United States Patent [19]

Lowe

[11] **3,926,242**

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[54] **DOORS**

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[52] **U.S. Cl.** ..... **160/89;** 160/84 R; 160/118

[51] **Int. Cl.²** **E06B 3/32**

[58] **Field of Search** 160/19, 84, 87, 88, 89, 160/113, 114, 115, 117, 181, 184, 185, 118; 52/64, 173; 254/141

[56] **References Cited**

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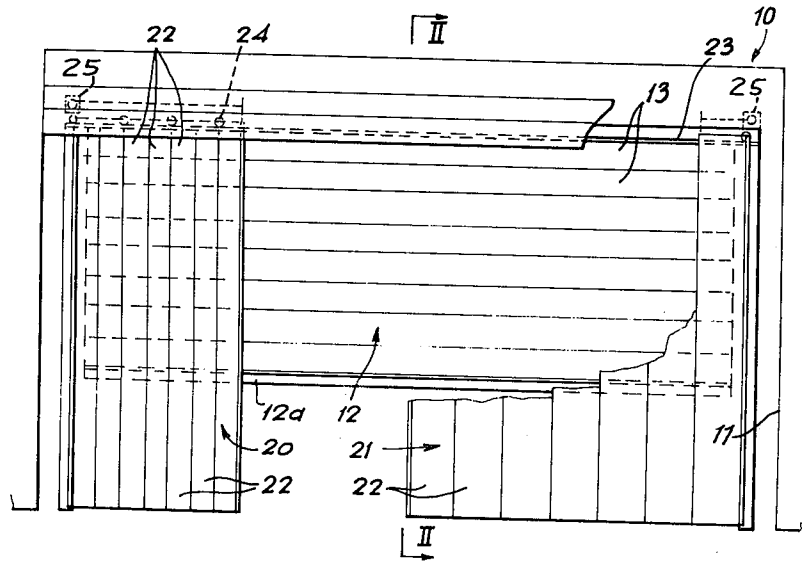
[57] **ABSTRACT**

A door system for a shed for the building of a ship by the so-called extrusion method comprising two door arrangements disposed one behind the other in a doorway opening in one end wall of the shed, one of said door arrangements being openable upwardly to an adjustable extent to define an aperture which extends over the full width of the doorway opening and which is of desired height from the ground to the lower edge of the door arrangement, and the other of said door arrangements being comprised by two door parts disposed one on each side of the doorway opening, each being openable outwardly to an adjustable extent to define an aperture extending over the full height of the doorway opening and of desired width between the inner vertical edges of the two door parts, the two door arrangements being operable together to define a rectangular aperture of any desired height and width in the doorway opening.

1 Claim, 2 Drawing Figures



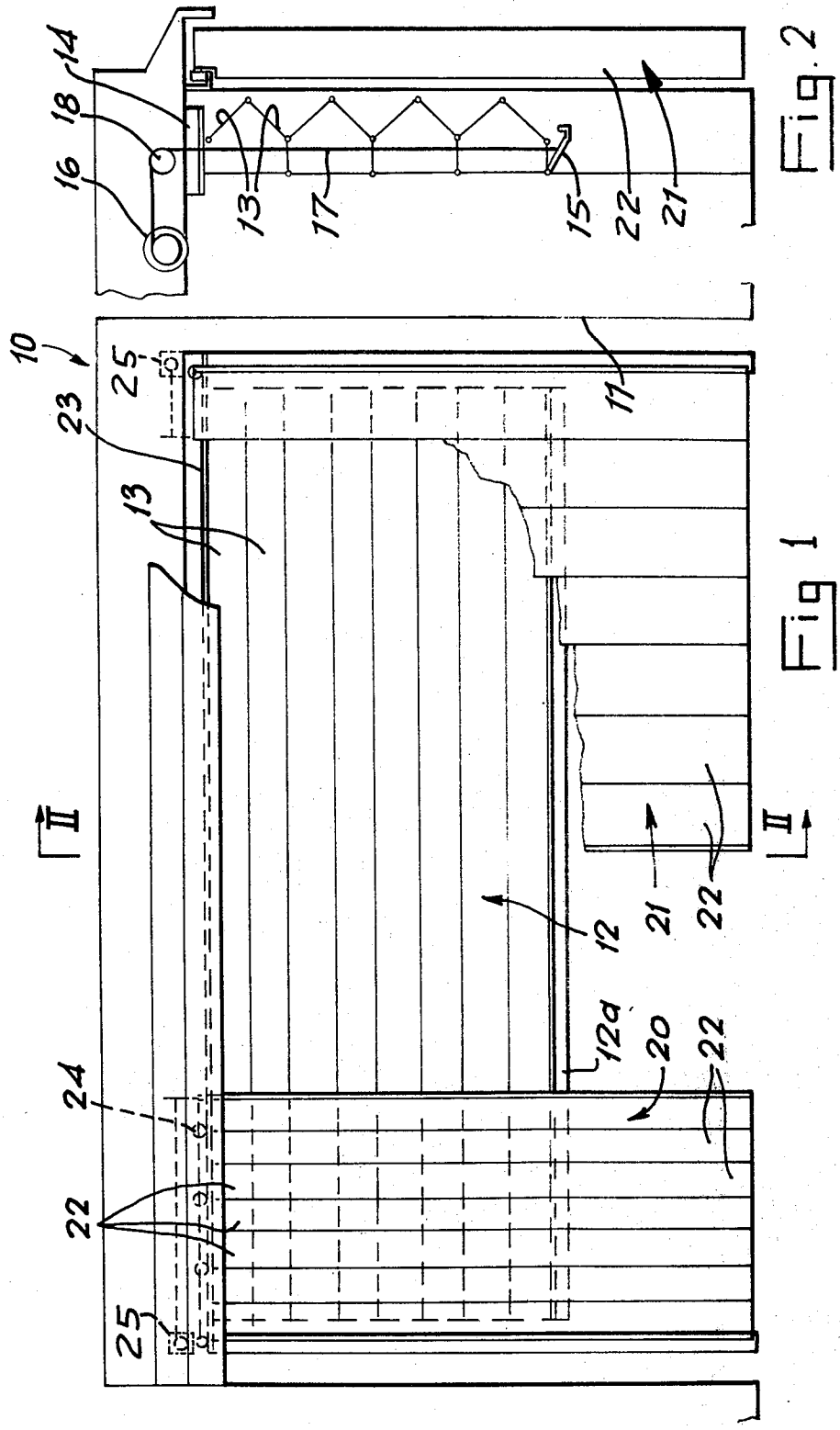


Fig. 2

Fig 1

DOORS

This invention concerns a shed for the building of ships by the so-called extrusion method, and more particularly to a door system for such a shed.

In the "extrusion method" of ship-building successive transverse sections of the ship are fabricated and joined together and the ship is extruded in successive steps from the shed in which it is built as it grows in length.

The present invention is particularly concerned with the provision of a system of doors for a doorway at the front of such a shed which can be operated to define an opening of variable geometry which closely conforms to the cross-sectional shape and size of that part of the ship extending through the doorway at any time during the building process.

According to the present invention a door system for a shed for the building of a ship by the so-called extrusion method comprises two door arrangements disposed one behind the other in a doorway opening in one end wall of the shed, one of said door arrangements being openable upwardly to an adjustable extent to define an aperture which extends over the full width of the doorway opening and which is of desired height from the ground to the lower edge of the door arrangement, and the other of said door arrangements being comprised by two door parts disposed one on each side of the doorway opening, each being openable outwardly to an adjustable extent to define an aperture extending over the full height of the doorway opening and of desired width between the inner vertical edges of the two door parts, the two door arrangements being operable together to define a rectangular aperture of any desired height and width in the doorway opening.

The invention will be further apparent from the following description with reference to the figures of the accompanying drawing which show, by way of example only, one form of door system embodying the invention.

Of the drawing:

FIG. 1 shows a front elevation of the door system;

and FIG. 2 shows a cross-section of the door system on the line II—II of FIG. 1.

Referring now to the drawing, it will be seen that the door system serves to close one entire end of a shed-like building generally indicated at **10.**

The door system is comprised by two door arrangements disposed one behind the other in the doorway opening **11.**

The first door arrangement is comprised by a door **12** which can be opened to an adjustable extent in an upward direction to define an aperture of desired height between the lowermost horizontal edge **12***a* of the door **12** and the ground, which aperture extends over the full width of the doorway opening **11.**

As best seen from FIG. **2** the door **12** is comprised by a plurality of horizontally extending pivotally interconnected parallel plates **13.** The uppermost edge of the uppermost plate **13** is pivotally connected with a fixed frame member **14,** and the lowermost edge of the lowermost plate **13** is pivotally connected with a movable frame member **15** which extends across the width of the doorway opening **11.** A control mechanism generally indicated at **16** is provided and includes cables **17** which run from the mechanism **16** over pulleys **18** to connect with the frame member **15.** As the cables **17** are raised to open the door the plate members **13** fold together progressively until when the door is fully open they are all disposed in a substantially horizontal plane in superimposed relationship.

It will be understood that the mechanism **16** is capable of being operated to allow the door **12** to be opened to any desired extent and secured at such position.

The second door arrangement is essentially comprised by two doors **20** and **21** located in a plane disposed outwardly from the plane of the door **12,** one such door lying to each side of the doorway opening **11.**

Each of the two doors **20** and **21** is comprised by a plurality of parallel vertically extending plates **22** each of which extends over the full height of the doorway opening **11.** The plates **22** are suspended from a track **23** along the upper edge of the doorway opening **11** by means of rollers **24,** and are pivotally interconnected at their adjacent vertical edges. The outermost edge of the outermost plate **22** of each door is pivotally connected to a frame member at the side of the doorway opening **11.** Power operable means such as indicated by numeral **25,** are provided for moving the innermost plate **22** of each door inwardly or outwardly across the doorway opening **11,** it being understood that as such plate is moved outwardly the plates **22** are caused to fold to overlie one another. Each of the doors **20** and **21** may be controlled independently as shown at **25, 25,** FIG. **1.**

It will be appreciated that by appropriate manipulation of the doors **12, 20** and **21** a rectangular aperture of any desired height and width and located at any desired position along the width of the doorway opening **11** may be formed.

It will be understood that as a ship is built in the shed it may be extruded stage by stage through the doorway opening **11,** the doors **12, 20** and **21** being set to define an aperture closely conforming to the cross-sectional shape and size of the portion of the ship extending through the doorway opening **11** at any stage during the building process.

It will be appreciated that it is not intended to limit the invention to the above example only, many variations such as might readily occur to one skilled in the art being possible, without departing from the scope thereof.

Thus for example, the doors **12, 20** and **21** need not collapse upon themselves during opening, but may be supported on tracks permitting them to be moved from their closed positions to underlie the ceiling of the shed and to overlie the side walls of the shed respectively to any desired extent.

What is claimed is:

1. In combination with a shed for the building of a ship by the so-called extrusion method said shed having a doorway opening in one end through which the ship under construction is extruded in successive steps as it grows in length, means for defining a rectangular aperture of any predetermined height and width within the perimeter of said doorway opening comprising two door arrangements disposed one behind the other at said doorway opening, means whereby one of said door arrangements is operable upwardly to an adjustable extent to define an aperture which extends over the full width of the doorway opening and which is of desired height from the ground to the lower edge of the door arrangement, the other of said door arrangements being comprised by two door parts disposed one on each side of the doorway opening, and means whereby

each of said door parts is openable outwardly to an adjustable extent to define an aperture extending over the full height of the doorway opening and of desired width between the inner vertical edges of the two door parts, the two door arrangements being operable together to define said rectangular aperture of any desired height and width to conform the effective doorway opening size and shape to the size and shape of the part of the ship extending through the doorway at any time during building, said first mentioned door arrangement comprising a plurality of horizontally extending pivotally interconnected parallel plates, the uppermost edge of the uppermost plate being pivotally connected with a fixed frame member and the lowermost edge of the lowermost plate being pivotally connected with a movable frame member which extends across the width of

the doorway opening, said movable frame member being suspended by cable means which can be raised and lowered to open or close said first door arrangement to a desired extent, and means for moving said cable means to open and close said first door arrangement, and each of said door parts of the second mentioned door arrangement comprising a plurality of vertically extending pivotally interconnected parallel plates whose upper ends are suspended from a track running along the upper edge of the doorway opening, and means for moving the innermost plate of said each door part inwardly or outwardly across the doorway opening, each of said means for moving said door parts and said means for moving said cable means being operable independently of one another.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,926,242 Dated December 16, 1975

Inventor(s) Kenneth Lowe

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the Title Page please insert:

Foreign Application Priority Data

January 23, 1973 Great Britain.....3341/73

Signed and Sealed this

twenty-third Day of *March 1976*

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
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