June 29, 1943. R. D. WHITEMAN 2,323,106

COLLAPSIBLE BUILDING

Filed June 16, 1942 5 Sheets-Sheet 1

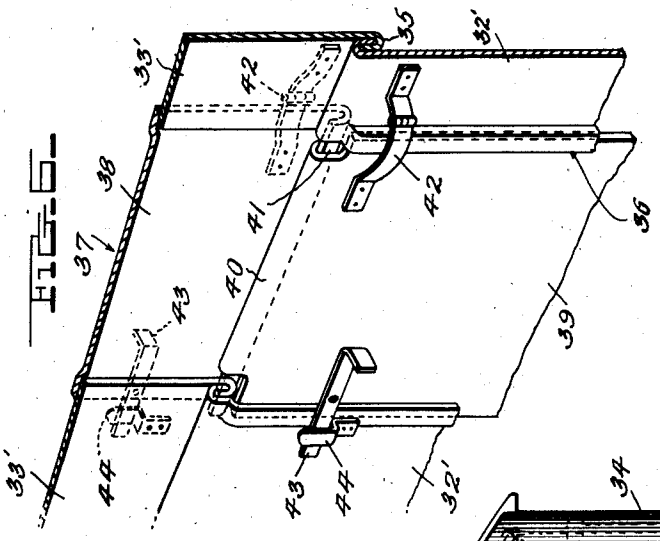


FIG. 6.

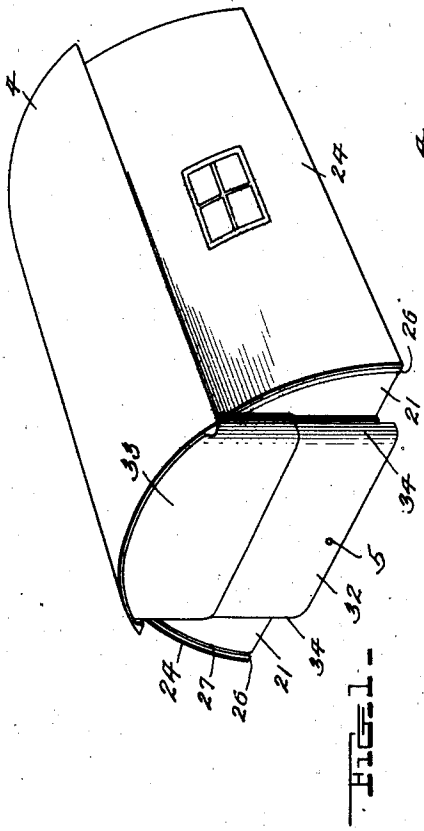


FIG. 1.

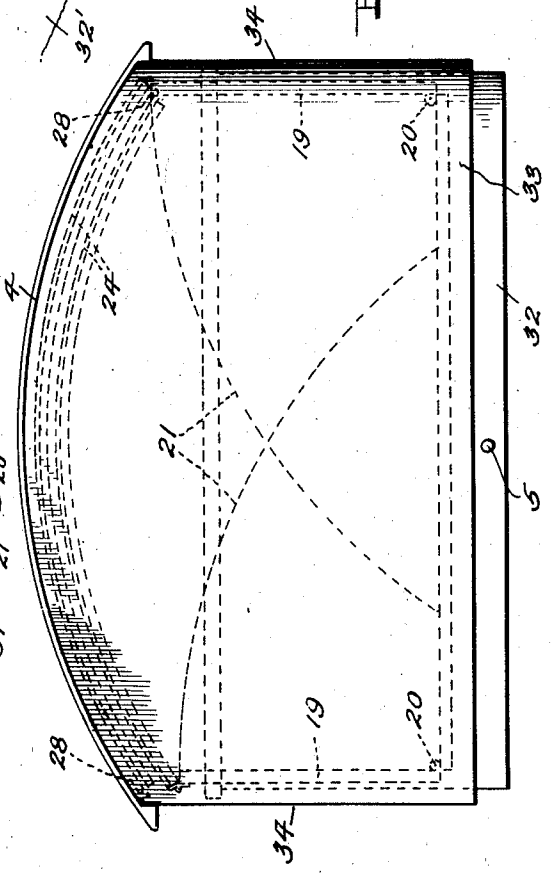


FIG. 7.

R. D. Whiteman, INVENTOR.

BY Albert Knowles.

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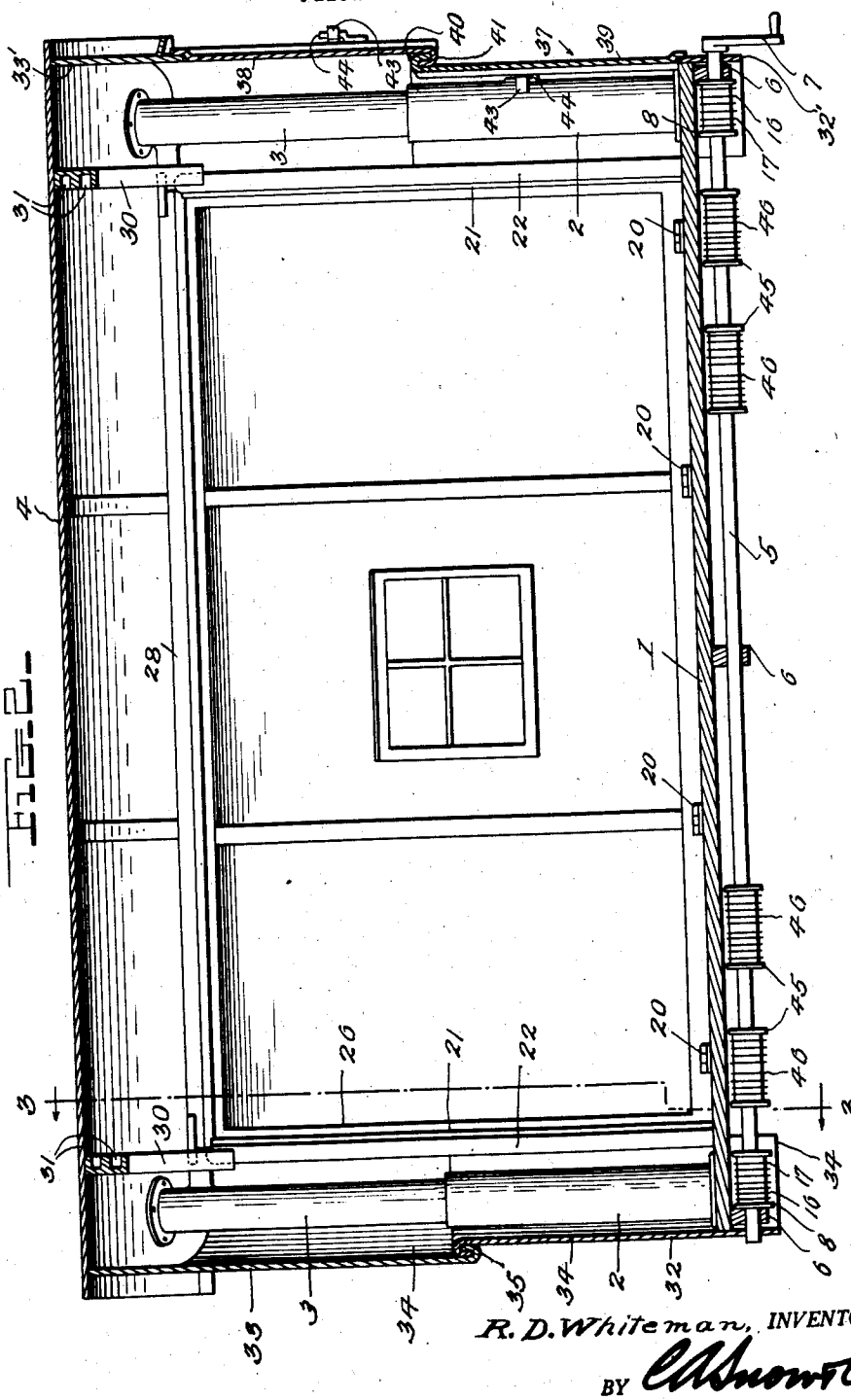


FIG. 2.

R. D. Whiteman, INVENTOR.

BY C. A. Snow & Co.

June 29, 1943. R. D. WHITEMAN 2,323,106

COLLAPSIBLE BUILDING

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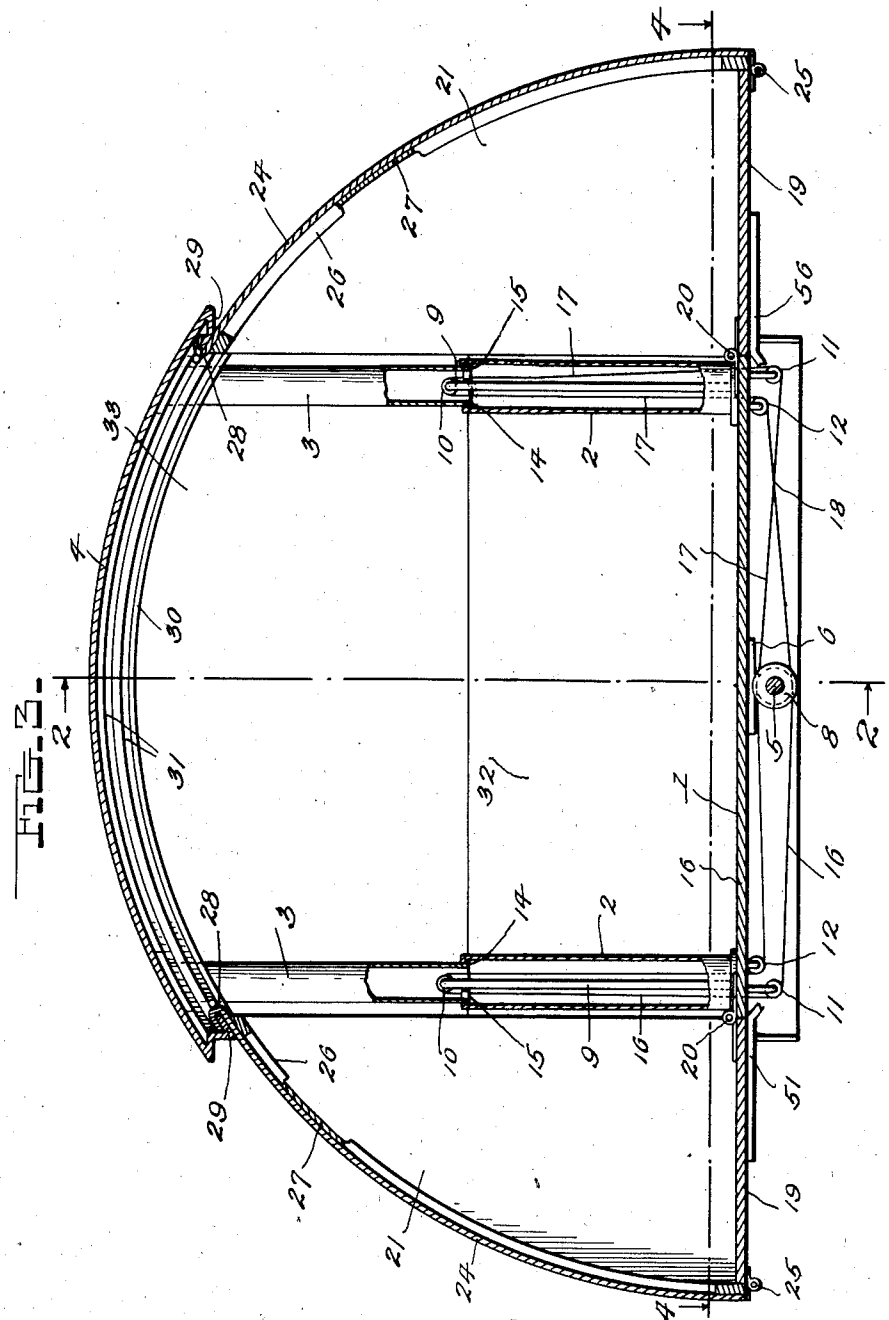


FIG. 3.

R. D. Whiteman, INVENTOR.

BY C. A. Knowles.

June 29, 1943. R. D. WHITEMAN 2,323,106

COLLAPSIBLE BUILDING

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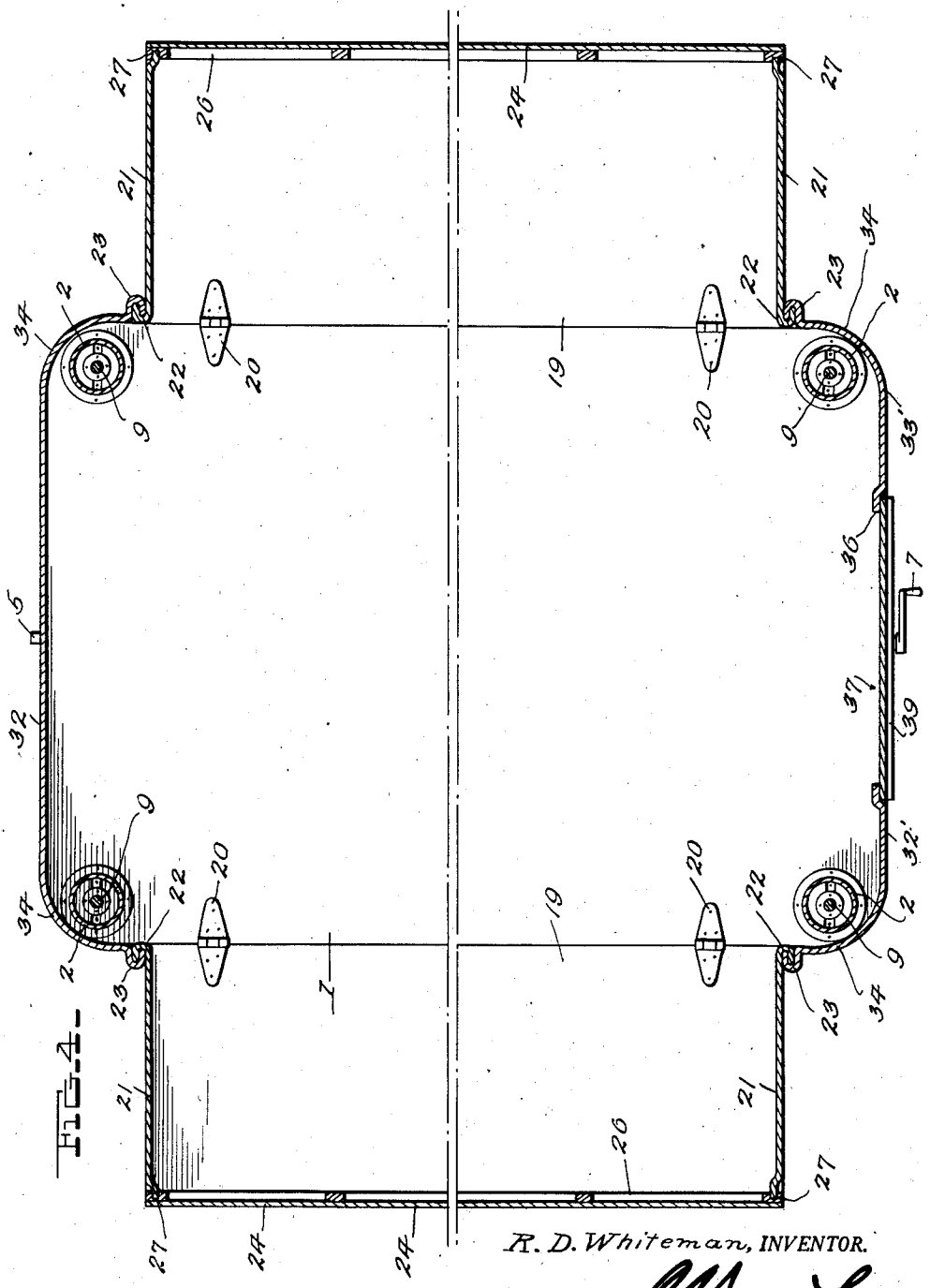


FIG. 4.

R. D. Whiteman, INVENTOR.

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COLLAPSIBLE BUILDING

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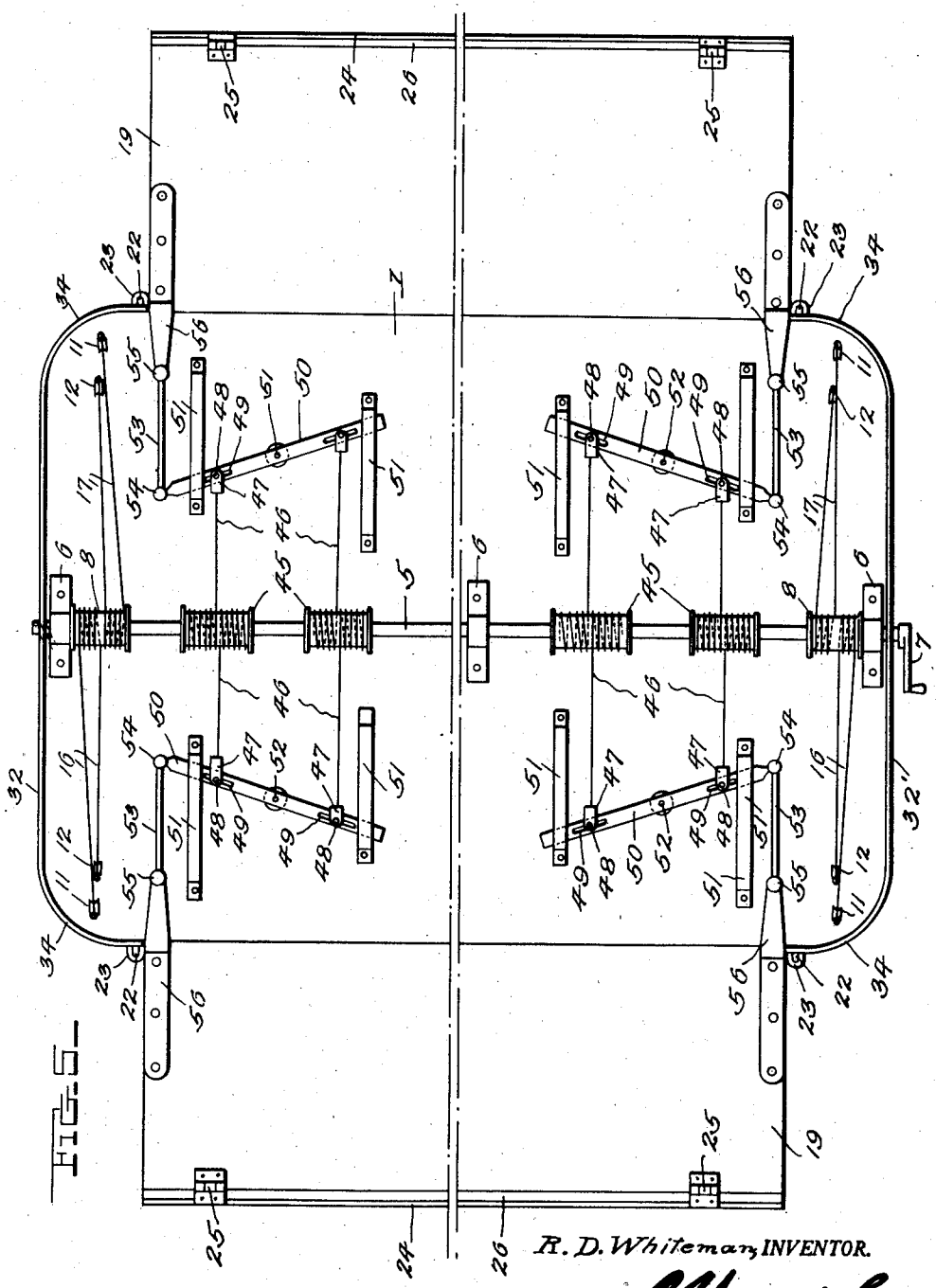


FIG. 5

R. D. Whiteman, INVENTOR.

BY C. Brown & Co.

Patented June 29, 1943 2,323,106

UNITED STATES PATENT OFFICE

2,323,106

COLLAPSIBLE BUILDING

Roy Donald Whiteman, Piedmont, Kans.

Application June 16, 1942, Serial No. 447,259

3 Claims. (Cl. 20—2)

The device forming the subject matter of my present application is a building, the word "building" being construed broadly, to mean the body of an automobile, a temporary dwelling, or one mounted fixedly.

The invention aims to provide a device of the class described, so constructed that its height and width may be lessened to decrease the bulk of the dwelling appreciably, thereby facilitating transportation. The invention aims to provide novel means whereby the various parts may be actuated from a single point control.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the present invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings:

Fig. 1 is a perspective view showing a device of the class described and constituting the subject matter of this application, in collapsed form;

Fig. 2 is a longitudinal section on the line 2—2 of Fig. 3;

Fig. 3 is a transverse section on the line 3—3 of Fig. 2;

Fig. 4 is a horizontal section on the line 4—4 of Fig. 3;

Fig. 5 is a bottom plan, the auxiliary floor pieces having been swung outwardly into operative position;

Fig. 6 is a perspective view showing the door and attendant parts;

Fig. 7 is an end elevation of the device in collapsed condition.

The building forming the subject matter of this application comprises a fixed floor section 1. Telescopic hollow posts are provided, each post including a lower section 2 and an upper section 3, the lower sections being secured to the floor 1. An upwardly curved main roof section 4 is secured to the upper parts 3 of the telescopic posts.

As shown in Figs. 2 and 5, an operating shaft 5 extends longitudinally of the building, beneath the floor section 1 and is journaled in bearings 6 on the floor section 1. Rotation may be imparted to the shaft 5 by any suitable means, for instance a detachable crank 7, appearing in Figs. 2 and 5. Drums 8 are secured to the shaft 5, closely adjacent to the outermost bearings 6.

Standards 9 (Fig. 3) have their lower ends connected to the floor 1, the standards extending upwardly into the upper sections 3 of the telescopic posts. Pulleys 10 are mounted to rotate on the upper ends of the standards 9. Outer pulleys 11 are mounted to rotate below the floor 1, and inner pulleys 12 are similarly located.

The constituent members 2 and 3 of the telescopic posts are supplied with cooperating flanges 14, which limit the upward movement of the post members 3. Adjacent to the aforesaid flanges 14, the post sections 3 have inwardly extended anchor lugs 15, best seen in Fig. 3.

The numeral 16 marks a flexible element having one end secured to the anchor lug 15 at one side of the device, the flexible element proceeding thence downwardly around the pulley 11, the flexible element being given a few turns around the drum 8 and being extended outwardly about the pulley 12, upwardly within the post parts 2 and 3, and downwardly about the pulley 10, the end of the flexible element 16 being attached to the anchor lug 15.

The same construction is employed at the opposite side of the building, a flexible element 17, corresponding to the flexible element 16, aside from the fact that, as shown in Fig. 3, the flexible element 17 is crossed upon itself, as shown at 18.

Since there are four of the telescopic posts, the drum and pulley mechanism described is duplicated at the end of the building remote from the crank 7, as Fig. 3 shows.

Auxiliary floor pieces 19 are provided, and are hinged at their inner edges to the outer edges of the fixed floor section 1, as shown at 20. At their ends, the auxiliary floor pieces 19 are connected rigidly to upright end closures 21, shown in clearest outline in Fig. 3. The upper edge of each closure 21 is curved, to conform to the curvature of the main roof section 1. The inner edges of the closures 21 are vertical, when the device is set up, and are at right angles to the floor pieces 19.

Referring to Fig. 4, it will be noted that the end closures 21 have hook flanges 22, adapted to interengage with hook flanges 23 on parts to be described hereinafter.

Referring to Fig. 3, curved side walls 24 are provided, and are hinged at 25 to the outer edges of the auxiliary floor pieces 19. Frames 26 are secured to the side walls 24, the frames having grooves 27, which receive the curved edges of the end closures 21, when the device is set up, as in Fig. 3. Along their upper edges, the side walls 24 have hook flanges 28, adapted to interengage with hook flanges 29 on the outer longitudinal edges of the main roof section 4. As depicted in Figs. 2 and 3, the roof section 4 carries arcuate guides 30, provided with grooves 31, in which the edge portions of the side walls

24, respectively, are received for sliding movement.

Referring to Figs. 1, 2, 4 and 5, a lower end wall 32 and an upper end wall 33 are provided, the upper end wall being secured to the main roof section 4, and the lower end wall 32 being secured to the floor 1, the wall 32 being extended downwardly below the floor, to shield the operating machinery at the ends of the building. As shown at 34, the end walls 32 and 33 are extended a little way around on the sides of the building. It may now be noted that the curved portions 32 and 33 carry (Fig. 4) the hook flanges 23 that engage with the hook flanges 22 of the end closures 21.

The structure at the end of the building remote from the end walls 33—32 is a substantial duplicate of that structure, parts hereinbefore described having been designated by numerals already used, the numerals being primed.

The end wall members 32' and 33' have a doorway 36, and closed by a door 37, which may be of any desired form. The door includes an upper member 38 and a lower member 39, the lower member 39 being provided at its upper edge with a downwardly opening hook-shaped flange 40, cooperating with an upwardly opening hook-shaped flange 41 in the upper member 38 of the door. Each door part 38 and 39 is connected to the walls 33' and 32', respectively, by a hinge 42, one hinge being an external hinge, and the other hinge being an internal hinge. The door members 38 and 39 are held closed by latches 43, cooperating with keepers 44 on the wall parts 32' and 33' respectively, one keeper being external and the other keeper internal.

In providing mechanism for swinging the auxiliary floor pieces 19 upwardly, from a horizontal position, to a vertical or closed position, drums 45 (Fig. 5), are secured to the shaft 5. The intermediate portions of flexible elements 46 are wound about the drums 45.

The flexible elements 46 are connected to adjustable anchors 47, carrying pins 48 which have longitudinal adjustment at the will of an operator in the slots 49 formed in levers 50. The anchors 47, the pins 48 and the slots 49 permit an adjustment of the flexible element 46 with respect to the lever 50, so that the auxiliary floor pieces 19 will work in properly timed relation with respect to other movable parts.

The levers 50 work within guides 51, secured to the fixed floor section 1 on the lower surface thereof. The fulcra for the levers 50 are indicated at 52 and are carried by the fixed floor section 1. Links 53 are supplied and are connected by ball and socket joints 54 to the levers 50. The outer ends of the links 53 are connected by ball and socket joints 55, to brackets 56, secured to the auxiliary floor pieces 19 at the ends thereof.

When the structure is in the open form of Fig. 3, the crank 7 is operated, to rotate the shaft 5. The drums 8 turn with the shaft 5; one run of the flexible elements 16 and 17 pays off the drums 8, the other run accumulates thereon, and the upper sections 3 of the telescopic posts move downwardly within the lower sections 2, carrying with them the roof 4. When the shaft 5 is rotated, the flexible elements 46 operate the levers 50, and through the links 53, the auxiliary floor pieces 19 are swung upwardly into vertical positions.

As the auxiliary floor pieces 19 swing upwardly, the curved side walls 24 are carried inwardly towards each other, the edges of the walls sliding in the grooves 31 of the guides 30.

As the upper sections 3 of the telescopic posts move downwardly, they carry downwardly the roof member 4, the end walls 33 moving downwardly with respect to the end walls 32. Owing to the construction shown in Fig. 6, the door member 38 can move downwardly with respect to the door member 39.

In its collapsed form, the device is greatly decreased in height (Fig. 7), and its width is also decreased, since the upper portions of the end closures 21 and the upper portions of the side walls 24 have been carried inwardly.

When rotation in an opposite direction is imparted to the shaft 5, the main roof section 4 is raised to its upper limit, as shown in Fig. 3, the flexible elements 16 and 17 operating in a manner which will be clear from Fig. 3, in view of what has been stated hereinbefore.

I claim:

1. In a collapsible building, a main floor, telescopic posts each comprising an upper section, and a lower section secured to the floor, a roof secured to the upper post sections, means for extending the posts to raise the roof, auxiliary floor pieces hinged to the outer portions of the main floor, end closures secured to the auxiliary floor pieces and having curved outer edges, side walls having their lower edges hinged to the outer edges of the auxiliary floor pieces and curved to conform to the curved edges of the end closures, curved guides carried by the roof and receiving the ends of the side walls slidably, end walls comprising slidably associated upper and lower members, the upper members being secured to the roof and the lower members being secured to the floor, and mechanism operated by said means to swing the auxiliary floor sections upwardly and carry the side walls and the end closures inwardly.

2. In a collapsible building, a main floor, a roof, means for mounting the roof for raising and lowering, auxiliary floor pieces hinged at their inner edges to the outer edges of the main floor, curved side walls hinged to the outer edges of the auxiliary floor sections, curved guides supported adjacent to the roof and receiving the ends of the side walls slidably, and means for swinging the auxiliary floor sections upwardly and downwardly, through an arc of approximately ninety degrees.

3. In a collapsible building, a main floor, a roof, means for mounting the roof for raising and lowering, auxiliary floor pieces hinged at their inner edges to the outer edges of the main floor, curved side walls hinged to the outer edges of the auxiliary floor sections, curved guides supported adjacent to the roof and receiving the ends of the side walls slidably, means for swinging the auxiliary floor sections upwardly and downwardly, through an arc of approximately ninety degrees, the last-specified means comprises a shaft supported for rotation on the floor, levers located on opposite sides of the shaft and fulcrumed intermediate their ends on the floor, drum structure on the shaft, flexible elements wound about the drum structure and having their outer ends connected to the respective levers, on opposite sides of the fulcra thereof, links having their inner ends pivoted to the respective levers, and means for pivotally connecting the outer end of each link to one of the auxiliary floor sections.

ROY DONALD WHITEMAN.