United States Patent [19]

Smoot

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[54] **CLOTHES DRYER SEAL**

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[73] Assignee: **The Schlegel Manufacturing Company,** Rochester, N.Y.

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[52] **U.S. Cl.** **34/242,** 34/133, 277/152, 277/157, 277/235

[51] **Int. Cl.** **F26b 25/00**

[58] **Field of Search** 34/133, 242; 277/152, 157, 277/235, 227

[56] **References Cited**

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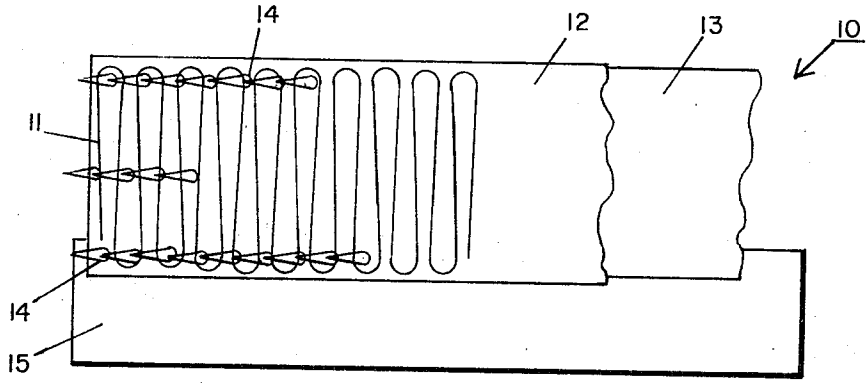
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Attorney, Agent, or Firm—Cumpston, Shaw & Stephens

[57] **ABSTRACT**

A seal between the housing and rotating drum of a clothes dryer is formed of a spring wire laid in a zig zag pattern with a wear material secured to the zig zag wire by rows of stitching that also hold the wire loops together. The seal includes an air barrier and is mounted in the dryer in a generally conical shape to engage a sealing edge at an oblique angle, and the spring wire is selected for pressing the wear surface against the sealing edge with a predetermined force.

13 Claims, 5 Drawing Figures



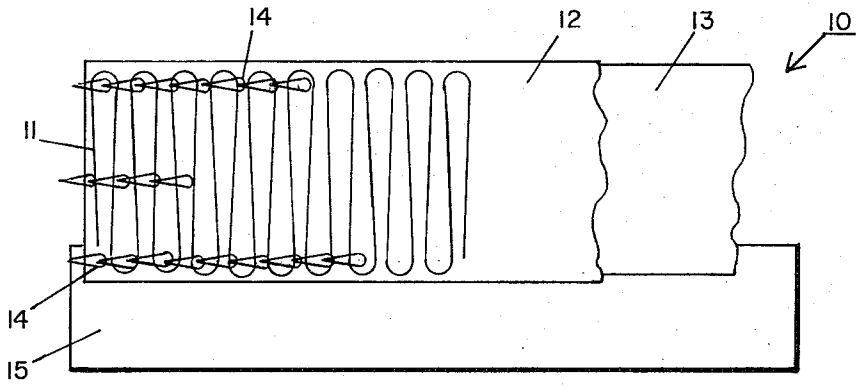


FIG. 1

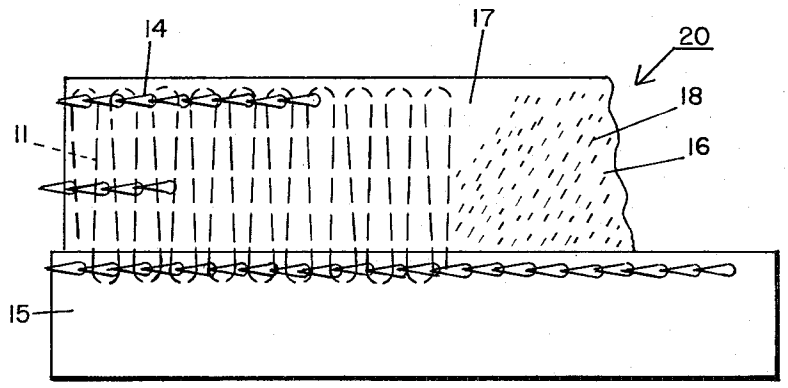


FIG. 2

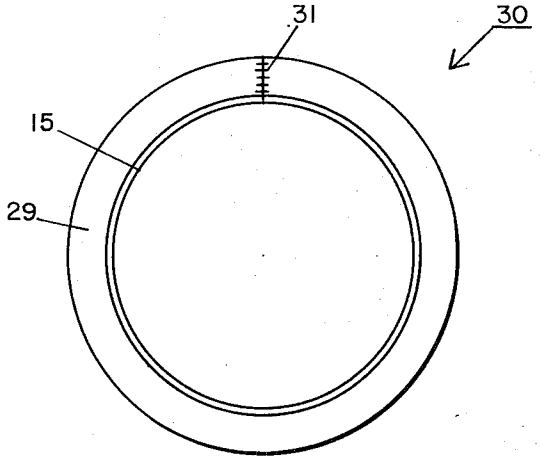


FIG. 3

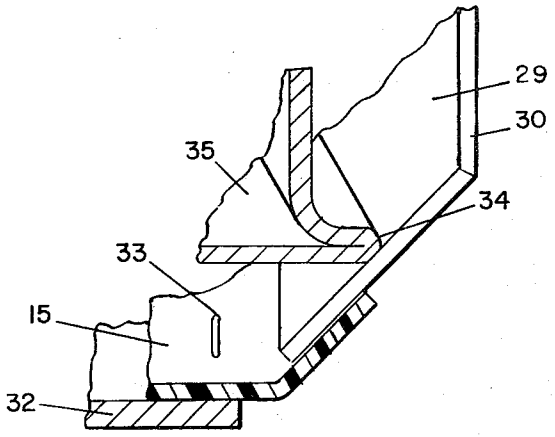


FIG. 4

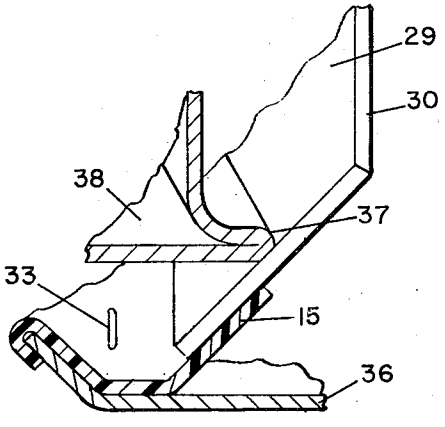


FIG. 5

CLOTHES DRYER SEAL

THE INVENTIVE IMPROVEMENT:

Present clothes dryer seals are formed of a relatively thick ring of felt stuffed and lodged into place between the housing and the drum to bear against the drum as it rotates. Such seals are necessary around the door of the dryer to prevent energy losses in undesired air flow between the dryer housing and the drum around the dryer door.

The dryer rides in wear rings as it rotates, and as the rings wear, the dryer settles down lower relative to the housing. Also, manufacturing tolerances between clothes dryer drums and housings are fairly liberal so that felt stuffing seals have been generally unreliable even in new dryers, and their sealing efficiency has decreased rapidly as the dryer is used.

The invention involves an understanding of the disadvantages of present clothes dryer seals and a recognition of the possibility of a much improved seal resiliently disposed between the dryer drum and housing. The invention aims at effective dryer sealing, accommodation to dryer construction, ease of installation, longer sealing life, and general economy and effectiveness.

SUMMARY OF THE INVENTION

The inventive seal extends between the housing and rotating drum of a clothes dryer and includes a spring wire laid in a zig zag pattern. A strip of wear material is laid over the zig zag wire, and several rows of stitching secure the wear strip to the zig zag wire and secure the loops of the zig zag wire together. The seal includes an air barrier substantially preventing air from passing through the seal and means for mounting the seal in place in the dryer so the wear surface engages a sealing edge. The seal is formed in a generally conical shape engaging the sealing edge at an oblique angle, and the spring wire is selected for pressing the wear surface against the sealing edge with a predetermined force during life of the dryer.

DRAWINGS

FIGS. **1** and **2** are fragmentary, partially cut-away, plan views of preferred embodiments of the inventive seal;

FIG. **3** is a front elevational view of the inventive seal as installed in a dryer; and

FIGS. **4** and **5** are fragmentary, cross-sectional views of two preferred installations of the inventive seal.

Seal **10** of FIG. **1** includes a spring wire **11** laid in a zig zag pattern as illustrated, with successive wire loops running along the length of a continuous strip. An air barrier strip **12** and a wear strip **13** are laid over zig zag wire **11**, and rows of stitching **14** secures strips **12** and **13** to wire loops **11** and secure wire loops **11** together. A mounting flange **15** is overlapped with one edge of the zig zag pattern of wire **11**, and a row of stitching **14** secures flange **15** to strip **10**. All the elements of strip **10** are preferably fed to a single machine that forms wire **11** into the zig zag pattern, overlays strips **12, 13** and **15**, and applies stitching **14**. The result is a flexible and springy seal strip **10**.

Wear strip **13** is made of a material that will have a long wear life in engaging a sealing edge in a clothes dryer, and felt is one material preferred for this. Several types of available felt are usable for strip **13**, and a needlepunched felt is especially suitable.

Air barrier strip **12** is a material that prevents air from passing through seal **10**. One preferred material for strip **12** is a non-woven, fibrous material having a coating that prevents air passage. Another possibility is a thin sheet of plastic material, and barrier **12** can be an air barrier coating applied to wear strip **13**.

Seal strip **10** can be mounted in a dryer by stapling through zig zag wire **11**, without any special mounting flange, but for most circumstances, flange **15** is preferred for mounting seal **10** in place. Flange **15** is preferably a strip of resilient plastic material secured to seal **10** adhesively, by staples, or by the preferred stitching **14**. Flange **15** and zig zag wire **11** can be formed in any cross sectional shape desired for securing to a dryer.

The alternative perferred seal **20** of FIG. **2** includes zig zag wire **11**, stitching **14**, and flange **15**, and has a different wear strip **16** having a base **17** supporting pile material **18**. Base **17** can be plastic sheet material, non-woven fibrous material, or a woven fabric, and pile **18** can be woven, tufted, flocked, or otherwise applied to base **17**. Pile **18** provides an excellent wear surface and a long running life, and an air barrier is provided by coating the back of base **17** with a suitable material or by adding a separate air barrier strip.

A suitable length of one of the seal materials **10** or **20** is cut off and formed into a circular seal **30** as shown in FIG. **3**, with the seal ends secured together by stitching **31** or some other means. For some circumstances, the ends of seal **30** can be left unsecured and merely butted or overlapped together, and the seal ends can be secured by staples, tape, adhesive, or other means. The wear surface **29** of seal **30** has a conical shape surrounding flange **15** which is secured to the dryer by staples, adhesive, or other means. Seal **30** can be mounted on the rotating dryer drum to engage a sealing edge on the housing around the drum, or can be mounted on the housing to engage a sealing edge on the rotating drum. Either way, seal **30** is arranged around the door of the dryer to provide an air seal between the housing and the drum so that air flow is confined to predetermined, desirable pathways within the dryer.

FIG. **4** shows seal **30** secured to dryer housing **32** by staples **33** through flange **15** to dispose seal **30** in a conical shape with its wear surface **29** obliquely engaging a sealing edge **34** on a dryer drum **35**. By proper selection of diameter, tensile strength, and modulus of elasticity for wire **11**, seal **30** has a predetermined resilience so that wear surface **29** engages sealing edge **34** with a predetermined force. Wear surface **29** also has a substantial conical extent to accommodate manufacturing and wear tolerances between housing **32** and drum **35**.

FIG. **5** shows a similar mounting of seal **30** to a drum flange **36** by staples **33** through flange **15**. Flange **15** has an extruded cross-sectional shape to fit around the edge of flange **36** as illustrated, and seal **30** is disposed with wear surface **29** in a conical shape obliquely engaging a sealing edge **37** of a dryer housing **38**. Many other mountings are possible for the inventive seal.

Persons wishing to practice the invention should remember that other embodiments and variations can be adapted to particular circumstances. Even though one point of view is necessarily chosen in describing and defining the invention, this should not inhibit broader or related embodiments going beyond the semantic orien-

tation of this application but falling within the spirit of the invention. For example, those skilled in the art will understand the materials usable in the inventive seal, and the various mountings possible to accommodate the seal to different dryers.

I claim:

1. A seal between the housing and rotating drum of a clothes dryer, said seal comprising:

a. a spring wire laid in a zig zag pattern;

b. a strip of wear material laid over said zig zag wire and having a wear surface opposite from the surface laid over said zig zag wire;

c. a plurality of rows of stitching securing said wear strip to said zig zag wire and securing the loops of said zig zag wire together;

d. means on said seal for providing an air barrier substantially preventing air from passing through said seal;

e. means for mounting said seal in place in said dryer so said wear surface engages a sealing edge;

f. said seal being formed in a generally conical shape engaging said sealing edge at an oblique angle; and

g. said spring wire of said seal being selected for pressing said wear surface against said sealing edge with a pre-determined force.

2. The seal of claim **1** wherein said wear material is felt.

3. The seal of claim **2** wherein said felt is needlepunched felt.

4. The seal of claim **1** wherein said wear material is a pile material.

5. The seal of claim **1** wherein said air barrier means is a coated fabric material secured to said zig zag wire with said stitching.

6. The seal of claim **1** wherein said air barrier means is a coating on said wear material.

7. The seal of claim **1** wherein said air barrier means is a sheet plastic material.

8. The seal of claim **1** wherein said mounting means is a flange overlapping one edge of said zig zag wire pattern and extending outward from said overlapped edge.

9. The seal of claim **8** wherein at least one of said rows of said stitching secures said flange to said zig zag wire.

10. The seal of claim **8** wherein said flange is a plastic strip.

11. The seal of claim **8** wherein said wear material is felt.

12. The seal of claim **11** wherein said air barrier means is a coated fabric material secured to said zig zag wire with said stitching.

13. The seal of claim **12** wherein said flange is a plastic strip secured to said zig zag wire with at least one of said rows of said stitching.

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