Sept. 11, 1928. 1,684,305

F. W. BRACKETT

SCREENING APPARATUS

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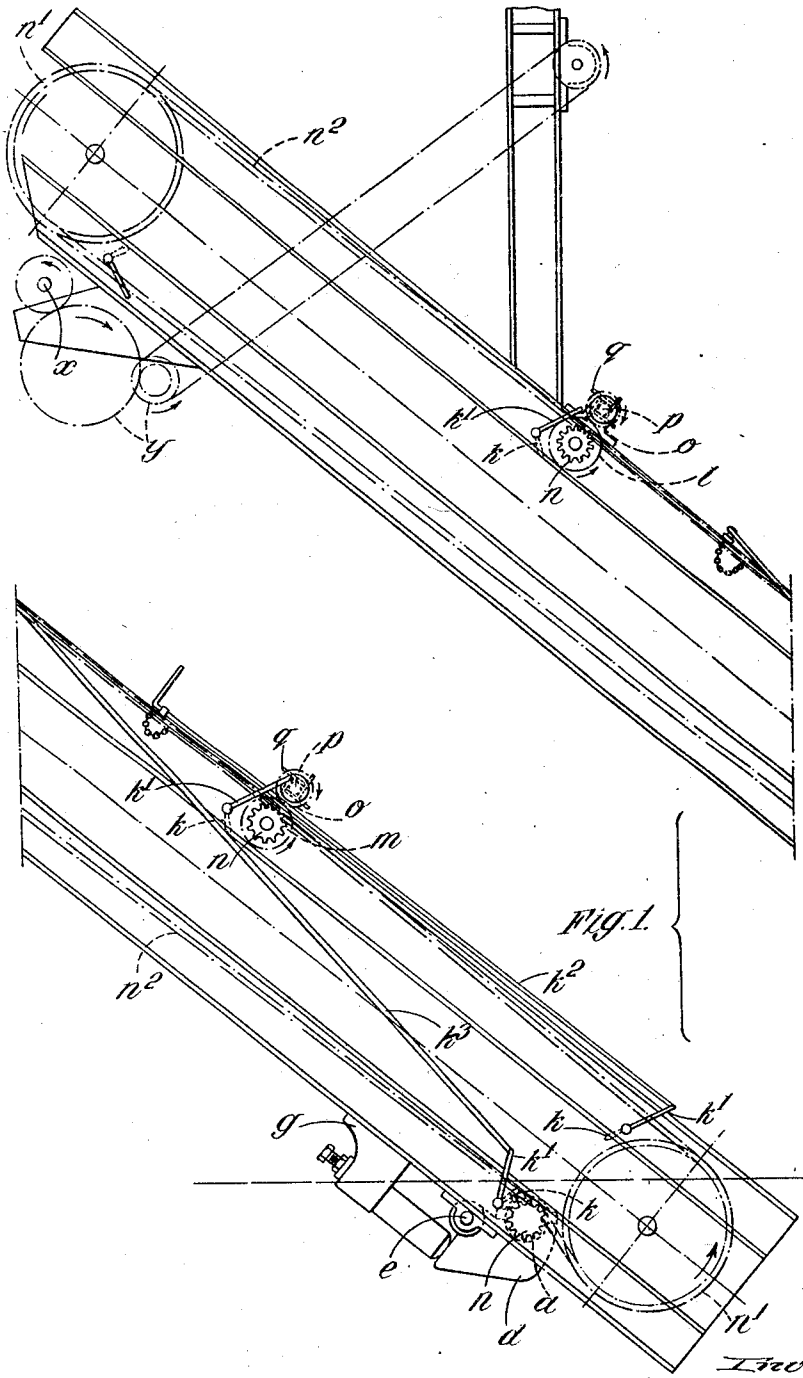


Fig. 1.

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Fig. 2.

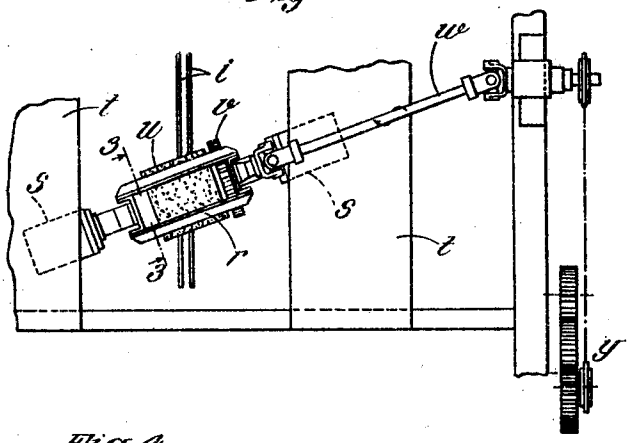


Fig. 4.

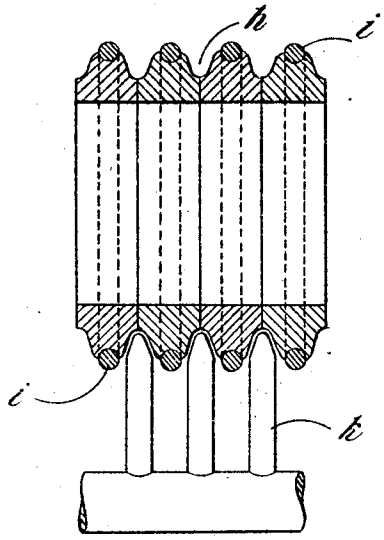
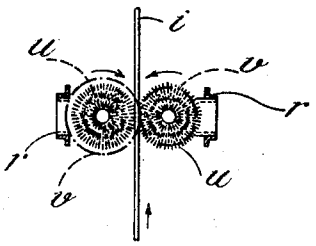


Fig. 3.



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Fig. 5.

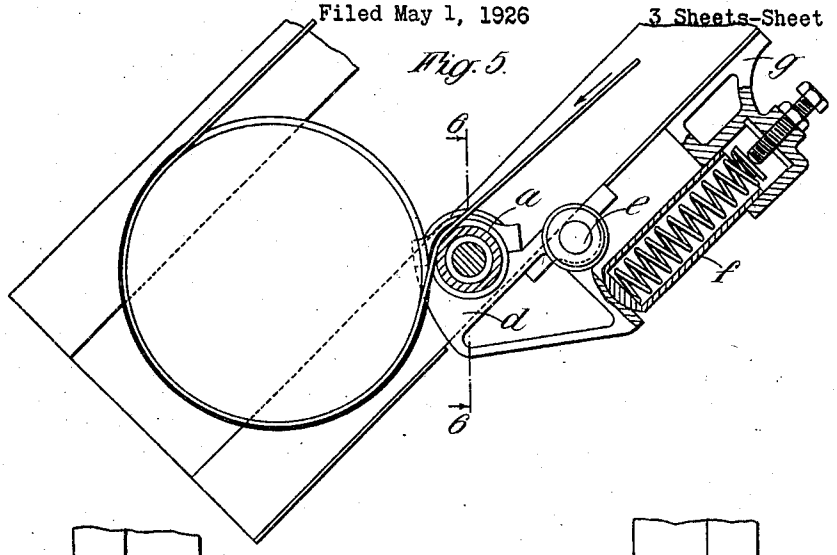


Fig. 6.

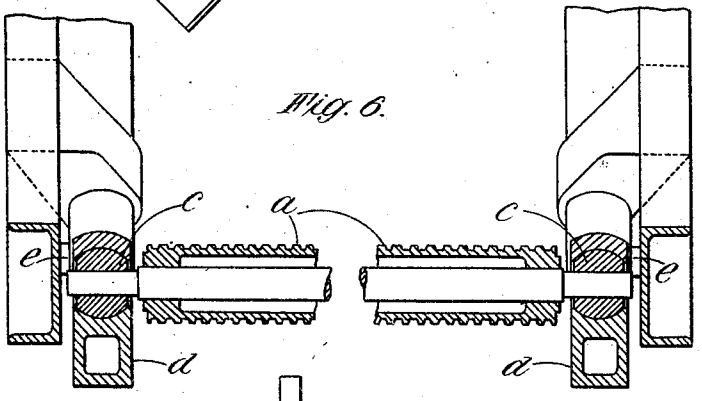
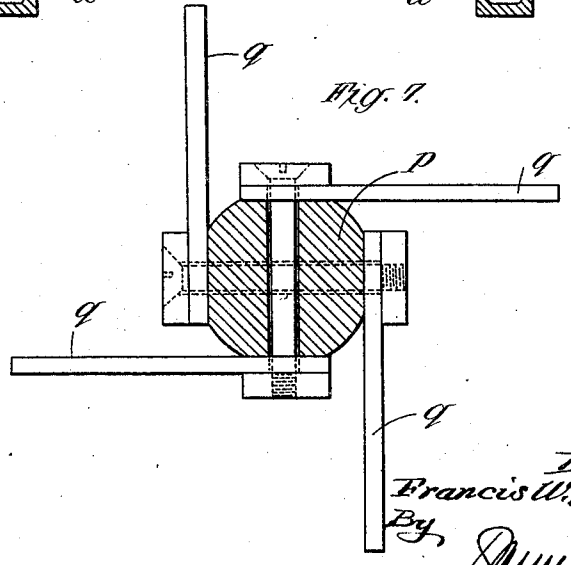


Fig. 7.



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Patented Sept. 11, 1928. 1,684,305

UNITED STATES PATENT OFFICE.

FRANCIS WHITWELL BRACKETT, OF COLCHESTER, ENGLAND.

SCREENING APPARATUS.

Application filed May 1, 1926, Serial No. 106,058, and in Great Britain December 28, 1925.

This invention relates to an improvement in or a modification of that described in U. S. Patent No. 1,585,461, dated May 18, 1926.

The invention described in that specification relates to improvements in screening apparatus of the kind in which the screen is an endless band made up of a continuous rope, or its equivalent, travelling over drums in such a manner that it forms parallel lengths close enough to each other to form a screening surface.

The present invention relates to further improvements having for their object the prevention of clogging of the screen.

According to said patent a roller is grooved correspondingly with the lower drum and adapted to rotate in close proximity with this drum so as to keep the rope in the grooves of the drum.

It has been found that in the event of a mass of material collecting on any of the descending stretches of wire constituting the screen, this mass is liable to wedge itself between the wire and the roller.

According to this invention the ill-effect of this wedging action is diminished by constructing the guide roller of independent grooved pulleys.

Another method of avoiding trouble due to this wedging action consists in mounting the shaft of the roller flexibly in self-aligning bearings, so that pressure between the wire and the roller causes the latter to move away from the wire thus allowing the mass of material to pass.

A further improvement consists of grooves in the guide roller, between the previously existing grooves in which the wire runs and deeper than the latter grooves. When the roller is made up of separate pulleys, the latter are so shaped that the deep groove is formed when two pulleys are contiguous. Since material, particularly of a fibrous nature, tends to place itself with its longest dimensions longitudinally of the roller, it extends across the said deep grooves and has less surface to which to adhere than it would have if the roller presented a more even surface. Furthermore, by providing a comb adapted to be turned on an axis so as to enter the deep grooves the matter extending across them is readily removed.

The upper drum may drive the lower drum through suitable gear, such as a chain, so that dependence is not placed on the wire as a driving agent.

It has been found that one or more positively driven guide rollers for the ascending stretches of wire help to prevent clogging of the screen and when such rollers are used it becomes convenient to drive the lower drum and also the several guide rollers by means of a chain drive from the upper drum. Since matter is liable to be dislodged from the screen at the places where the wires are on the guide rollers, it is preferable to provide devices for preventing this dislodged matter from sliding back on the screen; an example of a suitable device will be described hereinafter.

A further improvement is designed to remove matter, particularly of a fibrous nature, which clings to the wire that ascends to form the bight for the tensioning weight as described in the aforesaid patent. For this purpose revolving brushes driven from the shaft that drives the upper drum are used as will presently be explained.

In the accompanying drawings, Fig. 1 is a side elevation of a screen having the improvements according to this invention; Fig. 2 is a part end elevation; Fig. 3 is a section on line 3—3 of Fig. 2; Figs. 4–7 are drawn to an enlarged scale, Fig. 4 being a part axial section through a guide roller; Fig. 5 a longitudinal section through the lower part of the screen, Fig. 6 a section on line 6—6 of Fig. 5 and

Fig. 7 a section through a detail.

The guide roller *a* which keeps the wires in the grooves of the lower drum *b* is preferably constituted of a number of pulleys similar to the upper and lower drums described in said Patent No. 1,585,461. Whether so constituted or not, it is mounted to turn in spherical bearings *c* (Fig. 6), each of which is carried by one arm of a bell-crank lever *d* pivoted to the frame of the screen at *e*. The roller is maintained in engagement with the stretch of wire by springs *f*, each of the springs being in compression between a bracket *g* on the frame and the other arm of the bell-crank lever.

The guide rollers *a*, *l*, *m* have deep grooves *h* between the grooves in which the wire *i* runs, as shown in Fig. 4, wherein the guide roller is shown as consisting of separate pulleys having their peripheries so shaped as to form the said deep grooves.

Fig. 4 also illustrates a comb *k* entering the grooves *h*. In Fig. 1 such a comb is shown as mounted to turn in bearings in the frame

and as provided with a lever handle k' by which it may be so turned, in close proximity to each of the drums, to the guide roller a and also to the further guide rollers l and m presently to be described. By turning handle k' periodically the teeth of the comb can be caused to enter the grooves, as indicated in Fig. 4, of the guide roller and between the stretches of wire on the drum. In those cases where the combs are beneath the water level there are provided suitably guided rods k^2, k^3 connected with the handles k' so that the latter can be manipulated from above the water level.

The guide rollers l and m are constructed similarly to roller a but are mounted in ordinary bearings in the frame. Each of the guide rollers a, l and m carries a chain wheel n and the shafts of the upper and lower drums also carry chain wheels n'. All these chain wheels are in the same plane and are driven by the same chain n^2.

The rollers l and m drive, through suitable gear o, shafts p mounted transversely in bearings on the frame and carrying rubber flaps q (Fig. 7) adapted to wipe the screen as the shaft rotates, for the purpose of preventing material dislodged from the screen from sliding back into the sump, as already referred to.

The screen is shown as formed of two wires, as in that described in the said patent, so that there are two wires i ascending to form tensioning bights, as shown in Fig. 2. The arrangement for cleaning the wires at this place comprises a frame r having lugs s adapted to enter between flanges of the uprights t where they can be adjustably fixed so that the angle which frame r makes with uprights can be varied. In the frame r are journalled two brushes u geared together by wheels v of different diameter, one of which is driven through a universal joint by shaft w, itself driven through a universal joint from the counter-shaft x of the main drive through gear y.

The two brushes u attacking the wires at different speeds, have a thorough cleaning action, and their angular adjustability permits different portions of the brushes to be brought into action to compensate for wear.

Having thus described the nature of the said invention and the best means I known of carrying the same into practical effect, I claim:—

1. A screen of the kind described comprising a lower grooved drum, an upper grooved drum, a continuous rope wound in the grooves of the two drums and at least one guide roller having peripheral grooves alternately of different depth and of which the shallow grooves are each adapted to engage a length of the said rope.

2. A screen of the kind described comprising a lower grooved drum, an upper grooved drum, a continuous rope wound in the grooves of the two drums and guiding means for said rope comprising a shaft and a number of peripherally grooved pulleys mounted to turn on the shaft independently of each other and each adapted to engage a length of the said rope, contiguous pulleys having complemental depressions at their abutting ends forming grooves of greater depth than the grooves in the peripheries of said pulleys.

3. A screen of the kind described comprising an upper grooved drum and a lower grooved drum, a continuous rope wound in the grooves of the two drums, a frame in which the said drums are mounted, bearings in the frame near one of said drums, a comb mounted to turn in the said bearings and means for rocking the comb to cause its teeth to enter between the stretches of the said rope.

4. A screen of the kind described comprising a lower grooved drum, an upper grooved drum, a continuous rope wound in the grooves of the two drums, at least one guide roller having peripheral grooves of which alternate grooves are shallower than the remaining grooves and each adapted to engage a stretch of the said rope, a frame in which the said drums and roller are mounted, bearings in the frame adjacent the said rollers, a comb mounted to rock in the said bearings and means for rocking the said comb to move its teeth into the deeper grooves of said guide roller.

5. A screen of the kind described comprising an upper grooved drum, means for driving said drum, a lower grooved drum, a continuous rope wound in the grooves of the drums, at least one guide roller for the ascending stretches of the said rope, gearing for driving both the lower drum and the guide roller from the upper drum, a shaft mounted above the guide roller, means for driving the said shaft from the guide roller and flaps carried by the said shaft and adapted to wipe the ascending stretches of the said rope.

6. A screen of the kind described comprising a frame, an upper grooved drum and a lower grooved drum mounted in the frame, a continuous rope wound in the grooves of the two drums and of length greater than is necessary to fill all the grooves, a vertical frame erected on the aforesaid frame, guide pulleys carried by the said vertical frame and engaging said rope to cause the excess length of rope to ascend substantially vertically and to depend as a bight, and revolving brushes adapted to brush the said excess length of rope.

In testimony whereof I have signed my name to this specification.

FRANCIS WHITWELL BRACKETT.