Feb. 15, 1949. C. L. BERG 2,461,675

LOWERING AND HANDLING APPARATUS FOR BURIAL VAULTS

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FIG. 1.

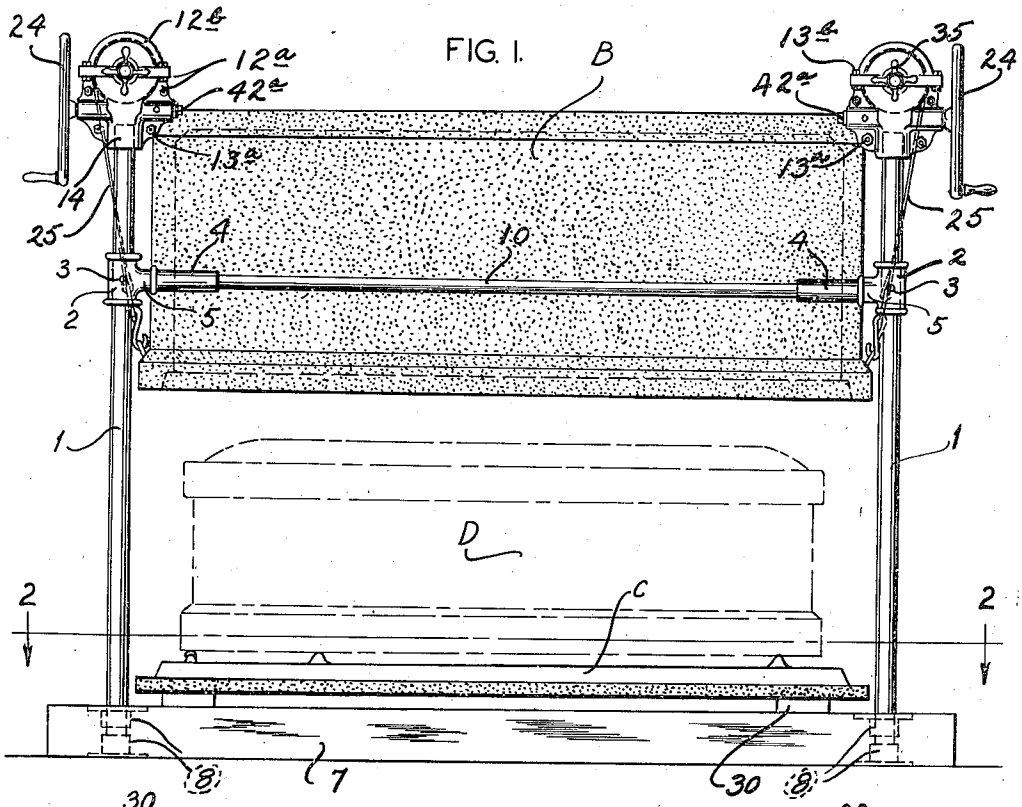
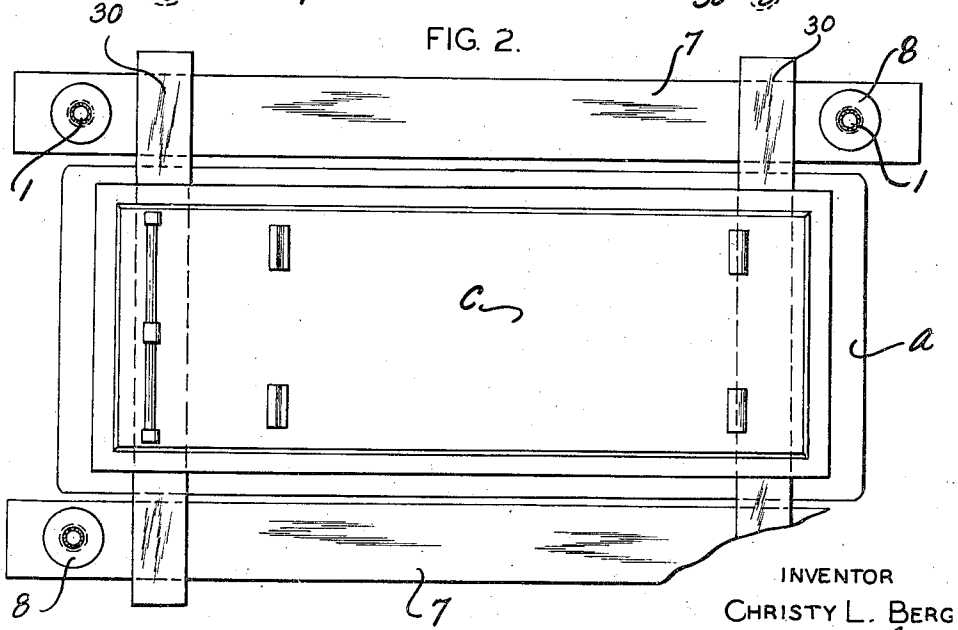


FIG. 2.



INVENTOR
CHRISTY L. BERG
BY W. Fisher
ATTORNEY

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FIG. 3.

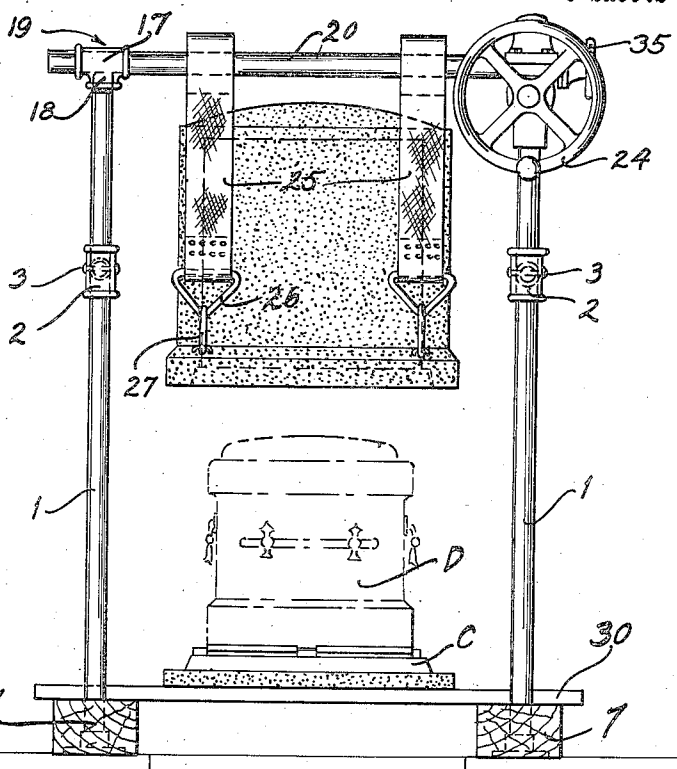


FIG. 7.

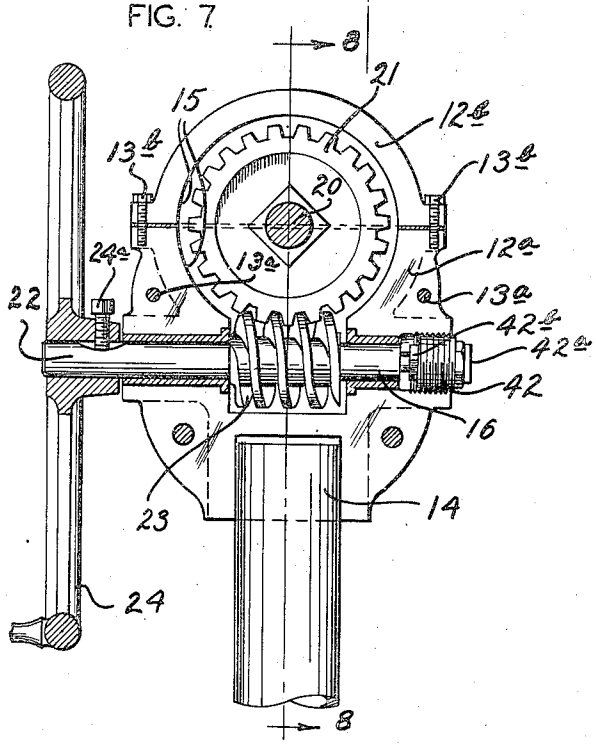
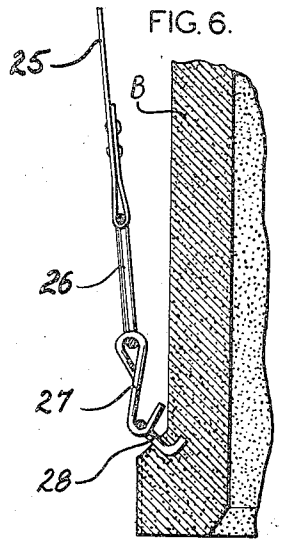


FIG. 6.



INVENTOR
CHRISTY L. BERG
BY
ATTORNEY

Feb. 15, 1949. C. L. BERG 2,461,675

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FIG. 8.

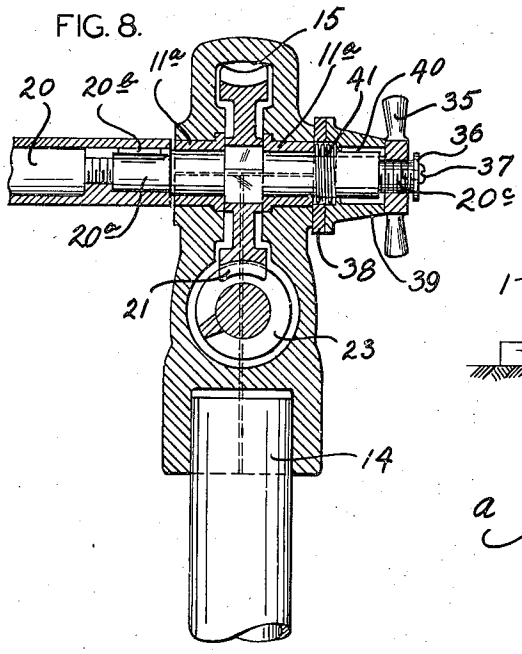


FIG. 5.

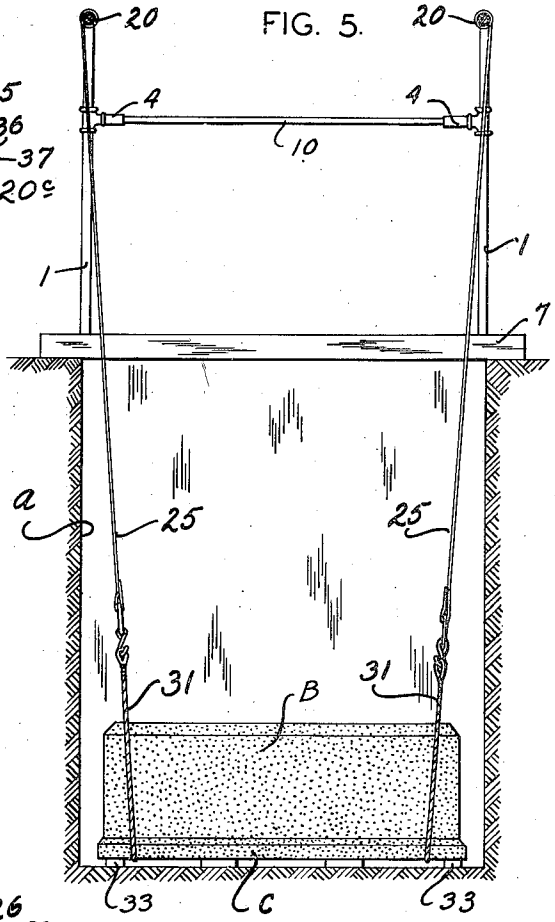


FIG. 4.

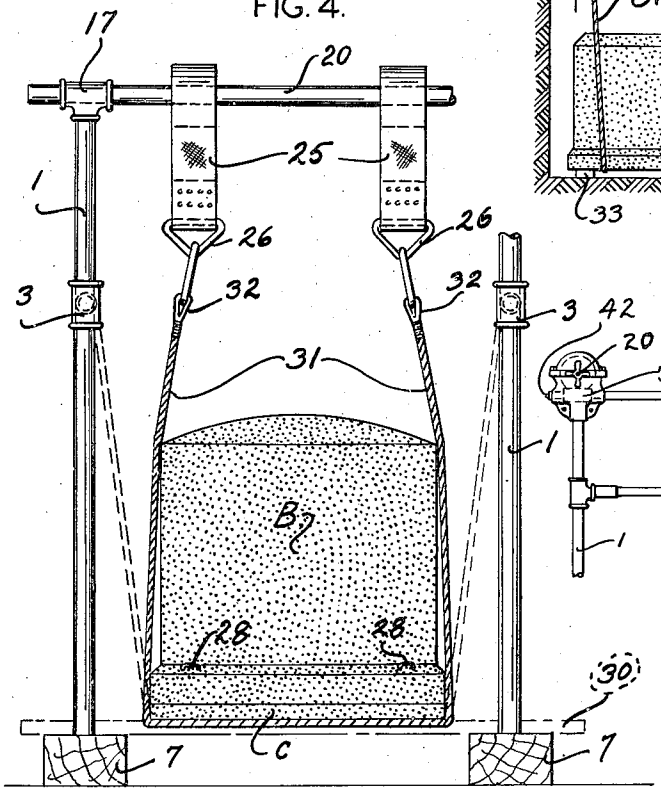
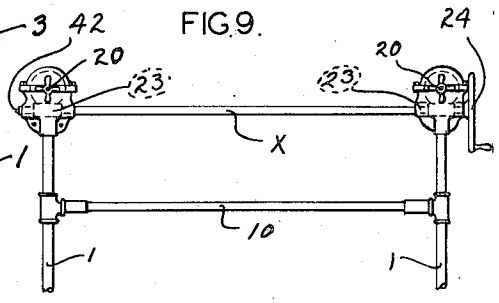


FIG. 9.



INVENTOR
CHRISTY L. BERG

BY A. E. Fisher

ATTORNEY

Patented Feb. 15, 1949 2,461,675

UNITED STATES PATENT OFFICE

2,461,675

LOWERING AND HANDLING APPARATUS FOR BURIAL VAULTS

Christy L. Berg, St. Louis, Mo.

Application May 2, 1945, Serial No. 591,493

2 Claims. (Cl. 254—136)

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This invention relates generally to a lowering and handling apparatus for burial vaults, and more particularly to an apparatus for lowering such a vault with its enclosed casket into a grave, in the process of making an interment. In this respect and for this purpose the present invention embodies certain structural improvements upon applicant's original United States patent, numbered 1,855,469.

The main object of the present invention is to provide an improved apparatus of the kind referred to and as disclosed in said original patent and wherein the usual coffin is enclosed within a vault or burial case formed of concrete or other suitable material for protecting the coffin.

In the making of interments by the use of the apparatus described in the said original patent and in the present improved apparatus, the separable base slab of the vault is first positioned and properly supported over the mouth of the grave by means of removable cross-strips extended across the ends of the open grave, then suspending the dome of the vault vertically above the base, then placing the coffin upon the vault base below the vault dome, then lowering the vault dome over the coffin, and finally lowering the whole assembly to the bottom of the grave and filling the latter in.

The construction, operation and function of the original patented apparatus, in the process of making such interments, are fully set out in the said patent, and the primary object of this present invention is to show and describe certain improvements in the said patented apparatus, for facilitating and rendering more efficient the use and operation of the same.

Another object of the present invention is to provide means incorporated upon the original invention for more conveniently locating and placing the lowering apparatus, and for regulating and governing the speed of operation.

With the stated objects in view, together with such other and additional objects and advantages as may appear from the following specification, attention is now directed to the accompanying drawing as embodying and illustrating the preferred structural features of the present invention as representing the said improvements over the original patent, and wherein:

Figure 1 is a side view of the complete apparatus as set up ready for use over a grave, showing the vault dome suspended above its base, and showing in broken lines the coffin as positioned upon the base.

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Figure 2 is a horizontal section on the line 2—2 of Figure 1.

Figure 3 is an end elevation of the assembly as shown in Figure 1.

Figure 4 is an end view of the assembly as shown in Figure 1, showing the vault dome however as lowered upon the vault base over the coffin, and ropes or cables passed underneath the ends of the vault base and releasably connected at their ends to the ends of the lowering straps, preliminary to lowering the vault and enclosed coffin into the grave, the gear head at one end of the apparatus being broken away.

Figure 5 is a side view on a reduced scale, showing the vault and enclosed coffin as lowered into the grave, the upper portions of the apparatus being broken away.

Figure 6 is a sectional and fragmentary detail on an enlarged scale of the releasable connections between the vault and the lowering straps of the apparatus.

Figure 7 is an enlarged detail of one of the gear heads and associated elements, as employed at each end of the apparatus for manipulating and controlling the lowering operations of the apparatus.

Figure 8 is a vertical section taken on the plane indicated by the line 8—8 of Figure 7.

Figure 9 is a fragmentary detail showing a method of adapting the apparatus for "one man" operation.

The original and patented invention includes the four corner posts 1, jointing T's 2 adjacent the upper ends of the posts, and secured in place by pins 3, relatively short sleeves or tubes 4 being threaded in the lateral outlets 5 of these T's, sills 7 being provided at the sides of the grave A, and there being socket members 8 seated atop the ends of the sills 7 for engaging the lower ends of the posts 1 for supporting same in upright position. However in this connection and in accordance with the present invention the posts 1 instead of being located endwise of the grave A, are located laterally of the ends thereof, thus facilitating interments in situations where the endwise space between adjacent graves and tomb-stones is limited. As a matter of course, in lieu of the sills 7, any other conventional method of basal support for the posts 1 may be provided. Also in the original and patented construction, side bars 10 connect at their ends with the sleeves 4, thus completing the rectangular supporting frame of the apparatus. Also in accordance with the original patented invention, gear housings of two-part structure

are mounted atop two of the laterally aligned corner posts 1 at one side of the apparatus, but in accordance with the revised and improved form of the invention the said housings 11 are of three-part structure as clearly indicated in Figure 7 of the drawing, the same including the pair of lower said castings 12a and the superposed top or cap castings 12b for covering both of the lower castings 12a. This structure facilitates the inspection, oiling and repairing of the contained working gears as positioned and mounted within these housings, without the complete disassembling of the same as would be required in the original structure. The parts of this housing are secured together by means of the bolts 13a, 13b and the lower parts of the housing are formed with sockets 14 adapted to set over the upper ends of two of the laterally disposed corner posts 1. The housing castings 12a and 12b are formed with the gear recesses or seats 15 and with the shaftways 16 longitudinally aligned at one side of the apparatus. A pair of T-joints 17 are threaded by their medial and down-turned outlets 18 onto the upper ends of the oppositely disposed posts 1, and have their heads 19 bored and reamed for freely receiving and journalling at one end the end cross-shafts or rollers 20, the opposite ends of these cross-shafts being extended through and journalled in the gear housings 11 at points above the shaftways 16. Two worm gears 21 are keyed on the ends of the rollers 20 within the housings 11, and short drive shafts 22 are journalled through the shaftways 16 and are provided with the worms 23 meshing with the said worm gears 21. Hand wheels 24 are rigidly keyed to the outer ends of the drive shafts 22, whereby the rollers 20 may be rotated by turning these hand-wheels.

The rollers 20 are of course of such length as to allow the sides of the frame to be set apart a distance somewhat greater than the width of the grave A. Four lowering straps 25 of any suitably strong and flexible material are provided, a pair of these straps being secured by one end to each of the end rollers 20 in a spaced relation and anchored thereto in any conventional manner. These straps are rolled or wound upon themselves around the rollers 20, and of course will be payed out or unrolled by rotating the hand wheels 24 in the proper direction, and will be rewound or drawn upward by the reverse rotation of these wheels. Triangular loops or eyes 26 are secured to the free ends of the straps 25 and S-shaped hooks 27 are hooked through these eyes as shown, these hooks being thus disposable for use in a manner later to be pointed out.

The foregoing elements and structural features constitute the frame-work and working elements of the said patented invention, the only novel feature of the assembly as so far described residing in positioning the posts 1 laterally of the ends of the grave A for facilitating interments in limited end-wise space, as heretofore referred to, and in the described three-part structure of the housings 11.

It is obvious that the assembly as described may be readily dismantled for transportation from place to place, the dismantling resulting in the dividing of the frame and separation of the elements, all of which may be again speedily reassembled for use on location as desired.

The apparatus as described is for use in connection with a hollow vault B, as usually formed of concrete or other suitable material, the same being generally of rectangular or oblong formation, with its under side open, and adapted to seat upon the base or bottom slab C over the coffin D as mounted upon the said base. The coffin D is of any conventional form, and in the process of interment is positioned upon the base slab C which in turn is supported immediately over the grave A upon spaced cross strips 30, immediately under the vault dome B and in vertical operative alignment therewith. Thus as the vault dome is lowered it will nicely enclose the coffin and seat at its lower margins upon the base slab.

In accordance with the invention the vault dome B is provided with metal end hooks or loops 28 anchored in spaced relation in the lower margins of the ends thereof, and which may be a part of the usual reinforcing framework commonly used in such concrete structures. These loops 28 may thus be readily engaged by the hooks 27 in the operation of the apparatus in making an interment. The apparatus also includes lowering cables 31 for positioning under the ends of the base of the vault and enclosed coffin, these cables being of such length as to permit their being pulled upward at their ends alongside and above the vault B when the same is resting upon its base, as shown in Figure 4. Loops or eyes 32 are secured to the ends of these cables.

In performing an interment with an apparatus of this kind, the vault dome B is first elevated above the mouth of the grave A by hooking the hooks 27 into the end loops 28 and then winding up the straps 26 onto the shafts or rollers 20. The base C is then positioned over the grave and supported in place by the cross strips 30, these operations of course being performed prior to the arrival of the coffin at the grave. The pall-bearers deposit the coffin on the base C, and the vault dome B is then lowered over the coffin onto its base C, by rotation of the hand wheels 24. The hooks 27 are then disengaged from the loops 28 at the ends of the vault dome, and the ends of the cables 31 after being passed under the ends of the base slab C are drawn upward alongside the vault and the hooks 27 are engaged with the loops or eyes 32, after the straps 25 have been wound up somewhat tautly. Thus slings are provided at the ends of the assembly for lowering the same into the grave, which is readily done by first raising the assembly slightly for removal of the cross strips 30 and then operating the hand wheels 24 for the lowering operation. When this is done the hooks 27 are disengaged from one end of each of the cables 31 and the straps 25 are wound up, thus withdrawing the cables from the grave and leaving the vault assembly in place therein, the latter being positioned on bricks 33 in a conventional manner and for facilitating the withdrawal of the cables. Ordinarily it should require a man at each end of the apparatus for operating the hand wheels 24. The apparatus as described could of course be employed for lowering a coffin alone into the grave, if desired.

The preceding description largely relates to the said prior patent, with the exception of certain improvements and novel structural features as recited. An important additional novel feature or features resides in braking devices for appropriately regulating and slowing the lowering operation of the heavy vault dome down onto its base over the coffin, and then lowering the entire assembly down into the grave. Owing to the weight

of such an assembly, the gravitational pull is so great as to unduly speed the descent of the vault and contents into the grave. It is an important object of the present invention therefore to provide practicable hand braking mechanisms or regulators for controlling the worm gears 21, and cooperating friction plugs in the ends of the worm shaft-ways 16 for controlling the drive shafts 22 mounted through the shaft-ways. For this purpose the gear housings 11 are provided with bushings 11a for receiving the journalled ends of the shafts or rollers 20 as passed into these housings, the said bushings being mounted at each side of the worm gears 21. The outer separable and jointed ends 20a of the roller shafts 20 as passed through the housings 11 are keyed to the shafts 20 in a conventional manner, as at 20b, and are reduced and screw threaded as shown at 20c, and axially tapped brake wheels 35 are provided for threadedly mounting upon these ends, where they may be locked in place by means of washers 36 removably mounted upon the ends of the shafts 20 by means of set screws 37 passed through the washers and into the tapped ends of the shafts. Heavy friction washers 38 of any suitably fibrous or composition material, are mounted over the ends of the roller shafts 20 and are pressed up against the sides of the housings 11, and outer press or friction cones 39 are then slidably keyed as at 40 upon the ends of these shafts and adapted to press up against the outer sides of the washers 38, these cones being normally pressed outward by coil springs 41 seated over the shaft ends. The dimensions of the elements are such that when the washers and cones are mounted upon the ends of the roller shafts the outer ends of the cones will extend out somewhat over the threaded ends of the shafts and so that when the brake wheels 35 are turned up onto these threaded ends of the shafts, they will press up against the outer ends of the friction cones and force those cones and the friction washers up against the housings 11, thus exerting a braking effect upon the worm gears 21 commensurate with the pressure of the brake wheels as turned upon the threaded spindles of the roller shafts. Complementary to the described braking wheels and mechanisms just described, co-operative screw threaded friction plugs or nuts 42 are seated within the tapped inner ends of the shaft-ways 16, as clearly shown in Figure 7, and it is to be noted that these plugs are reversible for seating within the ends of the shaft-ways, and that the opposite ends of the plugs are formed with circular, flat-faced heads 42a and 42b, either of which is adapted, when turned inwardly, to abut flatly against the inner flat ends of the drive shafts 22, and thus act as a friction brake upon the rotation of said drive shafts, depending upon the degree of pressure of the plugs and whether the larger or smaller ends thereof are turned inwardly, the degree of pressure of the plugs being of course dependent upon the force with which they are turned or screwed into their seats.

Thus it is evident that by the employment of either or both of the described braking mechanisms, singly or in unison, the descent of the vault and contents may be regulated in speed as desired, or may be even held stationary when desired. The described apparatus is ordinarily operated by placing a man at each of the hand-wheels 24, however should it be found desirable or necessary to operate the apparatus by only one man, this could be readily accomplished, as

illustrated in Figure 9, by reversing the positioning of one of the housings 11 at one end of the apparatus, so that the hand-wheel end thereof would face toward the housing at the opposite end, then removing the said reversed hand-wheel 24, then removing the friction plug or nut 42 at this opposite end, and slip joint in a conventional manner a connecting shaft X between the ends of the two aligned worms 23, for operatively connecting these worms. Thus operation of the one-hand wheel 24 would co-operatively rotate both of the worms 23 for rotating the roller shafts 20 and raising or lowering the connected vault and contents.

It is thought that the construction, use and operation of the said improvements over the original patented invention will be fully understood from the foregoing descriptions, and while the drawing and description shows specific forms of said improvements, these forms and specific constructions may be changed or modified as may be desired, within the scope of the claims.

I claim:

1. In an apparatus of the kind described for mounting over an open grave, the same including an oblong supporting frame with corner posts and gear housings upon the upper ends of the posts at one side of the frame and roller shafts disposed transversely at the ends of the frame and horizontally journaled at one end through the said gear housings and rotatably supported at their opposite ends at the upper ends of the posts at the opposite side of the frame, and there being worm gears upon the ends of the roller shafts within the gear housings, and including drive shafts with worms thereon journaled through the gear housings transversely below the said worm gears with the worms in mesh with the gears, and there being operating hand wheels upon the outwardly extended ends of the drive shafts, braking mechanisms at the ends of the roller shafts as extended through the gear housings, the same comprising brake wheels threadedly mounted upon the reduced and threaded ends of the roller shafts, and frictional braking elements interposed between the brake wheels and the adjacent sides of the gear housings, whereby the turning up of the brake wheels or releasing same will result in pressing the intermediate brake elements against the sides of the gear housings for slowing the movement of the roller shafts, or releasing the brake wheels will speed the movement of said shafts.

2. In an apparatus according to claim 1, and additional braking devices mounted upon the inner ends of the said drive shafts for controlling the rotation thereof.

CHRISTY L. BERG.

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