March 25, 1941. E. B. THOMPSON 2,236,019

HOIST

Filed March 25, 1939 3 Sheets-Sheet 1

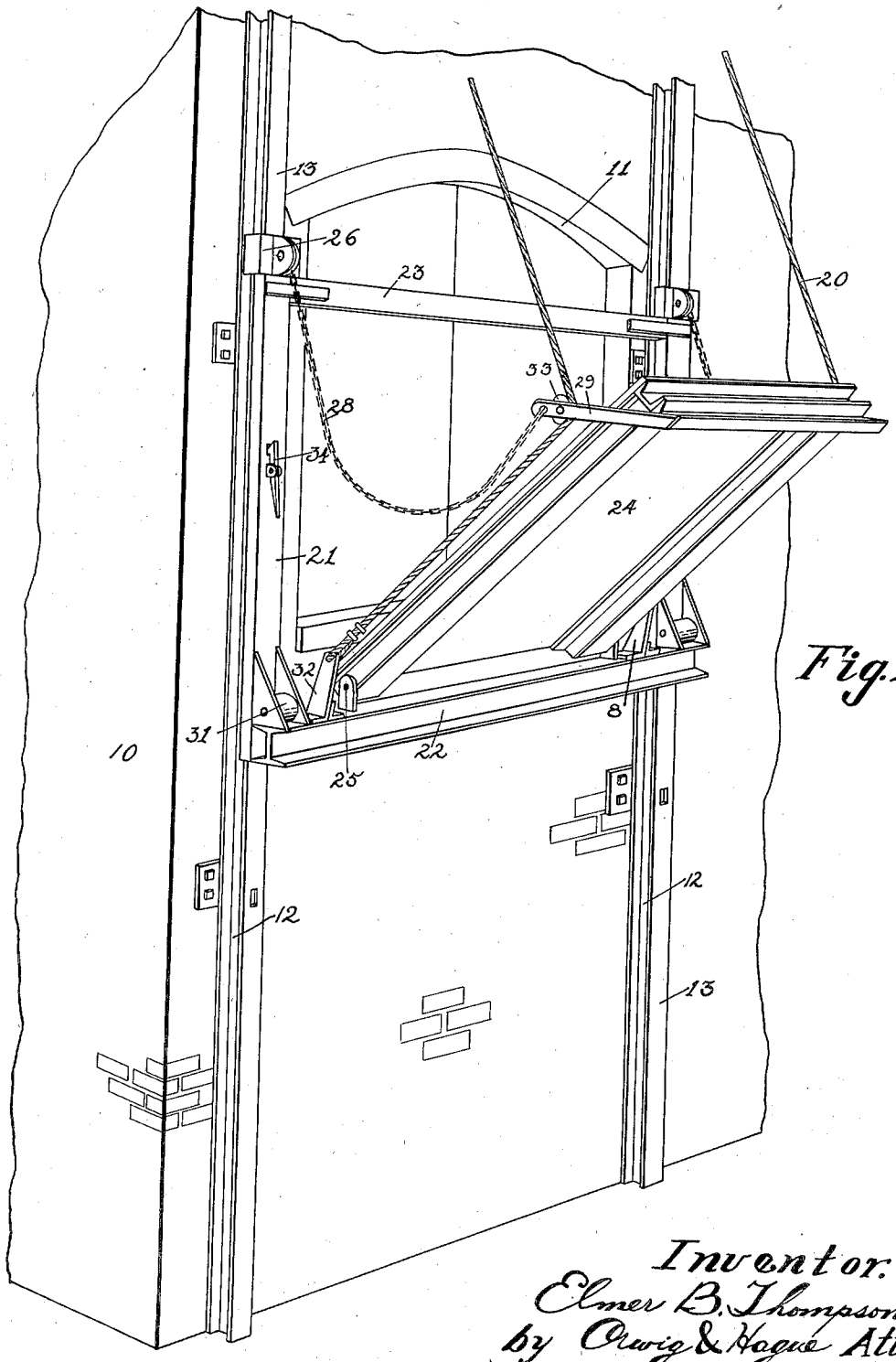

Fig. 1

Inventor:
Elmer B. Thompson
by Owrig & Hague Attys

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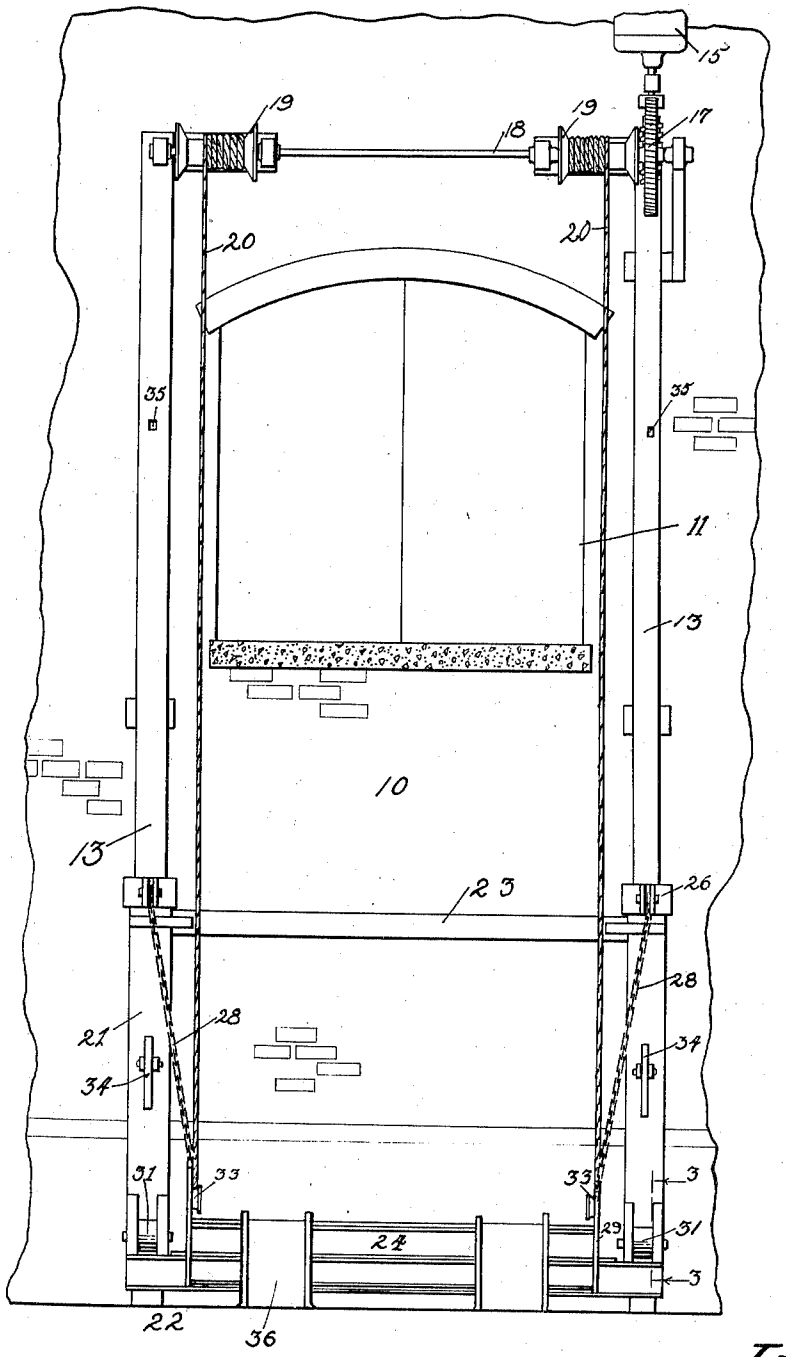

Fig. 2

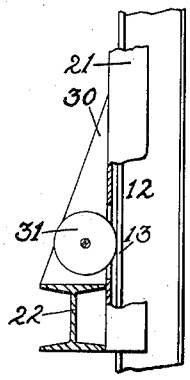

Fig. 3

Inventor.
Elmer B. Thompson
by Owen & Hague Att'ys

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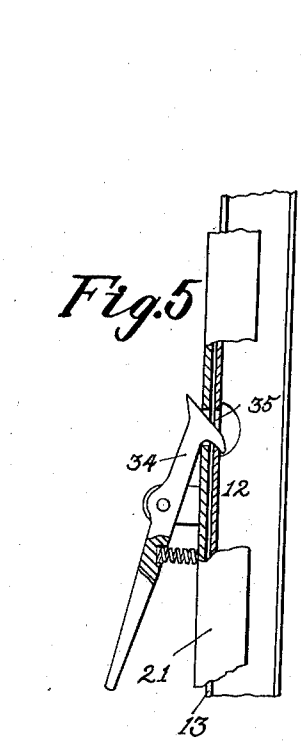

Fig.5

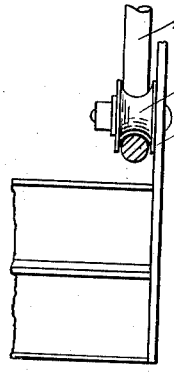

Fig.6

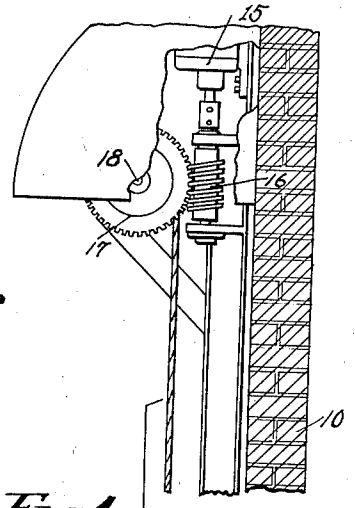

Fig.4

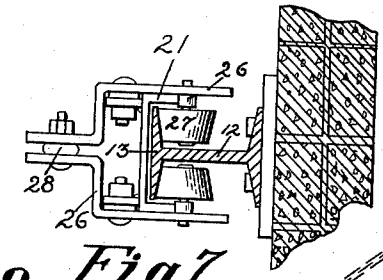

Fig.7

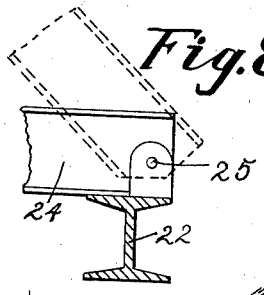

Fig.8

Inventor.

Elmer B. Thompson

by Orwig & Hague Attys

Patented Mar. 25, 1941

2,236,019

UNITED STATES PATENT OFFICE

2,236,019

HOIST

Elmer B. Thompson, Des Moines, Iowa, assignor to Globe Hoist Company, Des Moines, Iowa, a corporation of Iowa

Application March 25, 1939, Serial No. 264,146

8 Claims. (Cl. 187—6)

In some instances it is desirable to install a hoist on the exterior of a building close to a narrow passage or alley for hoisting to one of the upper floors of the building. Under some conditions it is not permissible to obstruct said passageway by any permanent structure nor for a greater length of time than that required to load and unload, and when the hoist is not in use it is desirable that it does not project over the passageway even from an upper floor of the building and thus obstruct light and visibility from adjacent buildings.

The object of my invention is to provide a hoist of simple, durable and inexpensive construction which may be easily and quickly installed upon and anchored to the outer wall of a building structure and which, when in its elevated folded position will not obstruct a passageway running under the hoist and which will not obstruct doorways leading into the building in line vertically with the hoist frame.

A further object is to provide a hoist of this class in which all of the weight of the hoist platform is on the outer side of the upright supporting and guiding rails of the hoist frame, with means for guiding the hoist in its up and down movements and minimizing the friction and binding caused by the tendency of the load to tilt the hoist outwardly at its upper portion.

A further object is to provide simple and durable means, readily and easily adjusted, for causing the hoist elevating and lowering cables to either elevate the hoist platform when in its horizontal position or to fold the hoist platform to a vertical position adjacent the side of the building and to securely hold it in that position during up and down movements of the hoist.

In the accompanying drawings Figure 1 shows a perspective view of my improved hoist applied to a building with the hoist adjacent an upper doorway in the building and shown in position with the hoist platform partly folded;

Figure 2 shows a front elevation of same with the hoist platform at its lower position;

Figure 3 shows an enlarged detail view, partly in section, illustrating the guide and anti-friction roller at the lower inner portion of the hoist platform;

Figure 4 shows an end elevation of my improved hoist;

Figure 5 shows an enlarged detail view, partly in section, illustrating the manually releasable latch for holding the hoist against downward movement;

Figure 6 shows an enlarged detail view illustrating the pulley for the hoist cable attached to the platform, on the line 6—6 of Figure 4;

Figure 7 shows an enlarged detail sectional view on the line 7—7 of Figure 4; and

Figure 8 shows an enlarged detail view, partly in section, and illustrating the hinged connection of the hoist platform. The dotted lines show the hoist platform partially elevated.

The building structure to which my improved hoist is shown in the drawings to be attached is indicated generally by the reference numeral 10, and a doorway or window on an elevated floor of the building is indicated generally by the reference numeral 11.

Attached to the building 10 are two upright supporting and guiding rails. These are preferably of the construction shown in Figure 7, in which the web of the rail is indicated by the reference numeral 12, and it having an outer flange 13 which is beveled from the web laterally and outwardly. These rails are spaced apart far enough to permit an automobile or the like to be passed through between them into an upper story doorway. Mounted upon the upper end portions of the rails is a motor 15 for operating the worm gear 16, which in turn operates a gear 17. This gear 17 is fixed to a shaft 18, and on this shaft are two drums, 19, one at each end. Fixed to and wound upon these drums are two cables 20.

The hoist frame comprises two uprights 21 with a cross member 22 at the bottom and a cross member 23 at the top for connecting them and forming a rigid frame structure. Pivoted to the said upright frame is the hoist platform, which is indicated generally by the reference numeral 24, and made of any ordinary construction. This platform is hinged at 25 to the lower portion of the upright frame to move from a horizontal position to a vertical position.

For guiding and supporting the hoist upon the rails I provide a yoke 26, as shown in Figure 7, to extend on opposite sides of the rail 21. Pivoted to each side of the yoke 26 is an anti-friction roller 27 tapered to correspond with the inclination of the flange member 13. At the outer end of the yoke a chain 28 is fixed, and this chain extends downwardly and outwardly and is attached at its lower end to a bar 29 fixed to the platform 24 to normally hold the platform in position at right angles to the upright frame and to permit the platform to be folded upwardly. A similar chain construction is applied to the other end of the platform.

At the lower portion of the upright hoist frame are brace members 30 adjoining the sides of the rails 21, and having mounted therebetween an anti-friction roller 31 to engage the outer face of the rail 13, as shown in Figure 3.

At the outer portion of the platform on each side is a bracket 32 in which is mounted a grooved pulley 33, and the cables 20 are secured to the inner portion of the platform.

For securing the hoist in any desired position of its adjustment I have provided a spring-ac-

tuated latch 34, shown in Figure 5, to enter an opening 35 in the rail 21. The head of this latch has its inner end inclined downwardly and its top surface upwardly and outwardly so that when the hoist is moved upwardly, the latch will be released automatically, and when the latch reaches the next one of the openings 35 it will automatically enter it and prevent downward movement of the hoist.

In my improved hoist where all of the weight of the platform and its load is on one side of the upright supporting guide rails there is a tendency for the upper end of the hoist frame to move outwardly from the rails, and to prevent this outward movement and minimize friction and the binding effect which is caused by the weight, I have provided the tapered rollers 27 engaging the inner faces of the rail flange 13, thus preventing such outward movement and minimizing the friction. The tapering of the rollers 27 tends to keep the yoke 26 centered to the rail 12 and at the bottom of the hoist frame this friction and binding effect is minimized by the rollers 31 which engage only the outer surface of the rails.

When it is desired to fold the platform upwardly the cables 29 are slackened and then passed around the pulleys 33, as shown in Figure 1. Then the motor is operated to move the cables upwardly and the platform is moved on its hinges to an upright position.

The rollers 27 tend to sustain the hoist against outward tension, and the rollers 31 tend to sustain the hoist against compression toward the rails. The chains 28 form tension members for supporting the platform.

When the hoist is designed for use as an automobile hoist, I attach ramps 36 to the hoist platform.

In practice, and to illustrate the advantages of my lift or hoist, I have installed one upon a hotel building in which the convention room was located upon an upper story and the elevators of the building could not receive an automobile. During a former automobile dealers' convention the hotel constructed a wooden runway through the lobby and up the wide stairway to the convention hall on the second floor. Since my hoist has been installed, automobiles are driven into the narrow alley at the side of the building, and upon the hoist platform, and are moved into the convention hall through the large window opening, thereby saving a vast amount of expense and interference with the hotel business. In places where automobile storage space is limited, my hoist may be installed and an automobile parked thereon in its elevated position.

I claim as my invention:

1. A hoist designed for use on the exterior of a building which has a roadway immediately adjacent its side and having a doorway leading into the building to a floor above the main floor of the building, said hoist comprising two upright guiding rails spaced apart from each other and having an unobstructed passageway between them, an upright hoist frame, a horizontal hoist platform pivotally secured to the upright hoist frame at its lower end and extended outwardly from one side thereof so that substantially all of the weight of the platform is on one side of the upright hoist frame, means at the lower portion of the hoist frame to engage said upright guiding rails to prevent inward movement of the hoist frame, means at the upper portion of the hoist frame to engage said uprights and prevent outward movement of the upper portion of the hoist frame, and means for elevating and lowering the hoist frame, said upright hoist frame having an opening above the platform to permit articles thereon to be moved to the interior of the building.

2. A hoist designed for use on the exterior of a building which has a roadway immediately adjacent its side and having a doorway leading into the building to a floor above the main floor of the building, said hoist comprising two upright supporting and guiding rails spaced apart from each other and having an unobstructed passageway for merchandise between them, an upright hoist frame, a horizontal hoist platform pivotally secured to the upright hoist frame at its lower end and extended outwardly from one side thereof so that substantially all of the weight of the platform is on one side of the upright hoist frame, anti-friction rollers at the lower portion of the hoist frame to engage said upright supporting and guiding rails to prevent inward movement of the hoist frame and to minimize friction caused by pressure of the weight of the hoist toward said uprights, and rollers at the upper portion of the hoist frame to engage said uprights and prevent outward movement of the upper portion of the hoist frame and to minimize friction, and means for elevating and lowering the hoist frame, said upright supporting and guiding rails being formed with laterally extending flanges at their outer faces, and the rollers at the upper portion of the hoist frame being in engagement with the inner faces of said flanges, and upright hoist frame having an opening above the platform to permit articles thereon to be moved to the interior of the building.

3. A hoist designed for use on the exterior of a building which has a roadway immediately adjacent its side and having a doorway leading into the building to a floor above the main floor of the building, said hoist comprising two upright supporting and guiding rails spaced apart from each other and having an unobstructed passageway for merchandise between them, an upright hoist frame, a horizontal hoist platform pivotally secured to the upright hoist frame at its lower end and extended outwardly from one side thereof so that substantially all of the weight of the platform is on one side of the upright hoist frame, anti-friction rollers at the lower portion of the hoist frame to engage said upright supporting and guiding rails to prevent inward movement of the hoist frame and to minimize friction caused by pressure of the weight of the hoist toward said uprights, and rollers at the upper portion of the hoist frame to engage said uprights and prevent outward movement of the upper portion of the hoist frame and to minimize friction, means for elevating and lowering the hoist frame, said rails being formed with a central flange and an outer flange extended laterally in both directions, a guide frame fixed to the upper portion of each side of said hoist frame and extended across opposite sides of the adjacent rail, and said guide rollers at the upper portion of the hoist frame being carried by said guide frame and in engagement with the inner face of the said outer flange, said upright hoist frame having an opening above the platform to permit articles thereon to be moved to the interior of the building.

4. A hoist designed for use on the exterior of

a building which has a roadway immediately adjacent its side and having a doorway leading into the building to a floor above the main floor of the building, said hoist comprising two upright supporting and guiding rails spaced apart from each other and having an unobstructed passageway for merchandise between them, an upright hoist frame, a horizontal hoist platform pivotally secured to the upright hoist frame at its lower end and extended outwardly from one side thereof so that substantially all of the weight of the platform is on one side of the upright hoist frame, anti-friction rollers at the lower portion of the hoist frame to engage said upright supporting and guiding rails to prevent inward movement of the hoist frame and to minimize friction caused by pressure of the weight of the hoist toward said uprights, and rollers at the upper portion of the hoist frame to engage said uprights and prevent outward movement of the upper portion of the hoist frame and to minimize friction, means for elevating and lowering the hoist frame, said rails being formed with a central flange and an outer flange extended laterally in both directions, a guide frame fixed to the upper portion of each side of said hoist frame and extended across opposite sides of the adjacent rail, and said guide rollers at the upper portion of the hoist frame being carried by said guide frame and in engagement with the inner face of the said outer flange, the inner surfaces of said outer flanges of said rails being beveled inwardly toward the central flange and said rollers in engagement therewith being correspondingly beveled to resist lateral movement thereof, said upright hoist frame having an opening above the platform to permit articles thereon to be moved to the interior of the building.

5. A hoist designed for use on the exterior of a building which has a roadway immediately adjacent its side and having a doorway leading into the building to a floor above the main floor of the building, said hoist comprising two upright supporting and guiding rails spaced apart from each other and having an unobstructed passageway for merchandise between them, an upright hoist frame, a horizontal hoist platform pivotally secured to the upright hoist frame at its lower end and extended outwardly from one side thereof so that substantially all of the weight of the platform is on one side of the upright hoist frame, anti-friction rollers at the lower portion of the hoist frame to engage said upright supporting and guiding rails to prevent inward movement of the hoist frame and to minimize friction caused by pressure of the weight of the hoist toward said uprights, and rollers at the upper portion of the hoist frame to engage said uprights and prevent outward movement of the upper portion of the hoist frame and to minimize friction, means for elevating and lowering the hoist frame, and guides at the lower portion of the upright hoist frame to overlap the sides of said rails to limit lateral movement of the hoist frame, said upright hoist frame having an opening above the platform to permit articles thereon to be moved to the interior of the building.

6. A hoist designed for use on the exterior of a building which has a roadway immediately adjacent its side and having a doorway leading into the building to a floor above the main floor of the building, said hoist comprising two upright supporting and guiding rails spaced apart from each other and having an unobstructed passageway for merchandise between them, an upright hoist frame, a horizontal hoist platform secured to the upright hoist frame at its lower end and extended outwardly from one side thereof so that substantially all of the weight of the platform is on one side of the upright hoist frame, anti-friction rollers at the lower portion of the hoist frame to engage said upright supporting and guiding rails to prevent inward movement of the hoist frame and to minimize friction caused by pressure of the weight of the hoist toward said uprights, and rollers at the upper portion of the hoist frame to engage said uprights and prevent outward movement of the upper portion of the hoist frame and to minimize friction, and means for elevating and lowering the hoist frame, the connection between the upright lift frame and the platform being pivotal to permit the platform to be moved to upright position adjacent the upright frame, said means for elevating and lowering the lift including a drum at the upper portion of said rails, a cable on the drum and attached to the hoist, and a pulley carried by the hoist and having its frame open at one side whereby the cable may be conveniently passed around the pulley or disconnected from the pulley, and whereby the hoist may be raised and lowered by the cable or the hinged platform may be moved by the cable to its upright position.

7. A hoist designed for use on the exterior of a building which has a roadway immediately adjacent its side and having a doorway leading into the building to a floor above the main floor of the building, said hoist comprising two upright guiding rails, spaced apart from each other and having an unobstructed passageway between them, an open upright hoist frame, a horizontal hoist platform pivotally secured to the upright hoist frame at its lower end and extended outwardly from one side thereof so that substantially all of the weight of the platform is on one side of the upright hoist frame, drums at the outer upper end of said rails, cables on said drums having their free ends attached to the inner end of said platform, pulleys on the platform adjacent to its outer end, said cables being adapted to be extended under said pulleys to first elevate the platform from a horizontal position to a vertical position by rotating the drums, then elevating the platform and the lifting frame after the platform has been elevated.

8. A hoist designed to be used on the exterior of a building, comprising two upright supporting and guiding rails spaced apart from each other and having an unobstructed passage for merchandise between them, an upright hoist frame, a horizontal hoist platform pivotally secured to the upright hoist frame at its lower end, drums at the upper portion of said rails, a cable on each of said drums having its free end attached to the inner end of said platform, a pulley on each end of the outer edge of said platform, said cables being adapted to be extended over corresponding ones of said pulleys to first elevate the platform by rotating the drums and elevating the upright hoist frame after the platform is elevated.

ELMER B. THOMPSON.