

UNITED STATES PATENT OFFICE

2,260,128

SEALING MEANS FOR A DIE IN A CLOSURE WALL

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Application February 2, 1940, Serial No. 316,985

3 Claims. (Cl. 271-2.3)

This invention relates to improved sealing means for a die in a closure wall separating areas of differential pressure.

It is an object of the invention to provide improved means to maintain an effective seal despite difference in thickness in the material passing through the die.

A further object of the invention is to provide effective sealing means which will also serve to advance the material.

In carrying out my invention I provide a pair of positively driven rollers adjacent a wall opening, through which material may be advanced into or out of a pressure or vacuum chamber for example, mounted so as to be movable toward or away from one another in a plane normal to the line of travel of the material, and having means urging the rollers together.

While the apparatus described herein may obviously be modified in size and form to accommodate a wide variety of different materials I have described it herein in its application to strip material, such as long strips of cloth.

The invention will best be understood if the following description is read in connection with the drawing in which:

Fig. 1 is a perspective view of one embodiment of my die sealing means;

Fig. 2 is a front elevational view partly broken away;

Fig. 3 is an end view of a transverse vertical section taken on the line 3-3 of Fig. 2; and

Fig. 4 is an end view of a transverse vertical section taken on the line 4-4 of Fig. 2.

The numeral 1 indicates the wall of a closure containing a slotted aperture 2 through which a strip of cloth may be advanced into or out of the closure. Positioned adjacent the opening and on opposite sides of the path of material passing through the opening are the rollers 3 and 4 having the journals 3' and 3'' and 4' and 4'' respectively. The journals 3' and 3'' extend through apertures provided in stationary bearing blocks 5 and 5' respectively, which in turn are supported on the frame members 6 and 6' respectively, secured to wall 1. The journals 3' and 3'' of the top roller 3 are supported in bearings 7 and 7' respectively which are carried by the slidable blocks 8 and 8' which are movable for a limited distance in a vertical plane, as will be more fully explained.

The journals 4' and 4'' are supported in bearings 9 and 9' respectively which are carried by stationary bearing blocks 5 and 5'.

Extending between the side frames 6 and 6'

from the wall 1 to the top and bottom respectively of the pair of rollers, are the members 10 and 10', which serve with the side frames to complete around the die 2 a closure in which wall 1, and the rollers 3 and 4 constitute the rear and front sides. Supported from the members 10 and 10' respectively are the spring contact strips 11 and 12 the free ends of which contact tangentially the full length of rollers 3 and 4 respectively thus closing the space between the members 10 and 10' and the rollers. Strip 11 maintains a sliding contact with roller 3 even when the latter is being raised or lowered, maintaining the closure at all times between member 10 and roller 3. The members 10 and 10' are slotted at x to receive the outer edges of strips 11 and 12 respectively which are fixed in the slots by retaining screws s.

The slidable blocks 8 and 8' are provided with grooves g keyed to the slideways 13 and 13' respectively which may be dovetailed into, as shown, or otherwise supported by, the bearing blocks 5 and 5', secured to the frame members 6 and 6'. The blocks 14 and 14' which as illustrated are fixed to stationary bearing blocks 5 and 5' by suitable means such as screws 15, may be formed integrally with blocks 5 and 5'.

Projecting laterally from bearing blocks 8 and 8' are the flanges or bracket members 16 and 17 respectively, and blocks 14 and 14' are similarly provided with the flanges or bracket members 16' and 17' respectively. Between the brackets 16' and 17' the tension springs 18 are provided tending to move the bearing blocks 8 and 8' on their respective slideways, 13 and 13' toward blocks 14 and 14' and thus close the space between rollers 3 and 4. The springs 18 are slidably mounted on rods 19 which may be secured to the brackets by the nuts 19'.

The ends of the rollers 3 and 4 are circumferentially recessed to receive the compressible rings 20 and 21 respectively, which may be of felt, rubber fabric, composition or other suitable material. Between the ends of the rollers and the frame members 6 and 6' respectively the stuffing boxes H and H' are provided fitted into recesses in the frame members, and between the journals 3' and 3'', and 4' and 4'' and the stuffing boxes H and H' and the respective bearing blocks 8 and 8', and 5 and 5' and 14 and 14' the self oiling or oil-less bearings K are provided.

The stuffing boxes H and H' are provided with overlapping flanges t and t' respectively permitting slidable engagement and providing an air-

tight seal between the journal boxes at all times irrespective to their relative movement.

The term "die" as used herein includes an opening in any partition or wall through which material may be passed. The purposes for which means for sealing the "die" or opening are provided are of course very varied and are immaterial to this invention but in general it is to prevent the loss or exchange of gaseous fluid through the opening through which the material is passed.

What I claim is:

1. A seal for an entrance or exit die in a chamber wall comprising support members spaced laterally on opposite sides of the opening in said wall, a pair of rollers journaled between said support members, journal boxes supported on said support members respectively and having sleeves for the axles of one of said rollers of greater diameter in a plane including the axles of both rollers than the diameter of the axles of said roller, and bearing boxes for each of said rollers, mounted on the said journal boxes respectively one above the other, one set of bearing boxes being alined with the said enlarged sleeves of said journal boxes and being slideable in the direction of enlargement of said enlarged sleeves thereby permitting limited movement of one of said rollers with respect to the other of said rollers.

2. A seal for an entrance or exit die in a chamber wall comprising support members spaced laterally on opposite sides of the opening in said wall, a pair of rollers journaled between said support members, journal boxes supported on said support members respectively and having sleeves for the axles of one of said rollers of greater diameter in a plane including the axles of both rollers than the diameter of the axles of said roller, and bearing boxes for each of said rollers, mounted on the said journal boxes respec-

tively one above the other, one set of bearing boxes being alined with the said enlarged sleeves of said journal boxes and being slideable in the direction of enlargement of said enlarged sleeves thereby permitting limited movement of one of said rollers with respect to the other of said rollers, each bearing box of each pair supported on the respective journal boxes on the respective support members having an outwardly projecting arm, and means interposed between said arms urging said bearing boxes together.

3. A seal for an entrance or exit die in a chamber wall comprising support members spaced laterally on opposite sides of the opening in said wall, a pair of rollers journaled between said support members, journal boxes supported on said support members respectively and having sleeves for the axles of one of said rollers of greater diameter in a plane including the axles of both rollers than the diameter of the axles of said roller, and bearing boxes for each of said rollers, mounted on the said journal boxes respectively one above the other, one set of bearing boxes being alined with the said enlarged sleeves of said journal boxes and being slideable in the direction of enlargement of said enlarged sleeves thereby permitting limited movement of one of said rollers with respect to the other of said rollers, each bearing box of each pair supported on the respective journal boxes on the respective support members having an outwardly projecting arm, and means interposed between said arms urging said bearing boxes together, and upper and lower closure members extending between said side support members and having means adapted to form a seal between said closure members while permitting relative movement of the rollers within the range permitted by the said enlargement of the sleeves for the axles of one of said rollers.

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