

April 5, 1932.

E. NEWCASTLE
FREIGHT CAR LADDER

1,852,430

Filed Feb. 9, 1931

2 Sheets-Sheet 1

Fig. 1.

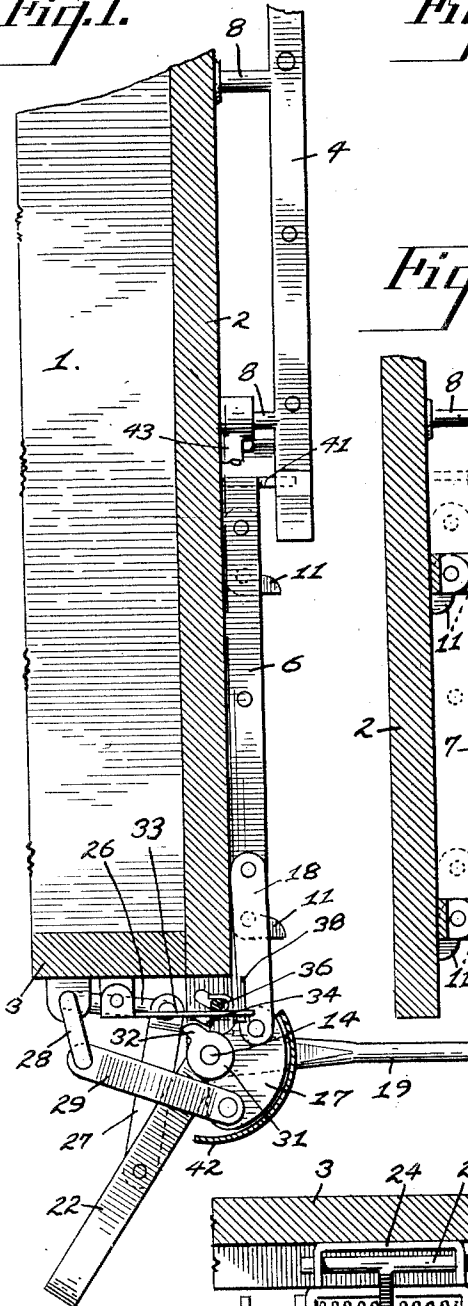


Fig. 2.

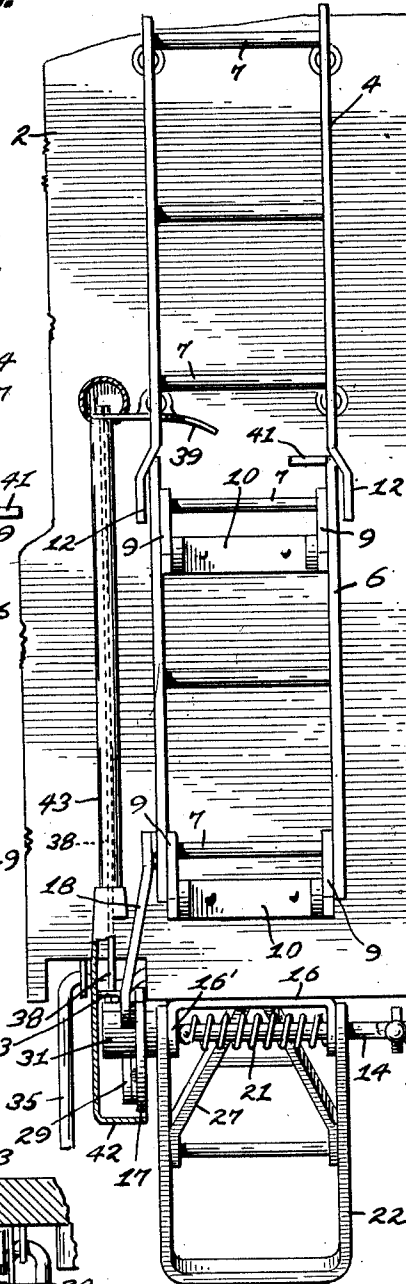


Fig. 3.

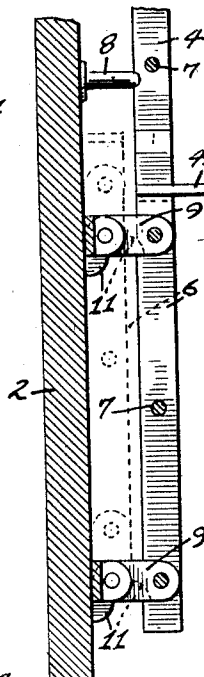
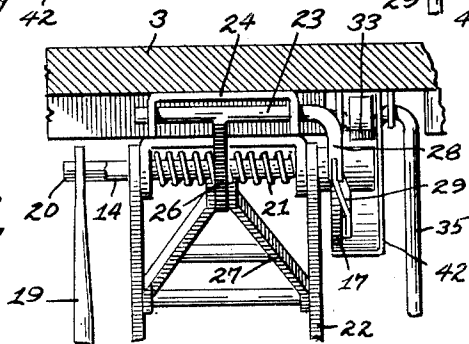


Fig.4.



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2 Sheets-Sheet 2

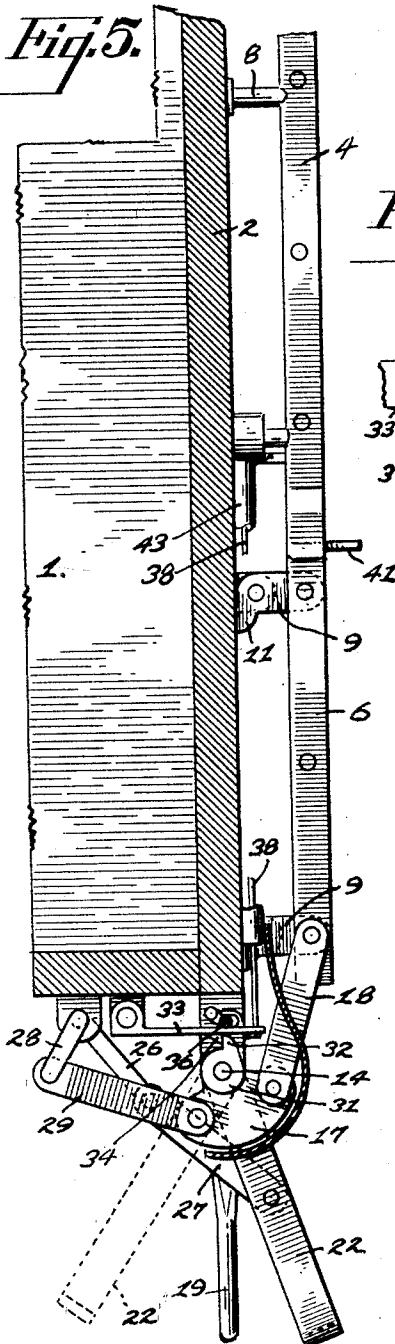


Fig. 7.

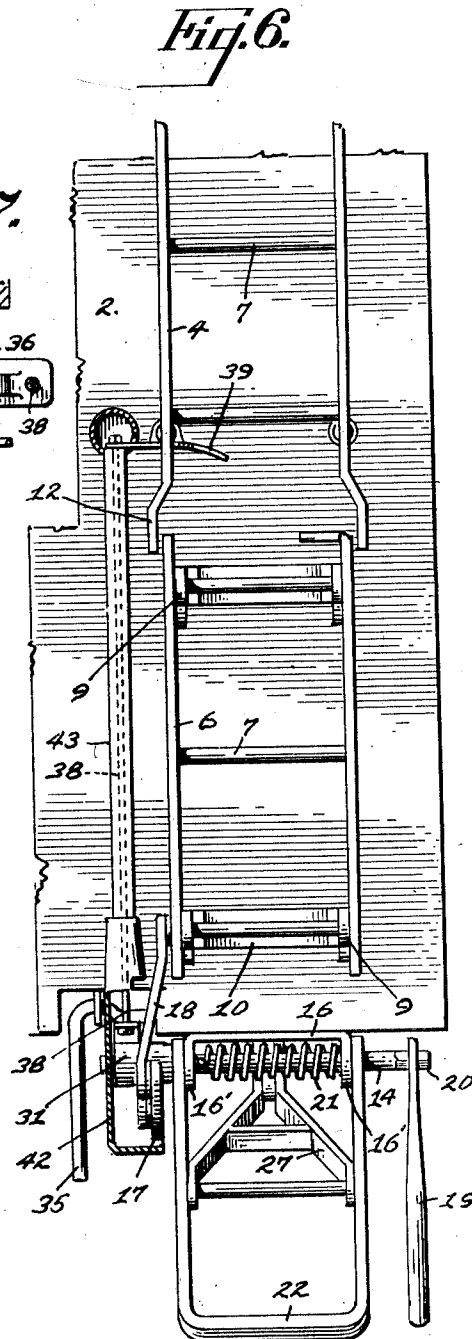
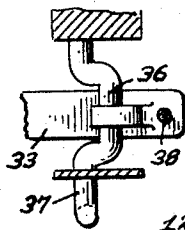
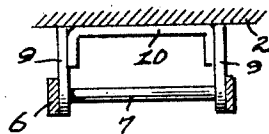


Fig. 8.



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FREIGHT CAR LADDER

Application filed February 9, 1931. Serial No. 514,494.

My invention relates to improvements in ladders for railway freight cars and the like, wherein a ladder section and an approach step are mounted upon the lower portion of a car wall, said ladder section and step being normally held in an inoperative position to prevent ascent thereon by unauthorized persons onto the car, and being movable to operative positions when required.

The primary object of my invention is to provide an improved ladder for railway freight cars and the like to normally hinder the ascent of unauthorized persons onto such cars.

Another object is to provide an improved ladder which is normally held in an inoperative position upon a wall and which may be readily moved to an operative position when required.

A further object is to provide an improved device of the character described provided with an approach step movable to operative and inoperative positions, the step being normally disposed in an inoperative position to prevent ascent onto the ladder.

Another object is to provide an improved ladder of the character described which may be readily operated either from above or below to move the ladder between its operative and inoperative positions in a prescribed manner.

A further object is to provide an improved device of the character described which may be effectually held in operative position when required, and which may be released and automatically returned to a normal inoperative position either from below or above.

A further object is to provide an improved device of simple and efficient construction and operation and which can be economically installed.

A still further object is to provide improved mechanism of the character described embodying improved details of construction and arrangement to facilitate the manufacture, installation, and operation of the device.

I accomplish these and other objects by means of the improved device disclosed in the drawings forming a part of the present application wherein like characters of reference

are used to designate similar parts throughout the specification and drawings, and in which:—

Fig. 1 is a broken vertical transverse section of a portion of a freight car showing, in side elevation, my improved ladder mechanism applied thereon, portions of the mechanism being broken away and shown in section;

Fig. 2 is a broken front elevation of the device as shown in Fig. 1, portions being broken away and shown in section;

Fig. 3 is a broken sectional view showing the manner in which the movable ladder section is movable from operative to inoperative positions;

Fig. 4 is a broken back view of the approach step and operating mechanism as mounted upon a freight car;

Fig. 5 is a view similar to Fig. 1, showing the ladder section and approach step moved to operative position;

Fig. 6 is a front elevation of the mechanism as shown in Fig. 5;

Fig. 7 is a broken plan view partly in section of the latch and its actuating crank shaft; and

Fig. 8 is a transverse sectional view of the movable ladder section.

Referring to the drawings, the numeral 1 is used to designate in general a railway freight car having a side wall 2 and floor 3 of the ordinary construction.

The wall 2 is provided with a ladder whereby persons may ascend to the top of the freight car or descend from the car to the ground, said ladder preferably comprising an upper portion 4 mounted in stationary position upon the upper portion of the wall, and a lower movable section 6 mounted upon the wall 2 below the stationary portion 4. The upper stationary portion of the ladder is provided with suitable rungs 7, and is mounted upon outwardly extending supporting standards 8 whereby the rungs are held in spaced relation to the wall 2. The lower or movable ladder section 6 is provided with similar rungs 7, and is mounted by means of links 9, each pivoted at one end upon the ladder section 6 in any convenient manner, and pivoted

at the opposite end upon suitable supporting members 10 secured upon the wall.

The movable section 6 is arranged to occupy a normal position with the side members and the rungs 7 in proximate relation to the wall 2 whereby the section is rendered inoperative for climbing onto or descending from the car. The links 9 are arranged to swing outwardly from a normal position in proximate relation to the sides of the ladder section 6, and against the wall 2, to an outwardly extending position, the links being of a length such that when extending outwardly from the wall, the section 6 will be disposed in an operative position substantially in the same plane with the stationary ladder section 4. The links 9 are provided with lugs 11 upon the inner ends thereof, said lugs being movable to seat against the wall 2 and limit the movement of the links 9 to their operative position. The upper end of the movable section 6 is arranged preferably to be received between offset extensions 12 formed upon the lower ends of the side members of the stationary section 4.

A shaft 14 is mounted adjacent to the lower edge of the wall 2 by means of a suitable mounting member 16 provided with bearing portions 16' engaging the shaft at points adjacent to opposite ends thereof. The shaft 14 is provided with a cam member 17 secured thereon. The member 17 is provided with a link 18 having one end pivotally connected to the member 17 and the other end pivotally connected to the lower end of one of the side members of the movable ladder section 6, the member 17 being movable by means of the shaft 14 to actuate the link 18 and thereby move the ladder section between its inoperative position as shown in Fig. 1 and its operative position as shown in Fig. 5 of the drawings. The relative positions of the ladder section 6 are shown in dotted and in full lines in Fig. 3 of the drawings. One end of the shaft 14 is squared or otherwise shaped as at 20 to receive a suitable turning implement 19. Spring means, such as a suitable torsion spring 21 is mounted in connection with the shaft 14 to normally turn said shaft and the member 18 to a position such that the ladder section 6 is moved and held in its inoperative position.

An approach step 22 is pivotally mounted below the lower end of the ladder section 6 at the bottom of the wall 2, the step preferably being mounted upon the shaft 14 in pivotally movable relation thereto. A crank member 23 is mounted in back of the step 22, preferably upon a suitable mounting member 24 secured upon the under side of the car floor 3. The member 23 is provided with an arm 26 connected to the step 22 by means of a connecting link or yoke member 27, the member 27 being pivotally connected at opposite ends to the arm 26 and to the step

22 respectively. The crank member 23 is also provided with an arm 28 connected to the cam member 17 by means of a link 29 whereby movement of the shaft 14 and cam member 17 will be imparted through the crank member 23 and yoke 27 to the step 22. The step member 22 is arranged to normally occupy a position extending inwardly under the car 1, as indicated in Fig. 1 of the drawings, and is movable by means of the cam 17 and the intermediate connections to an operative outwardly extending position as indicated in Fig. 5, when the shaft 14 is moved to actuate the ladder section 6 to its operative position.

The shaft 14 is provided with a stop member 31 having a detent 32 formed thereon. A latch member 33 is mounted adjacent to the stop member 31, said member 33 being provided with a latch portion 34 arranged to engage the detent 32 and prevent return movement of the member 31 and the shaft 14 after the shaft has been moved to actuate the ladder section 6 and step 22 to their operative positions. The latch member 31 is engaged by a crank 36 formed upon a shaft 37 extending transversely above the latch member, said shaft 37 being provided with an actuating lever 35. The crank 36 and lever 37 are so disposed that the action of gravity operates to turn the shaft to a normal position such that the crank 36 operates to press the latch member 33 downwardly to position the latch portion 34 in the path of the detent 32 whereby the detent will be automatically engaged and held against return after passing the latch portion 34. The latch member 33 is also engaged by an actuating rod 38 extending upwardly along the wall 2 at one side of the ladder section 6 to a point adjacent to the top of said ladder section. An actuating lever 39 is pivotally mounted adjacent to the top of the rod 38 and in engagement therewith whereby the rod 38 may be moved to actuate the latch member 33 to releasing position, as hereinafter more fully described.

The upper end of the movable ladder section 6 is provided with a foot piece 41 arranged to receive the weight of a person descending the ladder when the section 6 is in its inoperative position, whereby the weight of such person operates to swing the section 6 outwardly to operative position, the movement of the ladder being imparted through the link 18 and cam member 17 to the shaft 14.

The cam member 17, together with the latch member 33 and link 29 is covered by a suitable housing 42, and the rod 38 is enclosed within a tubular casing 43.

In operation, the shaft 14 is normally moved by the spring 21 to move the cam member 17 to the position indicated in Fig. 1 of the drawings, thereby causing the ladder section to be moved inwardly into proximate re-

lation to the wall 2, and at the same time moving the step 22 inwardly to its inoperative position, as indicated in Fig. 1 of the drawings. In this position, the step occupies a position inaccessible to a person seeking to ascend the ladder onto the car 1, and at the same time, the rungs 7 of the ladder section 6 are disposed in proximate relation to the wall so that they cannot be grasped or afford an adequate hand or foot hold by which a person could ascend onto the car.

When a trainman desires to ascend the ladder, the shaft 14 is turned, by means of the implement 19, to move the ladder section and step to operative positions. For this purpose, the ordinary brake club commonly carried by trainmen is preferably provided with a socket arranged to fit the squared end 20 of the shaft. The implement 19 is applied in a substantially horizontally disposed position so that the weight of the trainmen may be effectually applied through the leverage of the implement 19 to turn the shaft. As the shaft is turned, the link 18 is moved to swing the ladder section 6 outwardly to its operative position, and at the same time, the link 29 is moved to operate through the crank member 23 and link 27 to swing the step 22 outwardly to operative position, as shown in Fig. 5. As the shaft 14 is turned, the detent 32 is moved past the latch portion 34 of the member 33, the member 33 being raised against the force of gravity as the detent passes the portion 34, and being immediately moved downwardly by gravity to prevent return movement of the detent past the latch portion 34. The step 22 and ladder portion 6 will thus be held in an operative position whereby the trainman may readily ascend onto the car.

When the trainman has ascended until his weight is supported upon the stationary ladder section 4, he presses the lever 39 in a manner to move the same to actuate the rod 38 and thereby lift the latch member 33 to a releasing position out of engagement with the detent 32. As soon as the detent is released, the spring 21 operates to immediately return the shaft 14, and the connections actuated thereby, to normal inoperative position.

Should a trainman desire to descend from the top of the car 1, he descends in the ordinary manner until he can reach and apply his weight upon the foot piece 41, thereby pressing the ladder section 6 downwardly and outwardly to its operative position. The movement of the ladder section 6 actuates the cam member 17 and shaft 14 in the same manner as when the shaft 14 is turned by means of the implement 19, thereby causing the step 22 to be swung outwardly to operative position. Upon reaching the ground, the trainman raises the lever 35 sufficiently to move the crank 36 and latch member 33 engaged thereby to releasing position, thereby permitting the step and ladder section to be auto-

matically returned to their inoperative positions by the spring 21.

From the above explanation, it will be observed that trainmen may readily operate the ladder section 6 and step 22 either from below or from above as required, and that the section and step may be released either from above or below to permit the parts to be returned to normal inoperative position.

My device is primarily useful as a means to prevent unauthorized persons from mounting onto freight cars, and to guard against the theft of goods from freight cars while in transit. A common practice of freight car thieves is to swing aboard a freight train as it is leaving a station. They then break the seals and open a car door from the top of the car and swing into the opened car from above. The thieves then throw the goods out along the right of way to be collected by confederates or by the thieves themselves at a later time. My improved device renders it extremely difficult, if not impossible, for a thief to board a moving freight train, and thereby constitutes an effectual guard against the theft of goods in transit.

While I have illustrated what I now regard as the preferred embodiment of my invention, and have illustrated the device only as applied upon railway freight cars, the device is, of course, subject to modification in numerous details of construction and may be applied to other purposes without departing from the spirit of my invention. I therefore do not wish to be restricted to the specific construction and method of application herein disclosed, but desire to avail myself of all modifications which may fall within the scope of the appended claims.

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

1. A freight car ladder comprising a stationary section mounted upon a side of a freight car adjacent to the top thereof; a movable section mounted upon the wall below the stationary section; and means for moving said movable section between operative and inoperative positions relative to the wall of the freight car.

2. A freight car ladder comprising a stationary section mounted upon a side of a freight car adjacent to the top thereof; a movable section mounted upon the wall below the stationary section; and means operable from the top and from the bottom of said movable section to move the same between operative and inoperative positions relative to the wall of the freight car.

3. A freight car ladder comprising a stationary section mounted upon a side of a freight car adjacent to the top thereof; a movable section mounted upon the wall below the stationary section; means to normally hold the movable section in an inoperative

position in proximate relation to the wall; and means to move the movable section to an operative position in spaced relation to the wall.

4. A freight car ladder comprising a stationary section mounted upon a side of a freight car adjacent to the top thereof; a movable section mounted upon the wall below the stationary section; means to normally hold the movable section in an inoperative position in proximate relation to the wall; and means operable from the top and from the bottom of the movable section to move the same to an operative position in spaced relation to the wall.

5. A freight car ladder comprising a stationary section mounted upon a side of a freight car adjacent to the top thereof; a movable section mounted upon the wall below the stationary section; means to normally hold the movable section in an inoperative position in proximate relation to the wall; means operable from the top and from the bottom of the movable section to move the same to an operative position in spaced relation to the wall; retaining means to secure the movable section in operative position; and means to move the retaining means to a releasing position to release the movable section to its inoperative position.

6. A freight car ladder comprising a stationary section mounted upon a side of a freight car adjacent to the top thereof; a movable section mounted upon the wall below the stationary section; means to normally hold the movable section in an inoperative position in proximate relation to the wall; means operable from the top and from the bottom of the movable section to move the same to an operative position in spaced relation to the wall; retaining means to secure the movable section in operative position; and means independently operable from the top and from the bottom of the movable section to move the retaining means to a releasing position to release the movable section to its inoperative position.

7. The combination with a freight car, of a movable ladder section mounted upon a wall of the car; a step pivotally mounted at the lower edge of the wall in substantial alignment with the ladder section; means normally holding the ladder section and step in inoperative positions to prevent the ascent or descent of persons along the ladder section; and means to move the ladder section and step to operative positions.

8. The combination with a freight car, of a movable ladder section mounted upon a wall of the car, said section being provided with links pivoted at one end upon the ladder section and at the opposite end upon the wall to support the ladder in an inoperative position in proximate relation to the wall, the links being movable to support the section in

an operative position outwardly spaced from the wall; a shaft mounted below the lower edge of the wall and provided with means whereby the shaft may be rotated; an approach step pivotally mounted upon the shaft; a cam mounted upon the shaft; a link connected to the cam and to the ladder section to move the ladder between its operative and inoperative positions when the shaft and cam are moved through a portion of a revolution; and links connecting the cam with the approach step to move said step between operative and inoperative positions simultaneously with the movement of the ladder section to corresponding positions.

9. The combination with a freight car, of a movable ladder section mounted upon a wall of the car, said section being provided with links pivoted at one end upon the ladder section and at the opposite end upon the wall to support the ladder in an inoperative position in proximate relation to the wall, the links being movable to support the section in an operative position outwardly spaced from the wall; a shaft mounted below the lower edge of the wall and provided with means whereby the shaft may be rotated; an approach step pivotally mounted upon the shaft; a cam mounted upon the shaft; a link connected to the cam and to the ladder section to move the ladder between its operative and inoperative positions when the shaft and cam are moved through a portion of a revolution; links connecting the cam with the approach step to move said step between operative and inoperative positions simultaneously with the movement of the ladder section to corresponding positions; spring means to normally actuate the shaft and cam to move the ladder section and step to their inoperative positions; and latch means to releasably secure the shaft and cam against return movement when moved to actuate the ladder section and step to operative position.

10. The combination with a freight car, of a movable ladder section mounted upon a wall of the car, said section being provided with links pivoted at one end upon the ladder section and at the opposite end upon the wall to support the ladder in an inoperative position in proximate relation to the wall, the links being movable to support the section in an operative position outwardly spaced from the wall; a shaft mounted below the lower edge of the wall and provided with means whereby the shaft may be rotated; an approach step pivotally mounted upon the shaft; a cam mounted upon the shaft; a link connected to the cam and to the ladder section to move the ladder between its operative and inoperative positions when the shaft and cam are moved through a portion of a revolution; links connecting the cam with the approach step to move said step between operative and inoperative positions simultaneously with the

movement of the ladder section to corresponding positions; spring means to normally actuate the shaft and cam to move the ladder section and step to their inoperative positions.

5 latch means to releasably secure the shaft and cam against return movement when moved to actuate the ladder section and step to operative position; and means operable from the top and from the bottom of the ladder section to move the latch means to releasing position.

11. The combination with a freight car, of a movable ladder section mounted upon a wall of the car, said section being provided with
15 links pivoted at one end upon the ladder section and at the opposite end upon the wall to support the ladder in an inoperative position in proximate relation to the wall, the links being movable to support the section in an
20 operative position outwardly spaced from the wall; a shaft mounted below the lower edge of the wall and provided with means whereby the shaft may be rotated; an approach step pivotally mounted upon the shaft; a cam
25 mounted upon the shaft; a link connected to the cam and to the ladder section to move the ladder between its operative and inoperative positions when the shaft and cam are moved through a portion of a revolution; links connecting the cam with the approach step to
30 move said step between operative and inoperative positions simultaneously with the movement of the ladder section to corresponding positions; and means upon the upper end
35 of the ladder section for moving said ladder section to operative position from above.

In witness whereof, I hereunto set my signature.

EDWARD NEWCASTLE.