This invention relates to an improvement in safety latches for sliding closures and forms a division of my co-pending application entitled "Closures," filed April 18, 1940, and bearing the Serial Number 330,417.

It is a particular aim of this invention to provide a safety latch of simple construction for use on vertically sliding closures and adapted to be actuated by the closure striking an obstruction in the opening of the frame in which it is mounted, for actuating the safety latch for latching the closure to the frame to thereby prevent further downward movement of the closure toward a closed position.

Still another aim of the invention is to provide a latch which, when in an engaged position, will prevent the closure from moving downwardly in its frame but which will not prevent the closure from being raised and which, when the closure is raised, will be automatically released and will return of its own accord to a released position for returning the means which projects the latch to a position to again project the latch when the closure again strikes an obstruction while moving downwardly in the frame opening.

Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, which illustrates a preferred embodiment thereof, and wherein:

Figure 1 is a fragmentary side elevational view partly in section of a vertically sliding closure mounted in a closure frame and equipped with the safety latch, and

Figure 2 is an enlarged fragmentary vertical sectional view, partly in elevation, of one of the lower corners of the closure and frame. 

Referring more particularly to the drawing, wherein like reference characters designate like or corresponding parts throughout the different views, 10 designates generally a perpendicular closure frame including the spaced perpendicular pillars 11 having inwardly opening channels 12 for slidably mounting a closure 13.

The closure 13 is provided with a bottom rail 14 including a section 15 which is hollow and to which is connected a section 16 which is disposed therebeneath, and which is adapted to telescope into the section 15, as best seen in Figure 2. The section 15 opens downwardly and is provided with interrupted lower edges 17 and the section 16 opens upwardly and is provided with outturned upper edges 18 which engage over the edges 17 for connecting the sections 15 and 16 and for limiting the outward movement of the section 16 relatively to the section 15.

A bracket 19 is attached to each side of the closure 13 and is connected at its upper end to a flexible supporting member or chain 20. As best seen in Figure 1, the chains 20 extend upwardly through the channel portions 12 and are adapted to be connected to raising and lowering or counterbalancing means, not shown. A paw 21 or latch element 21 is pivotally connected at 22 to its upper end, to the lower portion of each of the brackets 19. The pawls or latch members 21 each depend downwardly from the bracket 19 to which it is connected, and is disposed in a channel portion 12. The latch elements 21 are each provided with an enlargement 23 at its lower end which extends through a slot 24 into an end of the space formed by the telescoping sections 15 and 16. A hanger 28 is secured by fastenings 25 in the intermediate portion 27 of the section 15, adjacent each end thereof. To each of the hangers 25, at its lower end, is pivotally connected a lever 28. The levers 28 are pivotally mounted, intermediate of their ends, at 29, and are each composed of two arms 30 and 31 which are disposed at obtuse angles to one another and which are provided with rollers 32 at their free ends. Each of the enlargements 23 is provided with an inner edge 33 which bears against a roller 32 of an arm 30. The normal positions of the latch elements 21 are illustrated by the position of the one latch element 21, shown in Figure 2. The latch elements 21 in their normal retracted positions hold the levers 28 so that the arms 31 thereof will engage and retain the lower telescoping section 16 in an extended position.

A rack bar 34 is disposed in each of the channels 12 and is fastened to the outer face of a side 35 of a pillar 11. The teeth 36 of the rack bars 34 are inclined upwardly and the rack bars 34 extend from the lower end of the frame 10 upwardly at least to the level assumed by the rail 14 when the closure 13 is in a fully raised position.

From the foregoing it will be obvious that if as the closure 13 is moving downwardly in the opening of the frame 10 it strikes an obstruction in the frame opening, the telescoping section 16, which forms the lower and leading edge of the closure 13 when it is moving downwardly, will strike the obstruction and be thereby forced upwardly and inwardly relatively to the section 15 for rocking the arms 31 upwardly to thereby swing the arms 30 outwardly and downwardly to
A safety attachment for vertically sliding closures, comprising a vertically slideable closure having a bottom rail formed of telescoping sections, a frame slidably mounting said closure and provided with a rack bar, a pawl pivotally mounted on said sliding closure, a lever pivotally mounted, intermediate of its ends, in said telescoping sections and having one end engaging against the bottom section and the opposite end engaging against said pawl whereby said lever will be actuated when the last mentioned section is moved inwardly relatively to the other of said telescoping sections for actuating the pawl for moving it into engagement with the rack bar for supporting the closure relatively to the frame, said lever being movable independently of said last mentioned section and pawl, and said last mentioned section and pawl being movable independently of each other so that the last mentioned section can move outwardly of the other section while the pawl remains in latching engagement with the rack bar.

OLIVER D. KINGSLAND.