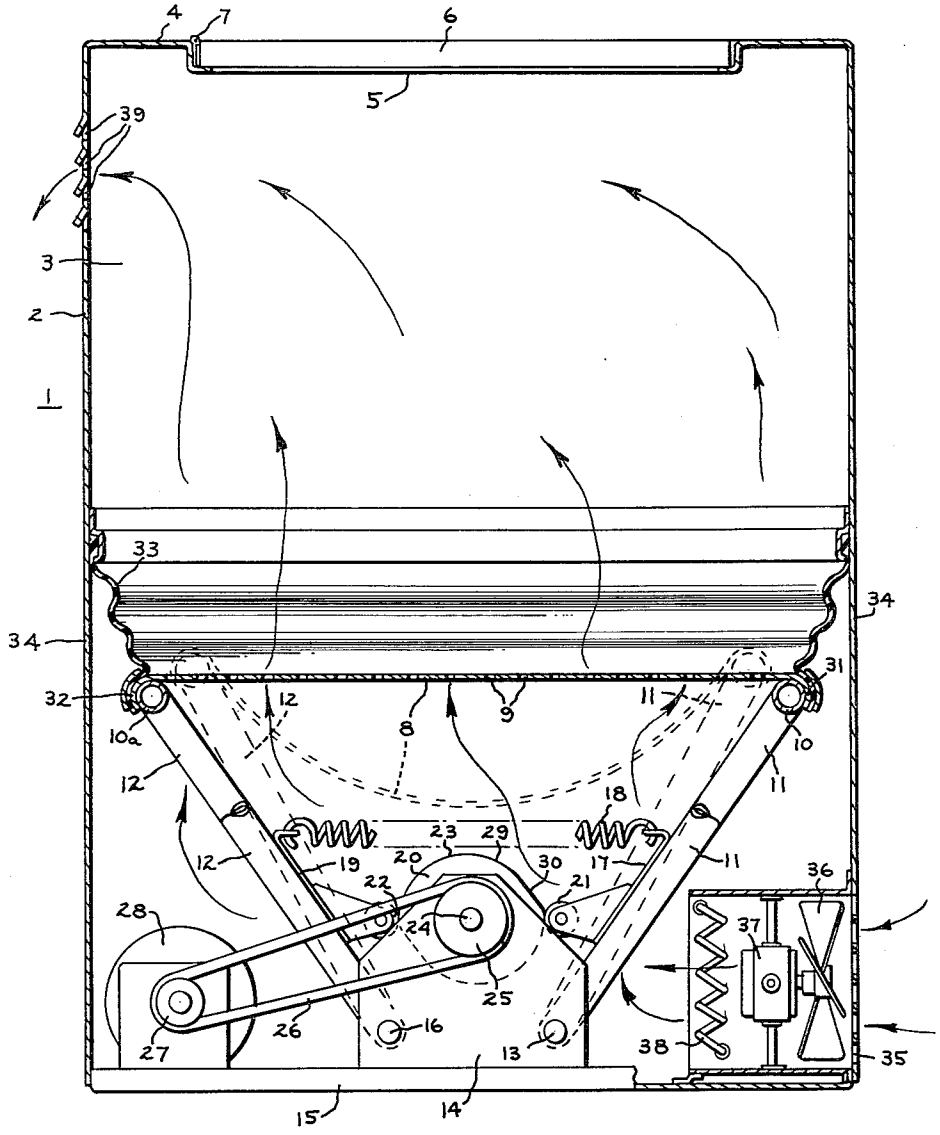
Aug. 28, 1962 J. BOCHAN 3,050,869

ARTICLE DRYING MACHINE

Filed Jan. 30, 1961



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United States Patent Office 3,050,869 Patented Aug. 28, 1962

3,050,869

ARTICLE DRYING MACHINE

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Filed Jan. 30, 1961, Ser. No. 85,541
1 Claim. (Cl. 34—164)

This invention relates to article drying machines, and more particularly to such a machine wherein the articles are bounced up and down to provide the motion which is required during drying.

It is an object of my invention to provide an article drying machine which includes improved means for effecting the motion of the articles generally deemed necessary in order for drying operations to be carried out effectively.

A further more specific object of my invention is to provide an article drying machine wherein the articles are bounced upwardly by a cyclical rapid deformation of the floor on which they rest.

Yet a further specifice object of my invention is to provide an article drying machine in which the cyclical deformation of the floor causes it to pass rapidly from a first shape as a substantially centered declivity toward a second shape as a generally horizontal surface so as to snap the articles upwardly.

In carrying out my invention, I provide an article drying machine which includes an article receiving compartment having a deformable floor. The floor is cyclically rapidly deformed from a first shape in which it is a substantially centered declivity toward a second shape as a generally horizontal surface, the floor then being returned at the end of each cycle to its first shape. The rapid upward deformation of a substantial part of the floor tends to snap or bounce up articles resting on the floor so that they are continually bounced up and down within the compartment. In conjunction with this structure, I provide means for directing a stream of drying fluid—such as air—through the compartment so that the articles bouncing up and down in the compartment will be dried by the stream.

The features of my invention which are believed to be novel are set forth with particularity in the appended claim. My invention itself, however, both as to its organization and method of operation, may best be understood by reference to the following description taken in conjunction with the accompanying drawing.

In the drawing, the single FIGURE is a front elevational view, partly in section, of an article drying machine incorporating my invention.

Referring now to the figure, there is shown an article drying machine **1** which, for purposes of illustration, has been shown as a clothes drying machine since this particular function has been found to be one of those for which the structure is highly useful. Machine **1** includes a casing **2**, the upper part of which forms a compartment **3** into which the clothes to be dried may be placed. In the top surface **4** of the casing there is provided an opening **5** closable by a lid **6** pivotably mounted on hinges **7** so that an operator may lift the lid **6**, and drop the clothing to be dried into compartment **3** through opening **5**.

The floor **8** of compartment **3** is deformable. This is preferably achieved by making floor **8** from a sheet of suitable flexible material such as, for instance, rubber impregnated woven cotton sheeting. Preferably, as shown, floor **8** is foraminuos, i.e., it is provided with a substantial number of foramina or perforations **9** for a purpose to be hereinafter disclosed. Floor **8** is supported between a pair of rod-like members **10** and **10***a*. Rod-like member **10** is supported at its front and rear by upwardly extending arms **11**; similarly, member **10***a* is supported by arms **12**. Arms **11** are pivotably secured on a pin structure **13** mounted in a support **14** secured to the bottom **15** of casing **2**. Similarly, arms **12** are mounted on a pin **16** also secured in the support structure **14**. A member **17** is mounted to the two arms **11** and has secured to it one end of a spring **18**, the spring being secured at its other end to a similar member **19** mounted between the two arms **12**. The spring **18**, as can be seen, biases the two sets of arms **11** and **12** toward each other.

Limiting the effect of spring **18** is a cam member **20** which bears against a pair of cam followers **21** and **22** respectively secured to members **17** and **19**. The biasing action of spring **18** keeps the cam followers **21** and **22** securely against the surface **23** of cam **20**. The cam is secured on a shaft **24** rotatably mounted on support **14**. Also secured to shaft **24** is a pulley member **25** driven by a belt **26** extending from a pulley **27**. Pulley **27** in turn is driven by a motor **28** secured on the base **15** of the casing, the connection of the motor **28** to cam **20** being such that the cam is rotated in a counter-clockwise directon.

The surface of cam **23** is formed into curved portions **29** and substantially straight portions **30**, the relationship of the curved portions **29** and **30** to the direction of rotation of the cam being such that the curved portions **29** allow the cam followers **21** and **22** to move inwardly at a relatively low rate of speed during cam rotation. As a result, spring **18** pulls arms **11** and **12** together to the position shown in phantom outline, and the flexible nature of the floor member **8** causes it to assume a shape substantially in the form of a centered declivity as shown in phantom.

The straight portion **30** of the cam, as it is rotated by motor **28**, causes an abrupt and rapid outward movement of the two followers **21** and **22** which carry with them arms **11** and **12**. As arms **11** and **12** are rapidly spread apart by this camming action, the bars **10** and **10***a* carry with them the secured ends **31** and **32** of floor **8**. As a result, the floor **8** changes very rapidly from the shape in which it is in the form of a centered declivity toward a substantially horizontal shape as shown in solid outline. The effect of this rapid change of shape is to snap any clothes which may have been inserted into compartment **3** and be resting on floor **8** upwardly so that they bounce up, and then come down. By designing the motor **28** and the cam **23** to provide a suitable cyclical sequence of the change in shape of floor **8**, the clothes may continually be bounced upwardly each time they fall back down to rest on the floor **8**.

It will be understood that, in cooperation with floor **8**, a suitable strong flexible member **33** may be provided extending entirely around the floor **8** and constituting its connection to the vertically extending walls **34** of the casing. The sealing member **33** serves to prevent clothes from falling down below the floor **8** of the compartment, while at the same time allowing the movement of the floor necessary for the proper motion of the clothes.

Suitable means for providing an appropriate stream of drying air through compartment **3** are provided. For illustrative purposes, I show opening **35** provided in one of the walls **34**, so that air may be pulled in by a blower **36**. The blower may be driven by motor **28** or, as shown for simplicity of illustration, may be driven by a separate small blower motor **37**. Blower **36** pulls air in over a heating device such as electric resistance element **38**. Operation of the blower thus causes air to be pulled in as shown by the arrows, so that it passes over the heating element **38** and thereby rises in temperature. The blower then forces the warm air up through the perforations **9** in floor **8**, as shown by the arrows, and then up-

wardly through compartment 3 to an outlet opening 39 which may be provided adjacent the top of the compartment 3 as shown.

It will be understood that suitable controls (not shown) may be provided so that the motors 28 and 37 and heating element 38 operate for a suitable period of time to dry clothes, either as a result of direct timing or by use of one of the automatic cycles commonly provided on domestic clothes dryers at the present time. In use, after the clothes are inserted the operator may set such a control: as a result, air will be drawn in, heated, and passed out through the compartment continually while the clothes are being bounced up and down as a result of the rapid cyclical change of floor 8 from a centered declivity toward a generally horizontal surface. It has been found, particularly in smaller clothes dryers of the portable type, that this type of structure provides a highly effective type of clothes motion and that the clothes are properly bounced or tumbled to continually present different surfaces to the stream of drying air to obtain maximum effectiveness in drying.

It will be understood that while one particular means of obtaining a centered declivity with a rapid deformation providing an upward snap to the articles has been illustrated, other equivalent structures will come within the scope of my invention. For instance, the floor 8 may be made of one or more sections of rigid but hinged material so that the pivoting between the different hinged sections provides the same general effect as the flexibility of the present structure. In addition, the floor 8, particularly where it is flexible as shown, might be forcibly pulled downwardly by some suitable mechanism and then released, in the manner of a bow string. Also, different air flow paths from the precise one illustrated may be provided.

Therefore, while in accordance with the patent statutes I have described what at present is considered to be the preferred embodiment of my invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and I therefore aim in the appended claim to cover all such equivalent variations as fall within the true spirit and scope of my invention.

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

A machine for drying articles comprising: an article-receiving compartment having a floor of flexible material deformable from a first shape as a substantially centered declivity to a second shape as a horizontal surface; means for cyclically rapidly deforming said floor from said first shape to said second shape and returning said floor to said first shape thereby to bounce up articles resting on said floor, said deforming means including rigid members secured to said floor on opposite sides thereof, and means for rapidly spreading said members apart and then returning them toward each other including an electric motor, cam means driven by said motor, means connecting said cam means to said rigid members in controlling relation thereto, and spring means biasing said rigid members toward each other, said cam means being formed so that upon rotation thereof by said motor it cyclically spreads said rigid members apart against the action of said spring means, and said spring means cyclically returns said rigid members toward each other; and means for directing a stream of drying fluid through said compartment thereby to dry articles bouncing therein.

References Cited in the file of this patent

UNITED STATES PATENTS

1,671,442	Noftzger	May 29, 1928
1,672,274	Noftzger	June 5, 1928
1,761,149	Peebles	June 3, 1930
2,445,516	Dickey	July 20, 1948
2,633,413	Eweson	Mar. 31, 1953