To all whom it may concern:

Be it known that I, FRANK MURPHY, a citizen of the United States, residing at the city of New York, borough of Manhattan, in the county and State of New York, have invented certain new and useful Improvements in Apparatus to Aid Blind in Walking, of which the following is a full, clear, and exact specification.

My invention relates to improvements in means for aiding blind persons to walk, and the same has for its object more particularly to provide a simple, efficient and reliable apparatus by means of which such person may be enabled readily to ascertain and determine when he is approaching a curb, either in front of him or at his sides, and also when he is approaching holes, ruts or other dangerous depressions or obstacles in his path.

Further, said invention has for its object to provide an apparatus of the character specified which is adapted to be moved or rolled upon the ground in front of the user or operator, and is provided with means for arresting the movement of said apparatus when the same comes into position directly over a dangerous hole, depression or contacts with an obstacle in the path of travel, whereby to prevent such user or operator from falling into such hole or depression, or stumbling over such obstacle.

Further, said invention has for its object to provide an apparatus of the character specified which is small, compact and easily operated, and which will audibly indicate to the user or operator thereof when a part thereof assumes a horizontal plane below that upon which such person or user is walking.

To the attainment of the aforesaid objects and ends, my invention consists in the novel details of construction, and in the combination, connection and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings forming part of this specification wherein like numerals of reference indicate like parts,—

Figure 1 is a side view showing one form of apparatus constructed according to and embodying the said invention, the same being taken on the line 1—1 of Fig. 2; Fig. 2 is a front view thereof, partly in section; Fig. 3 is a top view, and Fig. 4 is an illus-
38 and said main or forward wheels 28, 28, are adapted to ride upon a horizontal surface.

To the upper side of the T-joint 31 is secured the lower end of a handle 39 which has its free portion extended upwardly and rearwardly at about an angle of 45 degrees and has its upper extremity provided with a handle portion 40.

The operation of the apparatus is as follows:—The user or operator is merely required to grasp the handle portion 40, and hence push the apparatus forwardly in front of him as he is walking along the street or road. Should he encounter a dangerous depression or hole in the path of his travel one or the other of the side wheels 28, or the rear wheel 38 will be caused to drop into such depression or hole by reason of the vertical movement of their square shafts 17, 34 within their bearing 16, 33, respectively. As soon as this occurs the movement of the apparatus as a whole will be arrested by the engagement of said wheels, or one of them, with the hole or depression encountered, and thus save the user or operator from falling into such hole or depression. Should the depression happen to be in line only with the rear center wheel 38, said wheel 38 will alone drop into said depression and prevent thereby the further movement of the apparatus. Should the user approach laterally or sidewise too near the curb of the street, one of the side wheels 28 will be caused to drop to the level of the roadway beneath the sidewalk, and in so doing the small wheel or roller 23 carried by the bearing 20, which also serves as the support for the adjacent wheel 28, will be caused to engage the vertical side of the curb. As the small wheel or roller 23 drops it will be caused to engage the vertical side of the curb with a ringing sound produced by the metal of which said small wheel or roller 23 is made. To this end the said small wheels or rollers 23 are preferably made of hard metal in order to insure their giving a metallic sound or ring when the same strike a hard substance or the stone forming the curb along the edge of the sidewalk. The user's proximity to a depression will be further indicated by his sense of feeling as the apparatus can be moved, as a whole laterally or sidewise only in one direction, viz., in the direction away from the curb.

While I have shown my apparatus as made of small tubing and its ends connected by means of suitable joints it will, of course, be understood that the apparatus may be made of any suitable material and joined together to form a frame in which the several wheels and their attached parts shall be free to move vertically relative to the said frame.

Having thus described my said invention, what I claim and desire to secure by Letters Patent is:

1. An apparatus of the character described comprising a support, a plurality of wheels mounted thereon for supporting said apparatus upon a horizontal surface, guiding means normally free from but adapted to engage with a surface disposed at an angle to said horizontal surface, and means secured to said support for guiding said apparatus, substantially as specified.

2. An apparatus of the character described comprising a support, a plurality of bodily, vertically-movable wheels mounted thereon for supporting said apparatus upon a horizontal surface, guiding means adapted to engage with a surface disposed at an angle to said horizontal surface, and means secured to said support for guiding said apparatus, substantially as specified.

3. An apparatus of the character described comprising a support, a plurality of vertically-movable wheels mounted thereon for supporting said apparatus upon a horizontal surface, movable guide means, movable vertically with said wheels, and adapted to engage with a surface disposed at an angle to said horizontal surface, and means secured to said support for guiding said apparatus, substantially as specified.

4. An apparatus of the character described comprising a support, a plurality of wheels for supporting said apparatus upon a horizontal surface, movable guide means normally free from but adapted to engage with a surface disposed at an angle to said horizontal surface, vertically-movable means for supporting said wheels and said movable guide means upon said support, and means secured to said support for guiding said apparatus, substantially as specified.

5. An apparatus of the character described comprising a support, a plurality of vertically-movable wheels mounted thereon for supporting said apparatus upon a horizontal surface, guide wheels arranged upon said support intermediate of said wheels, said guide wheels being normally free from but adapted to engage with a surface disposed at an angle to said horizontal surface, and means secured to said support for guiding said apparatus, substantially as specified.

6. An apparatus of the character described comprising a support, a plurality of wheels for supporting said apparatus upon a horizontal surface, guide means arranged upon said support intermediate said wheels, and normally free from but adapted to engage with a surface disposed at an angle to said horizontal surface, and means secured to said support for guiding said apparatus, substantially as specified.
7. An apparatus of the character described comprising a support, a pair of main wheels and a trailer wheel mounted upon said support and capable of vertical movement thereon; said main wheels and trailer wheel serving to support said apparatus upon a horizontal surface, guide wheels arranged upon said support intermediate of said main wheels and movable with said main wheels, said guide wheels being normally free from but adapted to engage with a surface disposed at an angle to said horizontal surface, and means secured to said support for guiding said apparatus, substantially as specified.

8. An apparatus of the character described comprising a support, a plurality of wheels, means for supporting said wheels so as to be vertically movable upon said support and to support said apparatus upon a horizontal surface, means for preventing the rotation of the means for supporting said wheels, guide means arranged upon said support intermediate said wheels adapted to engage with a surface disposed at an angle to said horizontal surface, and means secured to said support for guiding said apparatus, substantially as specified.

9. An apparatus of the character described comprising a frame consisting of a horizontal front member, rearwardly extending members at the opposite ends of said front member, bearings secured to said rearwardly-extending members, shafts disposed within said bearings and adapted to move vertically therein, bearing members secured to said shaft, main wheels secured to said bearing members, and guide wheels secured to said bearing members at right angles to said wheels; and said main and guide wheels being adapted to engage, respectively, with a horizontal surface to support said apparatus, and with a surface disposed at an angle to said horizontal surface, and means secured to said frame for guiding said apparatus, substantially as specified.

10. An apparatus of the character described comprising a frame consisting of a horizontal forward front member, rearwardly-extending, horizontal members at the opposite ends thereof, bearings secured to said rearwardly extending members, each having a square opening therein, a shaft having a squared portion extending through said bearing, a bearing member at the lower end of said square shaft, and an arm extending outwardly from said bearing member, a wheel disposed upon the outer end of said arm and adapted to ride upon a horizontal surface, a stem depending from each of said collars, guide wheels, mounted upon the ends of said stems, adapted to engage with a surface disposed at an angle to said horizontal surface, a member extending rearwardly from said front members, a bearing disposed at the free end of said rearwardly-extending member and provided with a square opening, a square shaft extending through said last-named bearing, a wheel mounted upon the lower end of said last-named square shaft, and means for guiding said apparatus comprising an arm having one end secured to the front portion of said frame and its other end extending upwardly and rearwardly, substantially as specified.

Signed at the city of New York, in the county and State of New York, this 29th day of March, one thousand nine hundred and fifteen.

FRANK MURPHY.

Witneses:

MARION V. SHERIDAN,

LAWRENCE MILAZZO.