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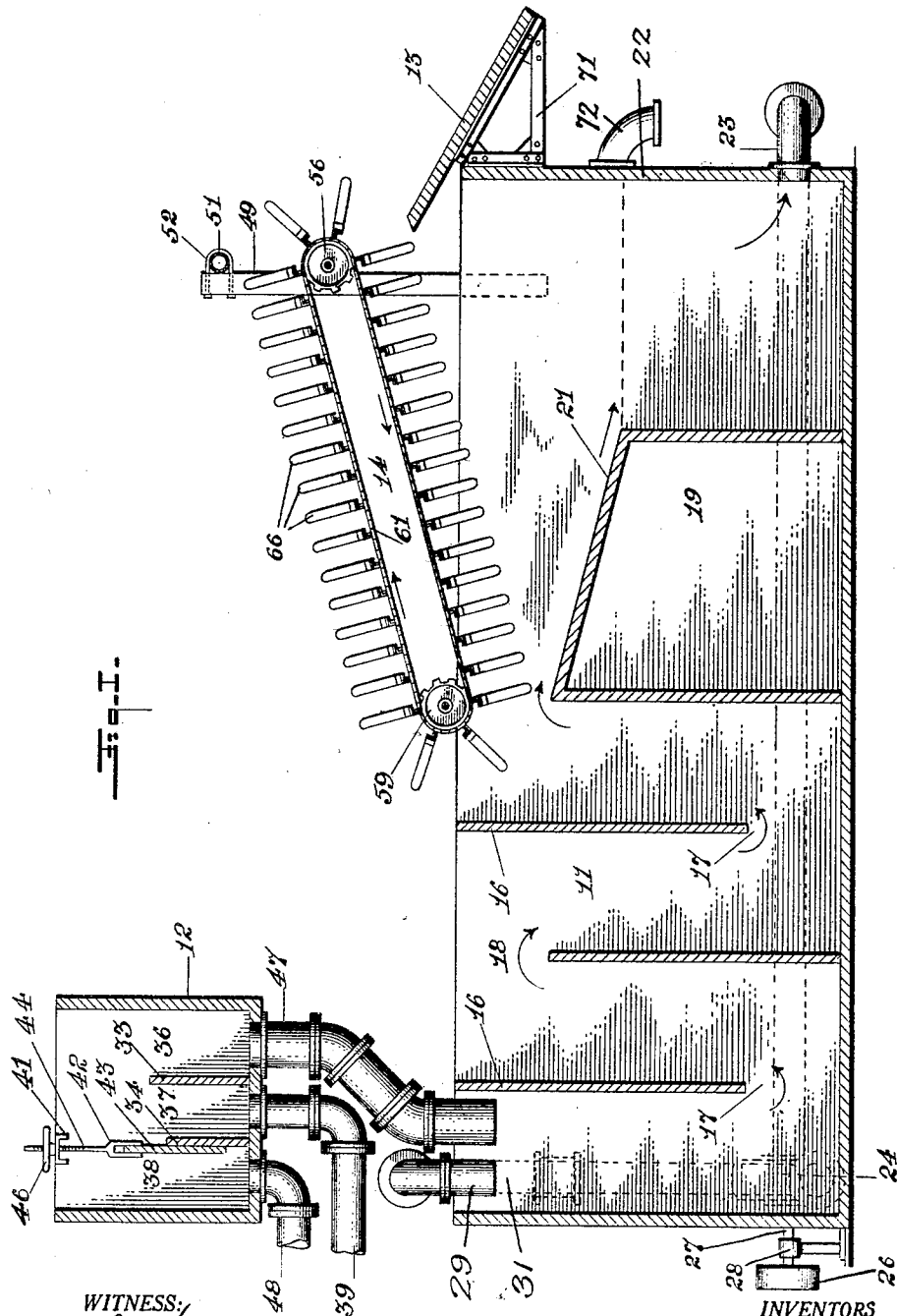
F. SCHILLING ET AL

1,829,544

SEPARATOR

Filed July 1, 1929

5 Sheets-Sheet 1



WITNESS:

W. Cook
W. H. Schilling

INVENTORS
Frederick Schilling
Charles Howard Kircoff
BY

Joshua R. H. Lott
ATTORNEY

Oct. 27, 1931.

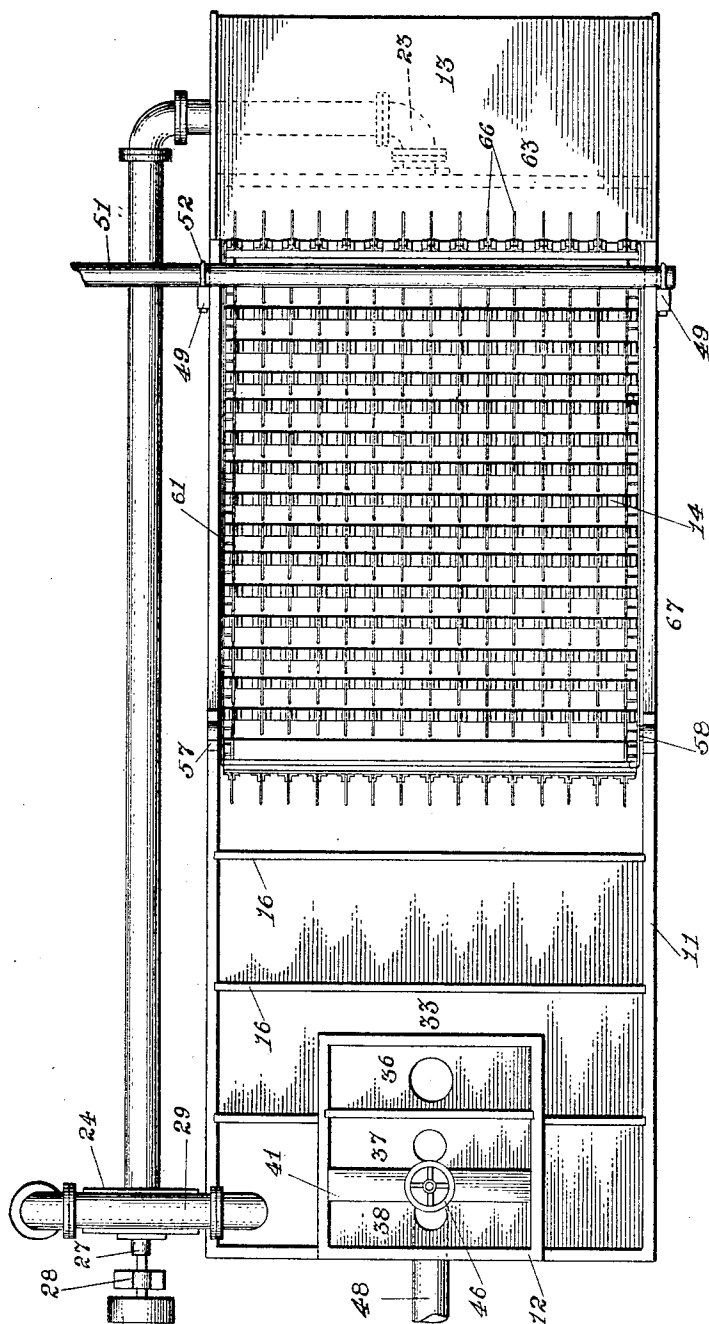
F. SCHILLING ET AL

1,829,544

SEPARATOR

Filed July 1, 1929

5 Sheets-Sheet 2



WITNESS:
W. H. Hook
W. H. Lewis

INVENTORS
Frederick Schilling
Charles Howard Kirchoff
BY
Joshua R. H. Roberts
ATTORNEY

Oct. 27, 1931.

F. SCHILLING ET AL

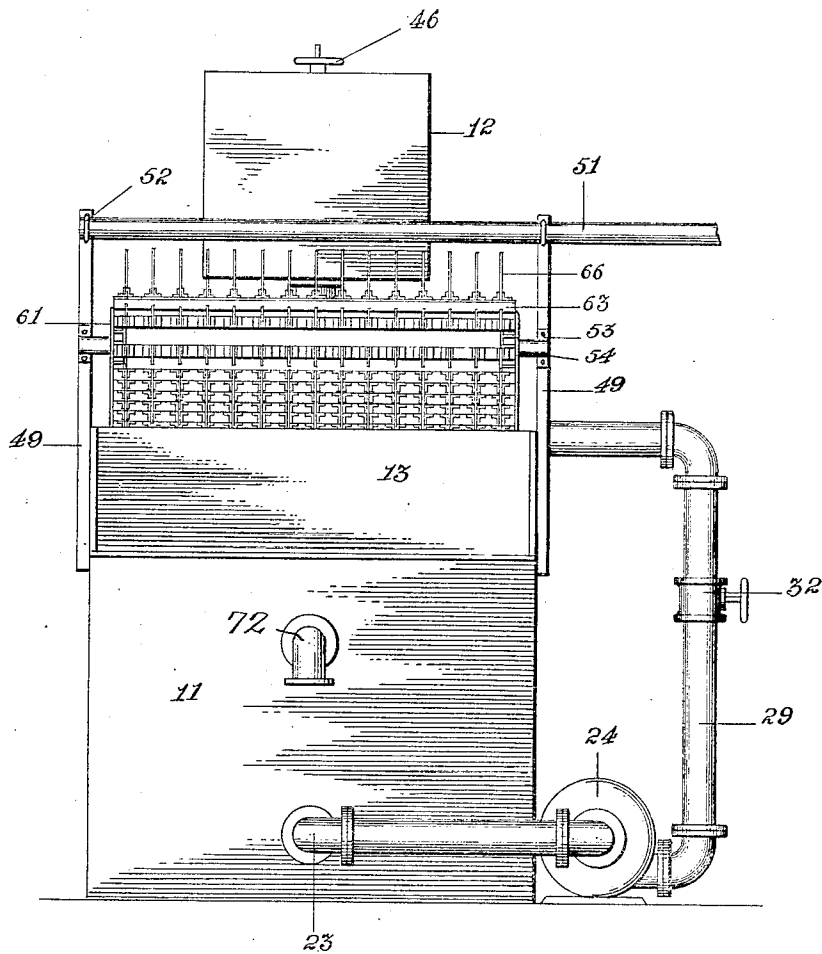
1,829,544

SEPARATOR

Filed July 1, 1929

5 Sheets-Sheet 3

Fig. 2.



WITNESS:

W. H. Cook
W. H. T. Lewis

INVENTORS

Frederick Schilling
Charles Howard Kircoaf
BY

Joshua P. H. H. H.
ATTORNEY

Oct. 27, 1931.

F. SCHILLING ET AL

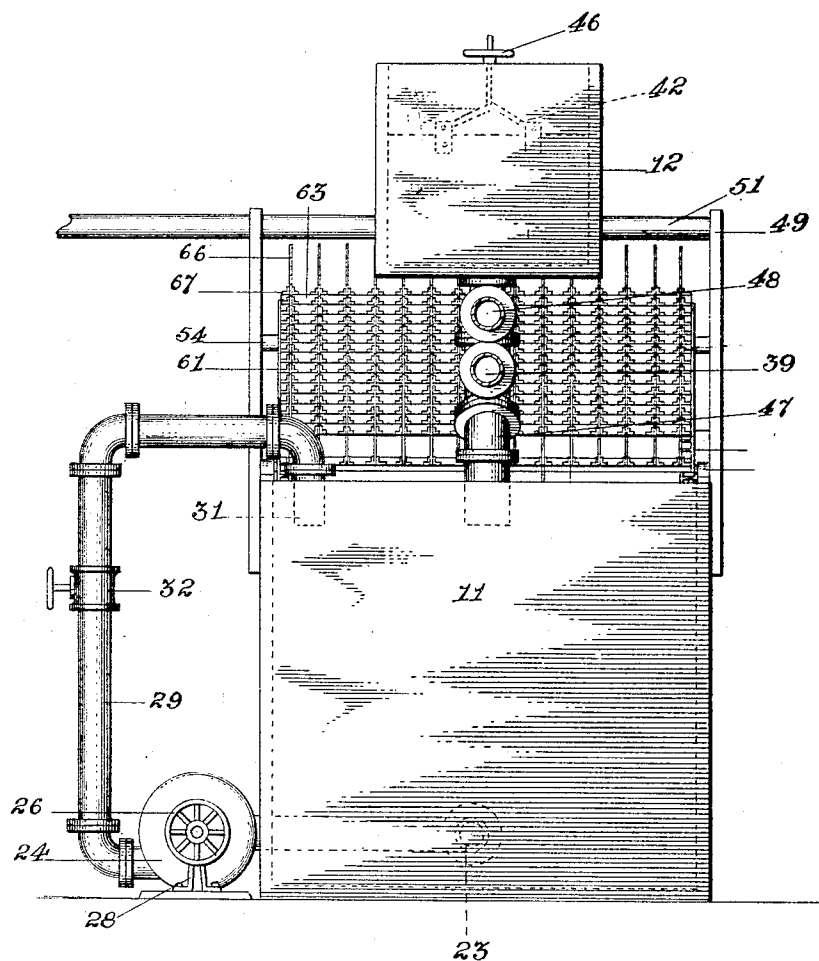
1,829,544

SEPARATOR

Filed July 1, 1929

5 Sheets-Sheet 4

Fig. 4.



WITNESS:

W. Hook
T. W. Davis

INVENTORS

Frederick Schilling
Charles Howard Kircoff
BY

Joshua P. Kott
ATTORNEY

UNITED STATES PATENT OFFICE

FREDERICK SCHILLING, OF PHILADELPHIA, PENNSYLVANIA, AND CHARLES HOWARD
KIRCOAF, OF WEST COLLINGSWOOD, NEW JERSEY

SEPARATOR

Application filed July 1, 1929. Serial No. 374,997.

This invention relates to a separator for separating fibres or threads from refuse or undesirable matter in the manufacture of paper or felt.

The machine is designed for use in a felt or, commonly called, paper mill and is intended to supersede mechanisms which are intended to accomplish the same result but which on account of their construction do not separate the materials thoroughly.

The object of this invention is to provide an improved separator for separating strands of material from what is termed in this particular art as "stock."

Another object of the invention is to provide a separator which is continuous in operation and which requires no attendants.

Another object of the invention is to provide a separator which will thoroughly separate the useable material from the "stock" without including any of the non-useable material.

According to the invention the separator has a tank which has an elevated inclined surface over which the "stock" passes and means acting continuously upon said "stock" to withdraw therefrom the useable material and to convey the same to a delivery point.

The tank may be provided with baffles for agitating the "stock" and may also be provided with an overflow box for regulating the amount of "stock" delivered to the tank and returned to the storage chest.

The drawings illustrate an embodiment of the invention and the views therein are as follows:

Figure 1 is a longitudinal sectional view showing the arrangement of parts,

Figure 2 is a top plan view,

Figure 3 is a view looking at the delivery end of the separator,

Figure 4 is a view looking at the supply end of the separator,

Figure 5 is a side view of the knife or picker and shows the arrangement for mounting the same on an endless chain, and

Figure 6 is an edge view of the knife.

Throughout the several figures, like reference characters are used for designating like parts.

The invention broadly consists of a tank 11 which receives its supply of "stock" from an overflow box 12 and which at its other end is provided with a chute 13 for receiving the collected material from the selecting and conveying apparatus 14.

The tank 11 has a series of partitions 16, some of which have their lower ends mounted on the floor of the tank while others are raised to provide a space 17 through which the "stock" must flow while the ones which are mounted on the floor of the tank provide a space 18 above the same for the same purpose so that the "stock" will be thoroughly agitated and the solids kept in suspension during the passage of the "stock" through the tank.

At a point toward the delivery end of the tank there is a box-like structure 19 which has one of its walls higher than the other so as to provide an inclined surface over which the "stock" passes.

The lower part of the delivery end 22 of the tank is provided with a return conduit 23 which extends to a pump 24 driven by means of a belt from any convenient line shafting (not shown) and connecting the pulley 26 on a shaft 27 which is mounted on the bearing pedestal 28.

The discharge side of the pump 24 is provided with a pipe 29 which is curved around so that it will discharge into the supply end of the tank, as shown at 31. This pipe 29 is provided with a gate valve 32 for regulating the flow of "stock" through the same.

Located at a position above the agitator tank 11 is the overflow box 12 which is provided with partitions 33 and 34. These partitions divide the box into three compartments 36, 37 and 38 and the felt "stock" is delivered from the chest (not shown) through the pipe 39 to the middle compartment 37.

The box is provided with an inverted channel 41 which reaches across the ends of the same and a bracket 42 is provided with a screw 44 which extends through a hole in said channel and is provided on the upper end with a hand wheel 46. This bracket is bifurcated, as shown in Figure 1, and the

bifurcated fingers are provided between the same with a gate 43 which is raised and lowered by means of turning the hand wheel 46.

5 With this gate the amount of "stock" delivered to the agitator tank 11 can be regulated to a nicety and may, when desired, be entirely cut off.

10 In the bottom of the compartment 36 there is a pipe 47 which delivers the felt "stock" to the front end of the tank while at the bottom of the compartment 38 there is a pipe 48 which carries the surplus which flows over the gate 43 back to the chest.

15 Through the adjustment of the gate 43 all the "stock" delivered into the chamber 37 from the pipe 39 may be passed into the compartment 36 where it passes through the pipe 47 into the agitator tank 11 or, the gate 43
20 may be lowered so that all of the "stock" delivered into the compartment 37 is returned by way of the compartment 38 and pipe 48 to the chest. It necessarily follows that any variation between these two points can be
25 obtained by adjustment of the gate through the medium of the hand wheel 46.

At a position near the delivery end of the tank and on each side thereof is an upright support 49 which supports a spray pipe 51
30 by means of the U-bolts 52. These supports are also provided with bearing brackets 53 which support a shaft 54 and which shaft is provided at the points near to where it enters the bearings with a sprocket 56.

35 At a point near the center of the length of the tank each sidewall thereof is provided with a bearing bracket 57 which is identical with the brackets 53 and these brackets also support a shaft 58 which is in like manner
40 provided with sprockets 59.

Either of the shafts 54 or 58 may be provided with a pulley (not shown) for driving the conveyor from a line shaft.

45 The aligned sprockets are each provided with a chain 61 and each chain has interspersed throughout its length and equally spaced from each other, special links 60 each of which has an upright extension or
50 lug 62 formed integrally therewith.

50 Angle bars 63 extend across the width of the tank between the chains 61 and are fastened to the opposed lugs 62 on the chains by means of the bolts 64 so that the number of bars on the endless chain corresponds to
55 the number of special links 60 composing the same.

Each of the bars 64 is provided with a plurality of knives or blades 66 which at their inner ends are held between pairs of angle
60 plates 67 by the bolts 68 in the outwardly extending legs of the plates while the inner legs of the plates lie flat on the outer flange of the bar 63 and are fastened thereto by means of the screws 69.

5 The conveying apparatus 14 operates in a

direction shown by the arrows thereon in Figure 1.

The supply end 22 of the tank is provided with a bracket 71 of any suitable form for supporting the chute or slide plate 13 which
70 receives and directs the collected strands of fibre or thread. For the purpose of maintaining a constant level in the tank an overflow 72 is provided through which the excess is discharged to such position as may
75 be elected. The dotted line at Figure 1, indicates the level of the stock maintained by this overflow.

The operation of the machine is as follows:
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Felt is usually made up from old rags, fabric tires and all materials containing threads and this is usually cut up, agitated and precipitated into liquid, etc., and passed into a chest in the form of a pulp.
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From this chest it is pumped through the pipe 39 into the middle compartment 37 of the overflow box 12. From this compartment 37 it flows over the partition 33, into the compartment 36 and thence through the pipe 47 into the front end of the agitator tank 11, the gate 43 regulating the amount which will flow over the partition 33 as formerly explained.
90

After entering the tank the "stock" passes under the first baffle 16, then over the succeeding baffle and continues through all the baffles in this manner, thereby constantly agitating the pulp or the fibre in the liquid, and thereby holding it in suspension.
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As the "stock" passes over the top of the box 19 and before running down the inclined surface 22, it is met by the knives or blades 66 which are constantly moving in a direction shown by the arrows and which collect
100 the threads or fibres on the sharp edges thereof and convey them to a point directly under the spray pipe 51.

When the strands are received by the knives they are wet and will adhere to the knives but when they have reached a point at the upper forward travel of the chains 61, they will be quite dry and will have a tendency to stick to the blades. However, at this point they are sprayed by water from the pipe 61 and as the knives pass around the upper sprockets 56 and their blades are thrown downward. The strands will slide therefrom assisted by the water and will fall onto the chute 13 which may direct the strands
105 onto an endless conveyor or other means, or into a suitable container.

Small pieces of rubber, dirt and other non-useable ingredients will flow down over the inclined surface 21 and into the bottom of the tank and this sludge must be removed from the tank from time to time as it continually piles up therein.
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The "stock" and, of course, some of the objectionable particles will be carried back
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through the return conduit 23 and forced into the receiving end of the tank through the pump 24.

Of course, the separator illustrated may be modified and changed in various ways without departing from the invention herein set forth and hereinafter claimed.

We claim:

1. A separator for felt stock comprising a tank, means within the tank to cause the stock to flow substantially vertically upwardly, and fibre removing means engaging the stock at the limit of its upward flow.

2. A separator for felt stock comprising a tank, means within the tank to cause the stock to flow upwardly, fibre removing means engaging the stock at the limit of its upward flow, said removing means comprising an inclined endless carrier having its lowest reach immediately over the limit of upward flow, and members mounted on the carrier dipping into the stock.

3. A separator for felt stock comprising a tank, means within the tank to cause the stock to flow upwardly, fibre removing means engaging the stock at the limit of its upward flow, said removing means comprising an inclined endless carrier having its lowest reach immediately over the limit of upward flow, and blades mounted on the carrier with their beveled edges in advance dipping into the stock.

4. A separator for felt stock comprising a tank, means within the tank to cause the stock to flow upwardly, fibre removing means engaging the stock at the limit of its upward flow, said removing means comprising an inclined endless carrier having its lowest reach immediately over the limit of upward flow, and blades mounted on the carrier with their beveled edges in advance dipping into the stock and moving in opposition to the flow.

5. A separator for felt stock comprising a tank, a baffle within the tank, means to cause the stock to flow upwardly along and over the top of the baffle, and fibre removing means engaging the stock as it turns to overflow the baffle.

6. A separator for felt stock comprising a tank, a baffle within the tank, means to cause the stock to flow upwardly along and over the top of the baffle, fibre removing means engaging the stock as it turns to overflow the baffle, said removing means comprising an inclined endless carrier having its lowest reach immediately over the baffle, and members mounted on the carrier dipping into the stock.

7. A separator for felt stock comprising a tank, a baffle within the tank, means to cause the stock to flow upwardly along and over the top of the baffle, fibre removing means engaging the stock as it turns to overflow the baffle, said removing means comprising an inclined endless carrier having its lowest

reach immediately over the baffle, and members mounted on the carrier dipping into the stock and moving in opposition to the flow.

8. A separator for felt stock comprising a tank, a baffle within the tank, means to cause the stock to flow upwardly along and over the top of the baffle, fibre removing means engaging the stock as it turns to overflow the baffle, said removing means comprising an endless carrier having its lowest reach immediately over the baffle, bars carried by the endless carrier, and blades mounted upon the bars adapted to dip into the stock.

9. A separator for felt stock comprising a tank, a baffle within the tank, means to cause the stock to flow upwardly along and over the top of the baffle, fibre removing means engaging the stock as it turns to overflow the baffle, said removing means comprising an inclined endless carrier having its lowest reach immediately over the baffle, bars carried by the endless carrier, blades mounted upon the bars with their beveled edges in advance and moving in opposition to the flow, a receiving deck over which the blades decline, and means to loosen the fibre from the blades in step with said declination.

In testimony we have signed our names to this specification.

FREDERICK SCHILLING.

CHARLES HOWARD KIRCOAF.

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