

June 9, 1936.

E. M. DAVIS

2,043,371

STRAINER

Filed Sept. 7, 1934

3 Sheets-Sheet 1

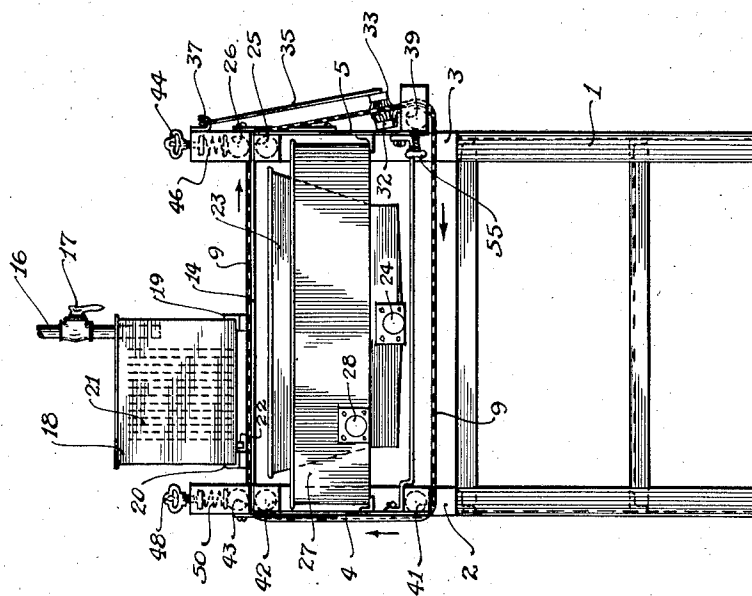


Fig. 2

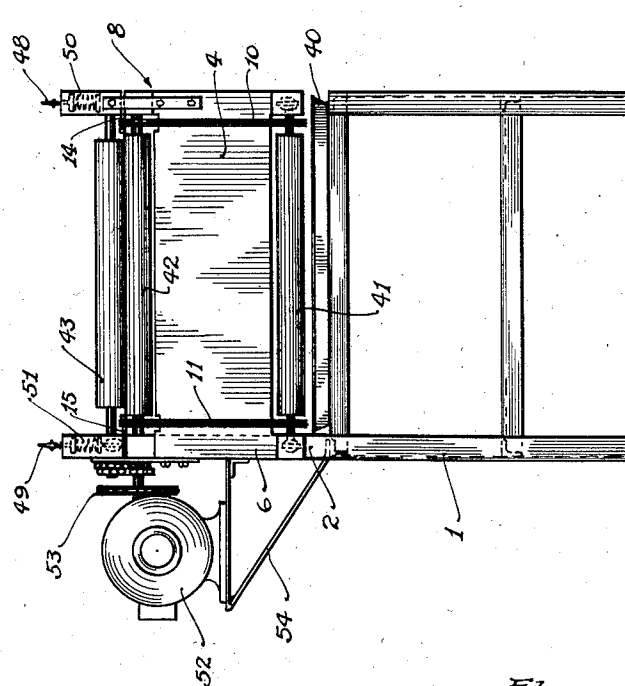


Fig. 1

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3 Sheets-Sheet 2

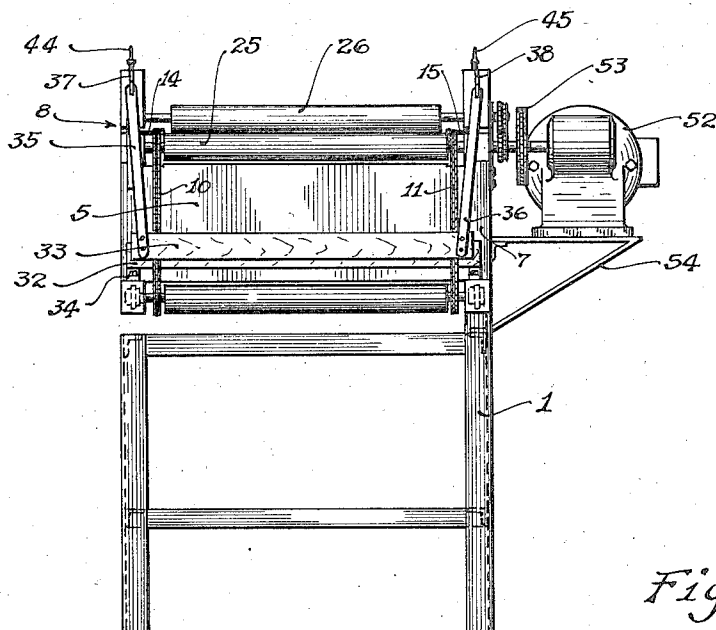


Fig. 3

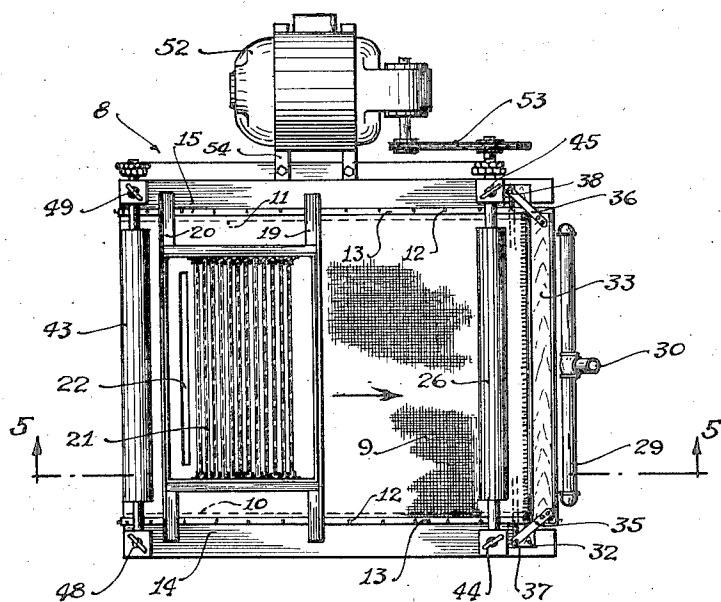


Fig. 4

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3 Sheets-Sheet 3

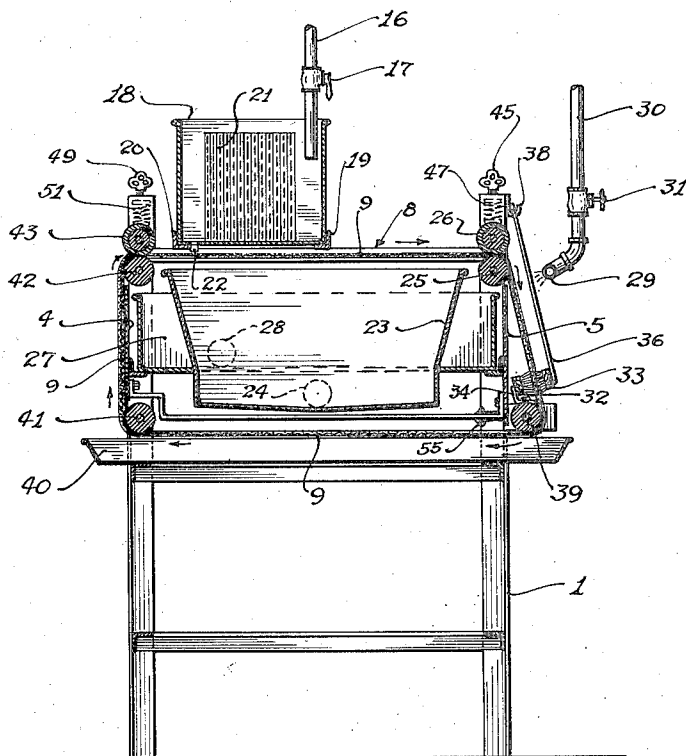


Fig. 5

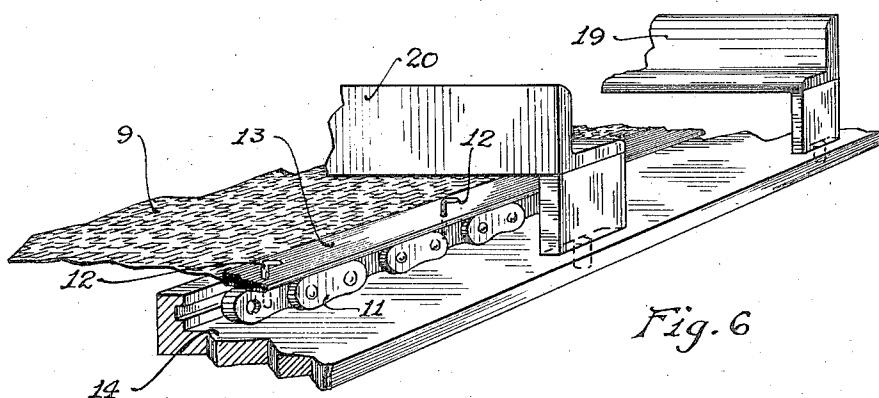


Fig. 6

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UNITED STATES PATENT OFFICE

2,043,371

STRAINER

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Application September 7, 1934, Serial No. 743,063

7 Claims. (Cl. 210—198)

This invention relates to a fluid straining device.

One of the objects of this invention is to provide a device for filtering cream.

Other objects will be apparent from the description and claims hereinafter set out.

Cream as received at the creamery for churning into butter contains more or less foreign matter such as specks of dust, portions of insects, seeds, straw and the like, fine enough to pass through the ordinary cheesecloth strainers sometimes used on the farm. For sanitary and aesthetic reasons it is desirable to remove this foreign material before the cream is churned. The device of the present invention has been found in practice to be unusually effective in removing the smallest bits of foreign material from the cream.

A preferred embodiment of the invention is disclosed in the accompanying drawings in which similar characters of reference in the several figures indicate similar parts.

Figure 1 is a rear elevation with the screening cloth belt removed to show the rollers.

Figure 2 is side view of the device.

Figure 3 is a front elevation with the screening belt removed.

Figure 4 is a plan view of the device.

Figure 5 is a section through 5—5 of Figure 4.

Figure 6 is a detail view of the screening belt and the manner of mounting.

Standard 1 may be made of angle iron or any other suitable material. The device is supported by members 2 and 3, extending from standard 1, and plates 4 and 5 secured to the upper portions of members 2 and 3 as at 6 and 7. The framework 8 upon which the device is mounted may be made of any suitable material but preferably of metal. A cloth screen 9 is attached to chains 10 and 11 by studs 12. The edge of the cloth is preferably edged with canvas tape 13.

In practice, I have found a voile, sixty by sixty-four mesh, to give satisfactory results, a single thickness of the voile being sufficient. Chains 10 and 11 ride in tracks 14 and 15 respectively.

The cream or other fluid to be filtered is fed into the device through pipe 16 which is provided with valve 17. The fluid first enters tank 18 mounted upon frame members 19 and 20 rigidly affixed to frame 8. After entering tank 18 the fluid passes through a battery of filter plates 21. The filter plates are made of wire cloth of a mesh from twenty-five to sixty. If desired, voile may also be used for some of the filter plates. I prefer to have the filter plates near the entrance

end of a coarser mesh than the filter plates near the exit end of the battery of filter plates.

Cream after passing through the battery of filter plates passes out of tank 18 through slot 22 and is distributed over cloth 9 which moves in the direction of the arrows. The cream or other fluid passes through the voile into receptacle 23 and is piped away through line 24.

Cloth 9 then passes between steel roller 25 and rubber covered roller 26. It will be readily seen that these rollers tend to force the cream back into the zone of filtration. Any cream which does not pass through the voile into container 23 is squeezed out at this point and passes into container 27 from which it is piped through line 28. The cloth screen, continuing in the direction of the arrows, is bathed with a spray of water from perforated pipe 29 fed through line 30 which is provided with valve 31.

The thoroughly wetted cloth then passes between brushes 32 and 33. Brush 32 is mounted on angle 34 and brush 33 is suspended by members 35 and 36 suspended from hooks 37 and 38 respectively. The weight of the brush is sufficient to cause it to remain in intimate contact with the moving cloth. After passing between brushes 32 and 33 the endless cloth belt 9 passes over steel roller 39, the water sprayed by spray pipe 29 being caught in pan 40. The cloth belt then passes over steel roller 41 and thence between steel roller 42 and rubber covered roller 43. Any moisture remaining in the cloth is squeezed out between rollers 42 and 43 and permitted to drop back into pan 40.

The set of rollers 25 and 26 may be adjusted by screws 44 and 45 acting on springs 46 and 47, the construction being of the typical laundry wringer type. Similarly, rollers 42 and 43 may be adjusted by screws 48 and 49 acting on springs 50 and 51, the construction of this set of rollers being identical to the construction of the other set of rollers.

The device is operated by power transmitted through motor 52 and chain 53, motor 52 being mounted on bracket 54. Roller 39 is adjustable as by screws 55, one of which is shown in Figure 2, and by the adjustment of roller 39 the tautness of the endless cloth screen 9 may be adjusted to the satisfaction of the operator.

The several rollers are journaled in suitable bushings provided in the frame as shown in the drawings.

It will be understood that changes may be made in the details of construction of my device as disclosed without departing from the spirit of

the invention as defined in the following claims.

I claim:

1. A cream filtering device comprising an endless fine mesh filter screen, rollers upon which
5 said endless screen is mounted, means for feeding fluid to said screen, filter means in said feeding means, wringing means for holding fluid within the zone of filtration and removing excess fluid from said screen, means to catch fluid passing
10 through said screen, separate means to catch fluid squeezed from said screen by said wringing means, and means for cleaning said screen after said fluid has been wrung therefrom.
2. A cream filtering device comprising an endless fine mesh filter screen, rollers upon which
15 said endless screen is mounted, means for feeding fluid to said screen, wringing means for holding fluid within the zone of filtration and removing excess fluid from said screen, means to catch
20 fluid passing through said screen, separate means to catch fluid squeezed from said screen by said wringing means, and means for cleaning said screen after said fluid has been wrung therefrom.
- 25 3. A cream filtering device comprising a frame, rollers mounted in said frame, an endless fine mesh filter screen mounted upon and rotatable upon said rollers, a filter tank including a battery of filter plates superimposed above said
30 filter screen, means for feeding fluid to said filter tank, an aperture in said filter tank for permitting filtered fluid to pass from said filter tank to said filter screen, a receptacle for collecting fluid passing through said filter screen, wringing means
35 for holding fluid within the zone of filtration and for wringing excess fluid from said filter screen, a receptacle to receive fluid wrung from said filter screen by said wringing means and means for cleaning said filter screen.
- 40 4. A cream filtering device comprising a frame, rollers mounted in said frame, an endless fine mesh filter screen mounted upon and rotatable upon said rollers, a filter tank including a battery of filter plates superimposed above said
45 filter screen, means for feeding fluid to said filter tank, an aperture in said filter tank for permitting filtered fluid to pass from said filter tank to

said filter screen, a receptacle for collecting fluid passing through said filter screen, wringing means for holding fluid within the zone of filtration and for wringing excess fluid from said filter screen, a
5 receptacle to receive fluid wrung from said filter screen by said wringing means, means for spraying water on the filter screen, brushes for cleaning said sprayed filter screen, a receptacle to receive water so sprayed on said filter screen, wringing
10 means for removing excess of such water from said filter screen and means for adjusting said wringing means.

5. A cream filtering device comprising a frame, rollers mounted in said frame, an endless fine mesh filter screen mounted upon and rotatable
15 upon said rollers, a receptacle for collecting fluid passing through said filter screen, wringing means for holding fluid within the zone of filtration and for wringing excess fluid from said filter screen, a
20 receptacle to receive fluid wrung from said filter screen by said wringing means, means for spraying water on the filter screen, brushes for cleaning said sprayed filter screen, a receptacle to receive water so sprayed on said filter screen, wringing means for removing excess of such water
25 from said filter screen and means for adjusting said wringing means.

6. A cream filtering device comprising an endless fine mesh filter screen, rollers upon which
30 said endless screen is mounted, means for feeding fluid to said screen, wringing means for holding fluid within the zone of filtration and removing excess fluid from said screen, means to catch fluid passing through said screen, and separate
35 means to catch fluid squeezed from said screen by said wringing means.

7. A cream filtering device comprising an endless fine mesh filter screen, rollers upon which
40 said endless screen is mounted, means for feeding fluid to said screen, means for holding fluid within the zone of filtration and removing excess fluid from said screen, means to catch fluid passing through said screen, and separate means to
45 catch fluid squeezed from said screen by said fluid holding means.

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