United States Patent [19]

Schneider

[11] **3,885,844**

[45] **May 27, 1975**

[54] **BATHROOM CABINET, ESPECIALLY FOR HOSPITALS**

[76] Inventor: **Walter Schneider,** Wildenbuhlstrasse 54, CH-8135-a.-A. Langnau, Switzerland

[22] Filed: **Jan. 2, 1974**

[21] Appl. No.: **429,552**

[30] **Foreign Application Priority Data**

Feb. 1, 1973 Switzerland 1414/73

[52] **U.S. Cl.** **312/227;** 248/487

[51] **Int. Cl.** **A47b 67/00**

[58] **Field of Search** 312/226, 227; 248/484, 248/485, 487; 350/307

[56] **References Cited**

UNITED STATES PATENTS

1,595,791	8/1926	Lanteri	312/227
1,661,899	3/1928	Martend	312/227
1,730,555	10/1929	Brennan	312/227
2,592,086	4/1952	Viney	312/227
3,811,755	5/1974	Carson	350/307

FOREIGN PATENTS OR APPLICATIONS

430,180	1925	Germany	312/227

Primary Examiner—Paul R. Gilliam
Assistant Examiner—Kenneth J. Dorner
Attorney, Agent, or Firm—Karl F. Ross; Herbert Dubno

[57] **ABSTRACT**

A bathroom cabinet has a door swingable about a vertical axis and a mirror on that door tiltable about its lower horizontal edge into an outwardly inclined position. The tilting of the mirror is controlled by a handgrip at the bottom of the cabinet which is linked by a Bowden cable with a fitting at the upper mirror edge. A locking lever at the top of the cabinet holds the door closed whenever the mirror is swung out from its normal upright position.

11 Claims, 13 Drawing Figures

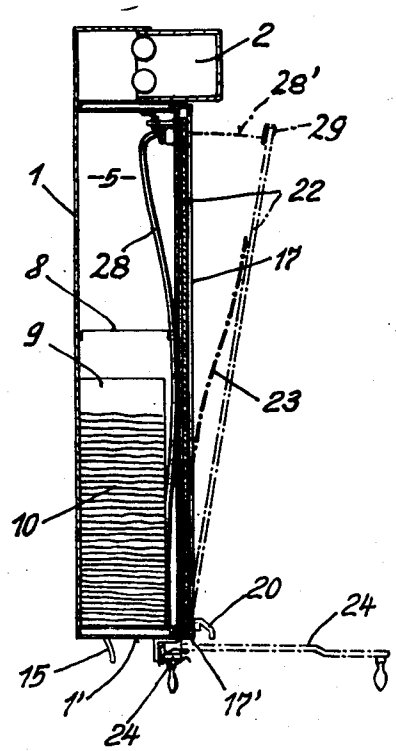


Fig.2

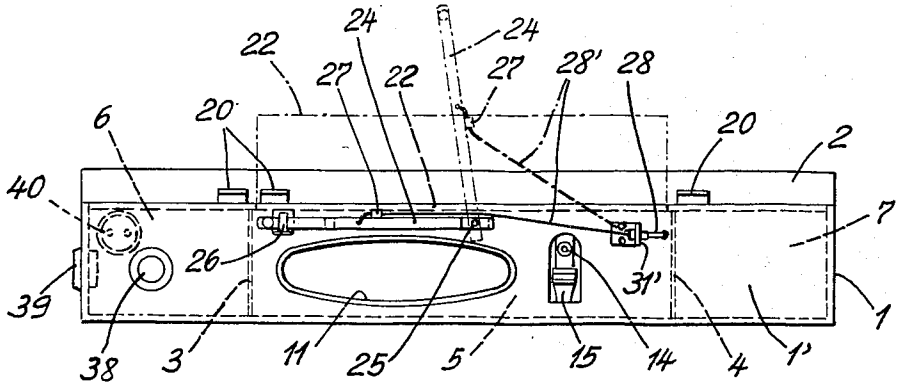

22
24
24
27
22
27
28'
28
6
20
20
2
40
7
26
31'
39
1
38
3
11
25
5
15
14
4
1'

Fig.1

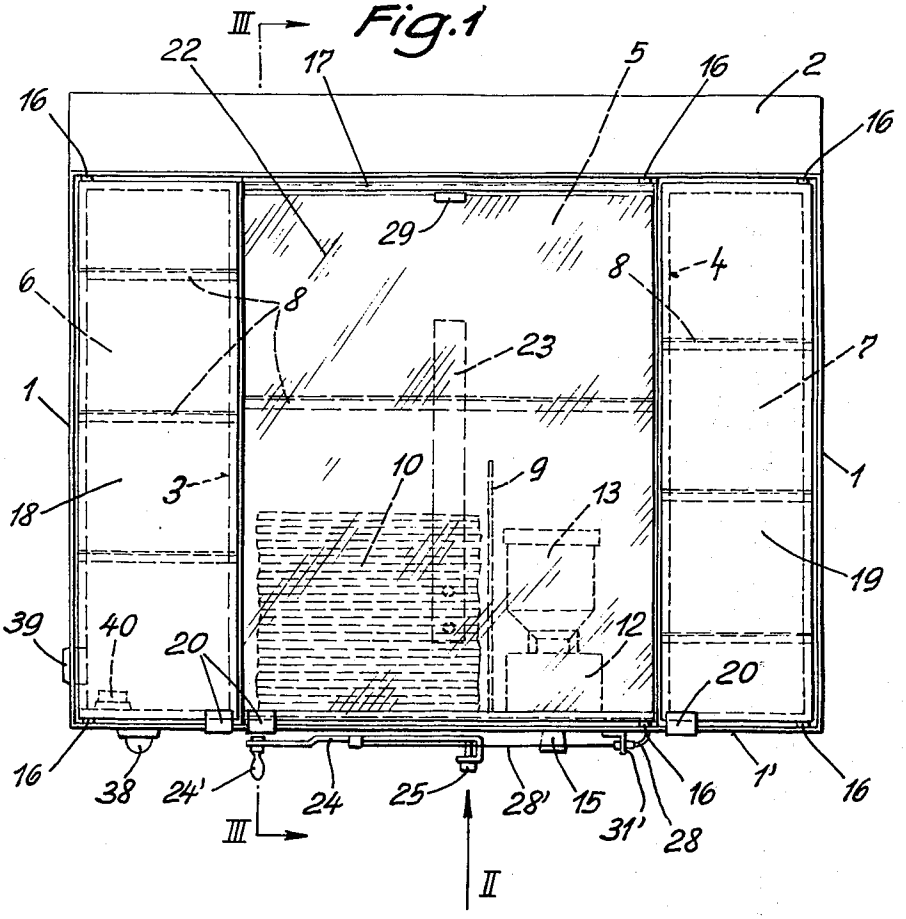

III
22
17
5
16
2
16
16
29
8
4
6
8
23
7
1
1
3
10
9
13
18
19
39
40
20
12
20
16
38
24'
24
25
28'
15
31'
16
28
1'
16
III
II

Fig.3

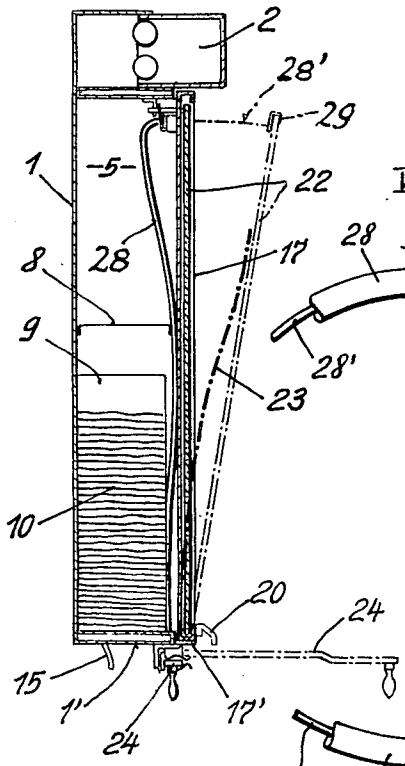


Fig.4

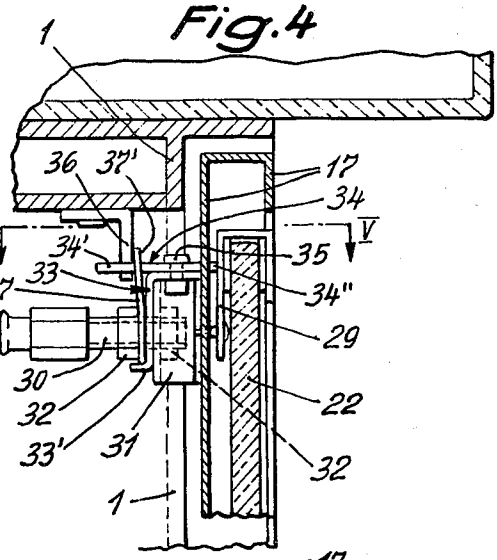


Fig.5

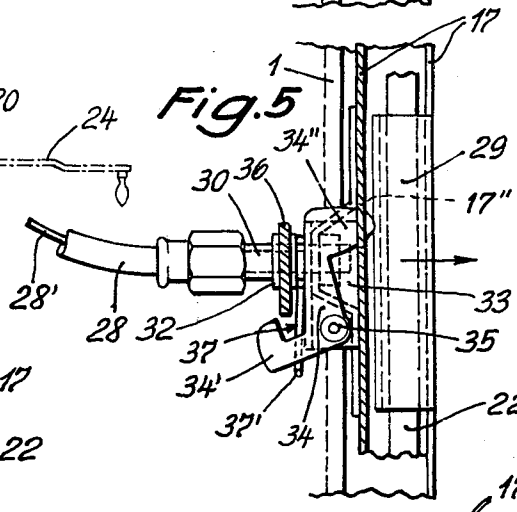


Fig.7

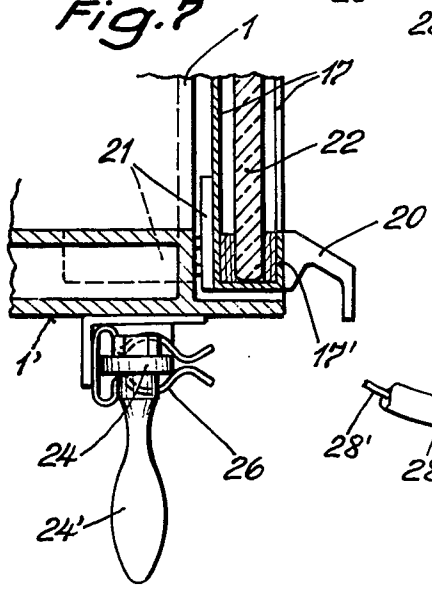
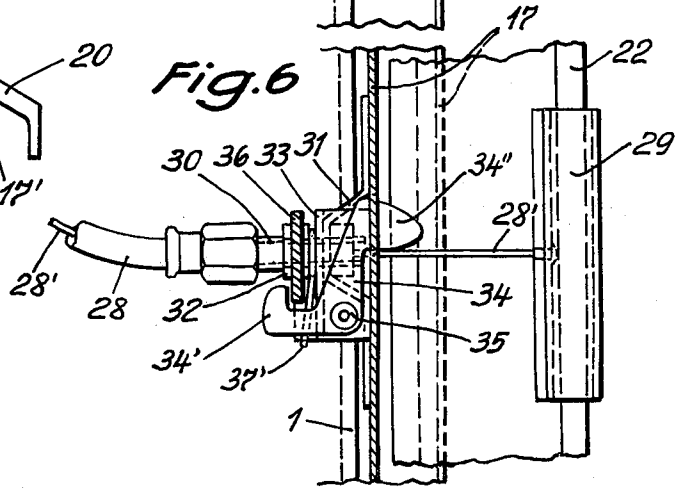


Fig.6



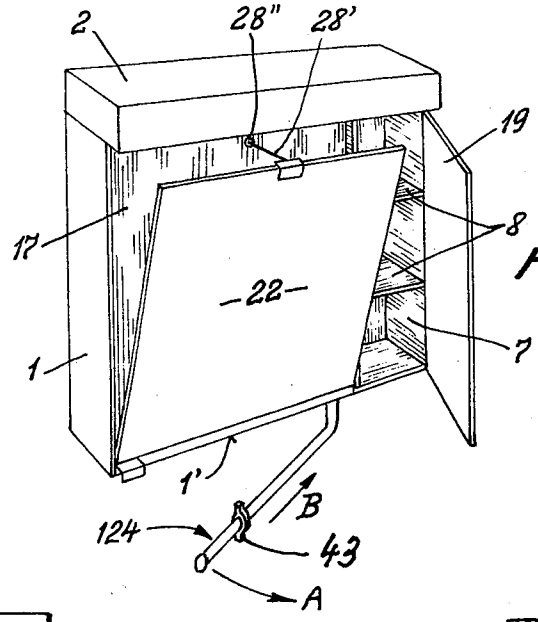


Fig. 8

Fig. 12

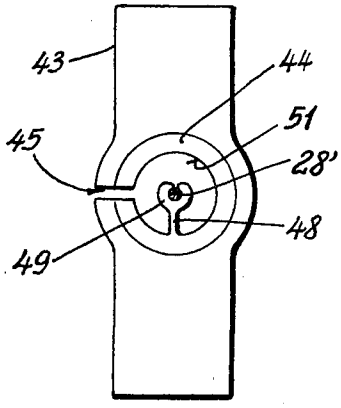


Fig. 11

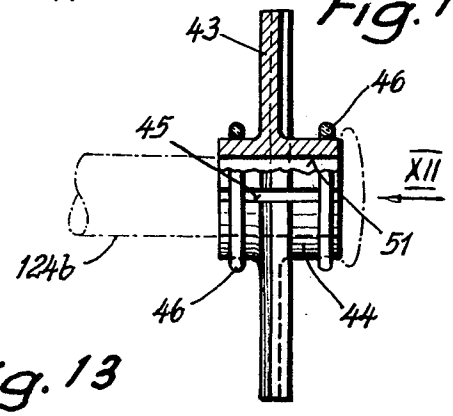
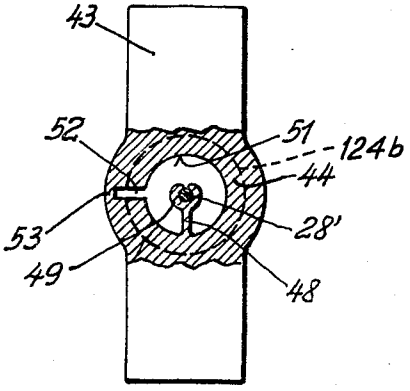


Fig. 13



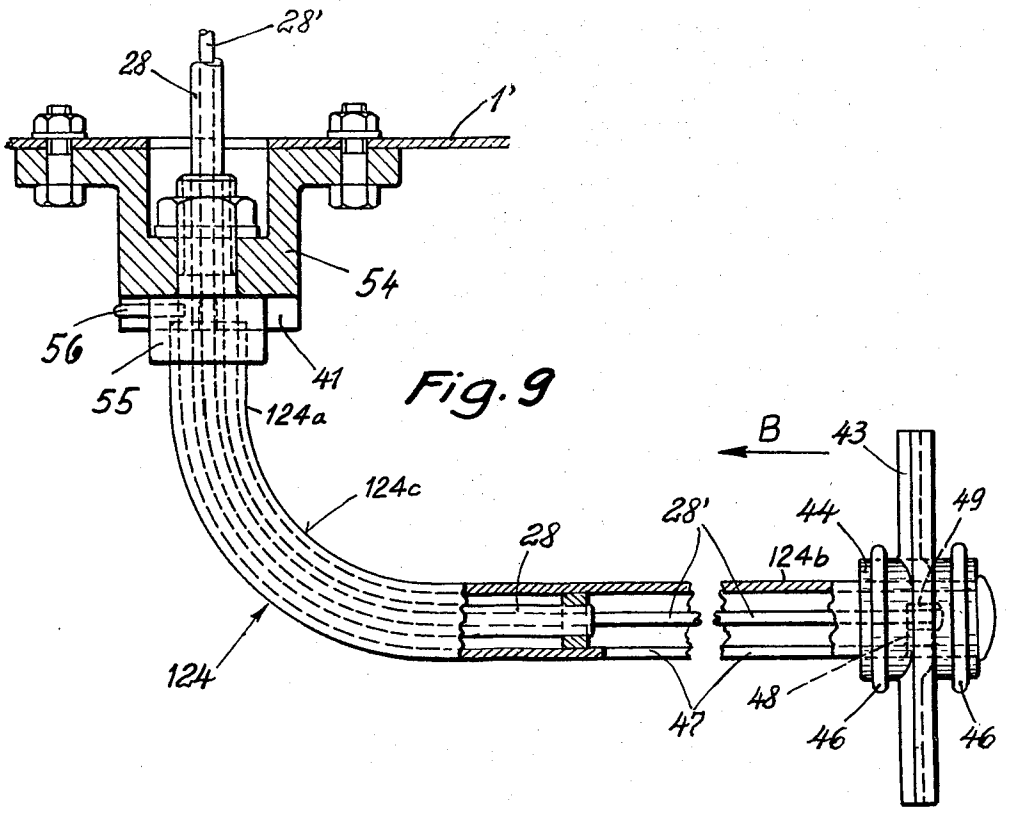
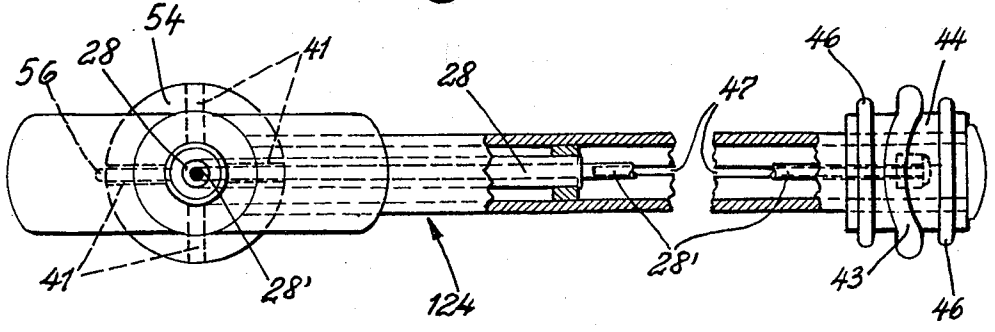

28'
28
1'
54
56
55
41
124a
124c
124
28
28'
B
43
44
49
124b
48
47
46
46

Fig. 9

Fig. 10


54
56
28
41
28
47
46
44
41
28'
124
28'
43
46

BATHROOM CABINET, ESPECIALLY FOR HOSPITALS

This invention relates to a bathroom cabinet especially intended for hospitals, having a door pivotable about a vertical axis with a mirror on its outer side. The bathroom cabinet according to the invention differs from conventional ones in that the mirror tilts out on its lower horizontal edge into various inclined positions and can be fixed in the one desired, the member for adjusting the mirror being mounted on or close to the cabinet bottom.

In addition to the usual stowage space, shelves, lighting fittings, switches and electric plugs, the cabinet according to my invention preferably accommodates a soap dispenser together with a paper napkin-dispenser; all these facilities and their operating members are likewise arranged on the bottom of the cabinet or close thereto.

Bathroom cabinets of such design that are normally mounted on a wall at the level of a standing person are particularly advantageous in that they can also be used and operated, say, by patients confined to wheel chairs.

The accompanying drawing shows by way of example a preferred embodiment of my invention. In the drawing:

FIG. 1 is a front view of a bathroom cabinet according to my invention cabinet;

FIG. 2 shows the underside of the cabinet as viewed in the direction of the arrow II in FIG. 1;

FIG. 3 shows a vertical section taken on the line III—III of FIG. 1;

FIG. 4 shows a detail of the section of FIG. 3 on an enlarged scale;

FIG. 5 is a horizontal part-sectional view taken on the line V—V of FIG. 4;

FIG. 6 shows a part-sectional view corresponding to FIG. 5 with some parts in another position;

FIG. 7 is another detail visible in FIG. 3 drawn to an enlarged scale;

FIG. 8 is a diagrammatic representation of the cabinet showing some modified details;

FIG. 9 shows the operating member for the tilting mirror according to FIG. 8, partly in vertical section;

FIG. 10 is a top view to FIG. 9, shown partly in vertical section;

FIG. 11 is a detail visible in FIG. 9, partly in vertical section;

FIG. 12 is a side view of the detail illustrated in FIG. 11, viewed in the direction of the arrow XII indicated in FIG. 11; and

FIG. 13 shows a modification of the embodiment of FIGS. 11 and 12, partly in section.

As shown in the drawing, a cabinet housing 1 has a lighting fixture 2 mounted thereon. The interior of the cabinet is divided by two vertical partitions 3 and 4 into a central or stowage space or compartment 5 and two lateral stowage spaces or compartments 6 and 7. Fitted in these spaces are various vertically adjustable shelves 8. Housed in the lower part of the central space 5 on one side of a vertical partition 9 is a stack of disposable paper napkins 10, which can be withdrawn through an oval opening 11 (FIG. 2) in the bottom 1' of the cabinet. Accommodated in the lower part of space 5 on the other side of partition 9 is a soap dispenser 12 with stock container 13, whose discharge nozzle 14 is exposable by operating a lever 15. The central cabinet space

5 and the two lateral spaces 6 and 7 are accessible through doors 17, 18, 19 pivotable on hinges 16 about vertical axes. The doors have hand grips 20 and are held in the closed position by permanent magnets 21 (FIG. 7). Recessed into the interior of the middle door 17 open to the front (FIGS. 4 and 7) is a mirror 22 tiltable in a U-shaped channel 17' forming the bottom edge of the door. A leaf spring 23 fixed to the door 17 and engaging the back of mirror 22 tends to tilt the same into the inclined position indicated by the dash-dotted line in FIG. 3.

The underside of the cabinet bottom 1' has mounted thereon a lever 24 with hand grip 24', together constituting on operating handle, with which the tilting movement of mirror 22 can be controlled. Lever 24 pivots on an axle 25, fixed in the bottom 1' of the cabinet, so as to be swingable in horizontal plane. In the flush position of the mirror the lever 24 is held by a spring clamp 26 on cabinet bottom 1' (FIG. 7). Fitted with a clamp 27 (FIG. 2) half-way along the length of lever 24 is one end of the core 28' of a Bowden cable 28. The other end of the cable core 28' is fixed to a fitting 29 on the top edge of mirror 22. At its upper end the sheath of the Bowden cable 28 has a connecting spigot 30 threaded on the outside (FIGS. 4 to 6). The same passes through a holding strip 31 fixed on the back of door 17 and an angle piece 33 rigidly joined thereto. By nuts 32 the spigot 30 is firmly connected to holding strip 31 and angle piece 33. The end of the cable core 28' emerging from spigot 30 passes through an opening 28''(FIG. 8) in door 17 and is firmly joined to a fitting 29 on mirror 22. With its lower end the sheath of the Bowden cable 28 is fixed to a holder 31' on the underside of cabinet bottom 1' (FIG. 1). It passes through the cabinet bottom and is let within cabinet space 5 to the holding strip 31 at the top.

On the horizontal leg of angle piece 33 a bell-crank lever 34 is mounted to rock about an axle pin 35, the hook-shaped arm 34' thereof coacting with an abutment 36 fixed to the top of the cabinet. Bell-Crank lever 34 is biased by an angled closing spring 37 whose horizontal leg rests on an offset projection of angle piece 33 and fits around the spigot 30 with a ring eye. An upstanding leg 37' of the closing spring 37 tends to urge lever 34 into its locking position according to FIG. 6. The other arm 34'' of lever 34 carries a feeler lug which, in the locking position, extends through a slot in door 17 in the region of fitting 29 into the cavity of door 17 and into the swivel range of the mirror.

With lever 24 swung out, the distance from the clamp 27 to the holder 31' is much smaller than when it is swung in. Accordingly, with lever 24 swung out, the cable core 28' is slackened so that the mirror 24 tilts correspondingly under the action of leaf spring 23, as indicated by dash-dotted lines in FIG. 3. At the beginning of this tilting movement of mirror 22 the lug 34'' is enabled to enter the interior of door 17 through a slit 17'' in its rear wall so as to permit pivotal movement of lever 34 out of the position shown in FIG. 5 into the locking position illustrated in FIG. 6 in which the mirror door cannot swing about its vertical axis since it is latched to the abutment-forming bracket 36. With lever 34 swung in from the position shown dash-dotted in FIGS. 2 and 3, a corresponding pull is exerted on cable core 28' so that the mirror tilts back from the position shown in FIG. 6 into that illustrated in FIGS. 4 and 5. At the end of this tilting movement the fitting 29

on the mirror pushes back the lever arm 34'', thus causing bell-crank lever 34 to pivot out of its locking position shown in FIG. 6 into the released position shown in FIG. 5. In this position the mirror door 17 is unlocked and can be opened.

On the underside of cabinet bottom 1' there is provided a small lamp 38 for illuminating the operating levers 15 and 24, together with the opening 11 for taking out paper napkins. At the bottom of the left-hand sidewall is a socket 39 for plugging in vacuum cleaners, floor-polishing machines, etc. Arranged inside the left-hand compartment 6 on cabinet bottom 1', accessible only after opening the side door 18, there is a socket 40 for plugging in an electric dry shaver or a tooth brush.

For operating the tilting mechanism of mirror 22, instead of the pivoted lever 24 shown, there may be provided a slide adapted to move preferably parallel to the back of the cabinet.

In FIG. 8 I have shown a modified cabinet 1 in which the left-hand compartment 6 of the preceding Figures has been omitted.

The bottom 1' of the cabinet 1 has a bearing 54 fixed thereon. In FIG. 9 there is shown an elbow-shaped guide tube 124 whose legs 124*a* and 124*b* are interconnected by a curved piece 124*c*. The short vertical leg 124*a* is rockably supported by means of a nipple 55 in bearing 54. Leg 124*a* and nipple 55 are secured in position by a radially projecting pin 56 receivable in either of two mutually perpendicular recesses 41 in bearing 54.

The end of the long horizontal leg 124*b* of elbow 124 has mounted thereon a hand grip 43 which can be displaced axially. To ensure guidance of the hand grip 43 on leg 124*b* this grip is provided with a hub 44 having a radial slot 45 extending outwardly from its bore 51 (FIG. 12). Hand grip and hub are preferably made from a flexible, wear-resistant plastic, such as the material known under the brand name DELRIN. The hand grip 43 by its hub 44, fits on the tube leg 124*b* with a certain stress ensuring enhanced sliding resistance. This tension is produced by two spring washers 46 girthing the slotted hub under tension.

Within the range of displacement of the hand grip 43 the leg 124*b* has a longitudinal slot 47 on its underside. This slot acts as guide for an arm 48 projecting radially inwardly from the wall of bore 51 (FIG. 12) and ending in a slotted eye 49 at the axis of the bore. Anchored in eye 49 is one end of core 28' of Bowden cable 28 which leads through the interior of elbow 124 to the mounting (not shown) for the tilting mirror 22. The sheath of Bowden cable 28 is supported in the leg 124*b* at 50 (FIG. 9).

Elbow 124 is indexable by pin 56 in two different pivotal positions, i.e. a retracted position in which the leg 124*b* coincides with or lies parallel to the plane of the cabinet door 17 and an operating position in which the leg 124*b* projects to the front transversely to the plane of that door. To operate the tilting mirror 22, the leg 124*b* is first swung out into the latter position. In FIGS. 9 and 10 the hand grip 43 is in its outermost end position, with the mirror tilted back into the vertical. By pushing the hand grip in the direction of the arrow B shown in FIGS. 8 and 9, the mirror is tilted out into an inclined position.

In FIG. 13 the hub 44 of hand grip 43 has an internal groove 52 instead of a throughgoing slot 45 as in the preceding embodiment, a bridge 53 being left between groove 52 and the hub wall to connect the halves of the hub above and below that groove. In the modification illustrated in FIG. 13, the diameter of the hub bore 51 is somewhat smaller than the outside diameter of the tubular leg 124*b*. Since, as aforementioned, hand grip and hub are made of flexible material, with the hand grip fitted on tubular leg 124*b* the slot 52 and the bridge 53 permit a certain elastic distension of the hub bore so that the hub embraces the tubular leg under stress. Relatively little tension suffices to achieve a friction-tight lock of the hand grip in the desired sliding position.

The construction according to FIGS. 8 to 13 enables easy manipulation by patients confined to wheel chairs, for with the elbow 124 swung out towards him the patient can adjust the mirror to the desired inclination by simple pulling and pushing movements.

What I claim is:

1. A bathroom cabinet comprising:
   - a housing with an open front side and a door for closing said front side, said door being swingable about a vertical axis;
   - a mirror on an outer face of said door mounted for tilting relative thereto about a horizontal lower edge thereof;
   - operating means for said mirror on said housing near the bottom thereof;
   - locking means in said housing mounted on said door near the top thereof for holding said door closed, said locking means being engageable by said mirror in an upright position of the latter for deactivation to permit opening of said door; and
   - biasing means in said housing acting upon said locking means for urging same into operative engagement with a coacting housing parts upon a forward tilting of said mirror into an inclined position, thereby preventing said door from being opened.

2. A bathroom cabinet as defined in claim 1 wherein said locking means comprises a bell-crank lever having a first arm projecting from said door into the interior of said housing for engagement with said coacting housing part and having a second arm with an extension traversing a slit in said door for engagement by said mirror.

3. A bathroom cabinet as defined in claim 1 wherein said mirror is provided with spring means urging same into said inclined position.

4. A bathroom cabinet as defined in claim 1, further comprising link means passing from said operating means to the top of said mirror by way of said housing.

5. A bathroom cabinet as defined in claim 4 wherein said link means comprises a Bowden cable.

6. A bathroom cabinet as defined in claim 5 wherein said door is provided with an opening and with mounting means adjacent said opening, said bowden cable having a sheath secured to said mounting means and a core traversing said opening.

7. A bathroom cabinet as defined in claim 6 wherein said operating means comprises a handle displaceable along the bottom of said housing and tied to said core.

8. A bathroom cabinet as defined in claim 7 wherein said handle comprises a lever swingable in a horizontal plane and provided with a hand grip.

9. A bathroom cabinet as defined in claim 6 wherein said operating means comprises a guide tube on the bottom of said housing receiving part of said sheath and

a hand grip slidable on said guide tube and tied to said core.

10. A bathroom cabinet as defined in claim **9** wherein said guide tube is elbow-shaped with a short vertical leg and a long horizontal leg, said hand grip being carried on said horizontal leg, the latter being swingable about said vertical leg between a retracted position parallel to the plane of said door and an operating position perpendicular thereto.

11. A bathroom cabinet as defined in claim **10** wherein said hand grip has a hub embracing said horizontal leg under tension with a frictional fit.

* * * * *