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A. F. CALLISON

SWIVELED WHEEL FOR SUPPORTING PORTABLE CONTAINERS

Filed Dec. 4, 1924

3 Sheets-Sheet 1

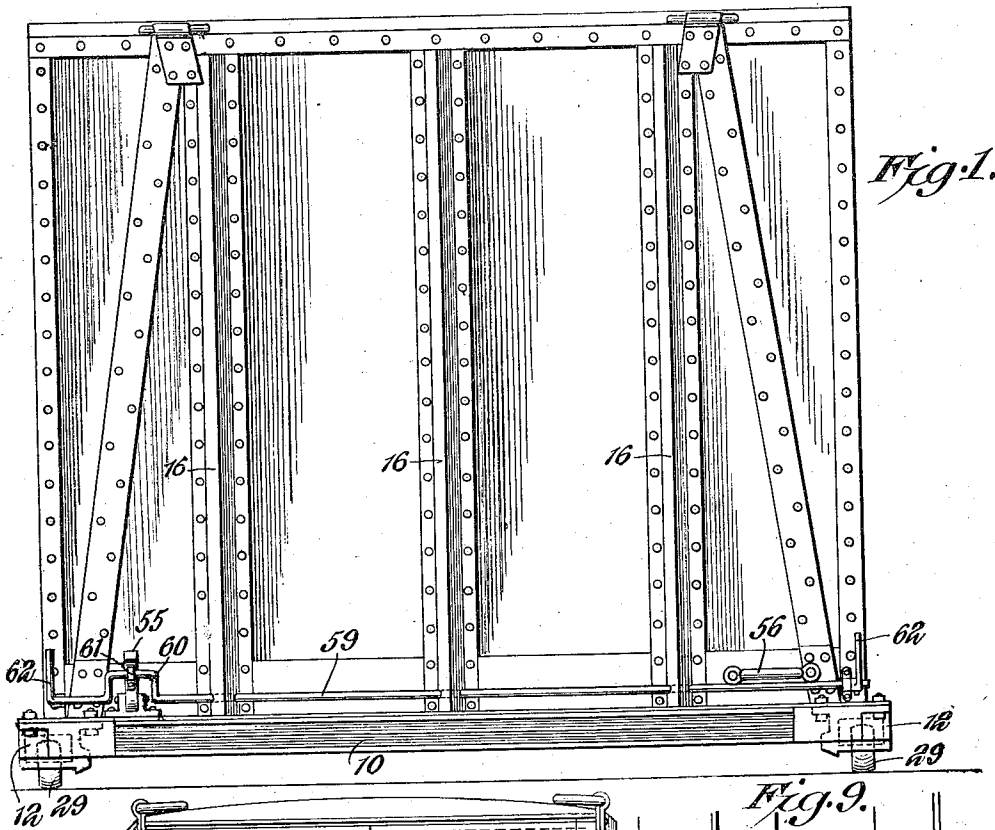
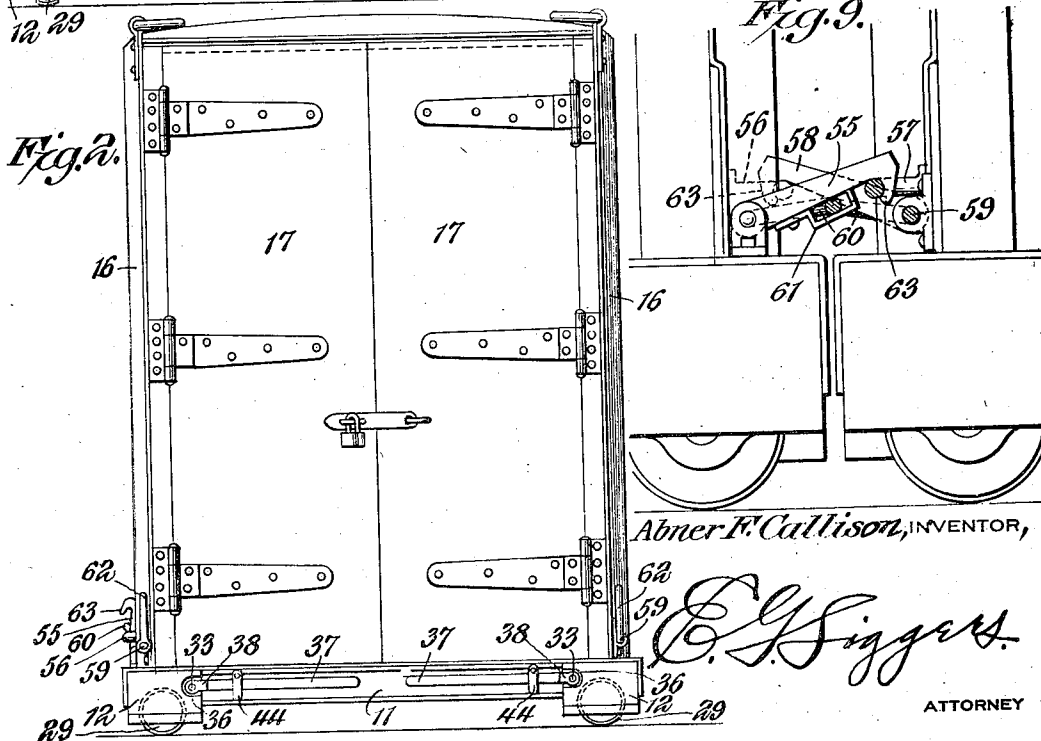


Fig. 1.



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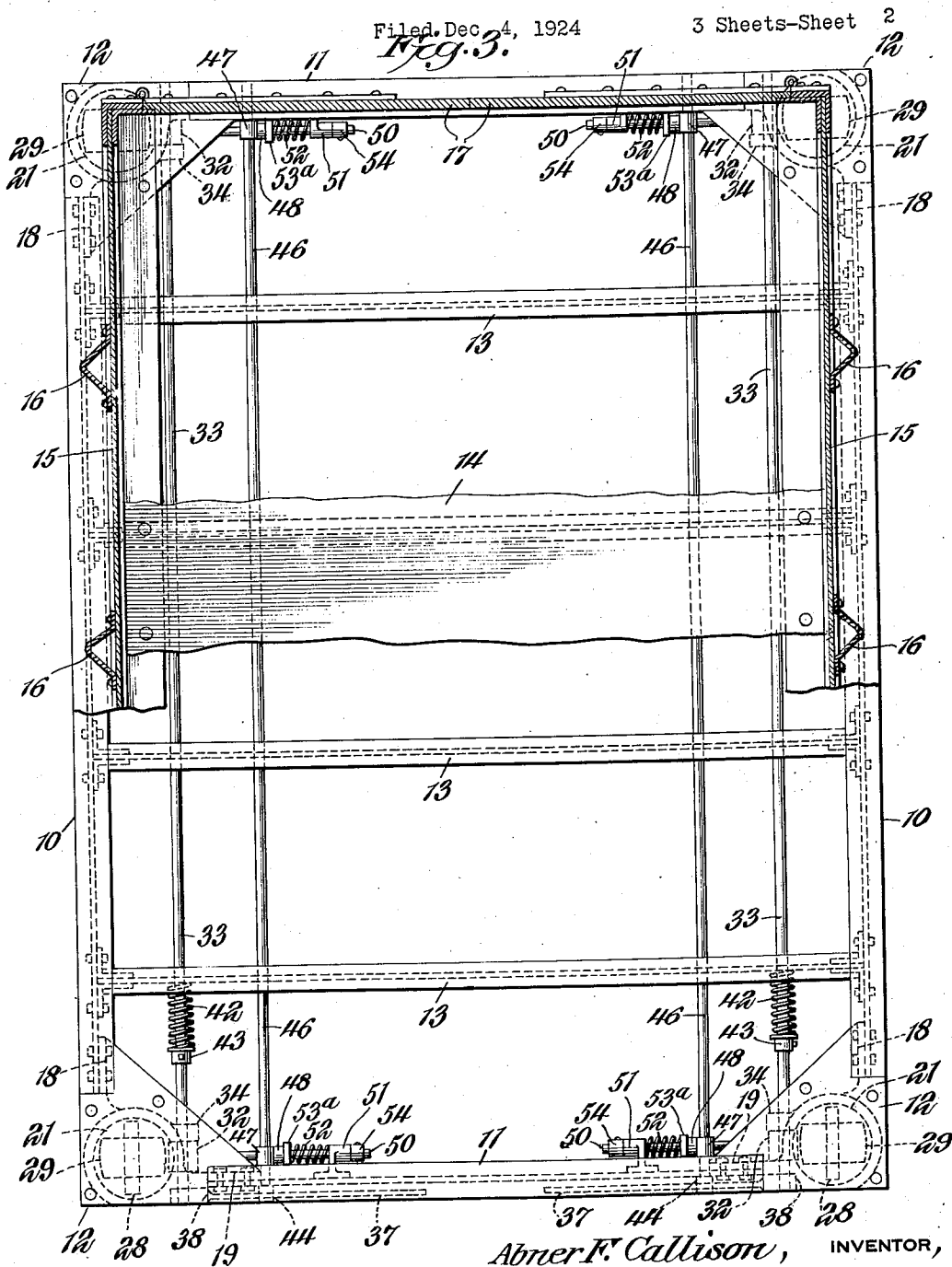
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3 Sheets-Sheet 2



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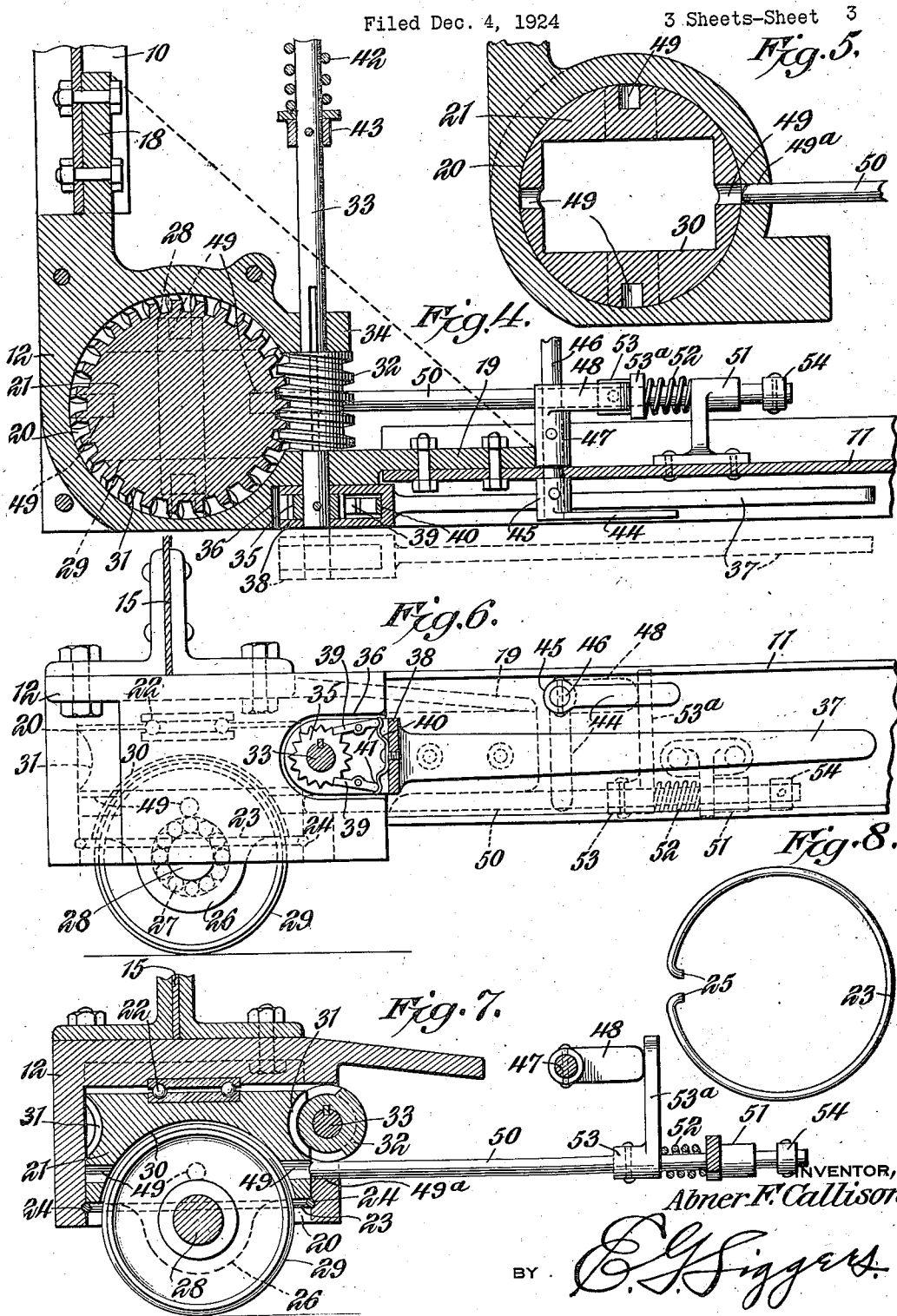
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SWIVELED WHEEL FOR SUPPORTING PORTABLE CONTAINERS

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3 Sheets-Sheet 3



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Patented July 10, 1928.

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UNITED STATES PATENT OFFICE.

ABNER F. CALLISON, OF NEW YORK, N. Y.

SWIVELED WHEEL FOR SUPPORTING PORTABLE CONTAINERS.

Application filed December 4, 1924. Serial No. 753,918.

This invention relates to swiveled wheels for portable containers and the like, and is particularly adapted for use on merchandise containers of large size, which are designed with a view to facilitating the transfer of freight in large units to or from a freight car, warehouse platform or delivery truck.

The general object of the invention is to provide wheels for this purpose of simple and rugged construction, improved means for mounting the same underneath the container, and means for swinging the wheels to change their direction, so that the container may be moved in any direction desired.

The present invention makes it possible to move the container over the platform in any direction, and is especially useful in transferring the container to and from box cars, since in that operation the container must be moved within the car in a direction at right angles to the direction of its movement in passing through the door of the car. When used on box cars, the longest dimension of the container will usually extend approximately from side to side of the car, and its width will be such that it may pass easily through the door of the car, this being approximately half the size of the containers which are designed for use on flat cars. Containers equipped with the present invention are also adapted to be handled on ramp tracks, or on any other loading and unloading or transferring device.

The preferred form of the invention and the principles of its operation will be more particularly described with reference to the accompanying drawings forming a part hereof.

In the drawings:

Figure 1 is a side elevation of a container equipped with my invention.

Figure 2 is an end elevation thereof.

Figure 3 is a plan view of the sub-structure with a portion of the container shown in section.

Figure 4 is a horizontal section through one of the corner castings in which the swiveled wheel is mounted.

Figure 5 is a horizontal section taken below the plane of Figure 4.

Figure 6 is a side elevation of the invention.

Figure 7 is a vertical longitudinal section thereof.

Figure 8 is a detail view of the retaining ring.

Figure 9 is a detail view, illustrating the means for coupling two containers together.

The merchandise container, in connection with which my invention is shown, comprises longitudinal sills 10 and transverse sills 11, in the form of I beams connected by corner castings 12. The side sills are also connected by girders 13, which support the floor 14, and to which are secured the walls 15 of the container. These walls are preferably reinforced by ribs 16, and hinged doors 17 are provided at one end of the container, furnishing access to the interior thereof.

The corner castings 12 are formed with flanges 18 and 19 which are secured to the I beams 10 and 11, and each casting is formed with a cylindrical socket 20 adapted to rotatably receive the block 21, having ball bearings 22 on its upper face on which the casting is supported. The block 21 is retained against accidental removal from the socket 20 by means of an expansive ring 23 adapted to seat in a groove 24, formed in the wall of the socket 20 beneath the lower edge of the block. The ring 23 has inturned ends 25, as shown in Figure 8, which are accessible to pliers, or other suitable tool, for contracting the ring, and withdrawing the same from the socket to permit the removal of the block 21 when necessary.

The block 21 is formed with opposed downwardly extending ears 26 for receiving roller bearings 27, in which is supported the axle 28 of the wheel 29. A recess 30 is formed in the under face of the block 21 for receiving the upper part of the wheel 29, and the bearings 27 are so located that the ends of the axle 28 are partially covered by the sides of the socket 20, thus preventing endwise movement thereof.

The block 21 is formed with a peripheral worm gear 31, which is engaged by a worm 32, splined on a shaft 33 extending longitudinally of the container, and journaled in the flange 19, and an ear 34 formed on the casting 12. Under certain conditions, as hereinafter explained, the shaft 33 is moved longitudinally to a limited extent, while the worm 32 is held against longitudinal movement by the flange 19 and ear 34.

As shown in Figure 3, two shafts 33 are provided for each container, and each shaft extends from end to end of the container, and is provided with two worms 32 which

mesh with the worm gears on the respective blocks 21, carrying the wheels 29 at that side of the container. Each shaft 33 has a ratchet wheel 35 secured to one end thereof, and a lever 37 is provided which has at one end a yoke 38, the arms of which are journaled on the shaft 33 at opposite sides of the ratchet wheel. The casting 12 is formed with a recess 36, within which the ratchet wheel 35 and yoke 38 may be housed, the end of the lever 37 being housed between the flanges of the I beam 11, as shown clearly in Figures 4 and 6. A pair of opposed dogs 39 are pivotally mounted between the arms of the yoke 38, and are adapted to be held in engagement with the teeth of the ratchet wheel 35 by means of a leaf spring 40 secured to the yoke, and having curved seats 41 for receiving the ends of the dogs. When the shaft 33 and lever 37 have been moved to the position shown in dotted lines in Figure 4, the dogs 29 are easily accessible, and either one may be manually adjusted so that by rocking the lever 37 back and forth about the shaft 33 one of the dogs will rotate the shaft step by step in one direction, while the other dog remains inactive.

Each of the shafts 33 is surrounded by an expansile coiled spring 42, seated between one of the girders 13 and a collar 43 secured to the shaft, and this spring urges the shaft toward the dotted line position shown in Figure 4, but the shaft and lever 37 are normally held in the full line position by a finger 44, which projects from a collar 45 secured to a small shaft 46 journaled in the web of the I beam 11, and which normally hangs downwardly over the lever 37, as shown in dotted lines in Figure 6. The small shaft 46 is held against longitudinal movement in the I beam by the collar 45 and a similar collar 47 secured to the stub shaft on the opposite side of the I beam. A cam arm 48 is formed on the collar 47, and projects laterally in parallel relation to the finger 44 for a purpose which will be presently explained.

The block 21 is formed with four equally spaced radial holes 49, two of which are arranged in the plane of the wheel 29, the other two being arranged in the plane of the axle 28. A locking bar 50 is slidably mounted in a bearing 51, which is secured to the I beam 11, and in a hole 49^a formed in the casting 12, and is adapted to be projected into one of the holes 49 to lock the wheel 29 in such a position that the container may be moved either longitudinally or transversely. An expansile coiled spring 52 surrounds the bar 50 between the bearing 51 and a collar 53 secured to the bar, and projects the bar toward the block 21, except when the bar is positively held in retracted position by the engagement of the cam 48

with a finger 53^a, which projects laterally from the collar 53, as shown in Figure 7. A collar 54 may be secured to the end of the bar 50 to limit the extent of its projection.

Provision is also made for coupling the containers together when they are being transported on trucks or on flat cars, or when they are being moved over ramp tracks and the like. For this purpose, each side face of the container is provided with a pivoted dog 55 and an eye 56, which cooperate respectively with an eye 57 and dog 58 mounted on the adjacent container, as shown in Figures 1 and 9. A rock shaft 59 is mounted on each side of the container, and is formed with a crank portion 60, which passes through a keeper 61 formed on an adjacent dog 55 or 58, as the case may be, and each end of the rock shaft is provided with an arm 62 by means of which it may be rocked to raise the dog, and release the eye which it engages. Each dog is provided with an engaging lip 63 having its outer face beveled, so as to automatically lock as the two containers are brought together.

As above explained, the wheels 29 are normally held either in a longitudinal or transverse plane, and the locking bar 50 engages in one of the holes 49. The shaft 33 is held in its inner position, as shown in full lines in Figure 4, and the lever 37 is contained between the flanges of the I beam 11, and retained, in opposition to the pressure of the spring 42, by the finger 44, which normally hangs by gravity in the position shown in dotted lines in Figure 6. When it is desired to shift the wheels 29 so as to move the container in another direction, the finger 44 is swung upwardly, releasing the lever 37 and permitting the spring 42 to force the shaft 33 outwardly, bringing the lever 37 to the position shown in dotted lines in Figure 4, and at the same time engaging the cam 48 with the finger 53^a, retracting the locking bar 50, and leaving the block 21 free to be rotated by means of the worm 32. One of the dogs 39 is then set so as to engage the teeth of the ratchet wheel 35, while the other dog 39 is left free. The lever 37 may then be manipulated to rotate the shaft 33 and worm 32 to turn the wheels 29 in any direction desired. As soon as the block 21 commences to turn, the finger 44 may be lowered, leaving the lever 37 in its outer position, and as soon as the block 21 and wheel 29 have been turned through an angle of 90°, they are again locked automatically by the projection of the locking bar 50. The finger 44 may then be momentarily raised, while the shaft 33 and lever 37 are restored to the position shown in full lines in Figure 4. The wheels 29 will now be in position to move the container in a direction at right angles to its former movement. It is, of course, to be understood that the two wheels on the same

side of the container are shifted simultaneously by the rotation of the shaft 33 at that side of the container.

While I have shown and described the invention in connection with a merchandise container designed to facilitate the transfer of freight in large units, it is apparent that a similar construction may be used in connection with other portable containers or vehicles. It is also apparent that many modifications may be made in the detailed construction and arrangement of the various elements of the invention. It is my intention, therefore, to include all such variations and modifications within the scope of the appended claims.

What is claimed is:

1. In a device of the character described, the combination of a frame, a block mounted therein for adjustment about a vertical axis, a supporting wheel journaled in said block, a shaft having a gear connection with said block, manually operable means for rotating said shaft to turn the block about its axis, said block having a plurality of radial holes, and a spring-held bar automatically projectable into any one of said holes as it comes in front of the same to positively stop the block when it has reached a predetermined position.

2. In a device of the character described, the combination of a frame, a plurality of blocks mounted therein for adjustment about vertical axes, a supporting wheel journaled in each block, a shaft having gear connections with a plurality of blocks, manually operable means for rotating the shaft to simultaneously turn the blocks which are geared thereto about their axes, each of said blocks having a plurality of radial holes, and a stop bar for each block automatically projectable into one of the holes thereof to positively stop the block when it reaches any one of a plurality of predetermined positions.

3. In a device of the character described, the combination of a frame including a casting having a cylindrical socket, a cylindrical block rotatable within the socket and forming one of the supports for the frame, a wheel journaled in and supporting the block, a shaft journaled adjacent the block and having a gear connection therewith, manually releasable means for automatically and positively stopping said block as it reaches a predetermined position, and means for rotating said shaft to rotate the block when the latter has been released, said stopping means being operable to again stop the block as soon as the latter has been rotated through a predetermined angle.

4. In a device of the character described, the combination of a frame, including a casting having a cylindrical socket, a cylindrical block rotatable within said socket and form-

ing one of the supports for the frame, a wheel journaled in and supporting the block, a shaft having a gear connection with said block, manually operable means for rotating said shaft to turn the block about its axis, said block having a plurality of radial holes, and a locking bar automatically projectable into one of said holes to lock the block when it has reached a predetermined position.

5. In a device of the character described, the combination of a frame, including a casting having a cylindrical socket, a cylindrical block rotatably mounted within said socket and forming one of the supports for the frame, a wheel journaled in and supporting said block, a shaft journaled adjacent the block and having a gear connection therewith, a lever journaled on said shaft and having a ratchet connection therewith for rotating the same, said lever and shaft being normally housed within the frame when not in use, but movable outwardly therefrom into operative position.

6. In a device of the character described, the combination of a frame, including a casting having a cylindrical socket, a cylindrical block mounted within the socket and forming one of the supports for the frame, a wheel journaled in and supporting the block, a shaft journaled adjacent the block and having a gear connection therewith, said block having a plurality of radial holes, a locking bar projectable into one of said holes to lock the block when it has reached a predetermined position, manually operable means for rotating said shaft to turn the block about its axis when the locking bar is withdrawn, said manually operable means including a lever journaled on said shaft and having a ratchet connection therewith, said lever and shaft being normally housed within the frame when not in use, but movable outwardly therefrom so that the lever may be operated.

7. In a device of the character described, the combination of a frame, a block mounted therein for adjustment about a vertical axis, a supporting wheel journaled in said block, a gear formed on the block, a shaft mounted adjacent the block and having a gear splined thereon and in mesh with the first mentioned gear, a lever connected with said shaft near one end thereof, said lever being normally housed within the frame, means for projecting said shaft longitudinally to move the lever out of the frame where it may be operated, said lever being operatively connected to the shaft so as to rotate the same and thereby change the direction of the wheel.

8. In a device of the character described, the combination of a frame, a block mounted therein for adjustment about a vertical axis, a supporting wheel journaled in said block,

a shaft mounted adjacent the block and having a gear splined thereon, said block having a gear formed thereon with which the first mentioned gear is held in mesh, a ratchet wheel secured to one end of the shaft, a lever journaled on the shaft and carrying dogs adapted to cooperate with the ratchet wheel, said ratchet wheel and lever being normally housed within the frame, means for moving said shaft longitudinally to project the ratchet wheel and lever from the frame so that they may be operated to rotate the shaft and thereby change the direction of the wheel.

9. In a device of the character described, the combination of a frame including I beams connected by corner castings, each of said castings having a cylindrical socket, a cylindrical block rotatable within the socket and forming one of the supports for the frame, a wheel journaled in and supporting the block, a gear formed on the block, a shaft mounted adjacent the block and having a gear splined thereon and in mesh with the first mentioned gear, a ratchet wheel secured to one end of the shaft and normally housed within the casting, a lever journaled on the shaft and normally housed between the flanges of one of the I beams, dogs carried by the lever and cooperable with the ratchet wheel to rotate the shaft in either direction, and means for moving said shaft longitudinally to project the ratchet wheel and lever from the frame, so that they may be operated to rotate the shaft and thereby change the direction of the wheel.

10. In a device of the character described, the combination of a frame having blocks mounted therein for adjustment about a vertical axis, a supporting wheel journaled in each block, a gear formed on each block, a shaft having a plurality of gears splined thereon and in mesh with corresponding gears on the blocks, a ratchet wheel secured to one end of the shaft, a lever journaled on the shaft and carrying dogs cooperable with the ratchet wheel to rotate the shaft in either direction, said lever and ratchet wheel being normally housed within the frame, and means for moving said shaft longitudinally

to project the ratchet wheel and lever from the frame, so that they may be operated to rotate the shaft and thereby change the direction of the wheels.

11. In a device of the character described, the combination of a frame including I beams connected by corner castings, each of said castings having a cylindrical socket, a cylindrical block rotatable within the socket and forming one of the supports for the frame, a wheel journaled in and supporting the block, said block having a plurality of radial holes, a locking bar projectable into one of said holes to lock the block when it has reached a predetermined position, a gear formed on the block, a shaft mounted adjacent the block and having a gear splined thereon which is in mesh with the first mentioned gear, a ratchet wheel secured to one end of the shaft and normally housed within the casting, a lever journaled on the shaft and normally housed between the flanges of one of the I beams, dogs carried by the lever and cooperable with the ratchet wheel to rotate the shaft in either direction, and means for moving said shaft longitudinally to project the ratchet wheel and lever from the frame, so that they may be operated to rotate the shaft and thereby change the direction of the wheel when the locking bar has been retracted.

12. In a device of the character described, the combination of a frame, a block mounted therein for adjustment about a vertical axis, a supporting wheel journaled in said block, said block being provided with radial holes, a locking bar projectable into one of said holes to lock the block in a predetermined position, means geared to said block for adjusting the same about its axis, said means being normally housed within the frame but projectable therefrom into position for operation, and unitary means for retracting the locking bar and simultaneously releasing the operating means to permit the latter to be projected from the frame.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

ABNER F. CALLISON.