

Sept. 25, 1945.

A. BURTON

2,385,683

TREATMENT APPARATUS

Filed March 10, 1943

3 Sheets-Sheet 1

Fig. 1.

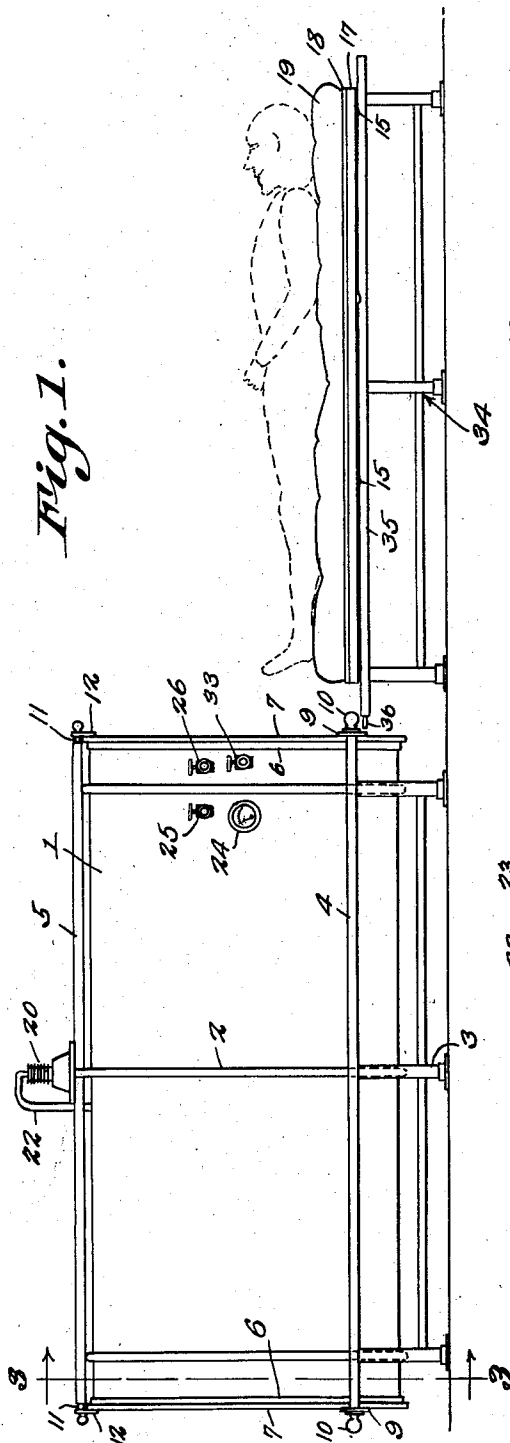


Fig. 3.

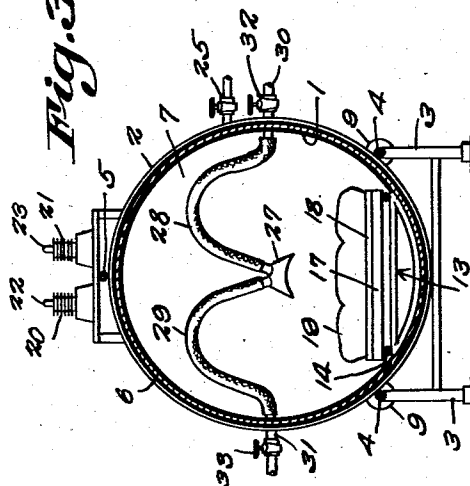
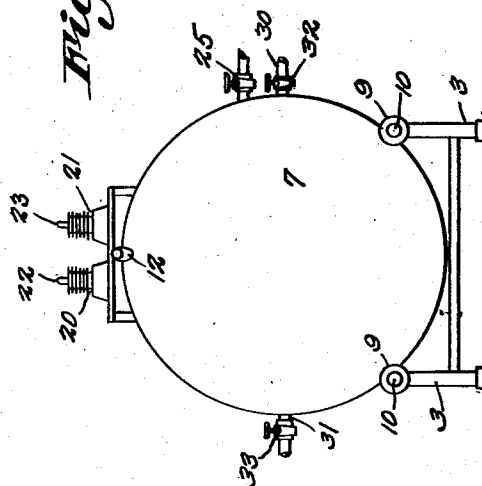


Fig. 2.



A. Burton

INVENTOR.

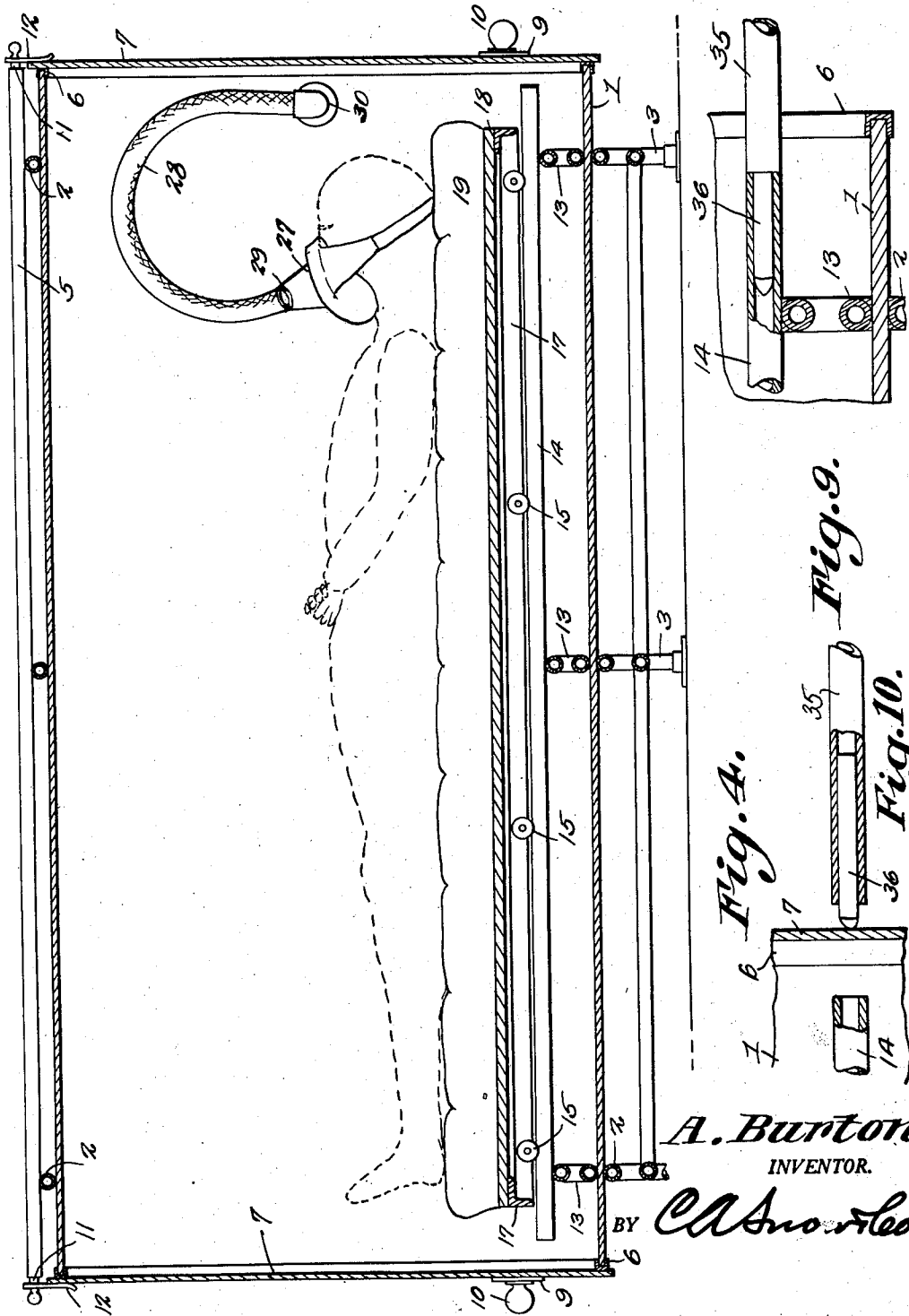
BY *Chas. H. Snow*

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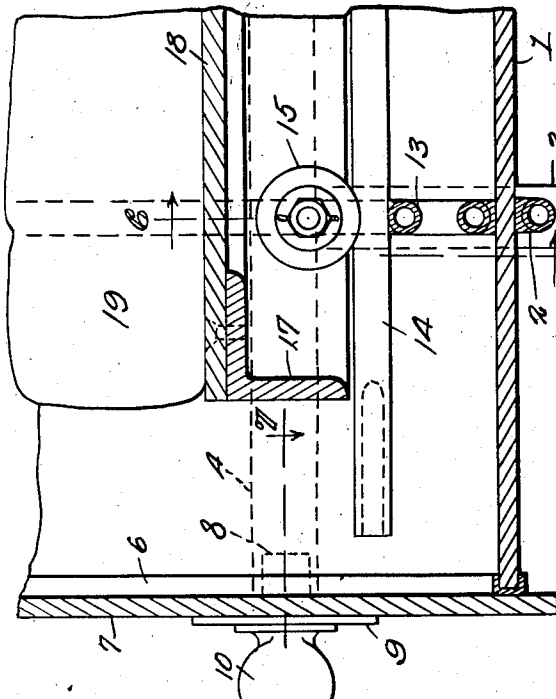


Fig. 5.

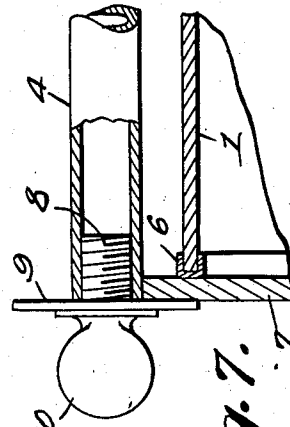


Fig. 7.

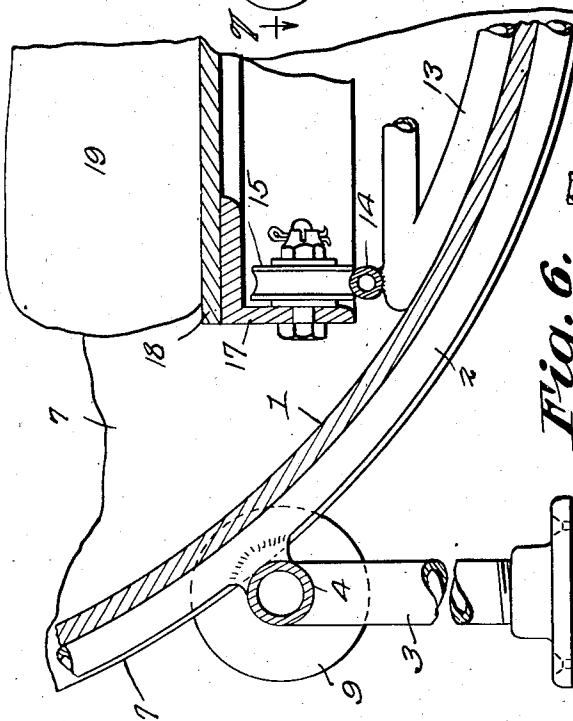


Fig. 6.



Fig. 11.

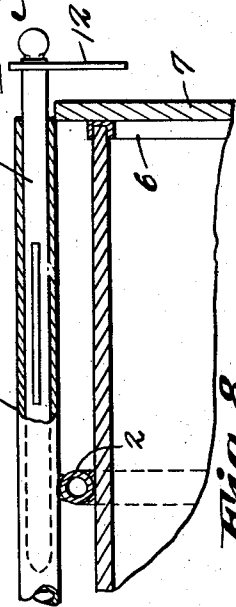


Fig. 8.

A. Burton

INVENTOR.

BY *CA Stone Co.*

UNITED STATES PATENT OFFICE

2,385,683

TREATMENT APPARATUS

Augustus Burton, Dallas, Tex.

Application March 10, 1943, Serial No. 478,723

1 Claim. (Cl. 128—298)

This invention relates to treatment apparatus and is designed primarily for use in treating persons having high blood pressure.

It is a fact long recognized that persons living in high altitudes are afforded considerable relief from high blood pressure which is not attainable in localities nearer sea level. The same beneficial effects are found in all cases involving the circulatory system, such as poor circulation.

An object of the present invention is to provide an apparatus which can be utilized for the purpose of maintaining a patient for any desired period of time under atmospheric conditions which will tend to relieve the ailment mentioned.

A further object is to provide an apparatus which can be installed readily as part of the equipment of a physician, can be manufactured at low cost, which is free from complicated mechanisms, and can be easily manipulated.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:

Figure 1 is a side elevation of the apparatus, the carriage portion thereof being shown in position for holding a patient prior to being moved into the housing provided therefor.

Figure 2 is an end elevation.

Figure 3 is a section on line 3—3, Figure 1.

Figure 4 is an enlarged central, vertical, longitudinal section through the housing and showing the patient-supporting carriage in position therein.

Figure 5 is an enlarged vertical section through a portion of one end of the housing and the carriage therein.

Figure 6 is a section on line 6—6, Figure 5.

Figure 7 is a section through one side portion of the housing and taken on the line 7—7, Figure 5.

Figure 8 is a view partly in section and partly in elevation showing the top latch of an end closure, the latch being illustrated in a released position.

Figure 9 is a view partly in longitudinal section and partly in elevation of one of the rail couplings.

Figure 10 is a view partly in section and partly in elevation of one end portion of one of the rails of the supplemental structure, the coupling pin being retracted.

Fig. 11 is a fragmental transverse sectional

view, showing the communication that exists between certain pipes and the interior of the casing.

Referring to the figures by characters of reference, 1 designates a casing which can be of any suitable shape and size and of any material desired. In the structure illustrated this casing is in the form of a cylindrical drum and it is preferred to make it of a transparent material, such as plastic but obviously it could be made angular and could be made of other materials. The casing is mounted in a supporting frame 2 having legs 3 designed to be mounted on a floor or other supporting surface and, for the purpose of reinforcement, the frame can be extended around and in contact with the casing as shown.

The frame also includes tubular side rails 4 extending longitudinally of the apparatus and terminating adjacent to the ends of the casing. An additional tubular rail 5 is extended along the top of the frame and also terminates adjacent to the ends of the casing.

Sealing gaskets 6 are fitted on the ends of the casing wall and these ends, which are open, are adapted to be closed by heads 7 each in the form of a large imperforate disk of light but strong material. Fitted in the ends of the side rails are stems 8 projecting from disks 9 from which project knobs or heads 10. These disks are of such size as to lap the lower portions of the heads 7 while said heads are resting on the end portions of the side rails 4. If desired the stems 8 can be screw-threaded so as to permit tightening of the disks 9 against the head 7 to insure a sealing contact between the heads and the gaskets 6.

A pin 11 is mounted for longitudinal adjustment within the upper tubular bar 5 at each end thereof and is provided at its outer end with a latch plate 12 adapted to extend downwardly so as to lap the adjacent head 7. By pushing the pin inwardly this plate will bear tightly against the head. By rotating the pin the latch plate 12 can be swung upwardly out of head-lapping position so that the head is thus released for outward and upward movement relative to the supporting rails 4.

It is to be understood that when the two heads are fastened tightly in position, they form sealing contacts with the gaskets so that it thus becomes possible to maintain desired air pressures within the casing.

Secured within the casing upon the bottom thereof is a frame 13 carrying parallel rails 14 which are preferably tubular. These rails are adapted to be engaged by and to support grooved wheels 15 journaled within and projecting below the frame 17 of a carriage 18. This carriage is adapted to support a pad or mattress 19 on which

a patient can be placed in a prone position although it is to be understood that under some conditions a patient could be supported in a sitting posture provided the casing is properly proportioned.

Mounted on the casing are a suction pump 20 and a pressure pump 21, the first pump, when operating, serving to extract air from the interior of the casing while the other pump operates to force air into the casing. The two pumps communicate with the interior of the casing through pipes 22 and 23 as shown.

For the purpose of indicating the pounds of pressure in the casing while in use, a barometer 24 is located in the wall of the casing. A valve inlet 25 is provided in the wall of the casing whereby a person outside of the apparatus can minutely regulate the flow of air into the casing to balance the suction pump and maintain a substantially uniform pressure in the casing. Another quick relief valve 26 can control the sudden flow of air into or out of the casing for emergency use. Should it be desired to supply air under atmospheric pressure or oxygen in the housing, a mask 27 can be provided, there being separate flexible tubes 28 and 29 extending from this mask to nipples 30 and 31 respectively in the wall of the casing, these nipples having valves 32 and 33 whereby the flow of air or gas to and from the mask can be regulated. For example if ordinary atmospheric air is to be breathed by the patient under treatment, the two valves 32 and 33 can be opened. However if oxygen is to be supplied, the oxygen tank will be connected to one of the nipples although both valves will be left open. Obviously a predetermined pressure can be maintained within the casing independently of the pressure of the gas supplied for breathing purposes.

In addition to the housing or casing structure thus far described, there is provided a supplemental structure in the form of a frame 34 having parallel rails 35. When one of the heads 7 is removed from the casing, this frame is adapted to be set up with its rails 35 aligning with the rails 14. A coupling pin 36 can be extended from each rail 35 for insertion into the adjacent rail 14 and thereafter the carriage can be pulled from housing 1 onto the rails 35 so that the patient to be treated can be placed in a prone position thereon. The carriage can then be pushed back into the casing, frame 34 pulled away from the casing, and the heads 7 lowered onto the adjacent ends of the rails 4 between the gaskets 6 and the disks 9. By means of these disks and the plate 12, the heads 7 can be held tightly against the gasket so as to seal the interior of the casing.

If the patient is to be subjected to the action of rarefied air, the suction pump 20 is set in motion and as the air is extracted the degree of pressure diminution in the casing will be indicated by the barometer 24. For the purpose of maintaining the air at a predetermined pressure, valve 25 can be opened to permit the admission of air at a desired rate in order that the predetermined pressure may be maintained.

Should the patient be equipped with the mask 27, air at normal pressure can be supplied to the mask through the tubes 28 and 29. However if oxygen is to be supplied to the patient, an oxygen tank can be connected to one of these tubes. These tubes are located adjacent to that end of the casing through which the patient is to be

moved and they are of such length that before the patient has been completely housed in the casing, the mask can be fitted to the patient and, thereafter, as the patient is pushed into the casing, the tubes will flex and maintain communication between the mask and the nipples 30 and 31. By providing these flexible tubes it is not only possible to fit the mask before the patient is entirely housed in the casing but the patient is free to turn or otherwise fit this position while under treatment in the casing and without disturbing the connection between the mask and the nipples 30 and 31.

Should the treatment require that the patient be subjected to a pressure more than atmospheric, the pressure pump 21 can be set in operation and obviously the pressure can be maintained at the predetermined point by manipulating the valve 25. Should a quick release of the air be desired, the valve 26 can be opened, this being a quick opening relief valve of any desired construction.

If the rails 35 are to be coupled to the rails 14, as heretofore described, the pins 36 can be maintained at all times projected beyond rails 35 and can even be fixed therein. If desired, however, and as has been illustrated, the pins are slidably mounted. Thus instead of moving the rails 35 into the casing 1 as in Fig. 9, they can be left outside of the casing. With the pins 36 retracted as in Fig. 4, the closure 7 can be placed in or removed from position. When the casing is open the pins 36 can be partly withdrawn from rails 35 so as to enter rails 14, thus bridging the gaps between the rails and providing a continuous track along which the carriage can move.

As the casing is provided with a removable head at each end, it becomes possible readily to clean the interior of the casing and maintain it in a sanitary condition. Furthermore, with this arrangement, it is possible, should it be found desirable to do so, to set up the supplemental structure adjacent to that end of the casing remote from the nipples 30 and 31, coupling the supplemental frame to the rails 14 in the manner heretofore explained so that the carriage containing the patient can be rolled into the casing to move the patient head-first into position.

What is claimed is:

Treatment apparatus including a casing, a removable head at one end of the casing, the other end of the casing being open, rails secured within the casing and extending substantially from end to end thereof, a supplemental structure outside of the casing and adjacent to but spaced from the open end thereof, rails on the supplemental structure aligned with and spaced from the rails in the casing, said supplemental structure being supported independently of the casing, means carried by the rails on the supplemental structure and positioned for movement into engagement with the other rails, thereby to bridge the spaces between the aligned rails, a carriage movable along the rails and said bridging means for conveying a patient into or out of the casing, and a head insertible between the open end of the casing and the supplemental structure for closing the open end of the casing, said bridging means being shiftable from engagement with the rails and the casing, thereby to provide a clearance for the reception of said head when placed in closed position on the casing.

AUGUSTUS BURTON.