

(No Model.)

I. M. PALMER.  
CORN POPPER.

No. 482,832.

Patented Sept. 20, 1892.

Fig. 1.

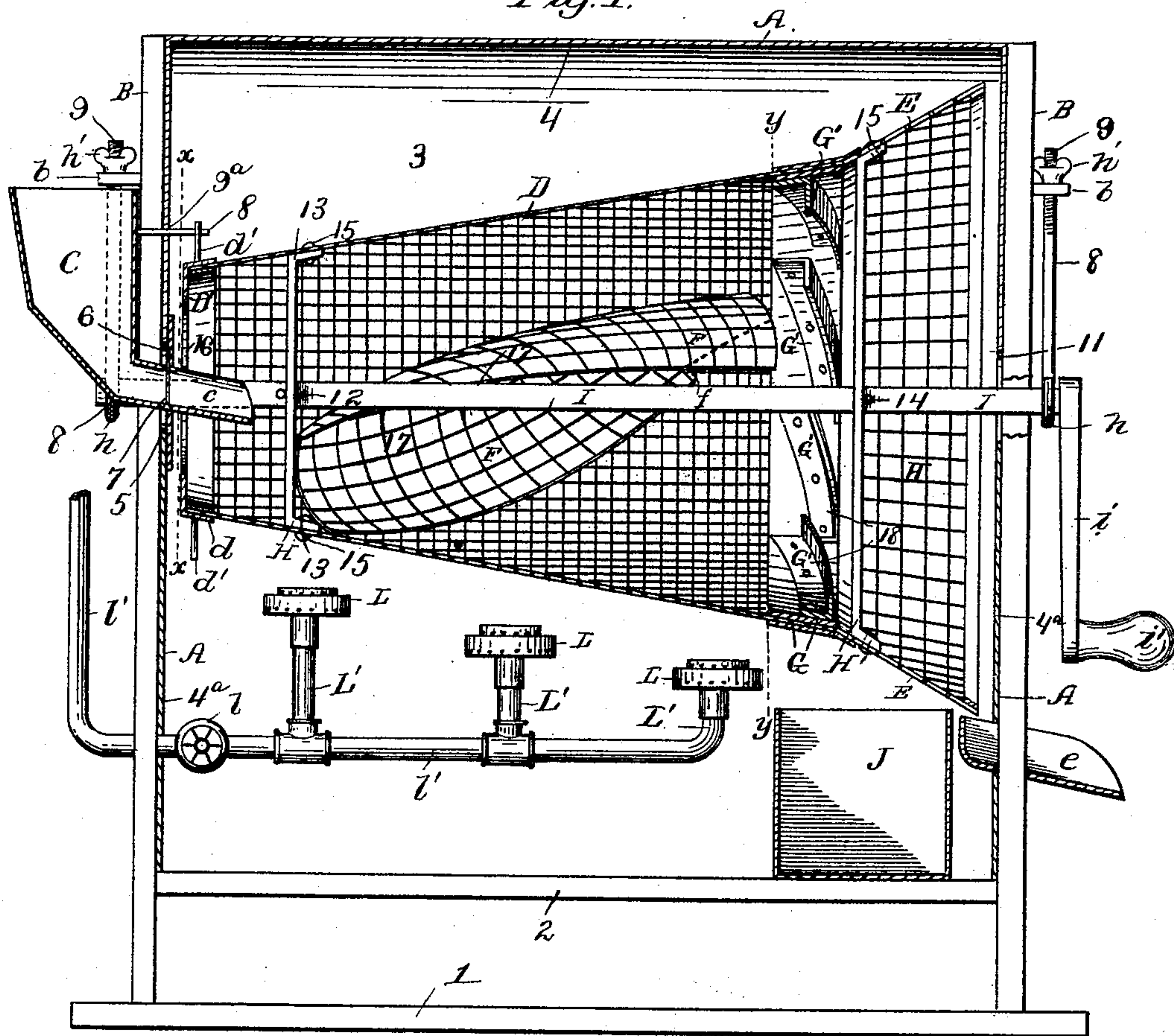


Fig. 2.

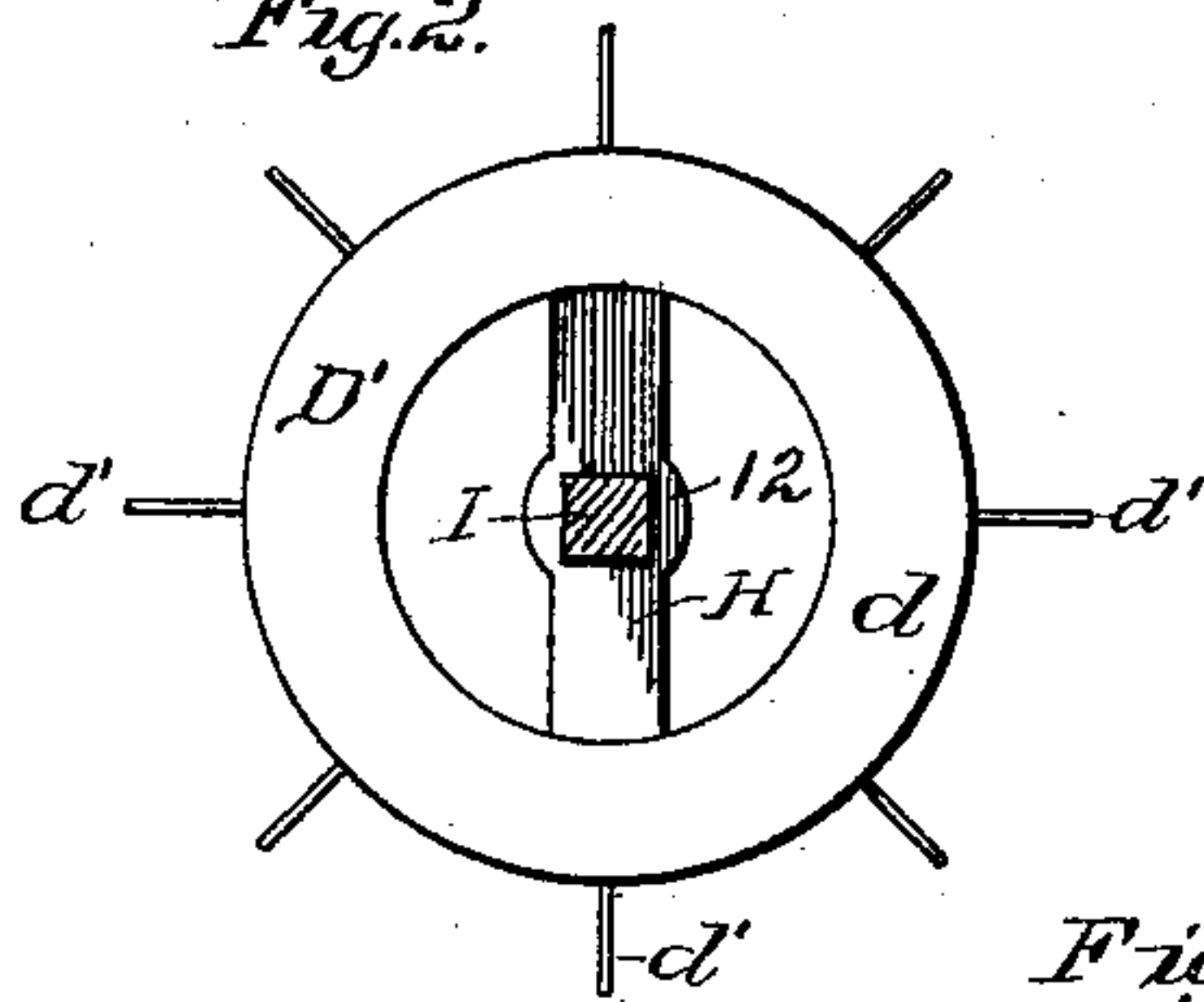


Fig. 3.

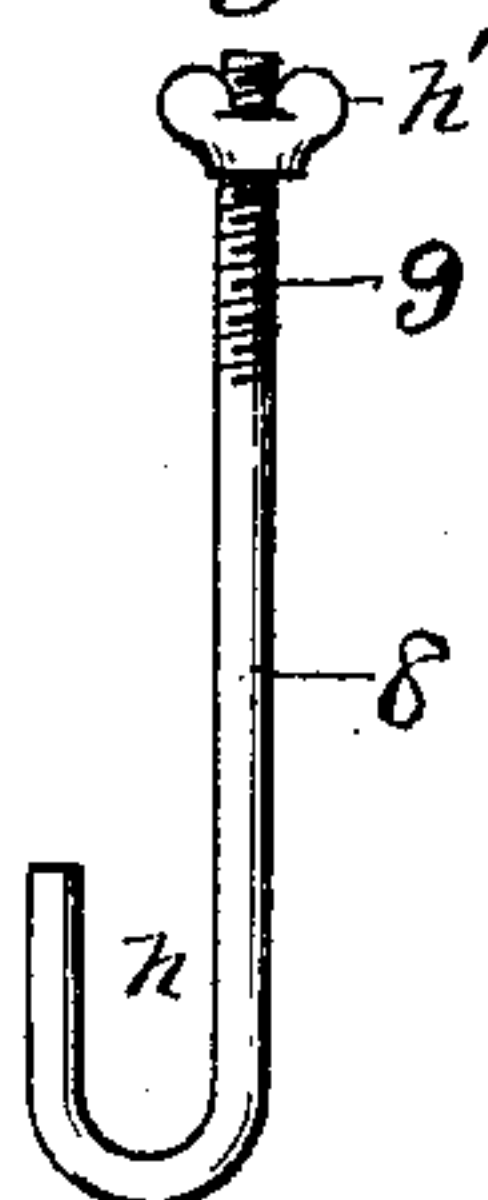


Fig. 4.

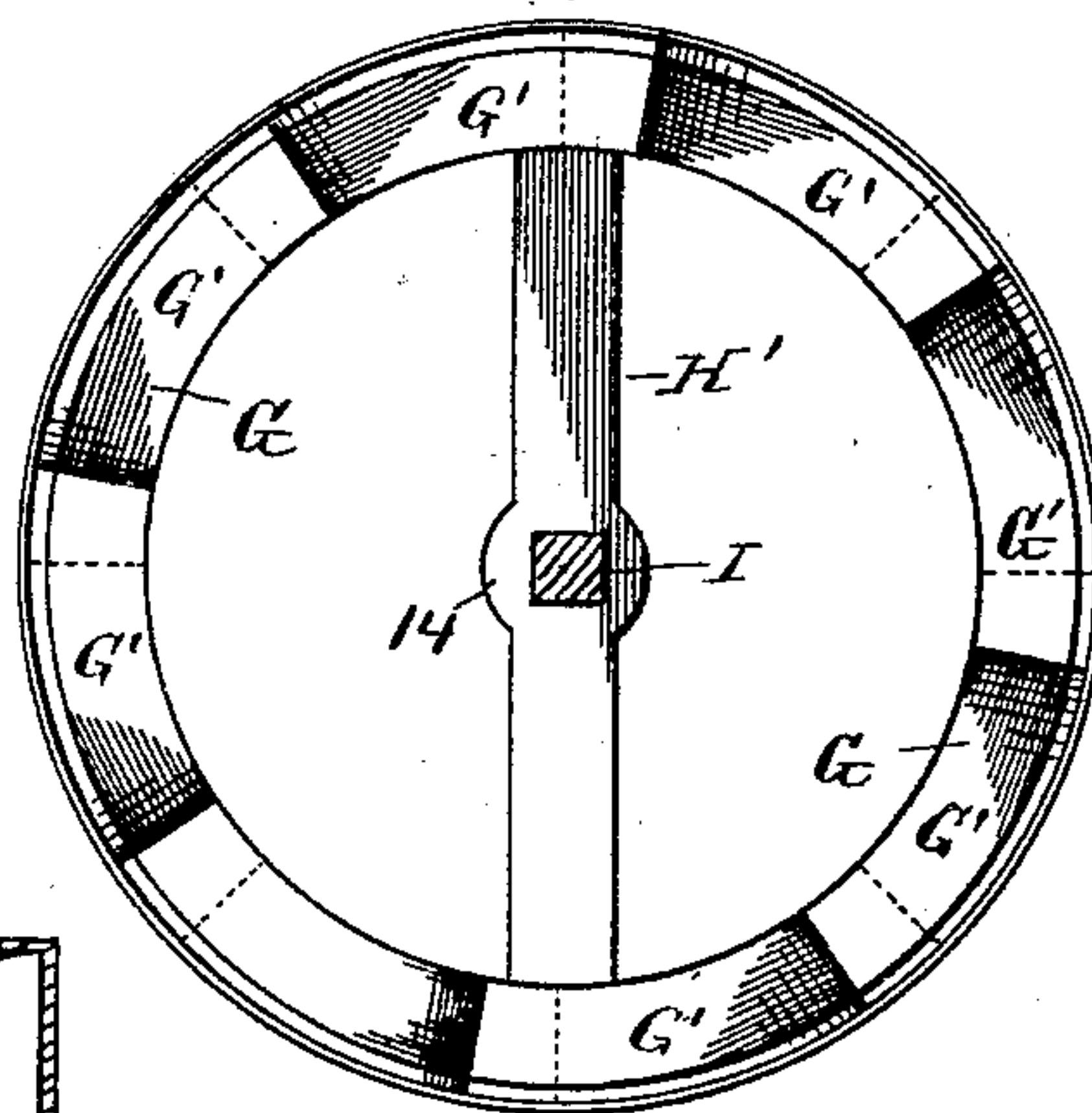
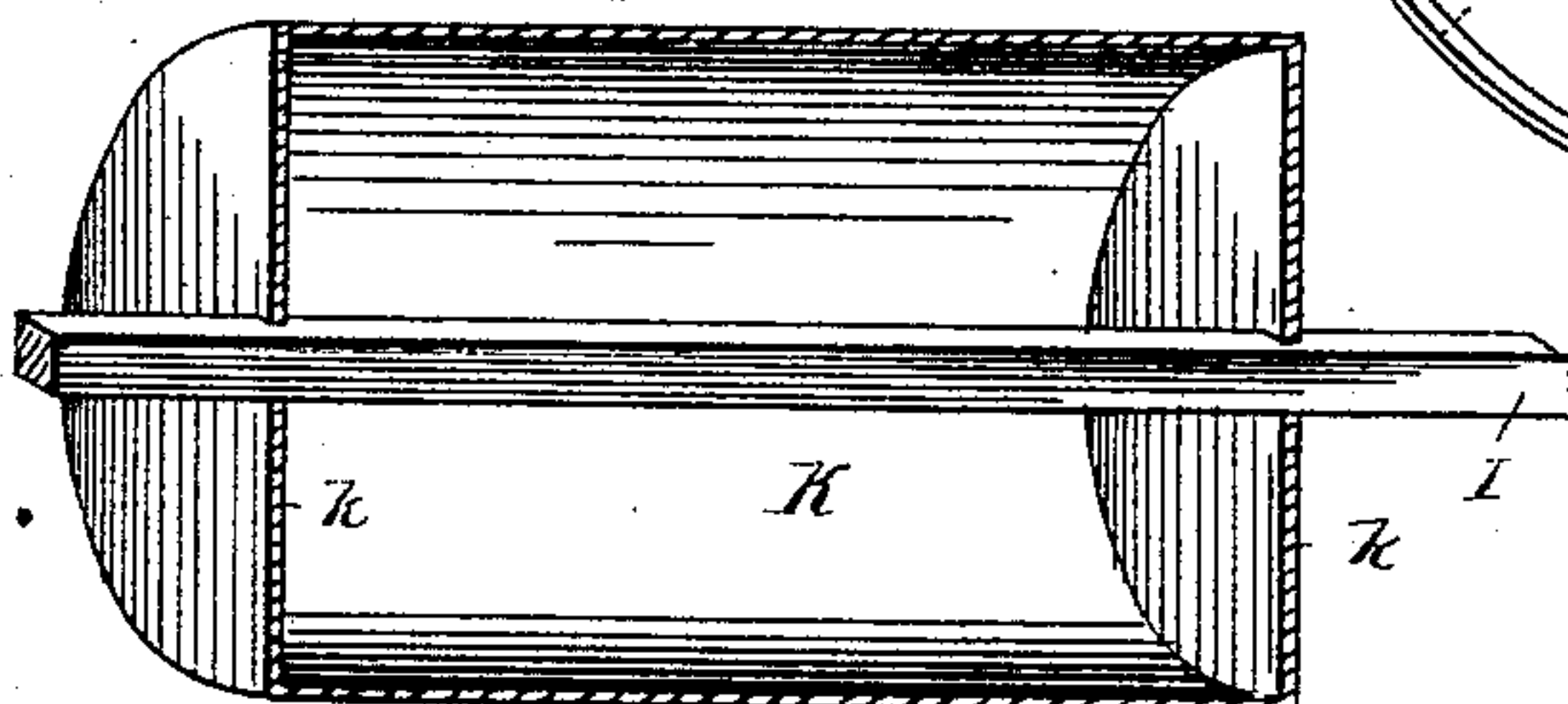


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## CORN-POPPER.

SPECIFICATION forming part of Letters Patent No. 482,832, dated September 20, 1892.

Application filed December 28, 1891. Serial No. 416,366. (No model.)

*To all whom it may concern:*

Be it known that I, IDA M. PALMER, of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Corn-Poppers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to that class of machines which are designed for popping corn, roasting peanuts, and for similar purposes; and the objects of my invention are, first, to produce a corn-popper, &c., which shall be simple, strong, durable, and inexpensive in construction and rapid and effective in its operation, and which shall operate to automatically receive the unpopped corn at one end of its cylinder and retain the corn within said cylinder until the corn shall have been popped, and which shall then by a reversed movement of the cylinder automatically discharge the popped and unpopped corn from the opposite end of the cylinder, and also discharge the unpopped corn from said opposite end of the cylinder, but separately from the popped corn.

A further object of my invention is to produce a corn-popper which shall automatically feed the corn through the supply-hopper and supply-spout by virtue of an agitating action produced by the revolution of the popping-receptacle.

To the above purposes my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a central vertical longitudinal section of a corn-popper embodying my invention. Fig. 2 is a transverse vertical section of the machine on the line  $x x$  of Fig. 1. Fig. 3 is a detached view, in side elevation, of one of the adjustable hanger-bolts for the popping-receptacle shaft. Fig. 4 is a transverse vertical section of the machine on the line  $y y$  of Fig. 1. Fig. 5 is a view in perspective and in central vertical longitudinal section of a peanut-roasting cylinder to be used in connection with my machine.

In the said drawings, 1 designates the base of the machine, and B designates the supports, which are suitably secured at their lower ends to the extremities of the base 1 and which extend vertically upward from said base, so as to constitute the front and rear end portions of the framework of the machine.

2 designates the bottom, 3 the sides, 4<sup>a</sup> the ends, and 4 the top, of a horizontal inclosing chamber A, within which the principal operative parts of the machine are located, the said chamber being either of wood or metal, as preferred, and being also, preferably, of oblong rectangular form, as shown.

C designates the feeding-hopper of the machine, the said hopper being either of wood or metal, as preferred, and being of any suitable or preferred dimensions or capacity, and being, furthermore, placed vertically outside of the front end of the chamber A. This hopper is provided at its bottom with a feed-spout  $c$ , which extends obliquely downward and inward from the bottom of the hopper and through an opening 6, which is formed through the front end wall 4<sup>a</sup> of the chamber A, said spout extending, also, through a corresponding opening 7 in a wear-plate 5, which is screwed or riveted or otherwise similarly secured to the inner surface of the front wall B.

From the body portion of the hopper C extends a spring-arm 8<sup>a</sup>, which projects through an opening 9<sup>a</sup> in the front wall 4<sup>a</sup> of the chamber A and which serves as the means for agitating the hopper, as hereinafter explained, so as to insure an automatic feed of the unpopped corn from the hopper and through the feed-spout  $c$  into the popping-receptacle, as hereinafter explained.

$b$  designates two brackets which extend horizontally from the outer surface of the upper parts of the end walls 4<sup>a</sup>. Through each of these brackets extends the upper end of a pendent vertical hanger 8, there being thus two of the brackets and two of the hangers, and one bracket and one hanger being located at each end of the machine-frame. The upper end of each hanger 8 is externally screw-threaded, as at 9, to receive an internally-screw-threaded adjusting-nut  $h'$ , said nuts resting upon the upper sides of the brackets



5 *b* and serving to raise and lower the hangers 8, as desired, for a purpose to be hereinafter explained. The lower end of each hanger 8 is turned upward and laterally, as at *h*, so as to form a hook-like bearing, as shown. I designate the shaft of the popping-receptacle, the said shaft extending horizontally through openings 11 in the end walls 4<sup>a</sup> of the receptacle, and being also of such length as to protrude at its ends beyond said openings and to rest in the bends of the hook-shaped bearings *h* of the hangers 8, as shown. At its rear end the shaft I carries a crank-arm *i*, having at its outer end a crank-handle *i'*, as shown.

15 Near its front end the shaft I carries a cross-bar H, the middle of which is formed with a boss or hub 12, which closely embraces the shaft, so as to cause the cross-arm H to revolve with said shaft, and the outer ends of said cross-arm are turned rearward obliquely, as at 13, for a purpose to be hereinafter explained. Near its rear end the shaft I carries a second cross-arm H', which is formed at its middle with a boss or hub 14, which

25 closely surrounds the shaft I, so as to cause the cross-arm to revolve with the shaft, the outer extremities of said cross-arm being turned forward, as at 15, for a purpose to be hereinafter explained. The cross-arms H and H' are similar to each other in form and differ from each other in that the cross-arm H is shorter than the cross-arm H', as shown. Moreover, the openings of the hubs or bosses 12 and 14 are preferably angular, the shaft I

35 being also angular at such points or throughout its length, as preferred, in order to insure the rotation of the cross-arms with the shaft. D designates the popping-receptacle, said receptacle being of frusto-conical form and

40 placed horizontally in the chamber A, the receiving end of the receptacle being the smaller of the two ends and being placed adjacent to the spout *c*, while the larger discharge end of the receptacle is placed adjacent to the rear end wall of the chamber A, as shown. This popping-receptacle D is of wire meshing or other foraminous material, the openings or foramina or mesh of the receptacle being of such size or gage as to prevent the escape of either the popped or unpopped corn through the same. The smaller or receiving end of the receptacle D is secured near its extreme margin to the flanges or rearwardly-turned ends 13 of the cross-arm

55 H by rivets 15 or other equivalent devices, and the extremity of the receiving end of the receptacle D is riveted or otherwise suitably secured to the rearwardly-extending oblique flanges *d* at the outer circular margin of a cap D'. This cap D' is preferably of sheet metal and is formed with an inlet-opening 16, into which extends the feed-spout *c*, and through which also extends the shaft I, it being understood that the shaft I passes to one

65 side of the spout *c*. The margin of the op-

posite or discharge end of the popping-receptacle D is interposed between two rings G, which are riveted or otherwise secured in position and the inner one of which is formed or otherwise provided upon its inner surface 70 with a circular series of oblique guards or check-pieces G', as hereinafter more fully explained. Between these two rings G is also inserted the inner margin of a flaring foraminous separator E, said inner portion of the separator being riveted or otherwise suitably secured in its described position, and the outer or body portion of the separator extending obliquely outward from the popping-receptacle, as shown. This separator is of 80 coarser mesh than is the popping-receptacle D, and thus serves to permit such corn as may not have been popped to pass through its openings, while the popped corn, owing to its greater size, passes out of the discharge end 85 of the separator.

Upon the bottom 2 of the chamber A is placed a box or other suitable receptacle J for the unpopped corn, while a chute or spout *e* is inserted through the lower part of the rear 90 end wall 4<sup>a</sup> of the chamber A. The inner end of this chute or spout *e* extends beneath the outer margin of the separator E, and said chute or spout extends thence obliquely downward and outward, so as to deliver the 95 popped corn into any suitable receptacle held beneath the outer end of said spout.

Within the popping-receptacle D is placed a spiral conveyer F, which is of wire meshing or other foraminous material and which extends in oblique longitudinal convolutions 100 around the shaft I from near the inlet end to near the outlet end of said popping-receptacle, as shown. The shaft I extends through an opening 17 in the body portion of this 105 conveyer, the margins of said opening being soldered or otherwise rigidly secured to the shaft, so that the conveyer shall rotate with said shaft. It is to be understood that, if preferred, the outer edges or margins 110 of the conveyer E may be suitably secured to the inner surface of the popping-receptacle D without departing from the essential spirit of my invention. It is to be observed that, owing to the described foraminous character of this 115 conveyer, its peculiar spiral form, and the fact that it does not extend fully either to the receiving or discharging ends of the popping-receptacle, the feeding action of the conveyer is very gradual, allowing the corn to be 120 repeatedly agitated and subjected to the direct action of the heat until practically entirely popped, and then finally discharging the popped corn. All husks and other foreign matters which may be mixed with the 125 corn are, owing to the foraminous character of the conveyer, winnowed out of the corn, so that practically only clean popped corn is discharged from the machine. As before stated, a number of guards or checks G' are 130



formed or suitably secured upon the inner surface of the inner ring G, (as by rivets 18 or in any other preferred manner,) and each of these guards or checks is preferably of substantially L shape in cross-section and of elongated form longitudinally, as shown. These guards or checks are so placed as to extend each obliquely to a line drawn transversely through the popping-receptacle and at right angles to the shaft of said receptacle. Moreover, the guards or checks G' are so placed that the adjacent ends of each two of said guards or checks shall lap beyond each other and at a suitable distance from each other for a purpose to be hereinafter explained.

The spring-arm 8<sup>a</sup>, above described as passing through a slot 9<sup>a</sup> in the front end wall B of the chamber A, is engaged successively by the outer ends of a number of pins or projections d', which extend radially outward from the flange d of the end cap D', as will be hereinafter fully explained.

The letter l' designates the feed-pipe of the machine, said pipe leading from a suitable tank or reservoir (not shown) for gasoline or other liquid fuel and then entering the chamber A through the lower part of the front wall 4<sup>a</sup> of the chamber A, said feed-pipe being thus of approximately L form, as shown. The lower part or arm of this feed-pipe extends horizontally within the chamber A, beneath the popping-receptacle D, and carries any suitable or preferred number of burners L, each of which is connected to the feed-pipe by a vertical branch pipe L', as shown, the said branch pipes being, preferably, of gradually-decreasing length or height, beginning with the front pipe and ending with the rear pipe, and the arrangement being such that the burners L shall all occupy approximately equal distances from the popping-receptacle D.

The operation of the above-described machine is as follows: Previous to placing the unpopped corn in the hopper C the adjusting-nuts h' are turned in one or the opposite direction, so as to bring the shaft I either into horizontal position or to slightly incline the shaft downward from the front end to the rear end of the machine, according to the desired rate of feed of the corn through the popping-receptacle D. A quantity of unpopped corn having been placed in the hopper C, the operator grasps the crank-handle i' and turns the same from right to left, the pins or projections d' successively striking the arm 8 and vibrating the hopper C laterally, so as to agitate the corn and cause it to feed automatically from the hopper and out through the spout c. The corn passes into the popping-receptacle and is stirred within the same by the conveyer. During the described rotation of the popping-receptacle the corn is popped by the heat from the burners L, but is prevented from leaving the receptacle D by the guards or checks G', owing to the fact that the rotation

of the receptacle is from right to left and to the described oblique position of the said guards or checks. Now when the corn has all been popped the receptacle D is rotated in the reverse direction—that is, from left to right—and the popped corn and also such corn as has not been popped is fed through the receptacle from the inlet end to the outlet end thereof by the spiral conveyer F, such popped and unpopped corn leaving the discharge end of the receptacle D and passing upon the separator E. As before stated, the meshing of the discharge-separator E is of such gage as to permit the unpopped corn to pass through its openings and fall into the receptacle J, while the popped corn passes over the separator and is received into a bag or other receptacle, which is placed beneath the lower end of the chute or spout e.

In Fig. 5 I have shown a popping-receptacle which is designed to be substituted for the receptacle D when peanuts or other nuts are to be roasted. This receptacle K is of cylindrical form and is closed at its sides and ends, the shaft I passing longitudinally through said receptacle.

From the above description it will be seen that I have produced a corn-popper which is simple, strong, durable, and inexpensive in construction, easily operated, and which automatically feeds the corn into the machine and discharges it and separates the popped from the unpopped corn during the discharging action of the machine.

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

1. A corn-popper comprising a suitable framework and a suitable revoluble popping-receptacle, a vibratory feed-hopper mounted upon the framework and carrying an outwardly-extending arm, and a number of projections carried by the popping-receptacle and successively engaging the arm to vibrate the hopper, substantially as set forth.

2. A corn-popper comprising a suitable framework, a suitable revoluble popping-receptacle mounted in said framework, a number of pendent hangers having adjusting-screws at their upper ends, and a shaft for the popping-receptacle, having its bearings in the lower ends of said hangers, substantially as set forth.

3. A corn-popper comprising a suitable framework having outwardly-extending brackets secured thereto, a suitable revoluble receptacle having a longitudinally-extending shaft, and a pair of pendent hangers having hooked bearings at their lower ends for the said shaft and externally screw-threaded at their upper ends, and a pair of adjusting-nuts surrounding said upper ends of the hangers and resting upon the brackets, substantially as set forth.

4. A corn-popper comprising a suitable revoluble popping-receptacle and a number



of elongated guards or checks mounted in the discharge end of the receptacle and set obliquely to the longitudinal axis of said receptacle, the said checks or guards extending  
5 past each other at their adjacent ends and having said ends separate from each other by suitable spaces, substantially as set forth.

5. A corn-popper comprising a suitable

revoluble popping-receptacle and a flared foraminous discharge-separator located at the discharge end of the receptacle, substantially as set forth.

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