Nov. 25, 1952 U. L. DICKSON 2,618,787

BED CONSTRUCTION

Filed Oct. 1, 1945 3 Sheets-Sheet 1

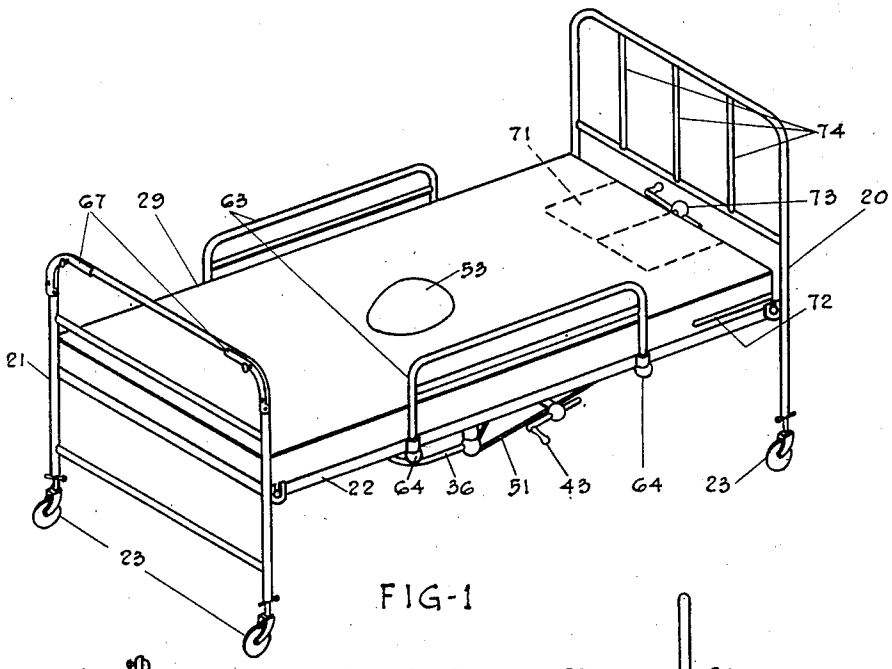



FIG-1

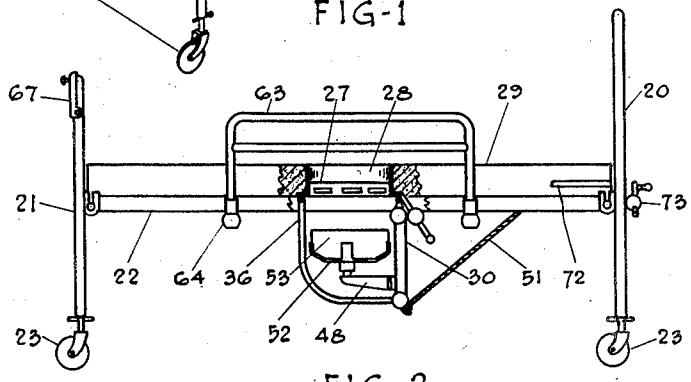



FIG-2

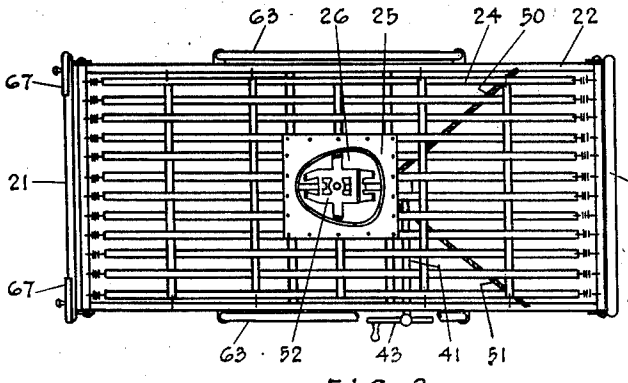



FIG-3

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BED CONSTRUCTION

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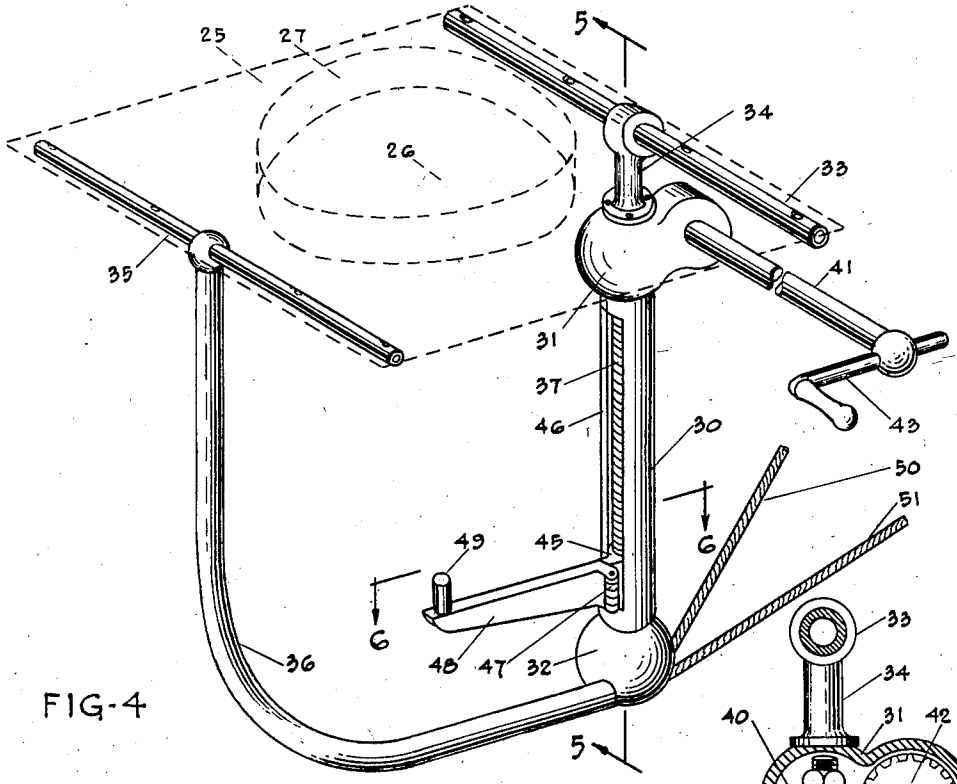



FIG-4

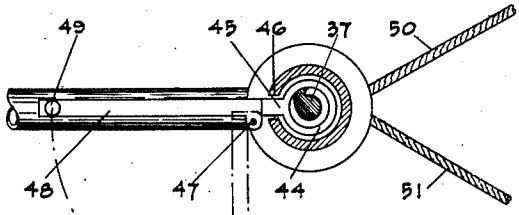



FIG-6

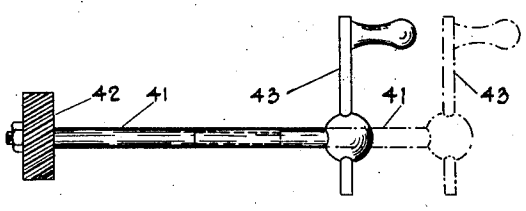



FIG-7

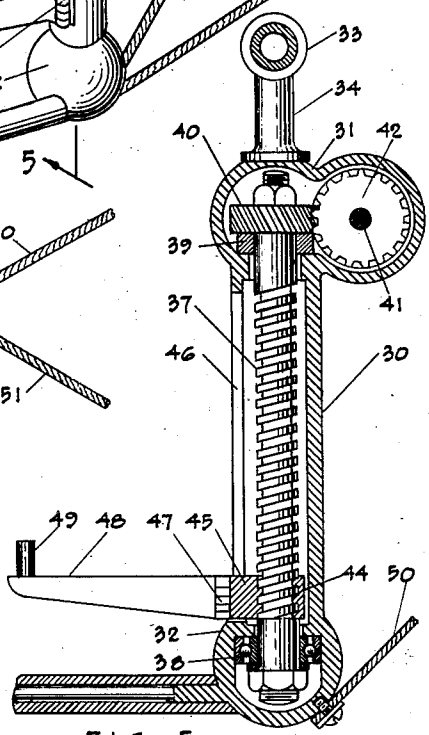



FIG-5

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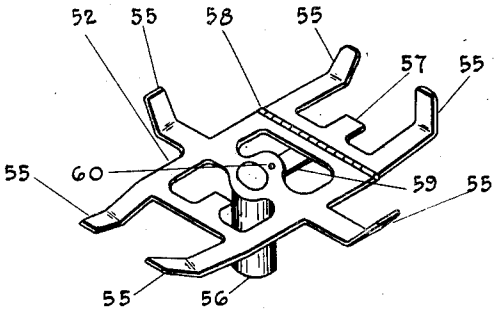



FIG-8

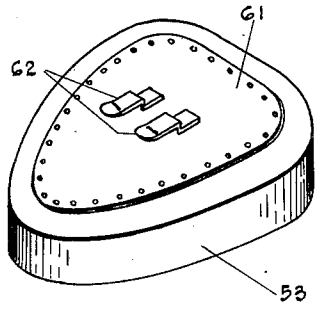



FIG-9

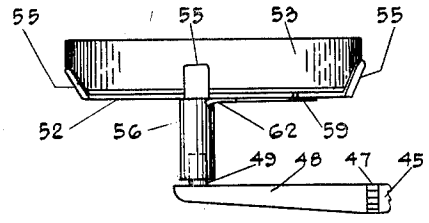



FIG 10

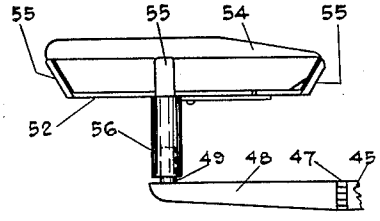



FIG 11

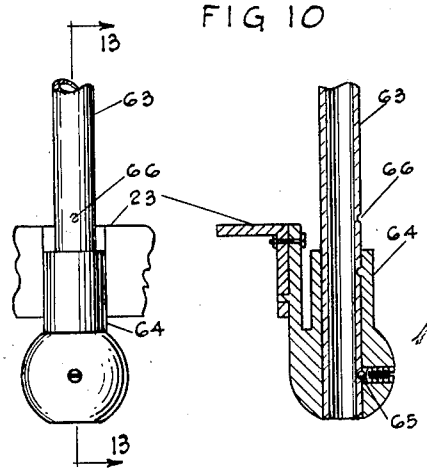



FIG 12 FIG 13

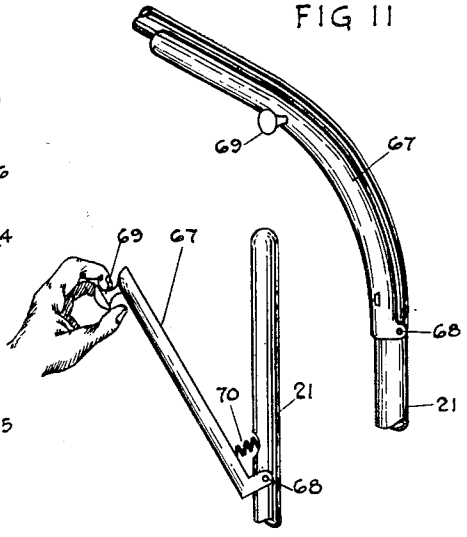



FIG 15 FIG 14

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# UNITED STATES PATENT OFFICE

2,618,787

## BED CONSTRUCTION

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Application October 1, 1945, Serial No. 619,553

4 Claims. (Cl. 5—90)

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The invention relates to improvements in a bed construction, as described in the present specification, and illustrated in the accompanying drawings that form a part of the same.

The invention consists essentially of the novel features of construction as pointed out broadly and specifically in the claims for novelty following a description containing an explanation in detail of an acceptable form of the invention.

The objects of the invention are to provide a bed suitable for hospitals, nursing homes and similar institutions, and which is equally adaptable for use in private dwellings or any place where it is necessary to treat sick persons, convalescents, invalids or the aged; to furnish a bed that will enable the user to obtain relief without leaving the bed and without the accompanying discomfort and other unnecessary movement; to devise a bed that will provide full sanitary protection and arrangements and reduce to a minimum the danger of soiling the bed sheets, mattress, or the user's clothing; to construct a bed with an opening through the spring and mattress and provided with a bed pan and a mattress plug for insertion when required in said opening; to furnish a bed with full conveniences for invalids and other persons to enable them to obtain complete rest and freedom from bed sores, thereby aiding in the rapid and complete recovery of the user; to provide a bed that may be used as a hospital bed or an ordinary bed, as desired, thereby increasing its usefulness, especially in private dwellings; and generally to provide a bed useful for its purposes, durable in construction, and attractive in appearance.

In the drawings, Figure 1 is a perspective view of the bed.

Figure 2 is a side elevational view of the bed with the mattress partly broken away to disclose the mattress fittings and showing the mattress plug in lowered position.

Figure 3 is a plan view of the bed with the mattress removed.

Figure 4 is a perspective view of the control mechanism for elevating and lowering the mattress accessories.

Figure 5 is a vertical sectional view of the control mechanism taken on the lines 5—5 in Figure 4.

Figure 6 is a cross-sectional view taken on the lines 6—6 in Figure 4.

Figure 7 is a view of the control handle.

Figure 8 is a perspective view of the mattress plug or bed pan holder.

Figure 9 is a perspective view of the underside of the mattress plug.

Figure 10 is a side elevation of the holder with the mattress plug in position.

Figure 11 is a side elevation of the holder with the bed pan in position.

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Figure 12 is a fragmentary side elevation of one of the side rail supporting members.

Figure 13 is a vertical sectional view of the side rail supporting member taken on the lines 13—13 of Figure 12.

Figure 14 is a fragmentary perspective view showing one of the sheet clamps on the foot of the bed.

Figure 15 is a fragmentary side elevation of a sheet clamp showing the method of opening same.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings, the bed is formed by the head frame 20, the foot frame 21 suitably joined or connected by the spring frame 22. The head and foot frames 20 and 21 may be of any suitable form and are provided with the swivel castors 23 for ease in handling. A bed spring 24 is positioned within the spring frame 22, and, while it is illustrated as being composed of flat strips, it may be of any convenient construction providing it is capable of having attached thereto the flat plate 25. This plate 25 has the central opening 26 and the perpendicular side wall 27 which is adapted to engage the opening 28 in the mattress 29. The opening 28 in the mattress 29 is normally closed by the mattress plug 53, but when desired, the mattress plug may be removed and the bed pan 54 inserted in its place.

Beneath the plate 25 and secured thereto, is the control mechanism for elevating or lowering the mattress accessories. This mechanism, as best shown in Figures 4 and 5, consists of the hollow, cylindrical, vertical post or standard 30 having the enlarged upper gear casing 31 and the lower spherical extremity 32. The cross bar 33 is secured to the plate 25 and to the underside of the spring 24 and is connected to the gear casing 31 on the upper part of the post 30 by means of the pipe 34 while the crossbar 35, which is similarly secured to the plate and spring, is connected with the lower extremity of the post 30 by means of the loop frame 36. The worm screw 37 is positioned within the standard 30 and is journalled in the bearing members 38 and 39, and has the helical gear 40 secured to its upper end. The crank shaft 41 has one end mounted in the gear casing 31 and extends outwardly to the side of the spring frame 22. The helical gear 42, which meshes with the gear 40, is secured to one end of the crank shaft 41 and the crank handle 43 is secured to the other end of the crank shaft. The worm screw 37 engages the internally threaded collar or cylinder 44 and this collar or cylinder is provided with the lug or arm 45 which extends outwardly through the vertical slot 46 which is cut or formed in the standard 30. It will be noted that collar 44 is a comparatively close fit within the standard and slot 46 acts as

a guide for the lug 45, thereby preventing rotation of the collar.

The lug or arm 45 is secured to one side of the offset hinge 47 and the horizontal arm 48 is secured to the other side of the hinge. A pivot pin 49 extends upwardly from the free end of the arm 48 and this completes the construction of the control mechanism. It will, however, be noted that supporting or guy wires 50 and 51 are connected to the lower end of the standard 30 and to the spring frame 22 to impart greater strength and rigidity to the control mechanism. It will also be apparent that turning the crank handle 43 in one direction raises the arm 48 and by turning the crank handle in the opposite direction the arm 48 will be lowered.

The holder 52 is for the purpose of supporting and guiding the mattress plug 53 or the bed pan 54 and is provided with a plurality of retaining lugs 55 and the downwardly projecting sleeve 56 which engages with the pin 49 on the arm 48. The sleeve 56 is a loose fit on the pin 49 to enable the holder to pivot thereon when desired. One end 57 of the holder is connected to the main body of the holder by means of the hinge 58 to permit easy installation of the mattress plug on the holder, and this hinged portion 57 is held in normal position by means of the flat spring 59 secured to the holder at 60.

The mattress plug 53 is preferably made of the same material as the mattress and has the plate 61 with the spring clips or prongs 62 secured to its underside in any convenient manner. The spring prongs 62 engage the holder and hold the mattress plug securely in position.

Side rails 63 are carried in sockets 64 mounted on each side of the spring frame 23. The side rails are held in position by the spring held ball 65 which engages with the indentations 66 formed in the side rails 63. Adjustment for height is effected by forcing the side rails upwardly or downwardly to a point where the ball and indentation coincide and co-operate to hold the side rail in the desired position. Bed sheet retaining clamps 67 are provided on the foot frame 21. These sheet retaining clamps are pivotally connected to the foot frame at 68 and have the operating knobs 69 secured thereto. The spring 70 holds the clamp tightly against the foot frame to retain the bed sheet or sheets when they are placed between the frame and the clamp. The adjustable head rest 71 is positioned within the slot 72 in the mattress 29 and has the adjusting crank 73.

In the operation of the bed, the mattress plug is placed on the holder and elevated to close the opening in the mattress, but when it is desired to use the bed pan, the crank 43 is rotated to lower the holder and the mattress plug. By swinging the arm 48 outwardly on the hinge 47 and depressing the end 57 of the holder, the mattress plug may be easily removed from the holder and the bed pan 54 may then be inserted in the holder. The person operating the bed then swings the arm 48 and holder inwardly to its normal position and then by turning the crank elevates the bed pan until it enters the hole in the mattress. Due to the construction of the bed and the location of the opening in the mattress, the patient is at no time compelled to move on the bed and as a result suffers no inconvenience. It might also be added that the crank handle 43 is normally positioned under the bed but due to the telescoping construction of the crank handle, as shown in Figure 7, the shaft may be extended to bring the handle outside the spring frame when it is necessary to use the same.

It will be noted that the head frame 20 is provided with a plurality of vertical rods 74 which are suitably spaced apart and so arranged as to enable the patient or other person resting on the bed to make use of them in pulling or otherwise adjusting themselves for comfort's sake or when desiring to use the conveniences of the bed.

What I claim is:

1. A bed construction comprising a head frame and a foot frame, a spring frame connecting said frames together, a bed spring having an excretion orifice, a mattress having an excretion orifice and supported on said spring frame, a control mechanism located below the excretion orifice in said bed spring and said mattress, said control mechanism comprising a hollow vertical post having an enlarged upper gear casing and a lower spherical extremity, an elongated slot in the wall of said hollow vertical post, a worm movably supported in said hollow vertical post, gears located in the enlarged upper gear casing on said hollow vertical post and being connected with the upper end of said worm, a crank handle and shaft suitably connected to one of said gears for indirectly rotating said worm, an internally threaded collar located within said hollow vertical post and being engaged by said worm, an arm integral with said internally threaded collar and projecting out through the slot in the wall of said hollow vertical post, a horizontal arm pivotally secured to said arm on said internally threaded collar, a pivot pin extending upward from the end of said horizontal arm, and a holder movably supported on said pivot pin on said horizontal arm and being adapted to form a movable support which may be raised or lowered with respect to the excretion orifice in said bed spring and mattress.

2. A bed construction comprising a head frame and a foot frame, a spring frame connecting said frames together, a bed spring having an excretion orifice, a mattress having an excretion orifice and supported on said spring frame, a plate having a central opening therein and with a vertical side wall therearound, a cross bar secured to said plate and to the underside of said bed spring, a pipe extending downward from said cross bar and supporting a gear casing on the lower end thereof, a hollow vertical post having said gear casing secured to the upper portion thereof, a second cross bar fixedly secured to said plate and said bed spring, a loop frame connecting one of the cross bars to the lower extremity of said hollow vertical post, an elongated slot in the wall of said hollow vertical post, a worm movably supported in said hollow vertical post, gears located in said gear casing on said hollow vertical post and being connected with the upper end of said worm, a crank handle and shaft suitably connected to one of said gears for indirectly rotating said worm, an internally threaded collar located within said hollow vertical post and being engaged by said worm, an arm integral with said internally threaded collar and projecting out through the slot in the wall of said hollow vertical post, a horizontal arm pivotally secured to said arm on said internally threaded collar, a pivot pin extending upward from the end of said horizontal arm, a holder movably supported on said pivot pin on said horizontal arm and being adapted to form a movable support which may be raised or lowered with respect to the excretion orifice in said bed spring and mattress.

3. A bed construction comprising a head frame and a foot frame, a spring frame connecting said frames together, a bed spring having an excretion orifice, a mattress having an excretion orifice and supported on said spring, a plate having a central opening therein and with a vertical side wall therearound, a cross bar secured to said plate and to the underside of said bed spring, a pipe extending downward from said cross bar and supporting a gear casing on the lower end thereof, a hollow vertical post having said gear casing secured to the upper portion thereof, a second cross bar fixedly secured to said plate and said bed spring, a loop frame connecting one of the cross bars to the lower extremity of said hollow vertical post, an elongated slot in the wall of said hollow vertical post, a worm movably supported in said hollow vertical post, gears located in said gear casing on said hollow vertical post and being connected with the upper end of said worm, a crank handle and shaft suitably connected to one of said gears for indirectly rotating said worm, an internally threaded collar located within said hollow vertical post and being engaged by said worm, an arm integral with said internally threaded collar and projecting out through the slot in the wall of said hollow vertical post, a horizontal arm hingedly secured to said arm on said internally threaded collar, a pivot pin extending upward from the end of said horizontal arm, a holder movably supported on said pivot pin on said horizontal arm and being adapted to form a movable support which may be raised or lowered with respect to the excretion orifice in said bed spring and mattress, said holder having a plurality of retaining lugs extending outward therefrom, a sleeve projecting downward from said holder and engaging said pivot pin on said horizontal arm permitting said holder to be rotatably supported thereon, a pair of retaining lugs hingedly connected to said holder at one end thereof, and a flat spring secured to said holder and exerting an upward pressure on said pair of retaining lugs for maintaining the same in a normal supporting position with respect to said holder, a mattress plug removably disposed in said orifice of said mattress, said mattress plug having a plate on the underside thereof and spring clips secured to said plate for suitably engaging said holder thereby permitting the latter to substantially support said mattress plug within the orifice in said mattress and said spring clips permitting said mattress plug to be removed from said holder thereby



permitting the latter to be lowered by means of said crank and said worm so as to facilitate the placing of a bed pan thereon and accordingly permitting the latter to be raised into the orifice in place of said mattress plug.

4. A bed construction comprising a head frame and a foot frame, a spring frame connecting said frames together, a bed spring having an excretion orifice, a mattress having an excretion orifice and, supported on said spring frame, a control mechanism located below the excretion orifice in said bed spring and said mattress, said control mechanism comprising a hollow vertical post having an enlarged upper gear casing and a lower spherical extremity, an elongated slot in the wall of said hollow vertical post, a worm movably supported in said hollow vertical post, gears located in the enlarged upper gear casing on said hollow vertical post and being connected with the upper end of said worm, a crank handle and shaft suitably connected to one of said gears for indirectly rotating said worm, an internally threaded collar located within said hollow vertical post and being engaged by said worm, an arm integral with said internally threaded collar and projecting out through the slot in the wall of said hollow vertical post, a horizontal arm pivotally secured to said arm on said internally threaded collar, a pivot pin extending upward from the end of said horizontal arm, and a holder movably supported on said pivot pin on said horizontal arm and being adapted to form a movable support which may be raised or lowered with respect to the excretion orifice in said bed spring and mattress.

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## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 793,061 | Dugan | June 27, 1905 |
| 1,093,901 | Masslow | April 18, 1933 |
| 1,918,896 | Bruch | July 18, 1933 |
| 1,959,728 | Mathis | May 22, 1934 |
| 2,218,572 | Dry | Oct. 22, 1940 |
| 2,287,552 | Dry | June 23, 1942 |

FOREIGN PATENTS

| Number | Country | Date |
|---|---|---|
| 492,597 | Germany | Feb. 25, 1930 |
| 19,069 | Great Britain | Aug. 28, 1896 |