

(No Model.)

2 Sheets—Sheet 1.

R. R. RICHMOND.
BURIAL DERRICK.

No. 536,938.

Patented Apr. 2, 1895.

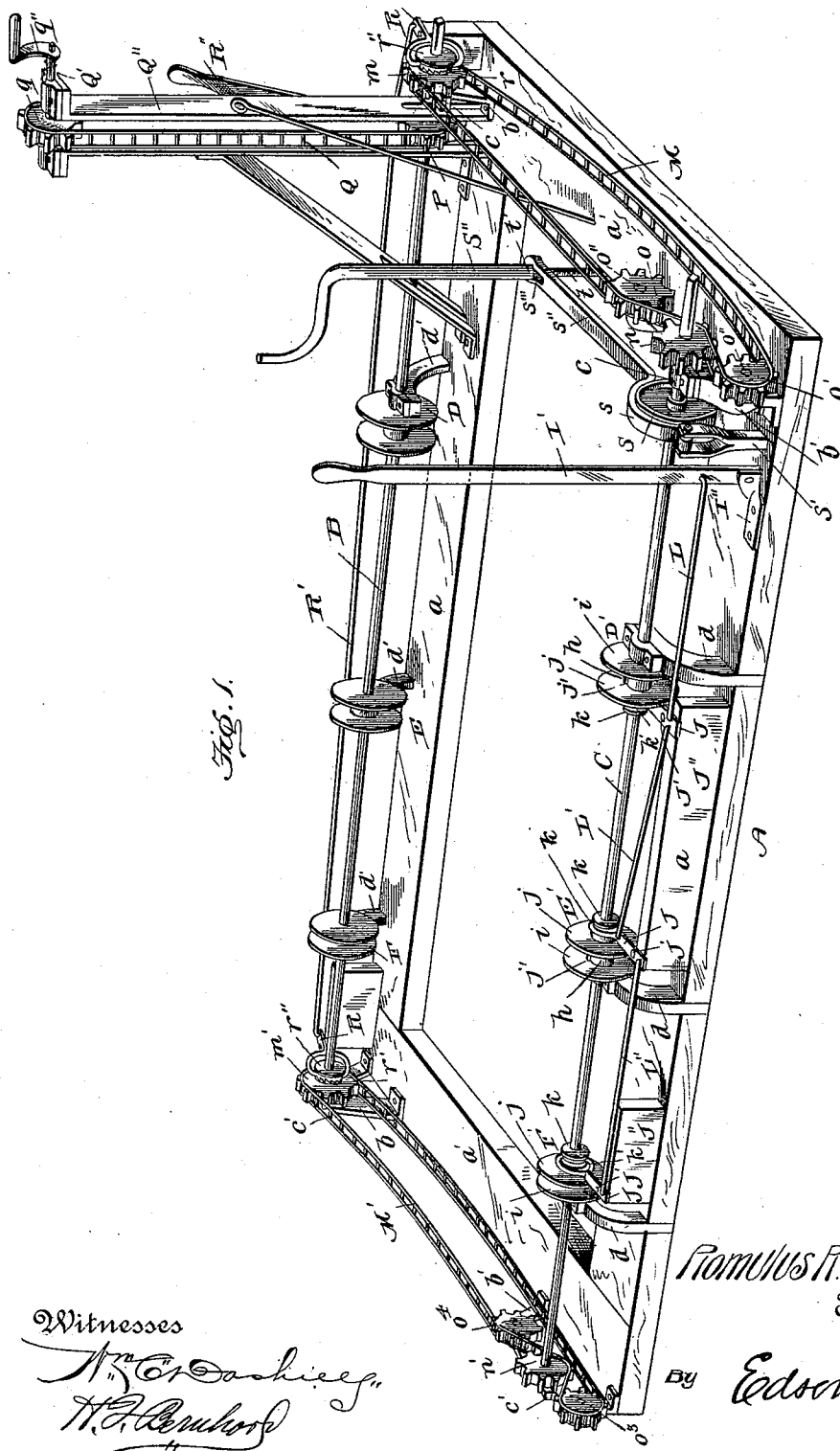


Fig. 1.

Witnesses

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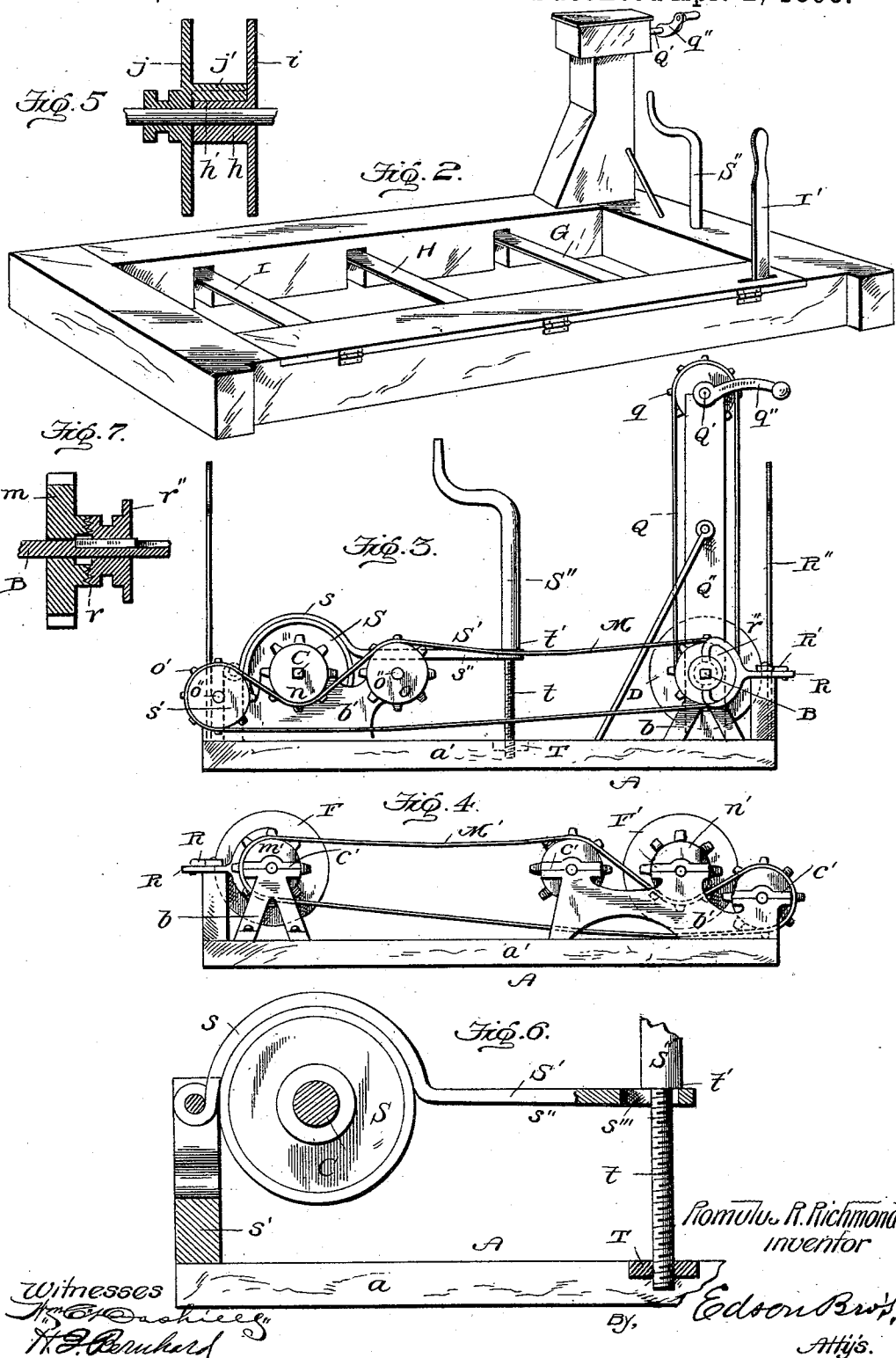
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UNITED STATES PATENT OFFICE.

ROMULUS RUFUS RICHMOND, OF CHARITON, IOWA.

BURIAL-DERRICK.

SPECIFICATION forming part of Letters Patent No. 536,938, dated April 2, 1895.

Application filed December 1, 1894. Serial No. 530,541. (No model.)

To all whom it may concern:

Be it known that I, ROMULUS RUFUS RICHMOND, a citizen of the United States, residing at Chariton, in the county of Lucas and State of Iowa, have invented certain new and useful Improvements in Burial-Derricks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in derricks or apparatus for lowering coffins into graves or raising them out of the same, and the objects that I have in view are, first, to provide simple means for lowering a coffin into a grave with safety and ease, which apparatus can be operated by one man, and which can be used for disinterring or raising a heavy metallic casket or other kind of coffin from the bottom of the grave to the surface of the ground, by the aid of one or two men; secondly, to enable the lowering straps or cables to be readily withdrawn from beneath the coffin without disturbing the latter when at rest on the bottom of the grave or vault; and to provide safety appliances, by which the descent of the coffin can be arrested or governed to enable the coffin to be deposited with safety into the grave.

With these and such other ends in view as pertain to my invention, it consists in the construction of the spools or drums, on one of the longitudinal shafts, with slidable heads or sections adapted to detachably clamp one end of each of the lowering traps or cables to one of said spools or drums, combined with mechanism to shift all of the slidable spool sections simultaneously into and out of engagement with the fixed spool sections, whereby the ends of the straps or cables may be released from series of spools to enable them to be wound on the series of spools on the other shaft and thereby be withdrawn from the grave and beneath the coffin without disturbing the latter.

The invention further consists in the novel combination of devices, and in the peculiar construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to more readily understand

my invention, I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of my burial apparatus, with the inclosing casing omitted for the purpose of more clearly showing the construction thereof. Fig. 2 is a perspective view with the casing in position around the operative devices. Fig. 3 is an elevation looking at one end of the apparatus. Fig. 4 is an elevation looking at the other end of the apparatus. Fig. 5 is a detail sectional view of one of the sectional spools or drums. Fig. 6 is a detail sectional view, taken through one of the side sills and one longitudinal shaft, to show the brake mechanism. Fig. 7 is a detail sectional view of the clutch and sprocket wheel for shaft B.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A designates the horizontal, main frame of the burial apparatus, which frame consists of the longitudinal side sills, *a*, and the transverse end sills, *a'*, which are suitably united together to present a substantial, rigid structure of such dimensions as to surround the open, upper end of the grave or vault into which a coffin is to be lowered. At the angles or corners of this horizontal main frame, which is substantially rectangular in outline or form, are provided the brackets, *b*, *b'*, the brackets at opposite corners, on each side of the frame, A, being arranged in line with each other. These aligned brackets, *b*, *b'*, on each side of the horizontal frame are provided with shaft-bearings, *c*, *c'*, and in each pair of bearings of the corresponding brackets is journaled a shaft. As two pairs of brackets and bearings are provided on the frame, A, I am able to provide the proper support for the two longitudinal shafts, B, C, which are necessary for the proper operation of the apparatus or derrick. These shafts B, C, are disposed longitudinally of the frame, A, at the respective sides thereof, and they are parallel to each other, as clearly shown by the drawings.

The shafts are sustained at points intermediate of their length by means of the supporting arms, *d*, *d'*, the arms *d* being securely fastened to the longitudinal sill, *a*, on one side

of the frame, A, while the other arms d' are likewise fastened to the other sill, a , on the opposite side of said main frame, both the arms, d , and d' , being arranged to overhang the sills a , a , and properly spaced apart, and provided with bearings at their upper free ends, through which bearings the shafts, B, C, are passed, so that the shafts B, C, are properly held and braced by the arms d , d' , and by the brackets, to enable the shafts to stand the strain to which they are subjected in the practical operation of the derrick. These shafts B, C, carry two or more pairs of spools or drums, although I have shown three pairs of spools in the drawings, but the number of spools or drums is not material and can be varied or changed at pleasure. The spools or drums forming each pair are carried by the respective shafts, B, C, and they are arranged in line with each other transversely across the main frame, A, of the derrick. The first pair of spools, is indicated at D, D', the second pair at E, E', and the third pair at F, F', of which pairs of spools those designated by the reference letters D, E, F, are fixed to the shaft, B, while the other spools, D', E', F', are carried by the other shaft, C, whereby the spools are arranged in series on the longitudinal shafts on opposite sides of the frame, A, and the two spools forming each pair are in line with each other transversely across the frame, A, to enable the lowering straps or cables G, H, I, to be properly connected to, and wound upon, the spools forming the proper pair to accommodate each strap or cable. These lowering straps are continuous or unbroken throughout their length, and one end of each strap is fastened or secured in any suitable way to one of the spools on the shaft, B, while the other end of said strap is detachably clamped to one of the sectional spools on the outer shaft C, to enable them to be wound on the spools of shaft B, and thereby permit the straps to be withdrawn from the grave and beneath the coffin, after the latter has been lowered into the grave, and without disturbing the same when at rest upon the bottom of the grave or vault.

The spools D, E, F, on the shaft B are each made in a single solid casting, or otherwise suitably constructed, as may be approved by those skilled in the art; while the other series of spools, D', E', and F' on the shaft C are made with separable heads or in sections constructed to clamp the ends of the straps or cables to be attached to said spools on the shaft C. In Fig. 4 of the drawings, I have shown in detail one of these sectional spools or drums, by reference to which figure it will be noted that the spool consists of a sleeve, h , a head, i , rigid or integral with the sleeve, and a slidable head or disk, j , which is provided with a locking key or stud, j' , adapted to take or fit into a key-seat, h' , formed in the sleeve h , whereby the end of the strap or cable may be fitted over the sleeve, h , and the slidable head or disk, j , can be adjusted toward the

sleeve, so that its stud or key, j' , will take or bind upon the end of the strap to detachably clamp the strap or cable to the sectional spool. 70

Although I have shown and described the sectional spool as provided with the key-seat in the spool, h , and the slidable head formed with the projecting key or stud, j' as the preferred embodiment of this part of my invention, yet I do not desire to strictly confine myself to this particular form of the sectional spool constructed to detachably clamp one end of the lowering strap or cable to itself, because I am aware that this precise form of the sectional spool may be modified without departing from the spirit of my invention. 75 80

It is desirable that all of the straps or cables forming the series G, H, I, shall be simultaneously released from their spools D', E', F', when the straps are to be withdrawn from beneath the coffin after it is lowered, and to accomplish this simultaneous release of the straps, I have provided an operating lever, I, and connections between said lever and the slidable sections, j , of the spools on the shaft, C. Each slidable section, j , of the spools D', E', F', is provided with a hub, k , which is extended a suitable distance laterally from the head, j , and in this projecting hub or boss, k , is formed an annular groove or channel, k' . In the channels or grooves of the slidable sections of the spools on the shaft C are fitted the forked or bifurcated ends of the shipping levers, J, which are fulcrumed at intermediate points of their length, as at J', to the blocks or supports, J'', fixed to one of the longitudinal sills, a , of the main frame A. 85 90 95 100

The operating lever I is fulcrumed at its lower end to a suitable stand, I', on the frame A, and to this lever is connected one end of a pitman, L, which extends to and connects with one end of the shipping lever J of the spool D'. Another link L', extends from the first shipping lever J to the second shipping lever, J, of the middle spool, E', and a third link, L'', extends from the shipping lever, J, of the middle spool to the third lever, J, of the spool F', whereby the shipping levers J, J, J, of the spools D', E', and F' are connected in series by the rods L, L', L'', to the operating lever, I, so that one movement of the operating lever will move all the slidable sections, j , of the spools, D', E', F', into or out of engagement with the rigid or fast members, h , of said sectional spools. 105 110 115 120

The two longitudinal shafts, B, C, of the derrick or apparatus are geared together for simultaneous rotation by means of the sprocket wheels and chains shown in the drawings. At one end of the frame A, and the shafts, B, C, is provided the endless sprocket chain, M, which passes around the sprocket wheel, m , on one end of the shaft, B, on one side of the frame, A, while the other part of the sprocket chain, M, passes beneath and engages with a sprocket wheel, n , on one end of the shaft, C, this part of the sprocket chain, M, passing over the idler, guide, sprocket 125 130

wheels, o, o' , arranged on opposite sides of the wheel, n , on the shaft, C, and both idler sprocket wheels, o, o' being journaled on stub axles or short shafts o'' supported on the bracket, b' , fixed to one corner of the frame A. The opposite ends of the two shafts B, C, are similarly geared together by the endless sprocket chain, M' , which passes around the sprocket wheel, m' , on the end of the shaft B, and beneath the sprocket wheel, n' , on the shaft, C, so as to engage with the teeth of the wheel, n' , and over the two idler sprocket wheels, o, o' , secured to the bracket, b' , by means of short axles situated on opposite sides of the shaft, C, and its driving sprocket, n' . The shaft, B, is further provided with a sprocket wheel, P, around which passes an upright endless sprocket chain, Q, which, at its upper end, passes around and engages with a driving sprocket wheel, q , on a short horizontal power shaft, Q' . This shaft Q' is journaled in fixed bearings on an upright supplementary frame, Q'' , attached to the main frame, A, on the same side thereof as the shaft B, and this power shaft Q' is provided with a crank handle, q'' , by which the shaft, the sprocket chain, and wheels can be conveniently rotated to turn the shaft, B, for the purpose of winding the straps or cables on the spools D, E, F, to withdraw said straps or cables from beneath the coffin.

When the lowering straps are to be wound on the spools of the shaft B, after the coffin has been lowered and the straps have been disconnected from the spools, D', E', F', of the shaft C, it is desirable to rotate the shaft, B, on which the straps or cables are to be wound in withdrawing them from beneath the coffin, without operating the shaft, C, or the spools from which the straps have been disconnected; and to accomplish this end, the sprocket wheels, m, m' , on the shaft, B, are provided with clutches, r, r' , that are fitted to slide on the shaft, B, and provided with projecting bosses r'' in which bosses are fitted the forked ends of the shipping levers, R, fulcrumed on suitable blocks attached to the sill, a , beneath the shaft B. These shipping levers, R, for the two sprocket wheels, m, m' , on the shaft B, are connected by means of the connecting rod R', and to this connecting rod R', is pivoted an operating lever, R'', fulcrumed on the frame, A.

To regulate or control the rotation of the shafts in lowering the coffin into a grave, I have provided the brake mechanism shown by Figs. 1, 2 and 4 of the drawings. This brake mechanism consists of the wheel or disk, S, the brake lever S', and the operating shaft S''. The brake disk or wheel, S, is fixed to the shaft, C, in any suitable way, and the lever, S', is curved, bent, or otherwise provided with the brake shoe, s , which is curved to conform, approximately, to the contour of the brake wheel. One end of said brake lever is hung or fulcrumed to the short stand, s' , fastened to the frame A, and the other end of said le-

ver is prolonged to form the arm, s'' , in which is formed the slot s''' . The operating shaft S'', is arranged in an upright position near one end of the frame, A, and its lower part is reduced to form the long tenon, t , and the shoulder, t' , said tenon t being externally threaded and fitted in a fixed nut, T, secured to one end sill, a' , of the frame A. This threaded tenon, t , passes through the slot, s''' , in the brake lever, so that the shoulder, t' , of the stem or shaft, S'', will bear upon the long arm of the brake lever, and when the shaft is rotated in one direction, the shoulder t' bears down on the long arm of the brake lever and forces the brake shoe into close engagement with the brake wheel on the shaft, C, whereby the rotation of the shaft can be arrested or retarded to control the descent of the coffin into the grave or vault.

This being the construction of my improved burial derrick or apparatus, the operation may be described as follows:—The apparatus is adjusted or placed over a grave or vault so that the open, upper end thereof is inclosed by the frame, A, with the shafts B, C, extending lengthwise of the grave, on opposite sides thereof. Previous to placing the coffin in position to be lowered, the crank handle of the shaft Q'' is operated to wind the cables G, H, I, equally on the series of spools on the two shafts B, C, and then the brake is applied to hold the shaft C against turning, which shaft, C, as it is geared to the shaft B, prevents all the spools forming the two series from turning when the coffin is placed on the straps or cables, G, H, I, the latter being stretched across the frame A, between the two shafts B, C. The coffin can now be placed upon the straps or cables, within or between the sills, a, a' , of the frame, A, and the shaft, Q, and brake can now be operated to permit the coffin to descend by its own weight, the speed of descent being regulated by the brake mechanism. As the two shafts are geared for simultaneous operation, and the cables or straps have been previously wound equally on the two series of spools, the coffin is lowered, in a horizontal position, into the grave or vault, and with entire safety. After the coffin is lowered and it rests upon the bottom of the grave, the apparatus is adjusted so that the cables or straps can be withdrawn without disturbing the coffin. This is done by operating the lever, I, to throw the shipping levers J to a position where the slidable sections of the spools D', E', F', are disconnected from the fixed sections, and thereby release the cables or straps from the sectional spools, and the lever R'' is operated to unship the clutches r, r' from the sprocket wheels, m, m' , on the shaft B, thereby throwing the two shafts B, C, out of gear. The crank handle can now be turned to rotate the power shaft and the shaft B, thereby coiling the straps or cables on the spools, D, E, F, and withdrawing the same from beneath the casket at rest in the bottom of the grave.

It will be noted that the operating mechanism for rotating the shafts B, C, that the stem for controlling the brake, and that the lever for disconnecting the gearing between the two shafts B, C, are all located at one end of the apparatus or derrick, and the sexton or attendant is thus able to operate and control the apparatus from one end thereof and without moving from one position to another.

In the practical construction of my apparatus or derrick it is designed to house or inclose all the working parts, except the two operating levers, I, R'', and the driving mechanism for the shaft B, within a suitable casing, which is slotted to accommodate the movement of the lowering straps or cables. This casing is shown in Fig. 2 of the drawings, but for the sake of clearness, the casing has been omitted from Figs. 1, 3, 4 and 5 of the drawings.

When it is desired to disinter a coffin or casket, the grave is opened in the usual way, and the apparatus adjusted over the same. A hook is now inserted beneath the head of the coffin, to raise it and permit one of the straps to be adjusted beneath the same, and the foot of the coffin is likewise raised to receive another one of the straps. The gearing is adjusted to connect the two shafts together, and the crank handle is turned to rotate the two shafts in opposite directions simultaneously so as to wind the straps equally on the spools of the two shafts. The coffin can thus be raised evenly and safely to the surface, and the apparatus can be used to advantage in raising a light weight coffin or the heaviest metallic coffin made, which is very desirable as difficulty is sometimes experienced in disinterring heavy caskets.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a burial apparatus, the combination of the longitudinal shaft, B, having loose sprocket wheels, *m*, *m'*, a shaft C provided with fixed sprocket wheels, *n*, *n'*, endless chains connecting the series of sprocket wheels at the respective ends of the shafts, B, C, the power shaft geared to the shaft B, slidable clutches on the shaft B to engage with the sprockets, *m*, *m'*, thereon, a lever and connections between the lever and said clutches, the pairs of spools carried by the shafts, B, C, and lowering straps or cables, substantially as and for the purposes described.

2. In a burial apparatus, the combination with the longitudinal shafts B, C, carrying the spools or drums, the straps or cables, and a power mechanism geared to the shaft, B, of gearing connecting the shafts B, C, and provided with clutch mechanism to make one of said gears fast to or loose from the shaft B, and a shifting lever connected with the clutch, for the purpose described, substantially as set forth.

3. In a burial apparatus, a series of sectional

spools of which each spool has a slidable section or head adapted to be moved into and out of engagement with the other section or head, in combination with a shaft C on which the sectional spools are fitted, another shaft B carrying a series of spools, and the series of straps each having one end fastened to a spool on the shaft B and its other end detachably clamped to a sectional spool on shaft C, substantially as and for the purpose described.

4. In a burial apparatus, a shaft C, and a series of sectional spools thereon, each of which spools has a fixed member provided with a seat, and a slidable member constructed with a clamping key adapted to said seat, in combination with a shaft B carrying a series of spools, and a series of straps each of which has one end fastened to one spool on shaft B and its other end detachably clamped between the seat and key on the sectional spool of shaft C, substantially as and for the purposes described.

5. In a burial apparatus, the combination of a shaft C and a series of sectional spools thereon, each spool having one member fast to said shaft and its other member slidable on the shaft, a series of shipping levers engaging with slidable members of the spools, an operating lever, connections between the operating lever and the spool shipping levers, another shaft carrying a series of spools, and lowering straps or cables, for the purposes described, substantially as set forth.

6. In a burial apparatus, the combination of a shaft carrying a series of spools, a series of lowering cables each attached at one end to one of the spools on said shaft B, another shaft, C, carrying a series of spools each of which is constructed in sections to clamp the end of one strap or cable detachably, mechanism for adjusting the sectional spools to release the straps or cables, gearing between the shafts, B, C, mechanism for throwing said shaft gearing out of operative relation to one shaft, B, to permit the latter to turn independently of the other shaft C, and a suitable power shaft geared to the shaft B, substantially as and for the purposes described.

7. In a burial apparatus, the combination of a frame having the brackets, *b*, *b'*, the shaft, B, journaled in one pair of said brackets, *b*, and carrying a series of spools, the sprockets *m*, *m'* and clutches for making the same fast to said shaft, another shaft, C, journaled in the other pair of brackets, *b'* and provided with another series of spools and with sprockets *n*, *n'*, the idler sprockets journaled on the brackets, *b'*, on opposite sides of the sprockets *n*, *n'* of the shaft C, the endless sprocket chains passing around the sprockets, *m*, *m'* of shaft B and beneath the sprockets *n*, *n'*, of shaft C and over the idler sprockets, a rod R' connecting the clutch levers R, R, to the clutches on shaft B and having an operating lever, R'', the lowering straps or cables for the two pairs

of spools on the shafts B, C, and a power mechanism geared to shaft B, substantially as and for the purposes described.

5 8. In a burial apparatus, the combination with longitudinal shafts, the spools thereon, and lowering straps or cables, of a brake disk on one shaft, a brake lever provided with a shoe and fulcrumed at one end and having a prolonged slotted arm, a threaded bearing at
10 one side of the brake lever, and a shouldered operating stem passing through the slotted arm of the brake lever and having its lower threaded end working in the fixed threaded bearing, substantially as described.

15 9. The combination of the shafts B, C, each carrying a series of spools, the lowering cables or straps, gearing between the two shafts, a

clutch and lever connected with said gearing to cause the two shafts to rotate simultaneously or to permit the shaft C to remain at rest, 20 a power mechanism geared to the shaft B, and a brake disk carried by the shaft C and provided with a brake shoe adapted to control the shafts B, C, and the cables, connected with the spools thereon when the gearing is ad- 25 justed to rotate the two shafts, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

ROMULUS RUFUS RICHMOND.

Witnesses:

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NAPOLEON B. BRANNER.