April 1, 1958 T. R. THAXTON, JR 2,828,757

COLLAPSIBLE PASSAGEWAY

Filed July 17, 1956 3 Sheets-Sheet 1

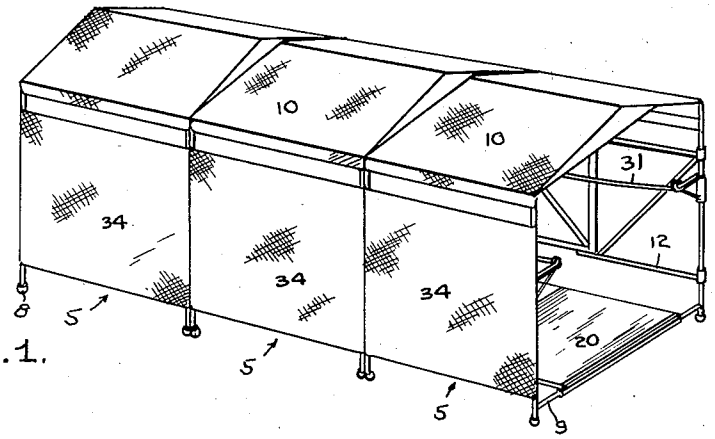


FIG. 1.

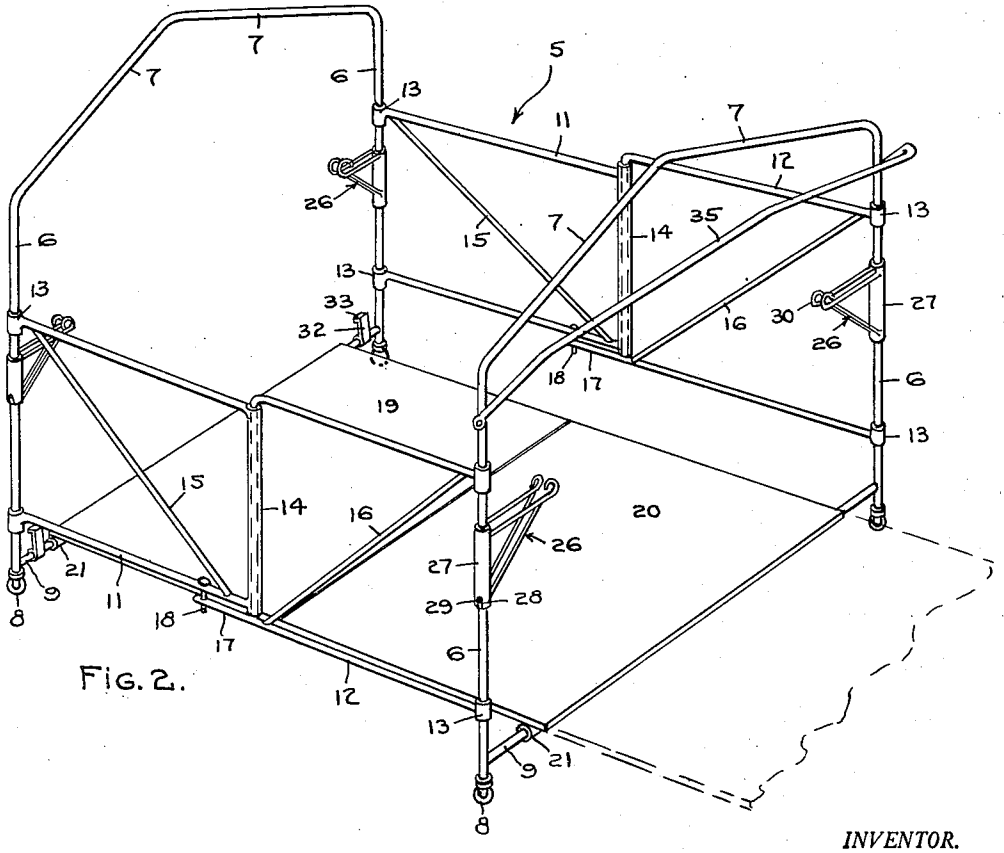


FIG. 2.

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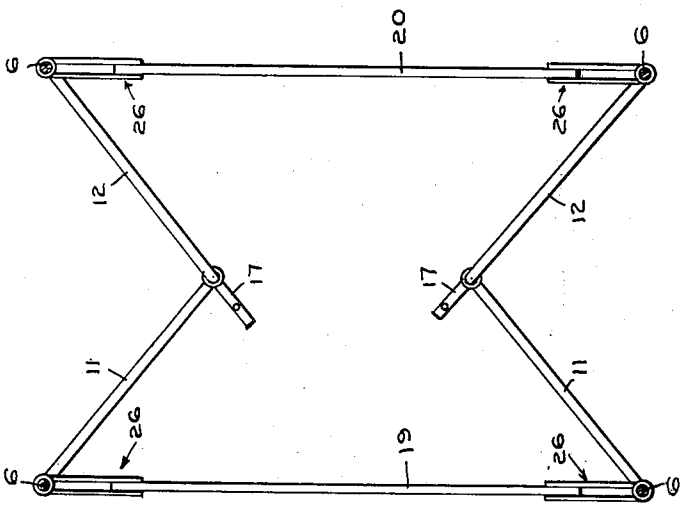


FIG. 4.

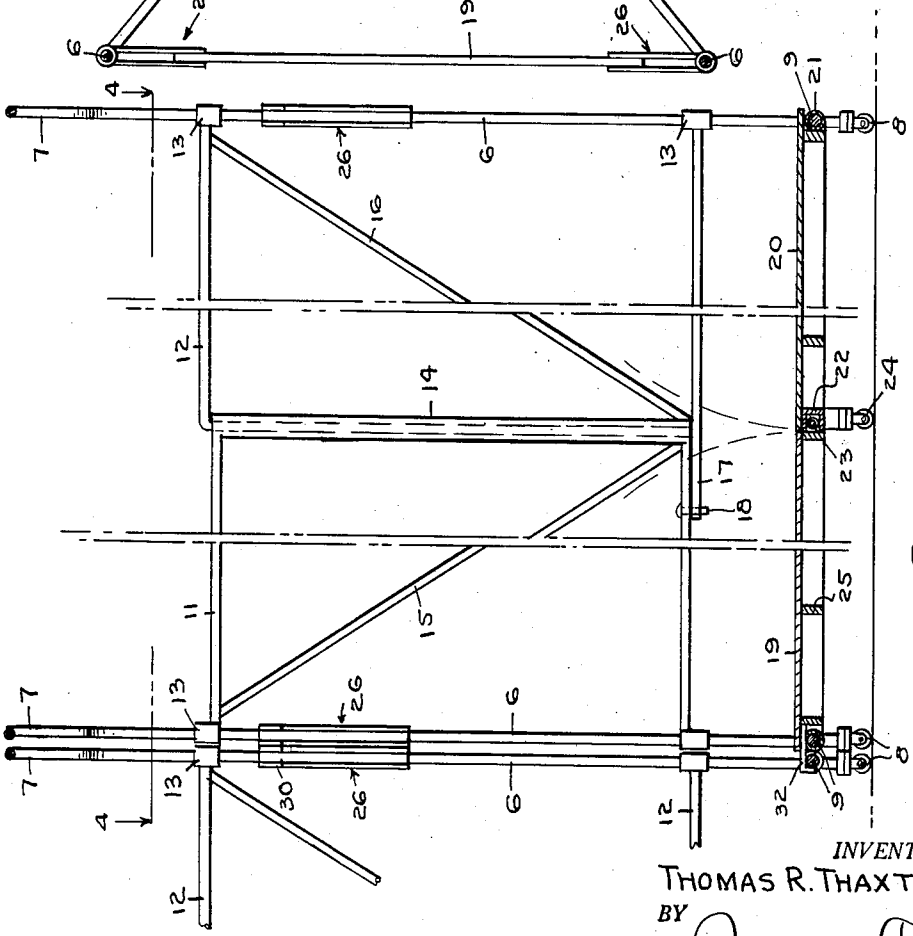


FIG. 3.

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COLLAPSIBLE PASSAGEWAY

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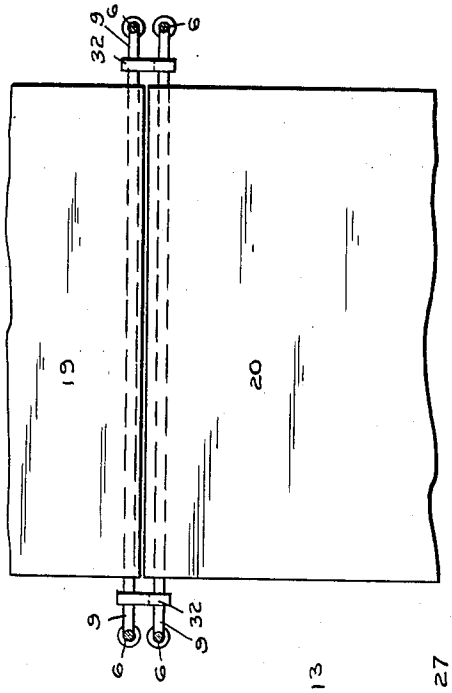


Fig. 6.

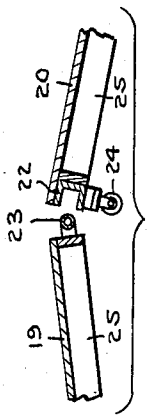


Fig. 7.

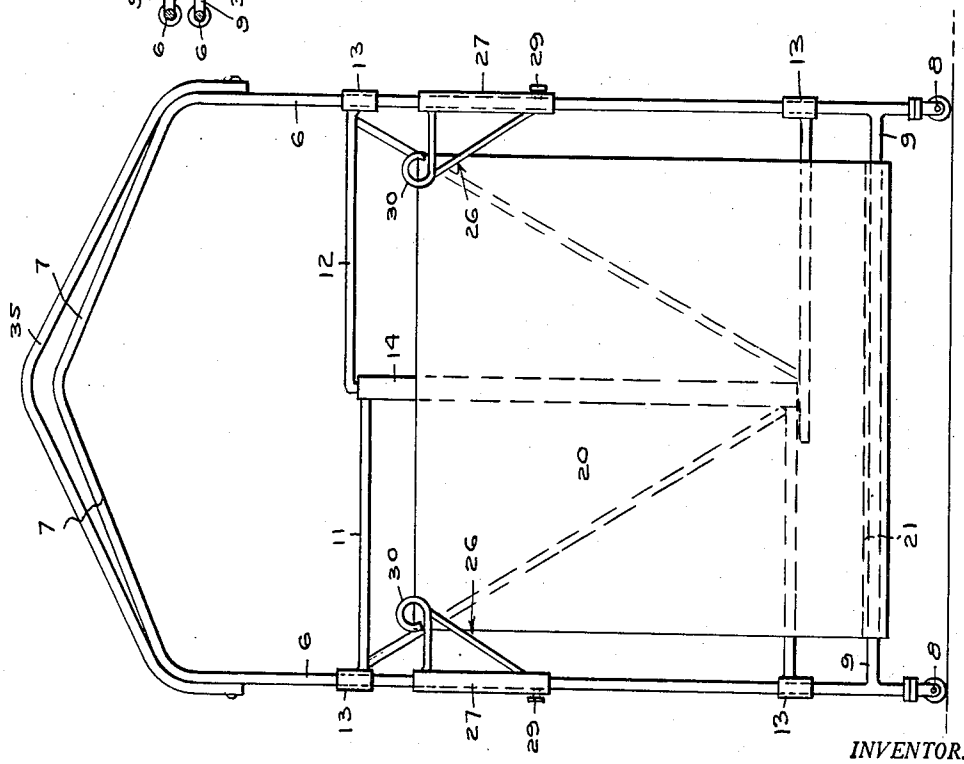


Fig. 5.

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2,828,757

Patented Apr. 1, 1958

2,828,757

COLLAPSIBLE PASSAGEWAY

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Application July 17, 1956, Serial No. 598,324

3 Claims. (Cl. 135—4)

This invention relates to passageways wherein a plurality of substantially identical frame devices are arranged in end to end engagement for providing a passageway between predetermined points for protection of persons against the elements.

The invention contemplates a plurality of substantially identical and collapsible frame devices that support a flexible covering and an elevated floor whereby the several elements are cumulative to provide an elongated passageway that is extensible to any desirable length for furnishing a protected passageway or walkway, such as a protected passageway from an airport terminal to a point of entry to an aircraft.

The invention also contemplates a plurality of substantially identical units that are in themselves collapsible in a manner to utilize a relatively small space and with the units when extended being arranged in end to end relation to constitute a cumulative extended passageway and with each of the units being provided with floor sections that are swingable in a vertical plane and whereby passengers or the like may traverse the distance from an airport terminal to a point of entry to an aircraft without contact with the ground area and with the cumulative elements each having interlocking means whereby to lock the sections together against shifting for maintaining a substantially fixed passageway.

The invention further contemplates novel structural units and mechanism whereby floor sections are swung upwardly to be disposed in a vertical position and whereby each of the units embody swingable gate members that function to maintain the units in extended position against accidental collapsing.

Novel features of construction and operation of the device will be more clearly apparent during the course of the following description, reference being had to the accompanying drawings wherein has been illustrated a preferred form of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

In the drawings:

Figure 1 is a perspective view illustrating a group of units in assembled relationshp whereby to constitute a passageway,

Figure 2 is a perspective view of one collapsible unit, parts being omitted for sake of clearness,

Figures 3 is a vertical longitudinal section illustrating one unit in extended position with a fragmentary showing of a next adjacent unit,

Figure 4 is a horizontal section, taken substantially on line 4—4 of Figure 3 illustrating the unit partially collapsed,

Figure 5 is an end view of one unit in the collapsed position,

Figure 6 is a horizontal section illustrating the connecting means between the units and,

Figure 7 is a longitudinal section illustrating the interlocking engagement between a pair of floor sections carried by each unit.

Referring specifically to the drawing, each of the units is designated as a whole by the numeral 5. Each unit embodies end frames, consisting of tubular or solid posts 6 that are connected together at their upper ends by upper flights 7, whereby to form a ridge for the unit. The lower terminal ends of each end frame is supported by ground engaging casters 8. Adjacent their lower ends, the posts 6 are connected by horizontal bars 9. Each of the frames of each unit are covered in any desirable manner by flexible water-proof covering 10 that overlie the upper flights 7 and terminate at each side at a point slightly below a point of connection of the flights 7 with the posts 6. Means are provided to rigidly hold the end frames in extended spaced apart relation, comprising hinged gate sections 11 and 12. Each of the gate sections are hingedly connected to the gate section 11 through the medium of a tubular hinge 14 and whereby the gate sections may swing inwardly to permit of the collapsing of the frame. Each of the gate sections are longitudinally braced by brace bars 15 and 16. The gate sections 12 are extended as at 17 whereby to underlie the lower flight of the gate sections 11 and locking pins 18 are provided to lock the gate sections against hinged movement and maintain the gates in the fully extended position to maintain the end frames against movement.

Hingedly connected to each of the bars 9 in each of the units 5, are a pair of vertically swinging floor sections 19 and 20, preferably hinged to the bars 9 by tubular hinge elements 21 and whereby the floor sections each swing in a vertical plane when the unit is to be collapsed. Means are provided to maintain the floor sections in proper alignment, comprising a channel member 22 carried by the free edge of the floor section 20 and a cylindrical bar or tube 23 carried by the floor section 19, such construction being clearly illustrated in Figure 7. It will be apparent, that when the floor sections are shifted to horizontal abutting relation the bar 23 enters the channel 22 to insure of proper alignment. The channel 22 is provided intermediate its ends with a ground engaging caster 24, whereby to limit the downward swinging movement of the floor sections and to prevent flexing of the floor section in use. Each of the floor sections may be reinforced in any desirable manner by transverse and longitudinal ribs 25, whereby to impart rigidity to the floors.

Means are provided to retain the floor sections in an upper perpendicular position when the frames are to be collapsed, comprising bifurcated brackets 26 that are vertically shiftable upon the posts 6 and whereby they may be elevated a sufficient distance to permit the floor sections to be swung upwardly to subsequently engage in the bifurcations. Each of the brackets 26 are provided with sleeve sections 27 that are slotted at 28 to engage over pins 29 carried by the posts 6 and whereby the brackets may be shifted upwardly and then downwardly to engage over the upper ends of the floor sections and, when the slots 28 engage the pins 29, the brackets are held against swinging movement, thus effectively supporting the floor sections in an upper inactive position to permit of the full collapsing of the frame. Each of the brackets 26 are provided at their free ends with loops 30, through which are trained flexible ropes or other grab rails 31, illustrated generally in Figure 1.

It will be apparent from the description so far given, that with the gates in the fully extended position, that the end frames will be rigidly supported in spaced apart relation to provide adequate clearance for the downward swinging movement of the floor sections. When the frame is to be collapsed for storage purposes, the floor sections 19 and 20 are first swung upwardly to engage the brackets 26, after which the pins 18 are removed and the gate sections 11 and 12 shifted inwardly, causing

the end frames to move together to provide a very compact collapsed unit.

Means are provided to lock the several units together when in the operative passage forming position, comprising locking elements 32, that are hingedly supported upon one cross bar 9. Each of the locking elements 32, are provided with a lip portion 33 that engages over the next adjacent cross bar 9 of an adjacent unit and whereby to effectively prevent shifting of one unit with respect to the other. Each of the units are preferably covered upon their sides by flexible water proof panels 34 formed of canvas or any other desirable material that permits of the ready collapsing of the units.

Means are provided to cover the joints between connected units, consisting of a transversely extending frame 35 that is connected to one end frame member and with the frame 35 being angled upwardly so that in the passage forming position, it overlies the connecting joint between the unit. The cover 10 is extended to be attached to the frame 35, thus providing a continuous passageway that successfully protects individuals traversing the passageway against the elements and against any dripping of water through the joints between the units. While the several frame units have been described as being bars, it will be apparent that the entire structure forming the frames may be of tubular light weight material such as aluminum.

In the use of the device, when a passageway is to be provided for instance, between an airport terminal and the entrance to an aircraft the operators select a predetermined number of units and shift them upon their ground casters 8 to the side of assembly. The units are then extended by the gates 11 and 12 and locked in the extended position by the pins 18. The floor sections 19 and 20 are then lowered and interlocked at their meeting edges as shown in Figure 7. The extended units are then assembled in end to end relation and locked together by the elements 32. When in end to end relation, the frame 35 and its supported covering overlies the next adjacent unit. Ropes or other grab rails 31 are then trained through the loops 30 throughout the length of the assembled units. It will thus be apparent that as many units as may be desired are assembled to provide a continuous passage that will protect individuals against the weather from the terminal to the aircraft. Any desirable means may be employed to engage the ground when the floors have been shifted downwardly to prevent any motion of the units under the influence of wind pressures. The covering 10 and 34 are spaced apart at their adjacent edges whereby to provide openings capable of relieving excessive air pressures that might tend to cause a shifting of the passageway. When the passageway has served its purpose, the units are disconnected, the floor sections 19 and 20 shifted upwardly and engaged with the brackets 26, after which the gate sections 11 and 12 are released and shifted inwardly, causing the end frames to move together to provide a very compact unit that is supported upon the casters 8. With all of the units in collapsed position, they may be locked together so that the entire group of collapsed units may be antifrictionally movable over the ground to a point of storage.

It will be apparent from the foregoing that a very desirable arrangement of collapsible units has been provided whereby they may be quickly and easily shifted to a point of operation, extended and assembled in end to end relation to provide a continuous protected passageway. The parts are few and simple, are strong, durable and provide for a very novel construction that may be extended in multiple in accordance with the desired length of the passageway.

It is to be understood that the invention is not limited to the precise arrangement shown, but that changes are contemplated as readily fall within the spirit of the invention as shall be determined by the scope of the subjoined claims.

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

1. A cumulative protected passageway that comprises multiple identical individual units that are detachably connected together to constitute a passageway of predetermined length, each of the units being individually collapsible and extensible, each unit embodying identical parallel end frames, gate devices hingedly connected to each of the end frames at their opposite sides and with the gate devices at each side being hingedly connected together, the said end frames being shiftable toward and from each other under the influence of the swinging action of the gates, a horizontal cross bar carried by each of the end frames adjacent their lower ends, a floor forming panel hingedly connected to each of the cross bars and whereby to swing in a vertical plane from a horizontal floor forming position to an upper collapsed position whereby the panels are disposed in a vertical plane substantially parallel to their adjacent end frames, brackets carried by each of the end frames at opposite sides for retaining the panels in the vertical position, the said brackets each being provided with a loop at its free end for the reception of a flexible rope that forms hand rails at opposite sides of the passageway when the frames are extended, the said panels at their free ends having interlocking engagement with each other whereby to provide a continuous uninterrupted floor for the full length of the unit, a ground support at the point of interlocking engagement of the panels and whereby to prevent downward flexing of the panels when in the floor forming position, the said frames and the ground support being provided with antifriction rollers, and means carried by one cross bar of each unit for locking engagement with an adjacent cross bar of the next adjacent unit.

2. The structure according to claim 1, wherein the free end of one floor forming panel is provided with a forwardly opening channel and with the free end of the adjacent floor forming panel being provided with a cylindrical bar extension that has interlocking engagement in the channel when the panels are swung downwardly to a position of horizontal alignment, the said ground support being connected to the channel and whereby to prevent disalignment of the floor panels under the influence of weight imparted thereto by persons walking thereacross.

3. The structure according to claim 1, wherein the said brackets are bifurcated for the reception of the free corner portions of the floor panels, the said brackets being shiftable in a vertical plane upon the end frames whereby to permit of a full vertical positioning of the floor panels when the unit is collapsed, the brackets when shifted downwardly embracing the corner areas of the floor panels, the said brackets being held against horizontal rotation with respect to the end frames.

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