

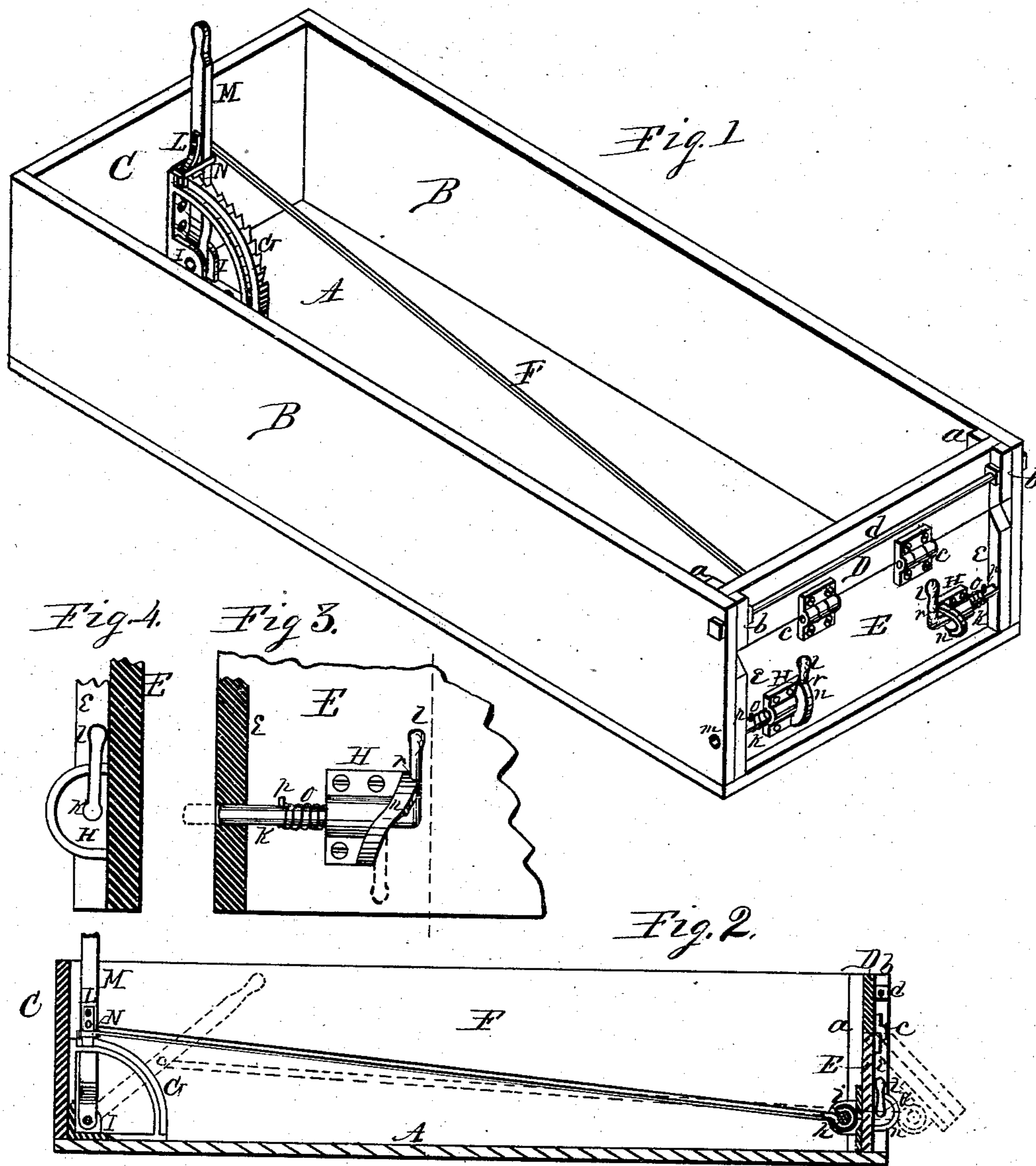
(No Model.)

2 Sheets—Sheet 1.

W. J. FORBES.  
End Gate for Wagon Boxes.

No. 241,484.

Patented May 17, 1881.



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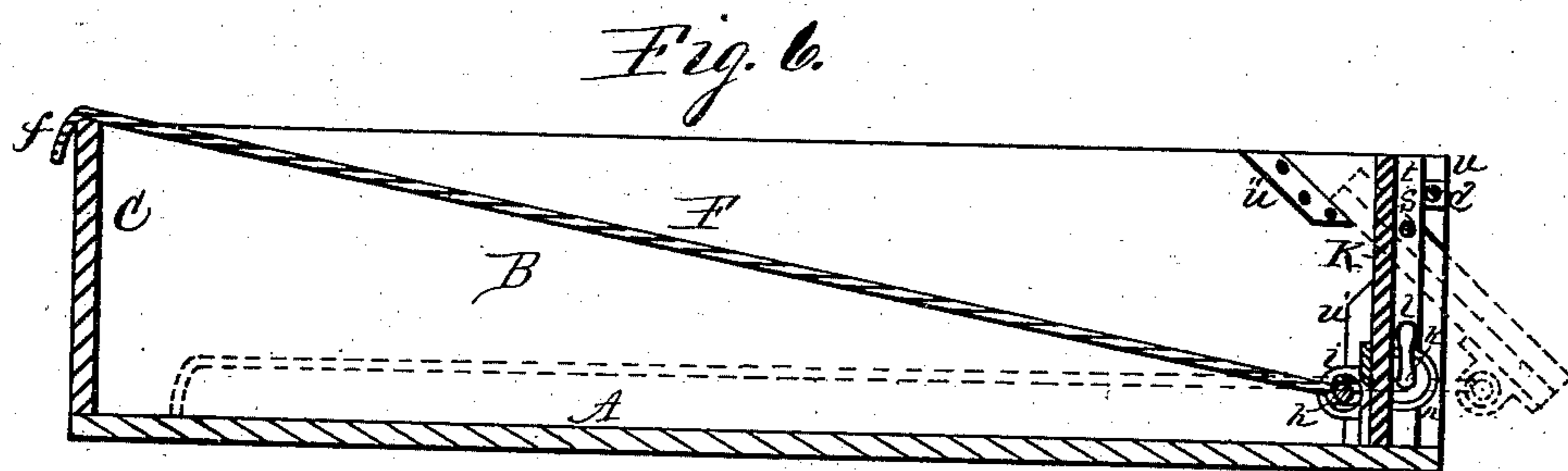
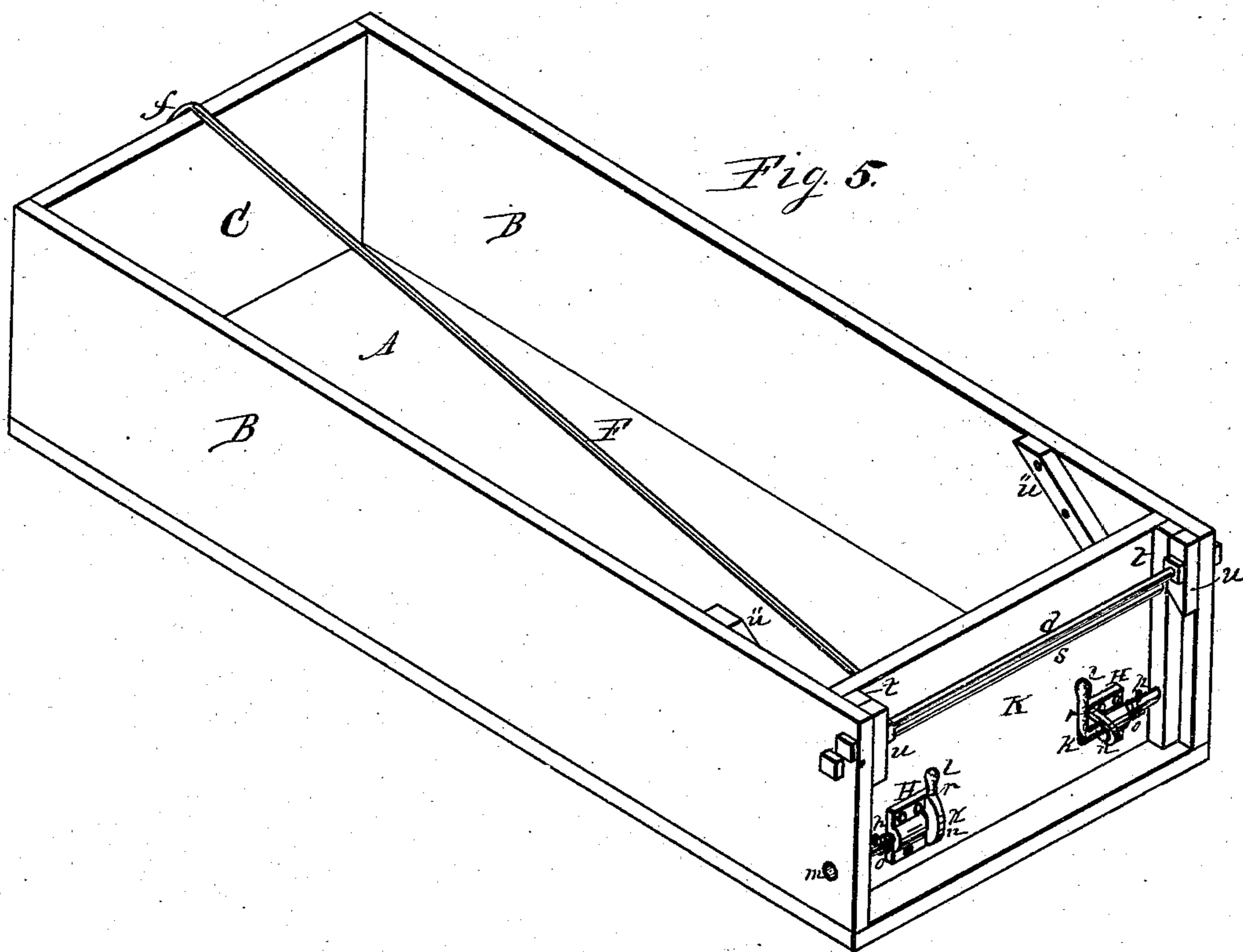
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# UNITED STATES PATENT OFFICE.

WILLIAM J. FORBES, OF WINNEBAGO, ILLINOIS.

## END-GATE FOR WAGON-BOXES.

SPECIFICATION forming part of Letters Patent No. 241,484, dated May 17, 1881.

Application filed February 10, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM J. FORBES, a citizen of the United States, residing in the town of Winnebago, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Wagon-Boxes, of which the following is a specification.

My invention relates to improvements in wagon-boxes in which the rear end-gate is capable of an outward-swinging movement.

The object of the first part of my invention is to enable the driver to open the rear end-gate without leaving his seat; and, second, to provide the end-gate with a secure locking mechanism, to be employed with or without the first part of my invention. To accomplish these objects I have designed and applied the devices represented in the accompanying drawings, in which—

Figure 1 is an isometrical representation of a wagon-box with my improvements represented in place thereon. Of this figure Fig. 2 is a central lengthwise vertical section. Fig. 3 is an elevation of a portion of the end-gate with end cleat in section, of which Fig. 4 is a transverse vertical section on dotted line *x*. Fig. 5 is an isometrical representation of a wagon-box, in which is shown an end-gate in one piece with my improvements attached. Of this figure Fig. 6 is a lengthwise central vertical section.

In the figures, A represents the bottom, B the sides, and C the front end, of an ordinary wagon-box composed of boards in the usual manner.

At *a* are represented cleats fixed to the inside of the rear-end portion of the sides, inside of the end-gate; and at *b* are short cleats fixed to the inner upper-edge portion of the side-boards, outside of the end-gate. In this instance the end-gate is composed of two portions, D and E, fixed to each other in hinge-joint connection by means of suitable hinges, as represented at *c*, or hinges of any of the usual or known forms applicable for the purpose. The upper portion, D, of this end-gate is placed between the cleats *a* and *b*, having its upper edge even with the upper edges of the sides, and is held in position by means of a screw-threaded clamping-rod, *d*, passed

through the sides, and short cleats, *b*, in rear of the end-gate. The lower portion, E, of the end-gate is of proper width to fill the space between the lower edge of the upper portion, D, and the bottom of the box, and its end portions are provided with cleats *e* suitably fixed thereto. The upper ends of these cleats *e* and the lower ends of the short cleats *b* are cut at such an angle as to permit the lower portion of the gate to swing outward freely without cramping.

At F is represented a rod, having its rear end connected centrally with the inside lower portion of the end-gate by a suitable hinge-joint connection, to permit the rod to turn therein when the end-gate swings outward.

At G is represented a segment-ratchet fixed centrally in the width of the front end of the wagon-box, in its lower inner angle, being suitably connected to the bottom and front end thereof.

M represents a hand-lever pivoted at its lower end between ears I formed in the central angle of the ratchet-segment, by means of a suitable pivot-pin passed transversely through the ears and lower end portion of the lever. This lever M is provided with a catch to engage the teeth of the segment-ratchet.

L represents a spring fixed to the lever M, having its free end adapted to engage the side of the segment opposite the ratchet-teeth, operating to hold the lever in contact therewith.

At N is represented a keeper spanning the spring, and having its ends fixed to the lever to limit the outward movement of the spring, to prevent over straining or accidental injury thereto.

From this arrangement it will be seen that the lever will be in easy reach of the driver when mounted in a seat supported on the forward end portion of the wagon-box, in the position usually occupied by drivers in such wagon-boxes, to enable him to disengage the lever from its hold on the ratchet, and to open the rear end-gate to permit the contents of the box to be discharged without leaving his seat. This arrangement is especially convenient in the present system, as now generally practiced in unloading grain, which consists in placing the wagon in an inclined position to discharge

its contents from its rear end into a bin or hopper to conduct it to the elevator, or into bins or other receptacles fitted to receive it, or to permit its contents to be readily shoveled from its open end. This arrangement of the lever and rod, however, may not be found convenient in all the uses for which a wagon-box is required—such as the carrying of live stock or other bulky or large articles. To meet such contingencies I have made the rod detachable, which, in this instance, I accomplish by removing the pin or bolt *h*, which connects it with the ears *i* fixed to the end-gate, and detaching its forward end from the lever, or by removing the ratchet lever and rod.

I have also provided the end portions of the swinging end-gate with spring-bolts *k*, provided with a crank-like lever-arm, *l*, by which it may be turned in its bearings from its position in solid lines to the position represented in dotted lines. The free ends of these bolts are supported in a bearing in the cleats *e* on the end portions of the swinging gate, and in position to engage a suitable hole, *m*, in the end portion of the box sides provided to receive them when the end-gate is closed and the bolts projected outward, as represented in dotted lines in Fig. 3. The inner portions of these bolts are supported in bearings *H*, fixed to the gate, and are capable of an endwise movement therein. The inner ends of these bearings are of a spiral inclined form, produced by the rim or thread-like projection *n*, which is located to engage the crank-like arm of the bolt, which, when turned from the position in dotted lines to the position in solid lines, making a half-revolution of the bolt, will cause it to move endwise inward from the position of the dotted lines to the position in solid lines, and disengage it from its connection with the box sides, and permit the gate to swing outward on its hinged connections. These bolts are provided with a spiral spring, *o*, surrounding the bolt, between the outer end of the bearings *H* and the pin *p*, operating to project the bolt outward and hold the lever-arm in contact with the incline. This action will operate to hold the bolt when engaged with the sides of the box, as in the dotted lines. The upper portion of the spiral inclines of the bearings are provided with a slight recess or indentation, as at *r*, to receive the lever-arm of the bolt when turned up, as in the solid lines, to hold it in position to permit the gate to swing outward, but are of such conformation as to permit the bolt to be disengaged therefrom by a slight downward or outward pull on the lever-arm.

In Figs. 5 and 6 I have represented a modification of my improvement, in which the end-gate *K* is in one piece, pivoted on a transverse rod, *s*, which is passed through the side-boards *B*, and through the cleats *t* fixed to the ends of the end-gate; and it is provided with a screw-nut on its outward projecting end to

prevent its accidental displacement. In this modification the inner sides of the rear-end portions of the side-boards are provided with a short cleat, *u*, on the outside of the end-gate and upper edge portion of the sides. A cleat, *u'*, is placed on the inside of the end-board and under-edge portion of the side-boards. These cleats are located to receive the end-gate when closed, and are of such length as to permit the lower portion of the end-gate swinging on its pivotal center to swing outward, as represented in dotted lines.

At *u''* are represented cleats placed on the inside and upper edge of the rear portion of the side-boards, at an angle to receive the inner side of the upper portion of the ends of the end-gate, to limit its inclination when open.

At *P* is represented a rod, which is passed through the end portions of the side-boards outside of the end-gate, and its outward projecting end is provided with a screw-nut, operating to prevent spreading of the sides. This end-gate is provided with the central rod, *F*, which, in this instance, is provided with a turn-down hooking end portion, *f*, fitted to overreach the front end-board, *C*, hooking thereon snugly, operating to hold the rear end-gate in place in its closed position, from which it may be readily detached by the driver in his seat to open the end-gate to deliver the contents of the wagon-box.

This end-gate is also provided with the spring-bolts *k* in the same manner and for the same purpose as hereinbefore described in connection with Figs. 1, 2, 3, and 4.

In the foregoing I have described the central rod as connected with the lever, or as hooking over the forward end-gate of the wagon; but instead thereof its forward-end portion may connect with any convenient portion of the forward part of the box, to be within reach of the driver.

I claim as my invention—

1. The combination, with the swinging end-gate of a wagon-box, of a rod connected with its inner lower portion by a hinge-joint connection, and extending forward within reach of the driver, substantially as and for the purpose hereinbefore set forth.

2. The combination, with the hinged rear end-gate of a wagon-box and a lever pivoted to its forward-end portion, of a connecting-rod hinged to the lower-edge portion of the end-gate and connected to the lever, substantially as and for the purpose hereinbefore set forth.

3. The combination, with a hinged rear end-gate, of a segment-ratchet, pivoted lever, and connecting-rod pivoted at one end to the pivoted lever and at its opposite end to the lower edge of the hinged end-gate, substantially as set forth.

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