

(No Model.)

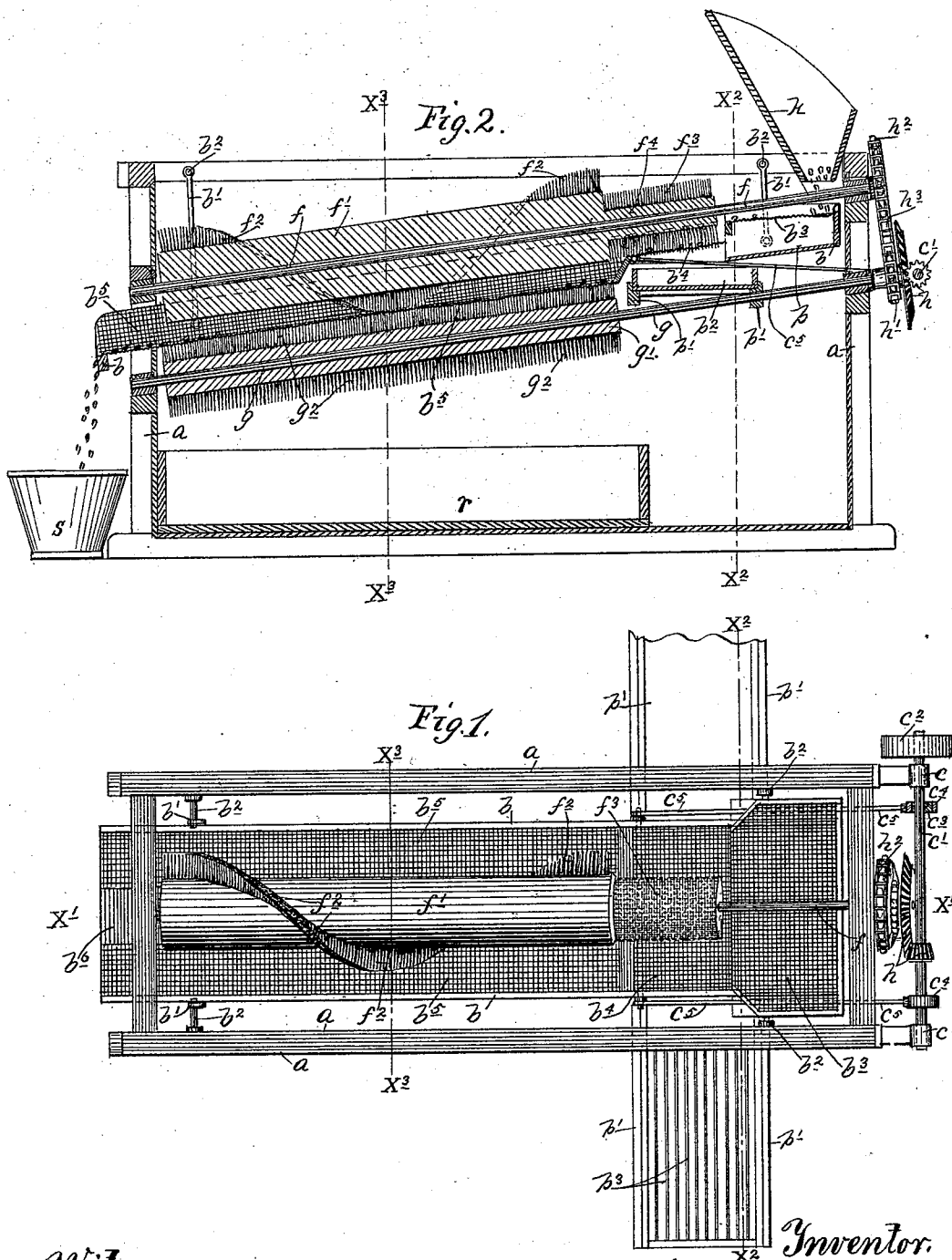
2 Sheets—Sheet 1.

G. CARLSON.

MACHINE FOR SCOURING OR CLEANING CANDIES.

No. 527,590.

Patented Oct. 16, 1894.



Witnesses.
E. F. Elmore
R. D. Merchant,

Inventor.
Gabriel Carlson
By his Attorney.
Jas. F. Williamson

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

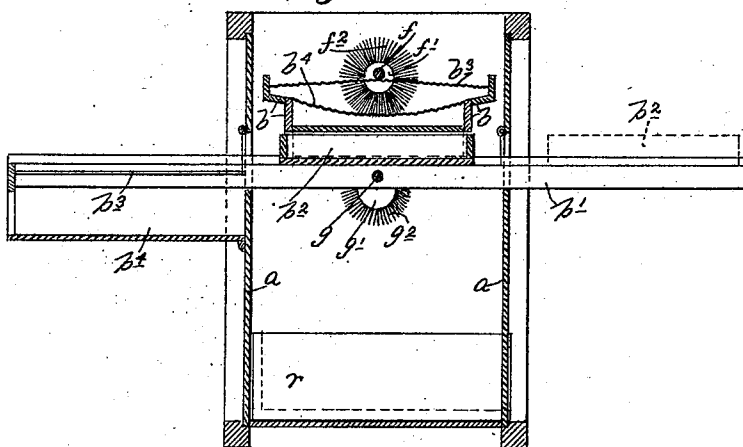


Fig. 4.

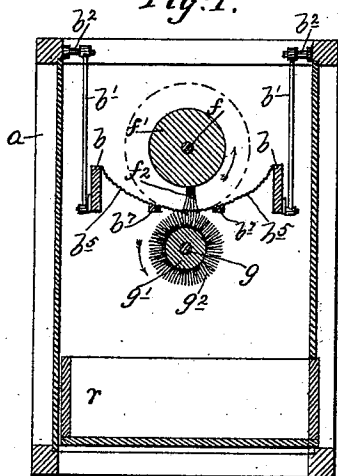


Fig. 6.

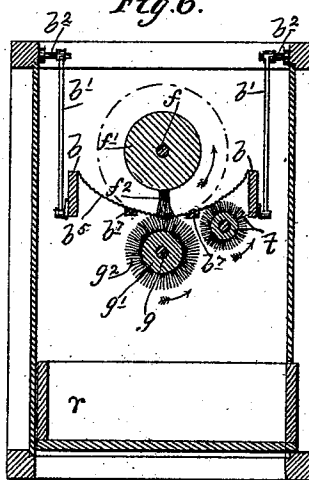
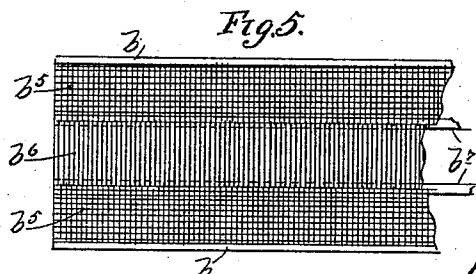


Fig. 5.



Witnesses.

E. F. Elmore,
D. D. Merchant,

Inventor.

Gabriel Carlson
By his Attorney.

Las. F. Williamson

UNITED STATES PATENT OFFICE.

GABRIEL CARLSON, OF MINNEAPOLIS, MINNESOTA.

MACHINE FOR SCOURING OR CLEANING CANDIES.

SPECIFICATION forming part of Letters Patent No. 527,590, dated October 16, 1894.

Application filed March 16, 1894. Serial No. 503,855. (No model.)

To all whom it may concern:

Be it known that I, GABRIEL CARLSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Machines for Scouring or Cleaning Candies; and I 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.

My invention was especially designed as a machine for use by confectioners in the manufacture of candies and confections, for separating the candies from the starch in which they are dried, and for scouring and cleaning the separated candies or confections and for refilling the empty trays with starch. The machine is, however, capable of effecting other separations; and capable of use for scouring various other kinds of materials than candies, such for example, as grains, peas, beans, &c.

The invention consists of certain novel devices and combinations of devices, which will be hereinafter fully described and be defined in the claims.

My invention is illustrated in the accompanying drawings, wherein, like letters referring to like parts throughout the several views—

Figure 1 is a plan view of the machine, with some parts broken away. Fig. 2 is a longitudinal vertical section, on the line $X'X'$, Fig. 1, with some parts shown in elevation. Fig. 3 is a vertical cross section, on the line X^2X^2 of Figs. 1 and 2, looking from the right toward the left, or from the head toward the delivery end of the machine. Fig. 4 is a vertical cross section, on the line X^3X^3 of Figs. 1 and 2, looking in the same direction as in Fig. 3. Fig. 5 is a detail in plan view, showing a part of the concave sieve detached; and Fig. 6 is a view similar to Fig. 4, showing a modification in the number and relation of the brushes to the sieve.

In a suitable oblong frame a , is mounted a skeleton-like sieve frame b , which is supported from the said main frame by hangers b' pivoted to the sieve-frame and to bearing-studs b^2 projecting inward from the top portions of the main frame a . In bearings c projecting from the head of the main frame a , is mounted a

cross-shaft c' provided with a driving-pulley c^2 , for the application of power. On the said shaft c' are fixed a pair of eccentrics c^3 fitted with straps c^4 having eccentric-rods c^5 connected to the said sieve frame b . By this construction, under the motion of said shaft c' , the said sieve frame will receive a longitudinal shaking motion.

The upper pair of hangers b' are shorter than the lower pair so as to support the said sieve-frame b in an inclined position sloping downward from the head toward the foot of the machine; and the said sieve frame projects outward at its delivery end beyond the main frame a . On the said sieve frame b , at its upper end, is fixed a sieve surface or screen b^3 , which slopes slightly from its center or highest point toward the opposite sides of the sieve frame. Farther down the sieve frame and at a slightly lower level, formed by a step in the frame, is located another sieve or screen b^4 , in position to receive whatever material may be carried over the top of the first sieve b^3 . The sieve b^4 is preferably of slightly curvilinear or concave form. Farther down the sieve frame b and receiving from the second sieve b^4 is located a third sieve or screen b^5 b^6 , of concave form in cross section, which extends the entire length of the remaining portion of the said sieve frame. Of this sieve or screen surface b^5b^6 , the portions b^5 are preferably constructed with reticulated meshes and the portion b^6 with uncrossed meshes made up of single wires extending crosswise of the sieve frame, and at the central or lowest traverse line of the same. At the junctions between the sieve surface b^5 and the central sieve surface b^6 , longitudinal stiffening or joint strips b^7 may be placed on the under side of the sieve, for insuring the necessary rigidity to the wires or strands of the central sieve surface b^6 .

Extending lengthwise of the sieve-frame and central thereof, one above and one below the sieve, are located a pair of rotary brushes, the parts of the upper member of which are marked with the letters $f f' f^2$, and the parts of the lower member of which are marked with the letters $g g' g^2$ respectively. The shafts f and g of these rotary brushes are journaled in suitable bearings in the end portions of the main frame a ; and receive

rotary motion in opposite directions from the shaft c' through the beveled gears h , one on the shaft c' , and the other on the shaft g , a pair of sprockets h' h^2 , one on each of the brush-shafts, and a sprocket-chain h^3 connecting the same. Having regard to the said brushes, the bristles g^2 of the lower or underneath brush work through the sieve surface b^6 and are intercurrent with the bristles f^2 of the upper or top member of the said brushes.

The bristles g^2 of the lower brush, preferably extend entirely around the brush-head or roller g' ; but the bristles f^2 on the upper brush are confined to a portion of the brush-head or roller f' , and are arranged thereon in a spiral, lengthwise of the said roller and lengthwise of the sieve frame b .

In addition to the spirally arranged bristles f^2 , which co-operate with the bristles g^2 , through the concave sieve, the upper brush head or roller f' has on a reduced portion thereof, f^4 , at its upper end a set of bristles f^3 , which may extend entirely around the said reduced portion f^4 of the roller, and which act on the candies and confections when passing over the second sieve b^4 .

It will be observed, that the upper brush f' f^2 is constructed and mounted to turn on a radius, or describe a circle which is of less radius than that of the concave of the screen or sieve b^5 and that its pivotal center is located eccentric to the radial center of the screen. The action obtained by this construction is important. The candies are subjected to the action of said brush at the lower portion of the trough of the screen, and will be carried some distance up one side of the same, but will be dropped back as the brush leaves contact with said screen.

Directly over the first or uppermost sieve b^3 , at the head of the machine and fixed to the main frame a , is located a supply hopper k into which the trays containing the candies and starch are emptied by hand, or in any suitable way. Directly under the said sieve b^3 is located an imperforate surface or tail-board p . Partly under the second sieve d partly under the said tail-board p are located guide-pieces p' , extending crosswise of the main-frame and to a distance on each side of the same beyond the frame equal to or greater than the length of a tray p^2 , and constituting a runway or platform for inserting the empty trays in position to be filled with the starch from the tail-board p and the second sieve b^4 . The part of said transverse runway for the trays p^2 , which extends to one side, say the left hand side, as shown, beyond the main frame may be provided with a rod-sieve or coarse screen-surface p^3 and have an open-ended catch-box p^4 thereunder supported in any suitable way, for catching and retaining any of the starch which may be swept off from the top of the filled tray in the striking or leveling action.

Under the main concave sieve b^5 b^6 , is lo-

cated or may be located a removable drawer r , for catching the material swept from the candies or other materials through the sieve under the scouring action of the brushes. A bucket or other suitable receptacle s is shown as in position, at the tail end of the machine, for receiving the clean candies or other material delivered from the tail end of the concave sieve b^5 b^6 .

It should be noted that all the sieve surfaces have their side margins attached to the side pieces of the sieve frame b in such manner that there will be portions of the said side pieces of said sieve frame extending above the top of the sieves, thereby affording side flanges which prevent the candies or other material from passing off at the sides of the sieves.

Operation: Turning now to the operation or action of the machine, it is of course obvious, that when the shaft c' is in motion, the sieve frame b and all the parts carried thereby will receive a backward and forward longitudinal shaking motion, from the eccentric and strap connections to said shaft, and that the brushes will receive a rotary motion from the said shaft, in opposite directions, at their peripheries or engaging bristles from the train of gears or drive hitherto noted. The construction, of course, may be such as to give any desired length or rapidity of vibrations to the sieves and any desired speed, either common or differential, as may be deemed best to the said co-operating brushes. When the parts are thus in motion, the trays containing the dried candies and their setting of starch or other drying material are dumped by hand into the hopper k , and the empty tray is placed on the tray runway from the back of the machine, and is shoved into the interior of the same to a position of rest under the tail-board p and the second sieve b^4 . The insertion of each empty tray in this manner will be made to push out a filled tray onto the extension of the runway at the front of the machine, where the starch may be leveled off by a striker and the filled tray be removed by hand.

The commingled materials from the empty trays will be delivered from the hopper k onto the central part of the first sieve b^3 , at the upper end of the same. Under the shaking action of the sieve frame, the candies will roll outward toward the margins of this sieve b^3 , and thence along the outer edges thereof to the lower end of the same where they will be delivered onto the second sieve b^4 , at or near the outer margins of the same. This sieve b^4 being of curvilinear or slightly concave form in cross section, the confections or candies will roll toward the center of the same and be subjected to the action of the bristles f^3 , at the upper end of the upper rotary brush. The conjoint action of the shaking motion of the sieve, the rolling motion of the confections and the scouring action of the said bristles f^3 will be to separate out all

the loose starch and cause the same to pass through the sieves b^3 and b^4 and be directed into the particular tray p^2 , which may then be in filling position thereunder. The candies will pass on downward from the second sieve b^4 onto the main concave sieve b^5 b^6 , where they will be subjected to a scouring action and a cleaning or separating action throughout the entire length of their travel over this main sieve. In virtue of the form of this main sieve, concave as it is in cross section, the candies, when carried up by the upper brush, will constantly roll back toward the center of the sieve, under the action of gravity, and will be subjected over and over again to the scouring action of the brushes. In virtue of the fact, that the bristles g^2 of the lower or underneath brush work through the meshes of the central sieve surface b^6 and are intercurrent with the bristles f^2 of the upper brush, with the two sets of bristles passing each other in opposite directions, the candies will be both carried and scoured on the bristles of the two brushes, without any or with, at least, very little tendency to mash or break the candies against the hard surface of the sieve. In virtue of the spiral arrangement of the bristles f^2 on the upper brush, the candies will be fed or propelled positively lengthwise of the said sieve. There will therefore be no point or location at which the candies can accumulate, but the same will be kept in continuous motion lengthwise of the sieve and be all the time subject to the scouring and the cleaning action. A single pair of co-operating brushes, with a concave sieve parallel and between the same, is therefore very effective mechanism for cleaning or scouring candies and similar materials, and a small machine thus constructed has a large capacity.

Having regard to the modification shown in Fig. 6, the only difference, over the other views, is the addition of a small rotary brush t , located under the sieve and to one side of the center thereof on the upward traverse line of the upper brush in position for its bristles to work through the sieve and throw back the candies toward the center of the sieve with a positive action. In case such a return brush t is used, the part of the sieve surface through which its bristles work, might be of the same kind as that shown in the central part of the sieve and marked b^6 .

By actual usage, I have demonstrated the efficiency of the form of machine shown in Figs. 1, 2, 3, 4 and 5, in cleaning candies and confections.

In some uses, as for example, in scouring grain or other comparatively hard substances, fair results might be obtained with the use of a single brush arranged longitudinally of and above the concave sieve, with the bristles in spiral arrangement and in position to brush the material against the sieve surface; but for cleaning candies or similar comparatively soft materials, the co-operation of a

pair of brushes, one above and the other below the sieve is necessary for good work.

The sieve of concave form in cross section is a very material element of my improved combination, on account of the action secured thereby as hitherto noted; but, so far as I know, I am the first to secure the scouring action by a pair of brushes arranged lengthwise of and on opposite sides of a sieve of any kind, with the bristles of the lower brush working through the sieve surface and intercurrent with the bristles of the upper brush, and with the bristles of the upper brush in spiral arrangement, for effecting a forced feed of the candies or other materials.

I am aware that it has been hitherto proposed by others, before my invention, to arrange brushes crosswise of a stepped sieve which was straight or horizontal in cross section, with the said brushes working in pairs, one above and the other below the steps of the sieve, and their bristles working through the sieve surface; and such a construction, in a broad point of view, I do not herein claim as my invention.

Having regard to the combination involving the concave sieve, I do not limit myself to the rotary form of brushes lengthwise thereof; for while the rotary form of brushes is desirable, good results may be obtained with the use of reciprocating brushes extending lengthwise of the sieve and reciprocating crosswise thereof, so as to make their bristles co-operate, through the sieve surface, with a sweeping action.

The word concave as herein used, is not necessarily limited to any exact curvilinear line, but means any form of sieve with a depressed central portion which will render gravity operative to return the candies or other material to the central portion, when struck out therefrom under the action of the brushes.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a machine, for scouring or cleaning candies &c., the combination with a concave sieve, of one or more pairs of scouring brushes arranged, one member of each pair below and the other above the sieve, with their bristles working through the sieve and intercurrent with each other, whereby, under the action of gravity, the candies will seek the lowest traverse line of the sieve, and be subjected over and over again, to the scouring action of said brushes, substantially as described.

2. In a machine, for scouring or cleaning candies &c., the combination with a concave sieve, of one or more pairs of scouring brushes extending lengthwise of said sieve, one member of each pair below and the other above the sieve, with their bristles working through the sieve and intercurrent with each other, substantially as and for the purposes set forth.

3. In a machine, for scouring or cleaning candies &c., the combination with a concave

sieve, of one or more pairs of scouring brushes extending lengthwise of the sieve, one from below and the other from above, with the bristles working through the sieve and intercurrent with each other, the upper member of which pair of brushes having its bristles in spiral arrangement, for propelling the candies lengthwise of the sieve, substantially as described.

4. In a machine, for scouring candies &c., the combination with a longitudinal shaking sieve, of one or more pairs of brushes extending lengthwise of the sieve, one member of each pair below and the other above the sieve, with their bristles working through the sieve and intercurrent with each other, substantially as and for the purpose set forth.

5. In a machine, for scouring or cleaning candies &c., the combination with a sieve of one or more pairs of rotary scouring brushes extending lengthwise of the sieve, one member of each pair below and the other above the sieve, with their bristles working through the sieve and intercurrent with each other, and the upper member of which brushes has its bristles in spiral arrangement, for propelling the candies lengthwise of the sieve, substantially as described.

6. In a machine, for scouring candies &c. the combination with a longitudinally shaking sieve, of one or more pairs of rotary brushes extending lengthwise of the sieves, one member of each pair below and the other above the sieve, with their bristles working through the sieve and intercurrent with each other, and the upper member of which brushes has its bristles in spiral arrangement, for propelling the candies lengthwise of the sieve, substantially as described.

7. In a machine, for scouring or cleaning candies &c., the combination with a longitudinally shaking concave sieve, of one or more pairs of scouring brushes extending lengthwise of the sieve, one below and the other above the same, with their bristles working through the sieve and intercurrent with each other, the upper member of which brushes has its bristles in spiral arrangement for propelling the candies, lengthwise of the sieve, substantially as described.

8. In a machine for cleaning or scouring candies &c., the combination with a sieve surface over which the candies are moved, of means for imparting a longitudinally reciprocating motion to said sieve, and a brush working transversely on the upper surface of said sieve, and fixed against reciprocating motion with the sieve, substantially as described.

9. In a machine for scouring or cleaning candies &c., the combination with a sieve which is concave in cross section, of a brush extending longitudinally in the trough of said sieve, and having a transverse sweeping action over the same, said brush being pivoted eccentric to and swinging on a radius less than the radius of the concave of said sieve, substantially as and for the purpose set forth.

10. The combination with the hopper k of the sieve b^3 of angular or two-way sloping form in cross section, receiving, centrally, from said hopper, of the sieve b^4 , of concave form in cross section, receiving from said sieve b^3 , and a rotary brush operating with a transverse sweeping action on said sieve b^4 , substantially as and for the purposes set forth.

11. The combination with the main frame a , of the hopper k , the longitudinally shaking sieve frame b , provided with the sieves b^3 , b^4 and b^5 , b^6 , as described, the tray runway crosswise of said frame, below the sieve and having its ends extended beyond the frame, the upper rotary brush with the parts f , f' , f^2 , f^3 and f^4 , as described, and the under rotary brush with the parts g , g' , g^2 , as described, and means for imparting the shaking motion to said sieve frame and the rotary motion to said brushes, all arranged and operating substantially as and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GABRIEL CARLSON.

Witnesses:

F. O. STREED,
E. F. ELMORE.