Oct. 14, 1941. H. L. BROWN ET AL 2,258,923

TRAIN ORDER CRANE

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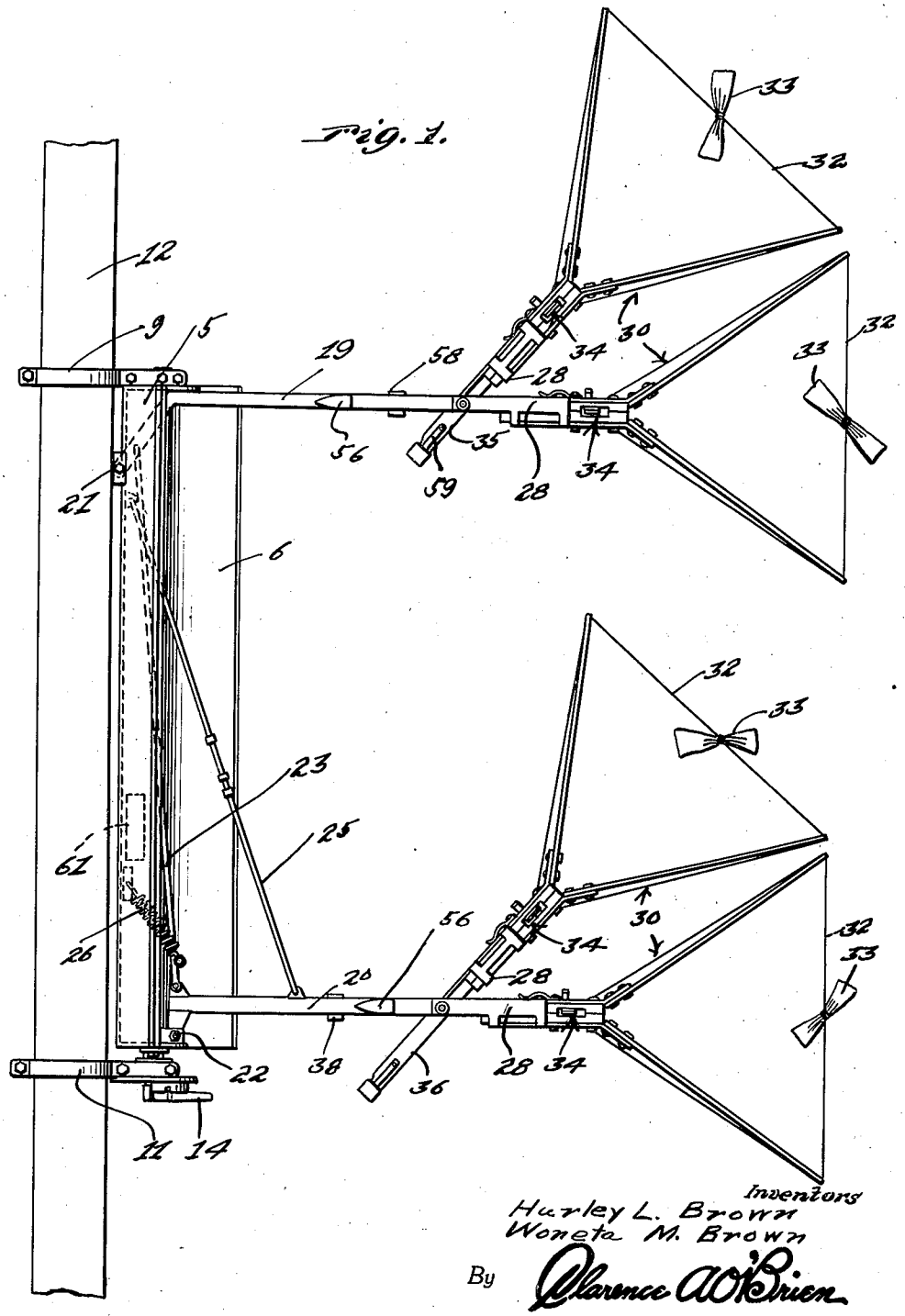
Fig. 1.



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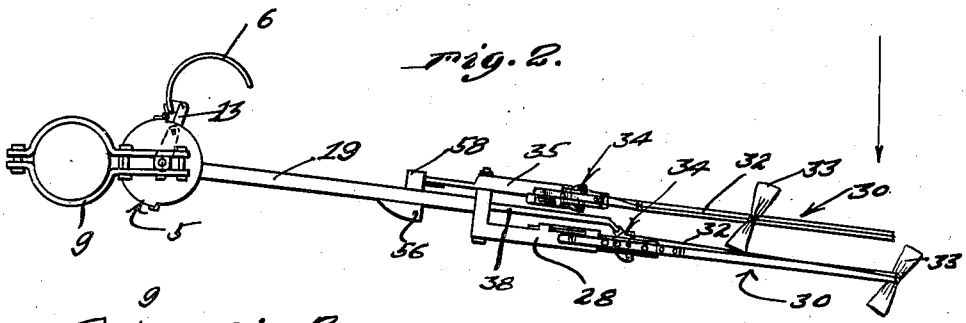

Fig. 2.

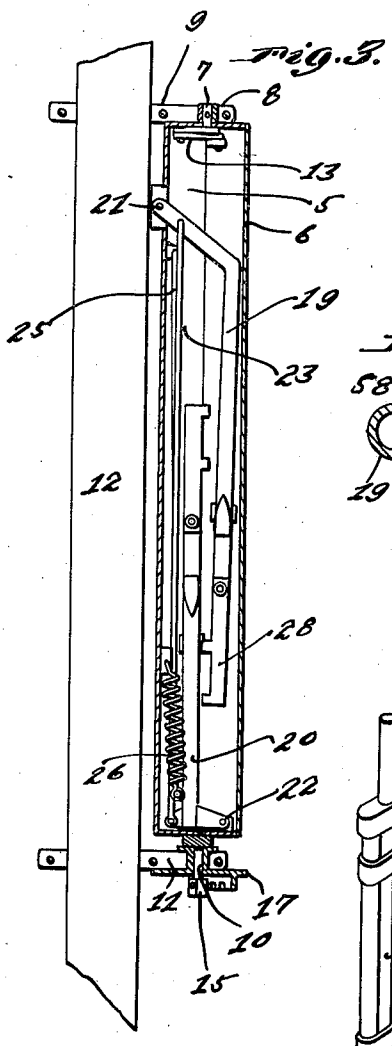

Fig. 3.

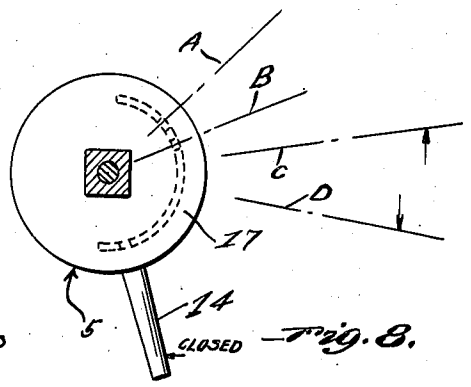

Fig. 8.

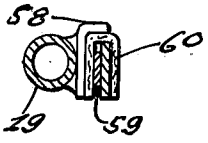

Fig. 10.

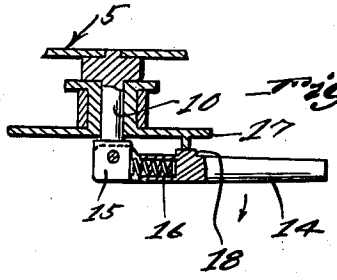

Fig. 9.

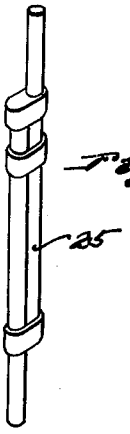

Fig. 11.

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Fig. 4.

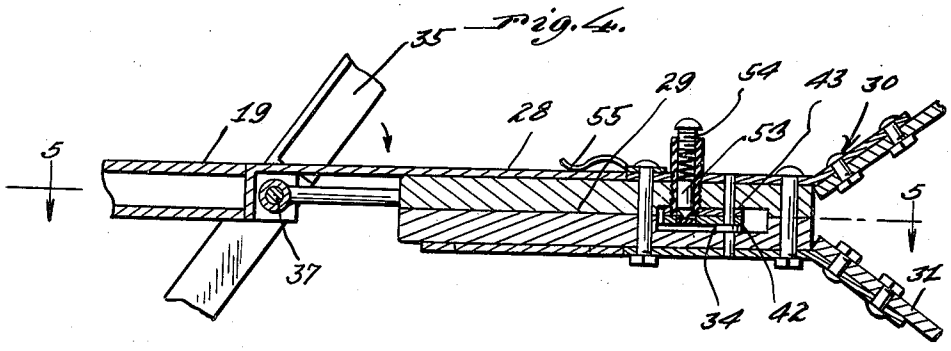


Fig. 5.

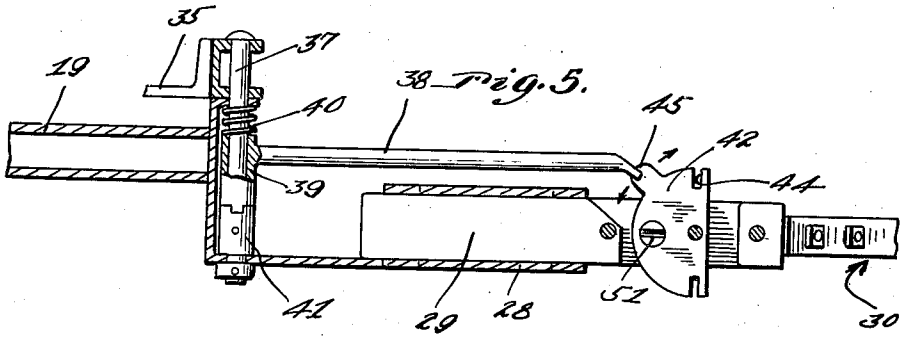


Fig. 6.

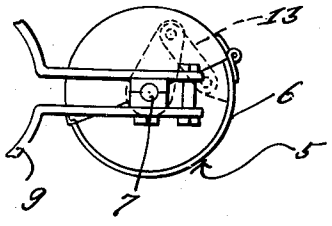


Fig. 7.

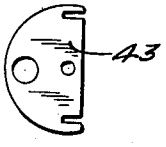
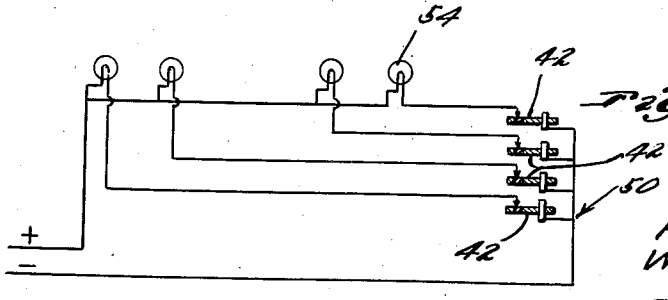


Fig. 12.



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UNITED STATES PATENT OFFICE

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TRAIN ORDER CRANE

Hurley L. Brown and Woneta M. Brown, Van Buren, Ind.

Application September 18, 1940, Serial No. 357,303

5 Claims. (Cl. 258—2)

This invention relates to a train order crane, and has for the primary object the provision of a device of this character which may be readily installed on a vertical support, such as a semaphore post so as to locate the device for dispatching orders to engineers and crews of trains while under headway and includes signal means for remotely notifying when the orders have been obtained.

Another object of this invention is the provision of a device of the above stated character which will be protected from weather elements when not in use and may be readily brought into operative position and includes means whereby several train orders may be positioned for delivery at one setting of the device, and be received by a crew and engineer of a train employing a single engine and a single caboose or by crews and engineers of a train composed of two engines and two cabooses and in such a manner that the engineer of the first locomotive may obtain the proper order and the engineer of the second engine may obtain the proper order and likewise the crews of the two cabooses.

With these and other objects in view as will become more apparent as the description proceeds, the invention consists in certain novel features of construction, combination and arrangement of parts as will be hereinafter more fully described and claimed.

For a complete understanding of our invention, reference is to be had to the following description and accompanying drawings, in which

Figure 1 is a side elevation illustrating a train order crane constructed in accordance with our invention and showing the device in an operative position.

Figure 2 is a top plan view illustrating the device and indicating the direction of travel of a train in relation thereto by an arrow.

Figure 3 is a vertical sectional view illustrating the device in an inoperative position.

Figure 4 is a fragmentary vertical sectional view illustrating an order holder applied to one of the main arms with a portion of an auxiliary train order arm in an operative position with respect thereto.

Figure 5 is a sectional view taken on the line 5—5 of Figure 4.

Figure 6 is a fragmentary top plan view illustrating the device in an operative position.

Figure 7 is a plan view of a holding plate.

Figure 8 is a diagrammatical view illustrating the various positions that the device will assume.

Figure 9 is a fragmentary vertical sectional view illustrating an operating lever.

Figure 10 is a detail sectional view showing a stop for one of the auxiliary arms.

Figure 11 is a fragmentary perspective view of a self-adjusting brace.

Figure 12 is a digrammatical view illustrating the wiring diagram of the signals.

Referring in detail to the drawings, the numeral 5 indicates a casing of cylindrical formation and provided with a hinged door 6 extending the full length thereof. The casing when in use is arranged vertically and the upper end is journaled on a comparatively short shaft 7 fixed in a bearing 8 carried by a split type clamp 9. The lower end of the casing has seucred thereto a shaft 10 journaled in a bearing forming a part of a split clamp 11. The clamps 9 and 11 are employed for mounting the casing vertically or parallel with a vertical support 12 which may be a post of a semaphore employed for giving signals on a railroad.

Pivotally connected links 13 are arranged in the upper end of the casing and one of the links is pivotally connected to the hinged door 6 while the other link is secured on the fixed shaft 7 so that the casing when rotated in opposite directions will bring about opening and closing of the door. To facilitate the rotation of the casing in opposite directions, a hand lever 14 is pivotally connected to a squared head 15 formed on the shaft 10. A spring 16 carried by the hand lever 14 bears against the head which will permit the hand lever to have a pivotal movement, but still will maintain said handlever against accidental movement. The clamp 11 carries a detent plate 17 to coact with a detent 18 on the hand lever for securing said hand lever in several positions, one position bringing about closing of the casing and another position opening of the casing. The casing has two open positions when the hand lever occupies either of the positions indicated by the characters A, B in Figure 8. The hand lever occupies the full line position shown in Figure 8 to bring about the complete closing of the casing.

The detent plate has a series of notches to receive the detent 8 of the hand lever so that the hand lever will not accidentally move from any of its positions.

Upper and lower main arms 19 and 20 are pivotally mounted in the casings, as shown at 21, and 22 and are connected by a tie rod 23. The tie rod has pivotal connection with the arms and is for the purpose of causing one arm to

move by the movements of the other arm. The arms 19 and 20 may be pivoted to lie entirely within the casing or to assume horizontal position outwardly of the casing. The lower arm 20 has pivotally connected thereto a self-adjusting brace 25 which is in turn pivotally connected to the casing. The brace 25 includes slidably connected sections. Arm balancing springs 26 are connected to the casing and to the connecting link 23 for the purpose of sustaining the arms in any position that they may be moved into.

The arms 19 and 20 have formed thereon sleeves 28 in which may be positioned stems or shanks 29 of train order holders 30 each including forked members 31 having the free ends thereof notched to receive a flexible element 32 to which is tied the train order, as indicated at 33.

The flexible element 32 is brought into engagement with a trip mechanism 34.

Auxiliary arms 35 and 36 are pivotally mounted on the main arms 19 and 20 and they also include sleeves 28 to receive the shanks or stems 29 of train order holders constructed in accordance with the train order holders 30. The arms 19 and 20 have journaled thereon pins 37 on which the auxiliary arms are fixed and also journaled on said pins are arms 38 forming part of the trip mechanism 34. The arms 38 include hubs 39 which are journaled on the pins 37 and have limited sliding movement thereon and are spring influenced by springs 40. The hubs 39 are in the form of clutch elements coactive with clutch elements 41 fixed on the pins to prevent rotation of the arms 38 on the pins when the train order supporting arms are arranged in operative position. However, by imparting sliding movement of the hubs 39 against the action of the springs 40 the arms 38 may be moved into folded position to permit the train order arms 19 to swing freely into the casing.

Each trip mechanism includes superimposed plates 42 and 43 each having a pair of notches 44. The notches of the plate 42 are arranged at right angles to the notches of the plate 43 so that when said plates are moved in one position relative to each other the notches of the plate 42 will cross the notches of the plate 43 to confine therein the flexible elements 32 of the train order holder. The plate 43 is fixed on the stem or shank 29 while the plate 42 is pivotally mounted thereto and the plate 42 has an extension 45.

It is to be understood that the notches of said plates 42 and 43 are arranged on opposite sides of the stem or shank 29 and that the flexible order of the train order holder is placed in either of the notches at one side of the stem or shank.

The extensions 45 are to be engaged by the arms 38, that is the free ends of the arms 38 rest on the extensions to prevent pivotal movement of the arms 35 and 36. It is to be further understood that the arms 38 are only employed on the main arms and coactive with the trip mechanisms of the train order holders adapted thereto for the purpose of freeing for pivotal movement the auxiliary arms 35 when the train orders have been removed from the train order holders carried by the arms 19 and 20 to allow the auxiliary arms to gravitate into parallel relation to the arms 19 and 20 for positioning the train orders carried thereby into position to be removed by members of the passing train. For instance, when a member of a train removes the train order from the train order holder carried by the arm 19 the trip mechanism is actuated to move the extension thereof from under the arm 38 and thereby free the auxiliary arm 35 for pivotal movement in relation to the arm 19 so that it may move into a position of placing the train order carried thereby to be reached by another member of the train. This also applies to the lower arm 20 and the auxiliary arm 36 carried thereby.

The plates 42 of the trip mechanisms 34 are connected in an electric circuit 50 and each has an insulated member 51. Spring influenced contacts 53 are carried by the stems or shanks 29 and ride the plates 42 so that during the pivotal movement of said plate 42 the contacts 53 move into and out of engagement with the insulated members 51 thereof. The contacts 53 are detachably connected in the electric circuit 50 which includes signal lamps 54 adapted to be remotely located such as in a train dispatcher's office.

When the plates 42 are set for securing flexible elements of the train order holders, the contacts 53 are in engagement with the insulated members 51 to break the circuit to the signal lamps 54. However, when the plates 42 are rotated due to the flexible elements being removed from the train order holders the contacts 53 engage with the plates 42 and complete the circuit to the electric lamps.

Thus it will be seen that through the electrical arrangement, signal lamps will be illuminated as the various flexible elements are removed from their respective train order holders by the members of the train.

Spring clips 55 are carried by the shanks 29 of the train order holders to engage with the sleeves 28 of the arms 19, 20, 35, and 36 to prevent the train order holders from becoming accidentally detached therefrom.

Illuminating devices 56 may be installed on the arms 19 and 20 for the purpose of illuminating the train order holders when positioned for delivery of the train orders.

When the device is in non-use, the train order holders are removed from the arms of the device and the arms 35 and 36 are swung into parallelism with the arms 19 and 20 and the latter are folded into the casing and by positioning the hand lever 14 in the full line position, as shown in Figure 8, the door 6 of the casing will be closed. However, when the hand lever 14 is moved into either of its positions A or B the door 6 will be opened and the casing so positioned as to place the arms at a proper angle with respect to the train tracks in accordance with the direction in which the train is traveling. The different positions of the arms are indicated by the lines C and D in Figure 8.

When desiring to apply the train order holders, the arm 20 is moved partly out of the casing which causes the arm 19 to move partly outwardly therefrom so that the train orders may be applied to the arms 19 and 35 with the arm 35 disposed at an angle to the arm 19. The arm 20 is then moved further into a lowered position or into a horizontal position, as shown in Figure 1, whence the train orders may be applied to the arm 20 and 36 with the arm 36 disposed at an angle to the arm 20, as shown in Figure 1.

It is to be understood that when the arm 20 assumes a full horizontal position, the arm 19 also assumes a full horizontal position in a plane thereabove.

The device as shown in Figure 1 is in an opera-

tive position and ready for the delivery of train orders to the engineers and crews of a train composed of two engines and two cabooses. The train orders carried by the arms **20** and **36** are for the crews of the cabooses while the train orders carried by the arms **19** and **35** are for the engineers of the engines. The engineer of the first engine takes the order from the order holder carried by the arm **19** which automatically releases the arm **35** to gravitate into parallelism with the order holder carried by the arm **19** thereby arranging the train order thereof in position to be taken by the engineer of the second engine. The same procedure occurs in regards to the crews of the cabooses, the crew of the first caboose takes the order from the order holder carried by the arm **20** which automatically releases arm **36** to assume a position parallel with the train order holder of the arm **20** thereby positioning the order carried thereby to be obtained by the crew of the second caboose.

Of course, it is to be understood that this invention can be successfully employed with a train composed of a single engine and engineer and a caboose and a crew therein. However, when the device is used in this manner only the arms **19** and **20** are employed for supporting the train order holders.

Stops **58** are mounted on the arms **19** and **20** to be engaged by spring fingers **59** on the arms **35** and **36** when the latter gravitate into position parallel with the arms **19** and **20**. It is preferable that the spring fingers have a covering **60** thereon.

After the train orders have been removed, the train order holders can be easily removed from their respective arms and the arms then folded into the casing and the latter closed by operating the hand lever so as to protect the device from weather elements. If desired, a suitable heating arrangement indicated diagrammatically in Figure 1 by the character **61** may be used to prevent freezing of snow and ice on the device.

While we have shown and described the preferred embodiment of our invention, it is to be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the spirit and scope of the invention as claimed.

Having thus described the invention, what we claim is:

1. In a train order crane, a casing, means for supporting said casing, main arms carried by the casing for movement into and out of said casing, said arms normally projecting horizontally from the casing, auxiliary arms pivoted on said first-mentioned arms to assume a position parallel with the first-named arms by gravitation and a position angularly to said first-mentioned arms by manual operation thereof, train order holders removably secured on said arms and each including a removable order carrying element, trip devices on said first-mentioned arms to releasably secure the auxiliary arms in the second-named position, and means for connecting the order carrying elements of the order holders of the first-mentioned arms to said trip devices for actuating the latter on the removal of said last named order carrying elements from the respective holders therefor.

2. In a train order crane, a casing, means for supporting said casing, main arms carried by the casing for movement into and out of said casing, said arms normally projecting horizontally from the casing, auxiliary arms pivoted on the first-mentioned arms and capable of assuming a position parallel with the first-mentioned arms by gravitation and capable of being placed in a position angularly to the first-named arms, forked order holders removably secured to said arms and each including a flexible removable order carrying element, trip mechanisms movably carried by said order holders of the main arms and having the order carrying elements releasably secured thereto and moved by said order carrying elements when detached from the holders, and means connected to said auxiliary arms and engaging the trip mechanisms of the order holders carried by the main arms to support said auxiliary arms in the second-named position and to release said auxiliary arms for movement into the first-named position on the trip mechanisms moving out of engagement therewith.

3. In a train order crane, a main arm, a supporting means for said arm, a pin journaled in said arm, an auxiliary arm to either parallel said main arm by gravitation or to assume a position angularly to the main arm by manual actution thereof and secured on said pin, order holders releasably secured to the arms and including removable order carrying elements and a movable trip mechanism carried by the main arm releasably securing one of said elements to the holder of the main arm and caused to move by the removal of the element from said holder, and means secured to said pin and releasably supported by said trip mechanism of the order holders on the main arm for releasably sustaining the auxiliary arm in an angular position to the main arm.

4. In a train order holder crane, a main arm, supporting means for said arm, a pin journaled on said arm, an auxiliary arm secured on said pin to be manually moved into a position angularly to said main arm and to assume a position parallel to the main arm by gravitation, order holders removably secured to said arms and including order carrying elements removably carried thereby, a trip mechanism on said main arm to releasably secure one of said elements on the holder of the main arm and including a movable member caused to move by said one element when removed from the holder, a trip arm secured to said pin and engaged with the movable member of the trip mechanism of the main arm to releasably sustain the auxiliary arm in the position angularly to the main arm.

5. In a train order holder crane, a main arm, supporting means for said arm, a pin journaled on said arm, an auxiliary arm secured on said pin to be manually moved into a position angularly to said main arm and to assume a position parallel to the main arm by gravitation, order holders removably secured to said arms and each including an order carrying element removably carried thereby, a trip mechanism on said main arm to releasably secure one of said elements on the holder of the main arm and including a movable member caused to move by said one element when removed from the holder, and a trip arm clutched to said pin for manual release therefrom, said trip arm being connected to the movable member of the trip mechanism of the main arm and adapted to releasably sustain the auxiliary arm in the position angularly to the main arm.

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