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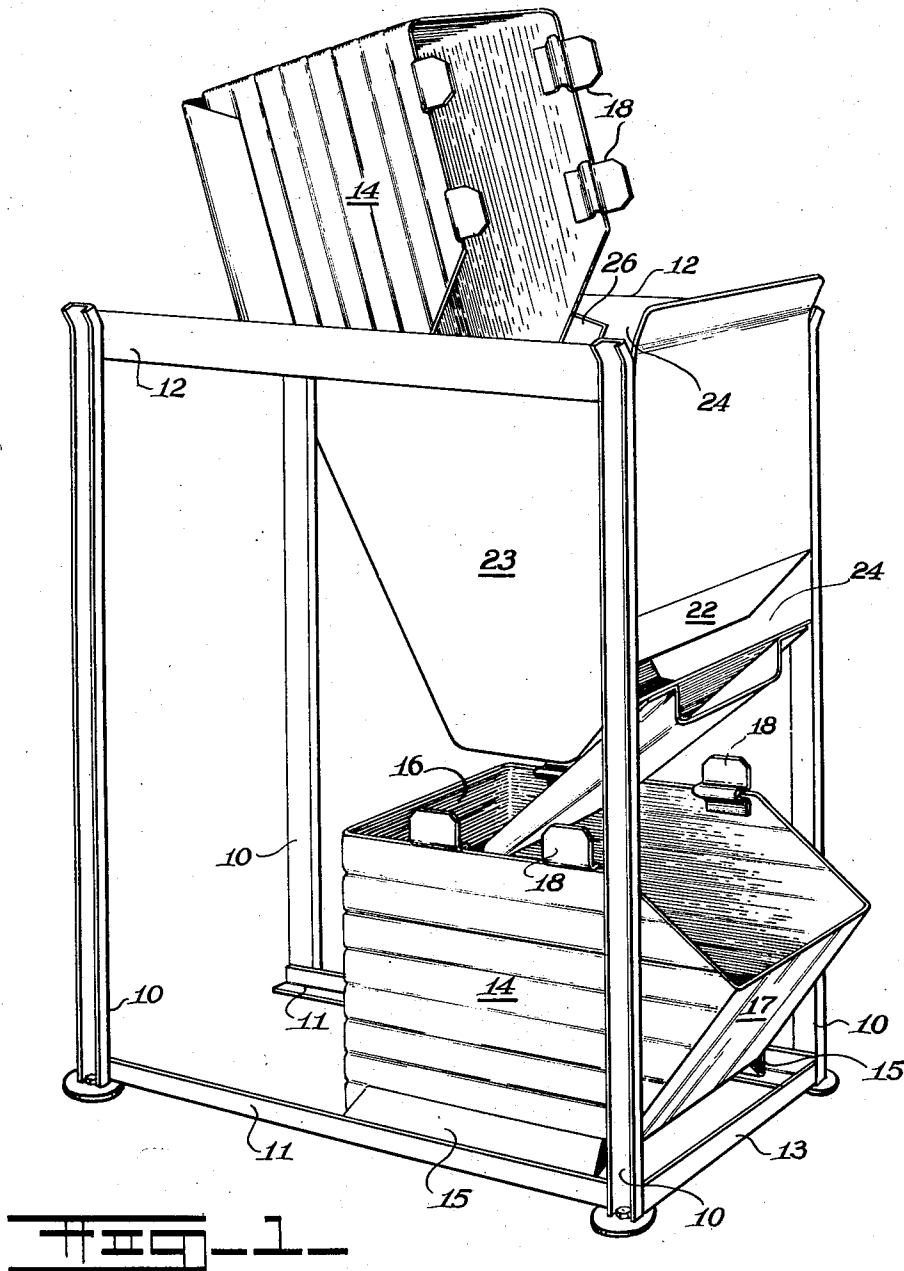
R. C. JOHNSON

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MATERIAL HANDLING STAND AND BOX THEREFOR

Filed March 26, 1958

2 Sheets-Sheet 1



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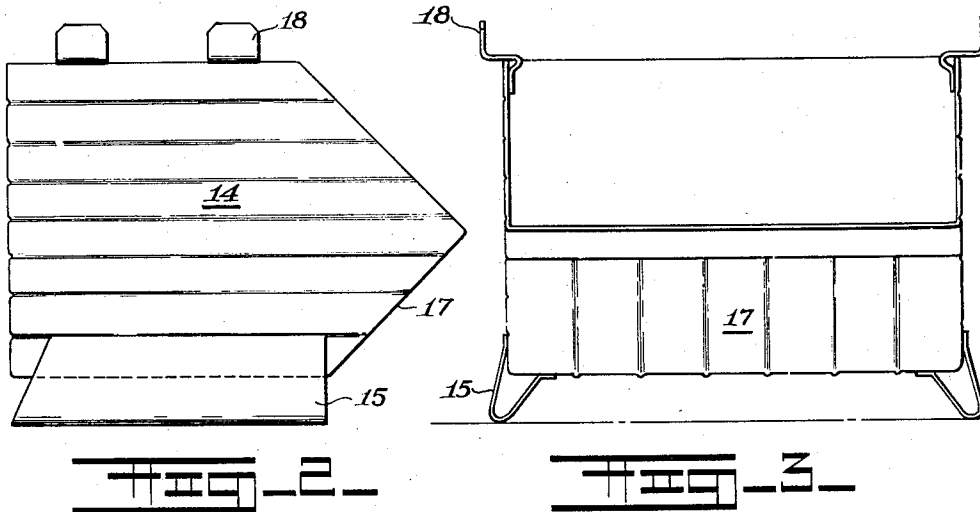
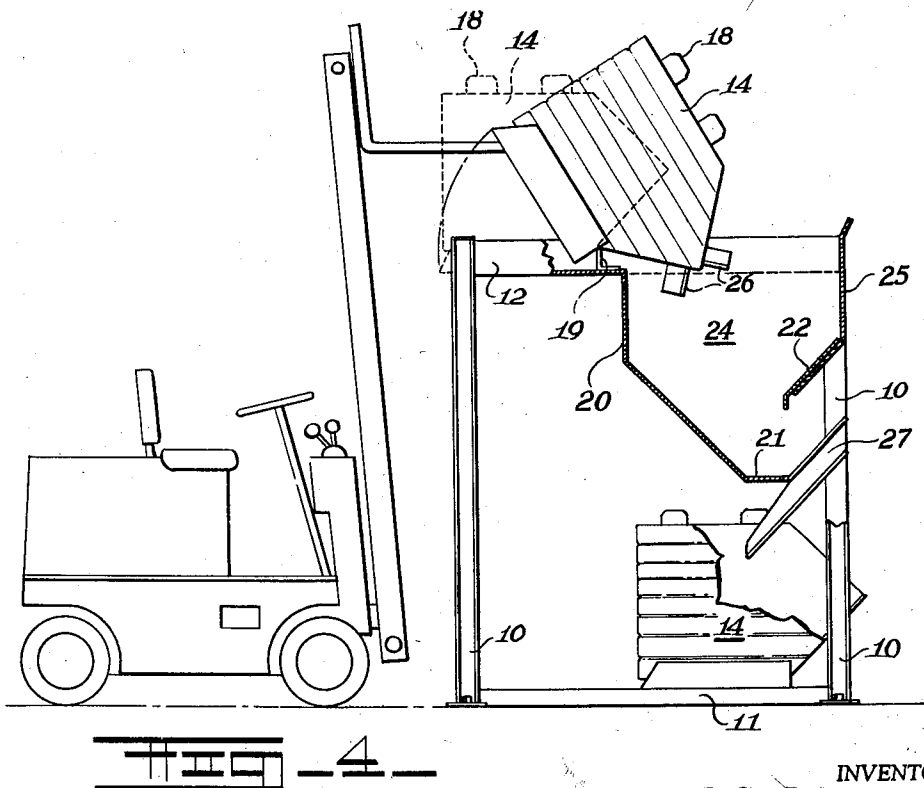
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MATERIAL HANDLING STAND AND BOX THEREFOR

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6 Claims. (Cl. 222-166)

This invention relates to a material handling stand and box combination such as used in industrial plants where the fabrication and machining of small parts makes necessary the delivery of a plurality of such parts to a machine location, for example, for processing and the pickup and removal of the machined parts.

The principal object of the invention is the provision of a stand and material handling box combination.

A further object of the invention is the provision of a material handling box and stand in which a pair of material handling boxes may be positioned, one arranged to deliver workpieces to the stand and the other arranged to receive workpieces.

A still further object of the invention is the provision of a material handling box and stand combination that considerably reduces handling of workpieces.

A still further object of the invention is the provision of a material handling box and stand combination in which a simple and economic form of box is employed and arranged to be tilted into dumping position in the stand.

A still further object of the invention is the provision of a material handling box and stand combination that provides a single station unit for a workman enabling him to pick up a workpiece, perform an operation thereon and return it to the same stand but to a different material handling box.

The material handling box and stand combination comprises an improvement with respect to the material handling boxes and stands disclosed in my U. S. Patent No. 2,762,529, issued September 11, 1956, and my U. S. Patent No. 2,780,393, issued February 5, 1957.

In the aforesaid patents a stand incorporating an open hopper is arranged to receive a box having a slidable access panel in the front wall thereof so that workpieces in the box will be delivered into an open hopper from which a workman may readily remove the same.

In forming the stands and boxes of the aforesaid patents commercially, the principle of the stand and box combination has been proven most effective and highly successful in industrial applications and many thousands of stands and boxes disclosed in the aforesaid patents have been made and sold. In some instances the boxes with the vertical slidable access panels have been damaged to the extent that the access panels became inoperative.

The present invention has as an object the provision of a material handling stand and box combination in which the box is incapable of being damaged at least insofar as would interfere with its use in the stand for delivering workpieces thereto and/or receiving them therefrom.

The present disclosure relates to an improvement in the stand, specifically in that a hopper capable of receiving and retaining workpieces from a tilted box is disclosed together with an improved box of more simple and less costly construction which is arranged to be tilted into delivery position partially within the hopper in the stand where it cooperates with the same and in

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effect extends the area of the hopper and thereby increases the capacity thereof.

Additionally, the improved box disclosed herein will, when positioned in lowermost or receiving position in the stand and beneath the hopper, as aforesaid, be capable of receiving more workpieces due to the unique configuration of the box and the fact that such configuration projects an open, throat-like portion of the box forwardly of the stand and hopper.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being the intention to cover all changes and modifications of the example of the invention herein chosen for purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention.

The invention is illustrated in the accompanying drawing, wherein:

Figure 1 is a perspective view of the material handling box and stand incorporating the improved hopper and box.

Figure 2 is a side elevation of the material handling box employed in the combination.

Figure 3 is a front view of the material handling box of Figure 2.

Figure 4 is a side elevation with parts broken away and parts in cross section illustrating the operation of the material handling box and stand. Dotted lines in Figure 4 show an alternate position of the uppermost material handling box.

By referring to the drawing and Figure 1 in particular it will be seen that the material handling box and stand comprises a stand having a plurality of legs 10-10 arranged in front and back pairs which are spaced with respect to one another by base channels 11-11 and top frame members 12-12. The base channels 11-11 and top frame members 12-12 are secured to the opposite ends of the two pairs of legs 10-10 as by welding the same thereto and a front base channel 13 maintains the uniform spacing of the right and left sides of the stand formed by the legs 10-10 and the base channels 11-11 as aforesaid.

The channels 11-11 provide guide and receiving means for a material handling box 14 which is provided with U-shaped continuously extending legs 15-15 on its opposite lower side or sides and which are adapted to slidably engage the base channels 11-11.

The material handling box 14 has integrally formed side and back sections, the back section being indicated by the numeral 16, and an integrally formed bottom and upwardly and outwardly inclined front section 17. The side edges of the bottom and front section 17 are welded to the bottom edges of the integrally formed side and back portion of the box 14 so that a box-like receptacle is formed having a solid fixed bottom, stationary vertically positioned side and back walls having a stationary inclined front wall.

It will be seen that the forward portions of the side walls of the box are formed with oppositely disposed angles from horizontal so that they extend outwardly to join the upwardly and outwardly inclined front wall 17 while at the same time extending downwardly and outwardly to the upper transverse edge thereof.

Each of the straight side sections is provided at its upper edge with upwardly outset brackets 18 which enable a plurality of the material handling boxes to be nested one on top of the other.

It will be observed that the material handling box disclosed herein is higher proportionately than material handling boxes heretofore known in the art with the

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exception of the upwardly inclined front wall 17 thereof which is of lesser height than boxes with fixed vertical or movable vertical front, back and side walls, as known in the art.

The frame members 12—12 have channel-like formations on their rearmost ends extending longitudinally thereof so that the material handling box 14 may be positioned thereon as by a fork lift truck and moved forwardly therealong until the front bottom corners of the material handling box 14 engage a transversely positioned member forming an upward extension of the back wall of a hopper formed in the stand. The member forming the back wall of the hopper may be seen in Figure 4 of the drawings where it is indicated by the numeral 19.

The downwardly continuing back wall of the hopper 20 extends therebelow and a portion thereof is disposed on a forward and downward angle reaching a horizontal bottom portion 21 and then upwardly and forwardly thereof to a point of junction with the foremost legs 10—10 of the stand.

A secondary transverse member 22 is positioned between the front pair of legs 10—10 and extends between side portions of the hopper 23 and 24 as does an upwardly extending front panel 25 so that a hopper is formed with the vertical sections 20 and 25 forming the back and front portions thereof, respectively, with the lower portions of the hopper being defined by the forwardly and downwardly inclined portion of the back 20 and the angularly positioned transverse member 22.

A pair of limiting and holding brackets 26 is positioned on each of the side walls 23 and 24 inwardly from the upper edges thereof so that the material handling box 14, upon being tipped into discharge position as shown in solid lines in Figures 1 and 4 of the drawings, will engage the brackets 26 and be held in discharge position thereby. It will be observed that in such position the contents of the material handling box will flow outwardly into the hopper and that the same may be removed from the hopper through the lower front entrance thereto which is defined by the angularly disposed transverse member 22 and the upwardly and outwardly curving portion of the bottom 21, as heretofore described.

The return chute 27 is secured to the bottom of the forwardly and upwardly positioned portion of the bottom 21 of the hopper so that a workman may secure a workpiece from the hopper, perform a machining operation thereon and then deposit it in the return chute 27 which will entail a minimum of manual handling of the workpiece inasmuch as it is returned to practically the same location in the stand as that from which it was obtained. The lower portion of the return chute 27 registers with one of the material handling boxes 14 which is positioned on the base channels 11—11.

It will thus be seen that a simple and efficient material handling box and stand combination has been disclosed in which a hopper of novel conformation and a material handling box of novel conformation cooperate in making possible a superior workpiece presentation and receiving means.

It will be observed that the material handling box 14 disclosed herein is preferably formed with the side, back and front walls corrugated to lend rigidity thereto as is the bottom thereof.

It will further be seen that the continuously extending legs 15—15 are so formed that they reinforce the lower corners of the material handling box 14 and at the same time insure its accurate positioning on the top frame members 12—12 as well as on the base channels 11—11.

By referring to Figure 4 of the drawing it will be seen that the material handling box and stand combination disclosed herein is advantageously operated by a conventional fork lift truck, as shown in the art. In

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Figure 4 the fork lift truck has previously deposited a material handling box 14 on the base channels 11—11 and pushed it forwardly into position beneath the return chute 27.

A second material handling box, for the purpose of this example, filled with workpieces has been positioned by the fork lift truck on the frame members 12—12 initially in the position shown in the dotted lines in Figure 4. The forks of the truck were then lowered and the truck backed away from the stand until the forward ends or tips of the fork were positioned beneath the rear edge of the material handling box 14. The fork was then elevated and the material handling box 14 moved in an arcuate tilting motion pivoting on the transverse member 19 which engages the forward ends of the continuously extending U-shaped legs 15—15 and the front outwardly and upwardly inclined panel 17 of the material handling box thus forming an angular fulcrum point on which the box tilts with respect to the stand and more particularly the transverse member 19 thereof.

The material handling box 14 is thus tilted or tipped into the position shown in solid lines in Figure 4 of the drawing where the workpieces therein will flow outwardly into the hopper of the stand, as previously described.

In the event the hopper is partially filled with workpieces, or almost completely filled with workpieces, the same operation can take place and the material handling box 14 will, in effect, extend the vertical area of the hopper. As the workpieces are removed from the hopper, the contents of the material handling box 14 will be discharged thereto. This feature enables the individual stands and hoppers to be serviced less frequently than would otherwise be necessary inasmuch as the extra capacity of the box plus the hopper is always available.

The material handling box 14 is removed when empty by the fork lift truck. The operator places the tips of the fork on the back of the box and moves it downwardly from the solid line position of Figure 4 of the drawing to the dotted line position where the forks may then be moved completely in under the material handling box 14 and the same picked up and removed from the stand.

The fork lift truck also positions the material handling box 14 in the lower portion of the stand and removes it when it is full. The position of the box within the stand on the base channels 11—11 is such that it may be partially engaged by the forks of the fork lift truck and moved backwardly out of the stand when loaded.

It will thus be seen that an improved stand and material handling box has been disclosed which meets the several objects of the invention, and the stand and box are interdependent in operation and that the same may be formed relatively inexpensively as compared with the stands and material handling boxes heretofore known in the art and particularly where the material handling boxes employed drop-bottoms or movable front panels.

Having thus described my invention, what I claim is:

1. In combination a supporting stand having a hopper with bottom, front, back and side walls, a structural member positioned transversely of the top of said stand adjacent said back wall of said hopper, and a box having a fixed bottom removably supported on said stand, a front wall of said box being inclined upwardly and outwardly from said fixed bottom, the side walls of the box terminating at their forward edges on the upwardly and outwardly inclined edges of said front wall and secured thereto, support means on the lower sides of said box, the forward ends of which are adjacent the lower edge of the upwardly and outwardly inclined front wall, said inclined front wall and support means of said box engaging said structural member when said box is positioned on said stand, said structural member forming a fulcrum over which said box may be tilted, means on the sides of said hopper for engaging and holding said box when tilted, and said hopper having an opening in

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the front wall thereof through which workpieces deposited therein may be removed.

2. The supporting stand and box combination set forth in claim 1 wherein the hopper is positioned in the upper front portion of the supporting stand and wherein the supporting stand has guide portions extending rearwardly of said hopper and said structural member to receive and support said material handling box.

3. The supporting stand and box combination set forth in claim 1 wherein the hopper is positioned in the upper front portion of the supporting stand and wherein the supporting stand has guide portions extending rearwardly of said hopper and said structural member to receive and support said material handling box, and wherein said supporting stand has horizontally disposed members below said hopper for receiving said material handling box.

4. The supporting stand and box combination set forth in claim 1 and wherein a secondary structural member is positioned in said hopper transversely thereof and adjacent said opening in said front wall thereof.

5. The supporting stand and box combination set forth in claim 1 and wherein a secondary structural member is positioned in said hopper transversely thereof and adjacent said opening in said front wall thereof, and wherein the bottom of said hopper is below said opening in said front wall thereof and the portion of said bottom adjacent said front wall extends upwardly to said opening therein.

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6. In combination a supporting stand having two pairs of vertically standing horizontally spaced legs, structural means interconnecting said legs and defining guide and support means, a hopper with bottom, front, back and side walls positioned in said stand between one pair of said legs and extending backwardly therefrom, a structural member positioned transversely of said stand on said guide and support means and above said back wall of said hopper, and a box having a bottom and vertically positioned side and back walls and an outwardly and upwardly inclined front wall removably supported on said stand, legs on the lower sides of said box, the forward ends of said legs being positioned adjacent the lower front edge of said inclined front wall, said inclined front wall being of lesser height than said back and side walls of said box, and said side walls extending outwardly to and joined with the side edges of said inclined front wall, said inclined front wall and said legs arranged to engage said structural member when said box is positioned on said guide and support means of said stand, said structural member forming a fulcrum over which said box may be tilted, means on the sides of said hopper for engaging and holding said box when tilted over said fulcrum, said hopper having an opening in the front wall thereof intermediate the bottom and top of said hopper through which workpieces deposited in said hopper may be removed.

No references cited.