A sealing curtain assembly for door or window openings having a pair of tracks attached to frame members which are fixed to a base, a curtain having edges slidably engaging the tracks and being reversibly insertable into covers over each track, and hinges on each cover, whereby the hinges facilitate the lowering and raising of the curtain. Each track has a raised lip over which the curtain slides as the curtain moves up or down, the lip maintaining a seal against air flow, even when the curtain is distended upon the application of pressure. The bottom of the curtain has a weighted member and the base has spring clamps. As the curtain is lowered the weighted member engages the spring clamps causing the covers to press against the tracks, thereby providing a tight seal against airflow.
SEALING CURTAIN ASSEMBLY FOR DOOR OR WINDOW OPENINGS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention
[0002] The field of the present invention relates to flexible enclosures for openings, such as doors and windows and, more particularly, to a curtain that can be raised and lowered with a motorized shaft to form a durable seal with the frame of an opening.
[0003] 2. Technical Background
[0004] The use of sealing curtains is known in the prior art. Generally, a sealing curtain apparatus comprises a curtain and tracks along the frame of an opening such as a door or window. The edges of the curtain are engaged by the tracks. As the curtain is moved towards a position covering the opening, the edges of the curtain travel along the tracks. The benefit of this design is that the sealed curtain prevents matter such as insects and debris from passing through the space between the curtain and the frame. However, the more tautly a sealed curtain is pulled across an opening, the more difficult it generally is to slide the curtain along the tracks.
[0005] What is needed is a sealing curtain which provides a tight seal between the edges of the curtain and the frame of an opening, but which is easy to raise or lower along the opening.

SUMMARY OF THE INVENTION

[0006] The sealing curtain assembly of the present invention has a pair of tracks attached to frame members of an opening such as a door or window where the frame members are secured to a base. The curtain assembly has a curtain having edges slidably engaging the tracks and being reversibly insertable into covers over each track. The covers are hinged to the tracks which allow the curtain to easily slide up and down along the opening. Each track has a raised lip over which the curtain slides as the curtain moves up or down, the lip maintaining a seal against air flow when the curtain is lowered over the opening. The bottom of the curtain has a weighted member and the base has spring clamps. As the curtain is lowered the weighted member engages the spring clamps causing the covers to press against the tracks, thereby providing a tight seal against airflow, even when the curtain is distended upon application of pressure. The curtain assembly also has a rotatable shaft and motor assembly which will raise the curtain to uncover the opening or lower the curtain to close the opening.
[0007] An advantage of the curtain assembly of the present invention is a flexible curtain that covers the opening of a window or garage which is durable and seals the opening from air flow.
[0008] Another advantage is a pair of covers which seal the edges of the curtain along the tracks, wherein the covers rotate away from the tracks to facilitate the raising and lowering of the curtain.
[0009] Another advantage is a pair of spring clamps which bias the covers towards the tracks to maintain the curtain taut and sealed when the curtain is in a lowered position.
[0010] Another advantage is a curtain which can be raised and lowered with a motor to cover and uncover the opening.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 shows the curtain assembly of the present invention.
[0012] FIG. 2 shows the cover and track of the curtain assembly.
[0013] FIG. 3 shows the design of the edge of the curtain.
[0014] FIG. 4 shows the cover and track attached to a frame member with the edge of the curtain inserted into the cover.
[0015] FIG. 5 shows a cross-sectional view of the curtain.
[0016] FIG. 6 shows a cross-sectional view of the frame members with the tracks and covers attached to frame members.
[0017] FIG. 7 shows a cross-sectional view of the curtain secured in the tracks with the covers in a closed position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] While the following description details the preferred embodiments of the present invention, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of the parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced in various ways.
[0019] FIG. 1 shows the curtain assembly 10 of the present invention. First frame member 12 and second frame member 14 define an opening 15 of a door or window. Frame members 12 and 14 are attached to base 35. A first track 11 is attached to first frame member 12 and a second track 13 is attached to second frame member 14. A rotatable shaft 17 is positioned at the top ends of frame members 12 and 14 by attachment to brackets 18. A motor 19 may be attached to one of the brackets, such as bracket 18 to rotate shaft 17. A flexible curtain 20 is attached to shaft 17 and can be rotated on shaft 17 by motor 19 to wind or unwind curtain 20 on to shaft 17. Curtain 20 has a bottom or leading edge 21. The outer edges of tracks 11 and 13 have hinge elements 22. The outer edges of covers 23 have hinge elements 24. The hinge elements 22 and 24 interlock to form a hinge whereby covers 23 are rotatably attached to tracks 11 and 13. The leading edge 21 of curtain 20 has a weighted member 25 which is retained within holders or spring clamps 26 attached at the bottom of base 35. The spring clamps 26 are hinged or form a cam at their openings to guide the weighted member 25 into the interior of the spring clamps 26. The spring clamps 26 press against the weighted member 25 which biases covers 23 against tracks 11 and 13.
[0020] Tracks 11 and 13 have inner lips 27 along which curtain 20 slides as it is raised and lowered by the action of motor 19 and shaft 17. The lateral edges 31 of curtain 20 fit over lips 27 and are inserted into covers 23.
[0021] FIG. 2 shows the cover 23 and track 13 disassembled. Cover 23 has an outer tab 28 and an inner tab 29. There are a plurality of holes 40 in track 11 and track 13 to attach them to frame members 12 and 14. Hinge pin 32 is used to connect cover 23 to second track 13.
[0022] FIG. 3 illustrates the lateral edge 31 of curtain 20. Lateral edge 31 has a semi-rigid outer flap for insertion into inner tab 29. Lateral edge 31 is inserted into outer tab 28.
[0023] FIG. 4 illustrates the assembly of the second track 13 to second frame member 14, of the cover 23 to second frame member 14, and of lateral edge 31 of curtain 20 into cover 23. The hinge elements 24 of cover 23 engage the hinge elements 22 of second track 13, and are locked into place by
hinge pin 32. Cover 23 is, thus, hinged rotatably to second track 13. This hinge assembly 16 facilitates the raising and lowering of curtain 20 along tracks 11 and 13 and covers 23. First track 11 is assembled in an identical fashion as second track 13. The curtain lateral edge 31 passes over inner lip 27 and is inserted into outer tab 28 and the outer flap 30 of curtain 20 is inserted into inner tab 29. The opposite lateral edge 31 is inserted into cover 23 on first track 11 in a similar fashion. As covers 23 press the lateral edges 31 towards their respective tracks by action of the spring clamps 26 on weighted member 25, curtain 20 is pulled taut over the inner lips 27 of tracks 11 and 13, thereby forming a tight seal over opening 15. If force is applied against curtain 20, cover 23 will remain pressed against tracks 11 and 13 with curtain 20 still maintaining its seal along inner lips 27.

**FIG. 5** shows a cross-section of curtain 20. **FIG. 6** shows a cross-section of the opening 15 formed by frame members 12 and 14. The tracks 11 and 13 are shown attached to frame members 12 and 14 by bolts 41. The arrows show the direction of rotation of covers 23 as they are pulled away from tracks 11 and 13 by, for example, raising and lowering curtain 20. **FIG. 7** shows a cross-sectional view of the curtain secured in the tracks with the covers in a closed position.

**[0024]** The foregoing description has been limited to specific embodiments of this invention. It will be apparent, however, that variations and modifications may be made by those skilled in the art to the disclosed embodiments of the invention, with the attainment of some of all of its advantages and without departing from the spirit and scope of the present invention. For example, the scaling curtain assembly can be constructed to cover any type of opening. The curtain can be made of any flexible type of cloth, plastic, and the like. The motor may be operated remotely to raise and lower the curtain. The tracks and covers can be constructed to operate with curtains of any desired thickness.

**[0026]** It will be understood that various changes in the details, materials, and arrangements of the parts which have been described and illustrated above in order to explain the nature of this invention may be made by those skilled in the art without departing from the principle and scope of the invention as recited in the following claims.

1. A curtain assembly for covering an opening comprising:
   a) an elongated curtain having a first end mounted at a first end of the opening, an opposing second end that is moveable between the first end of the opening and an opposing second end of the opening, and opposing lateral sides slidably attached to opposing sides of the opening;
   b) a track on each of the opposing sides of the opening, wherein each track has an outer edge and an inner edge;
   c) said curtain having a flap attached to each of said latter sides;
   d) a cover over each track, each cover being hinged to said outer edge of said track, and each cover having an inner tab and an outer tab; and
   e) each of said lateral sides of said curtain fitting over said lip of said track, wherein said flap engages said inner tab of said cover and said lateral edge engages said outer tab of said cover.

2. The curtain assembly of claim 1 wherein said covers are biased towards said tracks to retain said curtain against said track to maintain said curtain taut.

3. The curtain assembly of claim 1, further comprising said inner edges of said tracks having lips.

4. The curtain assembly of claim 1 further comprising a weighted member at said second end of said curtain.

5. The curtain assembly of claim 4, further comprising spring clamps at the opposing second end of the opening to secure said weighted member and bias said weighted member against said covers to bias said covers against said tracks.

6. The curtain assembly of claim 1, further comprising a rotatable shaft and motor to wind and unwind said curtain to lower and raise said curtain along the opening.

7. A curtain assembly for covering an opening comprising:
   a) an elongated curtain having a first end mounted at a first end of the opening, an opposing second end that is moveable between the first end of the opening and an opposing second end of the opening, and opening lateral sides slidably attached to opposing sides of the opening;
   b) a track on each of the opposite sides of the opening, wherein each track has an outer edge and an inner edge, said inner edge having a lip;
   c) said curtain having a flap attached to each of said lateral sides;
   d) a cover over each track, each cover being hinged to said outer edge of said track, and each cover having an inner tab and an outer tab; and
   e) each of said lateral sides of said curtain fitting over said lip of said track, wherein said flap engages said inner tab of said cover, said lateral edge engages said outer tab of said cover, and said cover is biased towards said track to retain said curtain against said track to maintain said curtain taut when said curtain covers said opening.

8. The curtain assembly of claim 7, further comprising a weighted member at said second end of said curtain.

9. The curtain assembly of claim 8, further comprising spring clamps at the opposing second end of the opening to secure said weighted member and bias said weighted member against said covers to bias said covers against said tracks.

10. The curtain assembly of claim 1, further comprising a rotatable shaft and motor to wind and unwind said curtain to lower and raise said curtain along the opening.

11. A curtain assembly for covering an opening comprising:
   a) an elongated curtain having a first end mounted at a first end of the opening, an opposing second end that is moveable between the first end of the opening and an opposing second end of the opening;
   b) a track on each of the opposite sides of the opening, wherein each track has an outer edge and an inner edge, said inner edge having a lip;
   c) said curtain having a flap attached to each of said lateral sides;
   d) a cover over each track, each cover being hinged to said outer edge of said track, and each cover having an inner tab and an outer tab; and
   e) each of said lateral sides of said curtain fitting over said lip of said track, wherein said flap engages said inner tab of said cover and said lateral edge engages said outer tab of said cover; and
   f) a weighted member at said second end of said curtain, and spring clamps at the opposing second end of the opening to secure said weighted member and bias said weighted member against said covers to bias said covers against said tracks to maintain said curtain taut when said curtain covers said opening.
12. The curtain assembly of claim 11, further comprising a rotatable shaft and motor to wind and unwind said curtain to lower and raise said curtain along the opening.

13. A curtain assembly for covering an opening comprising:
   a) an elongated curtain having a first end mounted at a first end of the opening, an opposing second end that is moveable between the first end of the opening and an opposing second end of the opening, and opposing lateral sides slidably attached to opposing sides of the opening;
   b) a track on each of the opposing sides of the opening, wherein each track has an outer edge and an inner edge, said inner edge having a lip;
   c) said curtain having a flap attached to each of said lateral sides;
   d) a cover over each track, each cover being hinged to said outer edge of said track, and each cover having an inner tab and an outer tab;
   e) each of said lateral sides of said curtain fitting over said lip of said track, wherein said flap engages said inner tab of said cover and said lateral edge engages said outer tab of said cover; and
   f) a weighted member at said second end of said curtain, and spring clamps at the opposing second end of the opening to secure said weighted member and bias said weighted member against said covers to bias said covers against said tracks to maintain said curtain taut when said curtain covers said opening; and
   g) a rotatable shaft and motor to wind and unwind said curtain to lower and raise said curtain along the opening.