June 21, 1938. W. F. J. WEITZENBERG 2,120,997

BRAKING DEVICE

Filed July 27, 1937

FIG. 2.

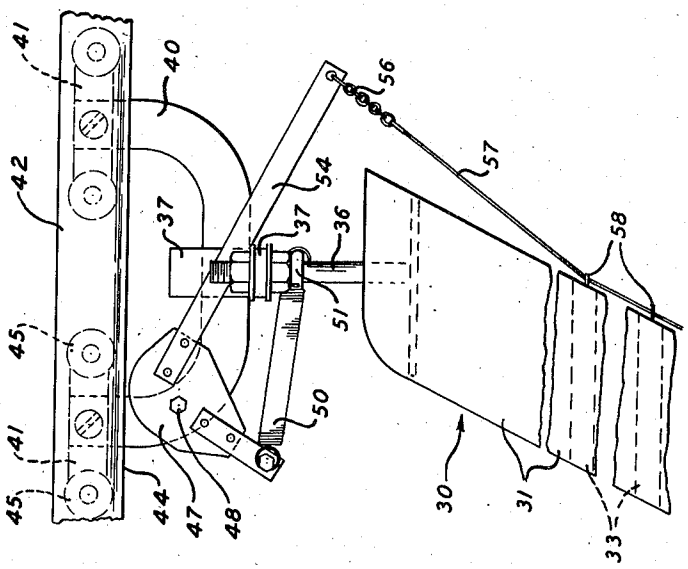


FIG. 3.

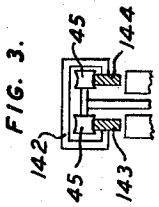


FIG. 1.

INVENTOR
W. F. J. WEITZENBERG

BY

E. R. Nowlan
ATTORNEY

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BRAKING DEVICE

William F. J. Weitzenberg, Maplewood, N. J., assignor to Western Electric Company, Incorporated, New York, N. Y., a corporation of New York

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8 Claims. (Cl. 188—42)

This invention relates to braking devices and more particularly to a braking device for a rolling ladder.

A common type of rolling ladder has its upper end supported by a carriage running by means of wheels or rollers or the like on a substantially horizontal rail located parallel to a series of bins, shelves, or the like, for access to which the ladder is to be used. Frequently the bottom of the ladder is also provided with wheels, casters or the like, which may run directly on the floor or on a rail mounted thereon. In a well known class of the above type of ladders the supporting carriage runs preferably inside of a tubular rail, which houses the carriage as a protection against dust and which is longitudinally slotted along its under side for admission of a supporting member to connect the carriage and ladder.

In a similar and well known related class of such ladders the carriage runs on a pair of parallel rails. It is frequently preferred to provide also some form of releasable stop or brake means between the ladder and the rail whereby accidental movement of the ladder while in use may be substantially prevented.

An object of the present invention is to provide a brake means for a rolling ladder supported by a carriage running within a tubular slotted rail or on a pair of parallel rails, which shall be simple, reliable and substantially equally operative between the ladder and each of the two carriage supporting elements.

With the above and other objects in view, one embodiment of the invention may comprise carriage means for a ladder running on two parallel supporting rails or the like, two independent brake means carried by the ladder and independently effective upon the two rails respectively.

Other objects and features of the invention will appear from the following detailed description of one embodiment thereof taken in connection with the accompanying drawing in which the same reference numerals are applied to identical parts in the several figures and in which—

Fig. 1 is a broken front view, partly in section, of a rolling ladder support and brake constructed in accordance with the invention;

Fig. 2 is a corresponding side view thereof, and

Fig. 3 is a partial view corresponding to Fig. 1 of a modified form.

In the embodiment disclosed in Figs. 1 and 2, a ladder generally indicated at **30** comprises sides **31** and **32**, rungs or steps **33**, **33**, ordinarily of wood but of any suitable material, and a top brace **34**, preferably of metal. A pair of pillars **35** and **36**, mounted on the brace **34** and extending upwardly, carry right angled connecting members **37** and **38** secured by one or more bolts **39** to a U-shaped laminar support **40**. Each of the upturned ends of the support **40** is secured to a carriage **41** positioned within a tubular rail **42**. The rail **42** is longitudinally slotted along its under side to admit the support **40**, and the lips of the slot are everted to present parallel downwardly facing edges **43** and **44**.

Each carriage **41**, as disclosed, is provided with two pair of rollers or wheels **45**, **45**, which run on the inner surface of the bottom of the tubular rail **42** beside the slot in the rail. The rail is supported by any suitable means not shown.

A pair of brake shoes **46** and **47** is supported pivotally on a bolt, pin or the like **48**, to lie parallel against and to be pivotable with respect to the support **40**. Each shoe is forced counterclockwise (Fig. 2), independently of the other shoe, by means of a tension spring **49** or **50** respectively, secured at one end to the lower portion of the shoe as shown, and at the other end to a cross bar **51** mounted preferably on the pillars **35** and **36**.

Each shoe also has an operating or actuating lever **53** or **54** respectively, rigidly secured to its upper portion, the outer ends of these levers extending out behind the top of the ladder, and there having a short length of chains **55** or **56** respectively attached thereto. The free ends of the chains **55** and **56** are brought together and attached to a cord, rope, wire or the like **57** which passes down the rear side of the ladder through a series of screw eyes, staples or the like **58**, **58** on the rear edges of the treads **33** of the ladder.

The bottom end of the ladder may be thought of as provided with rollers, wheels, casters or the like, not shown, to run on the floor or on a suitably supported rail or rails.

The shoes **46** and **47** are preferably formed with a cam or jamming curve on their upper edges, and are so formed and proportioned that, normally, the springs **49** and **50** will press these cams against the down facing edges **43** and **44** of the rail **42**, thereby substantially preventing motion of the ladder along the rail. Such motion is substantially absolutely prevented toward the rear of the ladder with the parts disposed and arranged as shown, since such motion will tend to jam the brake shoes more and more tightly against the rail; while in the other direction, motion is only inhibited by the frictional effect of the shoes under the tension of the springs.

To a person on the ladder, who stands, nor-

mally, on the sloping left side (Fig. 2), it is more important to prevent accidental motion of the ladder to the rear, i. e. to the right in Fig. 2, since such motion tends to run the ladder out from under him; while accidental motion to the left, if not too severe, is harmless. Hence the importance of the action as described.

When it is desired to move the ladder freely, a pull on the cord **57** draws the brake shoes out of contact with the rail.

Since the shoes are completely independent of each other each is free to exert its full effect without being affected by the position of the other regardless of faults in parallelism of the edges **43** and **44** of the rail. Thus even if these rail edges are worn or distorted, the total effectiveness of the brake system remains substantially the same, and there will be no "tight" or "loose" spots along the path of the ladder, of which the former are annoying and the latter are dangerous.

As indicated in Fig. 3, a closed tubular rail is not necessary. Here two parallel rails **143** and **144** interconnected at intervals by spaced supporting members **142** may be used equally well so far as effectiveness of the brake is concerned.

The embodiments of the invention herein disclosed are merely illustrative and may be widely modified and departed from without departing from the spirit and scope of the invention as pointed out in and limited only by the appended claims.

What is claimed is:

1. In a rolling ladder system comprising a ladder, a pair of parallel supporting members, carriage means running on the supporting members, and means to connect the ladder to the carriage means, brake means to prevent motion of the ladder along the supporting members and comprising two brake members mounted on the ladder and independent of each other and which coact respectively with the two supporting members, two means coacting respectively and independently with the two brake members to force the same yieldingly into contact with the supporting members, and means operable to withdraw the brake members from the supporting members.

2. In a rolling ladder system comprising a ladder, a pair of parallel supporting members, carriage means running on the supporting members, and means to connect the ladder to the carriage means, brake means to prevent motion of the ladder along the supporting members and comprising two brake members pivotally mounted on the ladder and independent of each other and which coact respectively with the two supporting members, two spring means coacting respectively and independently with the two brake members to force the same to rotate yieldingly into contact with the supporting members, and means operable to withdraw the brake members from the supporting members.

3. In a rolling ladder system comprising a ladder, a pair of parallel supporting members, carriage means running on the supporting members, and means to connect the ladder to the carriage means, brake means to prevent motion of the ladder along the supporting members and comprising two brake members pivotally mounted on the ladder and independent of each other and which coact respectively with the two supporting members, two spring means coacting respectively and independently with the two brake members to force the same to rotate yieldingly into contact with the supporting members, and single means operable to withdraw both of the brake members from the supporting members.

4. In a rolling ladder system comprising a ladder, a pair of parallel rails, a carriage on the rails, and means to connect the ladder to the carriage, brake means to prevent motion of the ladder along the rails and comprising a pair of pivotal brake shoes mounted on the ladder and movable independently of each other to engage each with one of the rails, a spring for each shoe to press the same into engagement with its rail independently of the other shoe, and means actuable to retract the shoes from the rails.

5. In a rolling ladder system comprising a ladder, a pair of parallel rails, a carriage on the rails, and means to connect the ladder to the carriage, brake means to prevent motion of the ladder along the rails and comprising a pair of pivotal brake shoes mounted on the ladder and movable independently of each other to engage each with one of the rails, a spring for each shoe to press the same into engagement with its rail independently of the other shoe, and common means manually actuable to retract the shoes from the rails.

6. In a rolling ladder system comprising a ladder, a pair of parallel rails, a carriage on the rails, and means to connect the ladder to the carriage, brake means to prevent motion of the ladder along the rails and comprising a pair of pivotal brake shoes mounted on the ladder and movable independently of each other to engage each with one of the rails, a spring for each shoe to press the same into engagement with its rail independently of the other shoe, and means actuable to retract the shoes from the rails, each brake shoe being formed with a cam surface to contact its rail of such form as to jam against the rail in one direction and not in the other.

7. In a rolling ladder system comprising a ladder, a rail, a carriage on the rail, and means to connect the ladder to the carriage, brake means to prevent motion of the ladder along the rail and comprising a pivotal brake shoe mounted on the ladder and formed with a cam surface to contact with the rail, the cam surface being formed to jam against the rail in one direction and not in the other.

8. In a rolling ladder system comprising a ladder, a rail, a carriage on the rail, and means to connect the ladder to the carriage, brake means to prevent motion of the ladder along the rail and comprising a pivotal brake shoe mounted on the ladder and formed with a cam surface to contact with the rail, the cam surface being formed to jam against the rail in one direction and not in the other, means to press the brake shoe against the rail, and means to retract the brake shoe from the rail.

WILLIAM F. J. WEITZENBERG.