C. CRETORS.

CORN POPPER.

APPLICATION FILED DEC. 13, 1911.

1,091,041.

Patented Mar. 24, 1914.

2 SHEETS—SHEET 1.

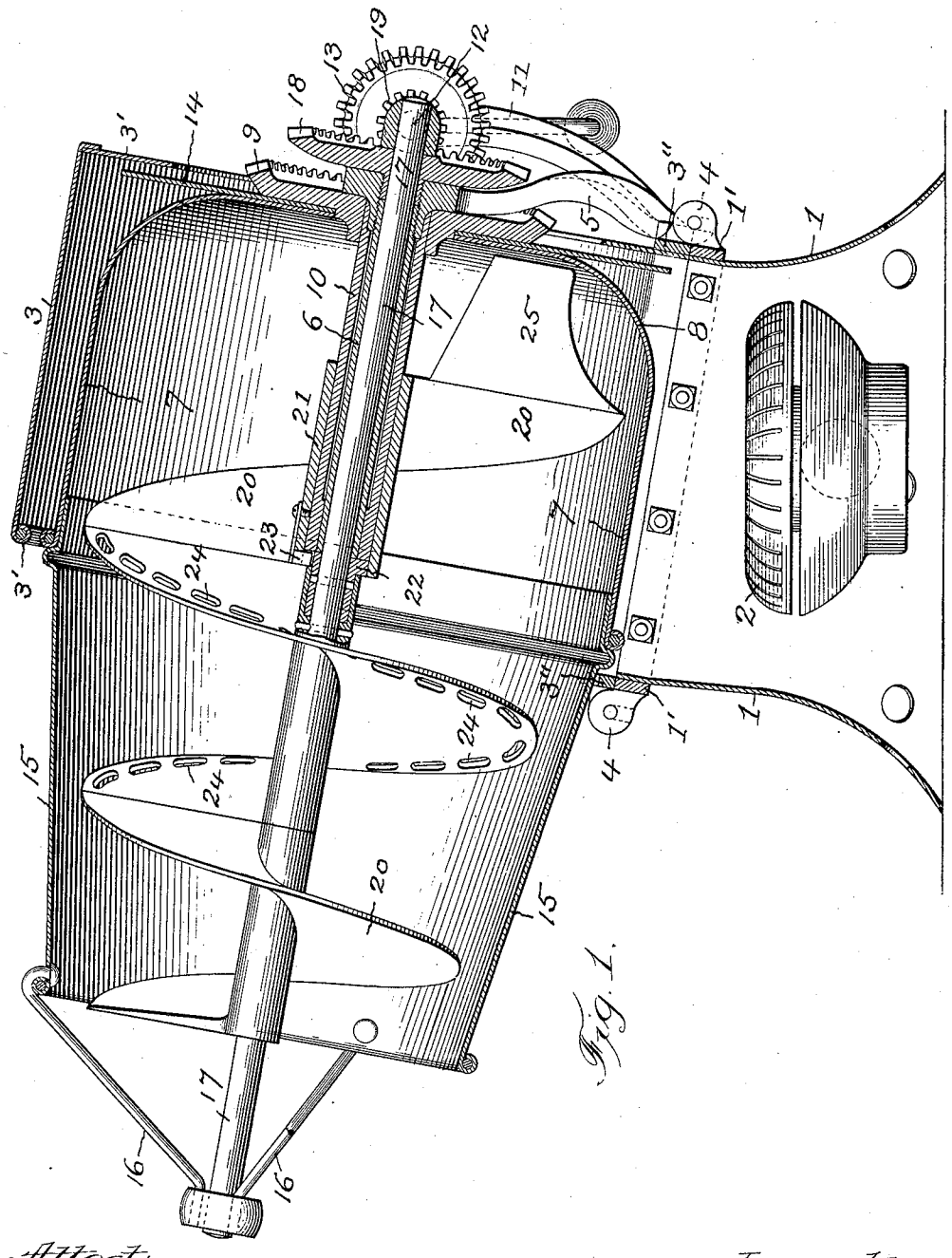


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 3.

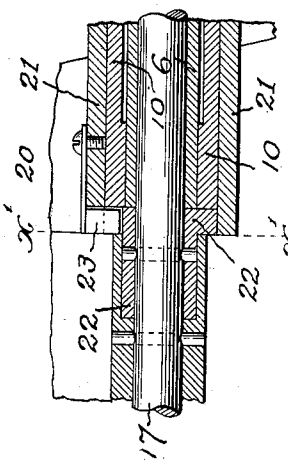
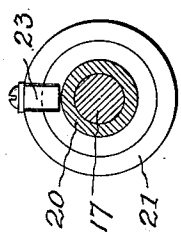


Fig. 4.



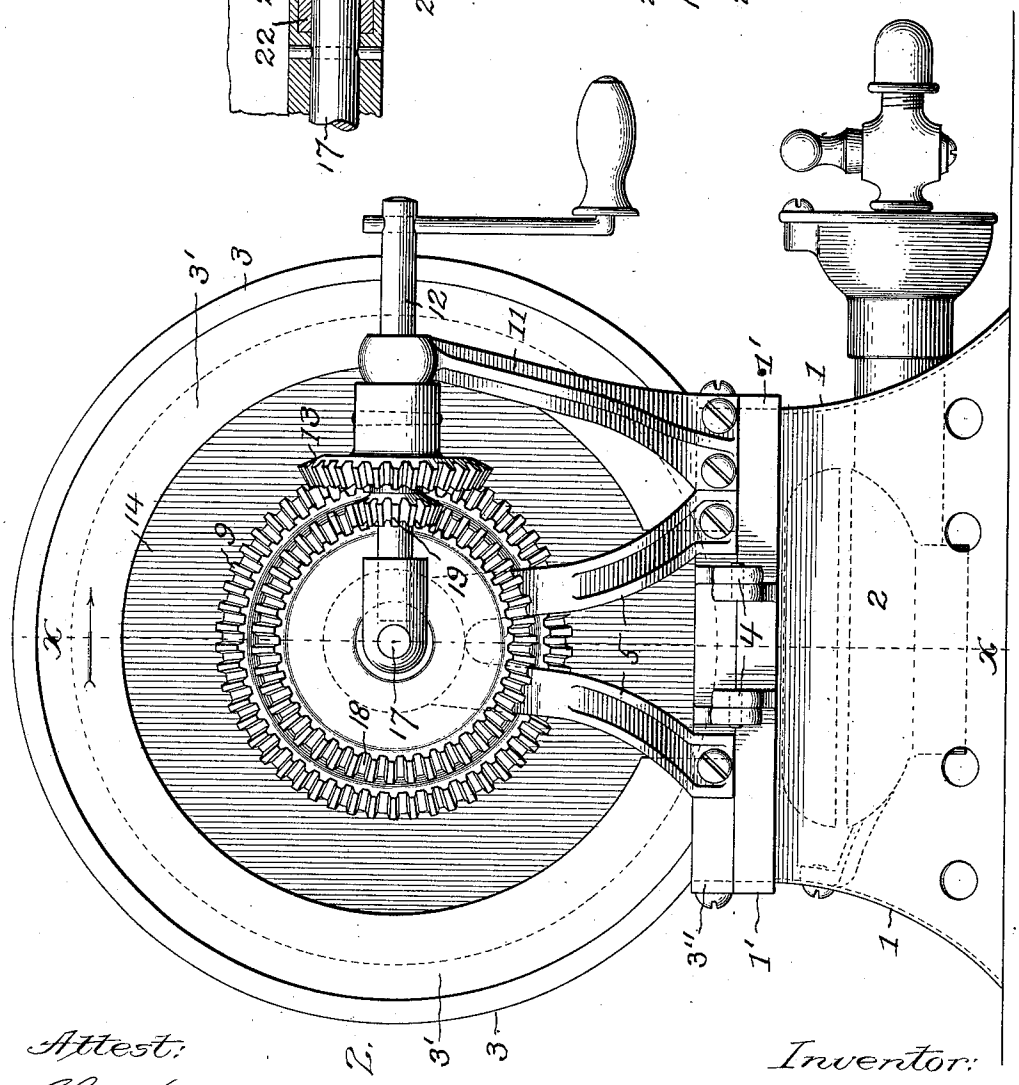


Fig. 2.

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UNITED STATES PATENT OFFICE.

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CORN-POPPER.

1,091,041. Specification of Letters Patent. **Patented Mar. 24, 1914.**

Application filed December 13, 1911. Serial No. 665,500.

To all whom it may concern:

Be it known that I, CHARLES CRETORS, a citizen of the United States of America, and a resident of Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Corn-Poppers, of which the following is a specification.

This invention relates to that class of corn popping apparatus in which the popped corn is discharged as fast as the same has been properly popped. And the present improvement has for its object to provide a simple and efficient structural formation and combination of parts, whereby the corn as fast as popped is removed from the heated popping zone of the apparatus, and after being separated from the unpopped material is discharged in a continuous and effective manner into a suitable receptacle, all as will hereinafter more fully appear.

In the accompanying drawings: Figure 1, is a longitudinal section on line x—x, Fig. 2, of an apparatus embodying the present invention. Fig. 2, is a rear end elevation of the same. Fig. 3, is an enlarged detail longitudinal section of the connection between the sections of the spiral conveyer and its carrying sleeve and shaft. Fig. 4, is a detail transverse section of the same on line x'—x', Fig. 3.

Similar reference numerals indicate like parts in the several views.

Referring to the drawings, 1 represents a hollow supporting shell, constituting the supporting base of the apparatus, and inclosing a burner 2 of any ordinary form, preferably a gas burner as shown.

3 is an annular casing pivotally secured in the manner hereinafter described, to the top of the shell 1 and opening into the same, in order to receive the heated products of combustion from the said shell 1 and the burner 2 contained therein. Said annular casing 3 is formed with marginal end heads 3′, the central portions of which are open and occupied by the rotary popping cylinder or vessel hereinafter described, and said openings are made of greater diameter than the popping cylinder so as to provide an annular space between the parts for the escape of the waste products of combustion.

In the preferred construction shown the abutting margins of the shell 1 and casing 3 are provided with reinforcing strips or bars 1′ and 3″, and these in turn carry open side hinge knuckles 4, at front and rear, and adapted to permit the bodily removal of the casing 3 and parts carried thereby; to permit a forward tilting of the casing and parts in effecting a discharge of the material left after the popping operation, and to permit a rearward tilting of the casing and parts in introducing a fresh charge of corn into the apparatus.

5 is a pedestal, preferably secured to the reinforcing bar 3″ at the rear end of the casing 3 of the apparatus, and provided at its upper end with a fixed and forwardly extending bearing sleeve 6, the central bore, as well as the periphery of which are adapted to provide bearings for the hereinafter described parts of the popping vessel and spiral conveyer of the apparatus.

7 is the main body of the popping cylinder or vessel, and which is made open at its forward end, and closed at its rear end by a cup-shaped head 8, which in turn is attached through a bevel gear wheel 9 to a longitudinal bearing sleeve 10 which fits and turns upon the before described fixed sleeve 6, and provides the requisite support for the popping cylinder or vessel 7, in its revolution.

11 is a secondary pedestal, preferably secured to the aforesaid reinforcing bar 3′ of the shell 3, and provided at top with a bearing for a driving countershaft 12, carrying a bevel pinion 13, adapted to mesh with and drive the aforesaid bevel gear 9, and the popping cylinder or vessel 7, to which the gear 9 is fastened. Motion may be imparted to the countershaft 12, by hand or power as found most desirable.

14 is a disk secured to the rear end of the cylinder or vessel 7, and having a greater diameter than that of the rear opening of the annular casing 3, and having adjacent relation thereto, so as to form a baffle and prevent too free outlet of the waste products of combustion at the rear end of the apparatus.

15 is a truncated cone shaped casing fitting the forward open end of the popping cylinder or vessel 7, and open at its forward end for the free outlet of the popped corn.

16 is a spider secured to the forward end of the aforesaid casing 15 and having a central hub adapted to have bearing upon the forward end of the conveyer carrying shaft, now to be described.

17 is a shaft extending the entire length of the apparatus and having journal bearing

in the bore of the before described fixed bearing sleeve 6 of the pedestal 5. At its rear end the shaft 17 is provided with a bevel gear wheel 18, which is operatively engaged and driven by a bevel pinion 19 on the countershaft 12, aforesaid.

In the preferred form of the present invention, the pairs of gears 9 and 13, and pairs of gears 18 and 19, are relatively proportioned, so that the latter will impart a slower rotation to the conveyer carrying shaft 17, than is imparted to the popping cylinder or vessel 7 by the first mentioned pair of gears, as it has been found from extended practical experiment that a relatively slow rotation of the conveyer and a more rapid rotation of the popping cylinder, affords the best results in the output as well as in the quality of the goods.

20 is the spiral conveyer above referred to, and which is preferably made in three sections for convenience in manufacture, and subsequent replacement, when worn or accidentally damaged. The two forward sections of the conveyer have central longitudinal hubs by which they are mounted directly upon and secured to the forward portion of the shaft 17 aforesaid, while the rear section of the conveyer also has a central hub 21, the bearing orifice of which turns upon the bearing sleeve 10 of the popping cylinder or vessel 7, and has detachable driving engagement with a collar 22, fixed on the shaft 17, and said detachable engagement is preferably effected by a removable key or spline 23, engaging in a peripheral recess in an annular rim on the collar 22 aforesaid.

In the preferred form of the apparatus, the conveyer 20, is made of a smaller diameter than that of the vessel 7 and extension 15, with a view to provide a clearance space between the parts and permit the return passage of the unpopped corn back into the popping chamber for further treatment, while the popped corn is discharged by the conveyer through the forward and open end of the aforesaid extension 15.

24 are a series of perforations formed in the spiral conveyer 20, near the outer margin of the same, and adapted to provide supplementary return passages through which the unpopped corn, etc., carried forward by the conveyer, may return to the popping chamber for further treatment. In the preferred form of the present invention, the series of perforations 24, are only formed in the central section of the conveyer, as such arrangement has been found by extended experiment to afford very efficient results.

25 is a longitudinal wing extending rearwardly from the rear section of the conveyer 20, and adapted to act as a stirrer for the material during the operation of the apparatus.

A material feature of the present invention involves the arrangement of the popping cylinder, the spiral conveyer and their immediate accessories, in a position inclined from a horizontal plane, and with the discharge end of the truncated cone shape casing 15 at the highest point of elevation. With such arrangement the operation of the spiral conveyer 20, in moving the popped corn toward the discharge end of the apparatus, acts against the tendency of the material to return to the popping chamber by gravity, and such tendency to return is materially increased by the upwardly inclined lower side of the casing 15, heretofore described, and in consequence a very effective separation of the popped corn from the unpopped corn, etc., is effected in the movement of the material to the discharge outlet of the apparatus.

In the operation of the apparatus, a quantity of unpopped corn is placed in the popping vessel 7, and settles by gravity into the lower portion of said vessel, immediately above the burner 2, and into the heated zone of the apparatus. With apparatus in motion, the popping vessel 7 receives a fast rotation and the spiral conveyer 20, a slow rotation, both in the same direction, through the intermediate driving mechanisms heretofore described in detail. As a result the material receives a constant, and efficient stirring action, so that any liability to charring of the corn is prevented, and the popped corn, as fast as formed is taken by the conveyer 20, and discharged from the apparatus.

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

1. In a corn popper, the combination of a revoluble popping vessel having a closed rear end and an open forward end, a revoluble spiral supported longitudinally in said vessel, there being a clearance between the inner wall of the popping vessel and the perimeter of the spiral slightly greater than that necessary to allow the unpopped corn to remain as the popped corn is discharged from the apparatus by said spiral, a stationary casing inclosing the popping vessel, a heater disposed in said casing, and means for imparting rotation to the popping vessel and to the spiral.

2. In a popper, the combination of a revoluble popping vessel closed at its rear end, a forward extension on said vessel of a truncated cone form and open at its forward end, a revoluble spiral supported longitudinally in said vessel and extension, there being a clearance between the inner wall of the popping vessel and the perimeter of the spiral slightly greater than that necessary to allow the unpopped corn to remain as the popped corn is discharged from the apparatus by said spiral, a stationary casing

inclosing the popping vessel, a heater disposed in said casing, and means for imparting rotation to the popping vessel and to the spiral.

3. In a corn popper, the combination of a revoluble popping vessel disposed on an inclined plane and having a closed lower end and an open upper end, a revoluble spiral supported longitudinally in said vessel, there being a clearance between the inner wall of the popping vessel and the perimeter of the spiral slightly greater than that necessary to allow the unpopped corn to pass back as the popped corn is discharged from the apparatus by said spiral, a stationary casing inclosing the popping vessel, a heater disposed in said casing, and means for imparting rotation to the popping vessel and to the spiral.

4. In a corn popper, the combination of a revoluble popping vessel disposed on an inclined plane and having a closed lower end, a forward extension on said vessel of a truncated form and open at its upper end, a revoluble spiral supported longitudinally in said vessel, there being a clearance between the inner wall of the popping vessel and the perimeter of the spiral slightly greater than that necessary to allow the unpopped corn to pass back as the popped corn is discharged from the apparatus by said spiral, a stationary casing inclosing said popping vessel, a heater disposed in said casing, and means for imparting rotation to the popping vessel and to the spiral.

5. In a corn popper, the combination of a revoluble popping vessel having a closed rear end and an open forward end, a revoluble spiral supported longitudinally in said vessel, there being a clearance between the inner wall of the popping vessel and the perimeter of the spiral slightly greater than that necessary to allow the unpopped corn to remain as the popped corn is discharged from the apparatus by said spiral, a stationary casing inclosing the popping vessel, a heater disposed in said casing, and means for imparting differential rotation to the popping vessel and to the spiral.

6. In a corn popper, the combination of a revoluble popping vessel closed at its rear end, a forward extension on said vessel of a truncated cone form and open at its forward end, a revoluble spiral supported longitudinally in said vessel and extension, there being a clearance between the inner wall of the popping vessel and the perimeter of the spiral slightly greater than that necessary to allow the unpopped corn to remain as the popped corn is discharged from the apparatus, by said spiral, a stationary casing inclosing the popping-vessel, a heater disposed in said casing, and means for imparting differential rotation to the popping vessel and to the spiral.

7. In a corn popper, the combination of a revoluble popping vessel disposed on an inclined plane and having a closed lower end and an open upper end, a revoluble spiral supported longitudinally in said vessel, there being a clearance between the inner wall of the popping vessel and the perimeter of the spiral slightly greater than that necessary to allow the unpopped corn to pass back as the popped corn is discharged from the apparatus by said spiral, a stationary casing inclosing the popping vessel, a heater disposed in said casing, and means for imparting differential rotation to the popping vessel and to the spiral.

8. In a corn popper, the combination of a revoluble popping vessel disposed on an inclined plane and having a closed lower end, a forward extension on said vessel of a truncated cone form and open at its upper end, a revoluble spiral supported longitudinally in said vessel, there being a clearance between the inner wall of the popping vessel and the perimeter of the spiral slightly greater than that necessary to allow the unpopped corn to pass back as the popped corn is discharged from the apparatus by said spiral, a stationary casing inclosing said popping vessel, a heater disposed in said casing, and means for imparting differential rotation to the popping vessel and to the spiral.

9. In an apparatus for popping corn, the combination of a popping vessel closed at its rear end, a spiral conveyer arranged longitudinally in said vessel and having a longitudinally extending stirring blade at its rear end, a heater casing inclosing said vessel, a heater arranged in said casing, means for supporting the popping vessel and conveyer in operative relation, and means for imparting rotation to the popping vessel and to the spiral conveyer.

10. In an apparatus for popping corn, the combination of a popping vessel closed at one end and open at the other, a forward extension on said vessel of a truncated cone form and open at its forward end, a spiral conveyer arranged longitudinally in said vessel and extension and having a longitudinally extending stirring blade at its rear end, a heater casing inclosing said vessel, a heater arranged in said casing, means for supporting the popping vessel and conveyer in operative relation, and means for imparting rotation to the popping vessel and spiral conveyer.

11. In a corn popper, the combination of a revoluble popping vessel having a closed rear end and an open forward end, a revoluble spiral supported longitudinally in said vessel and its periphery disposed in adjacent relation to the inner wall of said vessel and adapted to act as a discharging conveyer for the popped corn and as a stirrer

for the unpopped corn contained in the rear portion of said vessel, the said spiral having a series of perforations near its margin to afford free retrograde movement of the unpopped corn, a stationary casing inclosing the popping vessel, a heater disposed in said casing, and means for imparting rotation to the popping vessel and to the spiral.

12. In a corn popper, the combination of a revoluble popping vessel closed at its rear end, a forward extension on said vessel of a truncated cone form and open at its forward end, a revoluble spiral supported longitudinally in said vessel and extension with its periphery disposed in adjacent relation to the inner wall of said vessel and extension and adapted to act as a discharging conveyer for the popped corn and as a stirrer for the unpopped corn contained in the rear portion of said vessel, the said spiral having a series of perforations near its margin to afford free retrograde movement to the unpopped corn, a stationary casing inclosing said popping vessel, a heater disposed in said casing, and means for imparting rotation to said popping vessel and to the spiral.

13. In an apparatus for popping corn, the combination of a popping vessel, a spiral conveyer arranged longitudinally in said vessel, a heater casing inclosing said vessel and having an annular marginal rear end head, a baffle disk carried by the popping vessel in adjacent relation to said rear end head, a heater arranged in said casing, means for supporting the popping vessel and conveyer in operative relation, and means for imparting rotation to the popping vessel and to the spiral conveyer.

14. In an apparatus for popping corn, the combination of a hollow supporting base, a burner contained in said base, an annular casing communicating with said base and pivotally attached thereto, a popping vessel open at one end and closed at the other arranged within said annular casing, a spiral conveyer arranged in said popping vessel, means carried by said annular casing for supporting the popping vessel and conveyer in operative relation, and means for imparting rotation to the popping vessel and to the spiral conveyer.

15. In an appartus for popping corn, the combination of a hollow supporting base, a burner contained in said base, an annular casing communicating with said base and pivotally attached thereto, by front and rear open side pivot knuckles, a popping vessel open at one end and closed at the other arranged within said annular casing, a spiral conveyer arranged in said popping vessel, means carried by said annular casing for supporting the popping vessel and conveyer in operative relation, and means for imparting rotation to the popping vessel and to the spiral conveyer.

Signed at Chicago, Illinois, this 11th day of December, 1911.

CHARLES CRETORS.

Witnesses:
ROBERT BURNS,
HENRY MOE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."