Title: SLIDING DOOR GATE

Abstract: A sliding door safety gate attaches to a sliding door via sliding door clamps, while enabling a user to enter and exit freely while using it. The disclosed safety gate deters children, pets, or the like from exiting a sliding door or corresponding designated areas. The inventive gate includes adjustably engaged panels, a stationary vertical gate support and clamps to secure the gate to a sliding door. The inventive gate incorporates hinges that allow the gate to swing open or closed. Connecting clamps allow the gate to extend or retract according to the width of a sliding door. A locking mechanism is operatively attached to the front and back panels to secure or unlock the inventive safety gate as desired. The safety gate includes barrier panels, which protect small children, pets, or the like from putting their hand, foot, or head through the safety gate during use.
SLROIING DOOR GATE

1. Technical Field
This invention relates to the field of safety gates for restricting or controlling ingress or egress into or out of a designated area by children, pets and the like. More specifically, this invention pertains to a safety gate for sliding door structures to obstruct openings associated with sliding doors, patio doors and similar structures.

2. Background Art
A variety of currently existing safety gates are designed and constructed to restrict, prevent or otherwise control the ingress or egress of infants, children, pets and the like within or about a designated area. Such gates may be adjusted for use in passageways or openings of varying widths or related dimensions. Several such gates often include moveable bumpers, which may be extended from and retracted into the safety gate structure to secure or release the safety gate from contiguous openings.

A disadvantage of conventional gates employing moveable bumpers is that various mechanisms used to actuate the bumpers are relatively complex and expensive. Such gates conventionally incorporate multiple mechanisms to achieve bumper actuation and include numerous interconnecting parts requiring precise fittings and positioning to interact operationally in order to extend and retract the bumpers. Other conventional gates utilize actuating mechanisms that include a complex arrangement of links, cranks, pull rods or springs that interconnect to a pull handle.

Another disadvantage of conventional gates is an inability of associated moveable plungers to compensate independently for different spacings between each bumper and the side member of an opening. Different spacings can result
from various factors, such as surface irregularities of the vertical members of an opening, an opening having nonparallel vertical members and the like. Moreover, many conventionally gates use rigid connections between bumpers and corresponding actuating mechanisms, which may either result in a bumper making minimal or no contact with a vertical member of the opening, or a bumper exerting an excessive force against the vertical member of an opening. Actuating mechanisms incorporated in such gates are often a complex assemblage of parts that is relatively expensive to manufacture. Conventional gates are also functionally limited by their inability to attach securely to a corresponding sliding door structure without slipping or otherwise becoming disengaged.

For the foregoing reasons, a need exists for a gate device that can modulate ingress or egress within or about a designated area, which is constructed to overcome the above referenced limitation of conventional gates and that can accommodate a sliding door framework.

**DISCLOSURE OF INVENTION**

The present invention is directed to a sliding door safety gate for obstructing an opening associated with the sliding door comprising: a panel unit constructed and arranged to be positioned within the opening; a stationary vertical gate support operatively positioned adjacent to a vertical member of the panel; at least one sliding door clamp operatively attached to the vertical gate support for engaging or disengaging the sliding door; and a height adjustable pin operatively mounted on a bottom side of the stationary vertical gate support for positioning the gate within a sliding door structure, wherein the panel unit includes at least two panel sections adjustably connected to expand or contract within variable width dimensions to obstruct openings of different widths. The present invention further comprises a width adjustment locking mechanism constructed and arranged to secure the panel sections together to maintain a desired width, a rubber bumper operatively mounted on at least one of the panel sections to secure the safety gate within a sliding door structure, and at least one hinge operatively connected to the vertical gate support and at least one of the panel sections to facilitate movement of the safety gate when desired.
A handle latching device may be provided to keep both panel sections locked into position. The stationary vertical gate support structure sits on the vertical pin, which is placed in the sliding door track during use of the invention. The stationary vertical gate support structure is attached to a sliding door with a sliding door clamping device. The sliding door clamping device may be constructed in a non-adjustable configuration to accommodate a single width of any given sliding door frame. Alternatively, the sliding door clamping device may incorporate an adjustable construction to permit attachment to sliding door frames of any given width. Thus, the sliding door clamping device is constructed to securely engage any sliding door frame of any given width, including custom sliding door frame structures or conventional sliding door frame structures that commonly vary in width from one to two inches in thickness. At least one of the sliding door clamping devices is operatively attached to the upper and lower sections of a side panel of the vertical gate support. Hinges are operatively connected, respectively, to the vertical gate support and the stationary back panel section of the inventive safety gate, which permits the gate to pivot between opened and closed positions when desired and as more fully set forth below.

This invention is a new concept for safety gates because this gate is made specifically for sliding door structures. Children, pets and the like typically play or otherwise are in the vicinity of sliding door structures for sustained period of time, and may inadvertently run through or otherwise breach an associated opening, which could result in injury or fatalities. In order to prevent the prospect of such occurrences, the inventive safety gate may also include an alarm mechanism to warn adults or others if the gate has been tampered with or breached by children or pets.

Accordingly several objects and advantages of the invention are to provide a safety gate that prevents toddlers from pushing out or otherwise breaching screen doors. A further object of the present invention is to provide a safety gate that securely clamps on to a sliding door, which enables users to enter and exit a designated area easily. Yet, a further object of the present invention is to provide a safety gate that facilitates preventing a child, pet or others from exiting a home
or other designated area when desired. A further object of the present invention is to provide a safety gate that allows the user to leave their sliding door open and corresponding screen door closed during use, which permits air circulation throughout the home or other designated area. A further object of the present invention is to provide a safety gate that permits a sliding door to remain open while having small infants or like in the area of the sliding door. A further object of the present invention is to provide a safety gate that creates an additional barrier to outdoor access for families with swimming pools or other such outdoor structures. A further object of the present invention is to provide a safety gate that can be used easily and is constructed to prevent indoor pets from damaging or destroying sliding door screens.

The inventive sliding door safety gate has additional advantages in that it: simplifies use, is inexpensive to manufacture, and is light weight; provides a stable entrance and exit of the sliding door; provides assistance for deterring small children, pets, or the like from exiting the sliding door; provides a shield which prevents small children from pushing on or out the screen doors; and it provides a shield that prevents indoor pets from scratching the patio door screen.

Further objects and advantages will become apparent from a consideration of the drawings and description as set forth below.

**DESCRIPTION OF THE DRAWINGS**

FIG. 1 is the frontal view of the sliding door safety gate according to the present invention.

FIG. 2A is a frontal view of a back panel section of the sliding door safety gate according to the present invention.

FIG. 2B is a frontal view of a front panel section of the sliding door safety gate according to the present invention.

FIG. 3 is the top elevational view of the sliding door safety gate and an attached adjustable locking mechanism according to the present invention.

FIG. 4 is a frontal view of the vertical gate support and height adjustable pin of the sliding door safety gate according to the present invention.
FIG. 5A is a frontal view of a hinge of the sliding door safety gate according to the present invention.

FIG 5B is a frontal view of a connecting clamp of the sliding door safety gate according to the present invention.

FIG. 5C is a frontal view of a sliding door clamp of the sliding door safety gate according to the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

FIG. 1 illustrates a schematic diagram of the sliding door safety gate according to the present invention. As depicted in FIG. 1 and FIG. 2, the inventive safety gate comprises back panel (10), front panel (20), a plurality of connecting claims (60), at least one locking mechanism (70) (as shown in FIG. 3) and stationary vertical gate support (30), which detachably connects the inventive gate to a sliding glass door (not shown) as more fully set forth below.

FIGS. 2A and 2B illustrate, respectively, a frontal view of back panel section (10) and front panel section (20) according to the present invention. As illustrated in FIG. 2A, back panel section (10) comprises at least two vertically disposed side frame portions, a top frame portion and a bottom frame portion creating a square-shaped structure as depicted. Likewise, as illustrated in FIG. 2B, front panel section (20) comprises at least two vertically disposed side frame portions, a top frame portion and a bottom frame portion creating a square-shaped structure as depicted. As illustrated, back panel section (10) and front panel section (20) comprise a panel barrier (90) to prevent passage through the inventive gate as more fully set forth below. Panel barrier (90) is spacially disposed within and connected to, respectively, back panel (10) and front panel (20), in order to impede ingress or egress of people or pets through the inventive gate during use as more fully set forth below. A stationary bumper (not shown) may be attached to front panel section (20) in order to secure the inventive gate to a sliding door frame structure and diminish the prospect of sliding door track damage.

Back panel (10) and front panel (20) may be constructed from any suitable material, including wood, plastic, particle board, metal or any other such durable
material. Panel barrier (90) may be constructed from any suitable material, including wood, plastic, particle board, metal, nylon, cotton, glass, or any other such suitable material capable of filling or otherwise spanning the space of the interior portions of back panel (10) and front panel (20). Panel barrier (90) may be filled in or may be a screen constructed to allow the free flow of air through the inventive gate during use but having openings therein small enough to preclude a child, pet or other from putting a hand, foot or the like through panel barrier (90) in conjunction with the inventive gate.

As illustrated in FIG. 1 and FIG. 2, back panel (20) and front panel (30) are operatively disposed in face-to-face or parallel relationship with each other and moveably connected by means of connecting clamps (60). FIG. 5B illustrates an exploded view of connecting clamp (60) from an upside down frontal angle. As depicted, connecting clamp (60) is U-shaped in structure and comprises a top portion and two side portions. As depicted in FIG. 1, connecting clamps (60) are fixedly attached, respectively, to back panel section (10) and front panel section (20) via a suitable attachment device, such as a screw, rivet, pin, bolt or the like (not shown). As further depicted in FIG. 1, back panel section (10) and front panel section (20) are positioned in adjustable communication with each other during use of the inventive safety gate.

As depicted in FIG. 3, a lockable latch mechanism (70) may be operatively positioned in communication with back panel section (10) and front panel section (20) to secure the inventive gate is a specific position during use as more fully set forth below.Latch mechanism may comprise a hook and latch component (not shown), or a handle, grip, knob or other such lever (not shown) to facilitate locking or unlocking latch mechanism (70) as desired.

Back panel (10) is stationary during use of the inventive gate, whereas front panel (20) may be adjusted to accommodate the width of any given sliding door frame depending upon frame measurement parameters, user preference or similar considerations. The effective total width of the inventive gate may be adjusted via connecting clamps (60) to accommodate a range of widths corresponding to patio or other sliding door frame structures to be obstructed by
the inventive gate during use. Connecting clamps (60) and locking latch mechanism (70) may be constructed from a variety of suitable materials, including but not limited to metals, aluminum, steel, plastic, wood, particle board, or other such durable material.

As illustrated in FIG. 1 and FIG. 4, stationary gate support (30) comprises a vertical rod and at least one hinge (40) or other such pivoting connecting mechanism, height adjustment pin (80) and at least one sliding door clamp (50). Stationary gate support (30) operatively attaches to a side frame portion of back panel (10) via hinge (40) or other such pivoting connecting mechanism. At least one sliding door clamp (50) is operatively attached to vertical gate support (30) approximately opposite hinge (40) and during use is attached to a sliding door (not shown) as more fully set forth below.

Door clamp (50) may be constructed in a non-adjustable configuration to accommodate a single width of any given sliding door frame. Alternatively, door clamp (50) may incorporate a moveable construction to permit attachment to sliding door frames of any given width. Thus, door clamp (50) may securely engage any sliding door frame of any given width, including custom sliding door frame structures or conventional sliding door frame structures that commonly vary in width from one to two inches in thickness.

In operation, the inventive sliding door safety gate is attached to a sliding door via sliding door clamp (50), which is attached to stationary vertical gate support (30). Height adjustment pin (80), which is operatively attached to the bottom of stationary vertical gate support (30), is easily adjustable by twisting or otherwise adjusting pin (80) to a desirable height. Front panel (20) is adjustable and is locked in place through adjustable locking mechanism (70). This allows the user to lock the safety gate in place when entering or exiting a sliding door. Stationary vertical gate support (30) serves as a pivot point for hinge (40) allowing a user to swing the inventive safety gate open or closed. The inventive sliding door safety gate may be constructed to incorporate a safety gate alarm to notify a parent or other person when a child or pet is tampering with or has opened the inventive safety gate.
The inventive sliding door safety gate may be removed from a sliding door structure by detaching the inventive gate ends from the sliding door structure. The inventive gate may be stored during non-use.

Finally, although the description above contains many specificities, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this invention. Other modifications by those skilled in this art are possible and are included within the scope of the appended claims.
CLAIMS

1) A sliding door safety gate for obstructing an opening associated with the sliding door comprising:

   a panel unit constructed and arranged to be positioned within the opening;

   a stationary vertical gate support operatively positioned adjacent to a vertical member of said panel;

   at least one sliding door clamp operatively attached to said vertical gate support for engaging or disengaging the sliding door; and

   a height adjustable pin operatively mounted on a bottom side of said stationary vertical gate support for positioning said gate within a sliding door structure.

2) The safety gate of claim 1, wherein said panel unit comprises at least two panel sections adjustably connected to expand or contract within variable width dimensions to obstruct openings of different widths.

3) The safety gate of claim 2, further comprising a width adjustment locking mechanism constructed and arranged to secure said panel sections together to maintain a desired width.

4) The safety gate of claim 3, further comprising a rubber bumper operatively mounted on at least one of said panel sections to secure said safety gate within a sliding door structure.

5) The safety gate of claim 4, further comprising at least one hinge operatively connected to said vertical gate support and at least one of said panel sections to facilitate movement of said safety gate when desired.