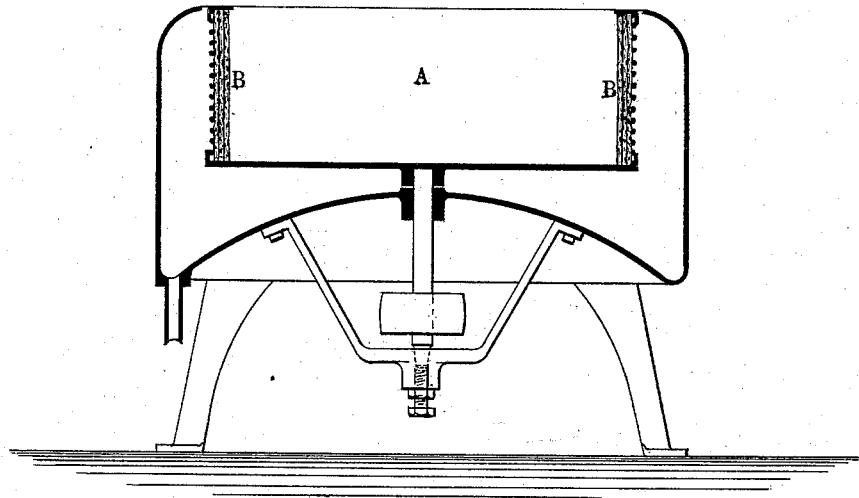


J. C. CHRISTOPHER & F. B. SQUIRE.
Centrifugal Apparatus for Treating Petroleum.

No. 217,063.

Patented July 1, 1879.



—WITNESSES—
/ L. H. Vico
/ J. W. Zedden

—INVENTORS—
James C. Christopher,
Frederic B. Squire,
by G. H. W. Howard,
Attys.

UNITED STATES PATENT OFFICE.

JAMES C. CHRISTOPHER, OF BALTIMORE, MARYLAND, AND FEARGUS B. SQUIRE, OF CLEVELAND, OHIO.

IMPROVEMENT IN CENTRIFUGAL APPARATUS FOR TREATING PETROLEUM.

Specification forming part of Letters Patent No. **217,063**, dated July 1, 1879; application filed April 18, 1879.

To all whom it may concern:

Be it known that we, JAMES C. CHRISTOPHER, of the city of Baltimore and State of Maryland, and FEARGUS B. SQUIRE, of the city of Cleveland and State of Ohio, have invented certain Improvements in Centrifugal Apparatus for Treating Crude Petroleum, Shale-Oil, and their Products, and lard and other animal oils, of which the following is a specification; and we do hereby declare that in the same is contained a full, clear, and exact description of our said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Our invention consists in the combination, with the perforated revoluble basket of a centrifugal machine, of an annular bottomless compressible and elastic lining, composed of wool, cotton, or other fibrous material in bulk, the said lining being applied to the inner sides of said basket, and constituting a compressible and elastic wall or cushion, whereby centrifugal force will project the flakes of paraffine, stearine, &c., against said wall or cushion without fracturing the said flakes.

It is found that the wire-cloth usually forming the separating medium in centrifugal machines adapted to the manufacture of sugar is totally unfitted for the retention of paraffine or stearine, as the flakes of these substances when chilled are very brittle, and when brought forcibly into contact with the wire-gauze are disintegrated, which causes them to pass through the interstices of the cloth.

To prevent this disintegration of the flakes we cover the inner vertical surface of the wire-cloth or perforated basket with a lining of soft fibrous material in bulk, and which is not secured to the walls of the basket, but retained in position by centrifugal force. This lining is to be distinguished from a woven fabric, which in actual practice has been found to present a surface too harsh for the purpose to which our invention is applied, thus fracturing the flakes and rendering the whole operation of the machine imperfect. This danger is wholly prevented by using a bulky and soft lining in connection with the basket.

It has also been found that a lining of cloth is inadequate to accomplish the results obtained

by the use of a soft and yielding wall. Any ordinary woven fabric will not prevent the passage from the basket of the paraffine flakes, which, on being broken by contact with the harsh surface against which they are projected, pass through with the oil in infinitesimal particles, and by forming up afterward destroy the cold-test of the oil.

As a means of enabling our improved machine to be constructed by others, it may be stated that the thickness of lining found in practice to be sufficient for the purpose may vary several inches—say from two to six inches. The thickness is to be determined by such circumstances as the quality of the article acted on, the speed at which the machine is run, &c.; but as a general rule it may be laid down that the lining should be of such thickness as to cause it to be readily compressible to about two-thirds or one-half of its normal thickness.

It has been found that the bottoms of the revolving baskets in machines applied to the uses contemplated by our invention must be smooth, and that they cannot be covered with any fabric or substance which will offer an abrading-surface for the outward passage of the paraffine flakes. We have found that such an abrading-surface will fracture the flakes, and therefore our lining is a simple annulus, the bottom of the basket being free from any covering whatsoever.

The accompanying drawing is a sectional view of a centrifugal machine embodying our improvement.

In the said drawing, A is the revoluble basket of the centrifugal machine, and B the soft fibrous lining, which consists of a hollow cylinder, open at the bottom, of wool, cotton, or other material in bulk, and of a thickness substantially as above stated.

To separate paraffine from the other constituents of petroleum, the crude petroleum, after being chilled, is introduced into the revoluble basket A and the machine set in motion. The fluid part of the petroleum, by reason of its superior specific gravity, is thrown by centrifugal force against the soft fibrous lining B of the basket A and passes from the vessel, the flakes of paraffine being retained in an unbroken condition within the revolving basket.

We are aware that sugar has been dried in a bag introduced to the revolving basket of a centrifugal machine, the object being to admit of the removal of the whole body of dried sugar at a single operation; and, also, that the revoluble baskets have been covered, both at their sides and bottoms, with one or more thicknesses of woven fabric; and, also, that said baskets of such machines have been constructed with double walls, whose intervening spaces have been filled with charcoal; but we are not aware that a revoluble basket of a centrifugal machine has been provided with an inner cylindrical jacket or lining open at the bottom, and constructed of soft fibrous material of substantially the thickness above stated, readily compressible to about one-third or one-half of its normal thickness, and of sufficient elasticity to resume said normal thickness when pressure is removed, which lining, by reason of its elasticity, will collect the flaky constituents of the crude petroleum without disintegrating the same, as stated.

Having thus described our invention, what

we claim as new, and wish to secure by Letters Patent of the United States, is—

Combined with the perforated revoluble basket of a centrifugal machine, an annular bottomless compressible and elastic lining, composed of wool, cotton, or other fibrous material in bulk, the said lining being applied to the inner sides of said basket, and constituting a compressible and elastic wall or cushion, whereby the flakes of paraffine, stearine, &c., which during the action of the machine will be thrown against said wall or cushion by centrifugal force, will not be fractured, substantially as specified.

JAMES C. CHRISTOPHER.
FEARGUS B. SQUIRE.

Witnesses to the signature of James C. Christopher:

WM. T. HOWARD,
GEO. MCCAFFRAY.

Witnesses to the signature of Feargus B. Squire:

J. F. SQUIRE,
FRED. E. KIPP.