J. A. McPHAYDEN.

FLEXIBLE CONDUIT FOR SIFTING MACHINES, &c.

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1,101,561.

Patented June 30, 1914.

Fig. 1.

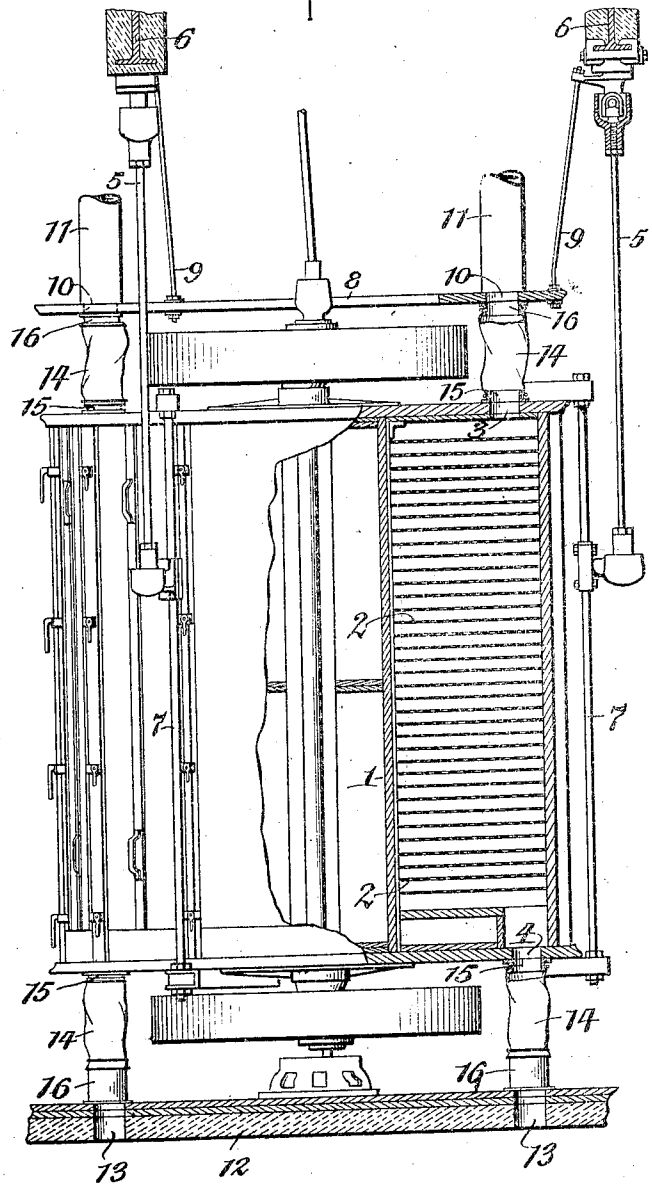


Fig. 2.

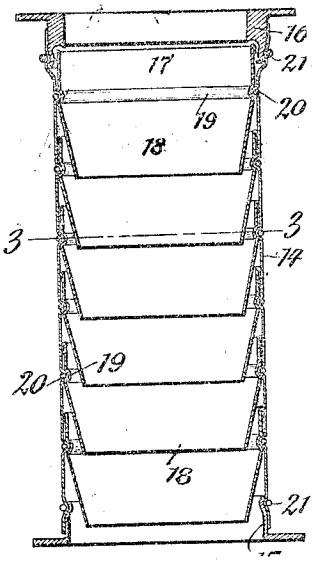
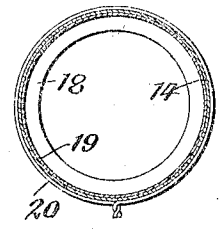


Fig. 3.



WITNESSES

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FLEXIBLE CONDUIT FOR SIFTING-MACHINES, &c.

1,101,561. Specification of Letters Patent. **Patented June 30, 1914.**

Application filed July 28, 1913. Serial No. 781,458.

To all whom it may concern:

Be it known that I, JOHN A. McPHAYDEN, a citizen of the United States, residing at Silver Creek, in the county of Chautauqua and State of New York, have invented new and useful Improvements in Flexible Conduits for Sifting-Machines, &c., of which the following is a specification.

This invention relates to a flexible conduit which is more particularly designed for use in conducting flour or other granular material from a stationary source of supply to a horizontally rotating or gyrating sifting box, and to conduct the separated material from the sifting box to a stationary place intended to receive the same. This flexible conduit is, however, capable of use in other places and kinds of machines in which similar conditions exist.

Heretofore it has been customary to employ pliable woven or textile tubes for conducting the material to and discharging the same from the movable sifting box but these are objectionable for the reason that they wear out very rapidly and require frequent renewal, thereby involving not only considerable expense for maintenance but also necessitating stopping of the machine an objectionable length of time for making repairs of these tubes.

It is the object of this invention to provide simple, efficient and inexpensive means for protecting the inner side of these flexible tubes so as to greatly prolong the life of the same and not only necessitate less frequent repair and avoid undue stoppage of the machine, but also reducing the liability of leakage of dust through the tubes.

In the accompanying drawings: Figure 1 is a vertical section of a sifting machine provided with my improved conduits. Fig. 2 is a vertical longitudinal section, on an enlarged scale, of one of these conduits. Fig. 3 is a horizontal section of the same taken in line 3—3, Fig. 2.

Similar characters of reference indicate corresponding parts throughout the several views.

The sifting machine which is shown in the drawings as an example of one of the various applications of my invention comprises a horizontally rotating or gyrating box or chamber 1 which contains a plurality of horizontal sieves or screens 2, a plurality of inlet openings or passages 3 at its top or upper end through which the material to be sifted is introduced into the sifting box, and a plurality of outlet openings or passages 4 in the bottom or lower end thereof through which the separated material is discharged from the sifting box.

Various means may be provided for horizontally rotating or gyrating the sifting box and while thus operated the latter may be movably supported in various ways for instance by means of a plurality of upright hangers 5 which are connected at their upper ends to overhead beams 6 or similar supports while their lower ends are connected with rods 7 mounted on the sides of the sifting box.

8 represents a stationary platform arranged horizontally above the sifting box and suspended by means of fixed hangers 9 from the overhead beams and provided with a plurality of delivery openings 10 to which the flour or other material to be sifted is delivered by means of spouts 11 from any suitable source of supply. Below the sifting machine is arranged the stationary floor 12 which is provided with a plurality of receiving openings 13 through which the material passes which is discharged from the lower end of the sifting box and delivered to any suitable place. Each of the upper inlet openings of the sifting box is connected with one of the supply passages of the platform and each of the outlet openings of the sifting box is connected with one of the receiving passages of the floor by a flexible conduit which embodies my invention and which is constructed as follows: 14 represents an outer tube of pliable or flexible material such as woven or textile fabric. This outer tube may be secured at its opposite ends to the sifting box and to the stationary member containing the respective openings which are to be connected in any suitable manner but preferably by means of externally grooved collars 15, 16 secured respectively to the sifting machine and the stationary member 8 or 12 around the openings of these members, and tie or retaining bands 21 whereby the end portions of the outer tube are securely fastened to the outer sides of the companion collars 15, 16. In order to protect the inner side of each of these outer tubes from the wearing effect of the flour or other granular material which is constantly flowing through the same a protec-

tive lining is provided for each of these tubes which preferably comprises a plurality of short tubular sections each of which is connected by a telescopic joint with an adjacent section. These sections may be constructed of any suitable material but sheet metal such as tin is preferred on account of its low cost and durability. Each of these lining sections is constructed to form an upper enlarged portion 17 which is preferably of cylindrical form and a lower narrow portion 18 which is preferably of downwardly tapering conical form. In the assembled condition of the several lining sections the lower narrow end of one section projects downwardly into the large upper end of another lining section so that the material in flowing downwardly through the flexible conduit is conducted successively from one lining section to another without coming in contact with the outer textile tube. Inasmuch therefore as the outer tube is by this means relieved from wear and the inner lining sections are capable of resisting wear, the life of the conduit is greatly extended so that less frequent renewals of the same and fewer stoppages of the machine are necessary and the cost of maintenance is also very materially reduced.

Each of the lining sections may be secured to the inner side of the outer flexible tube in various ways so as to hold the same in spaced relation to adjacent lining sections and also permit the several lining sections to articulate so that one end of the flexible conduit is free to move laterally relative to the other end as the sifting box gyrates or rotates with reference to the fixed member with which it is connected by the flexible conduit. The preferred means for thus connecting each lining section with the companion flexible outer tube which are shown in the drawings comprise an annular inwardly projecting bead 19 formed on the lining section at the junction between its upper large and lower small part, and a retaining ring or band 20 which is preferably constructed of a piece of wire and which engages with the outer side of the pliable outer tube and has its ends twisted or fastened together so that the outer tube is drawn into the bead and held in place therein. By this means the inner side of the outer tube is effectively protected against wear and a flexible conduit is provided which connects the movable sifting box with a passage in a relatively stationary member and is free to follow the movements of the sifting box without liability of wearing unduly.

I claim as my invention:

1. A flexible conduit comprising a pliable outer tube, and a protective lining arranged within said tube and composed of a plurality of tubular sections each of which is connected by a telescopic joint with an adjacent section and also connected with said pliable outer tube so as to be held out of contact with adjacent tubular sections.

2. A flexible conduit comprising a pliable outer tube, a protective lining arranged within said tube and composed of a plurality of tubular sections each of which is connected by a telescopic joint with an adjacent section and means for connecting each protective section with the adjacent part of said outer tube.

3. A flexible conduit comprising a pliable outer tube, a protective lining arranged within said tube and composed of a plurality of tubular sections each of which is connected by a telescopic joint with an adjacent section and means for connecting each protective section with the adjacent part of said outer tube, comprising an inwardly projecting annular bead formed on each protective section and adapted to receive the adjacent part of said outer tube, and a retaining ring engaging with the outer side of said tube and holding the same in said bead.

4. A flexible conduit comprising a pliable outer tube, a protective lining arranged within said tube and composed of a plurality of tubular sections each of which is connected by a telescopic joint with an adjacent section, each of said sections being of large cylindrical form at one end and of small tapering form at its other end, and the small end of one section projecting into the large end of another section and the large end of each section being connected with said outer tube.

Witness my hand this 14 day of July 1913.

JOHN A. McPHAYDEN.

Witnesses:
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