No. 735,731. PATENTED AUG. 11, 1903.

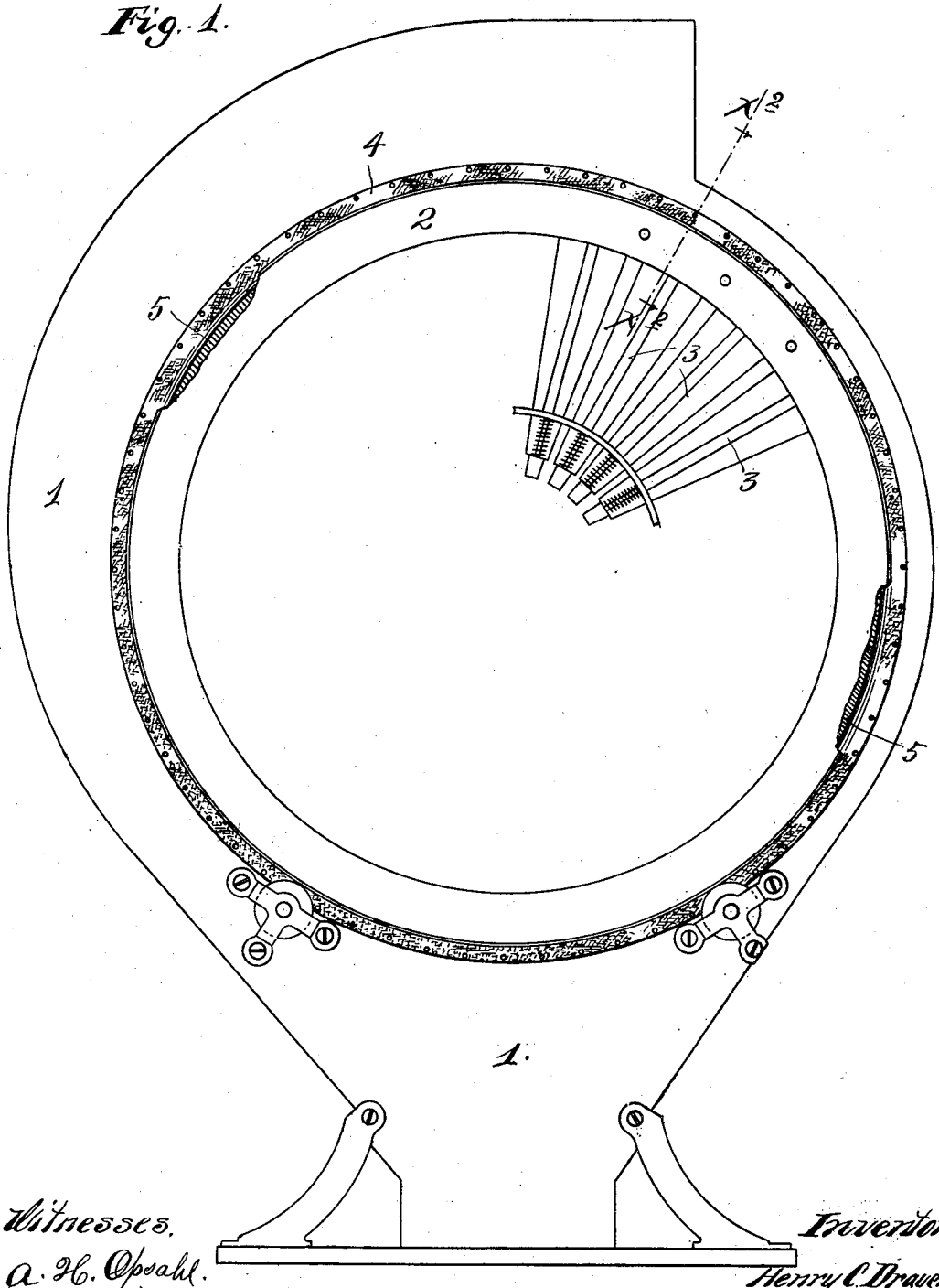
H. C. DRAVER.

DUST PROOF JOINT PACKING FOR DUST COLLECTORS, &c.

APPLICATION FILED APR. 22, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
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E. H. Kellner

Inventor.
Henry C. Draver.
By his Attorneys.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

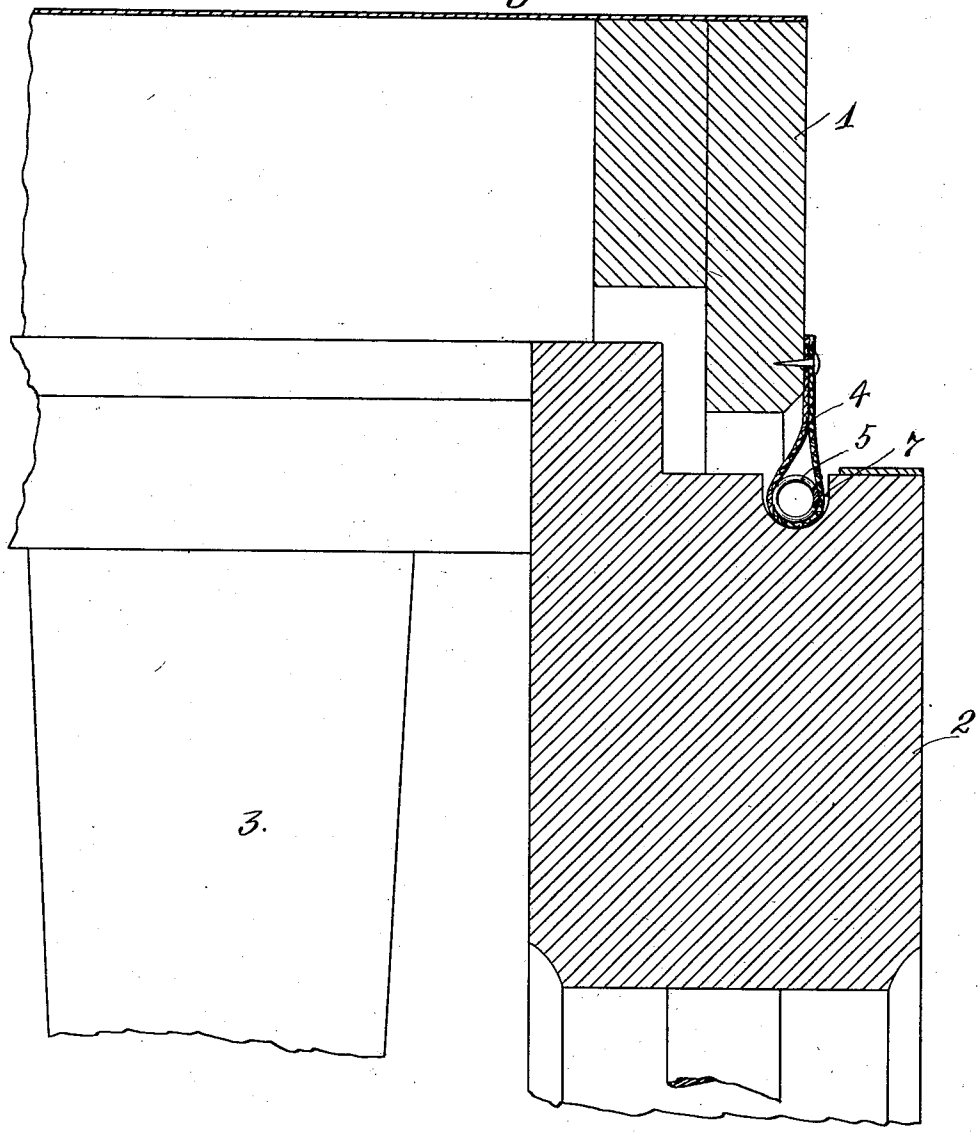
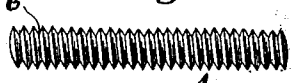


Fig. 3



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Fig. 4.



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No. 735,731. Patented August 11, 1903.

UNITED STATES PATENT OFFICE.

HENRY C. DRAVER, OF RICHMOND, INDIANA.

DUST-PROOF JOINT-PACKING FOR DUST-COLLECTORS, &c.

SPECIFICATION forming part of Letters Patent No. 735,731, dated August 11, 1903.

Application filed April 22, 1902. Serial No. 104,129. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. DRAVER, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Dust-Proof Joint-Packing for Dust-Collectors, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved dust-proof packing for the joints between elements subject to dust-laden air under pressure.

The invention is especially designed for use on dust-collectors of the balloon type to secure an efficient packing for the joints between the rotary drum and the casing or stationary frame in which or on which the drum revolves. In this class of dust-collectors the collecting tubes or pockets or other forms of filtering media are carried by the drum and the filtering media becomes subject to the dust-laden air under pressure. The dust is collected on one side of the filtering-cloths and the cleaned air passes out into the atmosphere. Hence the joints between the drum and the casing or framework are also subject to the dust-laden air under pressure and unless properly packed the dust will escape into the room. Great difficulty has been experienced in securing a reliable packing. Sheepskin has been most generally employed; but this soon becomes defective from rapid deterioration under the wear and tear of the service. The hair of the sheepskin will wear off unevenly and soon afford openings through which the dust can escape. Moreover, it is difficult to fasten the sheepskin strips sufficiently tight to the joint-surfaces.

My invention is designed to meet the above-noted conditions by the provision of a packing which is cheap, efficient, and durable.

To this end my invention consists of the packing having the novel features hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings as applied to a dust-collector of the balloon type, wherein like notations refer to like parts throughout the several views.

In said drawings, Figure 1 is a view, partly in full lines and partly in diagram, showing a dust-collector in end elevation, with some parts removed and some parts broken away, with my improved packing shown in working position. Fig. 2 is a detail in radial section on the line x^2 x^2 of Fig. 1, with some parts broken away. Fig. 3 is a detail showing a portion of the helical spring and the connecting-screw for uniting the ends of the same, and Fig. 4 is a detail showing the connecting-screw detached.

The numeral 1 represents a scroll-like casing in which is mounted the rotary drum 2, carrying the collecting-tubes 3 or other filtering media. The casing 1 is of a form designed to serve as a preliminary collector for precipitating the heavy particles of dust before the air enters the collecting-pockets 3. The collecting pockets or tubes 3 are closed at their inner ends, but open at their outer ends for receiving the dust-laden air from the surrounding air-trunk afforded by the casing 1. The dust-laden air is of course supplied to the casing 1 under pressure. The pockets 3 stand exposed in the open atmosphere.

From the foregoing statements it is of course obvious that the joints between the casing 1 and the rotary drum 2 are subject to the dust-laden air under pressure. Hence these joints must be packed, or otherwise the dust would escape into the room. I have shown my improved packing as applied to these joints. For this purpose I show a sheath 4, a helical spring 5, and a connecting-screw 6. The joint-surface of the drum 2 is also shown as provided with an annular groove or packing-seat 7. The sheath 4 is composed of flexible dust-impervious material. I have found canton-flannel to be the best material. The sheath 4 is made from this canton-flannel with the nap side of the flannel outermost. In the sheath 4 I place the helical spring 5 and unite the ends thereof by the connecting-screw 6. The screw 6 is simply a headless plug with screw-threads of substantially the same pitch as the coils of the spring, and by applying the same as shown in Fig. 3 may be made to connect the ends of the spring and to draw the same as closely together as may be desired. When the ends of the spring 5 are connected to the screw 6, the

helical spring in respect to its form becomes practically endless, and the spring action is universal. Otherwise stated the spring yields in every direction. The spring having thus been placed within the sheath 4, the sheath-mouth is closed and the packing is sprung into position on the seat or groove 7 of the drum. The sheath 4 has sufficient cross dimension to permit the edges of the sheath-stock or flange of the sheath to be made fast to the casing 1, while permitting the spring to clamp the back or body portion of the sheath tightly against the walls of the groove or seat 7 in the drum. When the packing has thus been applied, as shown in Fig. 2, it is obvious that the sheath 4 spans the joint-space between the casing and the drum and that the spring 5 tightly clamps a portion of the sheath against the drum or rotary member of the two elements between which the joint exists. As the spring 5 is universal in its spring action, yielding crosswise as well as lengthwise, it adapts itself to all irregularities of the seat-surface 7 or to unequal thicknesses of the sheath-cloth or inequalities occasioned by foreign material. Hence the flannel or sheath-cloth will at all points be held tightly hugged by the endless helical spring 5 against the walls of the groove or seat 7 in the rotary drum. Moreover, the yielding action of the spring permits the drum to rotate without slipping the sheath, without tearing the same, and with a minimum of wear thereon. There is no abrasion, and the durability of the sheath is so great in practice as to be almost beyond belief to persons unfamiliar with the actual facts. A single sheath will last for over a year on a machine in continuous service, as I have demonstrated from a large experience in actual usage.

It is of course obvious that the sheath might be made fast to the drum and the spring be applied to force the sheath against the joint-surface of the casing. Very good results can also be secured without the use of the groove or packing-seat 7. That groove or packing-seat, however, affords increased efficiency. It should be especially noted that with this packing constructed and applied as described the air-pressure becomes available on the inner wall of the sheath and through the spring to force the back of the sheath against the joint-surface being packed thereby. Experience demonstrates that no dust whatever escapes at the joints between the drum and the casing when this packing is employed. It will of course be understood that this packing is capable of general application to joints subject to dust-laden air under pressure regardless of the form of the machine.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A dust-proof packing for the joints between rotary and non-rotary elements subject to dust-laden air, under pressure, which packing comprises a sheath of flexible dust-impervious material secured to one of said elements and an endless helical spring within said sheath and operative to clamp the same against the other of said elements under a universal yielding action, substantially as described.

2. In a dust-collector of the balloon type, the combination with the rotary drum and the stationary frame in or on which the drum revolves, of a dust-proof packing comprising a sheath secured to one of said elements and an endless helical spring within the said sheath and operative to clamp the same against the other of said elements under a universal yielding action and which sheath is applied to span or fill the joint-space and is composed of flexible dust-impervious material, substantially as described.

3. In a dust-collector of the balloon type, the combination with the casing of the rotary drum, revoluble therein, and the dust-proof packings for the joints between the casing and the drum, which packings are composed of sheaths of flexible dust-impervious material secured to the casing with sufficient slack to bear against the drum, and of endless helical springs within the sheaths and operative to clamp the same against the walls of annular grooves or countersunk seats, formed on the drum, substantially as described.

4. A dust-proof packing for the joints between rotary and non-rotary elements subject to dust-laden air under pressure, which packing comprises a sheath of flexible dust-impervious material, secured to one of said elements, and a helical spring within said sheath with the ends thereof connected by an adjustable coupler and forming with the spring an endless clamp operative to hold the sheath against the other of said elements under a universal yielding action, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY C. DRAVER.

Witnesses:
JOHN L. RUPE,
JESSE S. REEVES.