July 25, 1950 W. R. HUGHES 2,516,122

METAL BIN

Filed Sept. 20, 1945 3 Sheets-Sheet 1

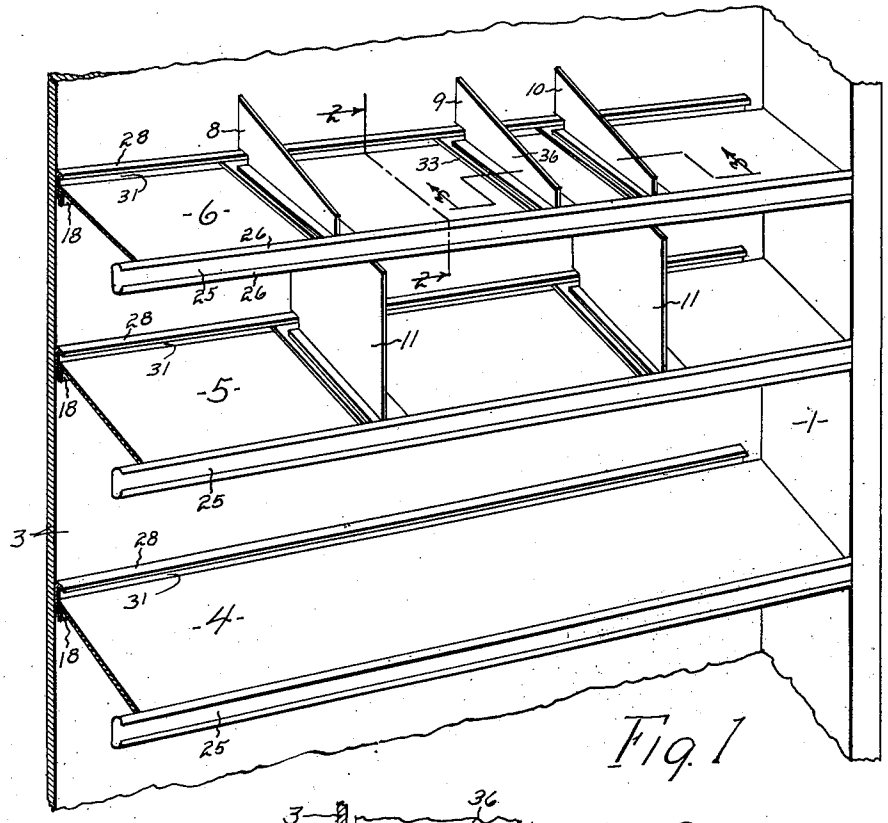


Fig. 1

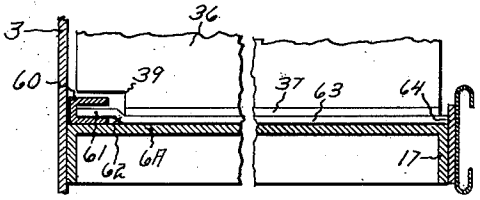


Fig. 8

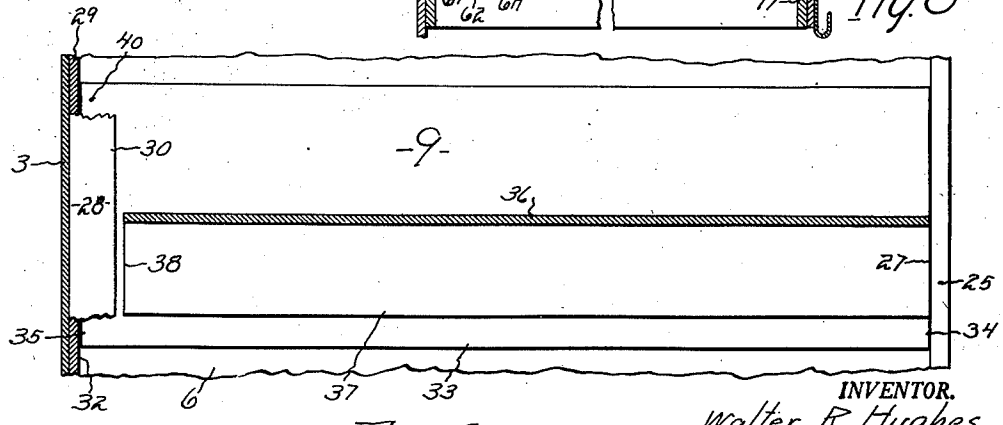


Fig. 4

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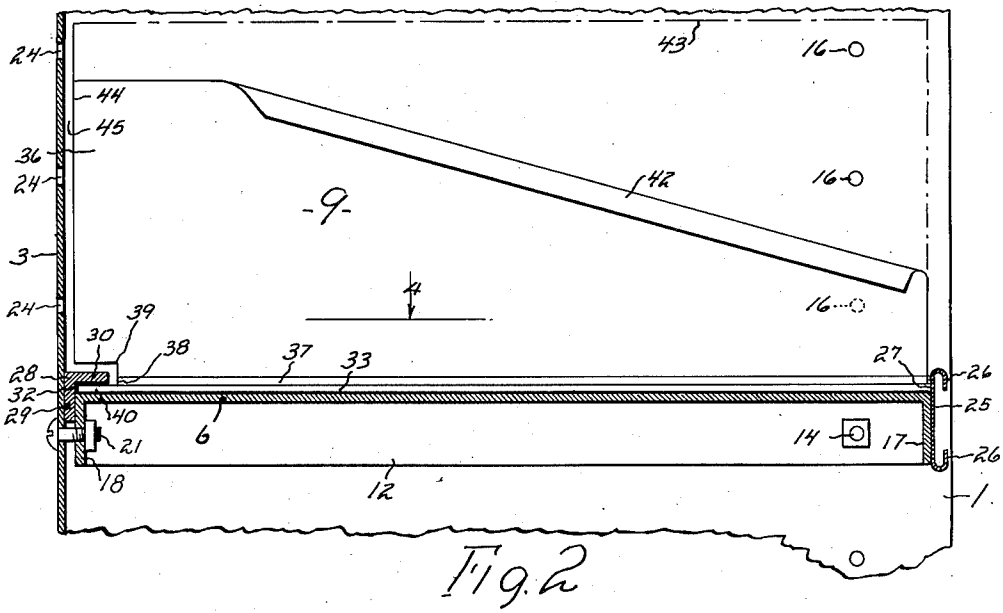


Fig. 2

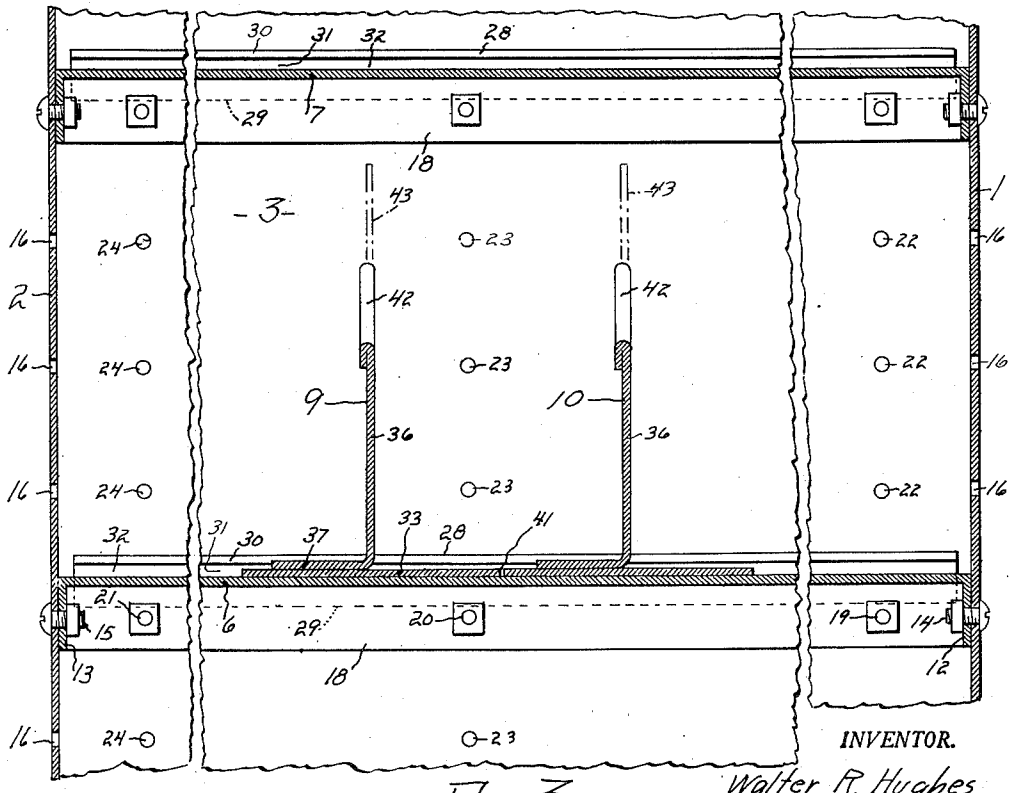


Fig. 3

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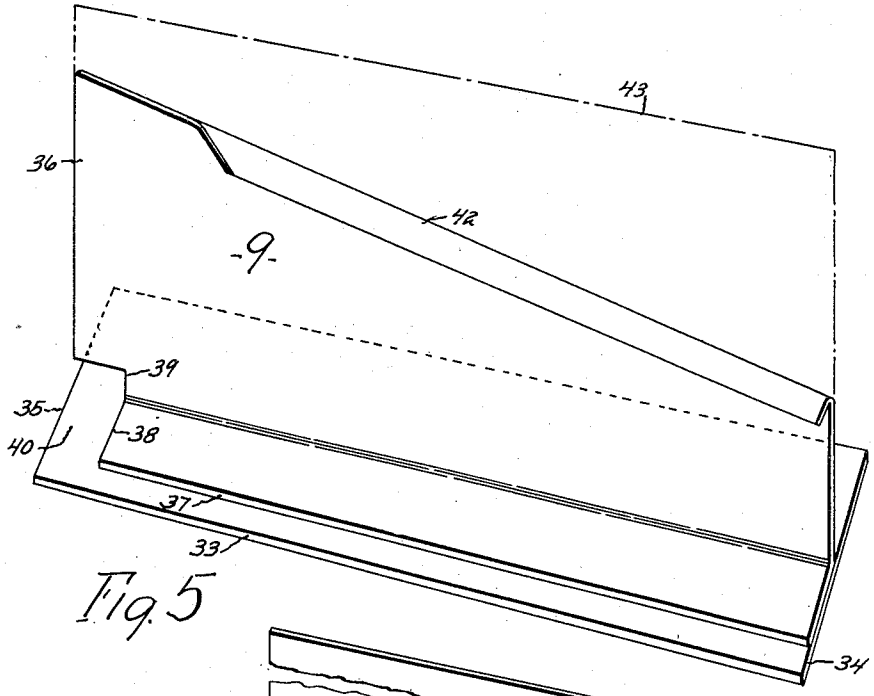


Fig. 5

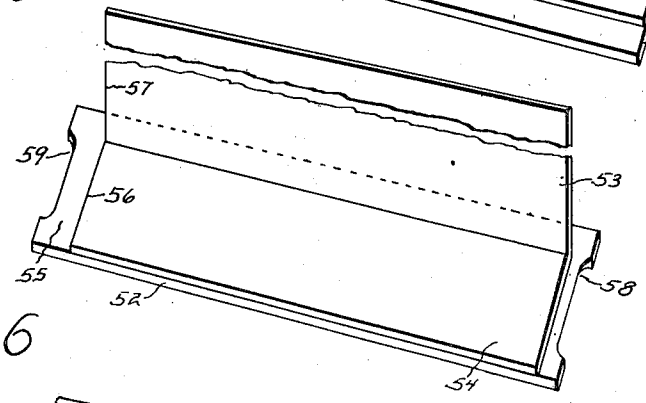


Fig. 6

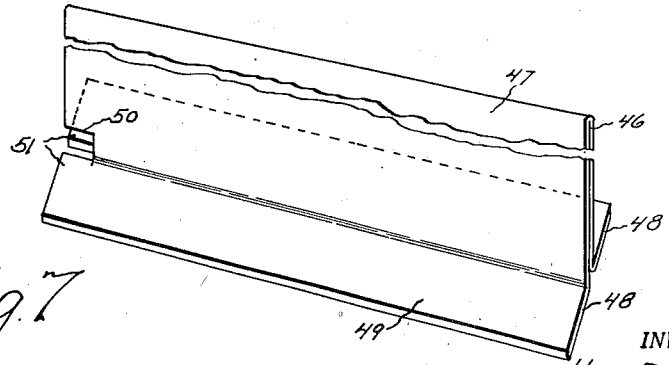


Fig. 7

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UNITED STATES PATENT OFFICE

2,516,122

METAL BIN

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Application September 20, 1945, Serial No. 617,556

5 Claims. (Cl. 211—184)

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This invention relates to sheet metal bins of the class in which a stock of automotive and other equipment parts, repair parts, tools, and articles of merchandise generally, are stocked in separated labeled compartments, or bins and in systematic arrangement, for ready access.

Such bins comprise generally a walled cabinet, usually open at the front, with shelves that can be adjusted to different distances apart vertically; and a number of partitions or dividers on each shelf that can be adjusted to different distances apart along the shelf; whereby the cabinet may be divided up into a great number of bins of different sizes, corresponding to the sizes of the articles to be contained in them and corresponding to the quantity of each article on hand.

In the development of this art, various structural features have been devised, to facilitate the adjustment of the size of the individual bins, so that the size can be initially preselected or changed from time to time, quickly and conveniently. Experience has shown that the most important adjustment is that for initially selecting, or from time to time changing, the width of the bins, that is, the number of the bins along a shelf, by selectively positioning the partitions or dividers.

Efforts have been made to provide shelves and shelf dividers of such construction that the dividers can be moved along the shelf and secured in selected positions without the use of tools. But all such proposals heretofore made of which I have knowledge have been objectionable because they have provided for securing the dividers in only a limited number of predetermined positions along the shelf, thereby prescribing within limits the width which the compartments or bins can have, as well as the number of bins possible to a shelf.

Among the objects of the invention are:

To provide a bin cabinet of the class referred to in which the possible positions of the shelf dividers along the shelf are not predetermined but in which the shelf dividers can be moved along the shelf to any desired position whatever and secured thereat.

To provide an improved construction of shelf and divider cooperating in a manner to provide unrestricted adjustment of the divider along the shelf, and secure attachment of the divider to the shelf after adjustment of its position.

To provide in a cabinet of the class referred to, an improved construction of shelf for the purposes mentioned above.

To provide an improved construction of divider for the purposes mentioned above.

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To provide a shelf and divider construction having an improved mode of operation.

To provide a shelf and divider construction in which the divider is attached to the shelf by friction; and may be detached by simply lifting one end of it; and, after moving it along the shelf to the desired position, may be reattached by depressing the lifted end; and by which the attaching engagement between the divider and the shelf thus effected is such as to prevent the divider from slipping, tipping, or becoming askew.

To provide an adjustable bin cabinet of the class referred to and having the features above mentioned, and comprising simplifications of structure which reduce its cost of manufacture and at the same time facilitate the adjustment of the dividers.

Other objects will be apparent to those skilled in the art to which the invention appertains.

The invention is fully disclosed in the following description taken in connection with the accompanying drawing, in which:

Fig. 1 is a perspective view of a fragment of a bin cabinet embodying my invention and showing two kinds of shelf dividers;

Fig. 2 is a sectional view taken approximately from the plane 2—2 of Fig. 1, to show in side elevation the construction of a divider and the cooperating parts of a shelf;

Fig. 3 is a sectional view with parts broken away taken from the plane 3—3 of Fig. 1, but with certain dividers of Fig. 1, moved closer together;

Fig. 4 is a sectional view taken from the plane 4 of Fig. 2;

Fig. 5 is a perspective view of a shelf divider such as I may employ and as shown in the preceding figures;

Figs. 6 and and 7 are views similar to Fig. 5 showing modifications;

Fig. 8 is a view, with parts broken away, similar to Fig. 2 but showing modifications.

In Fig. 1 of the drawing, I have illustrated in perspective a fragment of a bin cabinet embodying my invention, this fragmentary showing being sufficient for those skilled in the art to understand the invention, in view of the present state of development of the art.

There is shown at 1 a right hand end wall, the corresponding similar left hand end wall being broken away, but being shown at 2 in the sectional view Fig. 3. At 3—3 is shown a back wall connected to the end walls by any suitable construction not shown. At 4, 5, and 6, are three shelves; it being understood that there may be

any suitable or desired number, and to make this evident, another shelf, 7, has been shown in Fig. 3. At 8, 9, and 10 are shown three dividers on the shelf 6 at different adjusted distances apart; and at 11—11 are two dividers of another type on the shelf 5 (it being understood that there may be any suitable or desired number of dividers of either kind on either of the shelves), the shelves 4 and 7 being shown without any dividers thereon for clearness.

The construction with respect to the shelves can be understood from an inspection of Figs. 1, 2, and 3. Each shelf, for example the shelf 6, has depending flanges 12 and 13 at its opposite ends, bolted by bolts 14 and 15 to the end walls 1 and 2. These bolts pass through aligned perforations in the flange and end wall, and a vertical series of such perforations 16—16 (omitted from Fig. 1) is provided in each of the end walls whereby the shelf can be adjusted to different levels vertically; and these same series of holes 16 may be similarly utilized for the other shelves. Each shelf has also a depending flange 17 along its front and a depending flange 18 along its rear; and the rear flange 18 is bolted to the back wall 3 by bolts 19, 20, and 21, projected through the flange and through three vertical series of perforations 22—22, 23—23, and 24—24 (omitted from Fig. 1) spaced correspondingly with the series of perforations 16—16 for obvious purposes. It has been found that for cabinets of usual width three series of perforations such as 22, 23, and 24 and three bolts 19, 20, and 21 will suffice to support the shelf at the back, particularly if the bolts 14 and 15, and the series of perforations 16 are disposed at the forward part of the shelf as illustrated.

Running along the front of each shelf is a forwardly open channel 25 with inwardly bent flanges 26—26, in which cards or other labels may be placed bearing legends, numbers, or other indiciae to indicate the part number or other character of the contents of the bins opposite them, in a well known manner. It will be noted that the channel 25 as at 27 projects a considerable distance above the top surface of the shelf and without overhanging the shelf as shown for the shelf 6 in Fig. 2, to serve as an abutment along the front of the shelf for a purpose to be described.

The channel 25 may conveniently be spot-welded to the flange 15 at a number of points along its length.

Along the rear of the shelf is an angle section element or strip 28, the two legs 29 and 30 being preferably at right angles to each other. The leg 29 is preferably spot-welded or otherwise attached to the shelf flange 18; and the leg 30 overlaps the rearward part of the shelf, and is spaced above it as shown in Figs. 2 and 3, in the nature of a lip whereby a recess or groove 31 is provided at the rear of the shelf and running along its entire length, preferably continuously, although as will become apparent it may be discontinuous. The back or bottom of this recess or groove 31, provided by the inner face of the angle leg 29, constitutes an abutment 32 projecting above the shelf for a purpose to be described.

A description of the dividers and their cooperation with the structure of the shelf above described, will now be given with particular reference first to the form of the divider shown at 8, 9, and 10 in Fig. 1, the structure being best shown in Figs. 2 to 5 inclusive.

The divider is in a single integral unit without any moving or loose parts, and comprises a sheet metal base 33, preferably rectangular in form, the opposite ends 34 and 35 of which, see Figs. 4 and 5, are approximately parallel and preferably continuous, rectilinearly, although as will be referred to later this is not in every case necessary.

A sheet metal bin-wall 36 rises from the base 33, rigidly secured thereto; and the preferred construction is to provide the wall with an integral foot 37 bent at right angles thereto and spot-welded to the base at a number of points; and it is preferred that the wall 36 extend longitudinally of the base 33 coextensive therewith and along its center line. At the rear of the wall 36, the foot 37 is cut back as at 38 a distance from the rear edge 35; and the rear end of the wall 36 in the portion thereof adjacent to the base 33 is cut or notched back as at 39; and this leaves the rear end of the base 33 in the form of a flat transverse tongue 40. The over-all length of the base 33 between its end edges 34 and 35 is made to be the same, approximately, as the distance between the said abutment 27 at the front of the shelf, and the said abutment 32 at the rear of the shelf, described above.

To mount the divider, as thus described, on the shelf, it is first moved along the shelf to the desired position; the tongue 40 of the base 33 is then projected rearwardly under the angle flange 30 and into the groove 31 and into engagement with the abutment 32 at the rear or bottom of the groove; and then the forward end of the divider is depressed downwardly, the end of the tongue 40 hingingly moving on the abutment 32, until the base 33 rests upon the shelf, which causes the forward end of the base 33 to be frictionally engaged with and behind the abutment 27, and the rear end of the base to be frictionally engaged with the abutment 32.

To adjustably move the divider to a different position along the shelf, the forward end is first raised to disengage the forward end of the divider from the abutment 27, and the tongue 40 is thereby loosened in the groove 31, and the divider is then moved to a new position; and then the forward end of the divider is again depressed at the new position.

The structure of the shelf and the divider cooperate with each other as is apparent. The divider wall 36 cannot tip or rock from one side to the other, because the wide tongue 40 on the divider base 33 is trapped within the recess or groove 31, and if it is subjected to tipping force, the tongue engages the underside of the flange or lip 30. The divider cannot become askew, or displaced angularly on the shelf, because of the transversely extensive, parallel edges 34 and 35 at the opposite ends of the base, engaging their abutments 27 and 32. There is no tendency for the divider as a whole to be dislodged upwardly at its forward end, and all of the contents of the bins at either side of the wall 36 rest upon the base 33 and tend to hold it downwardly on the shelf and in engagement between the abutments at its opposite ends as described.

If the side pressure on the divider tends to shift it, this is counteracted, partly by the frictional engagement at the ends of the base, and partly by virtue of the fact that one end will tend to shift first and tend to skew the base, and this will lock the base against its abutments by a wedging action.

Since the divider wall 36 is rigidly or integrally joined to the horizontal base 33, it is supported

thereby and since the base cannot tip, it is unnecessary to provide any support for the wall at the upper parts thereof, as has heretofore been necessary in this art.

Dividers of the type 8, 9, and 10 and as shown in detail for the divider 9 in Figs. 2 to 5, will be used when narrow bins are wanted, for example when with the articles to be stocked are small, or come packed in small boxes, and when adjacent bins walls are to be close together. Fig. 3 shows two dividers 9 and 10 disposed with the walls 36—36 thereof the minimum distance apart (closer than they are in Fig. 1) the distance apart being determined by the engagement of their two bases 33—33 with each other as at 41; and the wall 36 is short, vertically considered, and its top slopes downwardly toward the front, whereby the distance between the walls of the two adjacent dividers may be less than the width of a man's hand, but by means of the vertically short, sloping walls he can reach over the top of the two walls and have access into the rear of the bin with his fingers.

The upper edge 42 of the sloping wall is therefore preferably made rounded and smooth by bending over the edge as shown in Figs. 2 and 3. (This rounded edge construction is omitted from Fig. 1.)

It may in some cases be desirable to have the wall of the divider extend approximately all the way from one shelf to the next above it, and this has been shown for the dividers 11—11 of Fig. 1. Such dividers may be constructed exactly like that of Figs. 2 to 5 except for the height of the wall; and an optionally greater height of wall has been indicated in Figs. 2, 3, and 5 in broken line at 43.

Particularly when the divider wall is high, the upper rear portion thereof, for example that indicated at 44 in Fig. 2, rocks toward the rear wall 3 when the front end of the divider is raised as described, and for this reason it may be desirable to have a small clearance space 45 between the divider and the rear wall; and this will ordinarily be present and sufficient even when the wall is coextensive, forwardly and rearwardly, with the base 33, because both the base and the wall will then be held forwardly to provide such space by the thickness of the vertical leg 29 of the angle 28.

The form of divider shown in perspective in Fig. 5 is the one preferred whether the bin wall 36 of the divider be made low with a sloping front as at 42 or whether it be made high as at 43 without a sloping front, but this particular form is not essential, inasmuch as the advantages of the invention may be practiced with other forms, and to make this certain, and as evidencing the scope of the invention, modifications have been shown in Figs. 6 and 7.

The divider of Fig. 7 is formed from a single piece of sheet metal folded over at the middle as at 46 to provide a bin-wall 47, and bent laterally in opposite directions into flanges 48—48, to provide a base 49 and the wall 47 is cut away or notched as at 50 near the base to leave a transverse tongue 51, which as will be apparent is discontinuous transversely.

The divider of Fig. 6 consists of a sheet metal base 52 and a bin-wall 53 secured thereon by means of a foot or flange 54 spot-welded to the base 52. This form shows that the wall 53 may rise from or near one side edge of the base instead of from its center line, and shows that the tongue, in this case 55, may be provided by cutting off the rearward end of both the foot 54 and the wall 53, in a plane represented by the edges 56 and 57. This form also shows that the opposite ends of the base need not be continuously rectilinear, as in the other forms, but may be discontinuous, being notched out as at 58 and 59 without detracting from the operative functions described for the base ends; and this form also shows that the forward end of the wall 53 need not extend all the way to the front of the base.

As to the recess or groove 31 extending along the back of the shelf to receive the tongue of the divider, the preferred construction is that already described; but it may be otherwise provided and illustrative of one of such possible modifications, there is shown in Fig. 8 a channel element 60 extending along and upon the back side of the shelf 6A and spot-welded thereto; and the tongue of the divider base as shown at 61 may be off-set upwardly at 62 so as to enter the channel, if as shown, the base 63 of the divider, rests upon the shelf.

Again, the abutment for the forward end of the divider need not be, as at 27, on a part of the card holder channel such as 25 as described, but, as also shown in Fig. 8, may be upon a separate piece 64 spot-welded to the forward flange 17 of the shelf, and projecting above the shelf.

My invention is accordingly not limited to the exact details of construction illustrated and described. Modifications and changes may be made therein. Some have been illustrated and described, and other modifications and changes will occur to those skilled in the art after a reading of the foregoing specification; and my invention comprehends all such changes and modifications which come within the scope of the appended claims.

I claim:

1. A bin cabinet comprising a sheet metal shelf; a sheet metal front element extending longitudinally along the front of the shelf and formed to project upwardly beyond it without overhanging it; a sheet metal flange element extending longitudinally along the rear of the shelf and spaced above the shelf providing a longitudinal recess; a bin divider comprising an elongated sheet metal base lying on the shelf and having opposite transverse ends; one end adjacent to the said front element and the other end being in the form of a tongue and disposed in the longitudinal recess.

2. A bin cabinet comprising a sheet metal shelf; a sheet metal abutment element extending along the front of the shelf and formed to project upwardly beyond it without overhanging it; sheet metal means providing a groove running along the upper surface of the shelf at its rear; a bin divider comprising an elongated sheet metal base on the shelf having parallel ends, and a transverse tongue at one end; the tongue engaged in the groove, and the base ends frictionally abutting upon the bottom of the groove and upon the abutment element respectively; and a sheet metal bin wall integral with the base, rising therefrom longitudinally thereof.

3. A bin cabinet comprising a sheet metal back wall and sheet metal side walls; a sheet metal shelf secured to the back wall and side walls; a sheet metal element of angle cross-section extending along the back wall and secured to the shelf, with one angle leg disposed vertically between the back wall and the shelf and the other angle leg disposed horizontally and overlapping and spaced from the top of the shelf; an elongated sheet metal element, extending along the front of

the shelf and formed to project upwardly beyond it without overhanging it; a bin divider comprising an elongated rectangular sheet metal base lying on the shelf, frictionally abutting at its forward end upon the elongated element and at its rearward end engaged under the horizontal angle leg and frictionally abutting upon the vertical angle leg; and a sheet metal wall rising vertically from and welded to the base and extending longitudinally thereof.

4. In a bin-cabinet construction, upright cabinet side walls; an elongated shelf supported therebetween; forward abutment means disposed at a forward portion of the shelf and extending over the major part of the length of the shelf and projecting upwardly above the shelf without overhanging it; rearward abutment means disposed at a rearward portion of the shelf and extending over the major part of the length of the shelf and projecting upwardly above the shelf; and the forward and rearward abutment means being equally spaced apart along the shelf; lip means disposed at a rearward portion of the shelf and extending over the major portion of the length of the shelf and spaced above the shelf and overhanging the rearward portion of the shelf forwardly of the rearward abutment means; a bin divider comprising a base supported upon the upper side of the shelf and having a bin wall rising from the base; the base having a rear portion formed to be received under the lip means; the base having opposite rear and front ends spaced apart to simultaneously frictionally engage the two said abutment means to positionally fix the base on the shelf longitudinally thereof; the said rear portion of the base being of substantial extent longitudinally of the shelf and by its engagement with the under side of the overhanging lip means substantially restraining the base from rocking on the shelf; the base being releasable from its fixed position by manually lifting the front end of the base out of frictional engagement with the forward abutment means and concurrently hingingly moving the base at its rear end upon the rearward abutment means; the base when released being movable along the shelf longitudinally by minute increments of movement to other positions and in each of said positions being fixable positionally by manually moving the forward end of the base downwardly and hingingly moving the base rear end upon the rearward abutment means to effect said frictional engagement of its ends.

5. The bin-cabinet construction described in claim 4 and in which the front end of the base is also of substantial extent longitudinally of the shelf; and a portion of the rear end of the base in engagement with the rearward abutment means is formed parallel to a portion of the front end of the base in engagement with the forward abutment means, to prevent the base from taking up skewed positions on the shelf.

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