March 31, 1964 W. J. KEMPINSKI 3,126,944

OVERHEAD SELF-STORING GARAGE SCREEN DOOR

Filed May 11, 1961 2 Sheets-Sheet 1

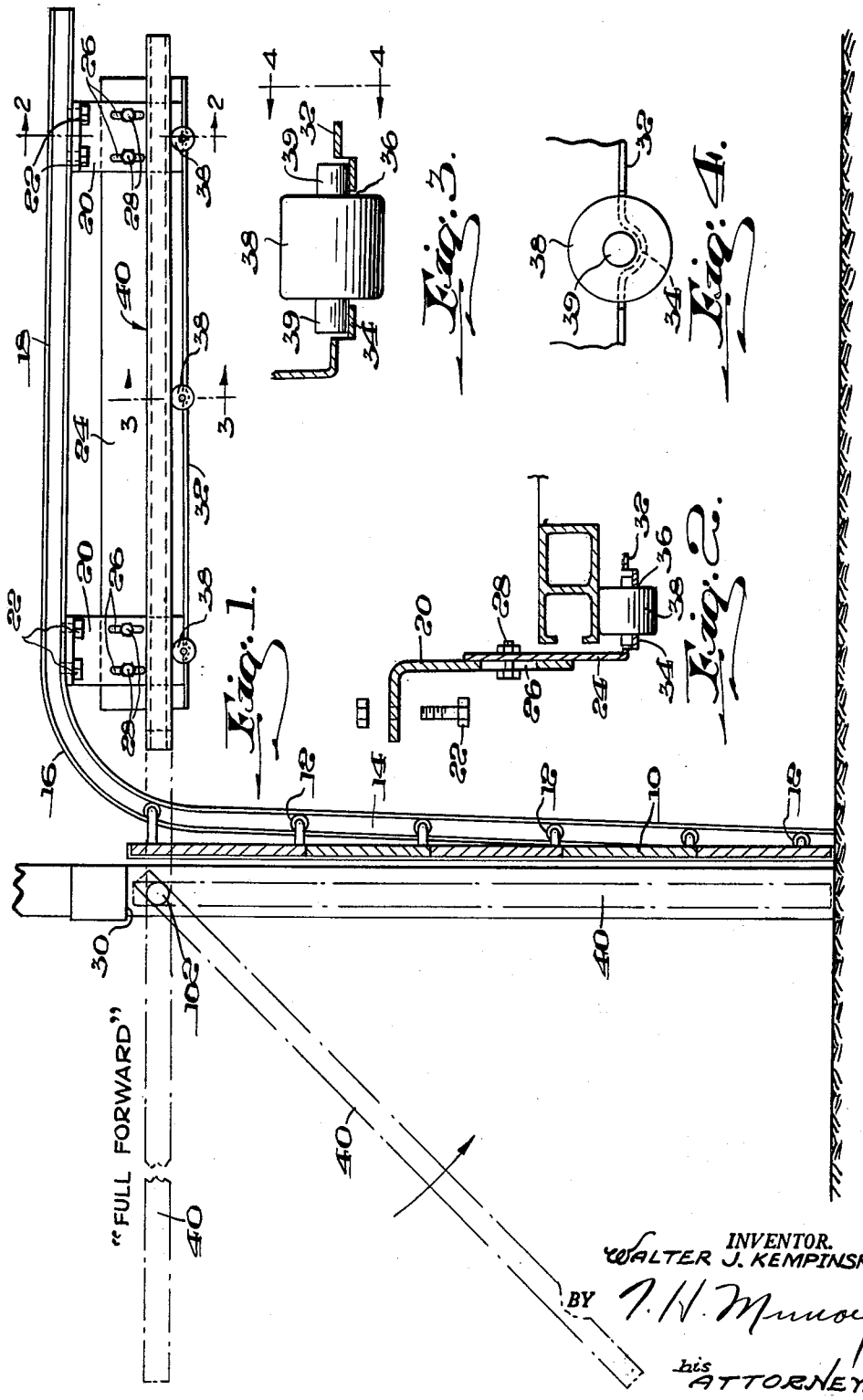


Fig. 1.

Fig. 3.

Fig. 4.

Fig. 2.

INVENTOR.
WALTER J. KEMPINSKI.
BY T. H. Mimoy
his ATTORNEY.

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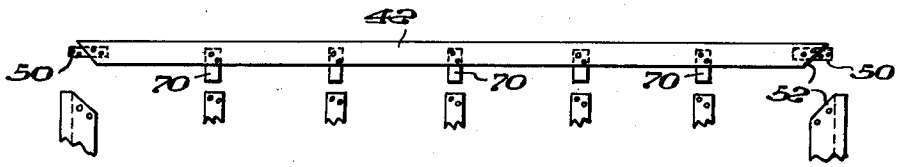


Fig. 6.

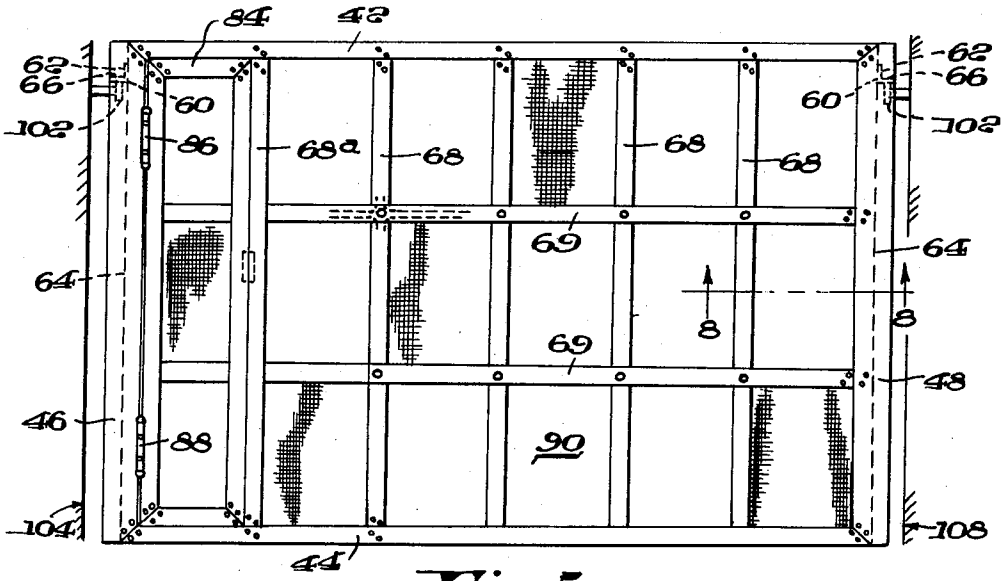


Fig. 5

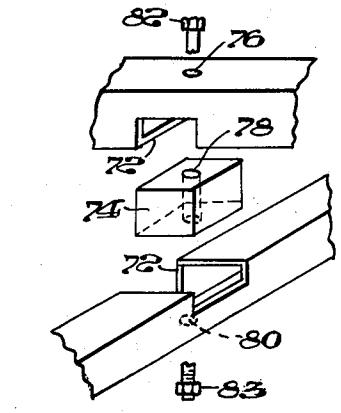


Fig. 7.

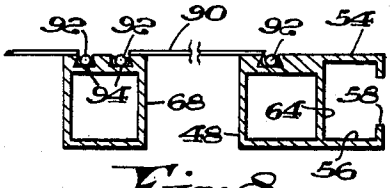


Fig. 8.

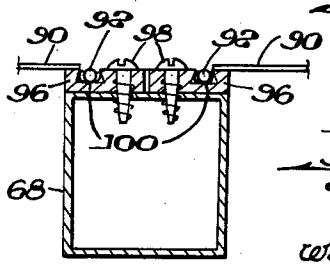


Fig. 9.

INVENTOR.
WALTER J. KEMPINSKI.

BY J. N. Murray

his ATTORNEY.

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OVERHEAD SELF-STORING GARAGE SCREEN DOOR

Walter J. Kempinski, 2908 7th St., New Kensington, Pa.

Filed May 11, 1961, Ser. No. 109,295
4 Claims. (Cl. 160—90)

This invention relates to combination doors for use in garages and other type building enclosures. The invention also relates to a novel door construction per se which is usable in combination with a conventional overhead sliding door and includes several construction features which make a rigid and economical construction readily adapted for use with garage door openings which were not originally constructed to provide for dual door usage.

Almost all garage doors designed for protecting the garage interior against inclement weather are designed to be efficient solid cross section heat barriers. During the summer-time when there is no necessity for using the door to protect the interior of the garage, the garage can be converted to a recreational area but only after the door is lifted. It then becomes a considerable convenience to provide an additional door for screening the garage opening so that the occupants can enjoy the comfort and convenience of the outdoors but without experiencing bothersome insects and the like. During summer weather the garage can thus be converted to a comfortable attractive living area since there is no need for sheltering vehicles in the garage against bad weather.

It is an object of the present invention to provide, in combination with a sliding overhead door for single or double garages, a second door which is independently operable and is also stored overhead and can be swung from an overhead substantially horizontal stored position to a vertical closing position to close the garage door opening.

A further object of the invention is to provide a combination of summer and winter doors which can be constructed at a relatively small additional expense approximating the cost of the summer door alone in addition to the conventional garage door installation. That is, the invention eliminates the cost of operating devices, conventional cable and spring mechanisms and other elaborate accessory structures for the auxiliary door which are normally required for operating each of dual door constructions.

Another object of the invention is to provide combination doors wherein each door utilizes the same door jamb structure. In this way, substantial economy is obtained, bearing in mind that no additional actuating equipment is required for operating one of the doors which can be swung into place without interference by the other door. The two doors, in other words, coact without interfering with each other and both can be stored simultaneously and separately lowered and raised.

Other features of the invention are the simplicity in construction of the "summer" door which is constructed of extruded aluminum (or like metal) sections to form a lightweight, durable but inflexible frame for supporting a screen thereon.

Other objects and features of the invention will become apparent from a consideration of the following description which proceeds with reference to the accompanying drawings wherein:

FIGURE 1 is a vertical sectional view showing the "winter" door in a closed position and the "summer" door in a stored position and illustrating in dashed-line views the "summer" door pulled outwardly and then swung half downwardly and then full downwardly to its upright closed position;

FIG. 2 is a sectional view taken on line 2—2 of FIG. 1;

FIG. 3 is an enlarged detail sectional view taken on line 3—3 of FIG. 1 of the bearing support for the "summer" door on which the "summer" door rests in its stored position;

FIG. 4 is a view looking in the direction of the arrows 4—4 in FIG. 3, this view being also in fragmentary section;

FIG. 5 is a front elevation view of the "summer" door in its closed position viewed from the left-hand side of FIG. 1;

FIG. 6 is an exploded view showing how the upper frame member is attached at its opposite ends to the two vertical frame members and to the vertically-spaced reinforcement members;

FIG. 7 is an exploded isometric detail view of the connection for joining the horizontal and vertical reinforcement members of the door of FIG. 5;

FIG. 8 is an enlarged fragmentary sectional view taken on line 8—8 of FIG. 5 and illustrating the attachment structure for the screen; and

FIG. 9 illustrates an alternate embodiment of FIG. 8 for supporting the screen.

Throughout the specification, the terms "winter" door and "summer" door are used as convenient terms to refer to the dual door construction. These terms are in no sense limitative of the invention to a particular kind, construction or weight of door; the terms are used only in a relative sense that one has a predominant function of heat insulation and the other has a predominant function of being open except to screen out insects and the like. The heavier heat insulating door 10 which may be of conventional construction is mounted on spaced rollers 12 which are guided within tracks or channels 14 spaced one at each side of the garage door opening and curved backwardly from the door opening at 16 into a substantially horizontal run 18 so that when the door 10 is lifted, its hinged sections are transported along the length of the track 14 from a vertical closed position to an overhead substantially horizontal stored position.

Each horizontal run 18 has suspended therefrom two spaced depending brackets 20 which are secured to the horizontal run by means of bolts 22. Vertically adjustable angles 24 are then clamped to the brackets 16 through elongated slots 26 by means of bolts or the like 28, said bolts 28 being then tightened when the angle supports 24 are in their proper horizontal position which, as shown in FIG. 1, inclines downwardly in the direction of door opening 30 for a purpose which will be later described.

Each angle 24 includes a flange 32 with spaced depressions 34 each having an opening 36. Rollers 38 are mounted within the depressions on shafts 39, and the rollers 38 extend partially through opening 36 (FIG. 3).

"Summer" door 40 in its substantially horizontal stored position, shown in FIG. 1, rests at two of the opposite edges thereof on the roller bearings 38 located in the respective angle supports 24.

Referring next to FIG. 5 for a detailed description of the door 40, it includes a frame comprising rectangular cross section extruded aluminum upper and lower border members 42 and 44 and two rectangular cross section side border members 46 and 48. The frame sections are joined at the four corners thereof by studs 50 (FIG. 6) which are proportioned to fit within each of the border members and are rigidly joined to their respective border members in any suitable manner as by screws, rivets or the like. The corners 52 of the border members are cut on a bias so that they meet squarely. Each side border member 46, 48 includes an integral C-shaped cross section portion 54 (FIG. 8) which provides a guideway 56 and a longitudinally-extending slot 58. The guideway 56 in-

cludes at the top of the door (FIG. 5) an angle abutment 60 which is secured by one flange 62 to the wall 64 of the guideway 56. The other flange 66 of each abutment 60 extends transversely of the guideway 56 and is the point at which the door 40 is pivoted from a horizontal to a vertical position in lowering the door and from a vertical to a horizontal position in raising the door.

The door is strengthened by a number of cross members; vertically disposed and regularly spaced reinforcement members 68 (FIG. 5), and regularly spaced horizontal members 69. The vertical reinforcement members 68 are joined through studs 70 (FIG. 6) to the upper and lower border members 42 and 44, respectively, the studs 70 being fitted within the rectangular cross sections of the reinforcement members 68 and the upper and lower border members 42, 44, the same as studs 50. The studs 70 may be riveted or joined in any suitable manner to their companion structure members as described for studs 50. Where the reinforecement members 68 and 69 cross (FIG. 7), there is provided in each a notch 72, allowing them to fit together and receive therebetween a block 74 which may consist of compressed paper or the like. Registering openings 76, 78 and 80 then receive a bolt 82, and nut 83 clamps the reinforcement members 68 and 69 firmly together. The horizontal reinforecement members 69 are joined at their opposite ends with the side border 46 and vertical reinforcement member 68*a* by means of studs which are the same in construction and function as the studs 70 (FIG. 6).

An access door 84 which is hinged at 86 and 88 to the vertical border member 48 can be opened and closed to provide entry through the door 40. The access door 84 is constructed from rectangular cross section extruded aluminum members of the same cross-sectional shape and dimensions as those of the door 40, this standardization providing an economy of manufacture, as will be understood.

The door 40 is then covered with a screen 90 which is held by cords 92 of hard nylon, for example, within dovetail cross section slots 94 (FIG. 8) so that there is a panel of screen material within the spaces provided between transverse reinforcement members 68, 69 and each panel can be separately replaced.

Alternatively, the screen can be secured as shown in FIG. 9, by means of strips 96 which are superimposed on the rectangular cross section reinforcement members 68, 69 and are fastened thereto as by metal screws 98. The strips are formed with dovetail cross section slots 100 which receive the edges of the screen panels 90 and are secured in said slots by rubber or hard nylon cords 92.

The summer door 40 is of such simple construction that it can be assembled with ordinary household tools. The door is therefore salable in "Knock down" kit form including properly dimensioned extruded aluminum members and the door assembled by the purchaser from the separate frame and reinforcement sections. The kit further includes the screen material 90, cord 92 and other parts which make up the complete door assembly. It is emphasized that the garage door of the invention need not have been especially adapted for dual doors and the homeowner need only have the correct dimensions of the doorway to obtain a proper fit for the summer door.

In operation, the summer door is lowered by first pulling it forwardly from its full line position shown in FIG. 1, wherein it is horizontally stored, while the two side members 46, 48 advance into the doorway 30. Two pivots 102, in the form of rollers or the like are mounted in the opposite door jambs 104 and 103 in general alignment with the slightly inclined door 40 so that they enter guideways 56 of the border members 46 and 48. In this manner the door 40 can move forwardly to the dotted line position labeled "Full Forward" in FIG. 1, at which time the angle abutments 60 engage pivot rollers 102, and the door 40 is then swung downwardly in the direction of the arrow (FIG. 1) to a vertical closed position, the pivots

102 serving as fulcrums for this angular movement. By virtue of the slight forward incline of the supports 24, the door can be much more easily pushed onto, or removed from, the rollers 38 than would be the case if the supports were exactly horizontal.

It will be noted from FIG. 1 that the pivot rollers 102 are located downwardly from the top of the doorway in the same relation as the abutment stops 60 from the upper edge border member 42 so that when the door is pivoted to a vertical closed position the door will not bind at its upper edge with the top of the doorway 30 but will substantially close the entire door opening 30.

The described summer door closing in no way interferes with the stored winter door 10. When it is desired to return the door 40 to its stored position, it is simply pivoted from the vertical position shown in FIG. 1 to the "Full Forward" position shown in FIG. 1 and then pushed toward the right onto the rollers 38 and is free to slide into the full line position shown in FIG. 1, its fully retracted and stored position.

While the two doors 10 and 40 are operated independently and separately, there is a coaction between the two in that each is supported in relation to the other and is movable with respect to each other so that both can be brought into a closed position in relation to the same door opening and each utilizes the same jamb structure to effect said closing. Likewise, each door is retracted and stored without interference one from the other.

It will now be clear that the householder can obtain the benefits of dual doors appropriate for seasonal changes although the doorway was not originally constructed with such advantages in mind. At the same time, the cost of the added convenience and comfort is substantially the cost of the additional door only, there being no costly installation and door actuating accessories incident to the "summer" door.

Although the present invention has been disclosed and claimed in connection with selected example embodiments, it will be understood that these are only examples of the invention and will in no sense be restrictive thereof. It is intended, therefore, that such revisions and variations of the invention which can reasonably be expected on the part of those skilled in the art, to meet individual design requirements, will be included within the scope of the following claims as equivalents of the invention.

I claim as my invention:

1. A combination door construction for garage door openings and the like having a pair of spaced vertical jambs, comprising a first hinged panel door having spaced vertical tracks which curve backwardly away from the door opening and extend into horizontally disposed lengths providing a storage for said first door, substantially horizontal storage means suspended from and located beneath the level of said horizontal track lengths and including a plurality of spaced antifriction bearing means, a second door having a rigid non-hinged peripheral frame, said second door being supported on said antifriction bearing means in its substantially horizontally stored position and movable on said antifriction bearing means from a position behind said vertical tracks to pass through the door opening, means forming a guideway along two of the opposite longitudinal edges of said second door and which are upright with said second door in its vertical closed position, means forming a single guide on each of the vertical jambs of the door opening at the tops thereof and proportioned to fit slideably within the respective guideways of said second door to guide the forward movement thereof from its stored position as it passes through said door opening, said guide means being positioned beyond the ends of the guideway means on the second door and separated therefrom when the second door is behind said vertical tracks, and abutment means disposed within each of said guideways and movable into engagement with its respective guide means to limit the forward movement of said second

door out of the door opening and define a pivoting position of said second door which is swung about the guide means with the abutment means in engagement therewith into a vertical closing position within the door opening.

2. A combination door construction for garage door openings and the like having a pair of spaced vertical jambs, comprising a first hinged panel door, means for slideably supporting said first door for movement between its vertical closed position to a substantially horizontal overhead stored position above the door opening, a second door having a rigid inflexible frame proportioned to pass between said first door supporting means, a support connected to said means for supporting the first door for locating the second door in a substantially horizontal stored position but inclined slightly downwardly in the direction of the door opening and at a lower overhead level than said first door in its stored position, the end of said stored second door adjacent the door opening being disposed in clearance relation with said first door supporting means to provide free movement of said first door between its open and closed positions, means forming guideways along two of the edges of said second door and which are upright in the closed position of said second door, guide means located within the door opening only at the top thereof and on the opposite jambs thereof and positioned for entry within said guideways to direct the movement of said second door forwardly from its stored position in the direction of the door opening, said guide means being spaced in offset relation with said first door in its closed position, and abutment means for limiting the forward movement of said second door through the door opening and thereafter providing a pivoting surface for said second door which is swung into vertical closed position within the door opening and in closely spaced relationship with the position occupied by said first door in its closed position.

3. A combination door construction for garage door openings and the like which have a pair of spaced vertical jambs, comprising two vertically disposed tracks spaced one at each side of the door opening and extending backwardly from said door opening to provide a substantially horizontal overhead support, a first hinged panel door including antifriction bearings along its opposite edges, said antifriction bearings being mounted in said tracks to direct said first door from a vertical door closing position to a substantially horizontal overhead stored position, substantially horizontally disposed support means suspended from said tracks and disposed at a lower vertical level than said first door in its stored position and including spaced support surfaces thereon, a second door having a rigid non-hinged peripheral frame and adapted to be stored on said support means, said second door being movable from its stored position between said tracks in a forward direction to pass through said door opening, means forming guideways along two of the edges of said second door and which are disposed upright when said second door is in a closed vertical position, spaced pivot members located one on each of the vertical jambs of said door opening at the tops thereof and proportioned to fit within respective ones of said guideways to direct movement of said second door between stored and closed positions, and means carried on

said vertical jambs and movable into engagement with said pivot members to limit the forward movement of said second door which thereafter pivots around said pivot members to swing said second door into a vertical position substantially filling said door opening.

4. A combination door construction for a garage door opening or the like having spaced vertical jambs and wherein each door is independently operable for movement from a stored substantially horizontal to a vertical door closing position within the same door opening, comprising two vertically disposed tracks spaced one at each side of the door opening and extending backwardly from said door to provide a substantially horizontal overhead support, a first door including antifriction bearings along opposite edges of said first door and mounted in said tracks to direct said first door from its vertical door closing position to a substantially horizontal overhead stored position, substantially horizontally disposed support members suspended from said tracks and disposed at a lower vertical level than said tracks, a screen door located on said support members and movable between said tracks in a forward direction to pass through said door opening, said screen door comprising an inflexible frame having border members at the top and bottom of said door and two vertical border members which are joined with said top and bottom members at their upper and lower ends respectively, said two vertical border members having longitudinal guideways therein of C-shaped cross section and constructed integrally therewith, a plurality of vertically disposed spaced apart extruded metal members operatively secured to said upper and lower border members respectively, a plurality of horizontally disposed spaced apart extruded metal members which are operatively secured to said vertical border members and interlocked with said vertically disposed members to provide a plurality of rectangular open panels, screen means stretched across said open panels, means for securing said screen means to said horizontal and vertical members to form a screen covering surrounded by the frame of said door, spaced pivot members located one on each of the vertical jambs of said door opening and proportioned to fit within a respective one of said C-shaped guideways to direct movement of the screen door between stored and closed positions, and abutments extending into said C-shaped guideways at the tops thereof to limit the forward movement of said screen door which thereafter pivots around said pivot members with said abutments in engagement with the pivot members to swing said screen door into a vertical position substantially filling said door opening.

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