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LUBRICATOR FOR ELEVATOR AND WEIGHT GUIDES

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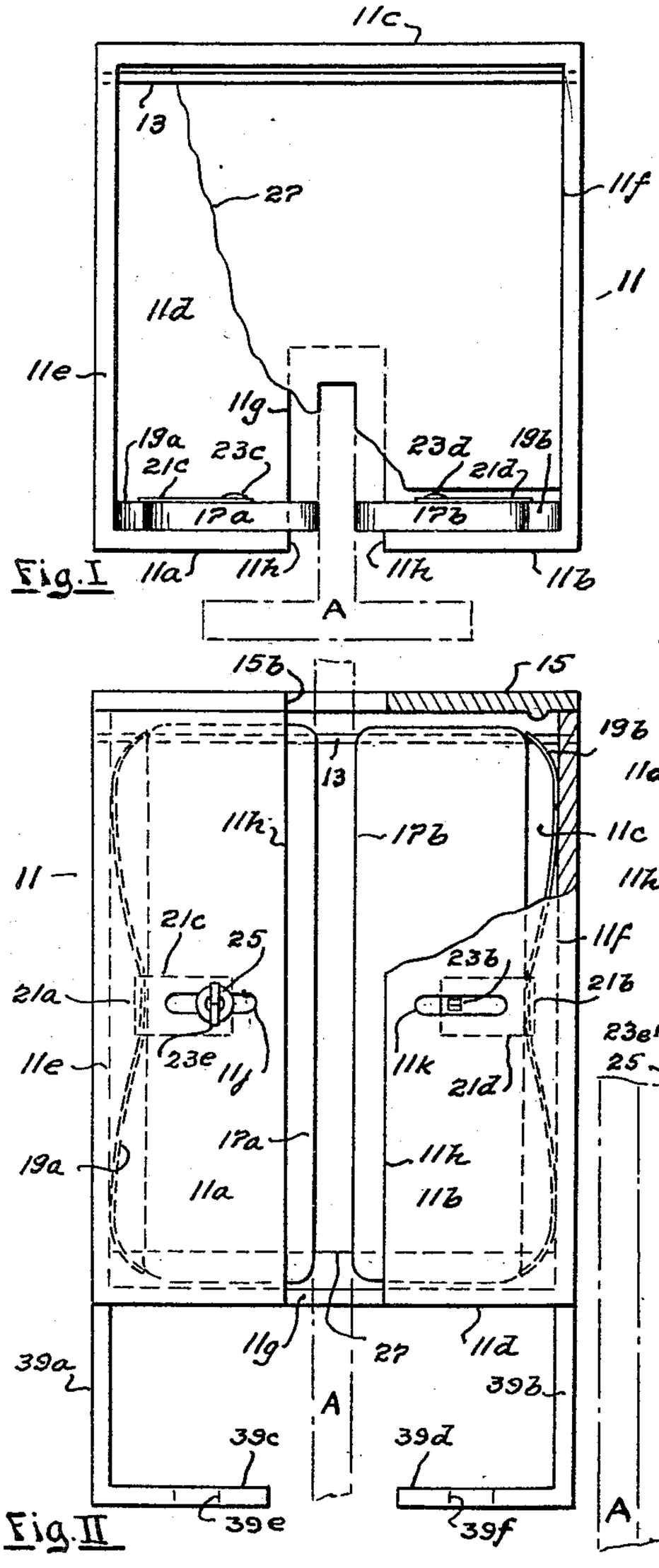

Fig. I

Fig. II

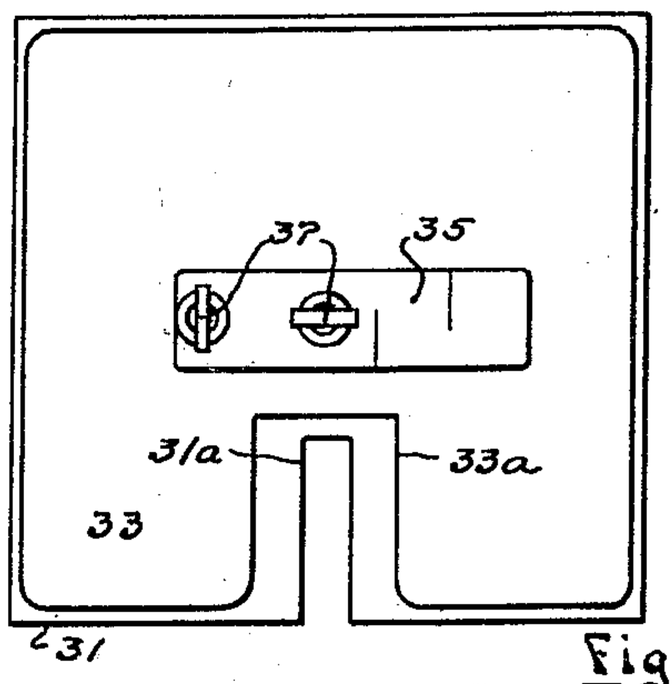

Fig. IV

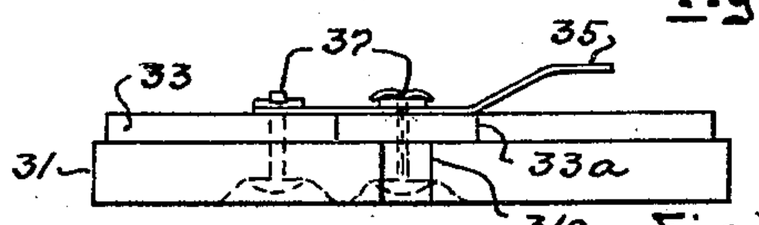

Fig. V

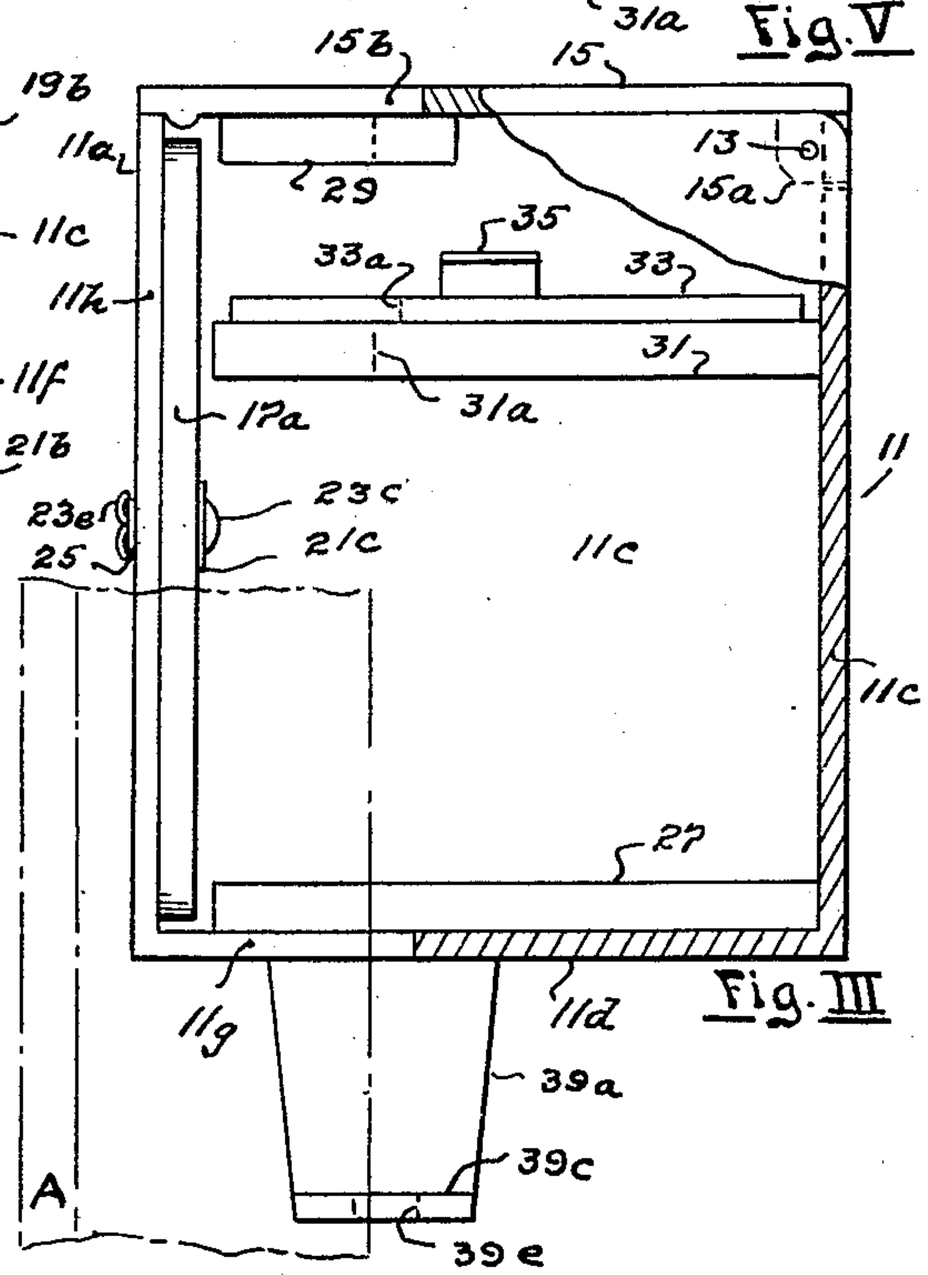

Fig. III

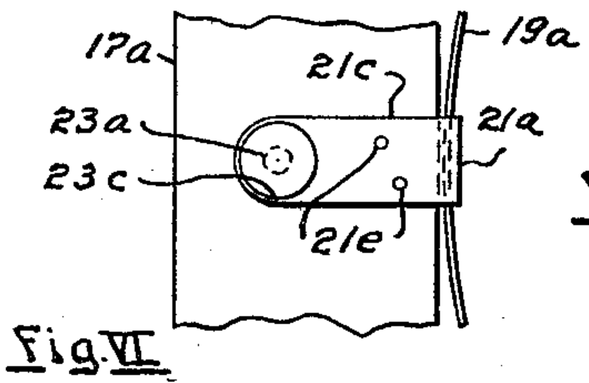

Fig. VI

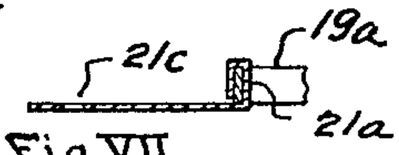

Fig. VII

Inventor
YVAN ZENON

By his Attorney
H C Marlson

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UNITED STATES PATENT OFFICE

YVAN ZÉNON, OF ROSEDALE, NEW YORK

LUBRICATOR FOR ELEVATOR AND WEIGHT GUIDES

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The present invention has reference to devices for lubricating the guide rails of elevators and also for the counterweights thereof, and it appertains more especially to lubricators employing grease or like semi-fluid lubricants.

The main object of the invention is the production of an improved device of the character described, which will function properly even though disalignment exists between guide members wherewith it coacts.

Another object is the provision, in a device of the nature set forth, of yieldably maintained grease retaining elements arranged to continuously contact with the guide members no matter if the same are out of plumb.

A further object is to provide a device of the class mentioned with spring urged grease retaining elements of softer material than the guide members upon the opposite sides whereof they bear, so as to automatically take up their own wear and follow irregularities occurring in and between the members and without leaving any marks on the latter.

Still another object consists in providing a device of the type specified with a gravity actuated follower for pressing the lubricant against the sides of the guide member, while allowing the grease retaining elements unrestricted freedom of operation.

A still further object is to produce a device of the kind referred to, so constructed and arranged that the parts thereof which are subjected to wear, can, when worn out, be quickly replaced by new ones.

A general object resides in providing a device for the purpose in view which shall be composed of few, simple, light and strong parts, requiring a minimum of machine work and attention; durable and readily kept in working order; convenient to put up and inspect, and amenable as well to economical manufacture.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists of the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims and illustrated on the annexed drawing, wherein like parts are designated by the same reference characters thruout the several views.

In the said drawing:—

Figure I is a top plan view of a lubricator embodying one form of the invention, a certain part being omitted and another part broken away to show those located below;

Fig. II is a front view, partly in section, of the lubricator represented by the first named figure, a certain part being broken away to show rearwardly located elements;

Fig. III is a side view, partly in section, of the structure illustrated by the preceding figures;

Fig. IV is a top plan view, corresponding to Fig. I, of a follower coacting with the interior of the lubricator;

Fig. V is a front view of the follower depicted in the last mentioned figure;

Fig. VI is a fragmentary rear side view of a grease retaining gate and actuating spring; and

Fig. VII is a sectional plan view of a keeper for the aforesaid spring.

Briefly outlined, the invention as it exists in the embodiment thereof herein exemplified, comprises an approximately cube-shaped grease container having a cover hinger thereto. The latter as well as the front, side and bottom of this container are formed with a gap affording a clearance space around the web portion of a guide rail received therewithin. Held in slidable relation to the inner faces of the container's front side, is a pair of grease retaining gates, one on each side of the aforementioned gap. These gates are spring urged so as to bear upon opposite sides of the guide rail's web. A weighted pad constituting a follower is made to rest on top of the grease and serves to force the same against the guide rail, still without interfering with the movements of the gates. Means are provided for attaching the container with its appurtenances to a primary support, such as the top of an elevator cage or the counterweight therefor.

Obviously, the greatest benefit will be derived from the invention by using it in its en-

tirety after the manner hereinabove expressed, although it may be noted that an operative device of acceptable design may be produced by employing a less number of parts, with correspondingly diminished advantages. Further, it will be observed by experts familiar with inventions of analogous import, that the combined gates, springs, follower, and attaching means herein disclosed, are susceptible of various modifications having the same end in view. Therefore, let it be understood, that the annexed drawing, is offered by way of example only, and is not put forth as representing the sole means of reducing the invention to practice.

As illustrated on the said drawing, the device constituting the present exemplification of the invention, includes a rectangular, box-like receptacle designated as a whole by the reference numeral "11". This receptacle or container, which is adapted to hold grease or other semi-fluid or viscous lubricant, comprises front, rear, bottom and side walls, denoted 11^a, 11^c, 11^d, 11^e and 11^f, respectively. Hingedly connected by means of a rod 13 to the upper rear corners of the last named walls, is a lid or cover 15 which tightly overlies the entire open top or upper end of container 11, precluding the entrance thereinto of dirt and dust. The before mentioned rod passes through an ear 15^a depending from the underside of the cover's rear edge, and this edge when cover 15 is swung open, will abut against the uppermost portion of the container's rear wall, thus limiting the opening movement of said lid. The over-weighted condition of the lid's free front edge, tends to close the same, even though an attendant after having charged grease into the receptacle, neglects to push the lid down. The container and its cover can conveniently be made of either cast or wrought metal.

From Fig. III it will be observed that the bottom wall 11^d and also the cover 15, are provided with open ended recesses 11^g and 15^b respectively, the mouths whereof are turned towards the front of the receptacle. The recesses spoken of, are continued so as to extend along the container's front wall, dividing the same by a straight sided slot 11^h into two parts (11^a) and 11^b. The slot and recesses hereinbefore mentioned, form together a gap which is disposed in parallelism with and has the inner ends thereof reaching into proximity of a median axis passing vertically through the receptacle. Within this gap is received the major portion of the three boundary faces that surround the web of a T-rail A, whereof the guides for elevator cars or cages and the counterweights therefor, are generally composed. The gap in question is made of ample width and depth in order to allow sufficient freedom of motion laterally therein of guide rail A, in case the same should happen to be distorted, or having one or more of the joints thereof with the companion guide members, out of alignment. Such disalignment of the guides, produces the uneven, shaky movement and rumbling noises, frequently noticeable in lifts or elevators, and may be caused by faulty installation, slipping of fastenings for the rails, or settling of the building walls and floors to which these fastenings are ordinarily affixed.

In order to prevent the lubricant contained in the receptacle from pushing or weltering out of slot 11^h, which leaves frontwise relatively large spaces on both sides of the guide rail, there is furnished a pair of grease retainers 17^a, 17^b. These elements or gates, as they also may be termed, bear with the apposed inner edges upon the opposite side faces of the guide rail A, being urged thereto by springs 19^a, 19^b which may be of the flat or leaf type, as shown. The material selected for the grease retaining gates is preferably a species of hard wood, altho fibre, or some suitable bearing metal can also be used therefor. In the particular construction illustrated, it is represented that the gates 17^a, 17^b, are held flat-wise in contact with the front side divisions 11^a, 11^b, respectively, in this instance on the inside of the receptacle 11. The springs 19^a, 19^b, are interposed between the outer side edges of the gates 17^a, 17^b, and the interior faces of the receptacle's side walls 11^e, 11^f, respectively. While it is optional how these springs are anchored in position, the drawing shows the same as being held in the plane of movement of the gates, by keepers 21^a, 21^b attached to the latter. From Fig. VII, which is a horizontal longitudinal section thru one of these keepers, it will be seen, that the last named instrumentality envelops both of the flat sides and the narrow edges included therebetween, of the spring's central part, which is firmly clinched intermediate its ends within the folds of said keeper. The keepers in turn, are secured by means of their flattened tail-like portions 21^c, 21^d to the sides of the gates that face the interior of the container. Said tail portions which overlie the inner sides of the grease retaining gates, are fixed by brads 21^e driven thereinto (see Fig. VI). The inner or preferably rounded extremities of the keepers' tail portions as well as the pieces of wooden boards composing the gate elements 17^a, 17^b, are pierced to receive split-shanks 23^a, 23^b of large headed rivets 23^c, 23^d respectively. The shanks of these rivets are slidably guided within elongated apertures 11^j, 11^k formed in the front wall divisions 11^a, 11^b, respectively. Washers 25 engaging the shanks 23^a, 23^b, are held up against the exterior surfaces of said divisions 11^a, 11^b, by the herein before mentioned rivets, after the outer terminals of their said shanks have been spread apart and bent outwardly over the first named washers, as denoted at 23^e, Figs. II and III.

Notwithstanding that in the guiding mechanism for the slidable grease retaining elements 17ª, 17ᵇ, the rivet shanks 23ª, 23ᵇ, extend from the inner sides of the tail portions of the keepers 21ᶜ, 21ᵈ, and are movable within the apertures 11ʲ, 11ᵏ, and that these shanks have the washers 25 on the outside of the receptacle, the reversal of this arrangement is contemplated by the invention, and may under certain circumstances be resorted to.

From the foregoing it will be comprehended, that if instead of being in a straight perpendicular plane, should the guide rail A have become deflected to one side or the other, for reasons hereinabove mentioned, the gates 17ª, 17ᵇ under the influence of their springs, will follow the varying or undulating path presented thereto, still without permitting any of the grease contained in the receptacle to find its way out, either between the edges of the gate elements that bear upon the said guide, or intermediate the sides of the gates which contact with the receptacle's inside front faces. At such times as the aforesaid gates have been worn out, it is only a matter of a few minutes, to bend back the prongs 23ᶜ of the split shanks, pull the washers 25 off the latter, and retract inwardly of the container, the old and in their stead substitute a new set of gates.

With reference to Figs. I, II and III, it will be seen that a pad 27 consisting of a piece of comparatively thick felt is laid upon the bottom 11ᵈ of the container. While this pad is notched to take around the inwardly turned faces of the guide rail, the edges of the felt are made to fit snugly about the said rail, bridging the contours of the recess 11ᵍ in said bottom. By reason of the fact that pad 27 bears against the innermost, short transverse side of the rail A, the front edge of the said pad which is in close adjacency to the gates 17ª, 17ᵇ, is restrained from coming into contact and interfering with the operation of the latter. At 29 (Fig. III) it is suggested that a similar but smaller pad can be secured, by cementing or in any other appropriate manner, to the underside of the lid 15 so as to cover up the recess 15ᵇ therein and prevent foreign matter from entering the container. Both of the pads 27 and 29 serve as wipers around the lubricated faces of the guide rail, in hindering too much of the grease that may adhere to said faces from being dragged out of the receptacle 11 when the lubricator is carried up and down by the moving primary support to which it is affixed.

When the object of forcing the contents of grease in the receptacle towards the surfaces of the guide rail included therewithin, there is supplied a weighted pad 31. This member constitutes a follower laid or floating on top of the grease and acts to press the same down and intimately against that portion of the T-rail which passes thru the container 11. Overlying pad 31 is a rather heavy plate 33 capable of imposing the weight necessary for the follower to descend by gravity within the said receptacle. To the upper face of said plate is fastened a grip 35, by means of a couple of split rivets 37, of like nature to those used in conjunction with the gates and their spring keepers. The employment of a pair of such fastenings prevent the associated grip, plate and pad from twisting one relatively to the other. The plate 33 and pad 31 are provided with a recess and a notch 33ª and 31ª respectively, on the same order as those in the bottom 11ᵈ and the thereon resting pad 27, being for the identical purpose and function as the latter. The felt piece 31 affords an additional safeguard, intercepting such particles of deleterious matter as may have escaped, past the top wiper 29, reaching the grease beneath the follower.

At 39ª, 39ᵇ it is represented that a pair of L-shaped legs extend inwardly under the receptacle from the bottom 11ᵈ thereof. The outer portions of legs 39ª, 39ᵇ are disposed flush with the exterior surfaces of the receptacle's sidewalls 11ᵉ, 11ᶠ, respectively, and the aforesaid portions as well as inwardly turned feet 39ᶜ, 39ᵈ wherewith the legs are provided, have their common transverse centres located in a plane passing crosswise thru the receptacle 11, in proximity to the inner end of its bottom recess 11ᵍ. The aforesaid feet are furnished with suitable openings 39ᵉ, 39ᶠ, for bolts or screws, securing the device in its entirety to the top cross-piece, guide engaging shoes, or to any other appropriate place on the elevator car, or to the counter-weights therefor.

In its broader aspects, the invention herein disclosed is not limited to the precise features of construction and arrangements of parts shown and described, nor to the particular structural make-up or design by which it can be reduced to practice, as numerous changes may be made in details without departing from the principles of the invention or even sacrificing any of its chief advantages.

Having now described my invention what I claim as novel therein and desire particularly to protect by Letters Patent of the United States, is:—

1. In a lubricator for guide rails, a grease container having a gap thru which passes a portion of said guide in direct contact with the lubricant, and an element yieldably bearing all along the portion of the guide received within said container serving to retain the grease therein.

2. In a lubricator for elevator guides, a grease receptacle having a vertical gap thru which passes in contact with the grease, a portion of one of said guides in spaced rela-

tion to said gap, and spring urged grease retaining elements associated with said receptacle yieldingly bearing all along opposite sides of the portion of the said guide received within the receptacle.

3. In a rail lubricator, a grease holding reservoir, the latter having one of its walls provided with a gap capable of loosely receiving therein a portion of the rail, elements associated with said wall arranged to bear along the sides of the rail received within the reservoir, and springs tending to urge said elements into contact with said sides regardless of their parallelism, the said elements serving to prevent the grease from escaping intermediate the rail and said gap while permitting the grease to come into direct contact with the said rail.

4. In a lubricator for aligned guide rail sections, a grease container having a gap through its front wall, said gap affording a clearance space around the portion of a rail section received therein, grease retaining gates disposed flatwise upon the inner faces of said wall on opposite sides of said rail portion, and resilient means acting to press the apposed edges of said gates jointly against the said portion irrespective of the alignment thereof with adjacent sections.

5. In a lubricator for elevator guide rails, a grease receptacle having a gap in the wall thereof facing one of the rails, said gap being adapted to loosely receive a portion of the latter, grease retainers of softer material than said rails associated with said wall in position to contact edgewise with opposite sides of said portion, springs urging said retainers against said faces independently of their condition of parallelism, and means for anchoring said springs to the said grease retainers.

6. In a guide lubricator, a grease container having a gap in one of its walls adapted to loosely take around a portion of the guide, elements coacting with the opposite sides of the latter and the gapped wall preventing escape of grease therebetween, springs urging said elements to follow said guide even though deflected sidewise, and means for maintaining the elements in operative relation with respect to the said wall on either side of the gap therein.

7. In a lubricator for T-rail guides, a grease containing receptacle having gaps extending through the front and bottom walls thereof, said gaps being adapted to loosely encompass a portion of the web of one of said guides, spring urged gates cooperating with the opposite faces of the latter and the sides of the front wall gap, and a pad overlying the bottom gap in wiping contact with said web, said gates and said pad jointly serving to prevent escape of grease between them and the said web portion, while functioning independently one of the other.

8. In a lubricator for elevator guides, a grease container formed with a gap capable of loosely receiving a portion of one of the guides therein, spring urged gates operatively carried by said container in coacting relation with the opposite faces of said portion, and a weighted follower within the container provided with a pad in wiping contact with the said guide portion, said follower acting to press the grease against the latter, being spaced from the gates to leave a working clearance therebetween.

9. In a lubricator for guide rails, a grease container having a gap permitting projection thereinto of a portion of said rail in direct contact with the lubricant, and means extending above the bottom of the grease holding portion of said container engaging the guide rail to prevent the lubricant from leaking out of said gap even tho the rail received therein is out of alignment.

10. In a lubricator for guide rails, a grease container having a gap permitting projection thereinto of a portion of said rail, the latter being in direct contact with the lubricant in the container, means associated with said container engaging the guide rail to prevent escape of the grease thru said gap regardless of the rail's alignment therein, and other means exerting pressure on top of the grease to force the same around the portion of the said rail projecting beyond said first named means into the said container.

YVAN ZÉNON.