United States Patent [19]

Mancino

[11] **3,885,681**

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[54] **FEEDING DEVICE**

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[52] **U.S. Cl.** ..... **214/1 T;** 3/1; 214/1 CM

[51] **Int. Cl.** **A61j 7/00**

[58] **Field of Search** ..... 214/1 T, 1 CM; 3/1

[56] **References Cited**

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Assistant Examiner—George F. Abraham
Attorney, Agent, or Firm—DeLio and Montgomery

[57] **ABSTRACT**

A feeding device for use by persons with limited or no use of their arms, wherein a spoon is mounted on supporting and counterbalancing levers and is associated with a mouth-piece in such a manner that the user can manipulate the spoon to lift food from a dish, can then place the spoon on a fixed support and then adjust the spoon to a position for convenient eating of the food. The spoon mounting includes an adjustable support for a counterbalancing spring. All the parts are mounted on a flat base which is adapted also to support the food dish.

7 Claims, 5 Drawing Figures

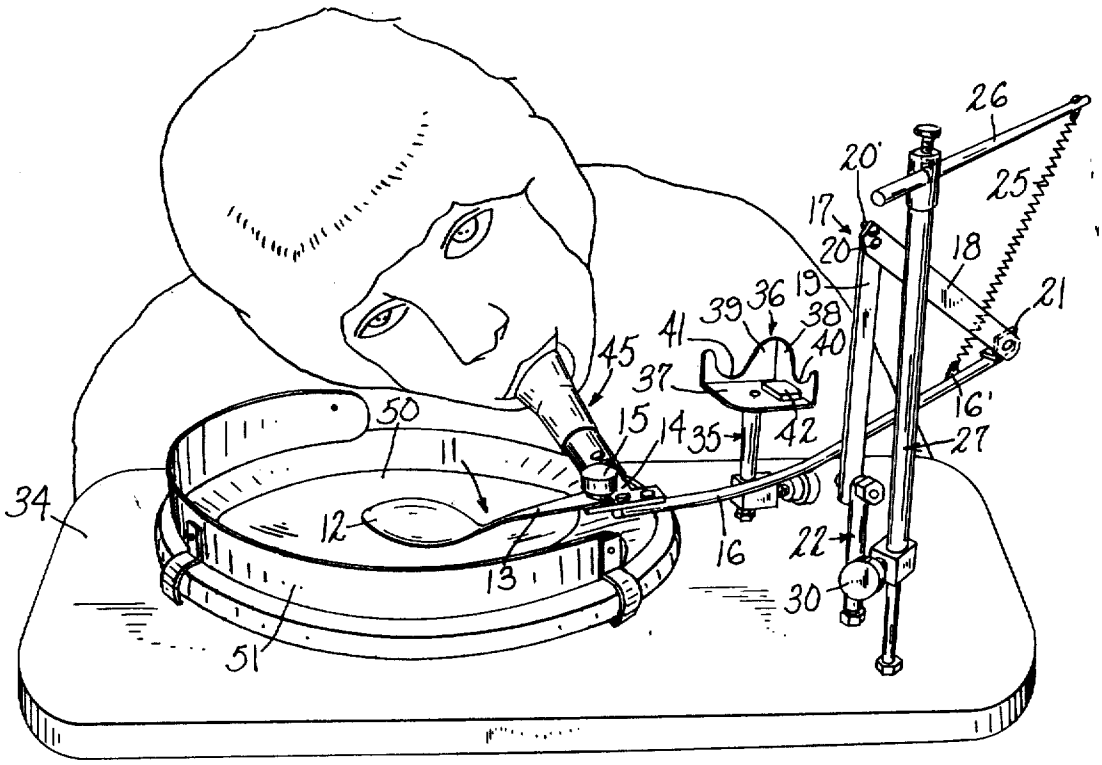


Fig. 1.

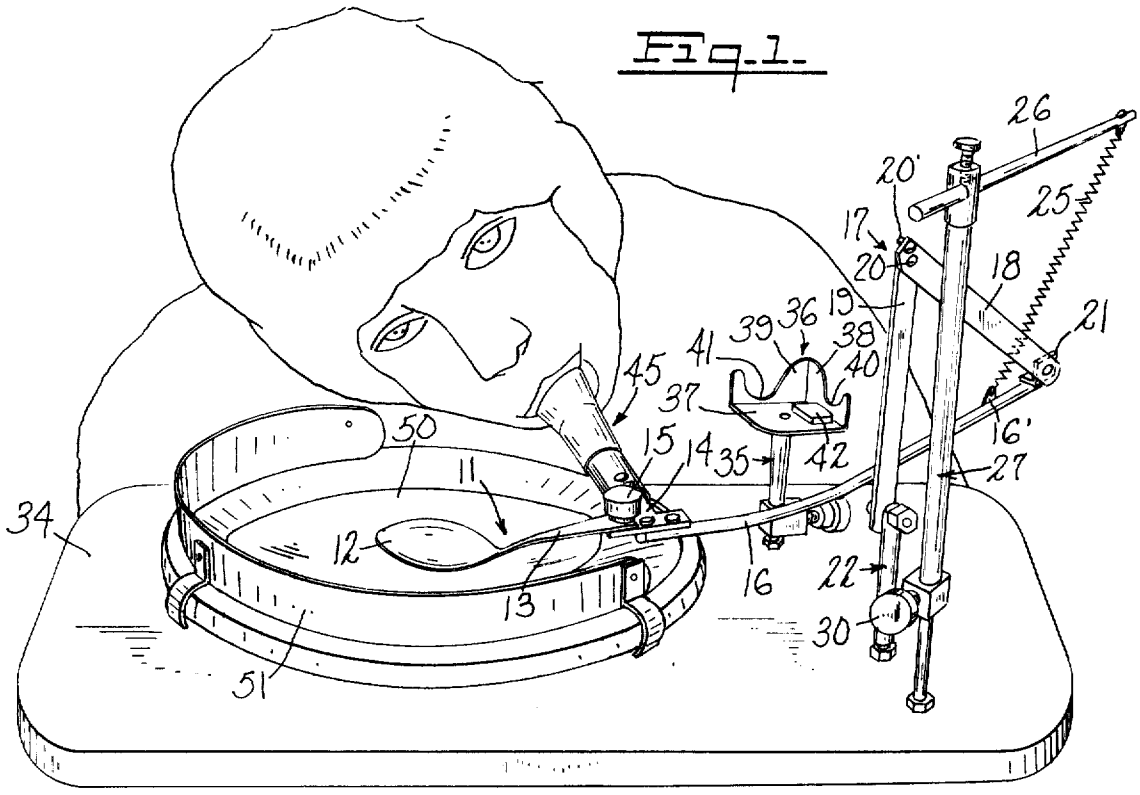

26
20'
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18
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35
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16'
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34
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22
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Fig. 2.

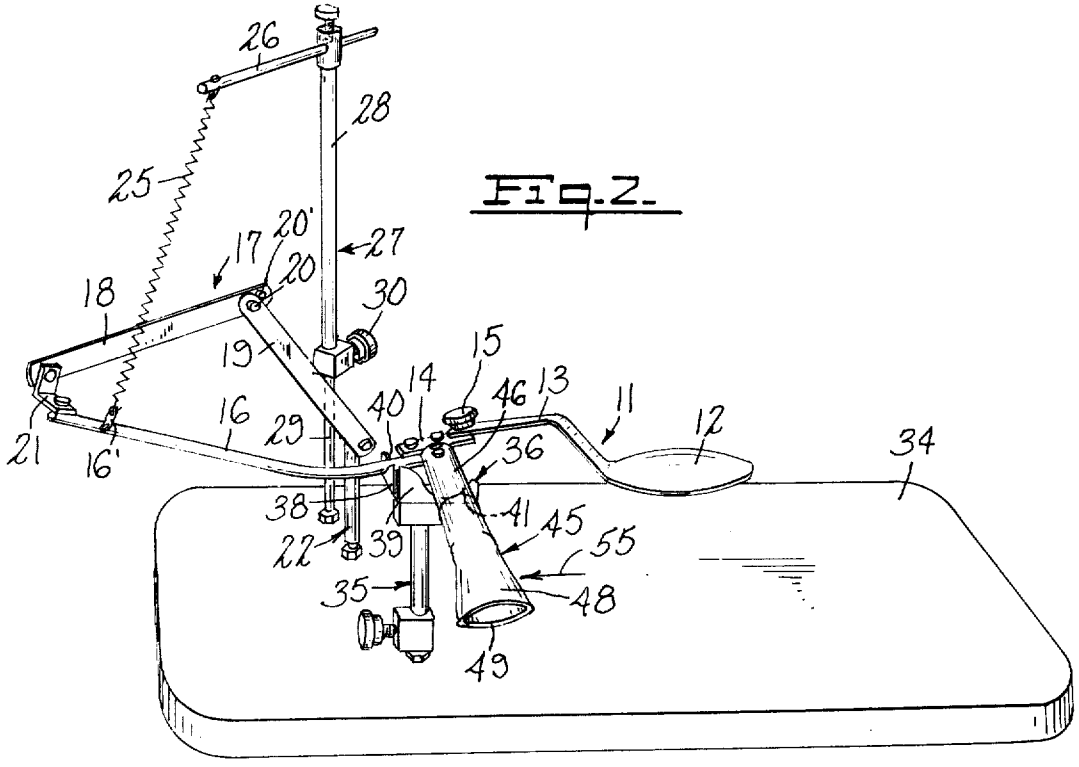

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20'
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16'
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Fig. 3.

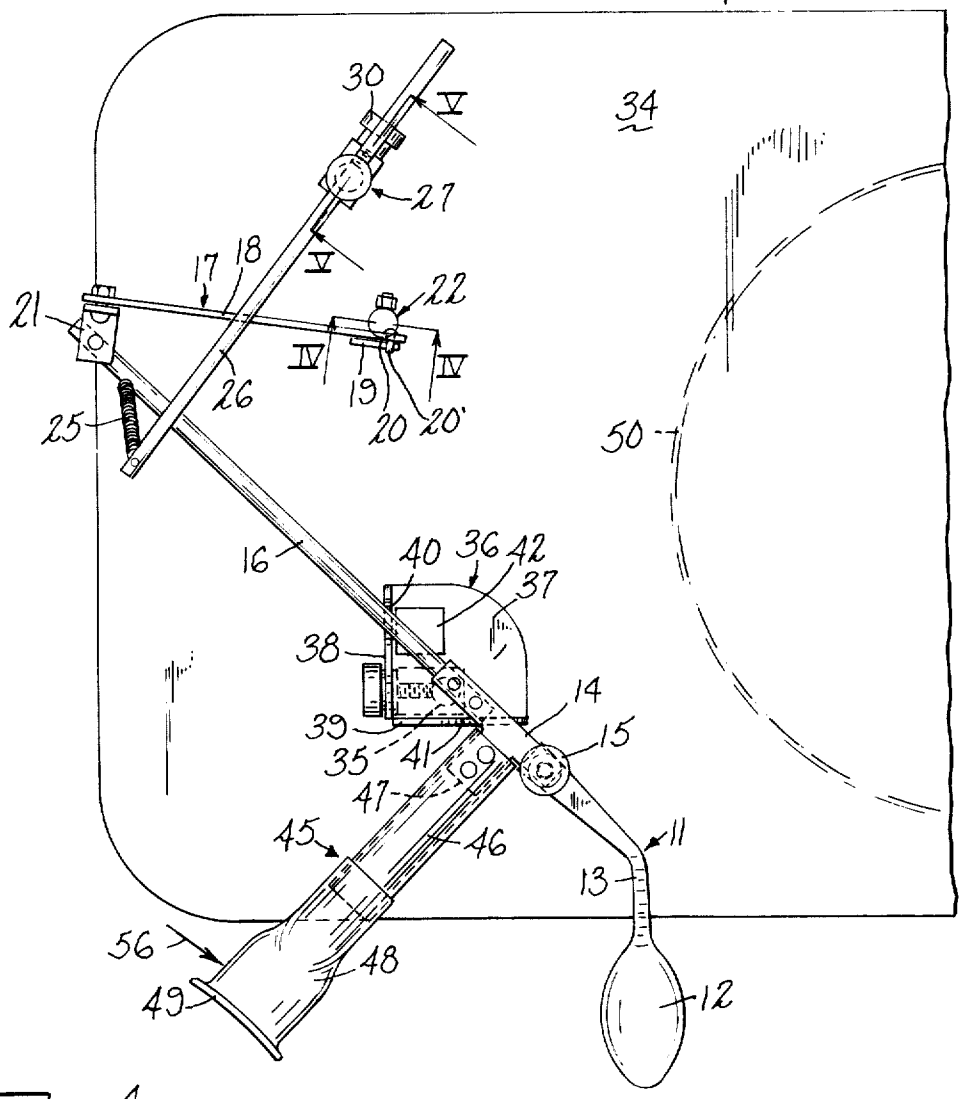


Fig. 4.

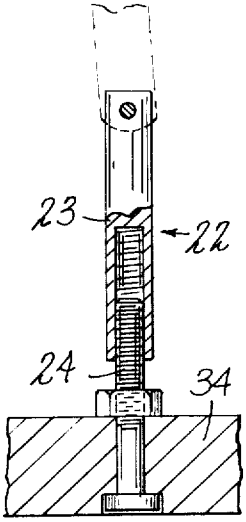
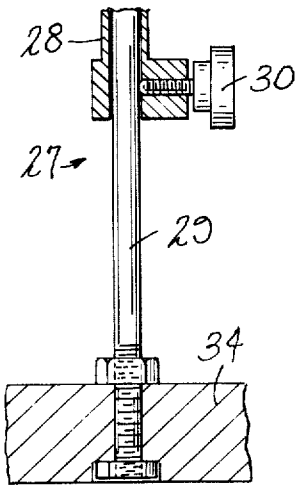


Fig. 5.



FEEDING DEVICE

This invention relates to a feeding device adapted for use by persons having limited or no use of their arms, the device including a spoon and supporting means therefor. The supporting means comprises a base, posts mounted thereon, levers and counterbalancing means carried by certain posts, a fixed spoon-holder cradle on another post, and a spoon mounting and actuating assembly, the latter being adapted for manipulation by the user's head, neck and mouth, to pick up a spoonful of food from a plate, to place the spoon holder on its cradle and, if desired, to move the filled spoon into a more convenient position for eating the food.

Children and adults may be, or become, afflicted with disabilities that result in little motor control due to a variety of causes including: congenital deformities such as arthrogryposis, Thalidomide effects, and bilateral above-the-elbow amputations; central nervous system involvements such as cerebral palsy, multiple sclerosis; and traumatic injuries such as spinal cord lesions. Depending on type, course and extent of the disease, injury or disability, the individual may be temporarily or permanently unable to perform any acts of independent living due to severe physical limitations.

It is an object of the present invention to provide the individual who is actually ill with an immediate accomplishment in independence.

It is a further object to provide what may be the only practical means of independence for the permanently disabled individual who lacks any functional upper extremity movement.

It is another object to provide, more specifically, an adjustable counterbalanced spoon mounting and actuating assembly which can be operated entirely by the user's head, neck and mouth movements, in conjunction with minimal trunk control, to pick up food from a plate and locate it in a position to be eaten.

It is a further object to provide certain improvements in the form, construction and arrangement of the several parts whereby the above named and other objects may effectively be attained, and the invention accordingly comprises the features of construction, combination of elements and arrangement of parts hereinafter set forth, and the scope of the invention will be indicated in the claims.

A practical embodiment of the invention is shown in the accompanying drawings, wherein:

FIG. 1 represents a perspective view of the feeding device being operated by a handicapped person to pick up a spoonful of food (not shown);

FIG. 2 represents a perspective view of the device with the spoon mounting and actuating assembly resting on the cradle, in the position assumed before and after filling the spoon;

FIG. 3 represents a plan view showing the parts turned to the preferred "eating" position;

FIG. 4 represents a detail vertical section on the line IV—IV of FIG. 3; and

FIG. 5 represents a detail vertical section on the line V—V of FIG. 3.

Referring to the drawings, the spoon **11** has a bowl **12** and a handle **13**, the latter being attached to one end of the T-shaped junction **14** by means of a spoon adjustment knob **15**, and the handle being bent substantially as shown. The opposite end of the junction is fixed to one end of the lever **16**, and the opposite end

of the lever **16** is connected to the guiding end counterbalancing assembly **17**.

The assembly **17** comprises levers **18** and **19**, pivotally connected at **20**, the lever **18** being loosely attached by the angle piece **21** to the end of lever **16** and the lever **19** being pivotally connected (for movement in a vertical plane) to the upper end of the post **22**. Said post is constituted by a sleeve **23** threaded freely on a bolt **24**. Maximum flexibility of the lever system may be assured by forming the pivot points of nylon or the like, with or without additional nylon washers. Pin **20'** in the end of lever **18** acts as a stop (FIG. **2**).

The weight of the assembly **17** and lever **16** is partially balanced by the force of the spring **25**, which extends from a lug **16'** projecting upward from the lever **16** to a rod **26** adjustably mounted on the top of a post **27**. Said post is constituted by a shaft **28**, slidable on the vertical bar **29** and adjustable thereon by means of the shaft adjustment knob **30**.

The posts **22** and **27** are mounted in a base **34** which also carries a post **25** (similar to post **27** but shorter) on which is mounted the spoon-holder cradle **36**. The latter is constituted by a small flat plate **37** having two vertical walls **38, 39**, disposed at a right angle and each being cut away to provide upwardly facing recesses **40, 41**. A magnet **42** on the plate **37** aids in stabilization of the device. The base **34** may suitably be of plastic material such as Formica or plastic covered wood, and should be heavy enough to resist movement when placed on a table or the like and easy to clean.

The mechanism described above is operated by means of the mouthpiece assembly **45**, consisting of a rigid tube **46** fixed at one end to the middle leg **47** of the T-shaped junction **14** and bearing on its other end a tubular plastic mouthpiece **48**, the free end of which is flattened to an oval shape and provided with a bead **49**. The mouthpiece **48** is proportioned to be received comfortably in the mouth of the user, gripped as tightly as desired between the teeth and taking account of the fact that breathing through the tube **46** and mouthpiece **48** may be necessary.

In its at-rest position, the lever **16** is in the recess **40** and the tube **46** is in the recess **41**, as shown in FIG. **2**, the tension of spring **25** being adjusted to hold the spoon bowl **12** in level or slightly elevated position. The food to be eaten is supplied preferably on a plate **50** which has a separate or integral upstanding rim or plate guard **51** around at least part of its periphery to aid in loading the spoon. If the food is liquid or semi-liquid, it may be served in a dish of suitable depth.

In use, assuming a plate of food to be positioned on the base **34** (FIG. **1**) and the mechanism at rest as shown in FIG. **2**, with the spoon approximately level with the user's mouth, the user grips the mouthpiece, lifts the spoon supporting assembly off the cradle **36**, and manipulates the spoon so that the bowl will pick up a quantity of food, normally by a sidewise pushing or endwise motion of the spoon bowl. When the spoon is loaded the parts are returned to the position of FIG. **2**, and the user releases the mouthpiece, then gently nudges it with the left cheek (arrow **55**) in order to swing the tube **46** out of the recess **41** and to bring the lever **16** and adjacent end of the junction **14** in line across the recesses **40** and **41**, as shown in FIG. **3**. This brings the filled spoon into a position extending directly toward the user so that the food can be most conveniently eaten. To repeat the operation, the mouthpiece

is nudged by the right cheek (arrow **56**, FIG. **3**) in order to return the spoon to the position of FIG. **2**. Some users may find it possible to eat the food from the spoon without shifting its position, particularly if the angle between the spoon handle and the tube **46** is reduced.

The spoon and mouthpiece can readily be removed for washing and/or sterilization.

The physical limitations and capabilities of patients needing to use such a feeding device necessarily vary widely; it will be noted that individual adjustments can be made with respect to spring tension and angle, post heights, spoon angle and cradle position in order to achieve optimal convenience in operation for each individual.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim is:

1. A feeding device for no-hand operation comprising, a spoon having a bowl and a handle, a mouthpiece assembly connected to said handle and projecting laterally therefrom, counterbalancing means connected to said spoon and mouthpiece assembly to support at least a portion of the weight thereof, and a cradle mounted adjacent said counterbalancing means and adapted to support the balance of said weight when the spoon and mouthpiece assembly are rested thereon.

2. A feeding device according to claim **1** wherein the counterbalancing means includes resilient means biasing the spoon bowl toward its level position.

3. A feeding device according to claim **1** wherein the counterbalancing means includes means for adjusting the position and direction of its supporting force.

4. A feeding device according to claim **1** which includes means for adjusting the angle of the spoon relative to the mouthpiece.

5. A feeding device according to claim **1** in which the connection between the mouthpiece and handle includes a T-shaped connector, and in which the spoon handle is attached to one end of the connector, the counterbalancing means is attached to the opposite end of the connector and the mouthpiece assembly is attached to the laterally projecting portion thereof.

6. A feeding device according to claim **5** wherein the mouthpiece is attached to the connector by means of a metal tube.

7. A feeding device according to claim **1** wherein the cradle is provided with at least two upwardly facing horizontally spaced recesses, one of said recesses being adapted to receive alternatively the mouthpiece assembly and the connector.

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