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AUTOMATED BATHING FACILITY

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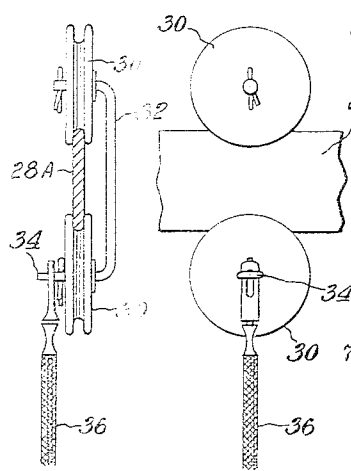
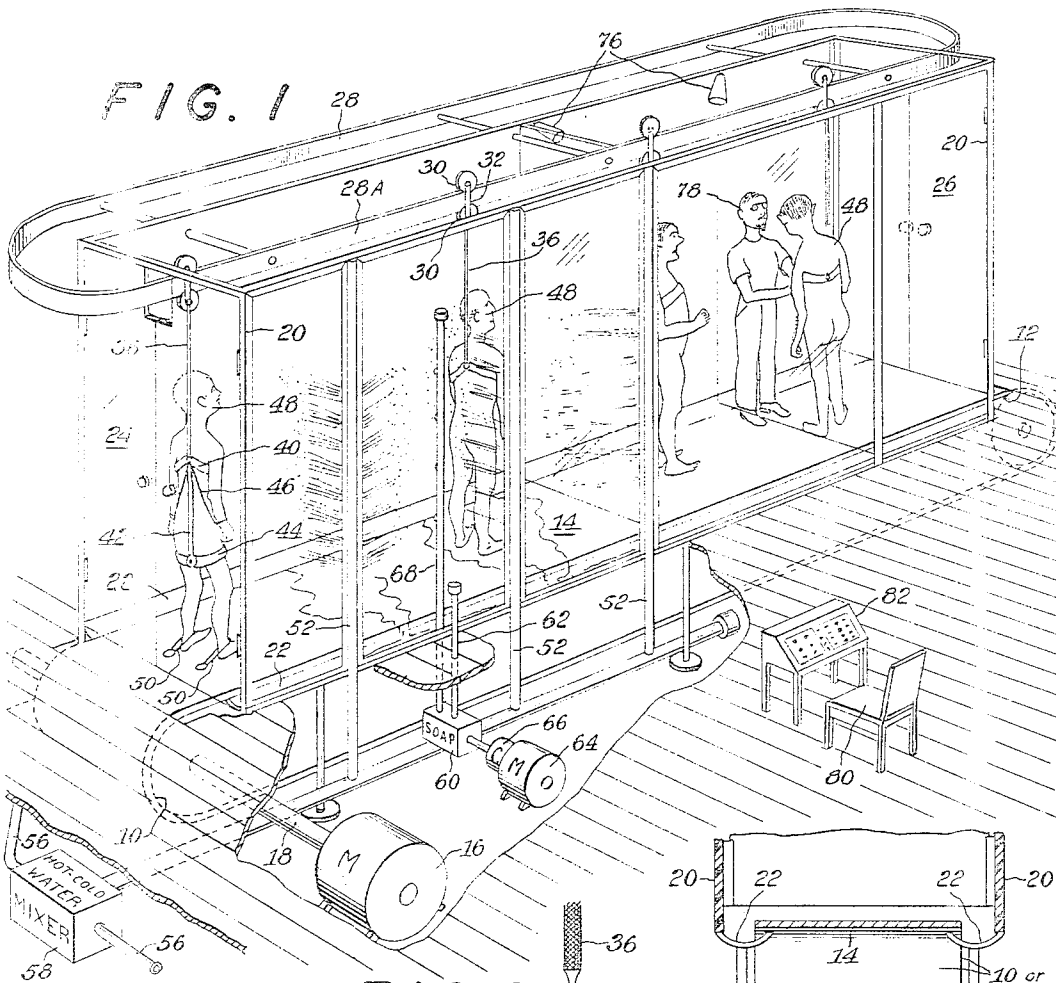


FIG. 3 FIG. 4

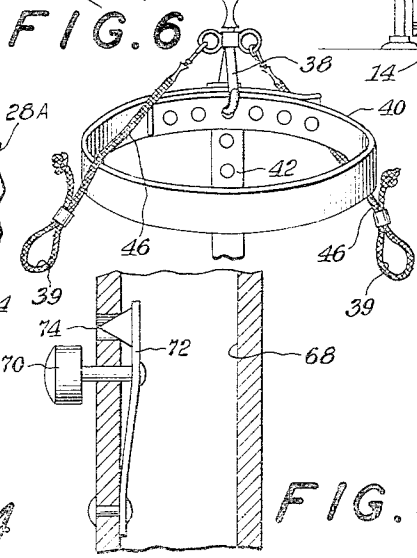


FIG. 5

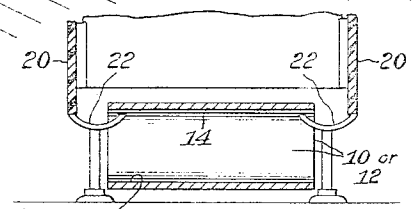


FIG. 2

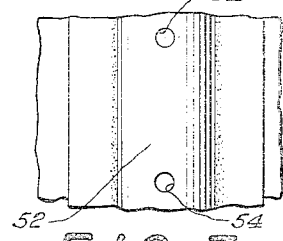


FIG. 7
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AUTOMATED BATHING FACILITY

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Continuation-in-part of application Ser. No. 634,629,

Apr. 28, 1967. This application Jan. 21, 1969, Ser.

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U.S. Cl. 4-145

6 Claims

ABSTRACT OF THE DISCLOSURE

An automated bathing system or facility adapted for use in bathing large numbers of patients or persons in standing position by which the patients are suspended by means of a harness from an overhead rail and are moved along a conveyor belt floor past a wetting station, a soaping station, a rinsing station and finally into a drying station where the patient is air dried still in standing position and is readied for redressing under conditions that minimize the danger of infirm or mentally incapacitated injuring themselves or others by struggling during the bathing procedure and that provide improved sanitation in that all steps of the bathing procedure are accomplished with the patient in a standing position such that wash cloths and towels are not needed.

This application is a continuation-in-part of application Ser. No. 634,629, filed Apr. 28, 1967, now abandoned.

SUBJECT MATTER OF INVENTION

This invention relates to improvements in bathing facilities to be used by a plurality of people and in particular the invention provides for an automated bathing facility in which a plurality of persons or institutionalized patients may be positioned on conveyor facilities and successively moved through a plurality of stations where said patients are automatically bathed, soaped, rinsed, and dried while being supported in a vertical or standing position.

PRIOR ART

A variety of problems arise in providing facilities to bathe patients in hospitals, mental institutions, young people in special educational institutions and institutions handling mentally retarded cases. Older patients are often terrified about the danger of slipping and falling in bathing or shower facilities while mentally retarded patients seem to have a strong fear of water and struggle against being bathed. In the course of such struggling both the patients and the attendants trying to bathe them are often injured. Thus the normal method of bathing patients in standard baths and showers have often proven to be more of a nuisance than helpful, and institution attendants are often prone to neglect bathing patients who struggle excessively.

If bath or shower facilities are provided with slick hard surfaces of tile or porcelain that can be easily cleaned, such facilities are likely to become slick when wet or covered with soap thus aggravating the dangers and fears of patients about slipping on such slick surfaces and injuring themselves. On the other hand if the dangers of slipping are minimized by using wood or porous structures in institutional bathing facilities said wet porous surfaces become areas in which germs from a variety of skin diseases and fungus infection may be harbored and transmitted to other patients with the result that old style bathing facilities may contribute to spreading skin disease and fungus infections to the point of epidemic proportions within a hospital or institution instead of providing the desired therapeutic effect upon the patient being bathed.

Institutional patients who spend any material amount of time in bed are likely to be susceptible to fungus and skin disease infection in the area of the buttocks, the thighs, and the hairy portions of the body. In controlling the spread of contagious skin diseases in institutions it is these very portions of the body which need to be bathed most frequently and most thoroughly but it is very difficult for either the patients or the institutional attendants to reach these portions of the body with soap and water when the patients are bathed in a sitting position. The use of wash cloths and towels is virtually a necessity in the course of bathing sitting patients in standard bathing facilities and the accumulation of wet bath cloths and towels on the floor and in storage piles also contributes to the spread of infectious skin diseases and fungus infections even under the most careful circumstances. It should be readily apparent that institutional patients need to be bathed in standing positions in open well ventilated facilities in which soap, water, and liquid medications may be sprayed on or applied to all areas of the human body with minimum or no use of associated bath clothes and equipment that can transmit germs and infections from one patient to another. Traditional shower facilities are adequate for mature and physically competent patients who can bathe themselves but no satisfactory arrangement is available to permit institutional bathing of patients in a vertical open position when the patients are infirm, mentally disturbed or prone to struggle against being bathed.

The prior art indicates that there have been a few proposals for mechanical carriers for bathing purposes but the patient has usually had to sit in chairs or baskets which occupy considerable space, made the bathing process slow or time consuming and interfered with the application of cleaning solutions and rinse water to all of the surfaces of the patient's body. Nor do the proposed facilities for automated bathing for institutional patients come to grips with the necessity of promptly and effectively drying the patient at the end of the bathing operation and this is not readily accomplished with the patient in a sitting position in or on wet equipment.

OBJECTS

It is therefore a primary object of this invention to provide an automated bathing system or facility in which a plurality of patients may be bathed in standing position.

Another object of the automated bathing facility described in this invention is to provide a set of suspensive straps and harnesses that will secure the patient in a standing position in such manner as to provide the patient with assured and secured support while leaving his buttocks and lower parts of his body available for more effective washing while minimizing the danger of the patient injuring himself by falling or struggling with the attendant.

Since inadequate bathing or bathing with defective and obsolete equipment is often a factor contributing to the spread of skin diseases and disorders in institutions it is an object of this invention to deter, if not eliminate, the spread of infectious skin diseases, by reducing patient contact with potentially contaminable surfaces by providing means whereby disinfectant and medical solutions may be mixed with liquid soap and sprayed over the entire body of the patient while in standing position.

A further object is to provide an automated bathing facility in which an increased plurality of patients may be placed in patient accommodating positions and the entire apparatus moved along a pre-arranged course in which the patients are consecutively and automatically treated with soap solutions, disinfectants and bathed and dried with the use of a minimum number of attendants.

An object of this invention is to provide a means of air-drying the patients while still in a standing position so that all parts of the body are effectively dried without

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having to expose the body to contact with towels or surfaces which might provide a fresh means of infection or reinfection.

With the problems of growing institutional population aggregating already over-crowded bathing facilities it is still a further object of this invention to provide an automated bathing facility which will permit patients to be scheduled and handled at a predictable rate of speed, materially increase the number of patients that can be handled in a very short time and reduce to a minimum the number of attendants required to assist in bathing a given number of patients.

It will also be readily apparent that the automated bathing facilities described herein could be effectively built into mobile van or trailer housing structures to provide mobile bathing facilities that may be moved from place to place to provide bathing facilities to persons in disaster areas or to cope with mass bathing requirements after an atomic bomb explosion, and it is an object of this invention to provide for mobile automated bathing facilities that could provide means for mass bathing under such circumstances.

These and other objects and advantages of this invention will become apparent through consideration of the following description and appended claims in conjunction with the attached drawings in which:

DESCRIPTION OF THE SEVERAL VIEWS IN THE DRAWINGS

FIGURE 1 is a perspective view of a partially cut away view of a bathing facility constructed in accordance with the teachings of the invention described herein.

FIGURE 2 is a floor level cross sectional end view of the bathing facility;

FIGURE 3 is a cross sectional end view of the overhead conveyor rail showing how the wheels of the patients' support harnesses are attached to the overhead conveyor rail;

FIGURE 4 is a side view of the structure shown in FIGURE 3;

FIGURE 5 is a cross sectional view of a portion of an optional soap dispensing mechanism that may be employed in one of the soaping stations;

FIGURE 6 is a perspective view of part of the patient support harness; and

FIGURE 7 is a sectional view of a part of the water spraying station.

In describing one selected form or preferred embodiment of this invention as shown in the drawings and described in this specification, specific terms and components are used for clarity. However, it is not intended to limit the claimed invention to the specific form, components or construction shown and it is to be understood that the specific terms used in this illustration of the invention are intended to include all technical equivalents which operate in a similar manner to accomplish a similar purpose.

SUMMARY OF THE INVENTION

The automated bathing system or facility described herein may be housed in a mobile van or trailer to provide mobility and availability at a plurality of locations in times of crises or it may be housed within an appropriate enclosure or housing structure 20 inside a regular building or institution. Two or more parallel rollers 10 and 12 are placed in the floor of said facility and an elongated endless conveyor belt 14 is mounted upon said rollers 10 and 12 in a horizontal position adapted to serve as a moving floor for said bathing facility. Appropriate motors or motive power means 16 are provided to drive at least one of said rollers to cause endless belt floor 14 to move longitudinally through the length of the housing structure 20. An overhead conveyor rail 28a is mounted longitudinally through the upper portion of said

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housing structure 20 to provide a means for supporting patients while they are moved through the bathing facility. The patients 48-48 to be bathed are undressed and are placed in patient support harnesses 40 which are rollably connected to said overhead conveyor rail 28a to support each patient in a vertical or standing position and the patient's feet are secured into foot straps 50-50 mounted at spaced apart positions on the endless conveyor belt 14 which serves as a floor of the bathing facility. As the conveyor belt floor 14 moves through the bathing facilities each person carried on the conveyor belt is successively moved through a first wetting station 52 where his body is sprayed with water, through a second treatment station 68 where he is sprayed with liquid soap or detergent or with appropriate liquid medication, through a third rinse station 52a where he is sprayed with water to rinse off the soap or detergent, and through a fourth station where the patient is air dried by pressurized streams of forced warm air. By placing a plurality of patients at spaced apart positions upon said conveyor belt and moving them through said bathing facilities most of the routine bathing steps can be carried out automatically so that large numbers of individual patients can be successively bathed in a short time.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT OF THE INVENTION

Referring to the specific embodiment of the invention selected for illustration in the accompanying drawings, the improved automated bathing facility described herein will need to be incorporated in an overall housing structure 20 in FIGURE 1 or enclosure symbolically represented by housing walls 20 in FIGURE 2. As previously explained said automated bathing facility could very well be built into a mobile van or trailer which in times of emergency, such as the period after the explosion of an atomic bomb, could be moved or towed from place to place to provide bathing facilities at a plurality of locations. In case the device were to be incorporated into a van, trailer, or mobile facility walls 20 of the housing enclosure could be the walls of said trailer or mobile unit. Otherwise housing walls 20 may represent the walls of a hospital or such other institutional building as such facility may be built into.

As indicated in FIGURES 1 and 2 of the drawings herein two or more parallel rollers 10 and 12 are mounted in the floor of the area to be employed for said bathing facility and an elongated endless conveyor belt 14 is mounted upon said rollers 10 and 12 in such a horizontal position as to be adapted to serve as a moving floor for said bathing facility. Conveyor belt floor 14 should be provided with a non-skid but otherwise water repellent surface that can be easily rinsed clean and that will present few or no porous surfaces in which germs or contamination material may lodge or cling. Referring again to FIGURE 1 appropriate motors or motive power means 16 are provided to drive at least one of said rollers to cause endless belt floor 14 to move longitudinally through the length of housing structure 20. Rotary motion is transferred from said motive power means 16 by shaft 18 which is connected to one or more of the rollers 10 or 12 that move conveyor belt floor 14 and electric motor or motive power means 16 may be stopped and started as needed by means of standard electric wiring and switch mechanisms operated by an attendant at master control console 82 or alternatively switch control circuits could be provided at a convenient location where the switch could be operated by the same attendant who assists the porarily stored as each patient is dried and dressed and re-in a bathing position on conveyor belt floor 14.

Since elderly patients, infirm patients, and mentally disturbed patients all share a terror of slipping and injuring themselves in any kind of stand up bathing facility and it is an object of this invention to provide a means of automated bathing of institutional patients in a standing position, it is therefore necessary to provide a means of suspensively supporting the patient in standing position

during the bathing procedure. This is accomplished by means of a patient support harness system 40 which extends upward to rollably connect with an overhead conveyor rail 28a which is mounted longitudinally through the upper portion of said housing structure 20 as shown in FIGURE 1. Rail 28a may be fabricated in the form of a continuous or endless loop so that harnesses may be returned to their beginning point or overhead rail 28a may have beginning and terminal ends and the system be provided with a generous plurality of attachable-detachable patient support harnesses which may be mounted on overhead rail 28a as each patient is introduced into the bathing facility and may be removed from the rail and temporarily stored as each patient is dried and dressed and released from the bathing facility.

As indicated in FIGURE I the walls of bathing facility housing structure 20 will be provided with customary entrance doors 24 and exit doors 26 and of course the frame work of housing structure 20 also supports overhead conveyor rail 28a. In the floor of housing structure 20 along opposite sides of conveyor belt floor 14 should be provided horizontal elongated troughs 22—22 which extend to a point just below the upper surface of conveyor belt floor 14 such that they collect the water flowing off of conveyor belt floor 14 and carry said waste water away through connections to standard sewage or disposal facilities.

Patient support harness 40 may be a simple strap or appropriate loop which fastens around the upper part of the patient's chest at a point under the patient's arms to provide support as shown on patient 48 in the drying station in FIGURE 1. Said patient support body harness means 40 is connected by means of strap or cable 36 to a pair of conveyor wheels or pulleys 30—30 which may be attachably and detachably mounted upon overhead conveyor rail 28a in such manner that conveyor wheels 30—30 engage the upper and lower horizontal edges of overhead rail 28a. Wheels 30—30 are joined together by vertical connector 32 to engage overhead rail 28a as shown in FIGURE 3. By means of said patient support harness 40 the patient may be supported in vertical position and may be moved along and through the bathing facility described herein as rollers or wheels 30—30 roll long overhead rail 28a. Patent support harness 40 including vertical support cable 36 may be strapped around the patient's chest or body prior to entering the automated bathing facility and then may be attachably secured to a horizontal extension 34 on connector 32 to provide vertical suspensive support to the patient after he has entered the bathing facility by connecting him to roller mechanism 30—30. The details of the means by which patient support harness system 40 may be attached and disconnected from rollers 30—30 are illustrated in FIGURES 3 and 4 of the drawings herein. A variety of means of connecting and disconnecting patient support harness means 40 from rollers 30—30 or support cable 36 will be readily apparent including the employment of a loop fastener 38 at the point where vertical support cable 36 attaches to the horizontal upper circular flexible frame or strap 40 of said patient support harness means.

If there is any indication that the patient is likely to struggle or be violent during the washing procedure the institution attendants may select and use a patient support harness system 40 like the one shown on the first patient in front of entrance door 24 in FIGURE 1 of the drawings herein to provide additional restraining means to prevent the patient from struggling during the bathing process. Said extended patient support harness or restraining means include additional strap 42 which extends down the patient's back from body support loop 40 to a lower circular flexible frame 44 which straps around the lower part of the patient's hips. Additional restraining means may be provided by securing straps 46—46 which connect to eyelets on loop fastener 38 and have wrist engaging loops 39—39 which may be used to restrain the arms and hands of the patient as shown in FIGURE 6, and as shown on the first patient in FIGURE 1. Thus

the patient may be both supported and restrained during his progress through the bathing facility.

At appropriate spaced apart intervals along the surface of conveyor belt floor 14 are mounted foot engaging straps 50—50 or hooks to which such foot engaging straps 50—50 may be attached as needed. As conveyor belt floor 14 moves through the length of said bathing facility patients stationed at intervals and standing upon said conveyor belt floor 14 will be moved or carried along the belt from the entrance to the exit doors while his body is suspensively supported in vertical position by a body harness means that is adapted to be supported by and rolled along on overhead conveyor rail 28a as previously described.

Disposed within automated bathing facility housing structure 20 at successive positions along the route of conveyor belt 14 as shown in FIGURE I of the drawings are a plurality of washing stations adapted to successfully wet, apply liquid soap or liquid medication, rinse, and air dry the body of a standing patient being moved past said stations. At the first washing station shown at the left of FIGURE 1 water spray from vertical pipe 52 is sprayed upon the body surface of each patient moving through said wetting station to wet the surface of the patient's body. The water is ejected or sprayed onto the individual patient through vertically spaced apart perforations 54—54 in vertical pipe 52. The vertically spaced apart perforations 54—54 in vertical spray pipe 52 are illustrated in the sectional drawing shown in FIGURE 7 of the drawings herein. Water for this wetting operation is supplied to pipe 52 from an external public utility or supply source through supply pipes 56—56 including appropriate water heating apparatus and temperature mixing unit 58 to set proper temperature. When water from this wetting operation collects on conveyor belt floor 14 it flows into troughs 22—22 which extend along each side of conveyor belt floor 14 to be conducted away for disposal.

The second washing station 68 shown in FIGURE 1 spray applies liquid soap, liquid detergent or liquid medication to the surface of the patient's body by means of vertical spray pipe 68 the bottom end of which connects to liquid soap tank 60 to a source of other liquid treatment material. An appropriate electrically controlled motor 64 operates a compressor 66 to force the liquid soap or other liquid treatment material upward in bubble form through vertical spray pipe 68 for spray application to the body of the patient being moved past this soaping or treatment station. Since the accidental spraying of liquid soap or medication into the eyes of a patient is likely to cause unnecessary discomfort and may cause injury in addition to frantic reaction from the patient, it is important that the spray from this station be applied to the patient only from the neck down. Since patients will vary in height, additional means for controlling the treatment spray being applied at this station will be needed. A variety of manual and automated controls for limiting and directing the application of treatment spray at this station may be devised. The manual system used for illustration in FIGURE I and FIGURE 5 of the drawings herein provide a normally closed closure mechanism 72 blocking each of the spaced apart port holes 74—74 in a vertical pipe 68 which prevents the soap or medication from escaping through said vertically spaced apart port holes 74—74 until manually operated soap control button 70 is depressed by an attendant present at soaping or treatment station 68. The attendant will, of course, open only those port holes which are far enough down on soap spray pipe 68 as to avoid spraying soap into the eyes of the patient. More elaborate arrangements may provide for control of the dispensing of soap or medication through port holes 74—74 from a centralized control panel in control console 82. The temptation to provide fancy automated controls is almost irresistible but the inventor feels that patients will have greater confidence or alternatively less fear of spray application of soap,

detergent or medication to their bodies if there is a live attendant standing at this station. It should also be readily apparent that such an automated bathing facility could well employ a plurality of soap and medication applying stations as appropriate or necessary for the treatment of particular diseases or to cope with particular circumstances.

The final washing station shown in FIGURE 1 of the drawings herein is a water rinse station consisting of one or more vertical pipes 52a with spaced apart spray perforations like the structure described above for the first wetting station to spray rinse water on the individual patients as they are moved through said rinse station. At the next station shown in FIGURE 1 drying devices 76—76 which may be forced air blowers, fans, electrical heating elements or other indirect heating devices are positioned to dry the patient's body without having to bring towels or cloths in contact with the patient. For symbolic simplicity FIGURE 1 of the drawings herein show infra red lamps being employed as drying devices 76—76 but the inventor has a definite preference for the application of streams of warm pressurized air to the body of the patient as a preferred means of providing for quick indirect drying of the patient. The actual choice of specific indirect drying agents 76—76 will depend to some extent upon the circumstances and experience of the institution in the particular area where the facility is to be used.

At the last station in this automated bathing facility attendants 78 are employed to assist the patients in re-dressing, to assist in releasing the patients from the support harness system and aid the patients in returning to their beds or rooms via exit doors 26.

OPERATION

In operation patients 48 are brought through entrance door 24 into the automated bathing facility. The patients 48 to be bathed are undressed by attendants who assist each patient into a patient support harness 40 which is strapped around the patient's chest as previously described. The patient and patient support harness mechanism 40 are then connected by means of vertical support strap 36 to trolley-roller mechanism 30—30 which is adapted to engage and roll along overhead rail 28a thereby providing suspensive support to maintain each patient in a vertical or standing position as the patient moves through the automated bathing facility. The patient either stands upon moving conveyor belt floor 14 or the patients are connected at spaced apart intervals to moving conveyor belt floor 14 by means of foot straps 50—50. Thus as conveyor belt floor 14 moves from left to right through the length of the bathing facility on rollers 10 and 12 as shown in FIGURE 1 of the drawings herein the patient is moved through the successive washing stations provided in this automated bathing facility.

The patient is first moved to a first washing or wetting station 52 where he is sprayed with water to wet the entire surface of his body. As endless conveyor belt floor 14 continues to move, the patient is carried to a second washing station or first soaping or treatment station 68 where the patient may be sprayed with liquid soap, a liquid detergent or a combination of liquid cleaning agents together with any other liquid medication which may be appropriate. There may, of course, be a plurality of such soaping or medication treatment stations as the individual situation may require.

Moving conveyor belt floor 14 continues to move the patient along until he is brought into a rinsing station where the patient is rinsed down with a water spray as he is moved through said station. As conveyor belt floor 14 continues to move the patient from the rinsing station into an open space designated as a drying station, rays from an indirect drying mechanism 76—76 such as electric heating elements or infrared lamps or streams of pressurized warm air are directed on and over the body

of the patient to dry him indirectly while he is still in standing position. The still standing patient may then be dressed by attendant 78 and assisted back to his room or bed in other parts of the institutional facility. By placing a plurality of patients at spaced apart positions upon said conveyor belt floor 14 and moving them through said bathing facilities most of the routine steps involved in patient bathing can be carried out automatically so that large numbers of individual patients can be successively bathed, efficiently and within a very short time.

In the foregoing description of the structure and operation of the invention set forth herein a number of advantages have been claimed for the proposed apparatus and others will be readily apparent to persons skilled in the art.

ADVANTAGES

In summary, one of the principal advantages of the invention would appear to be the ability of the facility described herein to provide for automated bathing of a comparatively large plurality of institutional patients within a comparatively short time by a minimum number of institutional attendants with all of the patients being bathed in standing position.

Another advantage of this invention is that it provides a practical means of providing sanitary stand-up bathing facilities for aged, infirm or mentally disturbed patients who were previously terrified by and struggled against being bathed.

Another advantage of this invention is that it has provided a means of enabling the patient to enjoy the advantages of stand-up type shower bathing without the danger and the terror of slipping and falling by providing a moving support system of suspensive straps and body support harnesses supported from above the patient to prevent the patient from slipping and injuring himself during the washing procedure.

A further advantage of this invention is that it is much easier to maintain in sanitary condition than conventional facilities for bathing infirm or institutional patients and that the facility and system described herein allows almost complete elimination of wet wash cloths and towels and materials that can transfer germs and skin diseases from one patient to another.

An advantage of this automated system for bathing of institutional patients is that it permits the bathing of mentally disturbed patients with minimum chance of conflict or violence between the patient and the attendants attempting to bathe the mentally disturbed patient.

Aged or infirm bed patients are the patients most likely to be suffering from infection and bed sores in the abdominal area and in the area of the buttocks and thighs which areas cannot be conveniently or easily reached in conventional sit down bathing procedures and facilities, and these are the very patients who cannot stand alone in conventional shower bathing facilities. An advantage of this invention is that it provides for easy spray bathing of the abdomen, buttocks and thighs of such aged and infirm patients without subjecting them to the danger of panic or possible injury.

Still a further advantage of the invention lies in the fact that a minimum staff of attendants can bathe a large plurality of patients at a controllable and therefore predictable rate of speed so that institutional bathing of patients in large numbers can be accomplished in accordance with a pre-planned schedule.

The automated bathing facility described herein will also permit a drastic increase in the number of institutional patients who can be bathed for a given investment in institutional bathing facilities and such improvements in efficiency and cost control procedures are likely to become even more important in the future as the population in mental and public supported institutions grow.

Still a further advantage of the invention described herein is that the proposed bathing facility is one that could be constructed in a mobile van or trailer facility

which would permit health authorities in times of catastrophes and crises to bring mass bathing facilities to bombed out or displaced refugees who might otherwise be exposed to the dangers of poor or no sanitation facilities.

Having thus described my invention, I claim:

1. An automated bathing system or facility in which a plurality of patients may be bathed in standing position, said bathing facility comprising:

- (A) a housing structure appropriately enclosing the apparatus described herein;
- (B) at least two parallel rollers located at the floor level of said housing structure;
- (C) an elongated endless conveyor belt mounted upon said rollers in a horizontal position adapted to serve as a moving floor for said housing structure;
- (D) motive power means to drive at least one of said rollers to cause the endless belt floor to move longitudinally through the housing structure;
- (E) an overhead conveyor rail mounted longitudinally in the upper portion of said housing structure;
- (F) a plurality of patient support harnesses provided with
 - (1) means of being supported by and rolled along said overhead conveyor rail,
 - (2) body harness means by which the patient is supported in vertical position, such that successive vertically positioned patients may be moved at spaced apart intervals through the bathing facility;
- (G) foot straps mounted at spaced apart positions on said endless conveyor belt to engage and secure the feet of patients being washed;
- (H) a first wetting station provided with means of spraying water upon the patient as each patient is moved past said wetting station;
- (I) at least one treatment station provided with means for spraying liquid soap, detergent or medication upon the patient as each patient is moved past each of said spaced apart treatment stations;
- (J) at least one rinsing station at a spaced apart position from the treatment station provided with means for spraying rinse water on the patient as each patient is moved past said rinsing station;

(K) a drying station provided with means for drying the patient as each patient is moved past said drying station;

(L) appropriate plumbing and means for supplying hot and cold water; and

(M) drain facilities for removing waste and excess liquids.

2. The automated bathing facility described in claim 1 with the patient support harnesses being provided with additional restraining means to prevent the patient from struggling during the bathing process.

3. The automated bathing facility described in claim 1 with the drying station provided with means for directing streams of pressurized warm air onto the patient to dry the patient in standing position.

4. The automated bathing facility described in claim 1 with additional stations for undressing the patients before bathing and redressing the patients after the bath.

5. The automated bathing facility described in claim 1 with remote control facilities providing means for an operator at a remote control panel to control the application and rinsing solutions to the patient from a central control point.

6. The automated bathing facility described in claim 1 built into a mobile housing to permit said facility to be driven or towed from place to place for use in a plurality of locations.

References Cited

UNITED STATES PATENTS

688,569	12/1901	Youree.	
2,698,627	1/1955	Kearney et al.	134-72 X
3,185,108	5/1965	Muller	104-25

FOREIGN PATENTS

395,982	5/1924	Germany.
368,435	5/1963	Switzerland.

ROBERT W. MICHELL, Primary Examiner

U.S. Cl. X.R.

15-302; 134-72