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END GATE

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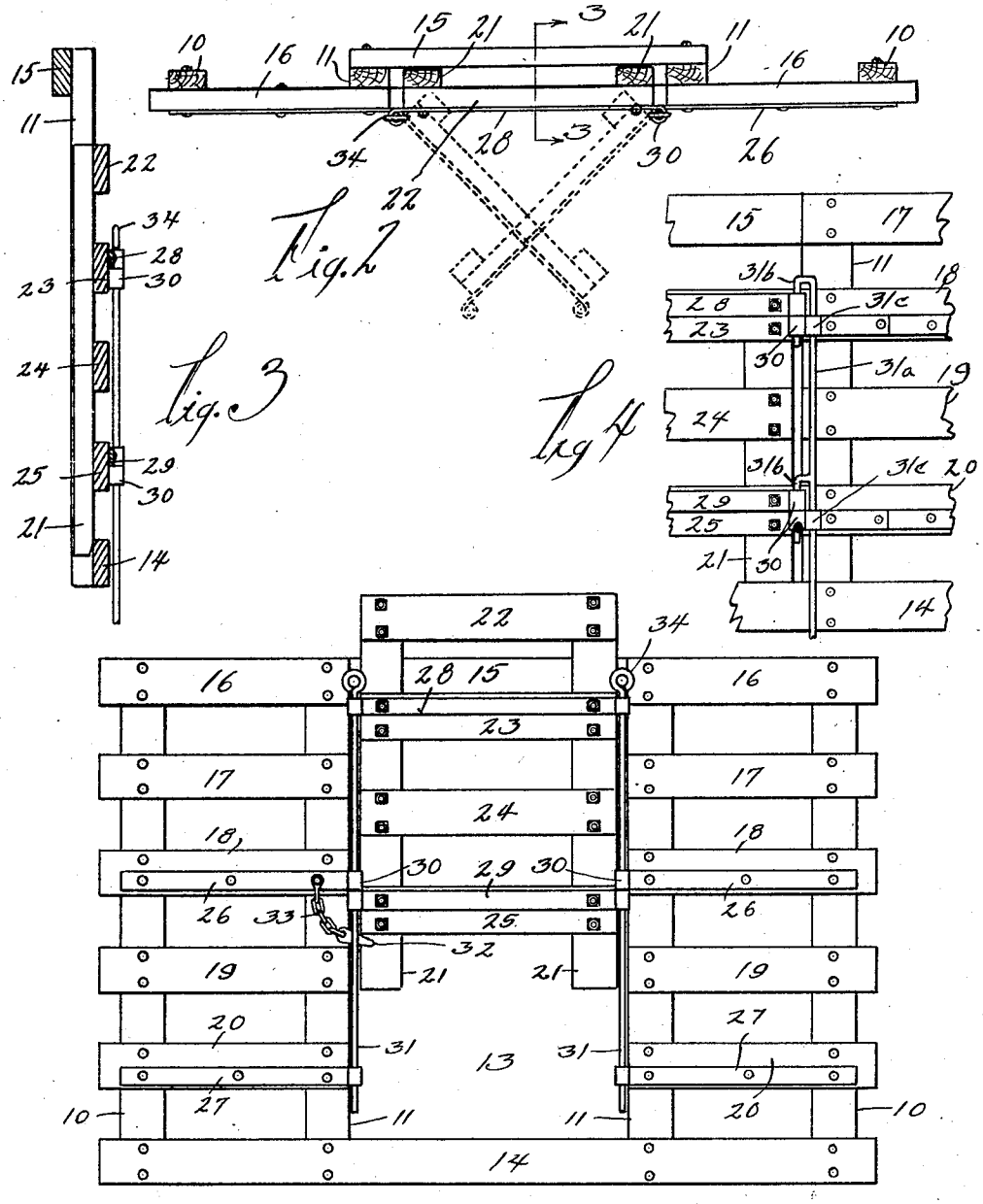



Fig. 1

Fig. 2

Fig. 3

Fig. 4

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## END GATE.

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My invention relates to end gates and it is my object to provide an end gate of simple, durable and inexpensive construction.

More particularly, it is my object to provide an end gate of the type having a central, auxiliary door which may be opened for most ordinary purposes of loading and unloading a truck in which the gate is used, whereby the gate itself need not be removed.

A further object of my invention is to provide such an end gate in which the central door may hinge in either direction or may be slid upwardly.

Another object is to accomplish the foregoing object by means of a structure, which is very simple and yet strong and durable.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Fig. 1 is an elevation of the end gate, the auxiliary door being shown raised.

Fig. 2 is a plan view of the end gate, the auxiliary door being shown hinged outwardly in either direction in dotted lines.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2, the auxiliary door being shown in its lowermost closed position.

Fig. 4 is an elevation of a portion of an end gate embodying a slightly modified form of my invention.

I am aware that it is not new to provide end gates having the central, auxiliary door feature, nor to provide such an end gate in which the central, auxiliary door may be hinged in either direction. I am also aware that constructions in which the central, auxiliary door may slide upwardly, are also old.

The present invention, therefore, comprises providing for both sliding movement and hinging movement in either direction by a very simple mechanism which does not weaken the end gate but is actually stronger than most of the end gates having the central opening. This strength is obtained by the hinge construction of my gate, in which there are provided iron straps extending entirely across the end gate.

I have used the reference character 10 to indicate the outer posts of the gate and the reference character 11 to indicate the inner posts which define the side extremities of the central door opening 13. The posts 10 and 11 are connected together at their lower ends by a sill 14 and at their upper ends by a bridge member 15 and the upper side pieces 16. It may be noted at this point that the upper side pieces 16, as well as the intermediate side pieces 17, 18, 19 and 20, are terminated at the inner edges of the posts 11, so as to leave an unobstructed space for the auxiliary door to slide upwardly beyond the upper extremity of the gate. The bridge member 15 connects the posts 11 in a plane which is the offset from the plane in which the door slides, this being accomplished by securing it to the opposite sides of the posts from the members 16 to 20, respectively. The door comprises the posts 21, connected by the cross pieces 22, 23, 24 and 25, which, when the door is in its lowered position, registers with the side pieces 17, 18, 19 and 20, respectively. The cross pieces 22 to 25, inclusive, are positioned in the same plane with the cross pieces 16 to 20 and the posts 21 are positioned in the same plane with the posts 11.

As the door slides upwardly, it will clear the bridge member 15, the latter serving to protect the door from impact against its upper extremity from either direction when the door is raised.

The door is secured between the posts 11 by means of the hinge straps 26, 27, 28 and 29, secured to the members 18, 20, 23 and 25, respectively, and provided with registering hinge loops 30, which receive the hinge pins 31. The hinge straps 26 and 27 are positioned below the hinge straps 28 and 29, respectively, the hinge straps 26 thus being positioned between the straps 28 and 29. Consequently the door may be slid upwardly from a position where the strap 29 rests against the straps 27 and 26, respectively, to a position where the strap 29 contacts with the straps 26. In this latter position, the door may be secured temporarily against sliding downwardly by a wedge 32, inserted between the adjacent corners of the cross piece 25 and side member 19, as illustrated in Fig. 1. The wedge 32 is secured to the end gate by means of a chain 33.

As the gate slides upwardly, the hinge pins 31 will slide with it, the heads 34 being engaged by the hinge strap 28.

When the gate slides downwardly to its lowermost position, the hinge pins 31 will

slide downwardly with it, as indicated in Fig. 3, and the projecting ends will slide behind the sill 14, as also shown in Fig. 3. When it is desired to hinge the door in either direction, the pin is removed from the side opposite that upon which the door is to hinge. The door is raised sufficiently to allow the projecting ends of the posts 21 to clear the sill 14 and the door may then be swung to the side of the hinge pin, which remains in place, as shown in dotted lines in Fig. 2.

It may now be noted that the hinge straps 26 and 27 extend from the opening 13 to the outer extremities of the gate and that the straps 28 and 29 extend entirely across the door. Consequently when the straps are connected by both hinge pins, they will, in effect, constitute steel bands extending the entire length of the gate, reenforcing the outer side of the gate as tension elements to resist pressure from within.

In this connection it will be understood that although the sides of the door are shown spaced considerably from the sides of the posts 11 for the sake of clearness, that in actual practice, there will be only sufficient clearance to allow the door to hinge outwardly in either direction. Thus when a strain is imposed against the gate from within, the door will serve as a compression element and the hinge straps as tension elements to resist that strain. The hinge loops are of course made very strong for this purpose.

As has already been mentioned, the bridge member 15 protects the door when in the position shown in Fig. 1, from the impact from either direction. A blow from the inner side of the gate will be received by the bridge member itself and a blow from the outer side of the gate against the door will be received by the bridge member through the medium of the door. The bridge member also serves to prevent the sides of the gate from sagging together and to maintain the posts 11 in proper spaced position so that the gate may slide freely upon the hinge pins. The gate is inserted in the ordinary way in a truck or the like, the projecting ends of the members 16, 17, 18, 19, 20 and 14 being received in the slides on the sides of the truck. The advantage of hinging the door in either direction may be stated briefly to lie in the fact that in backing a truck up to a building or the like under various conditions, it is sometimes necessary to back in from one direction and at other times necessary to back in from another direction. Under many conditions, the door can be readily hinged one way but cannot be opened in the other direction at all. Furthermore the door is often used to act as a part of a runway in guiding cattle, hogs and the like into the truck. In some cases it is desirable to have this auxiliary member on one side of the opening and sometimes on the other.

When small objects are to be unloaded from the truck or when it is used for carrying grain or the like, the door may be simply raised to remove the small objects or to shove out the grain. If desired, the door may be entirely removed by removing both pins.

In Fig. 4 I have shown a somewhat modified form of my invention, in which a shaft $31^a$ is substituted for the shaft 31 and provided with pins $31^b$, which extend through the loops 30 in the same manner as in the preferred form of my invention. The shaft $31^a$ is mounted in bearing loops $31^c$ beyond the side extremities of the door opening so that it is unnecessary to entirely remove the shaft from its bearings in order to open the door. By sliding the shaft upwardly to remove the pins $31^b$ from the loops 30, the door may be opened.

In sliding the door vertically, the shaft $31^a$ will slide vertically in the same manner as in the preferred form of the invention, being lifted by the loops 30.

Some changes may be made in the construction and arrangement of the parts of my invention without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. An end gate comprising a pair of side posts, a pair of central posts, side pieces connecting said posts, the central posts delimiting a central opening, upper and lower cross members connecting the central posts, a door to close the central opening, hinge straps secured to the outer faces of the side pieces and extending substantially from the outer sides of the gate to the inner posts, coacting hinge straps secured to the outer side of the door and extending entirely across said door, registering hinge loops on the respective ends of the straps, and hinge pins extending through said loops, the parts being arranged to allow outward hinging of the door around either hinge pin upon removal of the other and to allow upward sliding of door upon both pins.

2. An end gate comprising a pair of side posts, a pair of central posts, side pieces connecting said posts, the central posts delimiting a central opening, upper and lower cross members connecting the central posts, the upper cross members being secured to the rear sides of the posts and thereby removed from the plane of the said opening, a door to close the central opening, hinge straps secured to the outer faces of the side pieces and extending substantially from the outer sides of the gate to the inner posts, co-acting hinge straps secured to the outer side of the door and extending entirely across said door, registering hinge loops on the respective ends of

the straps, and hinge pins extending through said loops, the parts being arranged to allow outward hinging of the door around either hinge pin upon removal of the other and to allow upward sliding of the door upon both pins.

3. An end gate comprising a gate member provided with a central opening, a door, registering hinge loops secured to the gate member and to the door at each side thereof, respectively, removable hinge pins extended through said loops so as to allow outward hinging of the door around either hinge pin upon removal of the other and to allow upward sliding of door upon both pins, and means on said pins to engage the hinge loops of the door, whereby the door, during its upward movement, will carry the hinge loops upwardly with it.

Signed this 27th day of April, 1927, in the county of Woodbury and State of Iowa.

ARTHUR LANGREN.