

Extract

The invention for blind and partially sighted people relate to a few remote touch shoes with the tip of both shoes two remote sensors are attached with a remote sensor, the way scanning for obstacles ahead and a remote sensor away aside from the exterior of the shoe scanning for obstacles.

The obstacles detected by the remote sensors are transmitted to motors that vibrate back of the heel side of the inner lining of the shoes are placed and felt on the skin of the ankles.

In a belt around the waist of the blind, two distance sensors mounted near the belly navel with a remote sensor diagonally upward removing the height as overhanging branches etc scans and a distance sensor diagonally downward removing the depth include curb or stairs, scanning.

The combination of distance affects shoe and belt around the waist of the body is blind stick only needed for control of identified obstacles by the sensors.

On the belt, a GPS system and the sensors are mounted on the tip of the range shoes can be replaced by a camera.

Distance Attacks shoe and belt for the mobility of blind and partially sighted people.

The invention is a continuation of an idea where I got the following patents. Help the affected grab NL 1029561 and NL 1033239 addition. In both patents, I use remote sensors and vibrating pads that can be felt on the skin. In patent NL 1029561 I call a camera that is connected to a palmtop with the objects detected by the camera, compared to a database in the palm computer and the name of the object is passed into an earphone.

The new invention for blind and partially sighted people relate to a few remote touch shoes with the tip of both shoes two remote sensors are attached with a remote sensor, the way scanning for obstacles ahead and a remote sensor away aside from the exterior of the shoe scanning for obstacles .

In the front part of the pair of shoes under the insole is in each shoe a pressure sensor to a step forward with the right foot of the blind by the pressure of the body is activated and for half a second using an operating system in the heel the shoe of the distance sensors on the tip of the right shoe makes scanning the road for any obstructions. The operation of the pressure sensor and distance sensor with a step forward with the left foot is the same except that by lifting the right foot pressure on the pressure sensor of the right shoe is raised by moving the weight of the blind on the pressure sensor in the left shoe and then lifted a step forward with right foot.

The obstacles detected by the remote sensors are transmitted to motors that vibrate back of the heel side of the inner lining of the shoes are placed and felt on the skin of the ankles. With the right shoe, the identified obstacles ahead transmitted to the vibrating motor mounted in the back inside lining left in the shoe, and identified obstacles to the right side of the outer shoe are transmitted to the vibrating motor mounted in the rear interior of the liner right at the shoe. In the left shoe, the identified obstacles ahead transmitted to the vibrating motor mounted in the back inside lining right side of the shoe, and identified obstacles to the right side of the outer shoe are transmitted to the vibrating motor mounted in the rear interior of the liner left in the shoe.

These vibration motors can also be placed in a wired or wireless connection to the ankles, legs, or a belt around the waist of the body of the blind and there felt.

In a belt around the waist of the blind, two distance sensors mounted near the belly navel with a remote sensor diagonally upward removing the height as overhanging branches etc scans and a distance sensor diagonally downward removing the depth include curb or stairs, scanning.

The radius of the remote sensor down is software adjusted so that the pavement does not signal to a vibrating motor, but arrived at such a low down curb, or. Also takes into account the length of a person. The adjustment of the detection beam of the remote sensor to diagonally downwards software is adjusted to the height of the belt through the detection beam path so that only one signal to the vibrating motor to obstacles deeper than the road.

The belt has four vibrating motors with a vibrating motor in the abdomen and navel than ninety degrees apart right and left rear of the body placed. Obstacles in height, for example, the left engine vibration felt in the depth and obstacles are eg the engine vibration felt right.

On the belt is also an operating system and a GPS system attached. The GPS system has the same effect as described in my patent GB 1033239 except that the components in a belt around the waist of a body. The four vibration motors in the belt position to pass obstacles may also be used with the GPS system but may be vibrating at a different frequency, more or less vibration. The blind should be able to distinguish whether the obstacles are, or that it is using the GPS system to indicate direction. If the GPS system straight forward than the engine vibrates when the belly navel while.

If the GPS system ninety degrees left of the left engine vibrates the body for a while and forty-five degrees left shaking both motors at the navel and abdomen to the left of the body at the same moment, etc.

Because of the distance sensors on the point of distance shoes to replace a damaged

This camera can detect obstacles by putting one step in the

right foot forward. This will bring pressure on the pressure sensor by the weight of the body and provides a signal through the operating system to the camera and makes it a recording of the situation about two meters ahead. An analysis of the recording is only the sharp clear decisive part in the recording and further analysis as a split window with four panes. And through the inclusion in one of four parts that an obstacle is detected it is passed to the corresponding vibration motor in the rear right side or left in the lining of the shoe.

Obstacles standing or lying on the ground, for example by giving low-frequency, low vibration to the vibrating motors and obstacles in height are passed with much high frequency vibrations of the vibrating motors.

Fuzzy or blurry images more than two meters away from the blind by analyzing the absorption ignored. With a step with the left foot is the same function as the right foot.

The invention will be further detailed to put the basis of the embodiments shown in the figures of the construction of the invention.

Fig. 1 shows a side view of the shoe affects distance.

Fig. 2 shows the shoe pressure sensor.

Fig. 3 shows a top view of the operation of the remote sensor on the tip of the shoe affects distance.

Fig. 4 shows a side view of a blind person with the waist belt.

Fig. 5 shows a top view of the belt

Fig. 6 shows a side view of a blind person with a camera at the tip of the shoe affects distance.

Fig. 7 shows the obstacle analysis method and the back belt with vibrating motors.

Description and operation of the figures.

Fig. A front bottom of the insole of the right shoe 1 and the left shoe 1a is a pressure sensor placed over the tip of the shoe 1, a distance sensor 4 for detecting obstacles ahead and a distance sensor 5 for detecting obstacles on the side of the shoe . Back of the shoe 1 and 1a is a vibrating motor 6 left in the lining of the heel of the shoe a vibrating motor and a 7 right in the lining of the heel of the shoe 1 and 1a. In the heel of the shoe 1 and 1a is the operating system with battery 3.

Fig. 2 The movement of the shoe while walking A body supports its weight on the pressure sensor 2 is turned on for half a second. At B and C, there is no pressure on the pressure sensor and is disabled. In a next step D, the pressure sensor by the weight of the body back on for half a second.

Fig. 3 By a step forward, there will be pressure from the weight of the body on the pressure sensor 2 in the shoe 1 and gives for half a second a signal through the operating system 3 to the remote sensors 4 and 5 with remote sensor 4 via the detection beam 4a near straight scans for obstructions such 10 and 8. Remote sensing through touch sensor 5 ray 5a of the area right off the shoe at nine obstacles such obstacle. Obstacles detected by the detection beam 4a are passed through the operating system 3 to the vibrating motor 7 which then just vibrates and obstacles detected by the detection beam 5a are passed through the operating system 3 to 6 that the vibrating motor vibrates a moment. With a step forward with left foot 1a behavior is the same except that the remote sensor near the shoe scanning objects on the left of the shoe does 1a.

Fig. 4 The blind person 11 wears a belt 12 around the waist of the body at the front near the belly navel a distance sensor 13 where the detection beam obliquely upwards obstacles at head height and a distance sensor 14 where the detection beam diagonally downwards for obstructions such deeper than the road pavement off. The obstacles at head height are passed to vibration motor 15 in FIG. 5 and the obstacles down deeper than the road pavement on such vibration are transmitted to motor 17 in FIG. 5.

Fig. 5 On the belt around the waist of the body is a GPS system 19 as described in my patent NL1033239 who can give direction angles of forty-five degrees.

Ahead in identifying the GPS 19 is vibrating motor 18 while, at the left indicate the GPS 19 is vibrating motor 17 while, in identifying turning 180 degrees from the GPS 19 is vibrating motor 16 as in identifying and right by The GPS 19 is vibrating motor 15 even.

In identifying forty-five degrees to the left by the GPS 19 vibrating motors 18 and 17 the same and so on.

Fig. 6 The blind person wears a camera 20 on the right shoe and a camera 20 on the left shoe 1a. In a step forward with right foot, the weight of the body on the pressure sensor 2 through 22 operating system a shot with the camera at about half to two meters. The range of a sharp image is from 21 to 23 beyond the image blur and objects in that region will be ignored when analyzing the recording.

Upon detection of an obstacle in the field of E, F, G, H, by analysis of the recording system 22 via the vibration motor driven and the question then just vibrate.

Fig. 7 The detection of an obstacle by analyzing an image area 22 in the example that E is transferred to 18th in vibration motor belt 12. Upon detection of an obstacle by analyzing an image 22 in the region G is passed to 16g vibration motor in the belt 12. And so on with the obstacles in Area F and H.

Conclusion

1. A right and a left shoe with the tip of each shoe two remote sensors. Each shoe is one distance sensor detection beam straight ahead oriented and the other sensor is the sensing radius side of the shoe outwards, whereby the detection radius of the remote sensor on the right shoe on the right side is facing out and the detection radius of the remote sensor of the left shoe left side is facing out.

The detection radius of the remote unit is about five feet ahead, and the detection radius of the remote sensor to the side of the shoes right and left facing outward approximately two feet.

2. Device according to claim 1, the distance sensors are driven by both the left and right shoe a pressure sensor in the insole to confirm that the weight of the blind person a signal through the operating system at the remote sensor displays and for about half a second the Detection blasting the way for the blind person explores the obstacles.

By a step forward with the right shoe comes pressure on the pressure sensor by the weight of the blind person and the road is sensed by the remote sensors for about half a second obstacle. Then you turn on the left shoe one step forward and there will be pressure on the pressure sensor by the weight of the blind person and the road is sensed by the remote sensors on the left shoe for about half a second obstacle.

During step forward with the left shoe is one with the right shoe and up the pressure on the pressure sensor is much less because the weight of the body moves to the pressure sensor of the left shoe. In a next step in the right shoe is then again press the pressure sensor of the right shoe and you can start doing for half a second through the operating system to the remote sensor on the road sensed obstacles. At every step we move this process is repeated.

3. Device according to claim 1 and 2 that the detected obstacles by the distance sensors on the tip of the shoe passed to vibrating motors which are in every shoe on both the left and to right a vibrating motors in the lining of the heel of the shoe is placed and the vibrating motors felt on the inside and outside of the ankle of the foot.

The distance sensor detection radius indicates straight through obstacles on the vibrating motor which is felt on the inside of the ankles of the feet. The remote sensor whose detection beam right side out of the shoe is designed to give the obstacles by the vibrating motor is felt by the outside of the right ankle of the foot. The remote sensor whose detection radius outside left side of the shoe is designed to give the obstacles by the vibrating motor is felt by the outside of the left ankle of the foot.

In the same way obstacles can also be given by a strap or belt with vibrating motors on the left or right or from front or on the skin felt. As a band or strap can be attached to the ankles, legs or around the waist of the body.

4. A belt around the waist of a body with two remote sensors which a remote sensor detection radius diagonally upward aims to remove obstacles at head height to signal and another remote sensor detection beam diagonally downward to obstacles in depth eg curb, stairs to detect. The objects are identified by a battery system with vibrating motors that transmitted to a vibrating motor vibrates at the height of obstacles and vibrating motor vibrates at a different obstacles in depth and both of which are felt on the skin of the body.

The procedure is the same as previously described by me and obtained patent NL 1033239 except that the sensors are placed on a white stick and vibrating motors to control the touch-gripping aid.

5. Device according to claim 4 with the strap a GPS system whose operation is the same as previously described by me and obtained patent NL 1033239 except that the GPS system and the corresponding vibration motors in a different frequency vibration than the vibration of the passing obstacles, placed on a belt around the waist of the body.

6. Device according to claim 1, 2 and 3 except that the sensors on both shoes are replaced by a camera, using an operating system and the pressure on the pressure sensors in the left and right shoe with the weight of a blind, at each step forward a picture of a half to two meters ahead of the road on which the blind runs and recording in four sectors, divided into left and right and left and right, and in those areas found obstacles transfers to the corresponding vibration motor that both the left and on the right heel in the lining of the present and felt the ankles of the blind person.

Blurry images outside the range of two meters are ignored when analyzing the recording.

7. Device according to claim 6 that the camera is placed on a belt around the waist of the body or the glasses on the head and wirelessly with the pressure sensor in the shoe and the way of passing obstacles is the same with the possibility that The vibrating motors in the belt around the waist of the body, glasses on the head or tape around the ankles or legs are positioned.

Fig.1

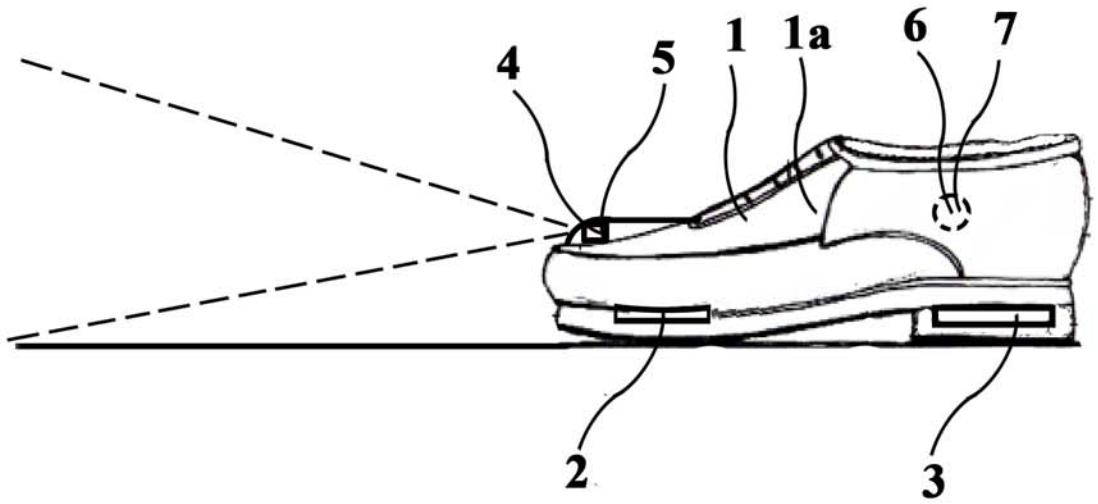


Fig.2

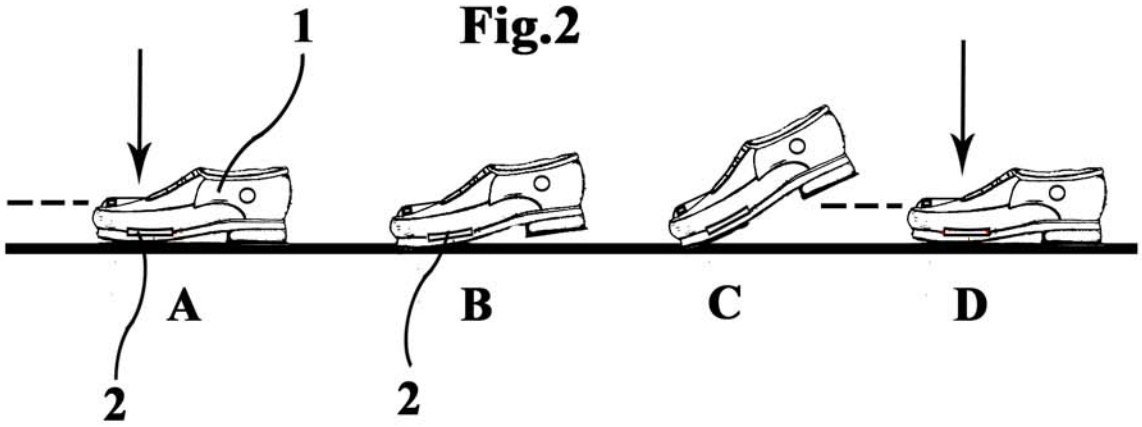


Fig.3

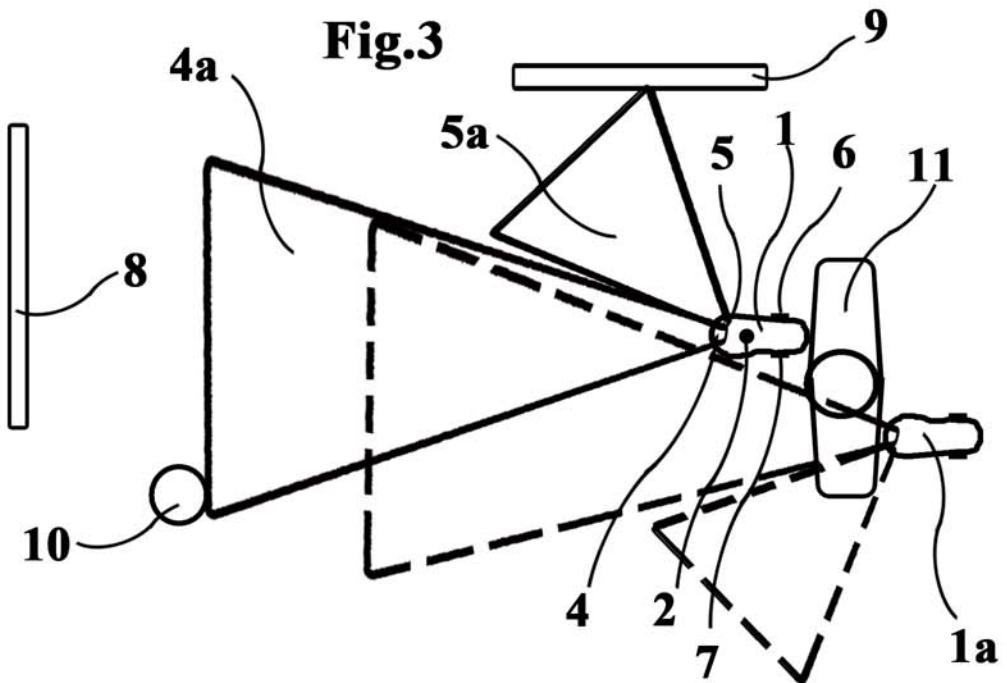


Fig. 4

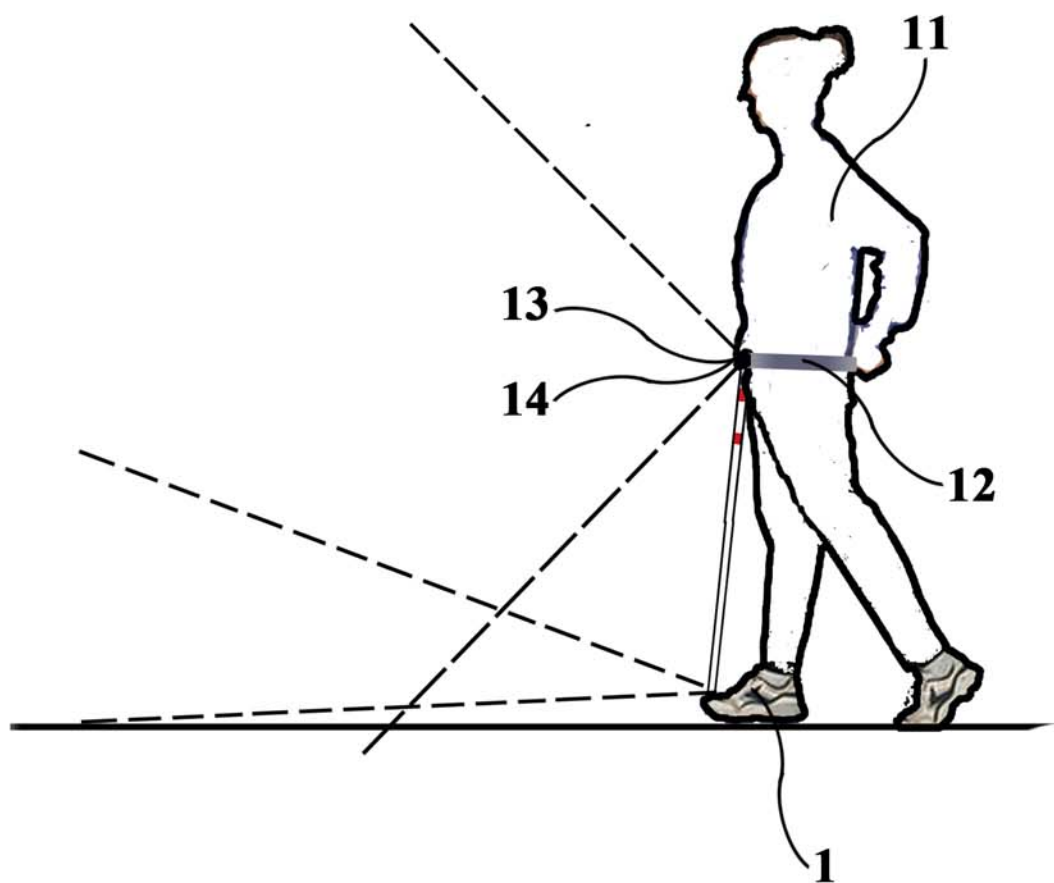


Fig. 5

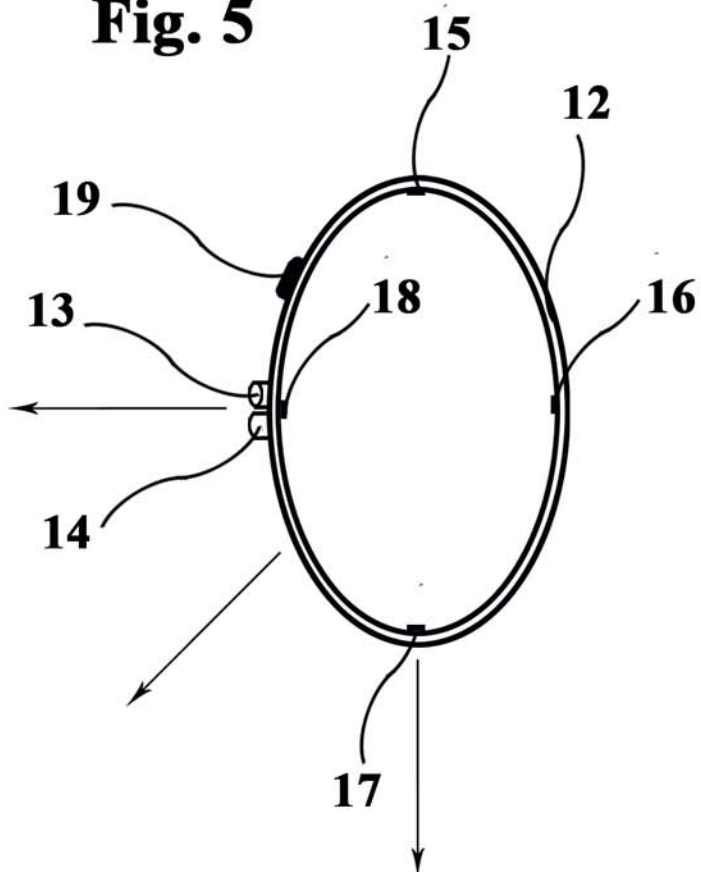


Fig. 6

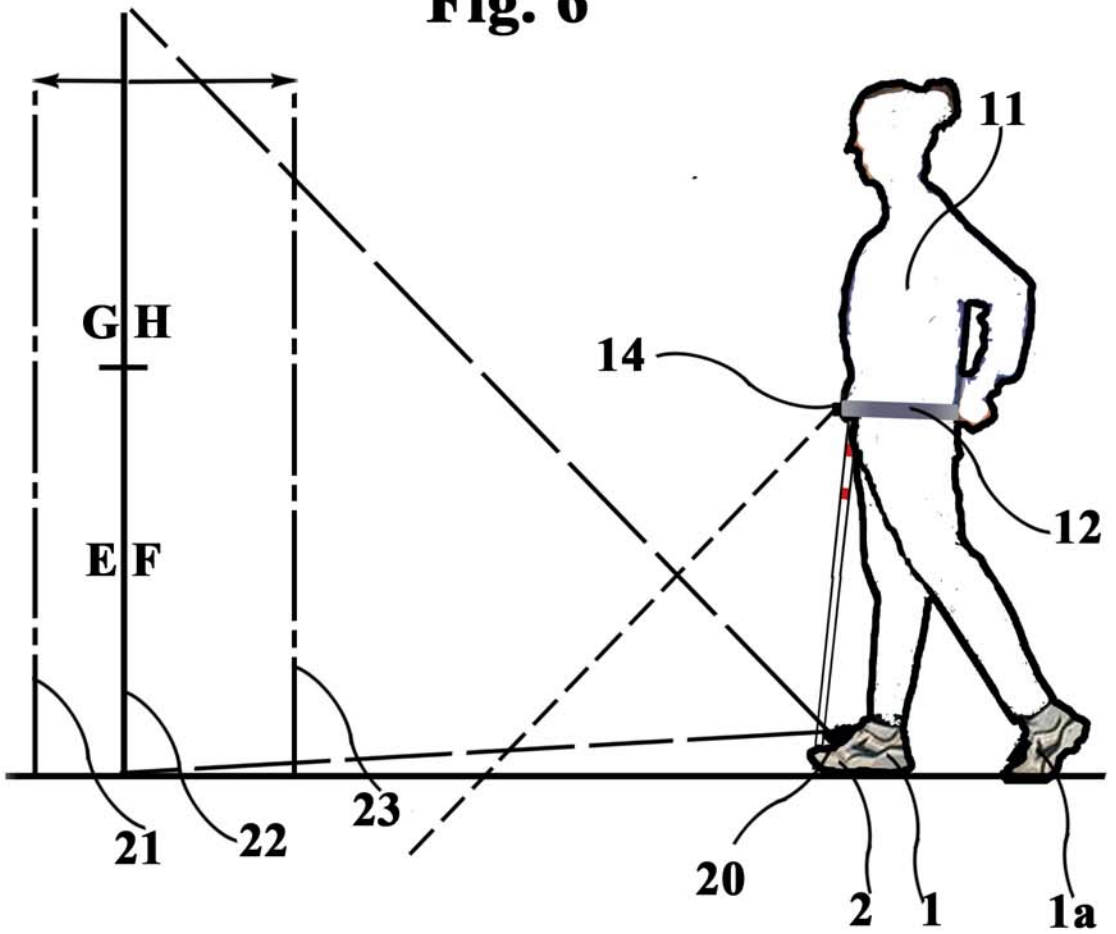


Fig. 7

