At this juncture the advancement of the row of shucks is momentarily retarded within the trough and the belt 33 passes idly along the bottom of the trough. In its upward movement the cam 79 of the plunger engages the opposing lower end of the dog and thus bodily lifts the dog above the path of the leading shuck of the row, thence escaping the cam 77 on such end and sliding against the body of the dog. In the upward stroke the vertical flanges 79′ afford an abutment for the contiguous end of the leading shuck, thus not only preventing the cam 79 from entering the open end of the shuck and displacing the latter, but also precluding advancement of the shuck until the bottom of the head 63 has moved above the top of such shuck. The spring 81 holds the dog constantly in frictional contact with the cam 79, thus maintaining the dog in its raised position and permitting the unobstructed passage of the shuck to the chute.

In the initial descent of the plunger, after the delivery of the shuck to the chute as just described, the plunger cam 79 impinges against the opposing surface of the dog cam 77, and thus presses the dog bodily downward in such a manner that the lip 78 thereof bears upon and slightly depresses the elevated end of the inclined shuck, so as to depend below the adjacent upper edge of the leading shuck in the trough, as seen in Fig. 9.

As the plunger continues its descent the cam 79 thereon co-acts with the dog cam 77 to swing the dog bodily toward the inlet of the chute, the lip 78 thus bearing against the end of the leading shuck and moving it slightly back, as seen in Fig. 10. At the same time the plunger bears upon the top of the underlying shuck and proceeds to press it bodily downward. In the continued descent of the plunger its cam escapes the cam 77 of the dog 72, which dog, with its lip 78, still in engagement with the leading shuck

in the trough, swings slightly rearward and is thus maintained until the plunger has completed its downward stroke and depressed the opposing shuck to the desired extent within the chute, as seen in Fig. 11. The entire series of shucks contained in the chute are removed downward by the descending plunger, the lowermost shuck being discharged from the lower end of the chute and delivered thence to the conveyer. This being done, the plunger, together with the dog, is raised, the parts thus resuming the relative positions shown in Fig. 8, preparatory to a repetition of the shuck feeding and depressing operations above described. By this construction, the shucks contained in the trough are consecutively delivered therefrom to and depressed within the chute, each leading shuck of the row in the trough being temporarily separated and held back at the inlet to the chute in an effective manner to prevent its interference with the adjacent shuck in the chute, as above mentioned.

I preferably provide the inner wall of the chute adjacent to and below the inlet 76, with a depending spring apron 83 which, pressing against the opposing end of the shuck as and when the latter is depressed within the chute by the down stroke of the plunger, serves to prevent upward displacement of said shuck during the upward or return stroke of the plunger, and also to maintain such shuck in position to serve as a support for the next incoming shuck.

It is to be understood that my invention is not limited to the specific constructions herein disclosed, as the mechanism may be modified within the principle of the invention and the scope of the appended claims.

I claim—

1. The combination with a chute, of means for feeding shucks in endwise relation to each other and delivering them successively into said chute from one side of the latter, a vertically and laterally movable member having a shuck-engaging portion overhanging the chute adjacent its inlet portion, means, including a reciprocative plunger head, for bodily depressing each shuck as rapidly as it is delivered into the chute, and means under the influence of said head whereby the member is periodically lowered and raised and also laterally vibrated during the operation of the head.

2. The combination with a chute, of means for feeding shucks in endwise relation to each other and delivering them successively into said chute from one side of the latter, a depending member having a shuck-engaging portion overhanging the chute adjacent its inlet portion, a sliding pivotal suspension connection for the said member, means, including a reciprocative plunger head, for bodily depressing each shuck as rapidly as it is delivered into the chute, and means under the influence of said head whereby the member is periodically raised and lowered and also laterally vibrated during the operation of the head.

3. The combination with a chute, of means for feeding shucks in endwise relation to each other and delivering them successively into said chute from one side of the latter, a depending dog having a shuck-engaging portion overhanging the chute adjacent its inlet portion, a sliding pivotal suspension connection for said dog, means, including a plunger head, for bodily depressing each shuck as rapidly as it is delivered into the chute, and means under the influence of said head whereby the dog is periodically raised and lowered and also laterally vibrated during the operation of the head.

4. The combination with a chute, of means for feeding shucks in endwise relation to each other and delivering them successively into said chute from one side of the latter, a depending dog supported by a pin and slot connection and having a shuck-engaging portion overhanging the chute adjacent its inlet portion, means, including a reciprocative plunger head, for bodily depressing each shuck as rapidly as it is delivered into the chute, co-acting cam members on the opposing faces of the dog and head, and a spring normally pressing said dog toward the head and into sliding contact with the cam member of the head, whereby the said dog is periodically lowered and raised and also laterally vibrated during the operation of the head.

5. The combination with a chute, of means for feeding shucks in endwise relation to each other and delivering them successively into said chute from one side of the latter, a vertically and laterally movable member having a shuck-engaging portion overhanging the chute adjacent its inlet portion, a yielding pressure member supported within the chute adjacent to and below the inlet portion, means, including a reciprocative plunger head, for bodily depressing each shuck as rapidly as it is delivered into the chute, and means under the influence of said head whereby the member is periodically lowered and raised and also laterally vibrated during the operation of the head.

6. The combination with a traveling shuck conveyer, of a chute having a delivery portion leading toward the upper path of said conveyer, a conveyer leading toward the receiving portion of the chute and adapted to support a row of shucks in endwise relation to each other and to de-

liver them successively into said chute from one side of the latter, a vertically and laterally movable member having a shuck-engaging portion overhanging the chute adjacent the inlet to its receiving portion, means, including a reciprocative head, for bodily depressing each shuck as rapidly as it is delivered into the chute, and means under the influence of said head whereby the member is periodically lowered and raised and also laterally vibrated during the operation of the head.

Signed at Barberton, in the county of Summit and State of Ohio, this 29 day of December A. D. 1920.

CHARLES F. WRIGHT.