

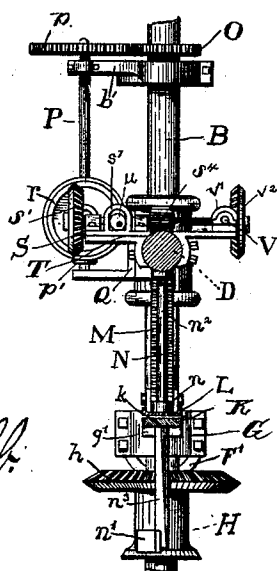
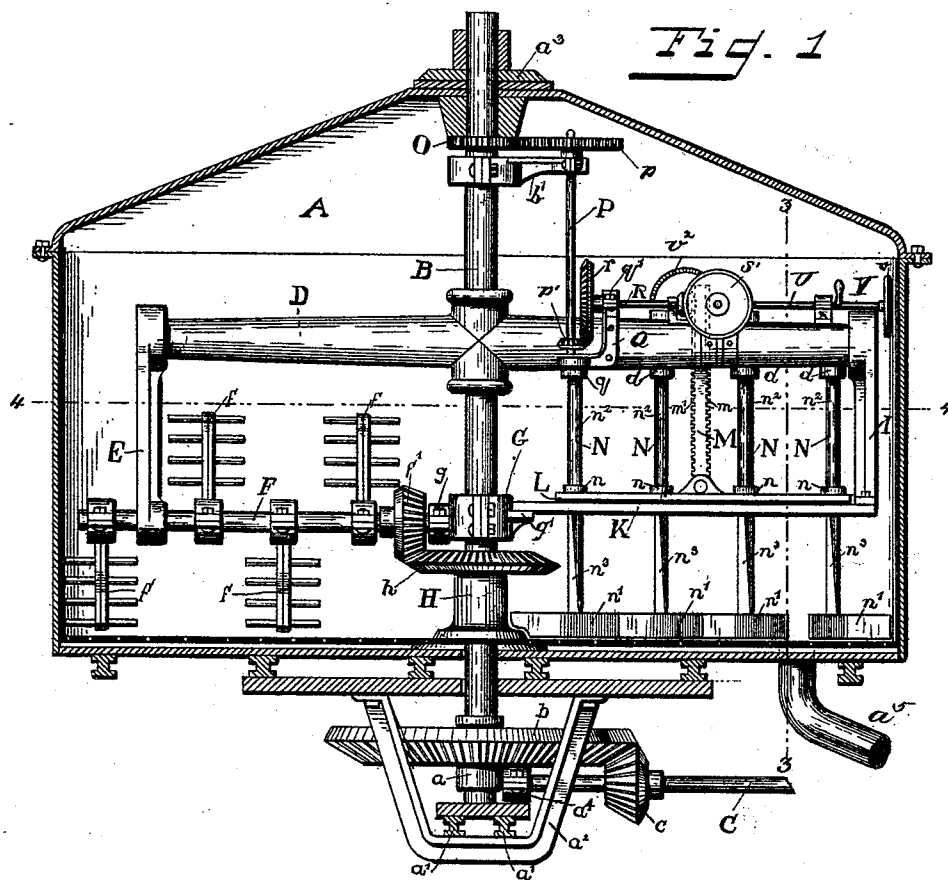
(No Model.)

3 Sheets—Sheet 1.

J. BRAUER.
MASH MACHINE.

No. 495,297.

Patented Apr. 11, 1893.



Witnesses:
August F. Verbeke
James M. Ramsey

Inventor:
John Brauer,
per
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Attorneys.

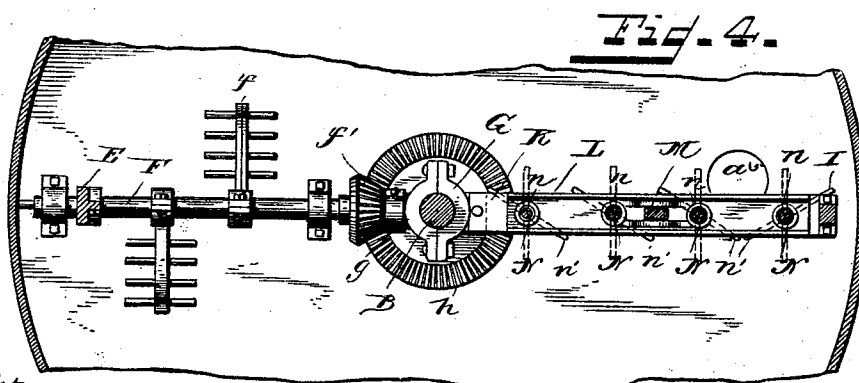
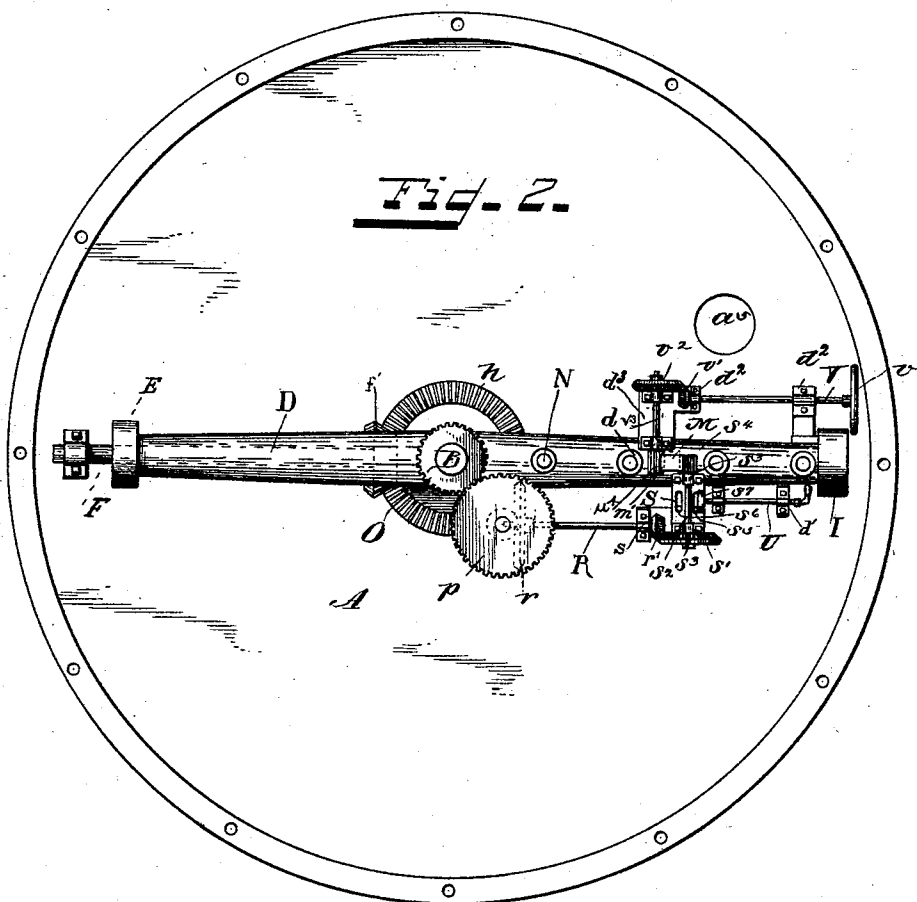
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MASH MACHINE.

No. 495,297.

Patented Apr. 11, 1893.



Witnesses:

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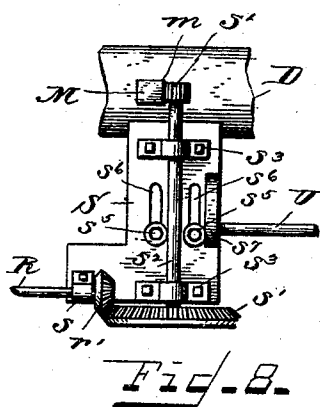
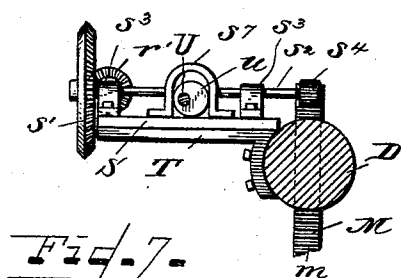
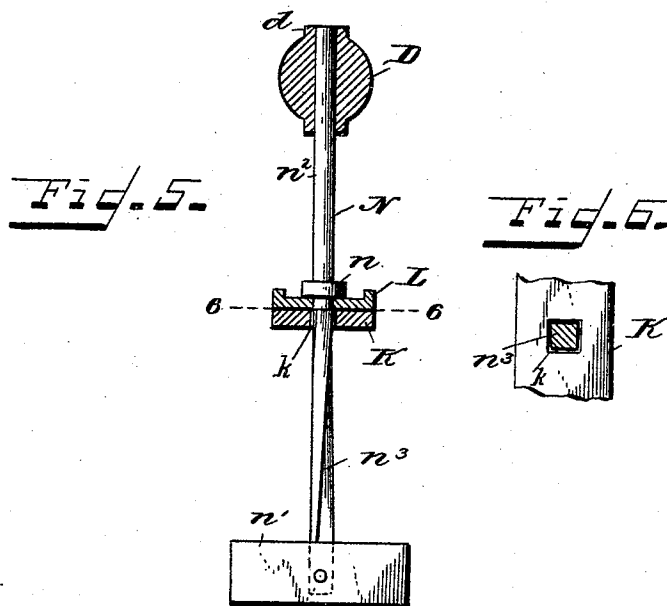
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3 Sheets—Sheet 3.

J. BRAUER.
MASH MACHINE.

No. 495,297.

Patented Apr. 11, 1893.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN BRAUER, OF CINCINNATI, OHIO, ASSIGNOR TO THE FRANCIS FRITSCH MANUFACTURING COMPANY, OF SAME PLACE.

MASH-MACHINE.

SPECIFICATION forming part of Letters Patent No. 495,297, dated April 11, 1893.

Application filed November 3, 1890. Serial No. 370,215. (No model.)

To all whom it may concern:

Be it known that I, JOHN BRAUER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and useful Improvement in Mash-Machines, of which the following is a specification.

It is the ordinary practice in the use of mash machines to throw off power when the mashing operation is completed and to then draw off the wort. The residue in the mash-tub is a thick, cohering mass. After the wort is drawn off power is again applied to discharge the residue. Mash machines are usually provided with scrapers to effect this discharge, but heretofore these scrapers have been rigidly secured in the oblique or transverse position to their line of travel which they normally occupy. The objection to this construction is that when power is applied to discharge the residue they will meet the full resistance of this thick, cohering mass and the machine will be subjected to great strain. It is the object of my invention to overcome this objection by providing the mash machine with mechanism to raise the scrapers, and to automatically return them while discharging the residue; and with means to bring the scraper-blades, when raised, into a plane substantially parallel to their line of travel, and, when being lowered, to gradually throw them into such angle to this line as to clear the bottom of the tub and direct the contents to the discharge opening, reducing the resistance to the travel of the scrapers to the minimum; and the invention consists in the construction and arrangement of parts hereinafter more fully set forth.

In the drawings: Figure 1 is a side elevation of my improved apparatus, showing the mash-tub in section. Fig. 2 is a top-plan view showing the cover of the mash-tub removed. Fig. 3 is a vertical section on the line 3—3, Fig. 1; Fig. 4, a horizontal section, on the line 4—4, Fig. 1. Fig. 5 is an enlarged detail showing a side elevation of one of the scraper-shanks and blades, the parts connecting therewith being shown in section. Fig. 6 is a horizontal section of one of the scraper-shanks

shown in connection with its guide-plate, on the line 6—6, Fig. 5. Fig. 7 is an enlarged detail showing an end elevation of the shifting plate with its connecting parts; and Fig. 8 is a top plan view of the same.

A represents the mash-tub.

B is a vertical shaft taking centrally through the mash-tub and journaled at its lower end in a step-box *a* resting on beams *a'* which are supported by hangers *a''*, preferably attached to the floor under the mash-tub. The upper end of this shaft is journaled in a sleeve *a'''*, secured to the cover of the mash tub.

C is a driving-shaft, the inner end of which is journaled in a bearing *a''''*, and carries a bevel-pinion *c* actuating a bevel-wheel *b* secured to the vertical shaft.

D is a beam, rigidly secured to the vertical shaft and rotated with it, and carrying at one end a hanger E, in which is journaled a stirrer-shaft F, carrying stirrers *f*. The inner end of this stirrer-shaft is journaled in a bearing *g* attached to a collar G rigidly secured to the vertical shaft B. The stirrer-shaft is revolved by a bevel-pinion *f'*, splined thereto, and traveling on a circular rack *h* affixed to a support H secured to the bottom of the mash-tub. At the other end of the beam D a hanger I is secured.

K is a plate, the inner end of which rests on a bracket *g'*, preferably cast as a part of collar G, and at its outer end securely bolted to hanger I.

L is a bar, preferably of channel-iron, resting, when the scrapers are lowered, on the plate K.

M is a double rack-bar, attached to bar L, preferably taking loosely through beam D, and adapted to raise and lower the scrapers.

N, N, are scraper-shanks, supported on the bar L by collars *n*, and carrying at their lower ends scraper-blades *n'*. The upper portions, *n''*, of the scraper shanks take through apertures *d* in the beam D, and are preferably round to permit them to turn. The lower portions, *n'''*, are preferably angular in cross-section and of spiral form and take through correspondingly shaped apertures or guides *k* in the plate K, though any form of shank and

aperture which serves to rotate the scraper shanks when moved relatively to the apertures or guides may be used. The pitch of the spiral portion n^3 , is preferably such that
 5 when the scraper-blades are raised they will be at substantially right angles to a radial line drawn from the center of the mash-tub, and when lowered they will gradually assume an oblique position, the forward ends of the
 10 inner scrapers turning inward and that of the outer scraper turning outward, thus directing the residue in the mash-tub to a discharge-opening a^5 .

O is a circular rack fixedly attached to the
 15 sleeve a^3 .

P is a vertical shaft journaled at its lower end in a step-block q on a bracket Q secured to the beam D. Near its upper end it is journaled in a bracket b' rigidly secured to vertical shaft B, and carries a spur-wheel p meshing in the circular rack O. When the vertical shaft B is rotated it carries with it beam D and bracket b' and causes the spur-wheel p to travel around the circular rack O and
 20 actuate the vertical shaft P. Near the lower end of vertical shaft P is secured a bevel-pinion p' meshing with and actuating a bevel-wheel r .

R is a shaft carrying bevel-wheel r , journaled
 30 at one end in a bearing q' on bracket Q and at its other end in a box s on a shifting-plate S which is supported by a bracket T bolted to beam D. A bevel-pinion r' is affixed to the shaft R and actuates a bevel-wheel s' at one end of an axle s^2 journaled in boxes s^3 , s^3 , on the shifting plate. To the other end of the axle s^2 a pinion s^4 is attached to mesh with one side m of rack-bar M and automatically lower it. The shifting-plate S is secured to
 35 bracket T by means of bolts s^5 , s^5 , taking through slots s^6 , s^6 .

U is a shifting-rod turning in brackets d' , d' , bolted to beam D. An eccentric u , is affixed to this rod and turns in a ring s^7 on the shifting-plate, and is adapted to throw the pinion s^4 in or out of engagement with the side
 45 m of the double rack-bar.

V is a rod, adapted to be actuated by a hand-wheel v , and journaled in bearings d^2 , d^2 . This rod carries a bevel-pinion v' meshing with and actuating bevel-wheel v^2 secured to one end of a rod v^3 , journaled in bracket d^3 , the other end of which carries a pinion u^4 adapted to mesh with the other side m' of the
 50 double rack-bar.

It is obvious that any means adapted to disengage the actuating medium for lowering the scrapers from the rack-bar may be employed, but I prefer to effect this disengagement in the manner shown.
 60

After the mashing operation is completed and the wort drawn off the scrapers are raised by turning hand-wheel v , at the same time bringing them parallel with their line of
 65 travel. Pinion s^4 is then thrown into gear

with the rack-bar by means of shifting-rod U, and power applied to the driving-shaft, operating the rack-bar, gradually lowering the scrapers and causing them to assume an oblique position, as heretofore described. The
 70 rack on the side m of the rack-bar extends only so far to the top of the bar as to cause the scrapers to be lowered to the bottom of the tub, when the pinion s^4 is allowed to turn freely.

I claim—

1. The combination in a mash machine, of a vertical shaft, a beam carried thereby, a bar rotating with the beam, a rack-bar attached to the bar, a hand-wheel connected to
 80 a pinion engaging with the rack-bar, a second pinion engaging with the rack-bar and connected with power-mechanism, and means for throwing the pinion in or out of operative engagement with the rack-bar, substantially as
 85 and for the purpose described.

2. The combination in a mash machine, of a vertical shaft, a beam carried thereby, a plate rotating with the beam and provided with apertures, spirally formed scraper-shanks
 90 passing through the apertures and adapted to be turned thereby, a bar supporting the shanks, a rack-bar connected with the bar, and means for reciprocating the rack-bar, substantially as and for the purpose specified.
 95

3. The combination in a mash machine, of the vertical shaft B, the beam D carried thereby, the plate K rotating therewith, the aperture k in the plate, the scraper-shanks N carrying the scraper-blades n' and passing
 100 through the apertures, the bar L for supporting the scraper-shanks, the rack-bar M connected therewith, the guides d in the beam D for the scraper-shanks, the pinion u^4 meshing with the rack-bar, and the rod V connected
 105 with and adapted to operate the pinion, substantially as and for the purpose specified.

4. The combination in a mash machine, of the vertical shaft B, the beam D carried thereby, the plate K rotating therewith, the apertures k in the plate, the scraper-shanks N carrying the scraper-blades n' and passing
 110 through the apertures, the bar L for supporting the scraper-shanks, the rack-bar M secured thereto, with the pinion s^4 engaging the rack-bar, the shifting-plate S carrying and the shaft R connecting with and operating the pinion, the circular rack O, gearing connecting the rack with the shaft R, the eccentric u engaging with the shifting-plate S,
 120 and the shifting-rod U for throwing the eccentric, substantially as and for the purpose specified.

5. The combination, in a mash machine, of the vertical shaft B, the beam D carried thereby, the plate K rotating therewith, the apertures k in the plate, the scraper-shanks N carrying the scraper-blades n' and passing
 125 through the apertures, the bar L for supporting the scraper-shanks, the rack-bar M se- 130

5 cured thereto, with the pinion s^4 engaging one side of the rack-bar, the shifting-plate S carrying and the shaft R connecting with and operating the pinion, the rack O, gearing connecting the rack with the shaft R, the eccentric u engaging with the shifting-plate S, the shifting-rod U for throwing the eccentric, the second pinion u^4 engaging the other

side of the rack-bar M, and the rod V connected with and adapted to operate the second pinion, substantially as and for the purpose specified.

JOHN BRAUER.

Witnesses:

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