

Sept. 20, 1971

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3,606,055

GOODS MOVING METHOD

Filed May 23, 1969

3 Sheets-Sheet 1

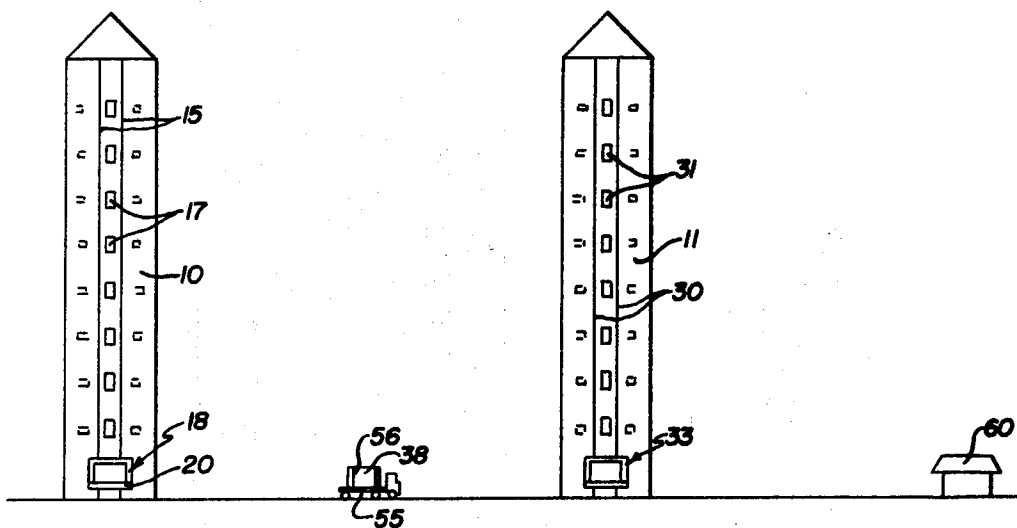
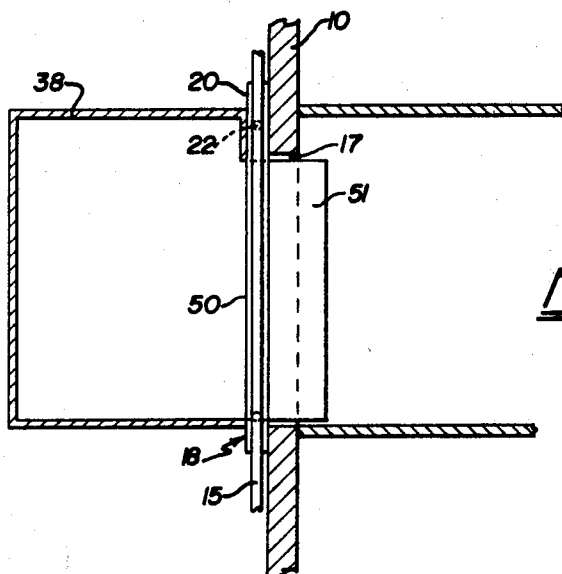


Fig. 1.



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Fig. 3.

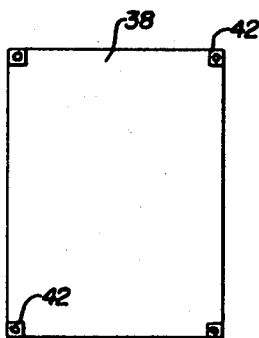
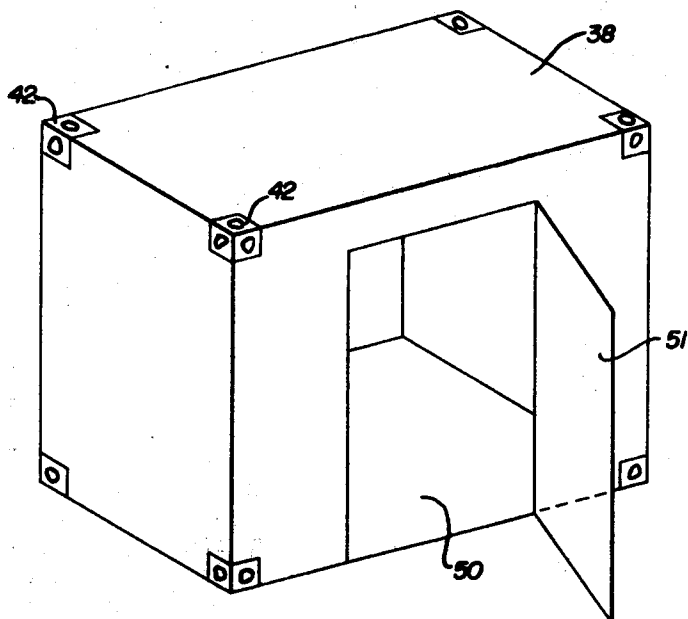


Fig. 4.

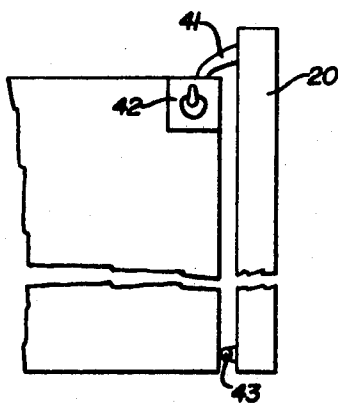


Fig. 5.

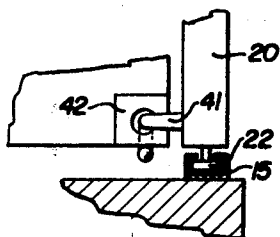


Fig. 6.

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3 Sheets-Sheet 3

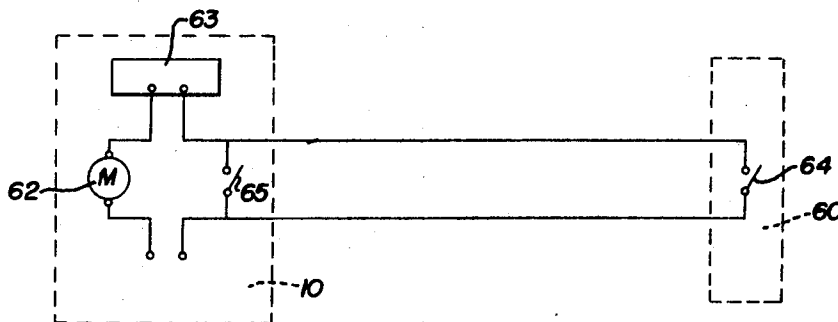


Fig. 7.

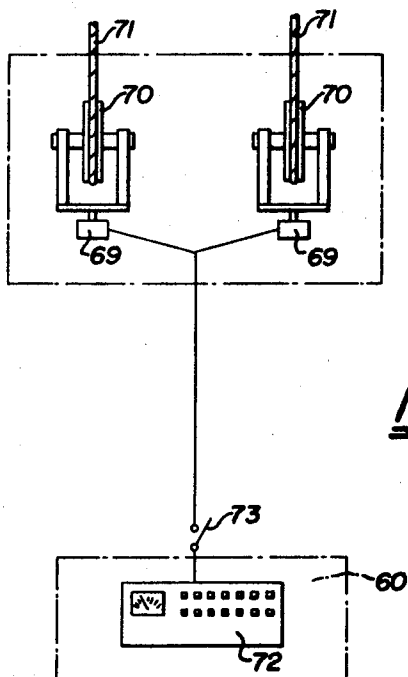


Fig. 8.

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GOODS MOVING METHOD

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Filed May 23, 1969, Ser. No. 827,384

Int. Cl. B65g 63/06

U.S. Cl. 214—152

13 Claims

ABSTRACT OF THE DISCLOSURE

There are disclosed a method of and apparatus for moving goods between multi-storied buildings. A container in which the goods are loaded is latched to a lift unit mounted on a first building to be transported by said unit to a vehicle, is transported by said vehicle to a second building, and is latched to a lift unit mounted on the second building to be transported thereby to a desired floor of said building.

BACKGROUND OF THE INVENTION

This invention relates to a method of and apparatus for moving goods of any type between multi-storied buildings.

Goods have been moved between buildings in substantially the same way ever since this type of movement started. The goods may be articles or machines, household effects, office furniture and equipment, and the like. The movement of household effects is typical. According to usual practise, household articles are moved one by one from the house into a vehicle usually waiting in the street. After the vehicle is loaded, it travels to the building where the goods are to be delivered. Then the operation is repeated in reverse, that is, the articles are moved one by one into the building. Substantially the same operation takes place when crates or packages are moved from one building to another.

The basic method has remained the same up to the present invention, although many aids have been provided and the equipment improved for this purpose. However, there is still a great deal of wasted time, and particularly when household effects are being moved, since the movers must be strong men to handle the relatively large objects or pieces of furniture, and yet they usually have to carry out armfuls of light things. In addition, the truck or vehicle stands on the road while being loaded and unloaded, taking up space, and remaining idle during the time.

The advent of high rise apartments and office buildings has brought the ancient ways of moving goods to a head, showing that such ways are completely inadequate. In addition to the problems and inefficiencies noted above, you have the problem of getting the goods down from and up to the different floors of the high rise buildings by the elevator systems of said buildings. The use of an elevator puts it out of commission for the regular inhabitants of the building while it is being used for moving goods out of or into the building. In addition, the size of the articles, such as furniture, that can be moved is limited by the size or capacity of the elevator. In the past, some buildings have had freight elevators, but these do not appear in modern buildings, probably because of the cost and the space that is required, said space being used only periodically. Even if freight elevators are present, you still have all the problems of handling the goods piece by piece.

SUMMARY OF THE INVENTION

The present method and apparatus eliminates all of the objections set out above. It is an entirely new concept

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for the present age with its many problems that are just coming to a head. The present invention greatly reduces the time and effort for loading and unloading, eliminates the necessity of using the standard elevators of the buildings involved, eliminates the necessity of the transporting vehicle waiting on the street or being tied up during the actual loading and unloading operations, permits control of each moving operation from a central station, and makes it possible to determine the exact weight of the goods being moved. The method is extremely efficient and, therefore, is beneficial to all concerned. The fact that the normal elevators of the buildings are not used is a boon to the building owners and to the tenants.

A very important advantage of the present method and apparatus is that they can be used quickly and efficiently to move firemen to various floors of high rise buildings in order to fight fires therein, and to evacuate persons, injured or otherwise, from the building when necessary. Prior to this invention, the getting of firemen up to upper floors in high buildings has been an almost desperate problem. If the electrical system of the building is put out of operation and the elevators are not operative, the firemen would have to walk up to the floors where there was a fire. It can readily be imagined how effective a man would be after walking up to, say for example, the 40th floor of a building, to say nothing of the time consumed in getting there. In addition, a fire on a given floor in a building can cut all those above the floor off from escape, as most of the buildings are constructed today.

The method of moving goods according to the present invention comprises latching a container in which the goods are loaded to a lift unit mounted on a first building to be transported by said unit to a vehicle, transporting the container by the vehicle to a second building, and latching the container to a lift unit mounted on the second building to be transported thereby to a desired floor in the latter building. If the goods are household goods, for example, they are loaded into the container on the floor of the first building where the goods are located, and they are unloaded on the floor of the second building where the goods are required.

Apparatus in accordance with this invention includes a lift unit mounted for movement up and down each of the buildings between which goods are to be moved, said lift units being moveable to openings at different floors of their respective buildings. Latching means are provided for removably connecting load-carrying containers to the lift unit. The apparatus includes means for removably connecting the containers to transport units. If desired, electrical control means are provided, said control means being operable to render the lift units at the buildings operative and inoperative. A master unit at a control station is operable selectively to operate each control means to render the lift unit associated therewith operative and inoperative.

DESCRIPTION OF PREFERRED METHOD EMBODIMENTS

This method can be used for moving any goods or articles, but for the sake of convenience, it will be described in connection with the movement of household goods from one high rise apartment building to another.

The method involves the use of the novel apparatus described herein. Each building has a lift unit mounted for operation up and down the outer wall thereof. There are standard-sized containers for shipping goods by rail and water, and the containers used with this method are preferably of the standard size, although this does not have to be so. These containers can be removably latched to the lift units and to a transporting vehicle.

When it is desired to move the household goods, a container is latched to the lift unit of the building in which

the goods are located, and it is raised to the desired floor. The goods can now be quickly and conveniently loaded into the container. After the container is closed, it is transported down and deposited on a vehicle. The container or the truck may have special latching means for securing the container in place, or the latching means may comprise chains, ropes or cables for securing the container to the vehicle. The vehicle is driven to the second building, and the container is latched to the lift unit of this building and raised to the desired floor where it can be quickly and easily unloaded.

The method contemplates the use of a control station from which the entire operation can be controlled. When the mover arrives at the building where the goods are located, he must communicate by telephone or radio with an operator in the control station who will then electronically release the lift unit of that building so that the container can be lifted to the required floor. After the container has been loaded, moved down and deposited on the vehicle, the mover informs the operator so that the lift unit can be rendered inoperative again. The operator knows how long it took to load the container and to get it on to the vehicle.

When the mover arrives at the second building, he must again communicate with the operator who releases the unit of that building for operation. This informs the operator of the time it took to move from one building to the other. After the container has been unloaded and returned to the vehicle, the operator is again informed so that the lift unit can be rendered inoperative. The time of the unloading operation is now known.

It is desirable to provide each lift unit with means for weighing the container when it is latched thereto. This weighing means is electronically connected to the control station so that the weight of the loaded container can be recorded as the container is descending on the first building, and the weight of the unloaded container can be recorded as it is descending on the second building. Thus, the method enables the exact weight of the goods being moved to be ascertained.

One of the important advantages of this method is that the vehicle does not have to remain on the street at each building during the loading and unloading operations, it can be moved to a convenient position, or it can even be used for other purposes during these times.

While the method is mainly applicable to a given area, say for example, a city and its suburbs, it is obvious that the goods can be moved from a building in one city or area to a building in another city or area. Said vehicle which moves the container can travel between the two different areas, or the container can be handled by ordinary shipping methods and equipment and transported between the areas either by railway or by boat.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 diagrammatically illustrates two high rise buildings, a container being transported between the buildings, and a control centre in accordance with this invention,

FIG. 2 is a vertical section through a container at a floor of a building,

FIG. 3 is a perspective view of a container suitable for this purpose,

FIG. 4 is an end view of the container,

FIG. 5 is a fragmentary side elevation of the container latched to a lift unit,

FIG. 6 is a fragmentary plan view of a corner of the container and lift unit,

FIG. 7 is a diagram of an electric circuit for rendering a lift unit operative and inoperative, and

FIG. 8 is a diagram of a weighing system for the lift units.

DESCRIPTION OF PREFERRED APPARATUS EMBODIMENTS

Referring to the drawings, 10 and 11 represent two high rise buildings, each having track means mounted on

an outer wall thereof. In this example, the track means of building 10 consists of a pair of rails 15 mounted on and extending from ground level up as high as desired on an outer wall of the building. These rails span a plurality of vertically arranged openings 17 in the building, there being an opening at each floor on to which and from which goods are to be moved. A lift unit 18 is mounted on rails 15 for movement therealong, said unit preferably being in the form of a flat supporting frame 20. This frame is movably mounted on the rails in any suitable manner, such as by means of rollers 22 which ride within rails 15 which may be in the form of channels, as shown in FIG. 6. Any suitable elevator hoisting means may be used for moving the lift frame up and down tracks 15, and as this does not form part of the present invention, it is not illustrated and described herein.

Building 11 also has track means mounted on an outer wall thereof, and in this example, the track means consists of a pair of rails 30 which span openings 31 in the building which are located at all or desired floors of the building. A lift unit 33, similar to unit 18, is mounted for movement along rails 30, and is moved therealong by any suitable elevator moving equipment, not shown.

A plurality of containers 38 are provided for use with this method, one only of these being illustrated in the drawings. Although these containers may be any desired size, it is preferable to make them the same size as the shipping containers that are now being commonly used in the transportation of freight by rail and boat. The standard dimensions are 10 feet long, 8 feet wide and 8 feet high.

Suitable means is provided for removably latching container 38 to the lift units 18 and 33. The actual latching mechanism does not form part of this invention, and the following is for illustration only.

To this end, lift frame 20 is provided with hooks 41 at the upper corners thereof which are adapted to fit in standard sockets 42 mounted on the containers at the corners thereof. Each hook is mounted for both vertical and lateral swinging motion. The hooks may be moved by hand or by means of a suitable mechanism, not shown, on frame 20. The lower portion of the container rests against rollers carried by the lower end of the lift frame.

Container 38 is formed with an opening 50 in a wall thereof which is adapted to register with openings 17 and 31 of the buildings which the equipment is to be used. A door 51 is provided on the container for closing opening 30.

A vehicle 55 in the form of a flat-deck truck is provided for transporting containers 38. Special latch means may be provided for removably connecting the containers to the vehicle or, as shown, the latch means may be a plurality of cables 56 which extend over the container and are secured to the truck body.

When it is desired to move goods from building 10 to building 11, vehicle 55, with a container 38 thereon, is maneuvered so that the container is beside lift unit 18 of building 10. At this time, hooks 41 of the lift unit can be lifted upwardly and swung towards the container and dropped into sockets 42 of the latter. Then the lifting mechanism of unit 18 is operated to move the unit to the floor on which the goods are located and over the opening 17 of said floor.

The container door 51 is opened, as shown in FIG. 2, and the goods can be moved into and properly stacked in container 38. After the container has been loaded, door 51 is closed, and the lift unit operated to move the container down to ground level. At this time, truck 55 is in place so that as the lift unit comes down, the container is placed on the truck. Hooks 41 are lifted out of sockets 42 so that the container is free therefrom.

Then truck 55 is driven to building 11, container 38 is connected to lift 33, and the latter is moved up to the desired floor over the opening 31 thereof. Door 51 is now opened, and the container is unloaded. After this,

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the door is shut and the container is moved back down on to vehicle 55 to be driven away for further use or storage.

One of the advantages of this invention is that truck 55 does not have to remain near either building when the container is being loaded and unloaded. It can be driven away and parked in a convenient place, or it can be used for other purposes until required again. Another advantage is that a special container may be provided containing fire-fighting and rescue equipment so that it can be moved by the lift unit to any floor for fire fighting or rescue purposes. As the lift units are outside the buildings, they are not liable to be bothered by smoke as are the standard building elevators. Furthermore, the hoisting mechanism of the lift units can be made completely independent of the regular building electrical and power systems.

This invention also contemplates a control station so that the entire move can be kept track of or controlled.

The moving equipment includes a control station 60 where the use of hoist units 18 and 33 can be controlled. The idea is that when the mover arrives at building 10, he will get in touch with an operator at station 60, either by radio or telephone, and ask that hoist unit 18 be released for use. The operator will then render the unit operative. Similarly, when the mover is ready to drive away with the loaded container, he advises the operator who then renders unit 18 inoperative. This process is repeated relative to lift unit 33 at building 11.

FIG. 7 is a wiring diagram of one way of controlling the operation of each lift unit. In this diagram, 62 is an electric motor which is either the source of power for moving the lift unit along its rails, or it may drive a pump for a hydraulic system for moving the lift unit. The controls for the motor are illustrated at 63 and are connected in series with the motor and a control switch 64 in station 60. When switch 64 is open, controls 63 cannot cause motor 62 to operate. If desired, a key-operated switch 65 at the building may be connected in parallel with switch 64 so that under certain circumstances, the lift unit can be operated by someone at the building.

With this arrangement, the operator at station 60 closes switch 64 when the lift unit 18 is to be used, and the time is noted. When the mover has the loaded container on his truck, he notifies the operator who opens switch 64, and this time is noted. When the mover arrives at building 11, he again notifies the operator who opens the switch 64 that controls the motor of lift unit 33. This time is noted, as is the time when the mover reports that the move is finished. This enables the operator to keep track of the time it takes to load at building 10, transport the container from one building to the other, and then to unload at building 11. This enables a strict control to be maintained over the movers, and the person billed for the move can be charged for the actual time involved.

In addition to the above, it is desirable to weigh the goods being moved. FIG. 8 diagrammatically illustrates one way of doing this. Suitable means is provided at each lift unit for weighing a container connected to said unit. This can be accomplished in numerous ways, for example, load cells 69 can be associated with sheaves 70 of each lift unit and around which the lift cables 71 of the unit extend. These cells are electrically connected to a read-out board 72 in control station 60. If desired, a control switch 73 may be provided between board 72 and the load cells.

When the loaded container is on lift unit 18, the weight can be indicated at readout board 72 in the control station. At the end of the move when the empty container is connected to lift unit 33, another reading is taken so that when this is subtracted from the first reading, the weight of the goods moved is known. This makes it possible to bill the customer according to the exact weight of the goods that have been moved on his behalf.

As stated above, electric motor 62 can be used to op-

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erate the pump of a hydraulic system for moving the lift unit up and down its building. This makes it possible to provide a connection with the hydraulic system so that an outside engine-driven hydraulic pump, such as that of an extension ladder fire truck, can be connected to the system in case of electric power failure.

We claim:

1. The method of moving goods between first and second multi-storied buildings, which comprises latching a container in which the goods are loaded to a lift unit mounted for vertical movement on track means on the first building to be transported by said unit to a vehicle, transporting the loaded container by the vehicle to the second building, latching the container to a lift mounted for vertical movement on track means on the second building to be transported thereby to a desired floor in said second building, and unloading the latched container at said desired floor.

2. The method as claimed in claim 1 including the step of weighing the container with the goods therein during the transportation thereof.

3. The method as claimed in claim 1 in which said container is loaded at the floor of the first building where the goods are located and is unloaded at the floor of the second building where the goods are required.

4. The method as claimed in claim 1 including controlling the transportation of the container with the goods therein from a control station by selectively rendering by remote control said lift units of said first and second buildings operative and inoperative in response to calls by persons at the lift units.

5. The method as claimed in claim 4 including the steps of weighing the container with the goods therein while on one of said lift units, the weight thereof being simultaneously indicated in said central station.

6. The method as claimed in claim 4 including the steps of weighing the container with the goods therein while on one of said lift units, the weight thereof being simultaneously indicated in said central station.

7. The method of moving goods between first and second multi-storied buildings, which comprises loading a container removably latched to a lift unit mounted for vertical movement on a wall of the first building with the goods to be moved, moving said lift unit with the loaded container to a vehicle, unlatching the container from the lift unit and transporting said container by the vehicle to the second building, latching the container to a lift unit mounted for vertical movement on a wall of the second building to be transported thereby to a desired floor in said second building, and unloading the latched container at said desired floor.

8. The method as claimed in claim 7 including the step of weighing the container with the goods therein during the transportation thereof.

9. The method as claimed in claim 7 including controlling the transportation of the container with the goods therein from a control station by selectively rendering by remote control said lift units of said first and second buildings operative and inoperative in response to calls by persons at the lift units.

10. The method as claimed in claim 9 including the steps of weighing the container with the goods therein while in one of said lift units, the weight thereof being simultaneously indicated in said central station.

11. The method of moving goods between first and second multi-storied buildings, which comprises latching a container to a lift unit mounted for movement on vertical track means secured to an outer wall of the first building, moving said unit and the container attached thereto on the track means to the level of the floor of the first building on which the goods to be moved are located, loading the goods into the container, moving the lift unit downwardly on the track means and depositing the loaded container on to a vehicle, unlatching the container from said lift unit, transporting the container by the vehicle

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to the second building, latching said container to a lift unit mounted for movement on vertical track means secured to an outer wall of the second building, moving the lift unit and container along said track means to the level of a desired floor of the second building, and unloading the latched container at said desired floor.

12. The method as claimed in claim 11 including the step of weighing the container with the goods therein during the transportation thereof.

13. The method as claimed in claim 11 including controlling the transportation of the container with the goods therein from a control station by selectively rendering by remote control said lift units of said first and second buildings operative and inoperative in response to calls by persons at the lift units.

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U.S. Cl. X.R.

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