(No Model.)

D. R. & W. A. KING.

BRETZEL AND CRACKER SIZING AND SALTING MACHINE.

No. 358,358. Patented Feb. 22, 1887.

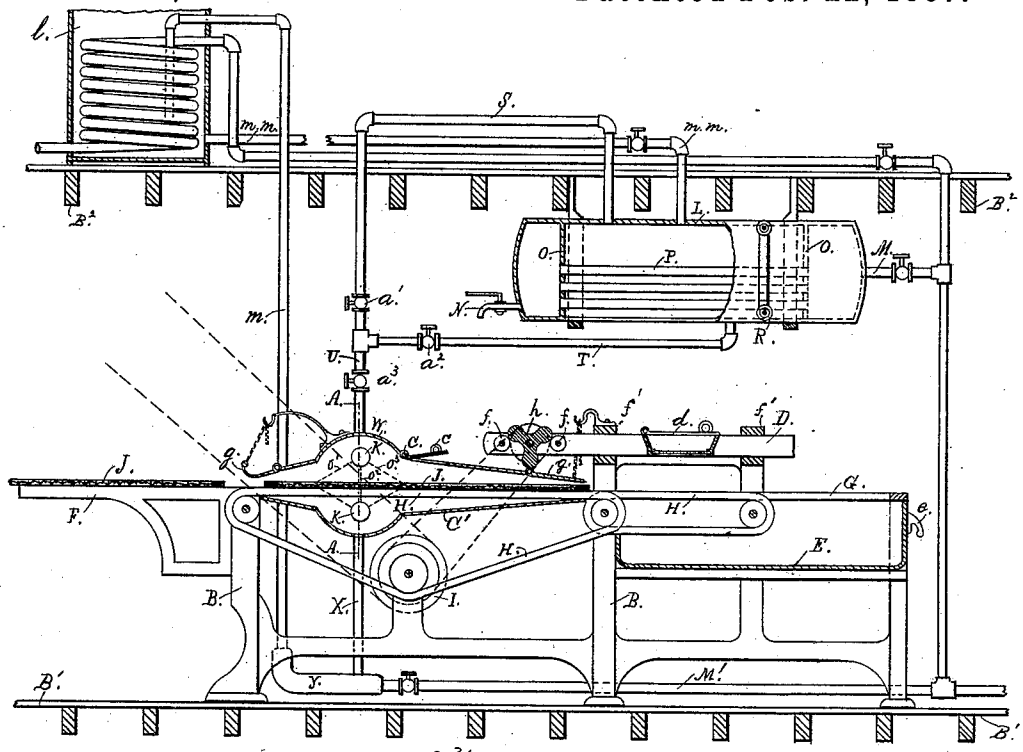


Fig. 1.

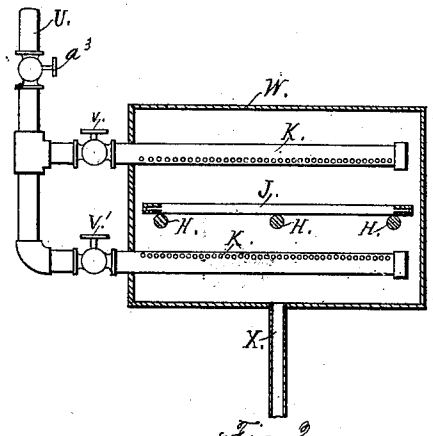


Fig. 2.

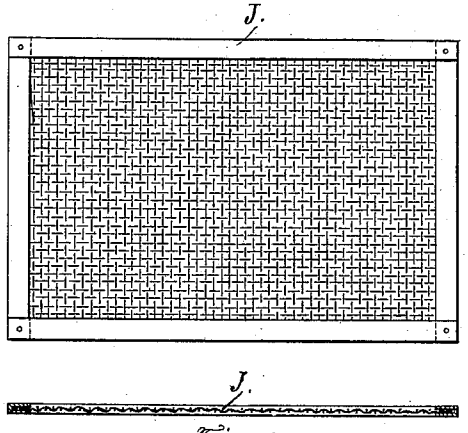


Fig. 3.

WITNESSES:
A. P. C. Kulp
Wm. J. Mingle

INVENTORS
Daniel R. King
William A. King
BY
A. P. C. Kulp
J. S. Bunn
ATTORNEYS

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

DANIEL R. KING, OF YORK, AND WILLIAM A. KING, OF COLUMBIA, PA.

BRETZEL AND CRACKER SIZING AND SALTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 358,358, dated February 22, 1887.

Application filed July 31, 1886. Serial No. 209,639. (No model.)

To all whom it may concern:

Be it known that we, DANIEL R. KING and WILLIAM A. KING, citizens of the United States, residing, respectively, at York and Columbia, in the counties of York and Lancaster, and State of Pennsylvania, have invented certain new and useful Improvements in Bretzel and Cracker Sizing and Salting Devices; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The labor necessary to prepare the unbaked dough for bretzels, crackers, &c., for their glazed and salted condition after the baking process being heretofore performed by hand, by dipping in the proper size and sprinkling the same with salt, and this process being not only tedious, but involving a considerable loss of material, a want has long been felt for a machine to do this work properly. We are aware of the fact that there are machines used for this purpose with various degrees of success, the most trouble being the lack of control of the density of the vapor before being deposited on the work; also, the failure to maintain this density for a time after the deposit has been made. Such being the case, the object of our improvement is, first, to construct a machine in which the density of the sizing vapor may be controlled at will; second, to construct a condenser which will maintain the density of the vapor-bath for a time after it is deposited on the work; third, to size with the machine the under as well as the upper sides at the same time; fourth, to provide a suitable salting device which shall economize the use of this material, keeping the waste separate from the condensed vapor; fifth, to furnish an arrangement to heat the sizing before it is forced into the generator. We attain these objects by the mechanism illustrated in the accompanying drawings, similar letters referring to similar parts, as shown in the several views.

Figure 1 is a full side elevation of the arrangement of the whole device; Fig. 2, a sectional end view through the line A A of Fig. 1. Fig. 3 is a plan and longitudinal section of one of the wire-screen frames.

We prefer the general arrangement of the parts of the machine as shown in Fig. 1; but the heater, generator, and the machine itself may be placed in any position to suit the space to be occupied without interfering with the working of the same.

In Fig. 1, B represents a suitable frame to support the arrangement; B′ and B², the two floors on which it stands; C and C′, the top and the bottom plates of the condenser; D, the salting device; E, the drawer to receive the waste from the same; F, the slats from which the frames of work are started in the machine; G, slats on which the frames of work are deposited by the machine.

Over the top of the bottom condenser-plate, C′, passes the wire cables H over sheave-pulleys at each end and underneath, which pulleys keep the cables from contact with the condenser. The cables are driven by any suitable rotary power applied to the pulley, as shown at I, and on the cables are carried the copper-wire-screen frames J J, which hold the work to be operated on, and pass it between the vapor-ejectors K K, by this means saturating it with vapor on both sides at the same time.

Suspended above the machine is a small tubular boiler, L, connected by means of the induction-pipe M with the steam-supply pipes of the establishment. On the other end is the waste-drip and stop N. Between the two inner heads, O, of this boiler, which are connected by the tubes P, and around the outside of these tubes, circulates the sizing-liquid, which, by means of the water-gage shown at R can at all times be kept at the proper height, which should be about half full. Connected with this liquid-space are two eduction-pipes—S at the top and T at the bottom. These two pipes are joined in one at U, and this pipe continues on down outside of the spray-chambers of the condenser, as more fully shown in Fig. 2. From it two suitable spray-ejectors, each controlled by its own stop-off V V′, enter the spray-chamber W, one above and one below the wire-screen frame J, upon which the work lies to be operated on, so as to deposit a continual stream of vapor-sizing on the work of any desired density.

Connected with the spray-chamber in the bottom plate of the condenser C' is a drip-pipe, X, which conducts all condensed sizing-liquid to the steam-ejector Y, from which it is thrown by the live steam in the pipe M' up the pipe *m* into the heater-tank *l*. This tank serves as a heater by means of the live-steam coil which lies on its bottom and keeps the sizing at all times very hot. The top being simply covered, the inside is easily reached for the purpose of strengthening the liquid.

When more liquid is required in the generator L, it is supplied thereto through the pipes *m*, leading from the heater.

The spray-chamber W has long rectangular funnel-shaped ends, which form the egress and ingress condensers, the top plate, C, having a suitable opening, *c*, through which to note the action of the vapor-ejectors K K.

The spray-chambers and funnel-shaped ends of the condenser we prefer to make of light copper, and the action of the air on the outside of the same exerts a greater condensing influence than would be the case if heavier material or wood were used. The funnel-shaped construction of these condensers, having their large ends connected with the spray-chamber W, and gradually diminishing toward the outer ends until they are just of a sufficient size to allow the largest work made to pass in and out, is such as to concentrate and condense the vapor so that none shall pass out at the outer ends of the same. These ends are made adjustable to suit any work by means of the hinged lids *g* and the chains shown attached thereto.

In our construction the spray is ejected in several directions, as indicated by the dotted lines o' o^2 o^3, this principle of ejection in our construction of condenser giving the best results in maintaining the vapor-bath.

The object of the arrangement of the egress-pipes from the generator L—S from its upper sides or steam-space and T from its lower sides or liquid space—is that by means of the stops a' a^2 a^3 on the pipes S, T, and U the density of the spray deposited on the work may be regulated at will. This regulation is accomplished in the following manner: The stops V V' on the spray-ejectors K K are opened. The stops a' on the pipe S is then opened, which allows the steam vapor from the generator L to reach the stop a^3 on the pipe U. This stop being opened, the steam is blown through ejectors K K, thoroughly cleaning them. The stop a^2 on the pipe T is now opened, and the sizing-liquid from the generator L will pass into the pipe U, through which it is driven by the steam vapor in the pipe S to and through the ejector-pipes K, the bath being easily regulated to the density required for the work under treatment by the stop a^2 and the force of its ejection by the stop a'. D in Fig. 1 is a rectangular sieve to sprinkle on the work the salt or any other substance required. It is inclosed, and has on its top a suitable lid, *d*, through which to charge the same. It is supported by guides *f* on its sides and oscillated by means of the three-toothed spur-cam *h* working on the idle-rollers *f f*. Under the sieve and projecting considerably beyond its end is the drawer E for the waste salt, so arranged as to keep the same from any contact with the sizing-liquid.

Having thus described our invention, the manner of working it is as follows: By our construction of machine it is intended to run with a steady rotary movement, it being unnecessary to accommodate the machine to the work by any intermittent action of the motive power. Any class of work intended to be sized and salted is placed on the copper-wire-screen frames J J. These we use of copper for the special purpose of preventing the colored marking of the goods on the under sides in contact with them, which occurs from the action of the alkaline solution on the bars if made of material for which the alkali has a chemical affinity. These frames enter the condenser-chambers from the slat shelf F, passing between the spray-ejectors K K, by them being saturated on both sides at the same time with the vapor sizing of any required density. This sizing is supplied by the generator L and regulated by the stops a' a^2 a^3, as before described. It continues on through the condensing vapor in the long rectangular funnel-shaped end of the body of the condenser. After leaving this it passes below the oscillating salting device D, by which it is properly coated with that material, all of the surplus falling off from the work and through the meshes of the copper-wire screen on which it is laid, into the waste-drawer E. The work is then delivered by the machine on the slats G, the screen being jarred on the slats by the operator before removing to the oven, so as to deposit in the waste-drawer E the loose salt which would otherwise fall to the floor. This drawer can be easily pulled from its position by the handle *e* to remove the accumulated waste, when so desired.

We are aware that it is not broadly new to provide a bretzel and cracker machine with a device for sprinkling liquid on the dough as it is carried by a conveyer; also, a salting device arranged to sprinkle salt on the dough, and also a receptacle arranged below the conveyer for the dough, for receiving surplus liquid and other material, salt included. We do not broadly claim such a combination.

Having thus described our improvements, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in the condenser, of the semicircular spray-chamber with the large part of the long rectangular funnel-shaped ends, whereby the spray from the ejectors above and below the saturated articles is gradually condensed, so that none will fall from the small ends of the same, as set forth and described.

2. The combination of the condenser with

the adjustable lids *g g*, by which the openings in its ends are regulated to suit any size of the work, the spray-chamber, the outlet *m*, and the heater *l*, as set forth, and for the purpose described.

3. The combination of the condenser and the salting, receiving, and heating devices with the generator L and the pipes T and S from the bottom and top of the same, with the stops a' a^2 a^3, by which the density of the vapor from the generator may be regulated at will, as set forth, and for the purpose described.

4. The combination of the generator L and the connecting-pipes with the ejectors K K, delivering the spray in its several directions, o' o^2 o^3, above and below the cables in the spray-chamber W in the condenser, and the stops V V′, by which the amount of the spray above and below can be regulated by the operator, as set forth, and for the purpose described.

In testimony whereof we affix our signatures in presence of two witnesses.

DANIEL R. KING.
WILLIAM A. KING.

Witnesses:
D. H. KULP,
J. S. BITNER.