

No. 618,153.

Patented Jan. 24, 1899.

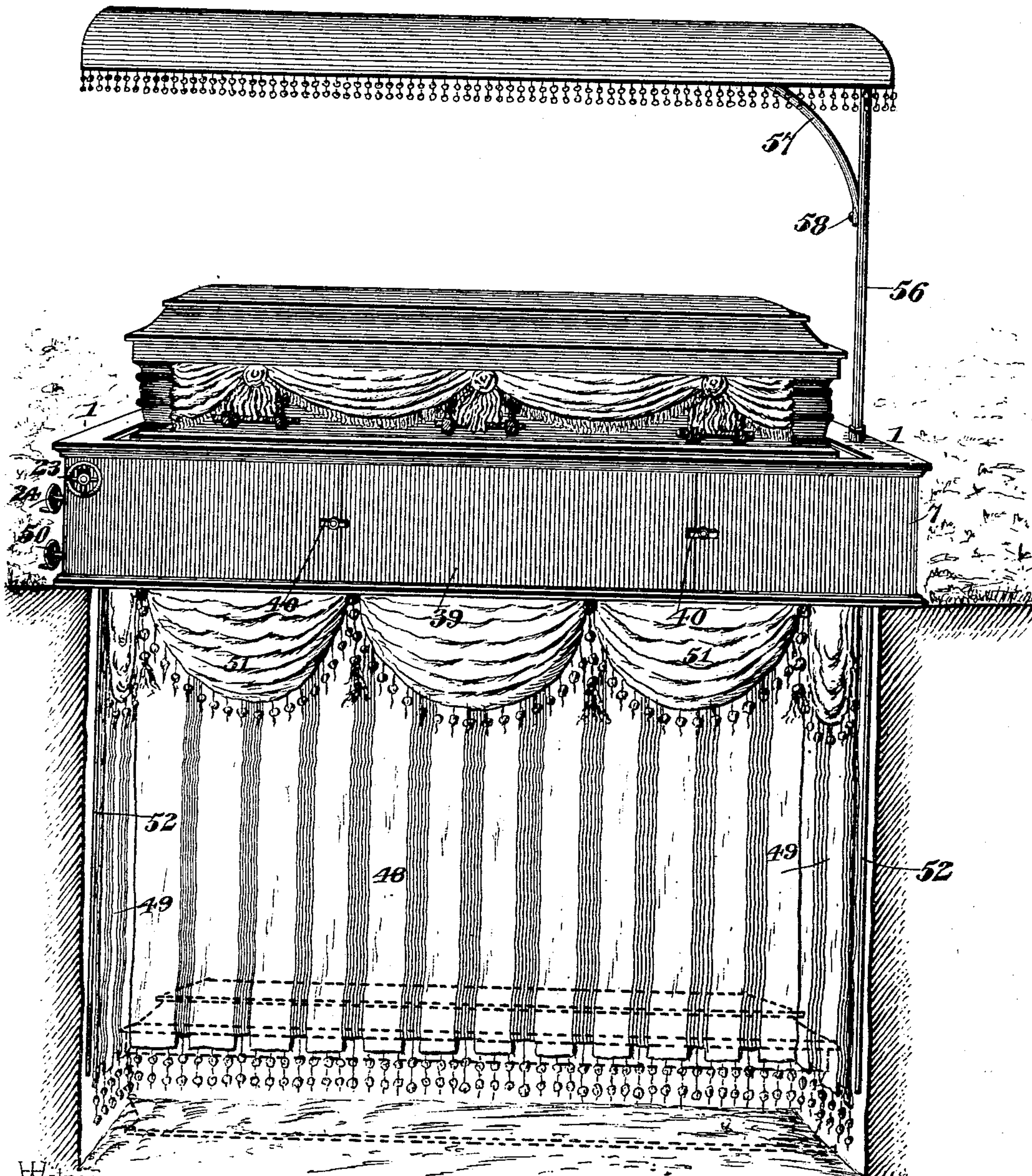
E. B. VOORHEES.  
CASKET LOWERING APPARATUS.

(Application filed June 20, 1898.)

(No Model.)

4 Sheets—Sheet 1

*Fig. 1.*



Witnesses

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*C. A. Snow & Co.*



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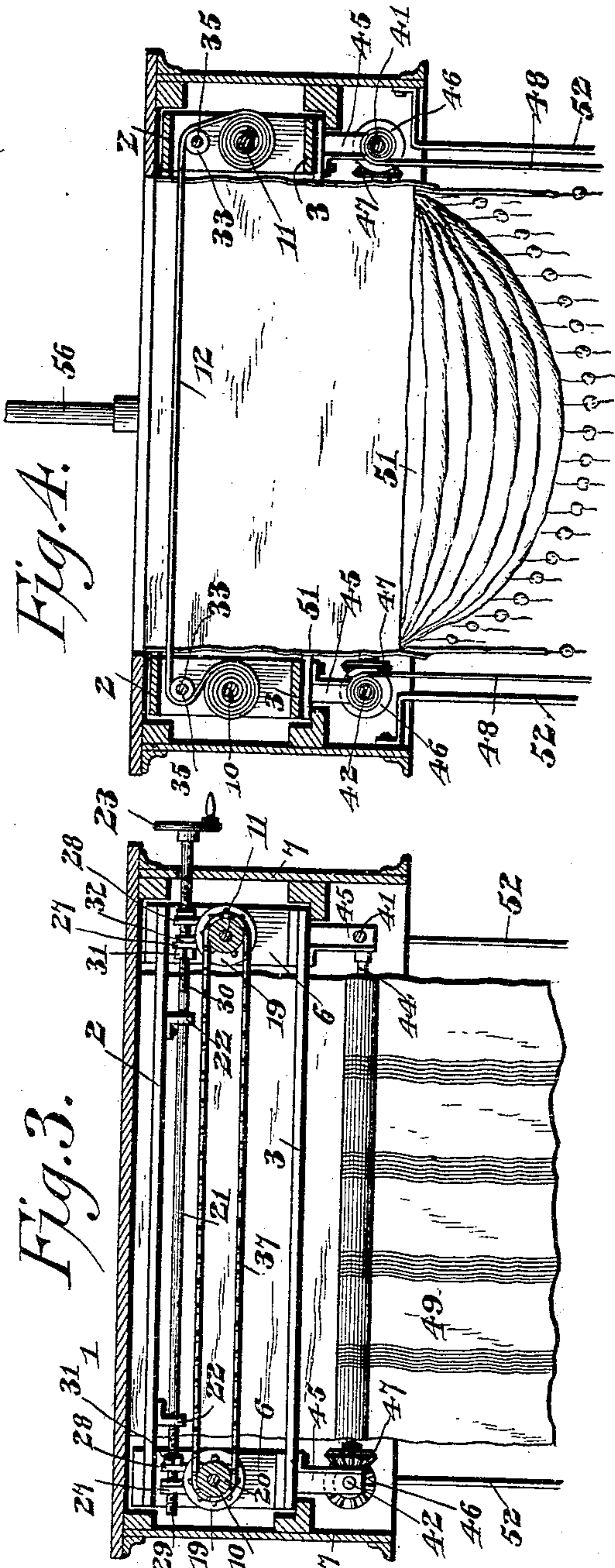
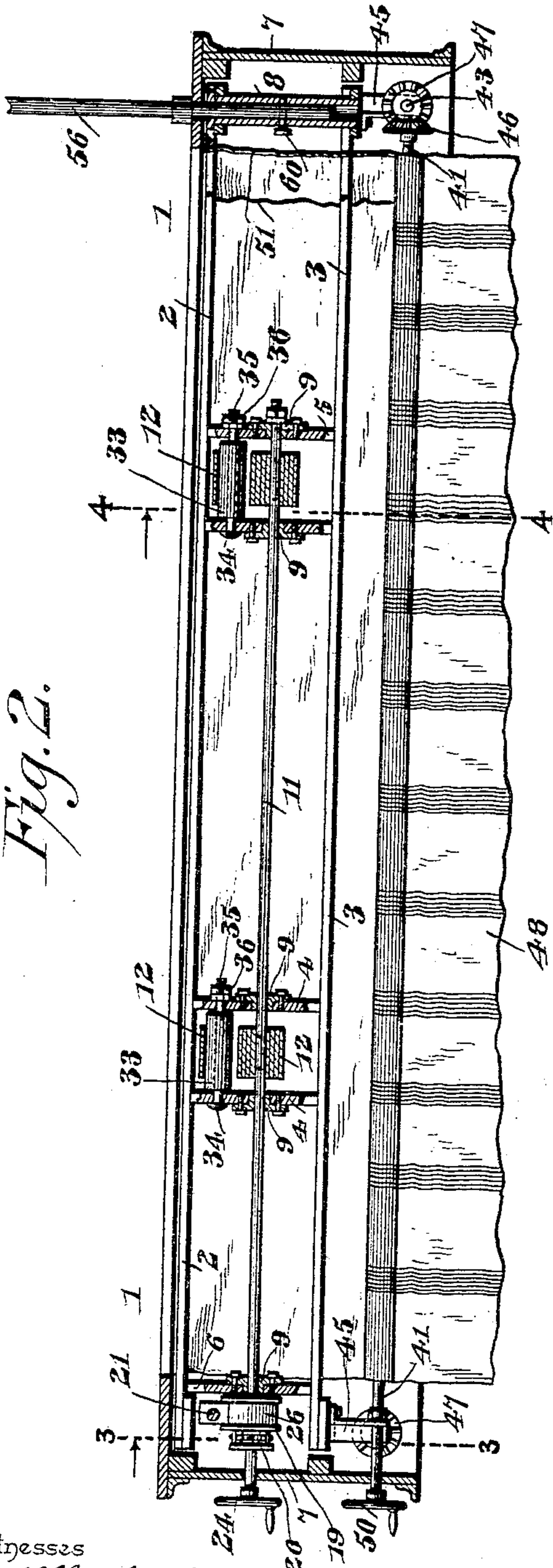
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4 Sheets—Sheet 2.



*Fig. 4.*

*Fig. 5.*

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Fig. 5.

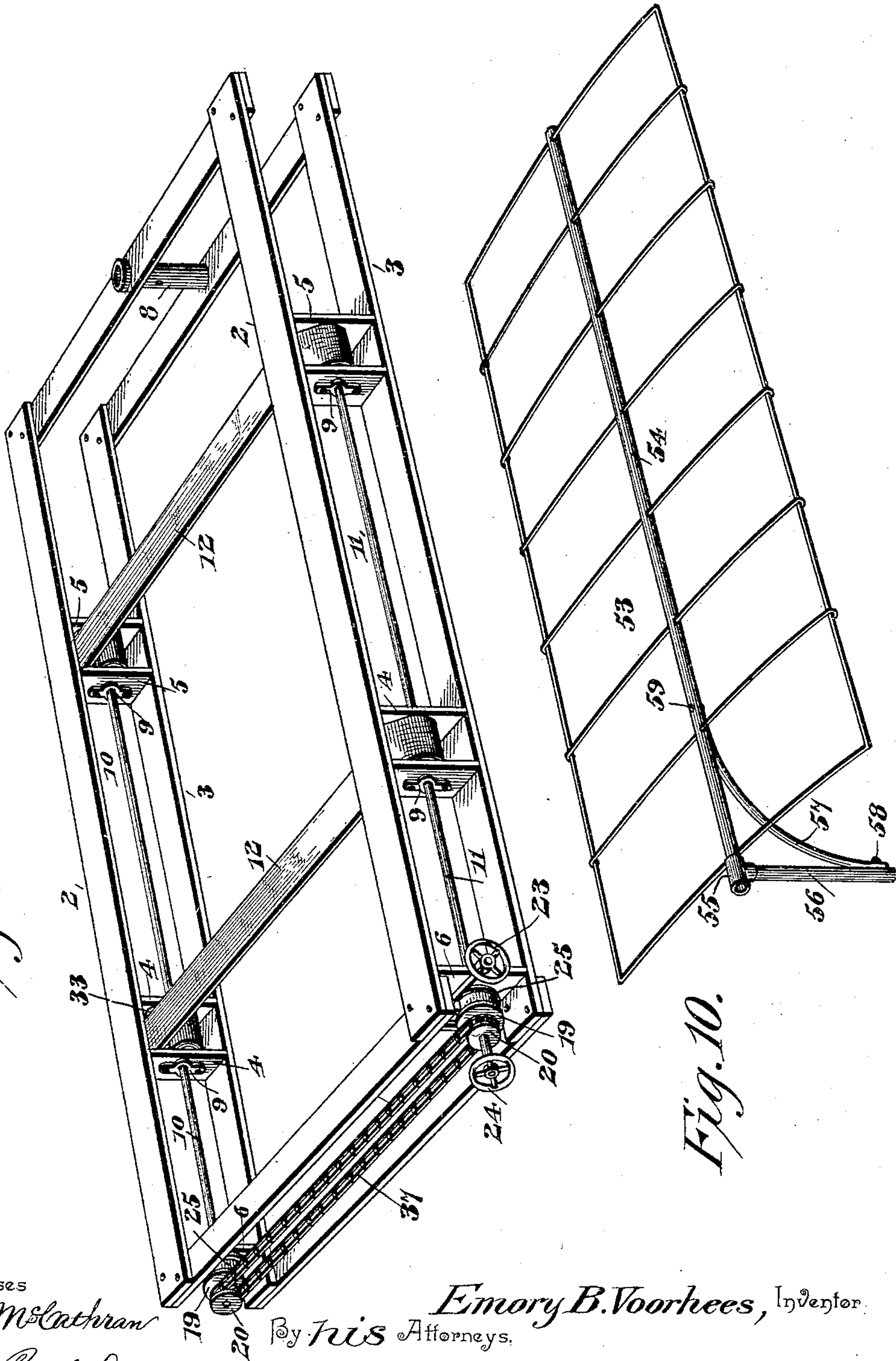


Fig. 10.

Witnesses  
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Fig. 6.

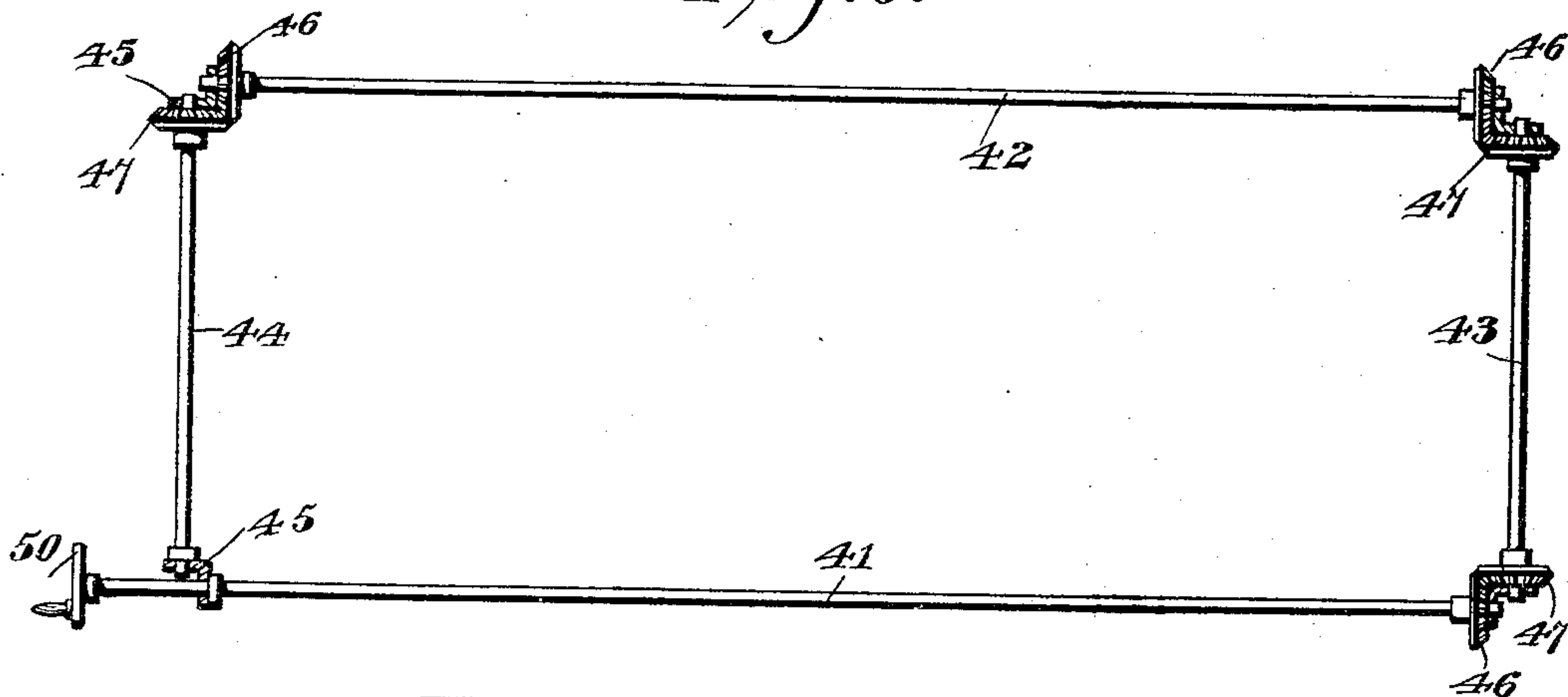


Fig. 9.

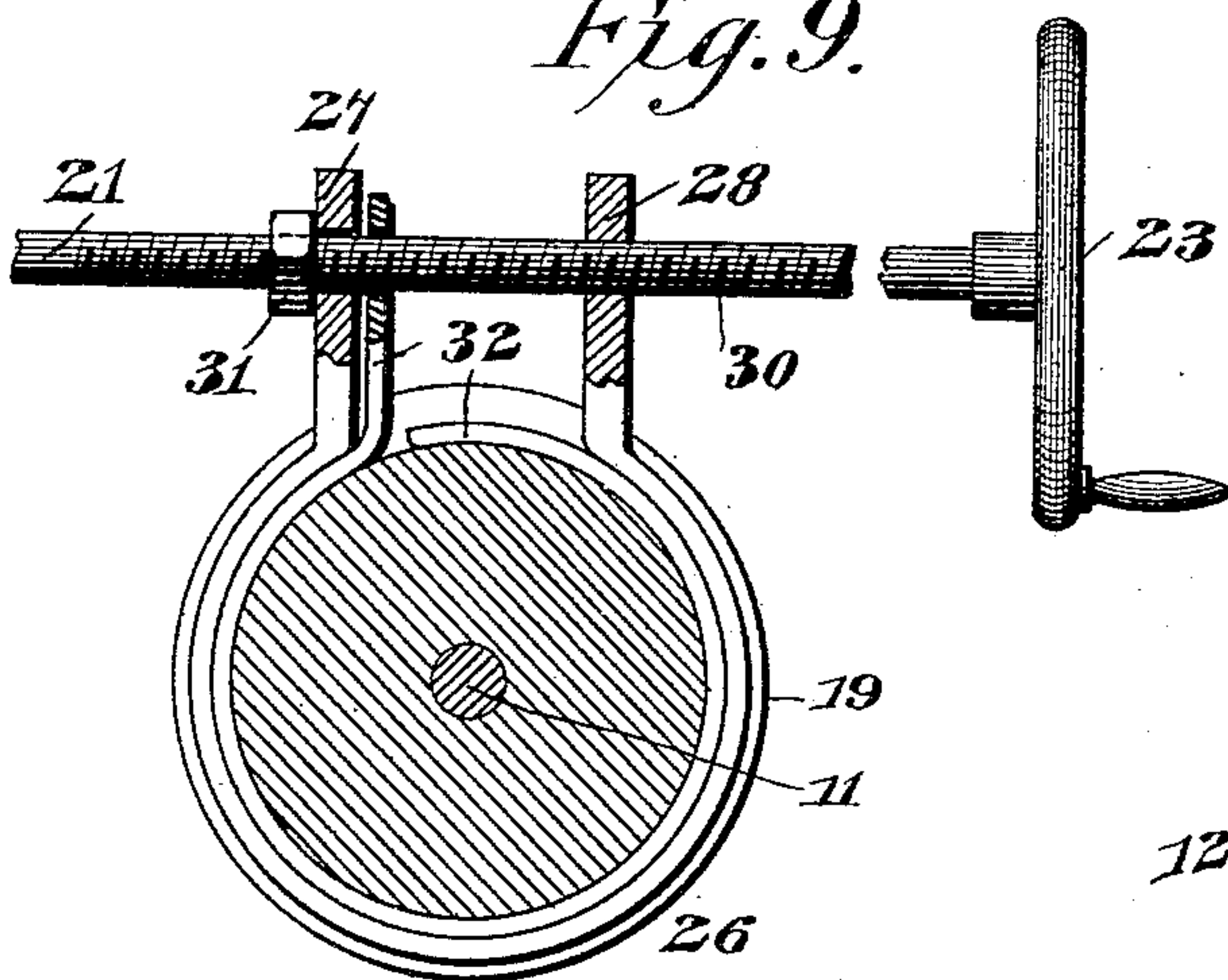


Fig. 7.

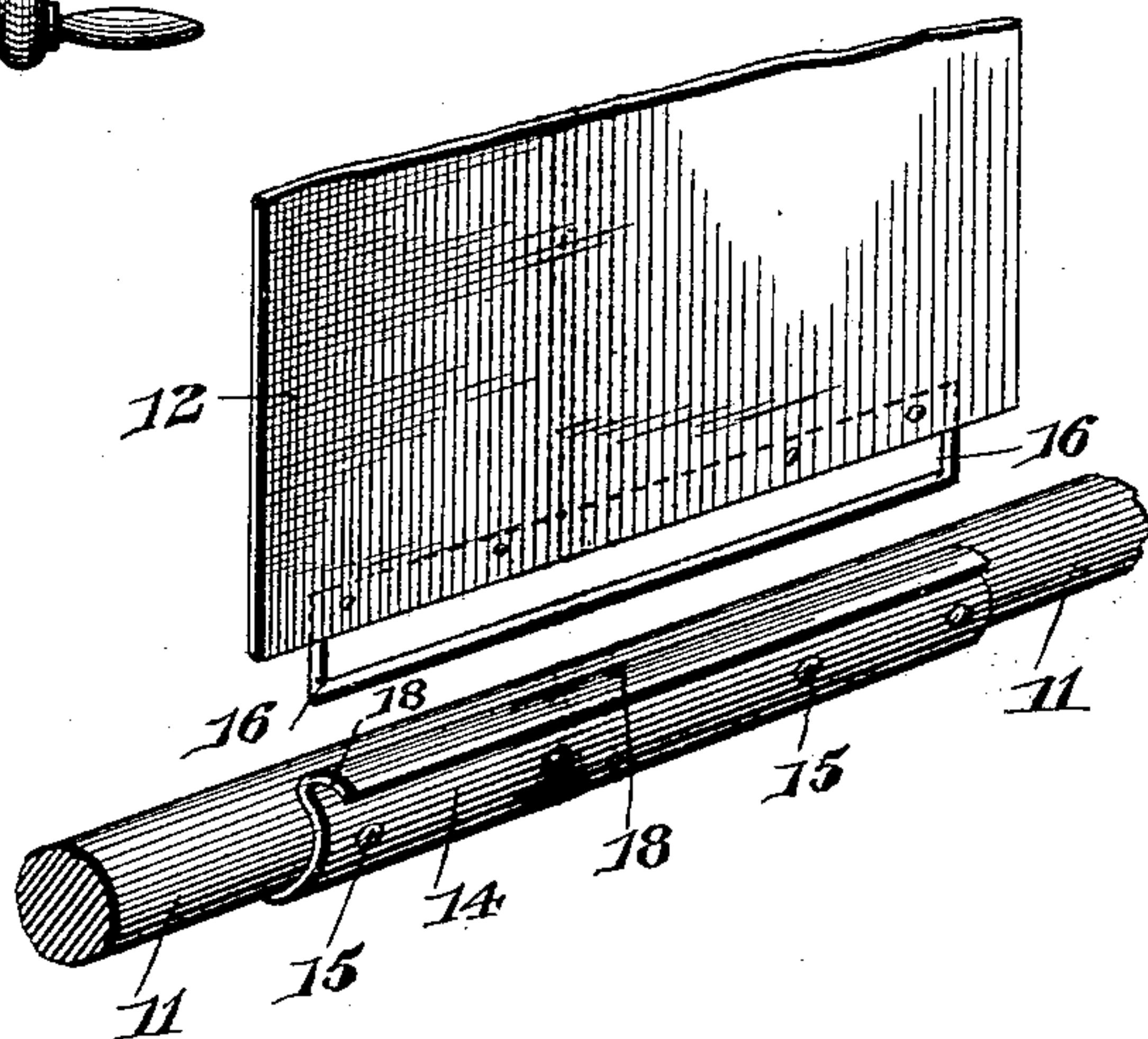
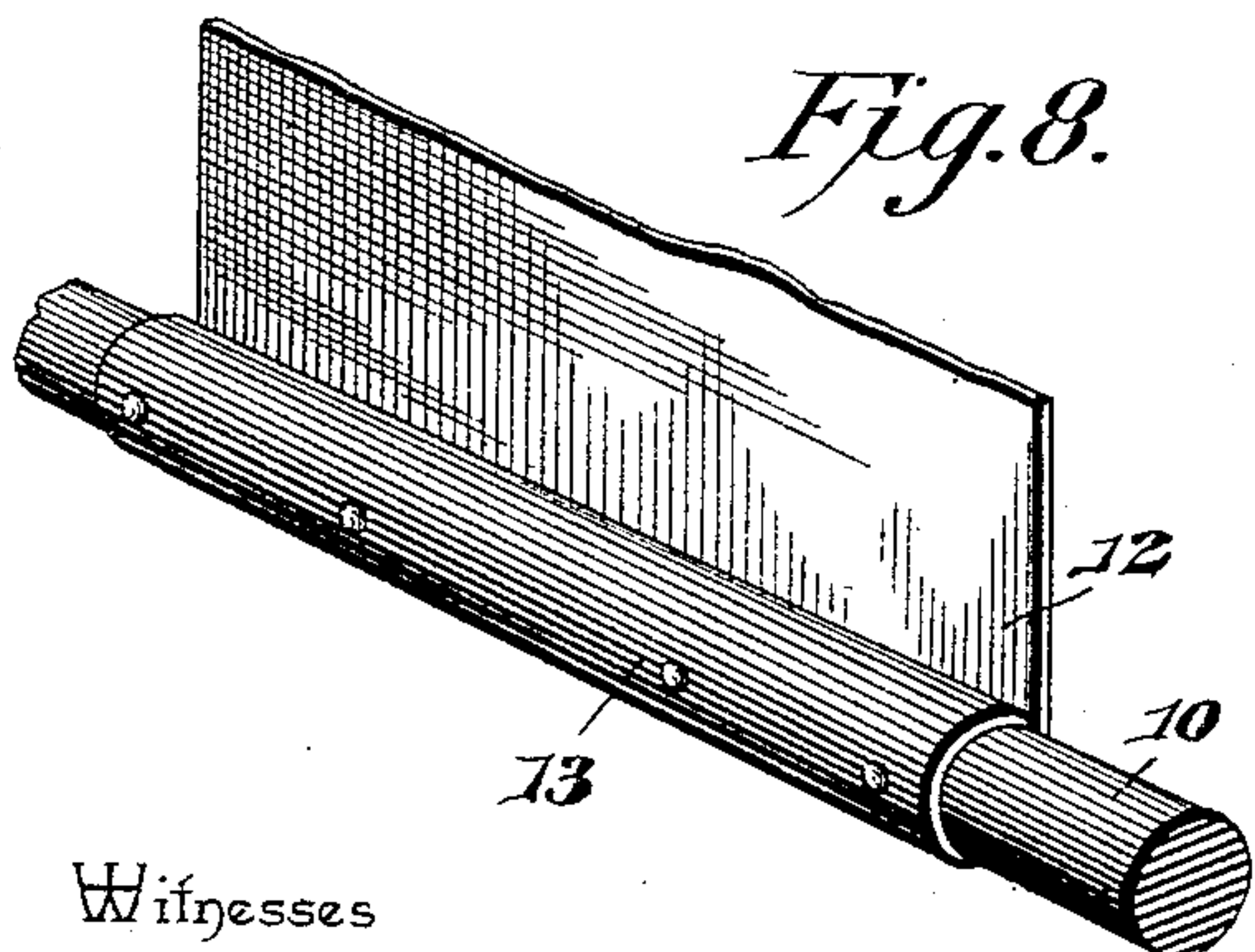


Fig. 8.



Witnesses

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# UNITED STATES PATENT OFFICE.

EMORY B. VOORHEES, OF OVID, MICHIGAN.

## CASKET-LOWERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 618,153, dated January 24, 1899.

Application filed June 20, 1898. Serial No. 683,968. (No model.)

*To all whom it may concern:*

Be it known that I, EMORY B. VOORHEES, a citizen of the United States, residing at Ovid, in the county of Clinton and State of Michigan, have invented a new and useful Safety Casket-Lowering Apparatus, of which the following is a specification.

My invention is a safety casket-lowering apparatus for use at graves or vaults to lower a casket or coffin therein; and the primary object that I have in view is to provide a simple and efficient apparatus by which a casket may be lowered with ease and despatch into a grave while maintained with safety in a horizontal position at all times during its descent, and which apparatus has its parts constructed and arranged for convenient operation to withdraw the lowering bands or cables readily and quickly from beneath the casket and from the grave or vault.

A further object of the invention is to provide a simple and efficient brake mechanism which is readily accessible at all times and is quick and powerful in action to control the rotation of the shafts to which the casket-lowering bands are attached, thus making provision for controlling the descent of the casket with safety.

A further object of the invention is to provide means for curtaining the walls of the grave or vault to conceal the latter from view during a service at the grave, and the curtained appliances are arranged for operation independently of the casket-lowering mechanism and without in any way interfering with the latter.

A further object of the invention is to provide means for protecting a casket from the weather at the grave-service, and such protecting means may be readily adjusted for use or detached from the burial apparatus when not desired.

With these ends in view the invention consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand the 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 a burial apparatus constructed in accordance with my invention and showing a vault or grave in sectional elevation, the full lines representing a casket supported by the burial apparatus in position for lowering into the grave and the dotted lines showing the position assumed by the casket after having been lowered and deposited upon the bottom of the grave. Fig. 2 is a vertical longitudinal sectional elevation through the housing and operating elements of the burial apparatus, the concealing-curtain being partly broken away and the canopy-standard being fitted in its supporting-tube at one end of the burial apparatus. Fig. 3 is a vertical transverse sectional elevation through one end of the burial apparatus on the plane indicated by the dotted line 3 3 of Fig. 2 and illustrating the brake mechanism by which the casket-lowering shafts are controlled during the operation of lowering a casket into the grave. Fig. 4 is a vertical transverse sectional elevation on the plane indicated by the dotted line 4 4 of Fig. 2, looking in the direction indicated by the arrow, one of the lowering-bands being operatively connected with the longitudinal shafts of the apparatus. Fig. 5 is a perspective view of the operative elements with the frame skeletonized and showing the parts in condition for service. Fig. 6 is a detail plan view of the means by which the concealing-curtains may be adjusted. Fig. 7 is a detail perspective view illustrating a fragment of one of the longitudinal shafts and the lowering band or cable to show one means for detachably connecting the lowering-band to one of the longitudinal shafts. Fig. 8 is a detail perspective view of the other longitudinal shaft to show the opposite end of the lowering-band permanently united to said shaft. Fig. 9 is an enlarged detail sectional view of a fragment of the brake-shaft, one of the brake disks or drums, the brake-band associated with said disk or drum and operatively connected with the shaft, and a friction-lining between the brake-band and brake-disk to reduce the noise and increase the frictional engagement between the band and disk. Fig. 10 is a detail perspective view of the canopy with its covering removed and the supporting-standard partly broken away.



Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

1 designates the housing of my burial apparatus, which contains all the operating or working parts necessary for lowering a casket with safety into a vault and is constructed of such dimensions as to extend entirely over the grave for the purpose of receiving a large-size casket, thus adapting the apparatus for lowering caskets of the varying different sizes. In the preferred embodiment of the invention as represented by the drawings this housing comprises upper and lower frames 2 3, which are arranged in parallel relation to each other, vertical brackets or plates 4, 5, and 6, arranged between the frames and serving to unite the latter rigidly together, a casing 7, which is built around the outside of the frames to inclose the same and the operating mechanisms, and a socket-tube 8, arranged centrally of the housing, at one end thereof, and secured firmly between the frames 2 3. The interior of this housing is open vertically to permit of the descent of a casket or coffin therethrough, and the space between the sides of the housing is adapted to be spanned by a series of lowering bands or cables, on which the casket may rest preparatory to lowering the same by the action of the apparatus into the grave or vault. The frames 2 and 3 may be of any suitable construction, and the casing 7 is united or secured to said frames in a proper manner to render the apparatus portable with ease. The brackets or plates 4 5 are arranged between the upper and lower frames, at each side thereof, but the brackets or plates 6 are disposed at opposite corners of the frames at one end of the housing. The brackets 4 5 6 on each side of the housing are in the same vertical plane longitudinally of the housing, and to these brackets or plates are firmly secured a series of bearings or boxings 9, which are in alinement horizontally with each other for properly supporting one of the longitudinal shafts. I preferably employ two pairs of brackets or plates 4 5 and a single bracket 6 on each side of the housing, and to each bracket or plate is secured a boxing 9, thus making a series of five boxes 9 on each side of the housing to properly support one of the longitudinal shafts; but it will be evident that the arrangement of the vertical plates or brackets and the number of boxes employed may be varied by the skilled mechanic.

To lower a casket, I employ two longitudinal shafts 10 11, which are disposed longitudinally of the housing, on opposite sides of the open portion thereof, and to the shafts are connected the bands or cables 12, which are adapted to be adjusted across the central opening in the housing to span the latter. Two of these transverse bands or cables 12 are employed, although the number used is not material, and said bands or cables are attached to the longitudinal shafts 10 11 in the

intervals between the transversely-aligned brackets or plates 4 and 5, forming part of the housing, whereby the weight of the casket imposed upon the bands or cables 12 is transmitted to the shafts 10 11, which are stayed by the boxes 9, attached to the plates or brackets on opposite sides of the points of attachment of the bands or cables to the shafts. Each band 12 has one end secured permanently, as at 13 in Fig. 8, to one of the longitudinal shafts 10, and this end is attained by passing or coiling said end of the band or cable around the shaft and passing rivets through the shaft and the looped or doubled end of the band. The other end of each band is, however, detachably fastened by a secure connection with the other longitudinal shaft 10, and for this purpose I employ the strong metallic hook-plate 14, which is fitted laterally against the shaft 11 and securely fastened thereto by rivets 15. (See Fig. 7.) The free edge of this hook-plate is bent or doubled to form the hook 16, which extends longitudinally of the shaft 11 and projects away from the same for the purpose of fitting the loop or keeper 18 easily and quickly into engagement with the hook 16 of the plate 14. It will be understood that each band or cable has one end permanently secured to the shaft 10, while its other end is detachably fastened in a secure manner to the other shaft 11, and provision is thus made for disconnecting the ends of the lowering-bands from the shaft 11 after the bands shall have been uncoiled from the shaft when the casket rests upon the bottom of the grave or vault, thereby permitting of the ready withdrawal of the bands or cables from beneath the casket and from the grave or vault. The longitudinal shafts 10 11 do not extend the full length of the housing, but, as shown by Fig. 5, the shafts begin at the brackets or plates 5 and extend through the brackets 6 at one corner of said housing. To these protruding ends of the longitudinal shafts are rigidly secured the brake-drums 19, which lie on opposite sides of the housing and occupy the same vertical plane transversely across the latter. These brake-drums are provided with the sprocket-wheels 20, which are rigid with said drums and are of uniform or corresponding diameter, and said sprocket-wheels are operatively coupled together by an endless sprocket-chain 37, which insures opposite rotation to both shafts 10 11 simultaneously.

21 designates the brake-shaft, which is arranged transversely across the housing, at the end thereof adjacent to the brake-drums 19, and this shaft lies above the longitudinal shafts 10 11, so that it may be operatively combined with the brake-bands that encircle the brake-drums and thus dispose all of the shafts of the machine for service without interfering one with the other. The brake-shaft is journaled in suitable bearings 22, secured rigidly to the upper horizontal frame 2, and



one end of this shaft is extended through one side of the housing, as shown by Fig. 3, to receive a hand-wheel 23, by which the shaft may be conveniently rotated in its bearings.

5 One of the longitudinal shafts is extended beyond the drum and sprocket-wheel thereon, so as to pass through one end of the housing, as shown by Fig. 2, and to this protruding end of the longitudinal shaft is secured a  
10 hand-wheel 24, that is readily accessible to the operator, thereby placing all of the shafts within convenient reach of the operator at one corner of the housing. The rotation of the hand-wheel 24 turns one of the longitudinal shafts, and as both shafts are opera-  
15 tively coupled together by the sprocket-chain, which intermeshes with the sprocket-pinions 20, said shafts 10 11 are rotated simultaneously in opposite directions to uncoil the  
20 bands or cables 12 uniformly from the shafts 10 11 and thereby lower the casket in a horizontal position at all times during its descent from the apparatus into the grave.

The brake-shaft 21 is operatively connected  
25 with brake-bands 25 26, which are fitted to the brake-drums secured to the longitudinal shafts 10 11, and this shaft and the brake-bands are constructed and arranged to secure simultaneous compression of both bands when  
30 the shaft is rotated in one direction. Each brake-band consists of a single length of elastic or resilient metal, which is bent to circumferentially embrace one of the drums, and the ends of this brake-band are extended par-  
35 allel to each other to form the arms 27 28, one arm, 27, having a smooth opening, while the other arm, 28, is interiorly threaded for a purpose to be explained. The brake-shaft 21 is provided near its respective ends with right  
40 and left hand threads 29 30, and the brake-bands are fitted to their drums to bring the arms thereof into positions where the openings in the arms 27 28 of the two bands 25 26 are coincident or in alinement. The brake-shaft  
45 21 is thus adapted to pass through the arms of the two brake-bands, and the threaded portion 29 of the shaft engages with the arm 28 of the band 25, while the left-threaded portion 30 of said brake-shaft engages the  
50 threaded opening in the arm 28 of the band 26. The brake-shaft is provided on its threaded portions with nuts that serve the purpose of stop-collars 31, against which the arms 27 of the two brake-bands are adapted  
55 to bear, and by the described construction and arrangement of the parts each brake-band has one arm thereof bearing against a fixed abutment on the brake-shaft, while the other arm has a threaded engagement with said  
60 shaft, whereby the brake-band is adapted to be compressed tightly around the brake-drum on the rotation of the shaft 21 in one direction; but a reverse rotation of the shaft effects an expansion of the brake-band to re-  
65 lease the drum and permit the drum and the longitudinal shaft to which it is secured to rotate within said brake-band. To reduce

the noise to a minimum when the apparatus is in service and to secure proper frictional engagement between the brake-band and the  
70 drum, a friction-lining 32, of leather or other appropriate material, is interposed between the drum and the band, and, as shown by Fig. 9, one end of this friction-lining is ex-  
75 tended to fit on the brake-shaft, thus holding the lining in position.

In order to dispose the lowering bands or cables at the upper side of the housing and to properly direct the bands around the longitudinal shafts, I employ the guide-rollers  
80 33, which are supported in the pairs of brackets or plates 4 5 above the longitudinal shafts 10 11 and in parallel relation thereto. Each guide-roller 33 is provided at one end with a headed journal 34, (see Fig. 2,) and the other  
85 end of said roller has an axial arbor 35, which passes through one of the brackets or plates for its threaded extremity to protrude beyond said plate and receive a nut or nuts 36. These  
90 guide-rollers 33 are arranged in pairs above the shafts 10 11 for each of the bands or cables 12, and said rollers rotate idly above the shafts to properly direct the bands or cables.

The housing 1 is provided with the doors  
95 39 on one side thereof, and these doors may be opened to expose the longitudinal shaft 11 and the hook-plates 14 thereon. The doors are preferably hinged to the casing and secured in place by any suitable form of fasteners—such, for example, as the pivoted  
100 button 40, (shown by Fig. 1)—and when the doors are open the shaft 11 may readily be reached by the operator for the purpose of attaching the loops or keepers 18 to the hook-plates on the shaft 11 or for detaching the  
105 bands 12 from said shaft.

In my burial apparatus I provide means by which the walls of the grave or vault may be concealed from view during the service over the corpse at the grave, and the concealing  
110 means is operated independently of the casket-lowering appliances, so that the various parts of the apparatus may be employed without hindrance and the concealing means dispensed with, if desired. Below the longitu-  
115 dinal shafts 10 11, which support the cables or bands and the casket, I arrange a series of shafts and a series of curtains, which are adapted to be operated to lower the curtains simultaneously into a grave or vault and  
120 cause the curtains to conceal the walls thereof. A series of four of these shafts are employed, and two of the shafts 41 42 are arranged longitudinally of the housing throughout the  
125 length thereof and below the band-shafts 10 11, while the remaining curtain-shafts 43 44 are arranged transversely across the housing at the ends of the latter and are operatively  
connected with the longitudinal curtain-shafts 41 42. The curtain-shafts are jour-  
130 naled in bearings 45, of angular construction, secured at the corners of the housing, and these shafts are geared together by the intermeshing bevel-gears 46 47 to insure simulta-



neous rotation of all the curtain-shafts. As shown by Fig. 6 of the drawings, the longitudinal curtain-shaft 41 is extended beyond one end of the housing to receive a hand-wheel 50, while the other end of the shaft is connected by the bevel-gears with the transverse curtain-shaft 43. This transverse curtain-shaft is geared in turn to the longitudinal curtain-shaft 42 on the opposite side of the housing from the shaft 41, and said shaft 42 is geared to the remaining transverse shaft 44, whereby all of the shafts are rotated when the hand-wheel 50 is turned to impel the shaft 41. To the longitudinal shafts 41 42 are secured the side curtains 48, while the end curtains 49 are attached to the transverse shafts 43 44. These curtains are independent one from the other, and they are attached to their respective shafts to enable all of the curtains to be coiled on the shafts when the hand-wheel 50 is turned in one direction or to be uncoiled from the shafts simultaneously on the reverse rotation of said hand-wheel. It will be observed that the shafts and the curtains lie below the means for lowering the casket and that they are operated independently of the lowering mechanism.

Special importance is attached to the arrangement of the curtain-shafts in a horizontal plane below the casket-lowering mechanism, because such organization of the two mechanisms disposes the curtain mechanism out of the path of the lowering mechanism and enables the curtains to be lowered within the walls of the grave or vault to conceal the latter during the burial service at the grave and before the casket is lowered. At the conclusion of the burial service the casket may be lowered by the lowering mechanism, which travels within the space inclosed by the curtains, and as the curtain mechanism is not affected by the lowering mechanism the curtains may remain stationary and in their lowered positions for the casket to descend through the space bounded by the curtains.

To impart a finished or ornamental appearance to the burial apparatus, I employ the drapery 51, which is secured permanently to the housing and depends therefrom in any suitable way, and this drapery lies in a vertical plane within the curtains 48 49, so that the latter may be raised or lowered without hindrance from the permanent drapery.

To hold the curtains out of contact with the walls of the grave and to reduce soiling thereof to a minimum, I employ the guide-rods 52, which are arranged outside of the curtains and are adapted to be lowered into the grave between the walls thereof and the curtains, as shown by Figs. 1 and 4. These guide-rods are suitably secured at their upper ends to the housing, and in addition to holding the curtains out of contact with the grave they serve in a measure to guide the casket as it is lowered.

To protect the casket from the weather, I employ a canopy, which is detachably con-

nected to the housing of the burial apparatus at one end thereof. The covering of this canopy is stretched over a frame 53, which, as shown by Fig. 10, consists of a series of transverse wires united by a marginal frame and attached to a central horizontal rod 54. One end of the rod extends beyond the canopy-frame to receive a T-coupling 55, which is secured to said rod 54, and into the depending branch of this T-coupling is screwed a vertical standard 56. The canopy-frame and standard are strengthened by a diagonal brace 57, one end of which is permanently secured to the standard in any proper way, as at 58, while the other end of the brace is secured detachably to the canopy-rod 54 by a bolt 59. The canopy-standard 56 is adapted to be fitted in the socket-tube 8 at one end of the housing, and the canopy is supported by its standard in a horizontal position, said standard being held in place in the socket-tube by a slip-pin 60.

The operation may be described, briefly, as follows: The cables or bands are stretched across the apparatus and properly coiled on the shafts 10 11. The curtains are lowered into the grave or vault by rotating the curtain-shafts, and the brake mechanism is adjusted by rotating the shaft 21 to compress the friction-bearings tightly around the drums and hold the shafts 10 11 against rotation. The apparatus is now in condition to receive the casket, which is placed upon the stretched bands or cables and sustained thereby in position over the housing during the graveservice. To lower the casket, the brake-shaft 21 is adjusted to release the tight frictional engagement of the bands with the drums, and the load of the casket depresses the bands or cables 12 and allows the casket to slowly descend into the grave, the travel of the casket being regulated by the brake mechanism. When the casket rests upon the bottom of the grave or on supports placed therein, the doors 39 are opened and the hooks or keepers 18 disengaged from the shaft 11, thus allowing the bands to drop into the grave. The shafts 10 11 may now be rotated to cause one shaft to wind the bands or cables thereon, and thus withdraw the bands from the grave.

It is evident that the canopy may or may not be used, and, if desired, the curtains may remain in their rolled compact conditions within the housing.

Slight changes may be made in the form of some of the parts, while their essential features are retained and the spirit of the invention embodied. Hence I do not desire to be limited to the precise form of all the parts, as shown, reserving the right to vary therefrom.

Having thus described the invention, what I claim is—

1. In a burial apparatus, substantially such as described, the combination with a frame or housing and a casket-lowering mechanism



supported by said frame, of a curtain mechanism supported by the frame in a horizontal plane below the casket-lowering mechanism out of the path thereof, and provided with curtains adapted to be lowered into a grave or vault to conceal the walls thereof, said casket-lowering mechanism arranged to travel in the space bounded by the lowered curtains, whereby the curtains conceal the grave-walls during a service and the operation of lowering the casket, substantially as described.

2. In a burial apparatus, the combination with a frame or housing and a lowering mechanism supported therein, of a curtain mechanism supported by the housing in a plane below and independent of the lowering mechanism, said curtain mechanism comprising a series of shafts which are disconnected from the lowering mechanism, a series of curtains coiled individually on said shafts, and means for operating the curtain mechanism without effecting the lowering mechanism, whereby the lowering mechanism is arranged to travel in the space bounded by the lowered curtains which may remain in position while the lowering mechanism is in service, substantially as described.

3. In a burial apparatus, the combination with a frame or housing, of a curtain mechanism comprising a series of shafts geared one to the other and journaled in said frame or housing, a series of curtains coiled individually on said shafts and arranged to be lowered within a grave or vault, means for operating the curtain-shafts simultaneously, and a lowering mechanism supported in the housing in a horizontal plane above the curtain mechanism and having bands arranged to travel within the space bounded by the lowered curtains, whereby the curtains may remain in their unrolled condition while the lowering mechanism travels in the space bounded by the curtains, substantially as described.

4. In a burial apparatus, the combination with a frame or housing, of a curtain mechanism comprising horizontal shafts geared together in series and journaled in the housing at the sides and ends thereof to have the pairs of shafts at the sides and ends rotate in opposite directions, and with all the shafts rotating simultaneously to raise or lower the curtains in unison, and means for actuating one curtain-shaft manually, substantially as described.

5. In a burial apparatus, the combination with a frame or housing, of horizontal bars fixed within the housing and carrying a series of depending brackets, the series of curtain-shafts arranged at the sides and ends of the housing to be supported in the brackets thereof and geared one to the other in series to secure simultaneous rotation of the shafts, one of said shafts extending beyond the housing and having the operating device, and a series of curtains coiled individually on the shafts

and arranged to be unrolled therefrom, substantially as described.

6. In a burial apparatus, the combination with longitudinal shafts, and brake-disks fast with said shafts, of a right and left threaded shaft having fixed abutments thereon, and brake-bands fitted to said disks and operatively connected to the threaded shaft to be controlled thereby simultaneously on a single adjustment of said shaft, substantially as described.

7. In a burial apparatus, the combination with longitudinal shafts, and brake-disks fast with said shafts, of a right and left threaded shaft having fixed abutments thereon, and brake-bands fitted to the disks and engaging with the respective threaded lengths of the shaft, each band having one end fitted against one abutment on the shaft and its other end united by a threaded connection with the shaft to be adjusted thereby, whereby a single adjustment of the shaft operates the brake-bands simultaneously to retard the longitudinal shafts, substantially as described.

8. In a burial apparatus, the combination with a frame or housing and a longitudinal shaft journaled therein, of another longitudinal shaft provided with hooked plates, lowering bands or cables each consisting of a single unbroken length and having one end thereof secured permanently to the first-named shaft and its other end provided with a loop or keeper which is engaged detachably with one hook-plate on the other horizontal shaft, each band or cable adapted to have its respective ends coiled equally on the two shafts and to be uncoiled therefrom simultaneously, and a brake mechanism actively connected with both longitudinal shafts, substantially as described.

9. In a burial apparatus, a frame or housing consisting of upper and lower horizontal frames, the vertical plates or brackets united to said frames to couple the same firmly together and provided at intermediate points of their length with journal-boxes, and guide-rollers journaled in said plates between the boxes thereof and the upper horizontal frame, and lying in the vertical plane of said boxes, in combination with longitudinal shafts journaled in the boxes of said plates or brackets, lowering-bands coiled on the shafts between the vertical plates and fitted over the guide-rollers, and a brake mechanism for said shafts, substantially as described.

10. In a burial apparatus, a housing having the upper and lower frames joined firmly together, and a vertical socket-tube fixed between said frames centrally at one end thereof to serve as a stay therefor, combined with the canopy-frame having at one end a standard which is fitted removably in said socket-tube, and a slip-pin connecting the socket-tube and the canopy-standard to hold the latter firmly in place, substantially as described.

11. In a burial apparatus, the combination



with a frame or housing, of vertical guide-bars fastened to the frame and arranged to depend therefrom into a grave, and a casket-lowering mechanism supported by the frame  
5 and arranged to travel within said guide-bars, substantially as described.

12. In a burial apparatus, the combination with a frame, of vertical guide-bars attached to the frame and arranged to extend into a  
10 grave, and a curtain mechanism having cur-

tains arranged to be lowered within the guide-bars and to be held thereby away from the walls of the grave, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in  
15 the presence of two witnesses.

EMORY B. VOORHEES.

Witnesses:

FRED R. EVERETT,  
EMORY A. FULLER.