Nov. 15, 1955 M. E. GOLDSMITH 2,723,665

FLUID INJECTION DEVICE

Filed Aug. 4, 1954 2 Sheets-Sheet 1

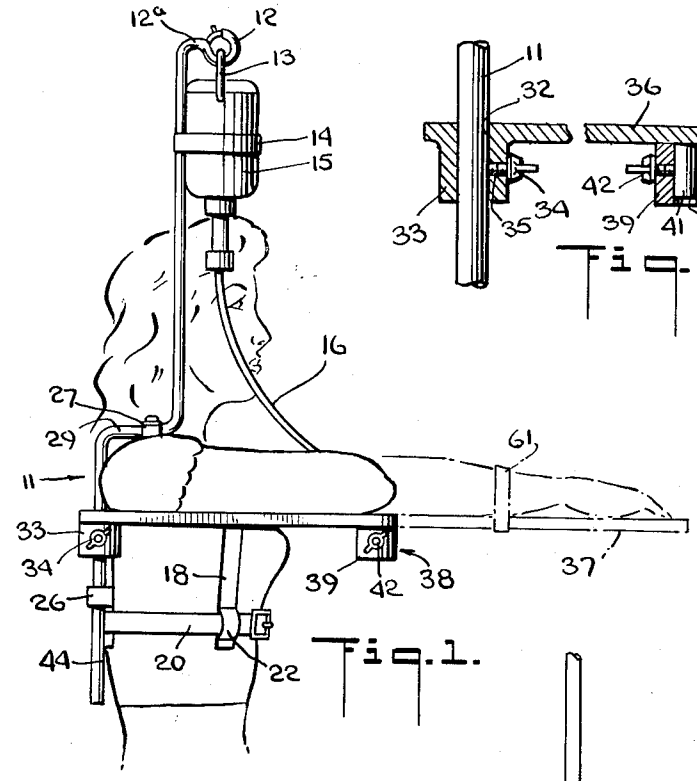


Fig. 1.

Fig. 3.

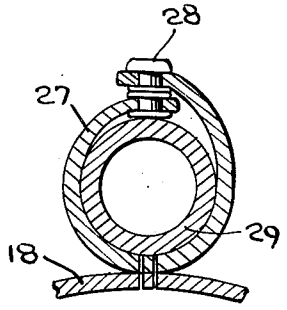


Fig. 6.

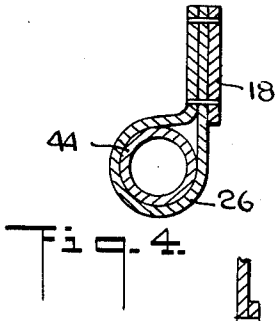


Fig. 4.

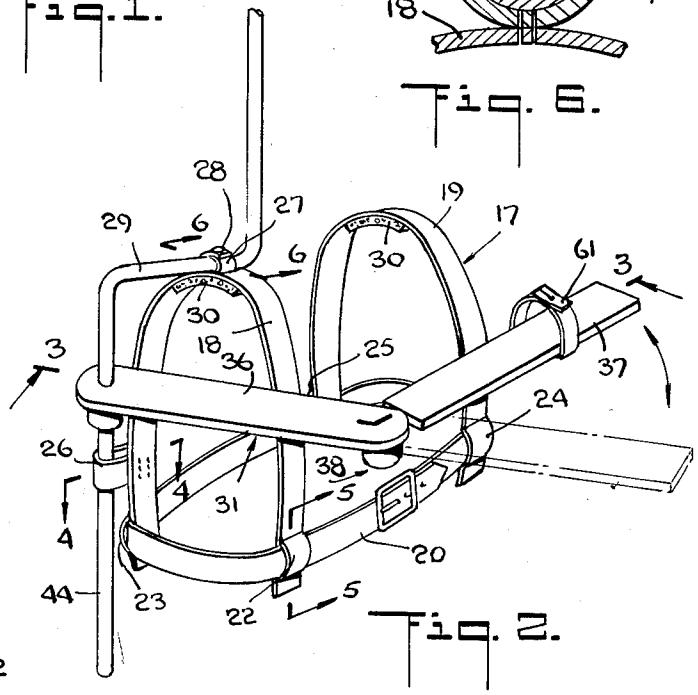


Fig. 2.

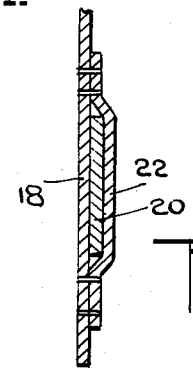


Fig. 5.

INVENTOR.
MIRIAM ELLEN GOLDSMITH
BY J. Walter Bader
ATTORNEY

Nov. 15, 1955 M. E. GOLDSMITH 2,723,665

FLUID INJECTION DEVICE

Filed Aug. 4, 1954 2 Sheets-Sheet 2

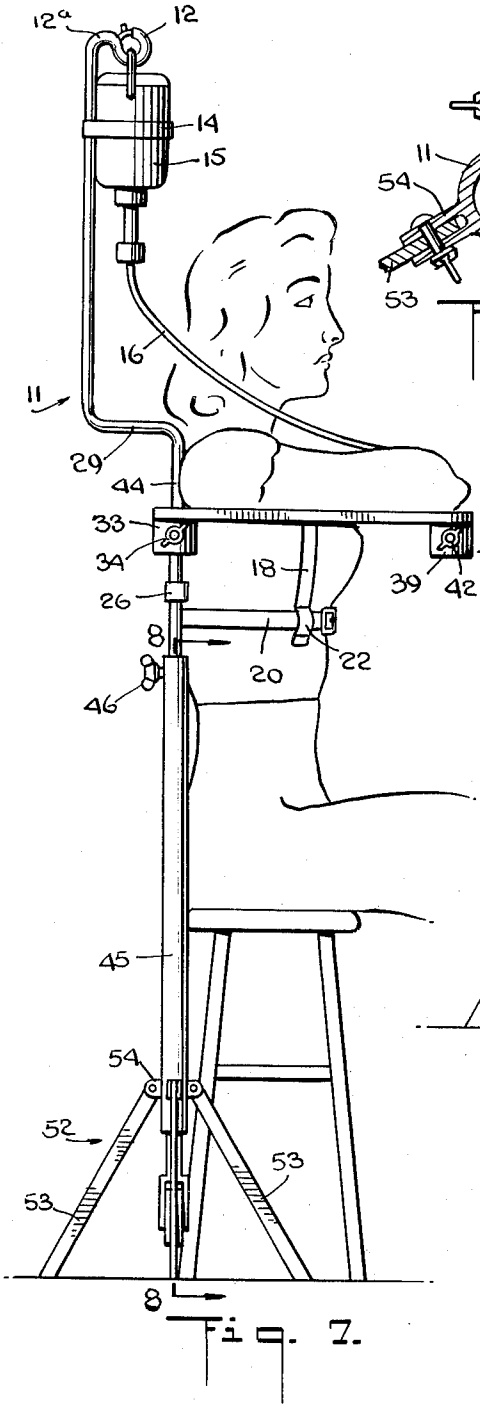


Fig. 7.

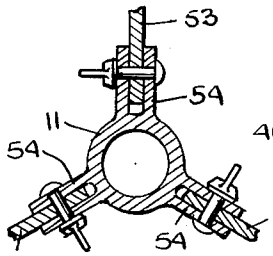


Fig. 9.

Fig. 8.

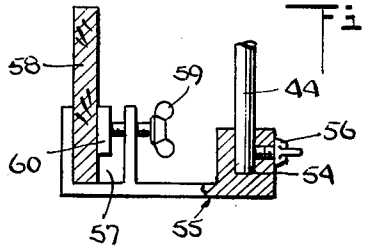


Fig. 10.

INVENTOR.
MIRIAM ELLEN GOLDSMITH
BY J. Walter Bader

ATTORNEY

United States Patent Office 2,723,665 Patented Nov. 15, 1955

2,723,665

FLUID INJECTION DEVICE

Miriam Ellen Goldsmith, New York, N. Y.

Application August 4, 1954, Serial No. 447,703

14 Claims. (Cl. 128—214)

This invention relates to a fluid injection device and has particular application to the method of intravenous feeding which is utilized after certain types of surgical operations.

In general, after operations have been performed in conditions such as gastric ulcer and the like, the stomach of the patient can no longer digest food. This condition continues for a considerable period until the operative injury has healed. It is therefore necessary to feed the patient intravenously until he can again take food by mouth.

The techniques of intravenous feeding have been well developed and need not be discussed at this time. However the apparatus used heretofore requires that the patient rest in bed. Modern techniques of rapid recovery from surgery, however, require that the patient become ambulatory as soon as possible.

It is therefore an object of this invention to provide a fluid injection device which may be adapted for use in the process of intravenous feeding, and which will permit such feeding to be carried out while the patient is in an ambulatory condition.

It is a further object of this invention to provide such a fluid injection device which will be simple and inexpensive to manufacture.

It is a further object of this invention to provide such a device which will be firmly secured to the body of the user.

It is a further object of this invention to provide such a device that can be adjusted to fit different sizes of patients.

It is a further object of this invention to provide such a device furnished with arm support means for the arm of the user thereof.

Briefly stated the invention comprises a container support and means for securing the container support to the body of the user of the device. The container support is adapted to hold a fluid container which contains the material used in intravenous feeding.

Preferably also an arm support is rigidly secured to the container support and is adapted to support the arm of the user of the device so that the needle adapted to puncture the vein of the patient may be steadily held.

The container support may also bear a movement element (such as a wheel member) at the lower portion thereof so that the patient's body does not have to support the entire weight of the device. In addition a standing element (such as a tripod member) may be employed at the lower portion of the container support so that the weight of the device may be supported when the patient is seated or standing in one place. Where both movement and standing elements are employed the standing element is upwardly movable and in its extreme downward position extends below the movement element. Thus either the movement element or the standing element, but never both at the same time, is engaged in operative manner.

The container support is preferably secured to the body of the user by an adjustable harness and a shoulder pad is preferably employed to aid in supporting the device. The arm support may be formed with a plurality of transversely movable sections so that various positions of the patient's arm may be accommodated.

In order to adjust the device to the physical characteristics of various individuals it is preferable to make the container support longitudinally adjustable and the arm support upwardly and downwardly movable upon the container support. In operation, however, the positions of the container support and the arm support are rigidly fixed after adjustment.

The invention will be further described by reference to the accompanying drawings which are made a part of this specification.

Fig. 1 is a side view of the fluid injection device of this invention in operative position with the lower portion of the container support not shown.

Fig. 2 is a perspective view of a portion of the fluid injection device of this invention.

Fig. 3 is a sectional view of the invention taken along lines 3—3 of Fig. 2.

Fig. 4 is a sectional view of the invention taken along lines 4—4 of Fig. 2.

Fig. 5 is a sectional view of the invention taken along lines 5—5 of Fig. 2.

Fig. 6 is a sectional view of the invention taken along lines 6—6 of Fig. 2.

Fig. 7 is a side view of the invention showing the standing means secured to the container support in operative relationship while the patient is seated.

Fig. 8 is a sectional view of the invention shown in Fig. 7 taken along lines 8—8 of Fig. 7.

Fig. 9 is a sectional view of the invention shown in Fig. 8 taken along lines 9—9 of Fig. 8.

Fig. 10 is a sectional view showing the method of attachment of the container support that may be used if the device is to be employed while the patient is in bed.

Referring to the specific form of the invention as shown in the drawings herein container support **11** is formed with hook **12** at its upper end. The portion **12***a* of container support **11** which bears hook **12** is offset from the remainder of container support **11** preferably at right angles thereto.

Hook **12** is adapted to fit into link **13** of fluid container **15**. Strap **14** is also provided and is secured to fluid container **15** and container support **11** so as to aid in holding the parts together.

Container **15** contains the fluid used for intravenous feeding. This fluid is conducted from container **15** through tube **16** and thence through a hollow needle (not shown) into the arm of the patient. The hollow needle punctures a vein.

Container support **11** is secured to the patient's body by harness **17** which is formed with straps **18**, **19** and **20**. Strap **20** is split and is formed with a buckle so that harness **17** may be opened and closed. It is thus possible to attach or remove harness **17** from the user's body quickly and easily.

Strap **18** is secured to strap **20** by loops **22** and **23** while strap **19** is secured to strap **20** by loops **24** and **25**. Strap **20** is secured to container support **11** by loops **26** and **27**. Screw **28** passes through loop **27** so that harness **17** is fixed to container support **11** and will not slide thereon.

Container support **11** is formed with an additional offset portion **29** in the region of screw **28**. Offset portion **29** is adapted to fit upon the shoulder of the patient. Pad **30** is provided upon strap **18** of harness **17**.

Arm support **31** is provided with hole **32** through which container support **11** fits. Arm support **31** is

planar in construction and is provided with downwardly depending portion 33 surrounding hole 32. Screw 34 fits into hole 35 in downwardly depending portion 33.

This construction permits arm support 31 to move upwardly and downwardly upon container support 11 but also permits arm support 31 to be rigidly positioned at fixed points upon container support 11.

Arm support 31 is formed with two pivotally movable sections 36 and 37. Sections 36 and 37 are secured to each other by connector 38 which is formed with a downwardly depending portion 39 and a planar portion 40. Downwardly depending portion 39 is provided with recess 40*a* and pin 41 projecting from the lower surface of section 36 fits into recess 40*a*. Screw 42 bears against pin 41 and so holds sections 36 and 37 in the proper relationship.

The planar portion 40 is fastened to section 37 of arm support 31 by screws 43.

Container support 11 may be adjusted in height since it is formed with two sections 44 and 45. These sections telescope within one another. Screw 46 bears against section 44 from the outer surface of section 45 and thus holds the sections rigidly when the proper length is obtained.

In order to support container support 11 upon the ground so that the weight upon the patient is lessened a movement element and a standing element are provided.

When it is desired to have the patient walk with the apparatus then a wheel 47 rotatably secured in support 48 is provided. Support 48 bears pin 49 which is pivotally movable in hole 50 in container support 11. Retainer 51 is provided to prevent support 48 from being displaced.

Where it is desired to have container support 11 in a standing position standing element 52 is provided. This consists of legs 53 which are pivotally secured within extension 54. Extension 54 is secured to container support 11.

Legs 53 are made longer than the base of wheel 47 so that when legs 53 are in position wheel 47 is inoperative and the device is supported by legs 53. When it is desired that the patient walk with the device legs 53 are moved upwardly so as to clear the ground and wheel 47 then becomes operative.

Fig. 10 of the device shows the device in position upon the bed of a patient. In this modification section 45 of container support 11 is removed from section 44. Section 44 is then fitted into recess 54 of connector 55. Screw 56 holds section 44 firmly in place.

Recess 57 is also provided in connector 55 and is adapted to fit board 58 which is secured to the patient's bed. Screw 59 extends into recess 57 and is formed with a flattened portion 60 which bears against board 58 and holds it in place.

In order to properly support the arm of the patient upon arm support 31 an additional strap member 61 may also be provided.

The foregoing description indicates the construction of the apparatus. In operation sections 44 and 45 of container support 11 are adjusted so that movement element (wheel 47) strikes the ground. Arm support 31 is then adjusted upon container support 11 to the proper height. Screws 46 and 35 are then tightened.

Arm support 31 is then moved to the proper angle by causing section 37 thereof to rotate about section 36. When the proper angle is obtained screw 42 is tightened.

Buckle 21 of strap 20 of harness 17 is then engaged so that harness 17 is secured to the patient's body.

The needle bearing the intravenous food is then inserted into the vein of the patient.

Where, as shown in Fig. 7, the device need not be moved (as, for example, when the patient is seated), the device is supported stationarily upon the ground.

This is accomplished in the device of this invention by moving legs 53 downwardly so that wheel 47 is lifted clear of the ground. In this position legs 53 support the weight of container support 11 so that offset portion 29 may be turned about and taken off the shoulder of the patient.

The foregoing specific embodiments of this invention as set forth in the foregoing specification are for illustrative purposes and for purposes of example only.

Various changes and modifications may obviously be made within the spirit and scope of this invention and would occur to those skilled in this art.

I claim:

1. A fluid injection device comprising a container support, a movement element and a standing element at the lower portion thereof, means for placing either the movement element or the standing element in operating position; an arm support rigidly secured to said container support, and mean for securing said supports to the body of the user of the device.

2. A fluid injection device comprising a container support, a movement element and a standing element at the lower portion thereof, means for placing either the movement element or the standing element in operating position; an arm support rigidly secured to said container support and adapted to be adjustably positioned thereupon, and means for securing said supports to the body of the user of the device.

3. A fluid injection device comprising a container support, a movement element and a standing element at the lower portion thereof, means for placing either the movement or the standing element in operating position; an arm support rigidly secured to said container support, and means for securing said supports to the body of the user of the device.

4. A fluid injection device comprising a longitudinally adjustable container support, a movement element and a standing element at the lower portion thereof, means for placing either the movement or the standing element in operating position; an arm support rigidly secured to said container support, and means for securing said supports to the body of the user of the device.

5. A fluid injection device comprising a longitudinally adjustable container support, a pivotally movable wheel member at the lower end thereof, an arm support rigidly secured to said container support and adapted to be adjustably positioned thereupon, and means for securing said supports to the body of the user of the device.

6. A fluid injection device comprising a longitudinally adjustable container support, a pivotally movable wheel member at the lower end thereof, an upwardy movable downwardly projecting support member extending below the base portion of said wheel member so that either said wheel member or said support member are in operating position; an arm support rigidly secured to said container support and adapted to be adjustably positioned thereupon, and means for securing said supports to the body of the user of the device.

7. A fluid injector device comprising a longitudinally adjustable container support, a pivoted wheel member at the lower end thereof, an arm support formed with a plurality of transversely movable sections rigidly secured to said container support, and a flexible body harness secured to said container support and adapted to hold said support to the body of the user.

8. A fluid injector device comprising a longitudinally adjustable container support, a pivoted wheel member at the lower end thereof, an arm support formed with a plurality of transversely movable sections rigidly secured to said container support, a flexible body harness secured to said container support and adapted to secure said support to the body of the user, and an additional holding member adapted to hold the arm of the user to said arm support.

9. A fluid injector device comprising a longitudinally

adjustable container support, a pivoted wheel member at the lower end thereof, an upwardly movable support member secured to the lower portion of said container support and extending below said wheel member so that either said wheel member or said support member are in operative position; an arm support formed with a plurality of transversely movable sections rigidly secured to said container support, a flexible body harness adapted to secure said supports to the body of the user, and an additional holding member adapted to hold the arm of the user to said arm support.

10. A fluid injector device comprising a longitudinally adjustable container support, a pivoted wheel member at the lower end thereof, an upwardly movable support member secured to the lower portion of said container support and extending below said wheel member so that either said wheel member or said support member are in operative position; an arm support rigidly secured to said container support, a flexible body harness adapted to secure said supports to the body of the user, and an additional holding member disposed upon said arm support and adapted to hold the arm of the user to said arm support.

11. A fluid injector device comprising a longitudinally adjustable container support, a pivoted wheel member at the lower end thereof, an upwardly movable support member secured to the lower portion of said container support and extending below said wheel member so that either said wheel member or said support member are in operative position; an arm support rigidly secured to said container support, said arm support being of planar construction, a flexible body harness adapted to open at the front portion thereof securing said supports to the body of the user, and an additional holding member disposed upon said arm support and adapted to hold the arm of the user.

12. A fluid injector device comprising a longitudinally adjustable container support formed with an offset portion, a shoulder pad secured to said container support at said offset portion, a pivoted wheel member at the lower end of said container support, an upwardly movable support member secured to the lower portion of said container support and extending below said wheel member so that either said support member or said wheel member are in operative position; a flattened arm support formed with a plurality of transversely movable sections rigidly secured to said container support, a flexible body harness opening at the front thereof and adapted to secure said supports to the body of the user, and an additional holding member disposed upon said arm support and adapted to hold the arm of the user.

13. A fluid injector device comprising a longitudinally adjustable container support formed with an offset portion, a shoulder pad secured to said container support at said offset portion, a pivoted wheel member at the lower end of said container support, an upwardly movable tripod member secured to the lower portion of said container support and extending below said wheel member so that either said support member or said wheel member are in operative position; a flattened arm support formed with a plurality of transversely movable sections rigidly secured to said container support, a flexible body harness opening at the front thereof and adapted to secure said supports to the body of the user, and an additional holding member disposed upon said arm support and adapted to hold the arm of the user.

14. A fluid injector device comprising a longitudinally adjustable container support formed with an offset portion, a shoulder pad secured to said container support at said offset portion, a pivoted wheel member at the lower end of said container support, an upwardly movable tripod member secured to the lower portion of said container support and extending below said wheel member so that either said support member or said wheel member are in operative position; a flattened arm support formed with a plurality of transversely movable sections rigidly secured to said container support and adapted to be adjustably positioned thereupon, a flexible body harness opening at the front thereof and adapted to secure said supports to the body of the user, and an additional holding member disposed upon said arm support and adapted to hold the arm of the user.

References Cited in the file of this patent

UNITED STATES PATENTS

2,266,231	Mazzeo et al.	Dec. 16, 1941
2,551,617	Maybert et al.	May 18, 1951
2,696,963	Shepherd	Dec. 14, 1954
2,710,004	Stamper	June 7, 1955