It is hereby certified that a patent has been granted to the patentee for an invention entitled ALTERNATE DRYING MECHANISM AND WATER EXTRACTION IN WASHING MACHINES as disclosed in the above mentioned application for the term of 20 years from the 9th day of January 2015 in accordance with the provisions of the Patents Act, 1970.
No. 146/CHE/2015

To:

Address of Service - D. MOSES JYAKARAN, ADVOCATE & PATENT AGENT, IN/P A-369, 245/105, METTU STREET, AYANAVARAM, CHENNAI - 600023, mjyakaran@yahoo.com
Email Id:- mjyakaran@yahoo.com

Sub:- Intimation of the grant and recordal of patent under section 43 of the Act in respect of patent application no. 146/CHE/2015

Sir/Madam,

This is to inform you that following the examination of above mentioned patent application under section 12 and 13 of The Patents Act, 1970 and Rules made thereunder [and hearing held on 01/12/2020] a patent is hereby granted and recorded in the Register of Patents on the 02/02/2021. The Patent Certificate is enclosed herewith.

Patent No: 357555
Name Of Applicant: INDIAN INSTITUTE OF TECHNOLOGY MADRAS (IIT Madras)
Date of Patent: 09/01/2015
Priority Date: 09/01/2015
Filling date of Request for examination: 29/01/2015
Title: ALTERNATE DRYING MECHANISM AND WATER EXTRACTION IN WASHING MACHINES
Number of claims: 06

The grant of above mentioned patent will be published in the Official Journal of the patent Office under section 43 of the Act.

Bommineni Ramamurthi
Controller of Patents

Note:
1. For revised renewal fees kindly refer to the First Schedule (fees) of The Patents (Amendment) Rules 2016 available on the official website of Controller General of Patents, Designs and Trade Marks www.ipindia.gov.in.
2. No hard copy of Patent Certificate shall be issued separately by the office.
We Claim:

1. An arrangement in washing machines for removing moisture from clothes, comprising:
   a means for bringing the absorbent polymer such as superabsorbent polymers or superporous hydrogels;
   a means for storing polymer laden cloth;
   a means for dispensing the polymer laden cloth into the drum containing the wet clothes;
   a means for ensuring adequate contact between wet clothes and polymer laden cloth;
   a means for supplementing the moisture removal through polymer absorption by passing hot air, condensing moisture from the air and re-circulating it.

2. The washing machine according to claim 1, wherein the polymer laden cloth acts as a mode of deployment for the absorbent chemical.

3. The washing machine according to claim 1, wherein the absorbent polymers are embedded in a matrix of cotton and wrapping it in a non-woven hydrophilic fabric.

4. The washing machine according to claim 1, wherein extracting the moisture from the polymer laden cloth by subjecting it to either temperature or pH changes or electrical fields.

5. The washing machine according to claim 1, wherein removing moisture from clothes by the passage of hot air through the clothes drum which vaporizes the moisture and in turn carried by the air outside the drum.

6. The washing machine according to claim 1, wherein when the clothes dried, the chemicals are separated and can be reused for subsequent wash cycles.

7. The washing machine according to claim 1, wherein the chemicals become saturated after some wash cycles, which are put in a recovery chamber where the water is extracted from the chemical, after which it is fit to be used again.

8. The washing machine according to claim 1, wherein the arrangement eliminates the need of a high speed motor, thereby reduces noise, vibration and the energy consumption of the drying cycle.
9. The washing machine according to claim 1, wherein the absorbent polymers remove the loosely held water in bulk and hence decreases the drying time significantly.

10. The washing machine according to claim 1, wherein the rest of the water removed by a combination of chemical absorption and heat evaporation.

Dated at Chennai this October 13, 2015

Signature: 

D. Moses Jeyakaran
Advocate & Patent Agent
IN/PA — 369
ABSTRACT

The present invention relates to the uses of absorbent chemicals to remove moisture from washed clothes in washing machines. The proposed invention uses absorbent polymers such as super absorbent polymers (SAP) or superporous hydrogels (SPH) to extract moisture from the clothes. These absorbent polymers are with very high affinity for water, to absorb moisture from the clothes, with the possibility of supplementing the absorption process by passing hot air. This significantly reduces the energy consumed, time taken to dry clothes, and damage to clothes.