Oct. 28, 1969 J. E. McWILLIAMS 3,474,915

APPARATUS FOR LOADING BAGGED MAIL FROM A LOADING DOCK INTO A HIGHWAY VEHICLE

Filed April 4, 1968 2 Sheets-Sheet 1

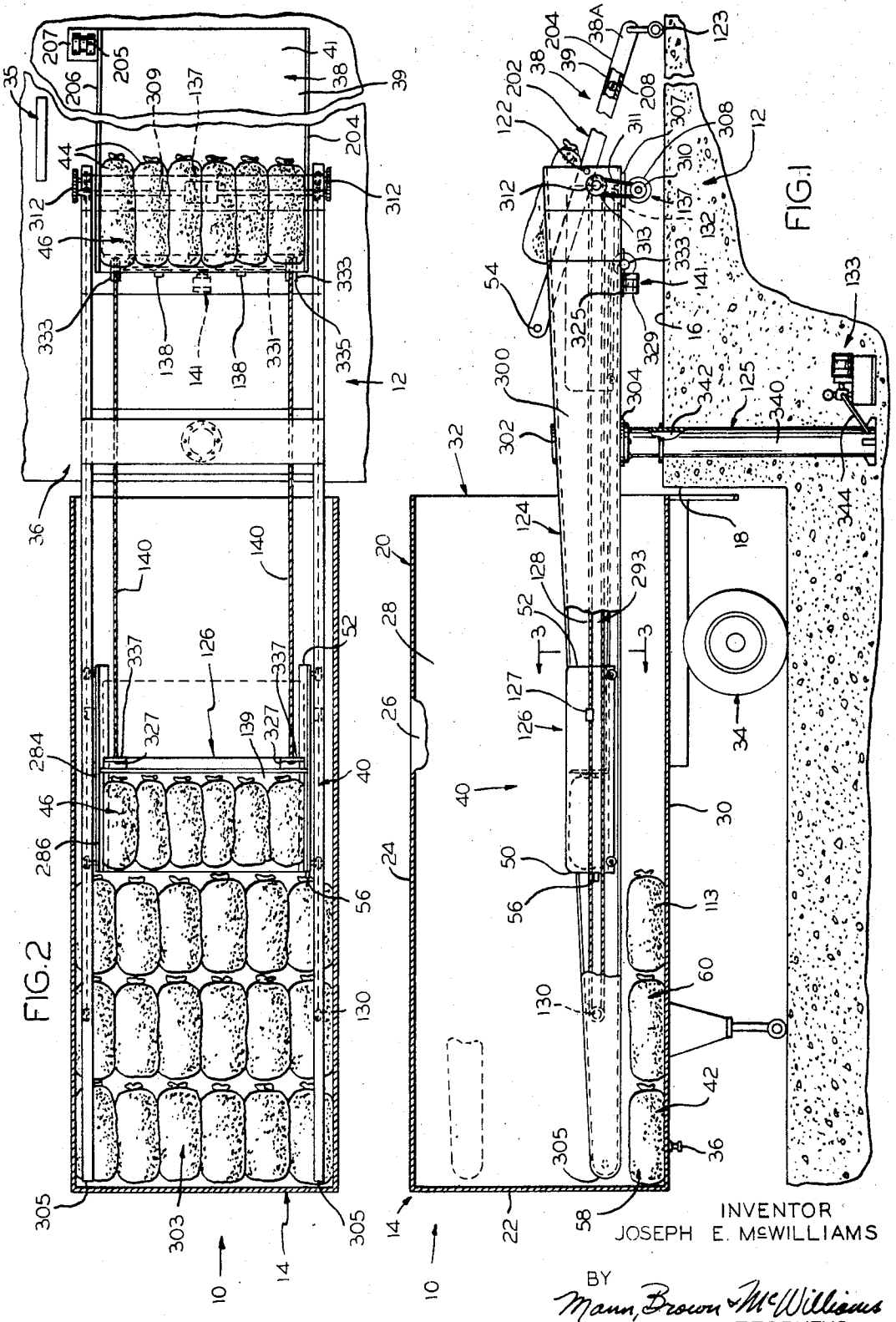


FIG.1

FIG.2

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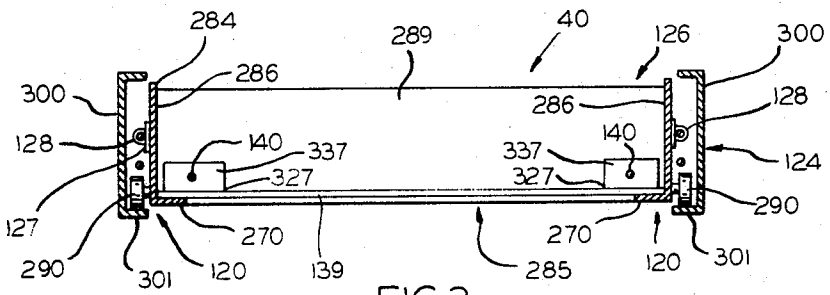


FIG.3

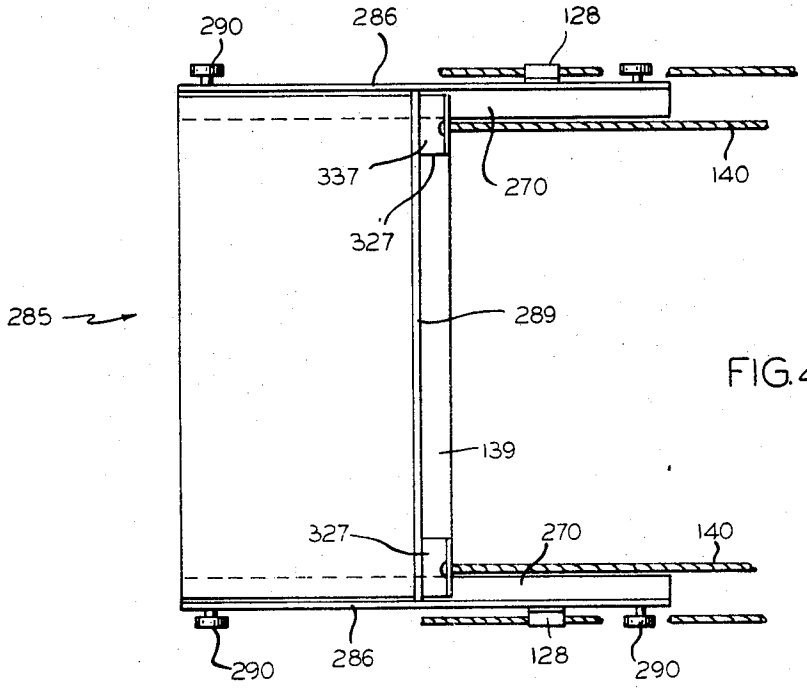


FIG.4

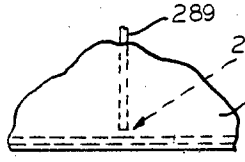


FIG.5

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APPARATUS FOR LOADING BAGGED MAIL FROM A LOADING DOCK INTO A HIGHWAY VEHICLE

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Int. Cl. B65g 57/00, 67/04
U.S. Cl. 214—6 6 Claims

ABSTRACT OF THE DISCLOSURE

The invention relates to the loading of mail bags from a loading dock into an end loading highway vehicle, such as a truck or a trailer, to fully load the vehicle with stacks of mail bags in which the bags are compactly loaded into place in individual stack forming tiers without those performing the bag loading operation having to enter the vehicle. In practicing the invention, the loading dock at the post office or the like is provided with a conveyor on which out-going bags are placed and oriented in closely spaced tier form to form a stack forming tier unit. Operating between the conveyor and the highway vehicle is a carriage, in the form of a carrier riding on trackways formed on a cantilevered open centered support frame mounted on the dock, with the dock supported frame being so positioned and proportioned that it projects into the vehicle substantially up to the forward end of its loading area when the vehicle is backed into loading position adjacent the dock. The carrier receives the tier load without disturbing the orientation of the bags and brings the tier load into the vehicle loading area for discharge of the stack forming tier unit, and effects placement of the tier as part of a stack in the vehicle, again without disturbing the orientation of the bags. The carriage then returns to the conveyor for another tier load.

The carriage movements are controlled longitudinally and vertically of the highway vehicle so that the individual tier loads are formed into vertical stacks of mail bags that are disposed to position the bags of adjacent stacks in closely spaced relation with the vehicle being thus filled with bags throughout its load receiving area so as to make maximum use of the available loading space within the vehicle to maximize the pay load. The operation of the carriage is fully mechanized so that workers do not have to go into the vehicle, and palleting of the bags in groups is avoided while still achieving uniform loading in tier form.

This application is closely related to my application Ser. No. 694,151, filed Dec. 28, 1967.

This invention relates to a method and apparatus for loading bagged mail from a loading dock into a highway vehicle, and more particularly, to methods of and means for facilitating the handling of bagged mail in individual load groups for purposes of loading same into vehicles that are to transport it.

Conventional methods of loading mail bags into highway vehicles and trailers of the end loading type are not only time consuming and inefficient in nature, but also require much manual effort on the part of the workers involved. The bags are conventionally loaded so as to form vertical stacks in which the bags of each stack extend longitudinally of the vehicle and the stacks fill all available space vertically and lengthwise of the vehicle. The bags, which when loaded are from 12–14 inches wide and 36–40 inches long, are usually loaded up to about 92 inches above the floor of the truck in a space that is about eight feet wide, with the length depending on the length of the truck.

Heretofore the loading procedures have been largely manual in nature, with the workers involved dragging the individual bags into the vehicle from a pile of the bags on the adjacent loading dock, and then individually positioning and lifting the bag as is necessary to complete the formation of the respective bag stacks. At best, hand carts are sometimes employed to reduce some of the manual effort involved, but the handling required of each individual bag is still much the same; in both cases, much repetition of bag orienting movements is required for each bag, which is wasteful of effort and inefficient in terms of the time and cost of getting the job done. The result is that valuable equipment is unduly tied up to accommodate these slow loading procedures, and labor is in short supply as workers are becoming increasingly reluctant to take on jobs involving such hard work.

Nevertheless, the Post Office Department and others concerned with the transport of loaded mail bags, load something on the order of 50,000 trucks a day in the U.S.A. in this manner at a cost on the order of $18 a truck, which gives an indication of the magnitude of the problem.

My Patent 3,164,271, granted Jan. 5, 1965, discloses a basic system for handling bagged mail which involves the sorting and loading of incoming bags into tier load units that are grouped by destination and stored until arrival of a suitable load transport vehicle whereupon the tier load units are unloaded in single or multiple tier form in the vehicle.

A principal objective achieved by the methods and apparatus disclosed in said patent is that the mail bags are oriented early in the cycle of their handling operations and this initial orientation is maintained throughout all of the subsequent handling operations.

The present application is directed to an additional embodiment of the basic arrangements shown in my said application.

A principal object of the present invention is to provide methods and apparatus for further facilitating the loading of end opening vehicles without requiring that the operator enter the transport vehicle or that the mail bags be palleted in groups to reduce individual handling.

Another principal object of this invention is to provide a method of loading bagged mail in transport vehicles in closely spaced relationship to the end that the available air spaced within the vehicle will be loaded to the maximum and all manual motions ordinarily required to handle the bags within the vehicle are performed by mechanical means arranged to carry, elevate as necessary and deposit the bags in the compact relationship necessary to maximize the pay load by substantially filling the available cubic loading space of the vehicle.

Another principal object of the invention is to provide methods and apparatus for loading of end opening vehicles such as motor trucks and trailers which permits a single operator to efficiently load the entire transport vehicle without stepping inside it.

Still other objects of the invention are to provide apparatus for loading bagged mail in transport vehicles that is adapted for full push button type actuation and control, to provide methods and apparatus for handling bagged mail that permits substantially automatic handling of the mail in tiered or other types of load unit groups, and to provide mail bag handling apparatus that is economical of manufacture, convenient in use, and adapted for all conventional mail bag loading dock areas and vehicles or their equivalents.

Other objects, uses, and advantages will be obvious or become apparent from a consideration of the following detailed description and the application drawings.

In the drawings:

FIGURE 1 is a diagrammatic side elevational view of a semi-trailer in the process of being loaded in accordance with my present invention, with the semi-trailer shown in section, and the mail bag load unit carrying carriage being shown in its load receiving position in the right hand dashed line position while its full line positon shows one of the load discharging positions thereof;

FIGURE 2 is a plan view of the apparatus shown in FIGURE 1;

FIGURE 3 is a fragmental cross-sectional view taken substantially along line 3—3 of FIGURE 1;

FIGURE 4 is a plan view of the load unit carrying carrier that is shown in FIGURE 3; and

FIGURE 5 is a fragmental side elevational view of the mid portion of the carrier as shown in FIGURE 1.

However, it is to be distinctly understood that the specific embodiment of the invention illustrated is supplied primarily to comply with the requirements of the Patent Code, and that the invention may have other embodiments.

GENERAL DESCRIPTION

Reference numeral **10** of FIGURE 1 generally indicates one embodiment of the present invention that incorporates the basic approach of my said application Ser. No. 694,217 for loading mail bags from a loading dock **12** into an end loading vehicle **14**, which has been illustrated as being in the form of the familiar semi-trailer, although the invention is readily applicable to any end loading vehicle.

It is assumed that the mail bag handling installation involved includes the loading dock **12** (of a post office or the like) that is conventionally provided with a level load support surface **16** and the usual shoulder or end **18** adjacent to which the vehicle **14** is backed up for purposes of being loaded.

It is also assumed that the vehicle **14** be in the form of the usual body **20** defined by forward end wall **22**, top wall **24**, side walls **26** and **28**, floor **30**, and end opening **32** that is customarily closed by suitable doors or the like (not shown). The body **20**, being of the semi-trailer type, rides on the usual rear wheels **34** and is provided with the usual kingpin **36** for connection to the fifth wheel of a conventional tractor truck (not shown).

In accordance with this invention, there is associated with the loading dock **12** at the position **36** where the vehicle body **14** is to be stationed for loading purposes a mail bag receiving conveyor **38** and a mail bag tier conveying carriage **40**, which receives the mail bags accumulated in tier form or conveyor **38**, transports them into the vehicle **14** and discharges them in tier form to form mail bag stacks **42**.

Under ordinary circumstances, the loading dock **12** is located at a post office or the like where loaded mail bags are processed for shipment to their destinations, and as indicated in FIGURE 2, the conveyor **38** and the carriage **40** are longitudinally aligned with the vehicle **14** (in the loading position of the vehicle) and have a width transversely thereof to accommodate enough mail bags **44** laid side by side in a row to form one complete tier **46** of a stack **42**, such that when the tier is placed within the vehicle **14**, it will extend substantially from one side wall **26** to the other side wall **28** as indicated in FIGURE 2. Conveyor **38** is in the form of conveyor belt **39** defining an upwardly facing load supporting surface **41** on which the bags **44** are placed, which surface, at least at the lower, loading end **38A** of conveyor **38**, is at an easy reach height above surface **16**, such as two to three feet high.

The carriage **40** comprises a load support in the form of a carrier **126** riding in trackways **120** defined by the vertically movable open centered, generally H-shaped, frame **124** mounted on a hydraulic jack device **125** with which loading dock **12** is equipped. Carrier **126** is positioned between cables **128** mounted on either side of the frame **124** in the form of appropriately tensioned closed loops and trained over suitable end pulleys **130** and **132**. Pulleys **130** and **132** are respectively journaled on frame **124** which is raised and lowered by operation of jack device **125** under control of control mechanism **133** which is associated with loading dock **12** in any suitable manner. The carrier **126** is fixed to the respective cables **128** at brackets **127** and the cables **128** are powered by a suitable drive mechanism **137** to cycle the carriage **40** forwardly and rearwardly of the frame **124** and thus of the vehicle **14** when it is in loading position. The carrier **126** of FIGURES 1–6 forming the carriage **40** is formed with a retractable shelf or slide plate **139** on which a mail bag tier **46** is placed by operating the conveyor **38**, and when the carrier **126** is positioned to dispose the tier of bags over the spot they are to be dropped into in accordance with this invention, the shelf **139** is drawn to the discharging position shown in dashed lines in FIGURE 2 by pulling on cables **140** through suitable mechanism **141** under the control of the operator (without moving the carriage **40** rearwardly of the vehicle).

The conveyor **38** is in the form of a frame **202** including side members **204** and **206** between which are journaled the rollers **208** that support belt conveyor **39**. Frame **202** is pivotally supported on frame **124** as at **122**, and at its lower end rides on rollers **123** as the forward end of frame **124** is adjusted vertically.

In practicing my invention, the mail bags are brought in any suitable manner to the area of the conveyor **38** and they may be piled at random adjacent the conveyor **38** for ready access by one or more workers stationed adjacent the conveyor **38** for purposes of controlling the operation of same and carriage **40**. In accordance with this invention, the controls for conveyor **38** and carriage **40** are arranged so that these pieces of apparatus are operated without anyone having to go into the vehicle **14**, as will be hereinafter described in connection with the embodiment of the invention illustrated in the drawings. For this purpose, the controls may be of the push button type applied to suitable control panel **35** and may be of any suitable electric and/or electronic type that will serve the purpose.

To practice my invention, after the vehicle **14** is positioned as shown in FIGURES 1 and 2 for loading (assuming it is empty), and the bags to be shipped are disposed, for instance in a pile or piles adjacent the conveyor **38**, the worker or workers in the area of conveyor **38** pick up and position enough of the individual bags **44** to form one or more tiers **46** (of six to eight bags in a tier) on the belt **39** of conveyor **38** in which, in accordance with the procedure contemplated by this embodiment of the invention, the bags of each tier **46** are placed in closely spaced side by side relation and extend longitudinally of the conveyor **38** and vehicle **14**. Assuming the vehicle **14** is empty, frame **124** is lowered to the lowermost position shown in FIGURE 1 to dispose carrier **126** so that bags **44** dropping therefrom will drop no more than 24 inches to the floor **30**.

When one or more tiers **46** have been applied to conveyor **38** in the manner indicated (which tiers are termed a "partial transport vehicle load depth unit" in the appended claims), the carriage **40** is positioned in load receiving relation to conveyor **38** and conveyor **38** is actuated to deposit simultaneously all the bags **44** forming the first tier **46** on the carrier **126**, its shelf **139** being disposed in its load supporting retracted position of FIGURE 4. It will be noted that the rear end **52** of the carrier **126** will need to be disposed to present the shelf **139** (as positioned in FIGURE 4) in load receiving relation with respect to the forward end **54** of the conveyor **38** when carrier **126** is in its load receiving position of FIGURE 1, such that when the bags drop from end **54** of conveyor **38**, they will assume the positions on shelf **139** that are indicated in FIGURES 1 and 2.

The carriage **40** is then actuated to move same from

its loading position into the vehicle **14** where it moves toward the front wall **22** of the vehicle to start the first stack **42** of mail bags. The carriage **40** moves forwardly of the vehicle **14** until a suitable limit switch arrangement such as that indicated at **56** at its forward end **50** engages the vehicle forward wall to stop the forward movement of the carriage **40** and actuate mechanism **141** to move shelf **139** to its bag discharging position, whereupon the first tier of bags is dropped onto the floor **30** of the vehicle adjacent the end wall **22** in the position indicated at **58**.

The carriage **40** is then returned to its loading position to receive the next tier **46** of mail bags **44**, which can be formed on to the conveyor **38** while the carriage **40** is operating in the manner that has just been described. Shelf **139** is either returned by hand to its load supporting position as carriage **40** returns to its load receiving position or by engagement with suitable stops **138** of frame **124** as the carrier **126** is moved rearwardly to full load receiving position, mechanism **141** operating automatically to wind up the slack in cables **140**. The next tier is then transferred to carrige **40** in the manner already suggested. This next tier, in accordance with one manner of practicing my invention is then unloaded in the manner already described, but adjacent the first tier unloaded, where indicated at **60**, the carrier **126** being automatically stopped at the position required to do this by appropriate sequence controls built into the circuiting controlled at panel **35**.

The next tiers are similarly handled to form a horizontally disposed layer **113** of tiers **46**, along the floor **30** of vehicle body **14** back to the vehicle open end **32**. In doing this, the carriage **40** is maintained at its initial elevation above the floor **30** of vehicle body **14** until the first bag layer **113** is fully in place between forward wall **22** and door opening **32**, after which the frame **124** is raised, by operating mechanism **133**, into a position suitable for forming the next layer **113**, which is formed in the manner described for the first layer **113**. This is repeated until the vehicle is filled, after which the vehicle open end is secured in the usual manner and the vehicle **14** driven off to be replaced by a similar vehicle **14** that is loaded in like manner.

The handling of the bags in moving them from the conveyor **38** to their respective positions in the vehicle **14** is thus carried out after having made a single orientation of the bag as to the position it is to take in a particular stack forming tier, and without having to drop the bag over the 24 inch limitation provided for by the Post Office regulations.

From the description so far there are several important features to be observed. Note for one thing that the bags **44** are properly oriented in their tier **46** by their application to the conveyor **38**, and that this orientation is maintained throughout the further handling of the bags that moves them into stacked relation in the vehicle **14**. Furthermore, the lifting and positioning of the bags **44** onto conveyor **38** is the only manual labor involved, and the workers is concerned with only as easy lifting and positioning action at a convenient working height above surface **16**, with such action needing only to be performed once per bag.

It is also to be noted that the loading of the vehicle **14** is done without anyone having to enter the vehicle **14**, and palletizing of the individual tier **14** is unnecessary.

SPECIFIC DESCRIPTION

The carrier **126** comprises a frame **284** including side plates **286** and a transverse bag stop plate **289** fixed together in any suitable manner to defiine an essentially open centered frame configuration as well as a slideway **285** for the slide plate **139** that is pulled from the solid line load supporting position of FIGURE 1 to the dashed line position of that figure to discharge the mail bag tier **46** that is carried thereby onto the vehicle floor **30** or mail bag stack on which it is to be placed. Side plates **286** are angled inwardly as at **270** to support plate **139**, and stop plate **289** extends short of slideway **285**, as at **272**.

The carrier side plates **286** on the outwardly facing sides thereof each journal a pair of rollers **290** that ride on the trackways **120** of frame **124**. Cables **128**, to which carrier **126** is fixed in any suitable manner at lugs **127**, has their respective ends closed together to form the indicated closed loop **293** about the respective pairs of pulleys **130** and **132** in any suitable manner.

The frame **124** comprises a pair of elongate tapering frame members **300** of channel-shaped cross-sectional configuration (see FIGURE 3) of which the lower flange **301** is horizontally disposed and defines the respective trackways **120**. Frame members **300** are joined together by suitable brace plates **302** and **304**, with the lower brace plate **304** being secured to jack device **125**. The space **303** separating members **300** between their forward ends **305** and plates **302** and **304** is continuous and uninterrupted to accommodate discharge of the mail bags from carrier **126** at the various positions required to fully load vehicle **14**.

At their rear ends **306** frame members **300** are joined together by plate **307** on which is mounted motor **308** that comprises drive mechanism **137**, which motor **308** reversibly drives cables **128** through shafts **309**, sprockets **310** and **312**, and chains **311** connecting the respective sprockets **310** and **312**, sprockets **312** and pulleys **132** being keyed to the same shaft **313** that is journaled in the respective frame members **300**.

Conveyor **38** is in the form of a frame **202** including the side members **204** and **206** in which are journaled the rollers **208** that support the belt conveyor **39**. Belt conveyor **39** is driven by a suitable electric motor **205** supported on a suitable bracket plate **207** carried by frame **202** adjacent the conveyor rearward end pulley and driving same through a pulley belt or the like (not shown). The pivotal connection **122** between frame **202** and frame members **300** may be of any suitable type.

The frame **202** of conveyor **38** and frame **124** are so proportioned that side plates **286** of carrier **126** fit between them in the loading position of carrier **126** (see dashed line position of FIGURE 1). Conveyor **38** is made of sufficient length so that in any operative position of conveyor **38** that is achieved by vertical positioning of frame **124** to fill vehicle **14**, the bags dropping off the forward end of conveyor **38** onto carrier **126** will drop no more than the 24 inches permitted by Post Office regulations.

Frame **124** also includes mounting plate **325** spanning the space between the frame members **300** on which is mounted motor **329** (comprising mechanism **141**) which operates shaft **331**, journaled on plate **325** and having reels **333** keyed thereto to which cables **140** are respectively attached for pulling cables **140** (under the action of motor **329**) to retract the slide plate or shelf **139** when unloading of the mail bags from the carriage **40** is desired, with the drive for the latter motor being arranged so that cables **140** pull out readily from their reels (without displacing shelf **139**) when the carriage **40** is moved toward the desired bag tier load discharging position. This may be done in any suitable manner. Cables **140** are suitably anchored to angle brackets **337** applied to slide plate or shelf **139** as at **327**. The stops **138** are fixed to plate **135** to project above the plane of operation of shelf **139**. Plate **325** is notched as at **335** to accommodate reels **333**.

Jack device **125** comprises hydraulic cylinder **340** that is mounted in dock **12** in any suitable manner, which includes piston member **342** that is fixed to plate **304** of frame **124** in any suitable manner. Mechanism **133**, which is illustrated in largely block diagram form, includes a suitable motor, pump, source of hydraulic liquid,

conduiting, and the like to raise frame **124** by supplying hydraulic liquids to the lower end of cylinder **340** through conduit **344**, as may be necessary under the control of the operator at panel **35** to position frame **124** at the desired elevation to form the mail bags into the superposed horizontal rows **113** for the full loading height of the vehicle **14**.

The operation and movements of the conveyor **38** and bag carrying carriage and parts thereof are preferably completely controlled from a control panel **35**, or the like, located outside of the vehicle **14**, through any suitable wiring arrangement that incorporates the various motors and switches that have been referred to, and ordinarily only a single operator will be needed to both load the bags on the dock supported conveyor **38** and operate the machines involved to deposit the bags in the vehicle **14**. The machines involved can readily be controlled to avoid dropping the bags further than the 24 inch limitation prescribed by the Post Office Department.

The conveyor **38** shown in the illustrated embodiment is considered an optional way of loading carrier **126**. An alternate way of doing the same thing would be to eliminate conveyor **38** and mount on dock **12** adjacent the end of frame **124** a second frame that is vertically movable to position same at an appropriate load discharging elevation relative to carrier **126** (as by employing power unit **133**), that is shaped for efficient load transfer of bags from same to carrier **126**, and that includes a suitable powered pusher plate means of the type described in my said patent to effect discharge of a bag tier from same onto the carrier **126**.

The bag stacking arrangement of this invention will load trucks and trailers in a fraction of the time now required and at less than half the cost, while at the same time greatly reducing the effort required by workers handling the bags. This not only greatly reduces the tie up time for each truck, but also significantly reduces the overall cost of mail bag handling.

As to all described embodiments and methods herein disclosed, the load units or tiers formed on the loading dock are termed "partial transport vehicle load depth unit" in the appended claims.

The foregoing description and the drawings are given merely to explain and illustrate my invention since those skilled in the art who have my disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

I claim:

1. In bulk mail handling apparatus for loading elongated mail bags from a loading dock into the load receiving area of an end loading transport vehicle backed into load receiving position adjacent the dock to dispose its end opening to receive the bags, without workers on the dock handling the bags having to enter the vehicle, and without requiring that pallets remain with the bags after they are loaded into the vehicle, said apparatus comprising:

a conveyor mounted on the loading dock adjacent the load receiving position of the vehicle and having a width transversely thereof approximately the width of the vehicle area,

said conveyor being positioned to be aligned with the vehicle and its end opening in the load receiving position of the vehicle,

said conveyor presenting an upwardly facing load transporting surface having at least a portion thereof at an elevation for convenient manual lifting of the bags from the dock onto the conveyor surface,

a vertically movable horizontally disposed frame mounted on the loading dock between said conveyor and said load receiving position of the vehicle and positioned to be aligned with said conveyor longitudinally thereof,

said frame defining a trackway proportioned to extend into the vehicle when same is in its said load receiving position and project substantially to the forward end of the load receiving area thereof,

a mail bag receiving carriage adapted to operate on said trackway between said conveyor and the forward end of said trackway and proportioned to enter said vehicle end opening,

means for moving said carriage longitudinally of said trackway,

said carriage including a load supporting surface approximately the width of the vehicle area and in substantial horizontal alignment with said trackway,

means for adjusting vertically said frame for adjusting vertically said carriage load supporting surface,

and means for discharging from said carriage surface bags received thereon from said conveyor,

whereby mail bags may be loaded onto said conveyor surface with the bags thereof oriented to extend longitudinally of the vehicle and in side by side tier forming relation, and said tier of bags may be mechanically transferred between said conveyor surface and stack forming positions in said vehicle area while maintaining said orientation.

2. The apparatus set forth in claim **1** wherein:

said conveyor is pivotally connected to said frame adjacent the forward end of said conveyor to dispose said forward end of said conveyor over said trackway,

with the rearward end of said conveyor riding on roller means engaging the dock.

3. In bulk mail handling apparatus for loading elongated mail bags from a loading dock into the load receiving area of an end loading transport vehicle backed into load receiving position adjacent the dock to dispose its end opening to receive the bags, without workers on the dock handling the bags having to enter the vehicle, and without requiring that pallets remain with the bags after they are loaded into the vehicle, said apparatus comprising:

a conveyor mounted on the loading dock adjacent the load receiving position of the vehicle and having a width transversely thereof approximately the width of the vehicle area,

said conveyor being positioned to be aligned with the vehicle and its end opening in the load receiving position of the vehicle,

said conveyor presenting an upwardly facing load transporting surface having at least a portion thereof at an elevation for convenient manual lifting of the bags from the dock onto the conveyor surface,

a vertically movable horizontally disposed frame mounted on the loading dock between said conveyor and said load receiving position of the vehicle and positioned to be aligned with said conveyor longitudinally thereof,

said frame defining a trackway proportioned to extend into the vehicle when same is in its said load receiving position and to project substantially to the forward end of the load receiving area thereof,

a mail bag receiving carriage adapted to operate on said trackway between said conveyor and the forward end of said trackway and proportioned to enter said vehicle end opening,

said carriage being secured at either side thereof to a closed loop cable,

end pulley means carried by said frame over which said cables are trained,

said carriage including a load supporting surface approximating the width of the vehicle area and in substantial horizontal alignment with said trackway,

means for driving said cables for moving said carriage between a mail bag receiving position adjacent said conveyor and predetermined mail bag discharging positions within the vehicle,

means for adjusting vertically said frame for adjusting vertically said carriage load supporting surface,

and means for discharging from said carriage surface bags received thereon from said conveyor at predetermined stack forming positions in the vehicle load receiving area,

whereby mail bags may be loaded onto said conveyor surface with the bags thereof oriented to extend longitudinally of the vehicle and in side by side tier forming relation, and said tier of bags may be mechanically transferred between said conveyor surface and stack forming positions in said vehicle area while maintaining said orientaton.

4. The apparatus set forth in claim 1 wherein:

said means for vertically adjusting said frame comprises:

lift means carried by the loading dock,

said frame being mounted on said lift means,

and means for actuating said lift means to raise and lower said frame between predetermined load discharging positions of said carriage.

5. The apparatus set forth in claim 3 wherein:

said conveyor comprises an endless conveyor carried adjacent the forward end thereof by said frame and being pivotally connected to said frame in load

transmitting relation thereto and the other end thereof riding on the loading dock.

6. The apparatus set forth in claim 3 wherein:

said carriage load supporting surface comprises a shelf member mounted for movement between a mail bag tier load supporting position and a load discharging position,

and means for mechanically moving said shelf member between said positions.

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