"Crazy Fruitcakes" is a heartfelt and comedic piece of musical theater that examines the mental health profession in modern society. It takes place at a Bellevue-like asylum in Manhattan. The patients display clear mental health disorders — Shakespeare has OCD that presents as the relentless rhyming of his speech, Tallulah has Borderline Personality Disorder, Julia has PTSD from repressed sexual violations, Malcolm has rage from the loss of his son, and Angel is dissociative — but the sickest people on the ward are actually the head nurse Stoneheart, a paranoid schizophrenic, and the doctor Shamas, a man so disappointed by his life and cocaine addiction that he suffers a psychotic break. Patients and staff alike undergo miraculous healing transformations, not via their go-to diagnoses, drugs, and outdated protocols, but through their acceptance of themselves just as they are.

Act I begins with Shamas and Stoneheart on morning rounds — each patient giving a glimpse into his/her psychological issues, and Shamas determining treatment. Stoneheart suggests that they use the "you-know-what" machine on Malcolm for his rage, revealing her sadistic tendencies. Shamas snorts cocaine and free associates to a skull of Freud about his unrealized dreams of becoming a training psychoanalyst due to a nervous breakdown after his wife left him and took away his daughter. Shamas has a first session with Malcolm in which Shamas is detached, and Malcolm ends up attempting to attack him. Shamas leads group therapy and tries to get Julia to open up about her past. A cop arrives with Angel, found naked in Times Square with no memory of who he is and sporadically speaking in a Divine Voice as if channeling God. Shamas diagnoses the seeming channeling as psychosis. He confides to Freud that all of the talk about God is triggering him since he feels that God has betrayed him.

The patients try to make sense of Angel's Divine Voice. Shamas begins another group therapy session but is interrupted by Angel further espousing about God. Shamas flees to his office to do more cocaine and has a psychotic break, in which he believes Angel's Voice is the devil who killed God and has now come to destroy them. Shamas talks to the patients about the devil and they notice that he is acting strangely. Stoneheart gives Julia a sedative to get her to talk, and the syringe re-traumatizes her. Julia confides that she was raped in college, and before that, molested by her stepfather. The patients hatch a plan to have Shakespeare find evidence of malpractice. Shakespeare manages to take some pictures of Shamas using cocaine. Act I culminates with Shamas in the midst of his psychotic break, deciding that the only cure for the devil in Angel's mind is to use the old "you-know-what" machine to exorcize it.

Act II begins with Shamas fantasizing about the stature the exorcism will bring his career. He has a follow-up session with Malcolm, and helps Malcolm access some of his grief. Shakespeare explains to Tallulah that he uses his rhymes to escape his suffering. Shamas tries to get consent from Angel to perform the exorcism, but when Angel objects, Shamas proceeds anyway. Angel and Julia begin to fall in love but are interrupted by Shamas and Stoneheart... Stoneheart sedates Angel and straps him to a table, and jolts of electricity are sent through his convulsing body.

Julia tells the other patients that Angel is in danger. They sedate Stoneheart and look for Angel. Malcolm finds him having hanged himself and cuts him down. Assuming he's dead, the patients threaten Shamas, and are stopped only by Angel when he regains consciousness. Angel remembers everything: in an effort to stop his abusive dad from hurting his mom, he accidentally killed him. Everyone comforts him that it wasn't his fault. The patients confront Shamas about his cocaine use. Shamas retreats to his office and hears the Divine Voice which promises him a miracle. This ends his psychotic break and restores his faith in God— he throws away his cocaine and the Freud skull, and decides to fire Stoneheart.

Shakespeare admits to Tallulah that he's a hermaphrodite and, being bisexual, she is happier than ever. Shamas faces the patients to admit his wrongdoing, offer his support around the healing they have done, and set them free. They all resolve to get Stoneheart the help she needs. Shamas returns to his office one last time and introspects to find closure with his ex-wife. He emerges to make one last effort to help Julia feel better about her past. He gets his miracle when they discover that she is, in fact, his lost daughter. Act II closes with everyone celebrating the radiance of love: Julia and Angel, and Shakespeare and Tallulah, with their affection for each other, Malcolm with a new sense of peace around his son for having saved Angel, and Shamas with his joy at having found his daughter.