

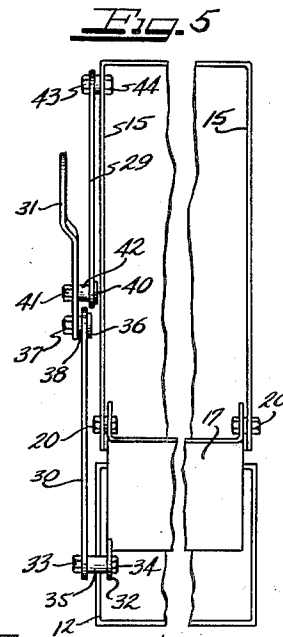
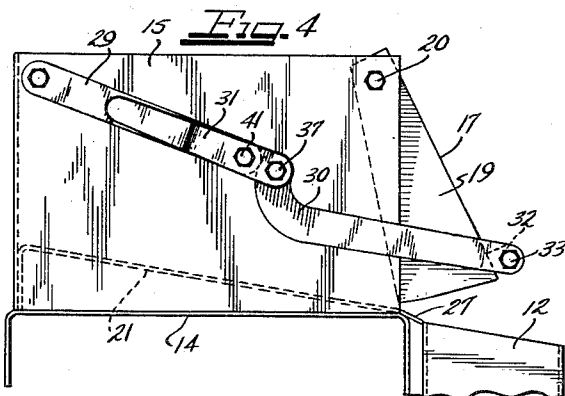
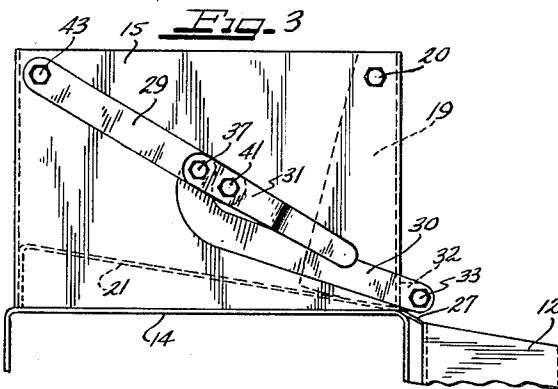
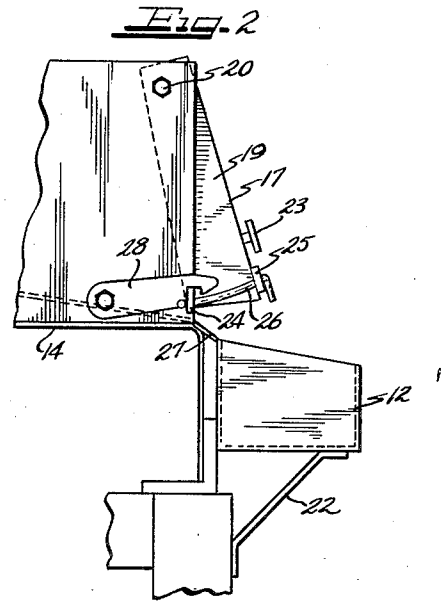
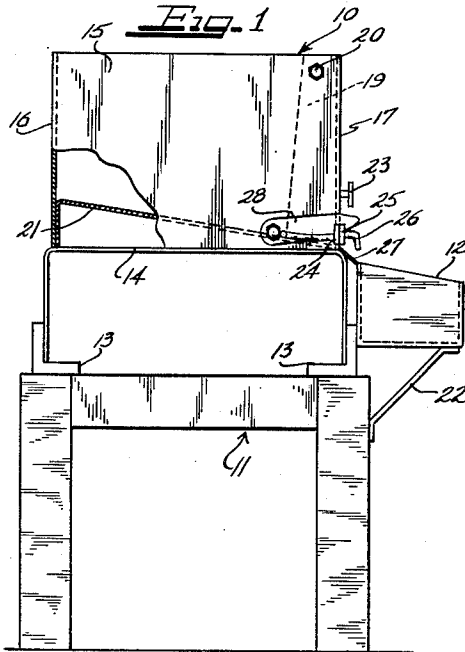
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L. T. ALMAS

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STOCK BIN

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Inventor
LOUIS T. ALMAS

By The Firm of Charles H. Hill Attys.

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STOCK BIN

Louis T. Almas, Detroit, Mich., assignor to
Thompson Products, Inc., Cleveland, Ohio, a
corporation of Ohio

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This invention relates to storage apparatus specifically designed to permit ready and easy access to articles held therein and more particularly to storage boxes adaptable to production manufacturing operations in which it is highly desirable to have articles fed to readily accessible positions for operators or assemblers performing manufacturing operations.

Efficient handling of parts used in manufacturing operations usually necessitates that the parts be handled in large quantities. For instance, if small parts such as nuts, bolts or washers should be shipped from plant to plant, or transferred from point to point within a single plant, their movement is greatly facilitated by effecting the transportation operation in large containers or boxes. When the parts reach their destination, however, and are to be used by an operator on a production line, such large boxes are usually too cumbersome for supplying the operators directly. If such boxes are used to supply the operator directly, as the quantity diminishes the operator is required continually to stoop over or stretch to reach the parts at the lower levels of the containers. Such unnecessarily expended effort naturally results in fatigue of the operator and causes production performances to be less efficient. An alternative method of supplying parts to the operator is to break the quantity into smaller lots arranged to be placed within easy reach of his working position. This method of supplying parts is time consuming, however, both in requiring that the large quantities be broken into the more efficient lots and also in requiring that a constant watch be maintained to assure that the operator does not become deficient in the number of available parts.

It is, therefore, a particular object of the present invention to provide means for efficiently handling large quantities of production parts in such a manner that the parts are automatically fed to positions of easy access without requiring a division into smaller lots.

It is another object of the present invention to provide novel stock storage apparatus capable of holding large quantities of parts while at the same time being readily adaptable to direct and efficient use in production line operations.

A further object of the present invention is to provide a novel stock bin having a container of a size sufficient to enable efficient transportation of a large quantity of parts and also capable of association with a stand in such a manner that it is readily adaptable to efficient supply of parts on production line operations.

A still further object of the present invention is to provide a novel stock container adaptable to efficient transportation of stock and feeding of parts held thereby to positions of easy accessibility.

The novel features which are believed to be

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characteristic of my invention are set forth with particularity in the appended claims. My invention, however, as to its organization and method of operation, together with further objects and advantages thereof may best be understood by reference to the following description taken in connection with the accompanying drawing.

In the drawing:

Figure 1 is a side elevational view in partial cross-section showing a large stock container and associated stand making up a stock bin embodying the principles of the present invention;

Figure 2 is a partial side elevational view of the stock bin of Figure 1, with the container shown in open position.

Figure 3 is an elevational view illustrating another embodiment of the present invention in which the opening and closing of the stock container may be better controlled;

Figure 4 is a side elevational view of the stock container shown in Figure 3, in open position; and

Figure 5 is a broken plan view showing the lever arrangement for opening and closing the container of Figures 3 and 4.

As shown on the drawing:

Referring to the drawing in greater detail, Figure 1 shows a stock container 10 removably mounted on a stand 11 which has a rectangular trough 12 fixedly secured thereto adjacent and immediately below one side of the container 10. Stand 11 is constructed of material such as angle iron welded together into a generally rectangular shaped structure corresponding in length and width to the container 10 with which it is associated. A pair of support rails 13, made of angle iron, are provided on top of the stand for mounting the container and proper positioning thereof. These rails are oppositely disposed along the front and rear top edges of the stand sufficiently far apart to permit the container 10 to be fitted snugly therebetween.

The bottom of the container 10 is provided with a large inverted channel member 14 having sides which define the legs of the container. Two end walls 15 and one side wall 11 of the container 10 are welded directly to the top of the channel member 14 in upright position while the fourth side 17 is hinged or pivotally mounted near its upper edge between the two end walls 15. The side wall 17 is provided with right angle end flanges 19 which increase in width toward the bottom of the wall so that their widest portions are at their lower edges. The flanges 19 thus provide end walls which close the ends of the space formed by pulling the side wall 17 outwardly to the inclined position shown in Figure 2. Pivotal mounting of the side 17 is accomplished by means of a pair of pivot bolts 20 passing through the end walls 15 and the upper portions of the end flanges 19. A false bottom 21 is provided in

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the lower level of container 10 which is arranged to slant downwardly from the fixedly secured side 16 toward the lower edge of the hinged side 17.

The trough 12 is secured in position adjacent the side 17 immediately below its lower edge by being welded to the stand 11 and is supported further by one or more braces 22 welded between the front of the stand 11 and the outermost bottom edge of the trough 12. The trough 12 is of a length which makes it extend slightly beyond each end wall of the container 10 as may be seen in Figure 5.

A narrow, flat plate member 27 is welded to the upper edge of the trough 12, extending toward the edge of the bottom 21 so that as the wall 17 is opened, the material from the container 10 will not drop between the trough and the channel leg 14 of the container 10.

The weight of the material in the container will normally urge side 17 open, but a pull knob 23 is provided on the side 17 to permit the side 17 to be withdrawn by hand, so that an opening may be established at the lower edge of the container when the material therein does not force the side 17 open of its own accord. As the side is so withdrawn, its right angular ends 19 act as guides for any material that might fall sidewise out of the container. In order that the material falling into the trough will not overflow, it is desirable that the side 17 be limited in its pivotal movement, so that the opening established thereby will not become too large.

In this respect, the ends 19 of the wall 17 are desired to be sufficiently flared out at their bottom edges so that no break exists between the end walls 15 and the withdrawn wall 17. In other words, when the wall 17 is withdrawn to its fullest extent, its side edges or ends 19 should present an continuous surface meeting the edges of the end walls 15 with which they are associated, thereby establishing an opening at the under edge of wall 17 only.

Limitation of movement of the wall 17 is accomplished by means of a limit bar 26 and a pair of tongue members 24 and 25 fixedly secured respectively to one end wall 15 of container 10 and an edge of the wall 17. Each of the tongue members 24 and 25 has an aperture therethrough through which the limit bar 26 is arranged to extend in slidable relation. The ends of the limit bar 26 are bent over at right angles to its body portion. The body portion is slightly curved to accommodate the arcuate path followed by the tongue member 25, while the length of the body is such that the ends are disposed a distance apart equal to the distance of motion to which the bottom of the end wall 17 is to be limited.

A latch member 28 is provided on the outer surface of the end wall 15 adjacent the tongue member 24 and is pivotally mounted thereon so that a cutout portion of the latch will lock the tongue members 24 and 25 together when the side wall 17 is closed. The wall 17 is locked in closed position in this manner when the container 10 is used for transporting stock material, but when the container is mounted on the stand 11 the latch 28 may be lifted to permit the wall 17 to open for the distance fixed by the bar 26.

In the embodiment shown in Figures 3, 4 and 5, parts similar to parts in the embodiment of Figures 1 and 2 are given identical reference numerals. In this embodiment a toggle lever mechanism is associated with the container 10 which permits a greater force to be applied to the wall 17 to effect both opening and closing operations

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thereof. The lever mechanism also permits full control of the position of the wall 17 as it is being opened, thereby keeping it from being opened too suddenly by the force of the material falling out of the container. The lever mechanism consists of a pair of lever arms 29 and 30 each pivoted at one end and a handle lever 31 pivotally joining their other ends. The lever arm 30 has one end pivotally connected to a tongue member 32 projecting from the edge of the wall 17. Pivotal connection is effected by a bolt 33 and a nut 34, while spacing between the arms is assured by providing a tubular spacer 35 between them. The other end of the lever arm 30 is curved at an angle with respect to its length and is pivotally connected to the extreme end of the handle lever 31.

The lever arm 29 has one end pivotally connected to the wall 15 by means of a bolt 43 and a nut 44 near its back upper corner. The other end of lever arm 29 is pivotally connected to the handle lever 31 at a point just above the point of connection of the lever 30 thereto. The handle lever 31 has its free end bent in an offset manner from the end wall of container 10 so that the handle may be grasped without touching either of the lever arms 29 or 30.

Connection of the lever arm 30 to the free end of the handle lever 31 is effected by a bolt 36 and a nut 37 while a tubular spacer 38 spaces the connected elements apart a slight distance. Connection between the lever arm 29 and the handle lever 31 is similarly made by a bolt 40 and a nut 41 with a spacer 42 which is slightly longer than spacer 38. When the lever 31 is drawn clockwise in a downward direction toward the front of the container 10, the curved end of the lever arm 30 moves around the pivot connection between lever arm 29 and handle 31 thereby establishing a toggle closing effect. By reason of the spacer 42 being somewhat larger than spacer 38, contact of the end of the lever arm 30 with the lever arm 29 is prevented during the operation of closing the container 10. In opening the container 10 the handle is drawn upward and slowly released as the material pours into the trough 12 and because of the mechanical advantage provided by the lever mechanism this operation may be performed gradually and with great ease regardless of the weight of material pressing against the side of the container. In some instances the material within the container might wedge against the ends of the wall 17 or press thereagainst in such manner that the container will not open by mere weight of the material against the inside of pivoted wall 17 and in such instances the lever mechanism may be utilized to force the side wall 17 to its open position.

From the foregoing description of my invention it can be readily realized that I have devised a stock bin which can be utilized to great advantage on production lines where the stands for the containers may be placed alongside of machines and where the loaded boxes or containers may be positioned on the stands by means of shop type or highlift truck type hoists. Utilization of the stock bin apparatus which I have disclosed will relieve production operators of a considerable amount of fatigue which they normally would experience in bending and reaching for parts supplied in plain four-sided boxes or containers.

While I have shown a particular embodiment of my invention it will, of course, be understood that I do not wish to be limited thereto, since many modifications may be made, and I, there-

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fore, contemplate by the appended claims to cover all such modifications that fall within the true spirit and scope of my invention.

I claim as my invention:

1. A bin comprising a pair of spaced opposed end walls having side edges, a bottom disposed between said end walls and inclined downwardly to said side edges, a side wall pivoted on a generally horizontal axis disposed upwardly from the lower edge of said inclined bottom for movement from a closed position in which the lower edge thereof is adjacent said lower edge of said bottom to an open position in which the lower edge thereof is outwardly spaced from said lower edge of said bottom to provide an opening for flow of material from said bin, and a pair of flanges on the ends of said side wall extending inwardly inside and adjacent said end walls, said pair of flanges in the open position of said side wall effectively forming extensions of said end walls to prevent flow of the material from said bin in a direction transverse to said end walls, and means on the outside of one of said end walls connected to said side wall to limit outward movement of said side wall.

2. A bin comprising a pair of spaced opposed end walls and having side edges, a bottom disposed between said end walls and inclined downwardly to said side edges, a side wall pivoted on a generally horizontal axis disposed upwardly from the lower edge of said inclined bottom for movement from a closed position in which the lower edge thereof is adjacent said lower edge of said bottom to an open position in which the lower edge thereof is outwardly spaced from said lower edge of said bottom to provide an opening for flow of material from said bin, a pair of flanges on the ends of said side wall extending inwardly inside and adjacent said end walls, said pair of flanges in the open position of said side wall effectively forming extensions of said end walls to prevent flow of material from said bin in a direction transverse to said end walls, and means for limiting outward movement of said side wall, including a tongue member projecting from said side wall adjacent one of said flanges, and means on the outside of the associated end wall linked to said tongue member.

3. A stock supply bin comprising a pair of spaced opposed end walls disposed generally vertically and having aligned side edges, a bottom disposed between said end walls and inclined downwardly to said aligned side edges, a side wall pivoted on a generally horizontal axis disposed upwardly from the lower edge of said inclined bottom for movement from a closed position in which the lower edge thereof is adjacent said lower edge of said bottom to an open position in which the lower edge thereof is outwardly spaced from said lower edge of said bottom to provide an opening for flow of material from said bin, a pair of flanges on the ends of said side wall extending inwardly adjacent said end walls, said pair of flanges in the open position of said side wall effectively forming extensions to said end walls to prevent flow of material from said bin in a direction transverse to said end walls, a first member affixed to said side wall, a second member affixed to one end wall, a bar slidably extending through said members, and projections at the end of said bar adapted to engage said first and second members for limiting outward movement of said side wall.

4. A stock supply bin comprising a pair of

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spaced facing end walls disposed generally vertically and having aligned side edges, a bottom disposed between said end walls and inclined downwardly to said aligned side edges, a side wall pivoted on a generally horizontal axis disposed upwardly from the lower edge of said inclined bottom for movement from a closed position in which the lower edge thereof is adjacent said lower edge of said bottom to an open position in which the lower edge thereof is outwardly spaced from said lower edge of said bottom to provide an opening for flow of material from said bin, a pair of flanges on the ends of said side walls extending inwardly adjacent said end walls, said pair of flanges in the open position of said side wall effectively forming extensions of said end walls to prevent flow of material from said bin in a direction transverse to said end wall, a first member affixed to said side wall, a second member affixed to one end wall, a bar slidably extending through said members, projections at the ends of said bar engaging said members for limiting outward movement of said side wall, and a latch member pivoted to said one end wall having a portion engageable with the outside surface of said first member in the closed position of said side wall.

5. A stock supply bin comprising a pair of spaced facing end walls disposed generally vertically and having aligned side edges, a bottom disposed between said end walls and inclined downwardly to said aligned side edges, a side wall pivoted on a generally horizontal axis disposed upwardly from the lower edge of said inclined bottom for movement from a closed position in which the lower edge thereof is adjacent said lower edge of said bottom to an open position in which the lower edge thereof is outwardly spaced from said lower edge of said bottom to provide an opening for flow of material from said bin, a pair of flanges on the ends of said side wall extending inwardly adjacent said end walls, said pair of flanges in the open position of said side wall effectively forming extensions of said end walls to prevent flow of material from said bin in a direction transverse to said end walls, and means for limiting outward movement of said side walls, said means comprising a handle lever, a first lever arm having one end pivoted to one of said end walls and the other end pivoted to said handle lever at first point thereon, and the second lever arm having one end pivoted to said side wall and the other end pivoted to said handle lever at a second point spaced from said first point.

LOUIS T. ALMAS.

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