United States Patent [19]

Shoup et al.

[11] **3,904,853**

[45] **Sept. 9, 1975**

[54] **STAND FOR TRANSPORTING AND STORING A MACHINE**

[75] Inventors: **Ransom F. Shoup**, Bryn Mawr, Pa.; **Henry D. Luther**, Massillon, Ohio

[73] Assignee: **R. F. Shoup Corporation**, Ridley Park, Pa.

[22] Filed: **Jan. 31, 1974**

[21] Appl. No.: **438,431**

[52] **U.S. Cl.** **235/51**; 74/106; 248/421; 312/272.5

[51] **Int. Cl.²** **G07C 13/00**

[58] **Field of Search** 74/106; 235/51-56; 248/132, 161, 162, 157, 421; 312/272, 272.5

[56] **References Cited**

UNITED STATES PATENTS

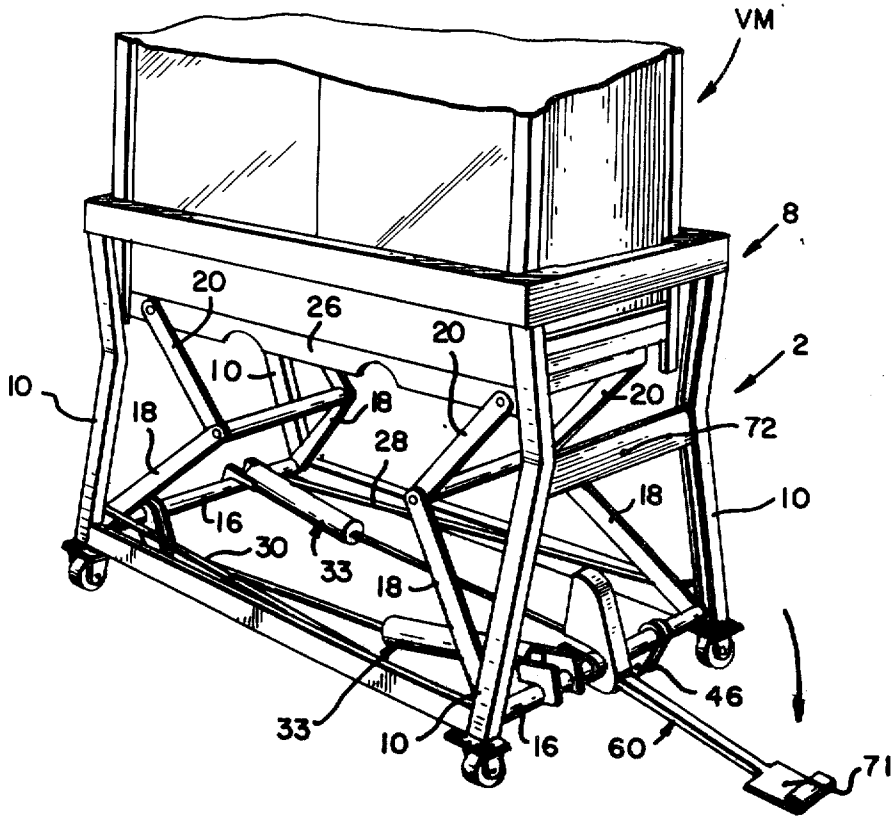
954,771	4/1910	Abbott	235/51
1,992,733	2/1935	Bayer	248/421 X
2,227,764	1/1941	Saunders et al.	248/421 X
2,445,004	7/1948	Reynolds et al.	248/157 X
2,597,861	5/1952	Gerlach	248/277 X
3,281,103	10/1966	Kisling	248/132
3,512,707	5/1970	Moldovan	235/51
3,724,797	4/1973	Freitag et al.	248/421 X

Primary Examiner—Lawrence R. Franklin
Attorney, Agent, or Firm—Woodcock, Washburn, Kurtz & Mackiewicz

[57] **ABSTRACT**

A voting machine is disposed in a lowered position within a frame for storing and transporting the machine. In this position access to the voting mechanism through the doors is blocked by the frame. The machine is raised by a toggle mechanism affixed at one end to a rotor and affixed at the other end to the machine. A lever rotates the rotor and this movement is translated into an extending motion of the toggle mechanism which raises the machine upwardly out of the frame into a position in which the machine can be used.

6 Claims, 19 Drawing Figures



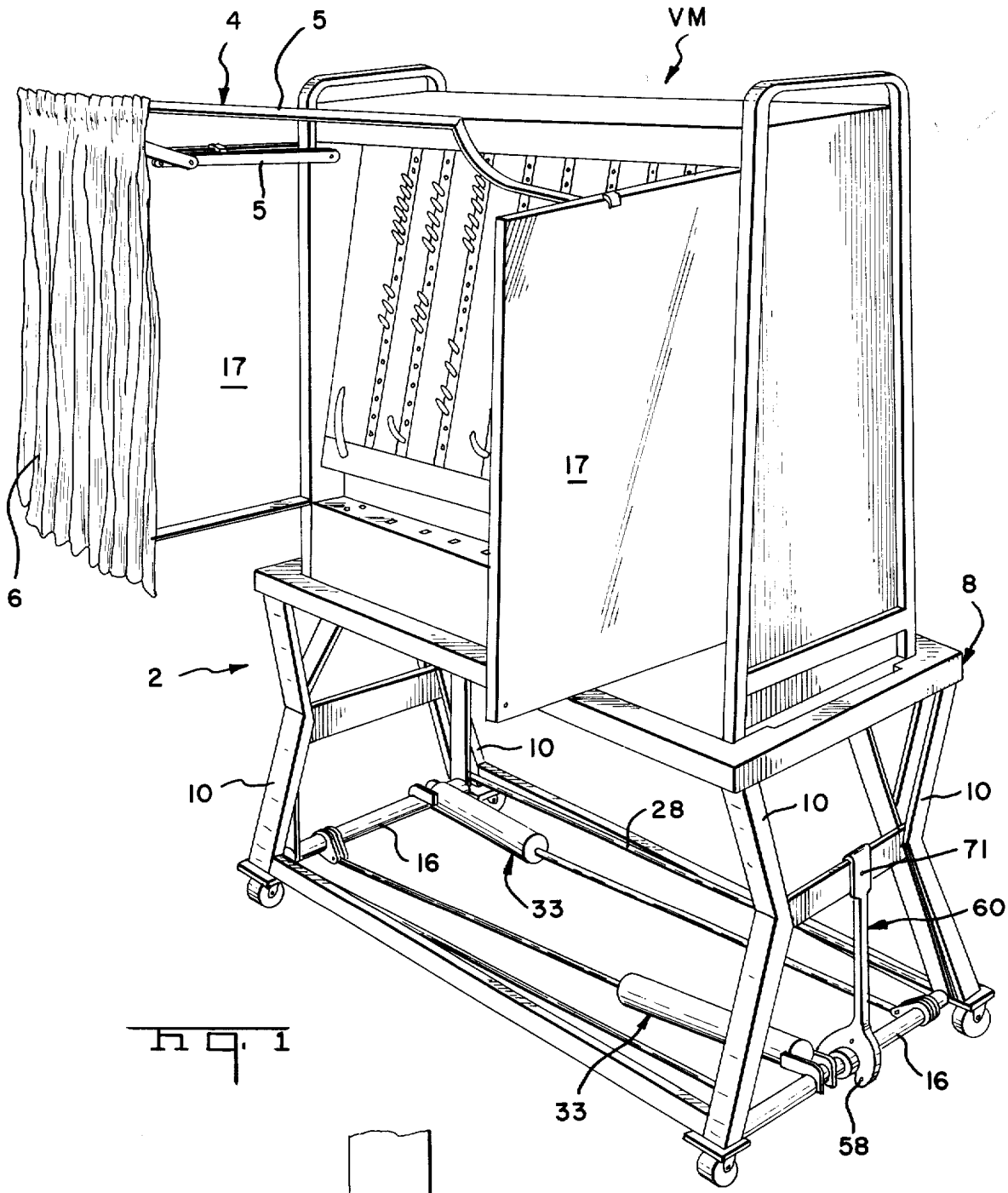


Fig. 1

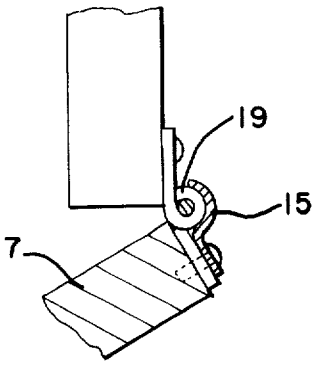


Fig. 1A

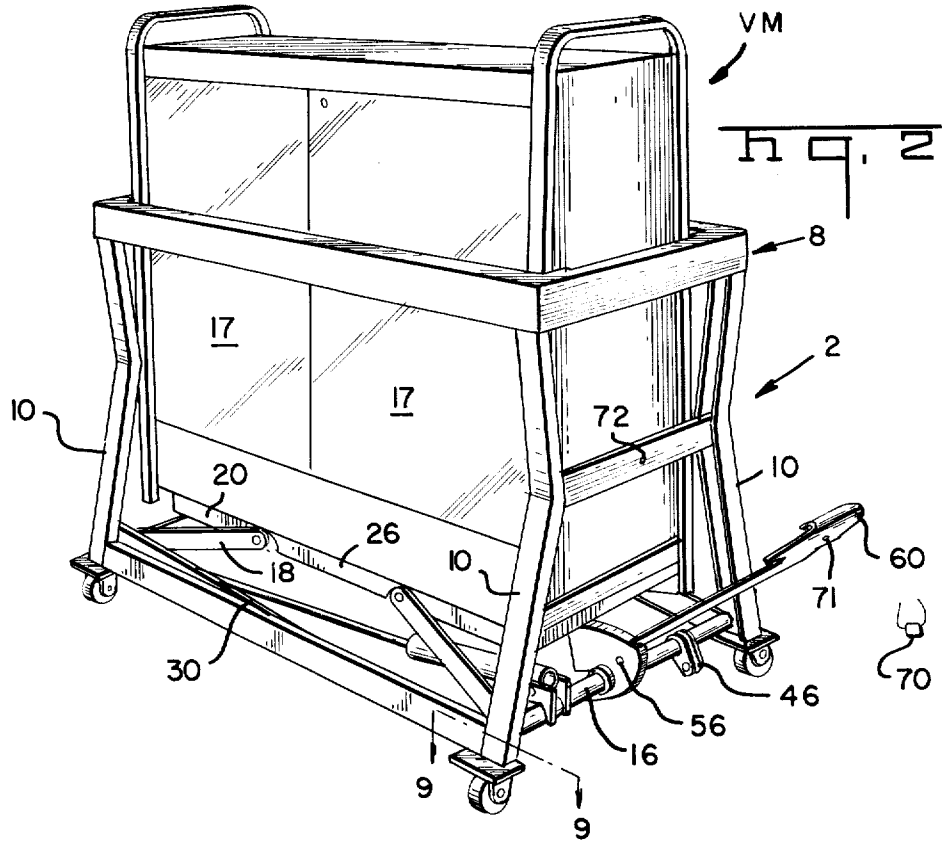

VM
8
2
17
17
10
72
10
20
26
18
10
60
71
70
30
46
56
16
9
9

Fig. 2

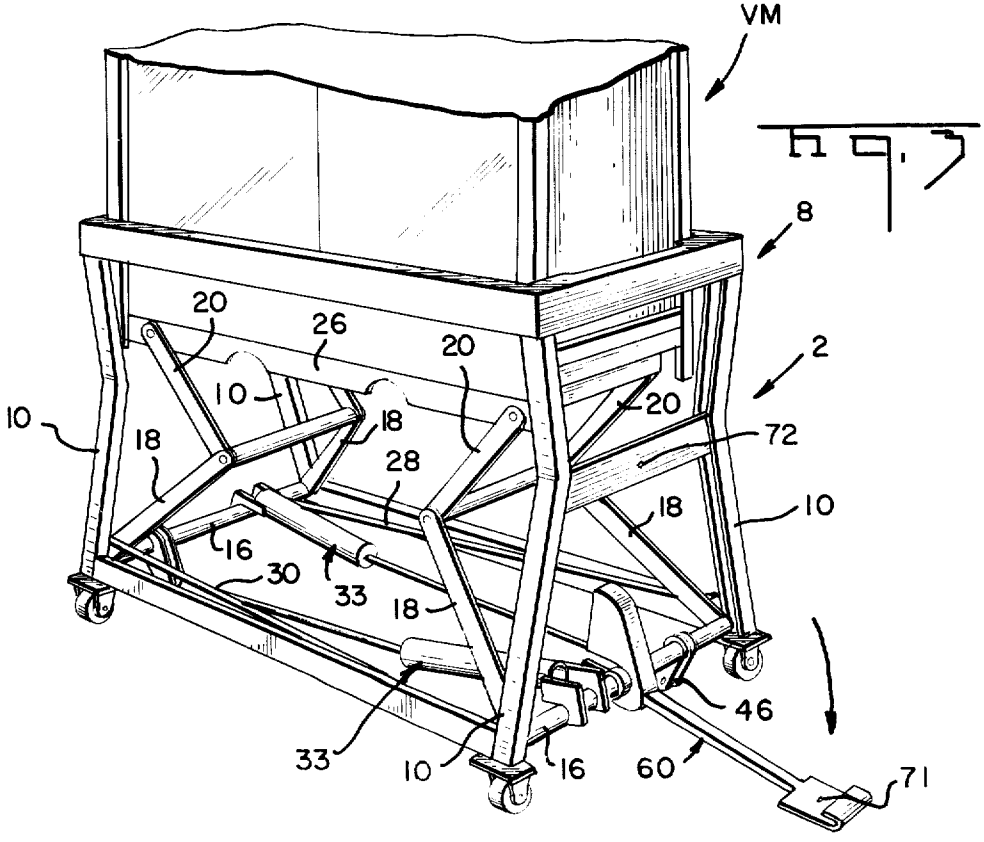

VM
8
2
20
26
20
10
20
10
18
18
72
28
18
10
16
30
33
18
46
33
10
16
60
71

Fig. 3

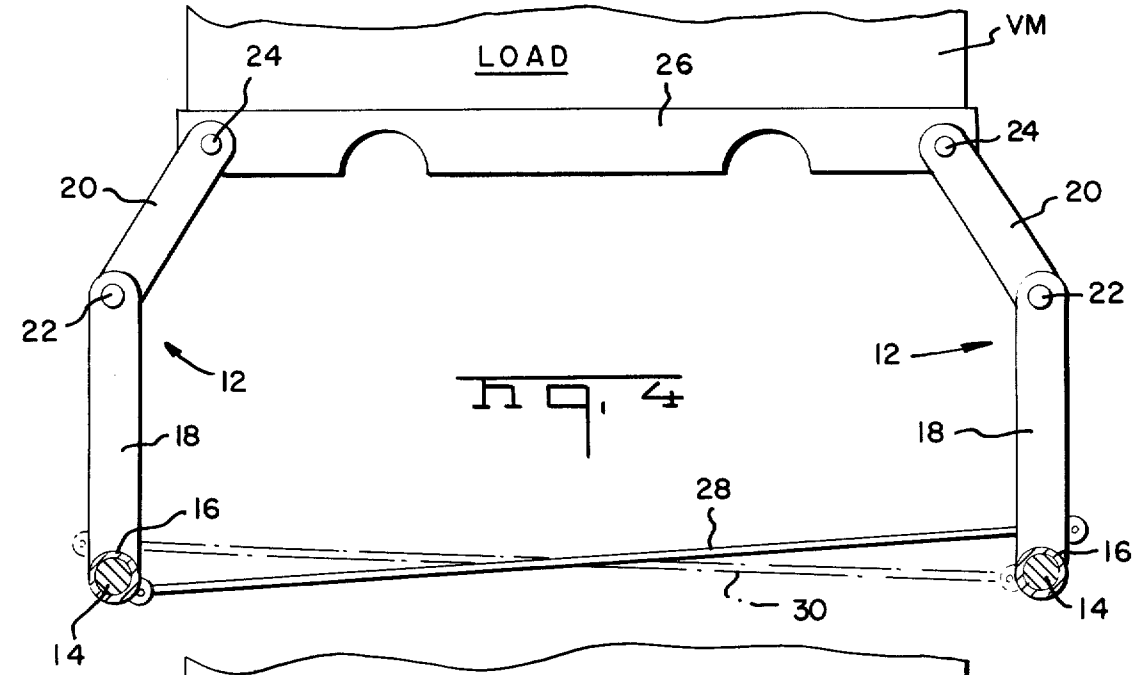


Fig. 4

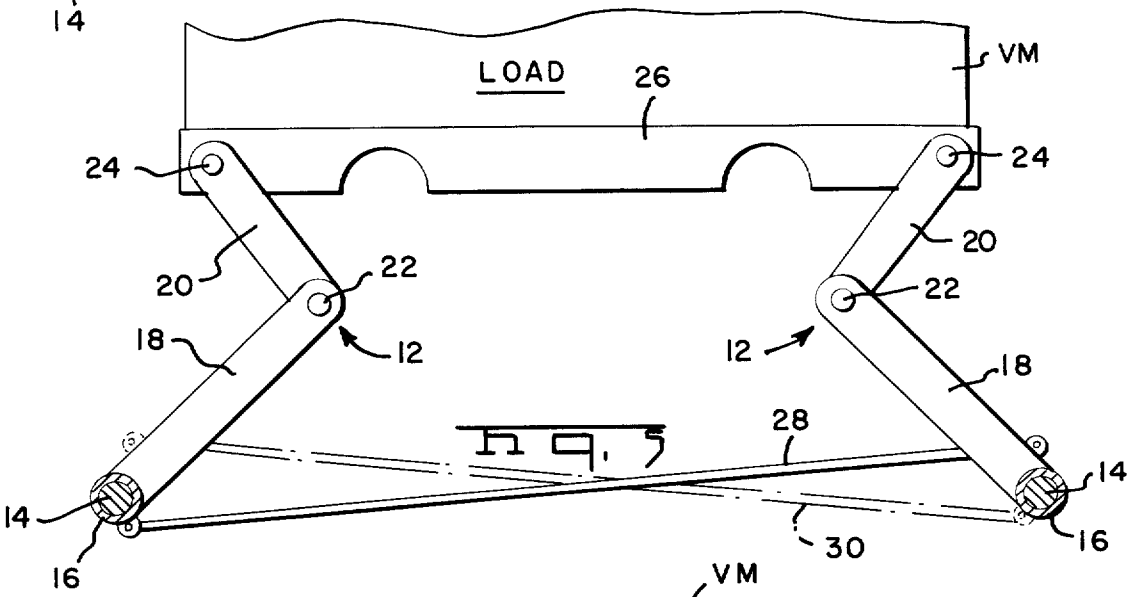


Fig. 5

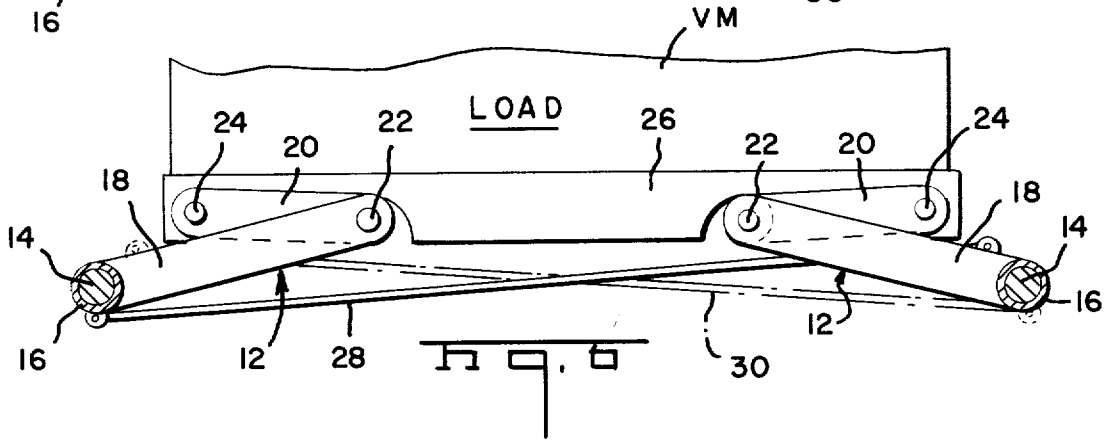


Fig. 6

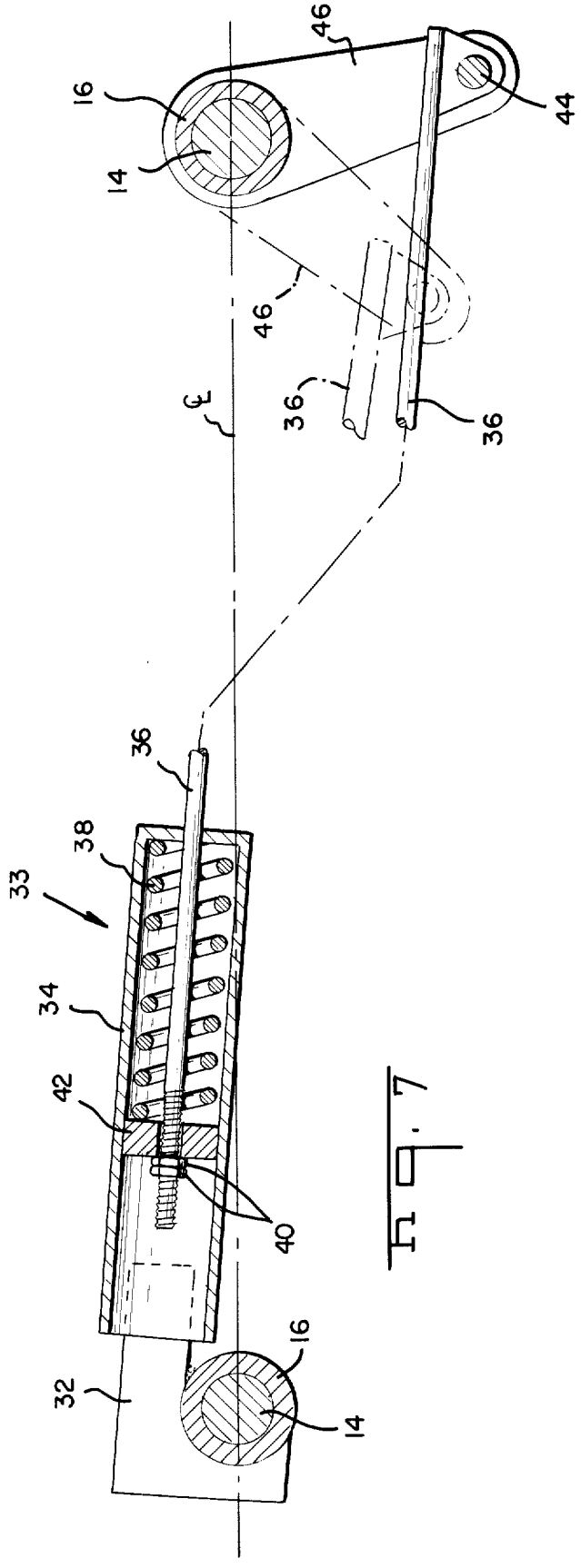


Fig. 7

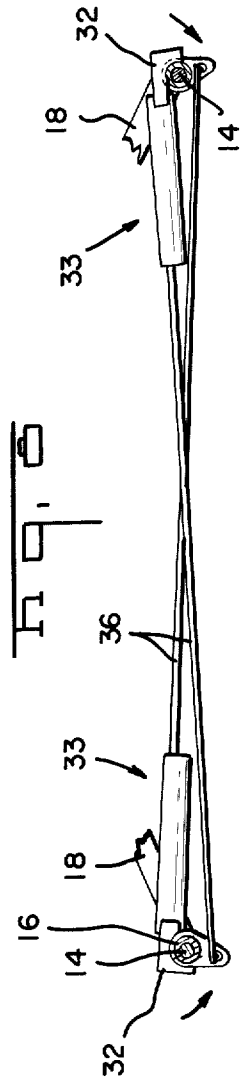


Fig. 8

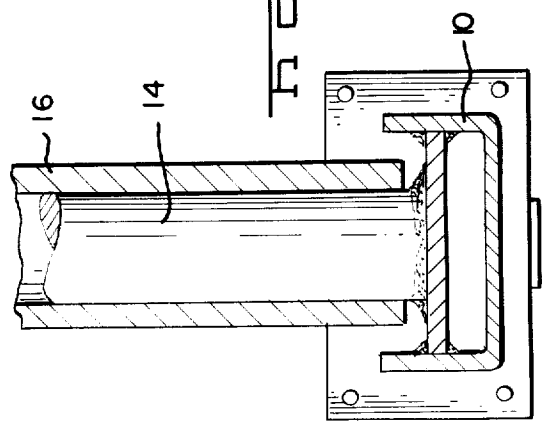


Fig. 9

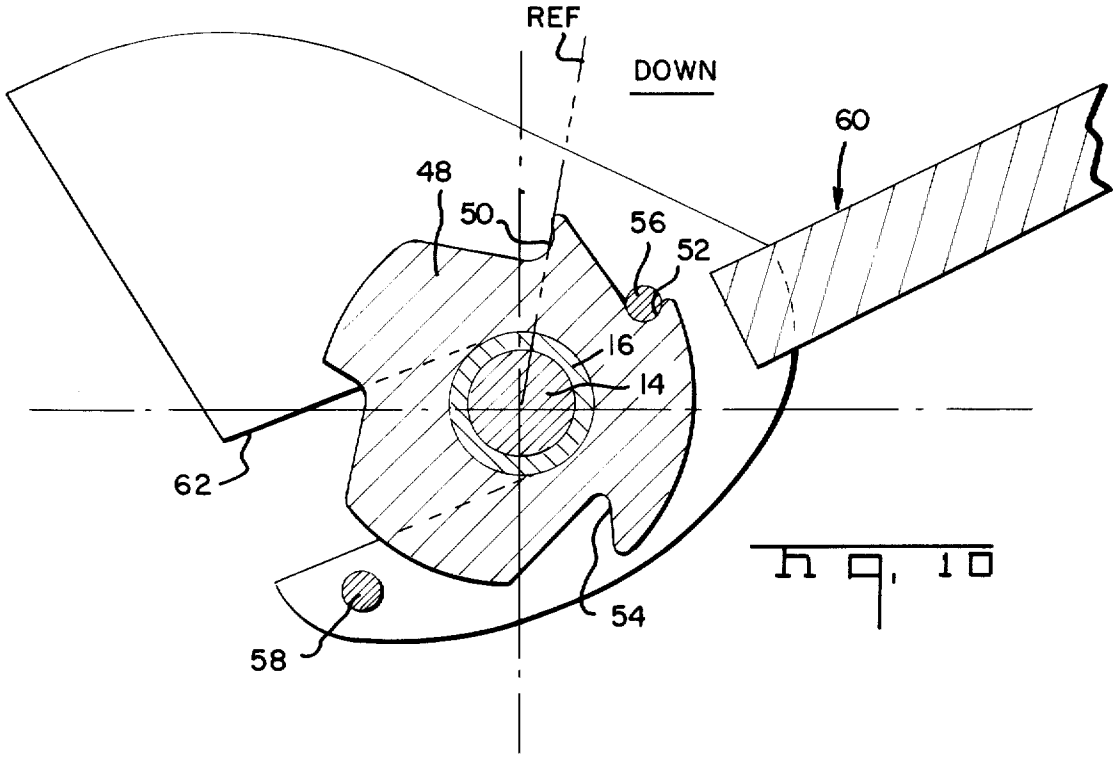

REF
DOWN
60
48
50
56
52
16
14
62
54
58

Fig. 10

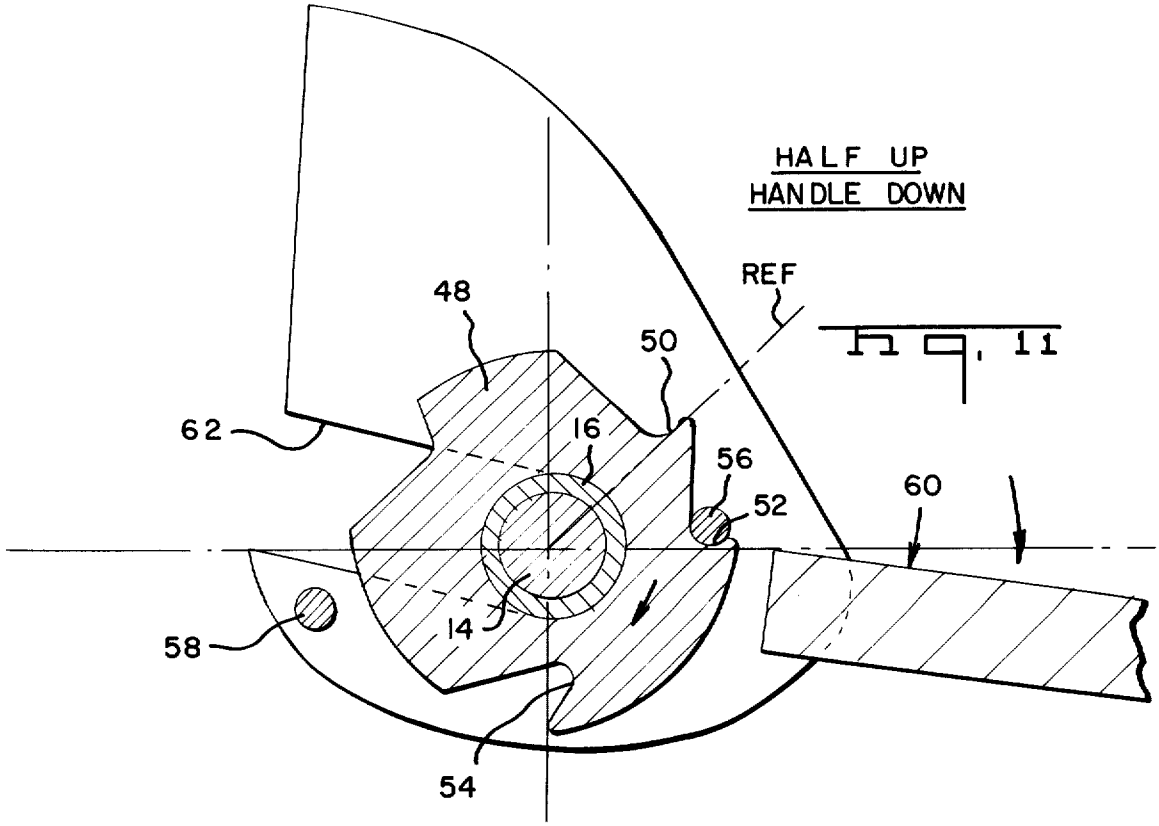

HALF UP
HANDLE DOWN
REF
48
50
62
16
56
52
60
14
58
54

Fig. 11

HALF UP
HANDLE UP

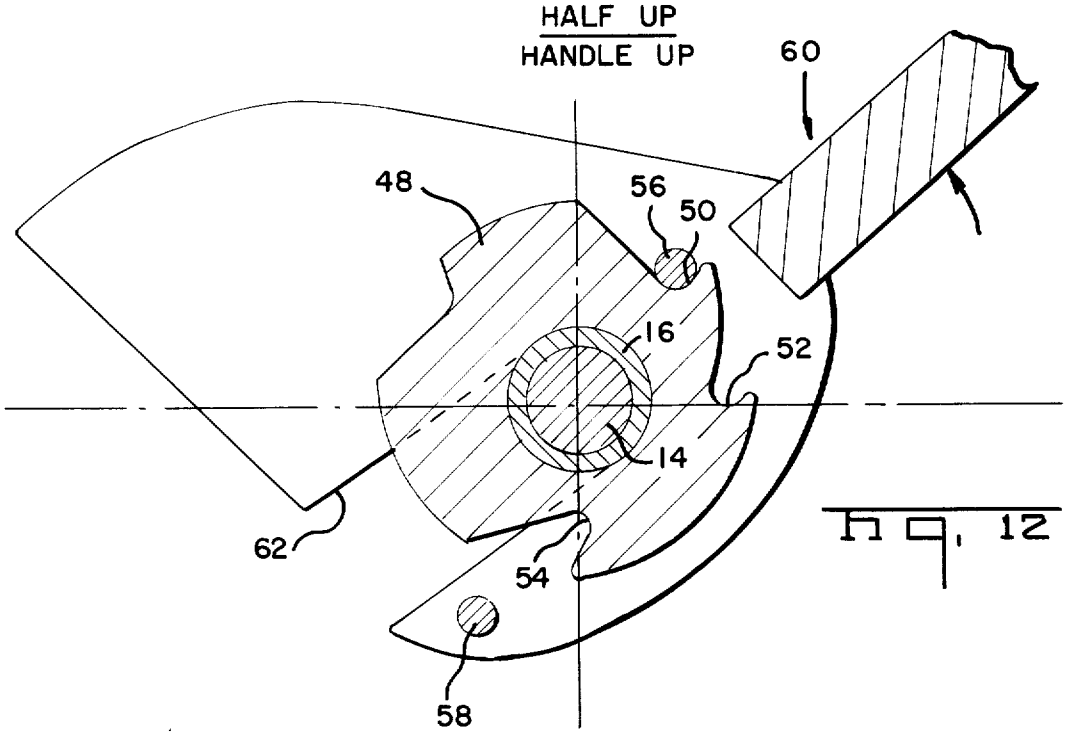


Fig. 12

COMPLETELY UP

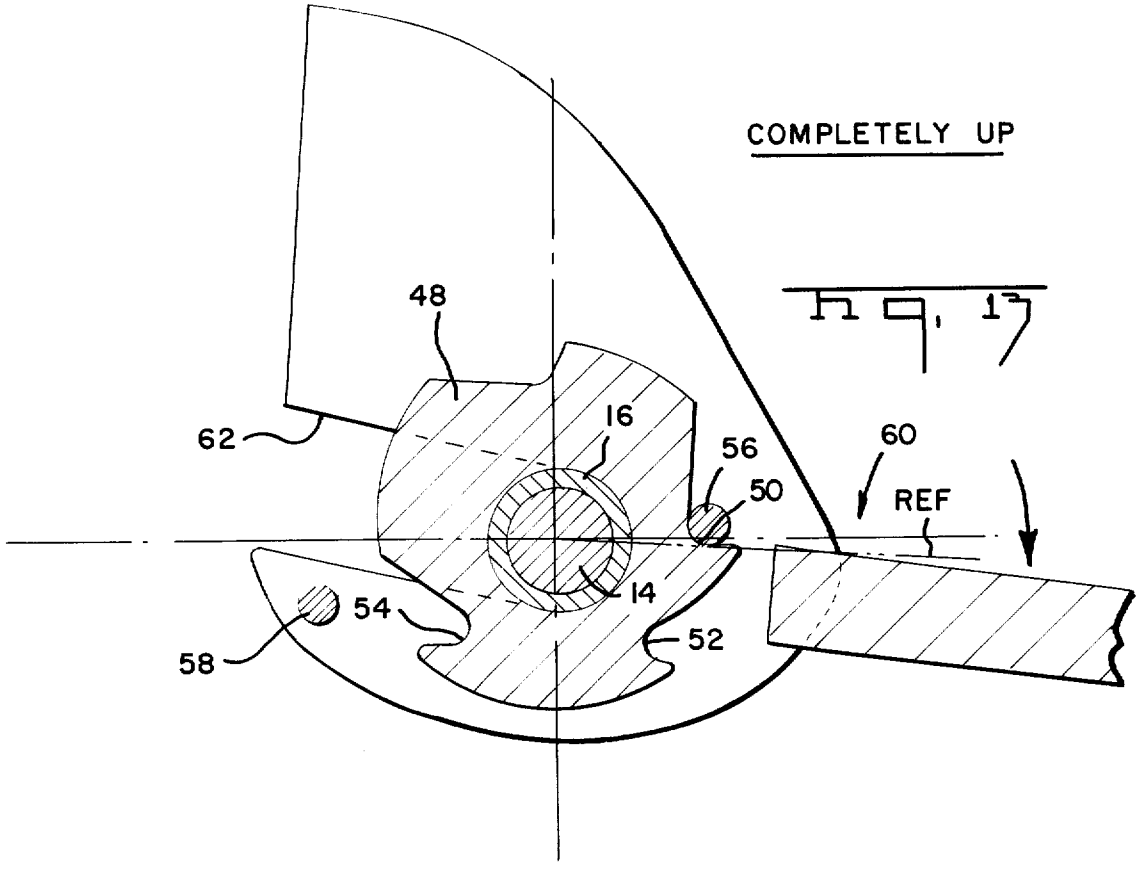


Fig. 13

UP
READY TO BREAK
TOGGLE

Fig. 14

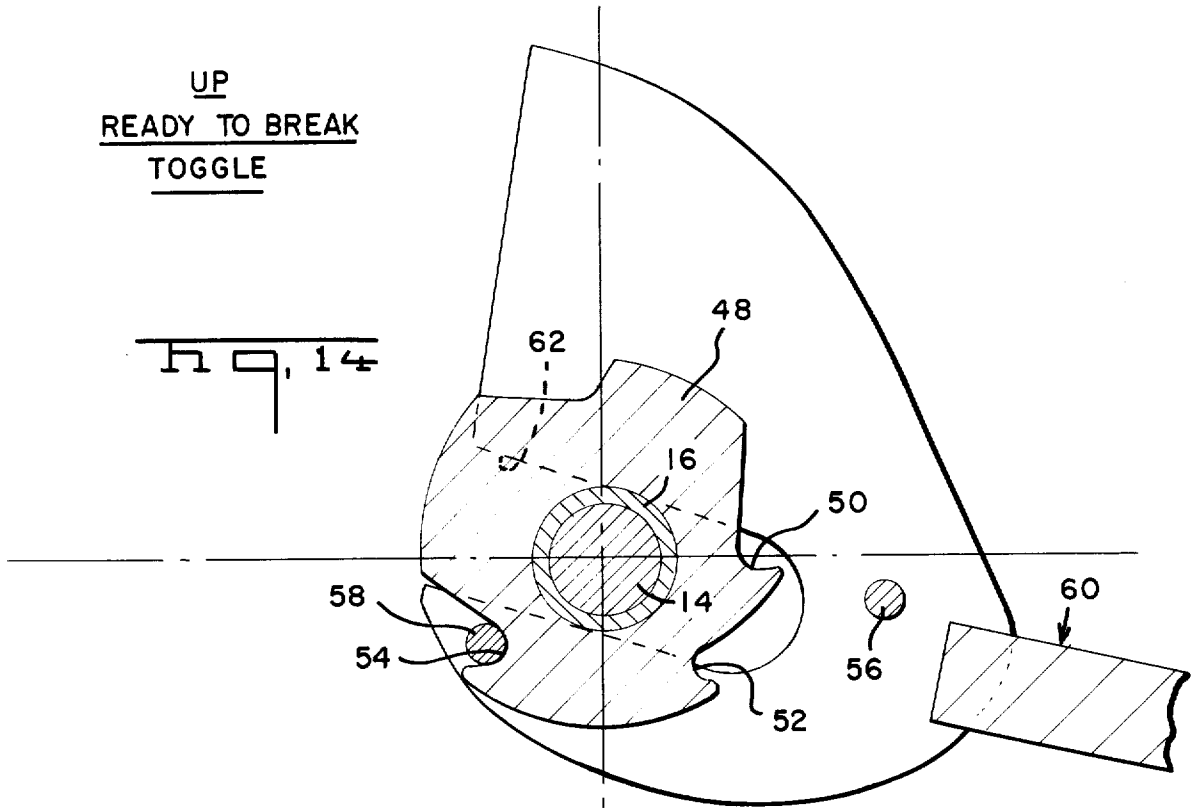
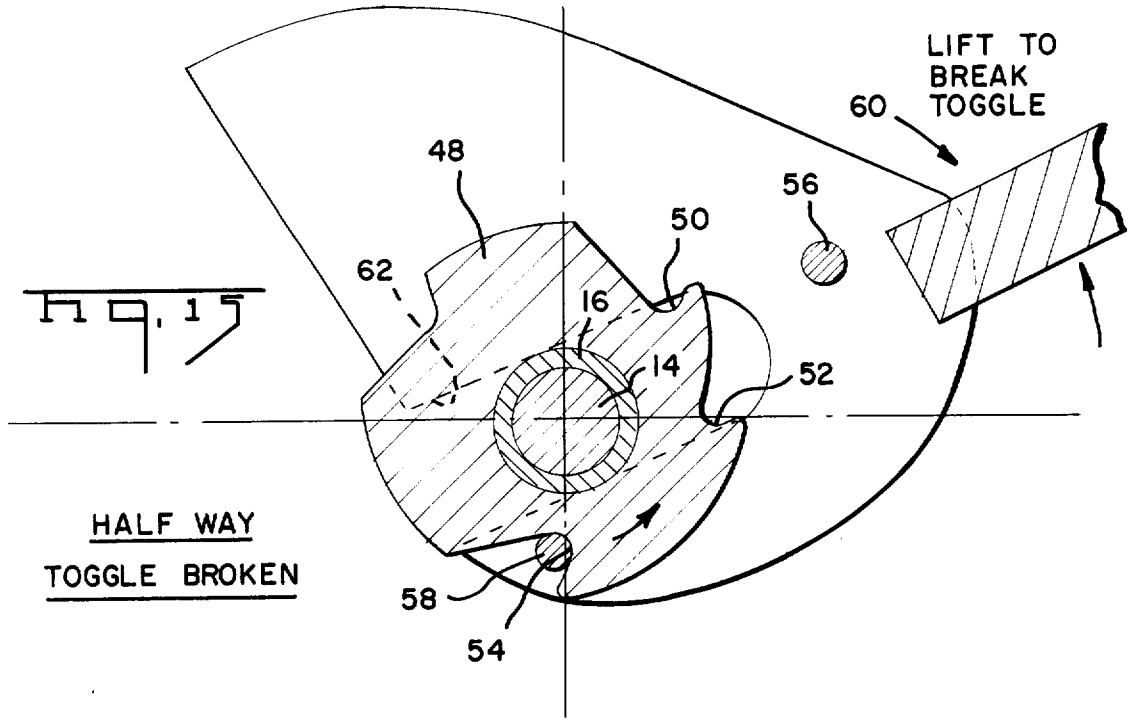


Fig. 15



HALF WAY
TOGGLE BROKEN

Fig. 16

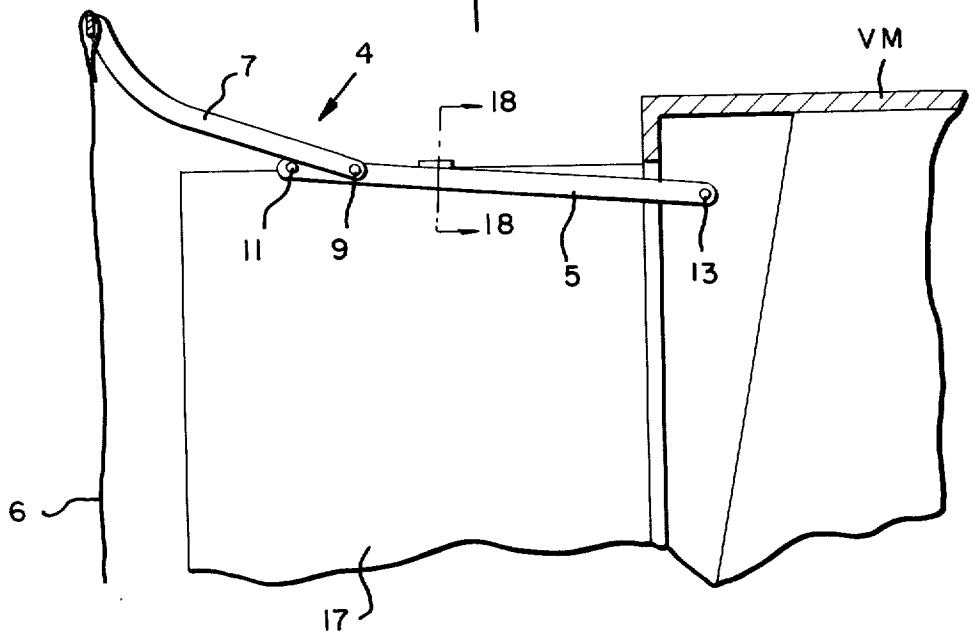


Fig. 17

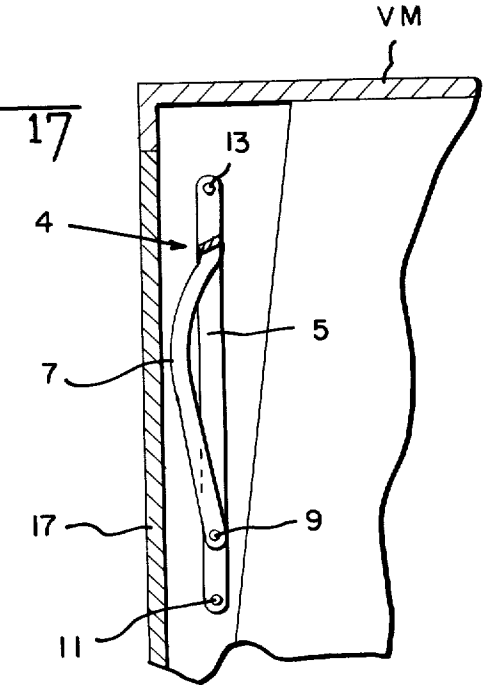
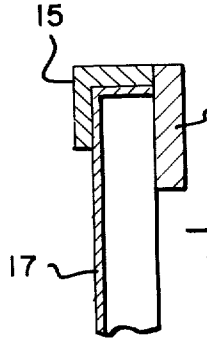


Fig. 18



STAND FOR TRANSPORTING AND STORING A MACHINE

BACKGROUND OF THE INVENTION

This invention relates to a stand for a machine and more particularly to a stand for transporting and storing a voting machine.

Early voting machines were mounted on a stand such as that shown in the Shoup et al U.S. Pat. No. 2,054,102. Later machines were contained in an upright, generally rectangular cabinet such as is shown in U.S. Pat. No. 3,094,276 Wilson and in Design Patent 90,405 Foehrenbach. These upright cabinets have doors which provide the voter access to the voting levers which are at a heighth suitable for use by the voter while he is standing in front of the machine. Machines such as this are top heavy. They are particularly cumbersome while being moved. Also, the machines take up an inordinate amount of space while they are being stored or transported.

One approach to alleviating these problems has been to make the top part of the machine retractable down into the lower stand. This makes the machine much less top heavy and easier to transport and to store. In the prior art a crank mechanism has been used to raise and lower the machine from its stand. Often, this requires that the operator turn the crank handle over 100 revolutions to raise the machine. When it is lowered it must similarly be cranked over 100 revolutions. This is a burdensome job, particularly when many voting machines are to be set up for election, or returned to storage after an election.

SUMMARY OF THE INVENTION

In accordance with this invention a stand provides a convenient mechanism for raising and lowering a machine to the position in which it is to be used. When the machine is retracted downwardly into the stand it provides a compact entity which can be easily transported and stored. The stand includes a toggle linkage actuated by a rotor rotated by a lever. Foot pressure on the lever easily and quickly raises the machine to the position in which it can be used. Similarly, when the machine is to be retracted to its lowered position for storage, operation of the lever again quickly accomplishes this operation. The toggle linkage is spring biased toward the raised position. This counter balances the weight of the machine and makes it possible to raise the machine with only a nominal foot pressure on the lever.

The foregoing and other objects, features and advantages of the invention will be more fully understood with reference to the following more detailed description and appended claims.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a voting machine and its carriage embodying the principles of my invention and shown in its fully extended and opened position, ready for use;

FIG. 1A shows a cross-section of the door hinged with a shield to prevent observance of a voter;

FIG. 2 is a perspective view of the machine and carriage of FIG. 1 showing it in its completely collapsed closed condition for transit or storage;

FIG. 3 is a view similar to FIG. 2 but showing the carriage in its intermediate position of opening;

FIGS. 4, 5 and 6 are diagrammatic views illustrating the successive movements of the carriage linkage upon opening or closing said carriage;

FIG. 7 is a fragmentary cross-sectional view illustrating the spring biasing means of the linkage of FIGS. 4–6;

FIG. 8 is a fragmentary view illustrating the opposing spring forces necessary for proper relative movement of the two sets of toggle links;

FIG. 9 is a view taken along the lines 9—9 of FIG. 2 illustrating the manner in which the toggle fixed pivots are mounted to the frame;

FIGS. 10–13 are successive cross-sectional views illustrating the movements of the actuating lever in raising the machine from the position of FIG. 2 to that of FIG. 1;

FIGS. 14 and 15 are successive cross-sectional views illustrating the movements of the actuating lever in lowering the machine from the position of FIG. 1 to that of FIG. 2;

FIG. 16 is a fragmentary drawing showing the curtain support in its open position;

FIG. 17 is a view similar to FIG. 16 but showing the curtain support in its folded or collapsed position inside the machine cabinet; and

FIG. 18 is a view taken along the lines 18—18 of FIG. 16.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, a voting machine VM is fixed to and rests upon a carriage member 2 which is designed to maintain the voting machine in either a totally closed condition (FIG. 2) or an open, usable position as seen in FIG. 1. The machine VM is equipped with a collapsible curtain holder 4 and curtain 6 to insure the voter's privacy.

In accordance with the present invention, the mechanism of the carriage 2 both raises and lowers the machine or any other desired load with a minimum amount of effort on the part of the operator.

The carriage 2 comprises a frame 8 including four leg members 10 having casters (two stationery and two rotary) fixed thereto and two sets of opposing toggle linkages 12 with their associated structure. A pair of fixed pivot pins 14 are secured to the leg members 10 of frame 8 as shown in FIG. 9 and are located at opposite ends of carriage 2 in paralleled relationship. Surrounding each pivot 14 is a full length collar, or rotor, 16 to which all the linkages and drive means are fastened.

Referring to FIGS. 4–6, one end of a link 18 is fixed on the ends of each collar 16. The other end of link 18 is fixed to a second link 20 at 22. Link 20 is fixed at 24 to a movable platen 26 on which the machine VM is fixed for vertical movement.

Rotational movement of the collars 16 cause a corresponding movement of the linkage assemblies 12 to raise or lower platen 26.

The opposing linkages are tied together by a pair of connecting rods 28 and 30 so that movement of one collar 16 will simultaneously actuate both sets of linkages. The mechanism for accomplishing this rotation will be explained below.

The linkage assemblies 12 are spring biased to their open position by means of a spring assembly 33 as shown in FIGS. 7 and 8. Welded to each collar 16 are a pair of L shaped arms 32 to which a cylindrical mem-

ber 34 is fixed. A rod 36 is slidably retained in the cylinder 34 and is biased leftwardly as viewed in FIG. 7 by an internal spring 38. The spring compression can be adjusted by turning the nuts 40 against the spring stop washer 42. The other end of rod 36 is pivotally connected at 44 to a link 46 welded to the collar 16 on the opposite side. As seen in FIG. 8, each side is equipped with a spring assembly 33 operating across the center of the horizontal axis of the pins 14 to create a torsional force on each; the left pin being biased in a counter clockwise direction thereby tending to open both sets of linkages 12. The compression of spring assemblies 33 is set so as to support the weight of the machine VM to the degree that the operator need apply only a downward force of only about 10 pounds to move the linkage from the position of FIG. 6 to that of FIG. 5.

Integrally fixed to one collar 16 is a drive dog 48 having a series of projections 50, 52 and 54 to be engaged by pins 56 and 58 of a drive lever 60. When the machine is down and the linkages are closed, the dog 48 is in the position of FIG. 10. Lever 60 is raised and positioned on collar 16 so that pin 56 engages projection 52 of dog 48. Downward movement of lever 60 to the position of FIG. 11 will cause a rotational force to be applied to collar 16 thereby opening the linkages 12 to the position shown in FIG. 5 which is approximately one-half the total travel needed to fully open the unit. Lever 60 is then returned to its upper position (FIG. 12) until pin 56 engages projection 50 of dog 48. Subsequent downward movement of lever 60 will cause further rotation of collar 16 to completely open the linkages 12 and set them past center so they will remain in that position until the toggles are broken to close the unit.

While the unit is being used, lever 60 is slid upwardly on collar 16 via its slot 62 and is hooked to the frame 8 as shown in FIG. 1.

When downward movement of the unit is desired, the lever 60 is placed in the position of FIG. 14 so its pin 58 engages the projection 54 of dog 48. Subsequent upward movement of lever 60 will cause a C.C.W. movement of collar 16 (FIG. 15) thereby breaking the toggles 12 and causing the unit to assume the position of FIG. 5. A manually applied downward force of about 10 pounds will cause the spring assemblies 33 to yield and will completely collapse the toggle linkages to close the unit to the position of FIGS. 2 and 6.

The lever 60 may then be hooked again to frame 8 for ease of handling.

As viewed in FIG. 2, when the voting machine is in its lowered position, it is impossible to tamper with said machine since all access doors are blocked by the frame 8. A seal 70 is applied to lock the lever 60 to the frame 8 to prevent any unwanted opening of the unit. Seal 70 includes wire which passes through hole 71 in the lever and hole 72 in the frame. These seals, long in use in voting machines, indicate by being broken that an unauthorized person has opened the machine. The use of a seal with this invention is particularly advantageous because when the seal is applied when the machine is in the down position, there is no way to enter the machine without breaking the seal.

Referring to FIGS. 16–18, the privacy curtain 6 is slidably fixed on a collapsible holder 4 which comprises two straight links 5 and a curved V-shaped member 7 which encloses the front panel of the machine as seen in FIG. 1. Member 7 is pivotally mounted at 9 to the links 5 and is maintained in its opened position by a stop pin 11 on the end of link 5. The other end of link 5 is pivoted at 13 to the inside wall of the voting machine. A stop bracket 15 (FIG. 18) is integrally mounted to each link 5 to hook over the doors 17 of the machine for properly locating the curtain support.

When the machine is to be closed, support 4 is folded up inside the cabinet as shown in FIG. 17 and the doors are closed thereby making a compact unit to be lowered into the carriage 2 as previously described.

The entire unit can then be transported with ease, possibly with two layers of machines on one truck due to their low profile. The machines can be stored in less space for the same reason and can, with a minimum of effort, be opened at the appropriate time for their prescribed use.

FIG. 1A shows the plate 15 which is secured to the door to prevent observance of a voter through the crack where the door is hinged to the cabinet. One leg of hinge 19 is fastened to the cabinet and alternate legs are fastened to the door. The plate 15 covers the opening presented by alternate hinged legs.

While particular embodiments of the invention have been shown and described, it will, of course, be understood that various modifications may be made without departing from the principles of the invention. The appended claims, therefore, are intended to cover any such modification within the true spirit and scope of the invention.

What is claimed is:

1. A voting machine comprising:
   - doors which open to provide a voter access to the voting levers therein,
   - a frame, said frame blocking access to said doors when said machine is disposed in a lowered position within said frame,
   - rotor means rotatably mounted at the bottom of said frame,
   - a toggle mechanism coupled to said rotor and affixed to said machine so that rotation of said rotor extends said toggle mechanism, and
   - a lever having one end adapted to selectively engage said rotor whereby movement of the other end of said lever raises said machine upwardly out of said frame into a position in said doors and the voting levers therein are accessible.

2. The stand recited in claim 1 wherein said rotor means includes first and second collars rotatably mounted at opposite ends of said frame, and wherein said toggle mechanism includes first and second toggle linkages each having first and second arms pivoted together at first ends thereof, the other end of the first arm in each linkage being connected to a collar at opposite ends of said frame, the other ends of the second arms being pivoted to said machine; and connecting rod means coupling said collars so that rotation of one collar causes rotation of the other.

3. The stand recited in claim 2 further comprising:
   - a dog member mounted on one of said collars, said dog member having a plurality of projections around the periphery thereof, and
   - a plate having at least one pin protruding therefrom, said plate being secured to said lever, said pin engaging a projection on said dog member to rotate said dog member and the collar attached thereto as the end of said lever is moved.

4. The voting machine recited in claim 1 further including a collapsible curtain holder comprising:

first and second substantially straight links each pivoted on a side of said machine adjacent the hinged side of a door,

a curved member pivoted at each end to the extremity of a straight link, and

a stop bracket mounted on each of said straight links to hook over the doors of each machine for properly locating said collapsible curtain holder so that a curtain can enclose the voting mechanism when said machine is in use.

5. The voting machine recited in claim 1 further including a cabinet and hinges with alternate legs fastened to said door and alternate hinged legs fastened to said cabinet, and

a plate fastened to said door along each hinge to prevent observance of a voter through the crack between each door and said cabinet.

6. A stand for transporting and storing a voting machine comprising:

a frame having a fixed portion and a movable portion, said movable portion being adapted to raise and lower said voting machine within said frame for storing and transporting said machine,

rotor means rotatably mounted at the bottom of said frame,

a toggle mechanism coupled to said rotor and extending between said fixed and movable portions of said frame,

said rotor means being coupled to said toggle means so that rotation of said rotor tends to extend said toggle mechanism,

a lever for engaging said rotor to effect the rotation thereof to extend said toggle mechanism whereby said machine is displaced upwardly out of said frame into a position in which it can be used,

said lever and said frame having formed therein mating openings, and a seal for being inserted through said openings when said voting machine is in a lowered position whereby access to said voting machine connot be obtained without breaking said seal.

* * * * *