

Description

Product: “Slide & Dry Unit”– in short “SDU”.

This is a simple sliding device for laundry drying to use in the residential market. It operation uses sliding track of 'I' shape profile section with pole holders at both ends of the track. The track is supported on rollers and together holds in position by stainless steel bracket secured to building members. The SDU serves to convenient and alleviate problems related to traditional pole laundry drying and clothes-line drying process in every household. Problems like placing the heavy pole of wet clothing out of the house and slotting the pole into holders for high-rise building, baby-sitting laundry of both pole and clothes-line users, to the risk of one falling while placing and retrieving the pole at high level.

The SDU uses non-corrosive material with structural grade aluminum alloy sliding track to move clothing in & out of the house. It comes in either manual or automatic mode with water sensor and stuck alarm. With 2500mm long slide track, the SDU can either hold 24 nos. of clothing at 100mm between hangers- see FIG-1 or 3 nos. bamboo poles for bed-sheet drying- see FIG-4. The sliding track can comes in various lengths. Additional pole for pole drying can be made which depend on the window space available.

The following attached drawings are to be read in-conjunction with this description and claims, and are part of this patent submission.

See FIG-1, Rear View Isometric of SDU with hanger frames.

See FIG-2, Front View Isometric of SDU with hanger frames.

See FIG-3, Side Elevation of SDU with hanger frames.

See FIG-4, Front View Isometric of SDU with poles

See FIG-5, Back Elevation of SDU with hanger frames.

See FIG-6, 'I' shape profile Track's Section.

See FIG-7, Steel Bracket with Rollers.

See Fig-8, Wide Shoulder Hanger Frame.

See FIG-9, Sensor Plate.

How “Slide & Dry Unit” Operates?

With SDU manual, wet clothing is secured on specially profiled hanger frames and the hanger frames are slotted into holes located along the track. To move the clothing out for drying, the sliding frame is push out of the house to allow the sun and wind to dry the clothing. To retrieve the clothing, the sliding frame is pulled into the house and removal of the clothing is done easily.

With SDU automatic, ensure that the center push button is under 'in' position of the switch control provided; the power supply can be either 'on' or 'off' position at this stage. Clothing are similarly secured on the special hangers and slotted into holes along the track. To move the clothing out of the house, turn 'on' the power supply and push the center button to 'out' position and under automatic selector, push the lever to 'on' position.

Electric motor inside the casing acting on gear rack secured on the top of the track will move the frame out. The motor will stop acting on the gear rack once the outer plastic markers, which represent the one end of the track, trigger the limit switch inside the top casing. To move the track back into the house, push the center button into 'in' position and the track will move in and will stop once the other limit switch is triggered by the inner plastic marker. Removal of the clothing is done easily with the frame inside the house. When the track is out of the house under 'auto' mode, once it rains, the sensor which is installed outside the house will triggered the motor into reverse rotation and send the track sliding back into the house. When no water is on the sensor, the motor will forward rotate to slide the track out again. Therefore, no attention is needed when it rains, the system will slide back automatically and slide out again when no water is detected. Should obstruction occur and the track stop during sliding process, built-in sensor in the control box located inside the top casing will trigger an alarm (buzzer). Attention is needed then to determine and remove the cause of obstruction. Optional buzzer can be installed for inward track movement under 'auto' mode.

Composition

Slide & Dry Unit is fully make-up of mainly high corrosion-resistant materials. Therefore, it can be classified as an item for long-term usage. The main parts that make-up "Slide & Dry Unit" unit are; the track that carries the clothing, roller shafts that take the load from the track and the bracket that transfer the load to the building structure. The track is make-up of structural aluminum material similar to the material use for structures in building construction. The roller shaft is of stainless steel 316, and the bracket is make-up of stainless steel 304.

The **track** is of homogenous 'I-shape' profile section with filleted lip along shoulder edges and with stainless steel cable insert, which together provide strength, rigidity and assurance to the sliding frame – see FIG-6. At both ends of the track, pole holders are bolted to hold bamboo poles for drying bed-sheet or likewise. The pole holders comprise of two nos. of 10 mm by 50 mm wide aluminum plates that are welded to square holder tube and bolted to the track. The holder tubes are of 50mm by 50mm square hollow section. The front pole holder tube has 3 nos. 30 mm diameter holes on one side for bamboo pole insert. And the back pole holder tube has 3 nos. 35 mm diameter holes on both sides with stop lever at each hole on one side of the tube to stop the bamboo pole from coming out.

The **stainless steel angle bracket** secured the SDU to the building, transfer the load from the track to the building. The 6 nos. anchor bolts are used to secure the bracket to the structural ceiling and 2 nos. to secure to structural beam. This arrangement creates a 2 planes lock of the bracket. Each **roller assembly** comprises of stainless steel roller shafts, steel rollers, steel washers and split pins. The roller shafts are welded to the bracket and the steel roller inserted for the track to slide on. The arrangement of the roller shafts is intended to lock the track to prevent excessive side movement, and direct longitudinal travel of the track –see FIG-7.

To increase the rate of drying, the hanger frames are specially designed with wider shoulder to create a wider air passage between clothing fabrics while on the hanger – see FIG-8. The hanger frame has both corners bent 90 degrees on the same side and a joining horizontal rod attached to create a wide separator. The wider air passage will help to dry the clothing faster. The track is also designed to reduce swinging of hanger frame to increase crosswind circulation. The position of the holes on the track and the track shape are intended to reduce easy dislodge of hanger frames.

With SDU automatic, a water sensitive plate is used as sensor to activate the motor to move the sliding frame 'in' & 'out' of the house. This water sensor is located outside the house expose to the environment to sense water. The sensor is make-up of thin conducting linear element, layout in close string looping pattern from two terminal points on non-conductive plate –FIG-9.

Claims

Product: “Slide & Dry Unit”– in short “SDU”.

1. A sliding laundry-drying device with steel frame secured to the building member and uses a ‘I’ shape profile section track to hang clothing on hanger frame for moving laundry ‘in’ and ‘out’ of the house manually. The device comprise:
 - a. A sliding frame which make-up of a track of homogeneous ‘I’ shape profile section with holes for hanger frames and pole holder at both ends to hold laundry poles. The back pole holder has 3 nos. holes on both sides with stop lever at each hole on one side. The front pole holder has 3 nos. holes on one side.
 - b. A steel bracket to connect to the building member and to hold the roller assembly where the sliding frame travel on.
 - c. An elongated casing secured over the lower part of the steel bracket covering the roller assembly.
 - d. Roller assembly, which make up of staggered diameter stainless steel shafts inserted and welded to steel bracket, and with roller bearings and steel washers inserted to the shaft.
 - e. A removable alum handle, which can be attached to one end of the track to push ‘out’ or ‘in’ the sliding frame.
2. A sliding laundry-drying device of claim 1. of which movement of the ‘I’ shape profile section track is motor assisted and with water sensor and stuck alarm. The device comprise:
 - a. A sliding frame as of claim 1. and the track also include gear rack and limit markers at both ends.
 - b. A steel bracket as of claim 1.
 - c. An elongated casing as of claim 1. and the casing cover over control box, limit switches and motor.
 - d. Roller assembly as of claim 1.
 - e. A removable alum handle as of claim 1.
 - f. Control box containing power and sensor circuitry.
 - g. Switch control panel with selector and control buttons.
 - h. Water sensitive sensor plate of conducting element in close string pattern on non-conductive plate.
 - i. Circuitry to support motor, switches, sensor and alarm buzzer.
3. The configuration of hanger frame use in claim 1. & claim 2. The broad shoulder of the hanger frame is to create a wider air channel between fabric layers to facilitate faster drying.
4. The steel bracket use in claim 1 & 2. in which the arrangement of the roller shafts locks the track from excessive side movement and allow only longitudinal travel.
5. The ‘I’ shape profile section of the track use in claim 1 & 2.
6. The water sensitive plate use in claim 2.
7. The arrangement of the pole holders to the track in which it allows laundry poles or clothesline to be slide out together with the track.