Aug. 16, 1955 J. P. VILLO 2,715,559

FACTORY STORAGE BIN

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FIG. 2.

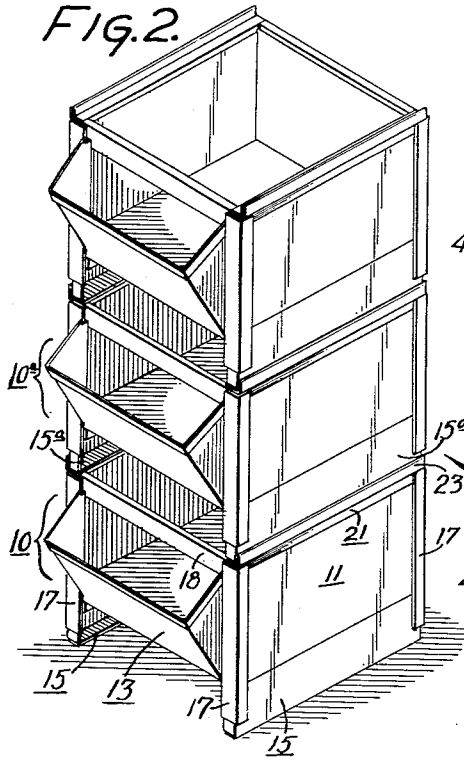


FIG. 1.

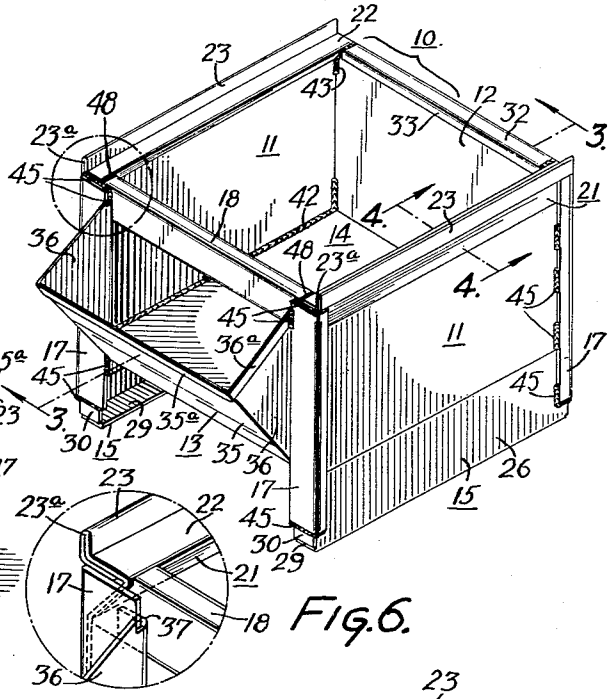
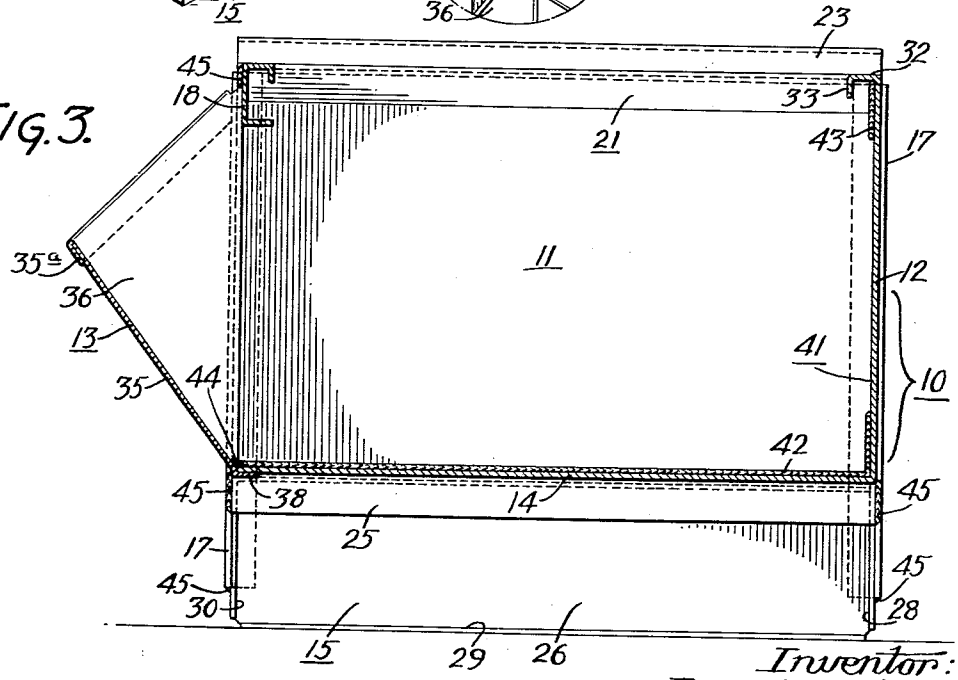


FIG. 6.

FIG. 3.



Inventor:
Joseph P. Villo
by his Attorneys
Howson & Howson

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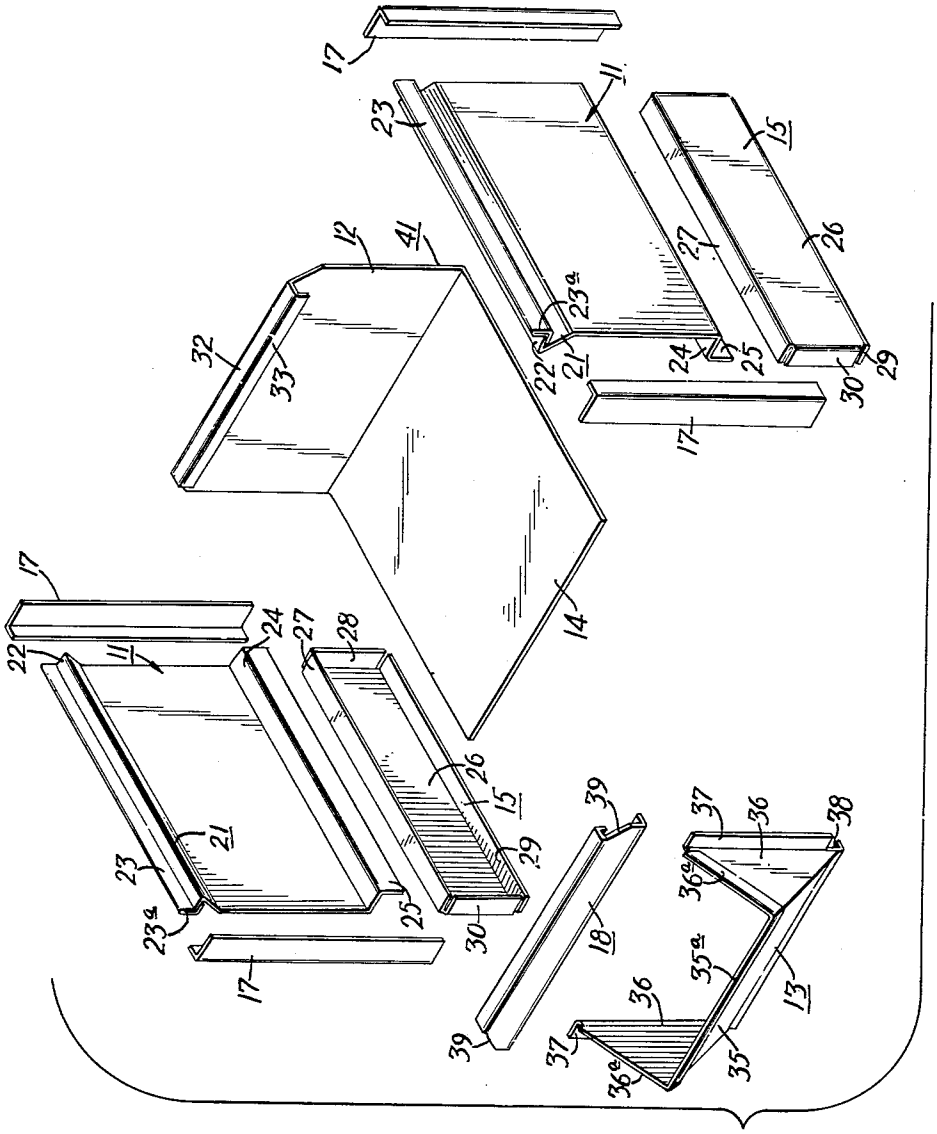


FIG. 5.

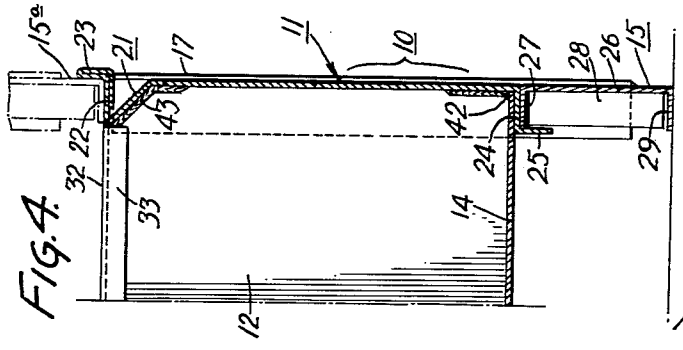


FIG. 4.

Inventor:
Joseph P. Villo
by his Attorneys
Howson & Howson

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FACTORY STORAGE BIN

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FIG. 8.

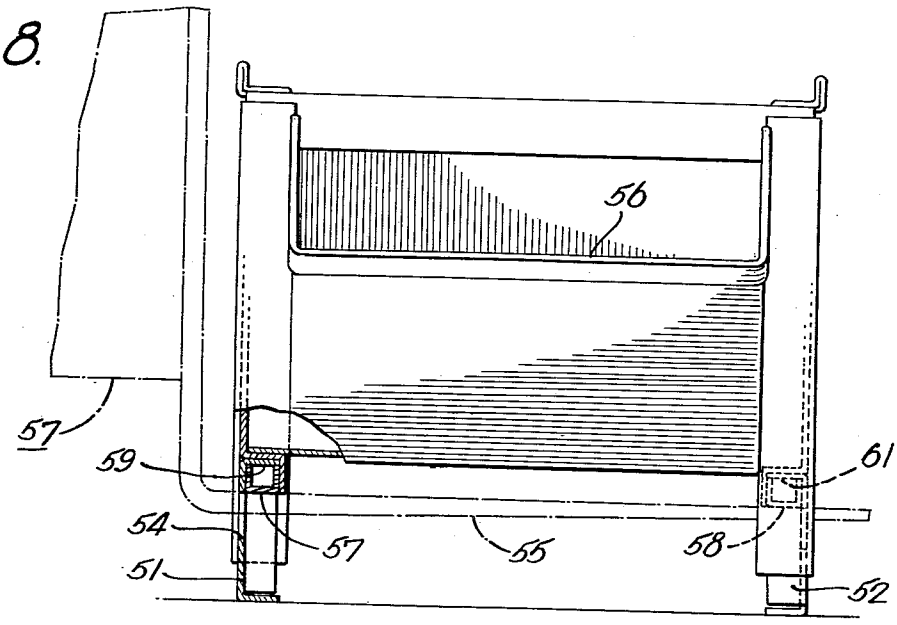
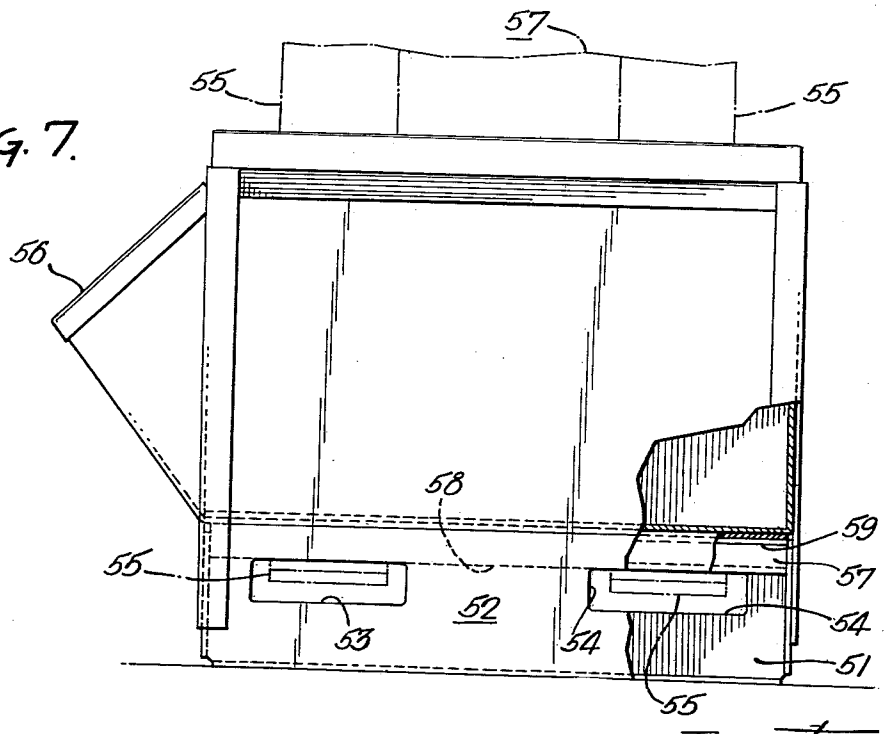


FIG. 7.



Inventor:
Joseph P. Villo
by his Attorneys
Howson & Howson

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2,715,559

FACTORY STORAGE BIN

Joseph P. Villo, Glenside Gardens, Pa., assignor to Standard Pressed Steel Company, Jenkintown, Pa., a corporation of Pennsylvania

Application February 8, 1952, Serial No. 270,541

4 Claims. (Cl. 312—107)

The present invention relates to factory storage bins and more particularly to bins of the class which are capable of being stored in tiers.

One object of the present invention is to provide a storage bin of the stated class wherein provision is made for distributing the strains imposed on the bins, both by the stored articles and by a superimposed bin or bins, over a relatively large area of the bin structure, thereby reducing objectionable stress concentrations;

Another object of the invention is to provide a bin which is of relatively simple structural form and which is rigidly constructed so as to be proof against functional deformation;

A further object of the invention is to provide a bin of convenient form and superior functional characteristics, and

A still further object is to provide a bin which is structurally well adapted for handling by conventional lift-truck equipment; and which is provided also with means for dumping the contents by operation of said truck equipment.

The invention resides also in certain novel structural details hereinafter described and illustrated in the attached drawings, wherein:

Figure 1 is a perspective view of a single bin made in accordance with the present invention;

Figure 2 is a perspective view of a plurality of bins according to Figure 1 illustrated in tiered relationship;

Figure 3 is an enlarged sectional view taken on the line 3—3 of Figure 1;

Figure 4 is an enlarged sectional view taken on the line 4—4 of Figure 1;

Figure 5 is an exploded perspective view showing the forms of the various component parts of the bin structure;

Figure 6 is a fragmentary perspective view showing details of the bin structure within the area indicated by the broken line circle in Figure 1;

Figure 7 is a side elevational view of a modified form of bin provided with means for dumping the contents by operation of conventional lift truck equipment, and

Figure 8 is a front elevational view; partly in section, illustrating structural details of the bin as well as the mode of operation of the dumping means.

Referring now to the drawings, the bin is designated generally by the reference numeral **10** and comprises side walls **11**, **11**, a rear wall **12**, a front piece **13** and a base portion **14**. Co-extensive with and underlying each of the side walls **11**, **11** is a leg member **15**, **15** respectively; and to provide reinforcement and protection for the corners of the bin, corner braces **17** are provided. A cross-brace **18** spans the top of the front member **13** to provide additional structural support for the bin.

Referring now to Figure 5, it will be noted that the various structural elements of the storage bin are formed and arranged to provide inherent structural stability in the bin structure. The upper extremities **21** of the side walls **11** are bent angularly inwardly and upwardly and then outwardly to form a horizontal flange **22** which in

turn is bent upwardly at **23** to provide a channeled guideway and seat for the leg members **15***a* of a superimposed bin **10***a*. Additional reinforcement is provided by bending the metal of the flange **23** back upon itself, as indicated at **23***a*, to afford in effect a double thickness.

At their lower extremities, the side walls **11** are provided with inturned flanges **24** which terminate in downwardly depending lips or flanges **25** and which with said inturned flanges form angular sockets or seats for the leg members **15**. The leg members **15** are formed from a generally rectangular blank, the blank being bent inwardly along its peripheral edges to form a recessed structure having a vertical base web **26** and inwardly projecting peripheral walls **27**, **28**, **29** and **30**. With reference to Figure 4, the upper wall **27** of each leg member is dimensioned to seat against the lower face of the flange **24** of the side wall **11** so that the web portion **26** will be in alignment with the wall **11**, the leg, in effect, constituting a continuation of the wall **11**.

The base member **14** is formed integrally with the rear wall **12**, see Figure 5, and is adapted to seat upon the upper surface of the lower flanges **24** of the side walls **11**. The rear wall **12** is cut out at its upper extremities to conform in contour with the angularly bent portions **21** of the side walls **11** and is similarly provided with an inturned flange **32** which is bent downwardly at its extremity to form a vertical lip **33**.

The front member **13** constitutes a chute for ready access to the interior of the bin. The forward wall **35** of the front member extends angularly outward and upward from the forward edge of the base member **14**, and vertical side walls **36** extend inwardly towards the vertical front edges of the side walls **11**. The inner extremities of the side walls **36** are provided with outturned flanges **37** which at their upper extremities bear against the cross brace **18** as more fully described hereinafter. The upper peripheral edges of the side walls **36** and of the wall **35** are turned back upon themselves as indicated at **36***a* and **35***a*, respectively, to reinforce the upper edges of the front member **13**.

The lower terminal edge of the forward wall **35** is provided with an inturned horizontal flange **38** which seats between the lower face of the base **14** and the confronting upper faces of the flanges **24** of the side walls **11**. The angle members **17** at each corner of the bin structurally reinforce said corners and provide sturdy interconnection of various elements of the bin. In this respect, the flange **22** extends outwardly beyond the side wall **11** so that the flange, in assembly, will find a seat upon the upper edges of the corner braces **17** to impart further structural support to the guideway or seat formed by said flange.

The cross-brace **18** consists of a channel member shaped at its outer extremities **39** to conform with the contour of the angular portions **21** of the side walls **11**, and is adapted to span the space between the said walls, seating against the interior faces of the said flanges **37** and the said angular portions **21**.

The construction of the bin is greatly facilitated by the aforedescribed structural conformation of the various component parts. The member **41** which forms the base portion **14** and the rear wall **12** is joined to the side walls **11** by welding, as indicated for example at **42**, **42** in Figures 1 and 4. These welds **42** extend continuously along the side edges of the base member **14** and continue up the joint between the side walls **11** and the rear wall **12**. The side walls **11** are jointed to the upper part of the rear wall **12** by welds **43** as clearly indicated in Figures 1 and 4. To afford further rigidity the cross-brace **18** is seated between the angular portions **21** of the side walls flush with the forward edges thereof, and is welded as indicated at **48**.

The front piece **13** is jointed to the aforedescribed assembly by a suitable weld indicated at **44** in Figure 3, uniting the forward edge of the base member **14** with the lower extremity of the forward wall **35**, and a weld (not shown) between the flanges **37** and the brace **18**. As shown in Figure 6, the vertical edges of the flanges **37** will be spaced apart from the forward edges of the side walls **11**, said spaces being closed by the corner braces **17** as more fully described hereinafter.

The leg members **15** may then be seated against the lower face of flange **24** and the lip **25** of the side walls **11** and held in place by the corner braces **17** which are secured to the assembled structure by a plurality of welds indicated at **45** in Fig. 1. The welds are suitably located to reinforce the previously described joints as well as to provide for union of the leg members **15** with the side walls **11**.

Because of the substantial strength and rigidity afforded by welded unions in addition to the neat internesting of the various structural components of the bin, the bin is extremely strong and substantially proof against deformation under load. Of particular importance is the construction of the guideways for the superimposed bins **10***a*. The angular portion **21** is, in effect, a continuous supporting strut for the interior edge of the guideway, this support being reinforced by the cross brace **18** and upper terminal portion of the rear wall **12**. The outer edge of the guideway is reinforced to a great extent by the double thickness of metal indicated at **23***a* in addition to the extra support afforded by the corner braces **17** at the forward and rear ends of the guideway.

The lower flange **24** and the lip **25** also contribute to the strength and durability of the bin. In this respect, the lip **25** reinforces the flange against deformation, and, with the added support of the side **27** of the leg member **11**, affords substantial support for the base member **14** along the full longitudinal dimension of said member.

The corner braces and the particular configuration of the various elements present a pleasing appearance and provide a factory storage bin free from rough edges and affording sufficient hand holds together with suitable means for modern mechanized handling of the bins.

The bin illustrated in Figs. 7 and 8 is essentially of the same structural design as that described above with the exception however that means has been provided for dumping the contents of the bin by way of the front wall chute through the medium of conventional lift truck equipment. To this end, each of the leg members **51** and **52**, which correspond to the members **15** of the previously described embodiment, is provided with a pair of openings, **53** and **54** respectively, which constitute sockets for reception of the forks of the lift truck, one of said forks being shown in broken lines in Fig. 8 and being designated by the reference numeral **55**. The openings in the leg member **51** are aligned with the respective corresponding openings in the leg member **52** and are spaced apart in the said leg members so that the forks of the truck may pass freely through the openings to occupy the position indicated in Fig. 8. The bin can then be elevated and transported by the truck to a desired point, and the contents of the bin or any part thereof dumped through the front wall chute **56** by tilting the forks and the bin laterally in the appropriate direction by mechanism provided for that purpose on the truck indicated generally by the reference numeral **57**.

In order to afford a suitable bearing or seat for the forks **55** in the bin structure, I may provide channel members **57** and **58** secured, preferably by welding, under and against the upper inturned flanges **59** and **61** of the leg members **51** and **52**, as shown in Fig. 8. The bottoms of these channels lie flush with the upper edges of the openings **53** and **54** and thereby form the seats for the forks **55** as described above.

Preferred forms of the invention have been illustrated and described herein, but considerable deviation in the form of the parts and the method of assembly is possible without departure from the present invention as defined in the appended claims.

I claim:

1. A portable factory bin comprising a substantially flat base member, an upwardly extending rear wall, a front piece diverging upwardly and outwardly from the forward edge of said base member, side walls each having at its lower extremity an inwardly projecting horizontal flange to underlie said base member and terminating in a depending lip, and recessed leg members each comprising a vertical web and peripheral walls, the upper said peripheral wall being dimensionally identical with and underlying said horizontal flange and the inner edge of said upper wall seating against said downwardly depending lip whereby the web and the associated side wall present a substantially uninterrupted exterior side surface, and the said side walls each having at its upper extremity a portion bent angularly inwardly and upwardly and terminating in a horizontal flange projecting outwardly beyond said uninterrupted side surface and having at its outer extremity a vertical lip, said flange and lip forming a seat for a second superimposed, like bin.

2. A bin according to claim 1 including corner braces lying flush against each said uninterrupted side surface to unite said leg members to said side walls, said braces extending upwardly along said side wall into engagement with the outwardly projecting horizontal flange to support the latter.

3. A bin according to claim 2 wherein a cross member extends between the forward upper extremities of said side walls and is shaped at its outer extremities to conform in contour with and to support said angular upper extremities of the side walls, and wherein further the said rear wall is also shaped at its outer edges to conform in contour with and to support said angular extremities of the side walls.

4. A portable factory bin comprising a substantially flat base member, an upwardly extending rear wall, a front piece diverging upwardly and outwardly from the forward edge of said base member, side walls each having at its lower extremity an inwardly projecting horizontal flange underlying said base member and terminating in a downwardly depending lip, recessed leg members each comprising a vertical web and peripheral walls, the upper said peripheral wall underlying said horizontal flange and seating at its inner edge against said downwardly depending lip, said leg members being provided in their vertical webs with socket openings for reception of lift elements whereby the bin may be tilted toward the front for discharge of the contents by way of said front piece, and bars secured to the leg members below the upper peripheral walls thereof and rigidly supporting the latter, said bars being positioned for seating engagement with said lift elements after insertion of the latter in the socket openings so that the weight of the bin and its contents is imposed on said elements primarily through said bars.

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