

May 6, 1952

D. A. FREEMAN  
SORTING APPARATUS

2,595,837

Filed June 3, 1947

4 Sheets-Sheet 1

*Fig. 1*

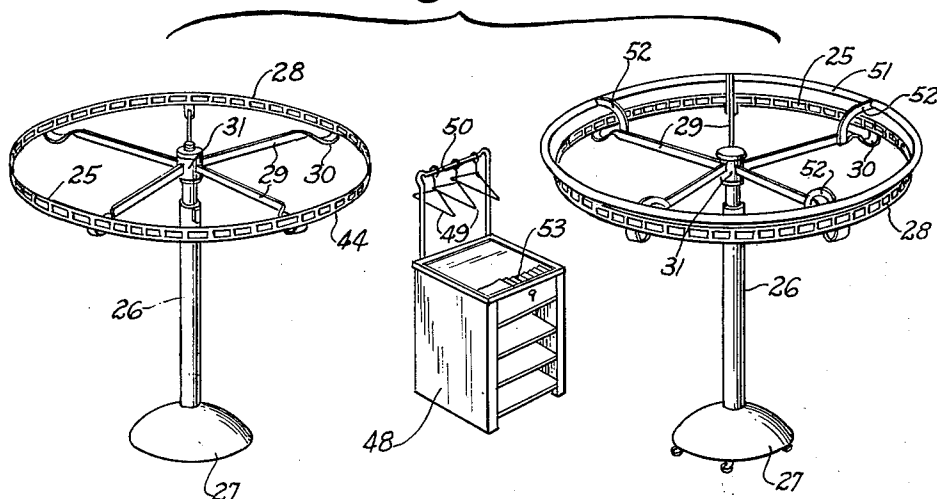
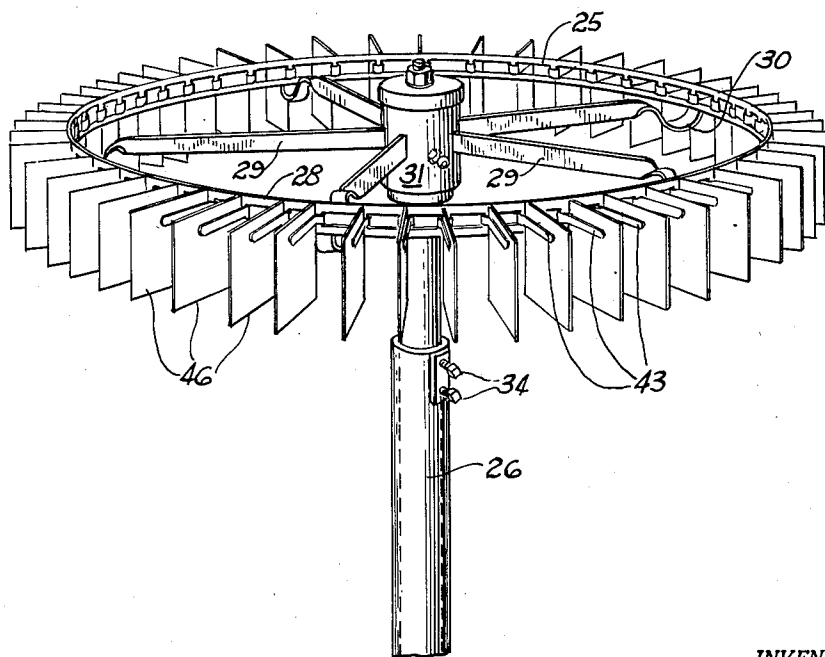


*Fig. 2*



INVENTOR.  
David A. Freeman  
BY  
Thies, Olson, & Associates  
Attorneys

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4 Sheets-Sheet 2

Fig. 3

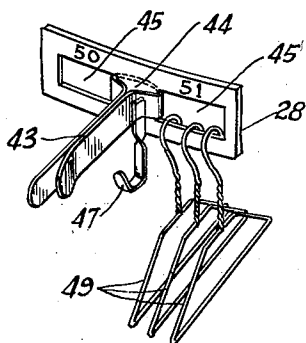


Fig. 4

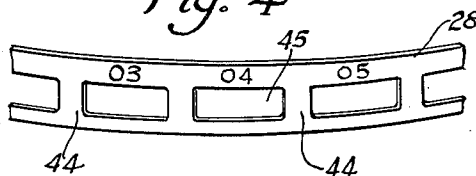


Fig. 5

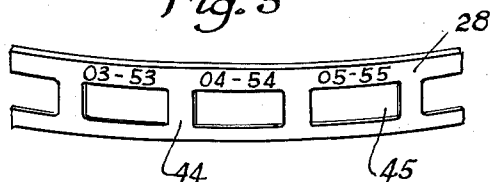


Fig. 6

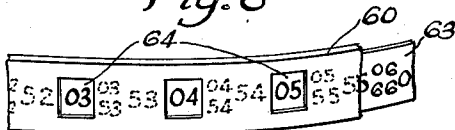


Fig. 7

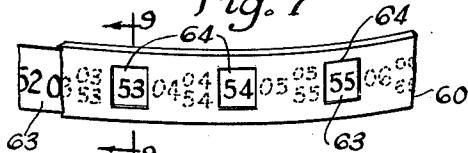


Fig. 8

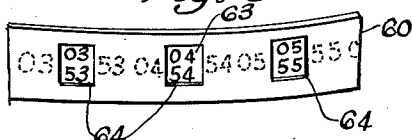


Fig. 9

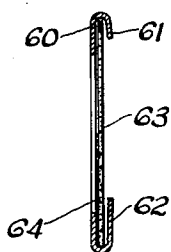


Fig. 10

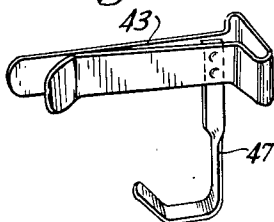


Fig. 11

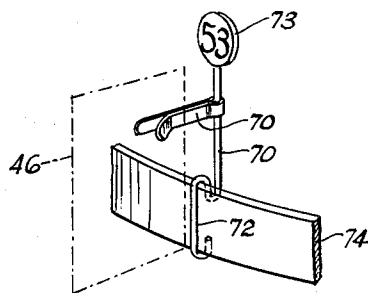
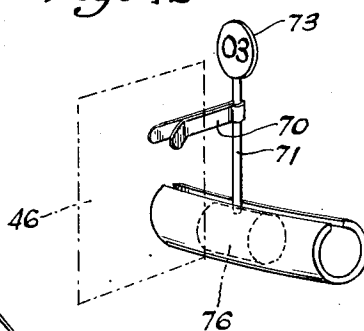


Fig. 12



INVENTOR.  
David A. Freeman  
BY  
Thurs, Osm, Inc. & Co.  
attorneys

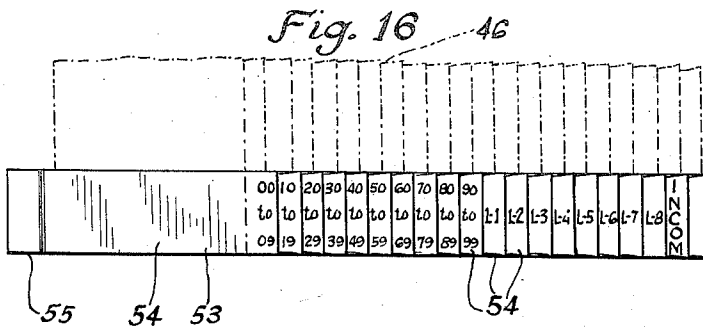
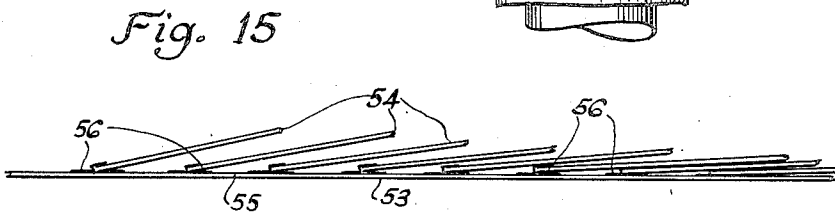
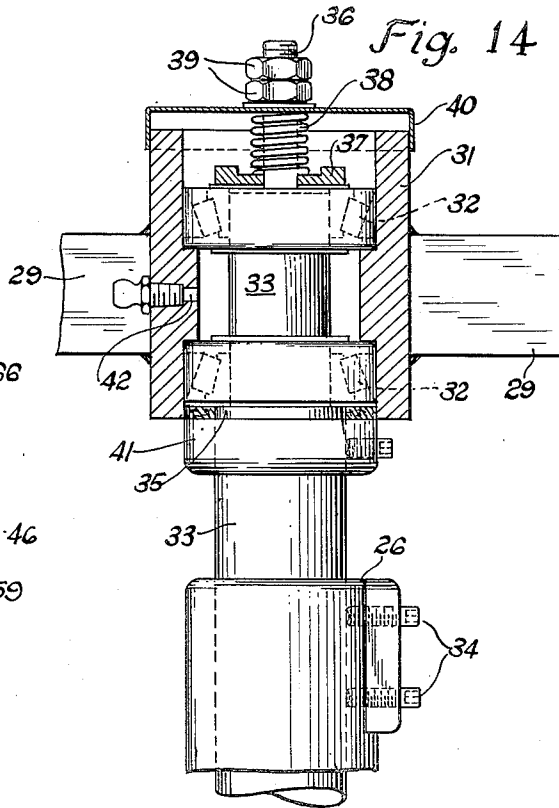
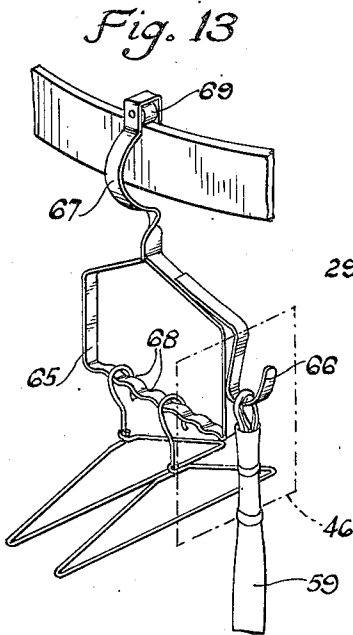
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INVENTOR.  
David A. Freeman  
BY  
Thos. C. Smith & Co.  
Attorneys

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4 Sheets-Sheet 4

Fig. 17

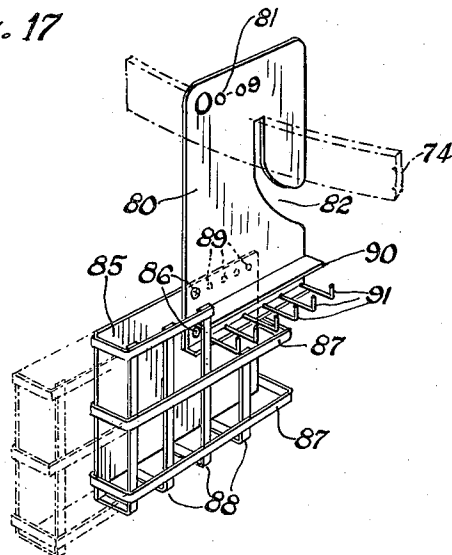


Fig. 18

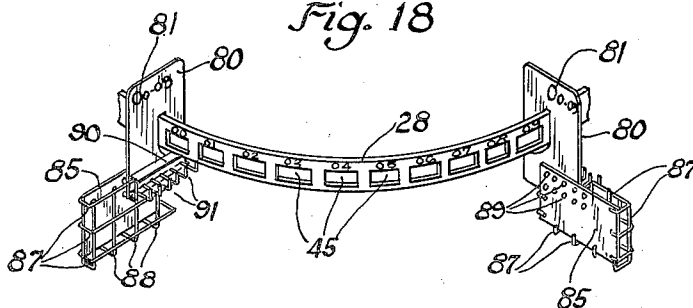


Fig. 19

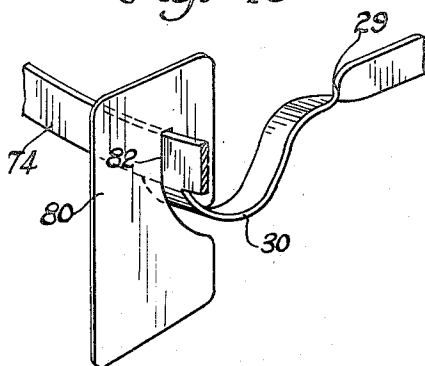
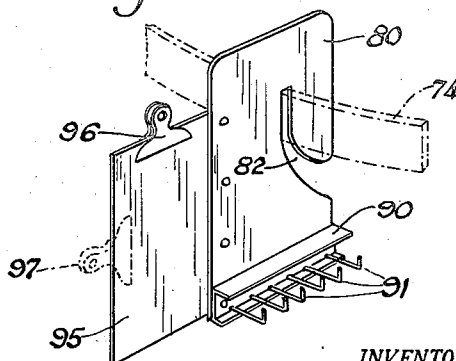


Fig. 20



INVENTOR.  
David A. Freeman  
BY  
Thomson, Olson & Macklinburg  
Attorneys

## UNITED STATES PATENT OFFICE

2,595,837

## SORTING APPARATUS

David A. Freeman, Chicago, Ill., assignor to G. H. Bishop Company, Chicago, Ill., a corporation of Illinois

Application June 3, 1947, Serial No. 752,075

4 Claims. (Cl. 211-10)

1

This invention relates to a system of sorting and assembling articles and apparatus therefor in association and co-ordination with the invoices, orders, or the like relating thereto.

Such a system is particularly valuable in dry cleaning or similar plants where customers' bundles or others of miscellaneous articles come in and are sent into the plant for treatment, and then when finished the articles for each bundle or order have to be sorted out from the others and reassembled into individual groups for the customers or others.

When the bundles or groups are first received, an invoice or order for each bundle is made out, itemizing or listing the various articles therein. These invoices, using the term generally, may be serially numbered and tags similarly numbered are attached to the respective articles of each bundle. The tagged articles are then sent into the plant for treatment and the invoices to the sorting and assembling position.

In the present system, each sorter and assembler, of which there may be several in the larger plants, may be provided with one or two sorting and assembling reels and an invoice desk preferably arranged so that all are within reach of the operator while standing practically in one position. The sorter and assembler or operator is usually a woman, and an object of the invention is to provide means whereby not only will the work be expedited and fewer mistakes made, but the operator will be saved many steps in the course of the day's work, since she does not have to travel from her position or carry heavy garments long distances in order properly to sort and assemble the articles ready for bagging or delivery. It is estimated that an operator in the usual plant is required to walk 25 or more miles per day, often carrying heavy garments, in order to do her work.

This sorting and assembling reel is horizontally rotatable on a vertical standard, shaft or pedestal at a convenient height for suspending garments thereon. The garments are usually on hangers and these may be hooked over or to the peripheral circular rim of the reel, so that they and the garments hang in radial planes of the reel and thus take up a minimum of peripheral space on the rim.

The rim in accordance with the system of this invention may be divided or marked off into sections or segments to accommodate the groups of garments or articles of each invoice or the like, and may be plainly marked therefor.

The invoices or orders in such plants are

2

usually serially numbered and of course the numbers run up rather high, into several digits each. It is the custom to attach tags or other markings bearing the number of the invoice to each garment or article included in the invoice.

Since the number of invoices or articles that may be hung on a reel is limited and the reels must be used over and over again, the designations of the segments thereon are keyed to the invoice numbers in such manner that for the number of groups that may be hung thereon the designations shall identify the individual invoices regardless of how high the invoice numbers may run.

In the present instance, the rims of the reels are preferably divided into 50 sections, which may bear numbers consecutively from 1 to 50 and/or 51 to 99, depending on whether one or two reels are used in the system, and each section or segment has provision for hanging a plurality of garments or articles thereon. Provision may also be made for receiving and holding on the rim the invoices covering the articles hung or to be hung thereon. The finished articles may be sent to the sorter and assembler in lots covered by 100 invoices. The operator of the system then takes 100 of the invoices, if there are that many, from the invoice sorter with which she is provided, and, in accordance with the system adopted, using the last two digits or numerals of the number on the invoice as a guide or key, places each of them in the invoice holders attached to the segment of the reel that is numbered accordingly. This she may readily do by merely turning the reel about one way or the other as she stands before it.

Then the operator looks at the last two numerals on the tags attached to the garments and hangs the garments on the correspondingly numbered sections of the reel, turning the reel about as before, without having to move from her position. In this way the garments or articles for the respective invoices or orders are automatically sorted and assembled.

The items on the invoices on the sections of the reel may be checked at the same time, and when all on a particular invoice or order are completed and thus hung on the reel, they may be removed from the reel and sent at once to the proper place for bagging for the customer.

If there happens to be some order for which all the items have not come through from the plant when the sorting is done or for which some articles may have to be done over, and the operator is ready to start on the next lot of orders or

invoices, the reel may be readily cleared by placing such hold-overs on the garment rack on the invoice desk adjacent the reel or reels.

The foregoing explains generally the system and apparatus of this invention of assorting and assembling articles in association and co-ordination with the invoices, orders or the like relating thereto, and which is an object of the invention. Further details and other objects of the invention will appear from the detailed description and claims to follow, in connection with the accompanying drawings, which illustrate, by way of example but not of limitation, an embodiment thereof with some modifications, and in which—

Fig. 1 is a diagrammatic perspective view of a desirable arrangement or placement of the sorting and assembling reels and the invoice desk used in the operation of the system;

Fig. 2 is a perspective view of the reel, looking downwardly toward its upper face and showing invoices detachably suspended from the invoice-receiving clips or invoice holders projecting radially from the peripheral rim of the reel;

Fig. 3 is a perspective view of the invoice clip or holder as applied to the peripheral rim of the reel (a short section only of the latter being shown) and a plurality of garment hooks suspended from the adjacent slot or opening in the rim and indicating how the garments suspended therefrom are assorted and assembled for bagging; it also shows the numbering of the rim;

Figs. 4 and 5 are perspective face views of short portions of the peripheral rim of the reel, showing still further how the sections or divisions of the rim, as represented by the slots therein, may be numbered for different conditions;

Figs. 6, 7 and 8 are similar views showing a modification of the rim and the numbering thereof;

Fig. 9 shows a cross-section of this rim on the line 9—9 of Fig. 7;

Fig. 10 is a perspective view of the invoice clip of Figs. 2 and 3;

Fig. 11 is a perspective view of a modified rim and the invoice holder and section number;

Fig. 12 is a view similar to Fig. 11 but showing a still further modification of the rim or rail and section marker;

Fig. 13 is a perspective view of a plain rim with combined sorter and assembling hook, invoice, tie and belt holder;

Fig. 14 is a detail and section of the reel hub and bearing;

Fig. 15 is an edge view of the invoice sorter;

Fig. 16 is a plan view of the same;

Fig. 17 is a perspective view of a reel rim section marker with invoice basket and belt and tie holder;

Fig. 18 is a similar view of such a marker and basket applied to a reel rim of the form shown in Fig. 1;

Fig. 19 is a similar view of the marker and spoke and rim joint; and

Fig. 20 is a similar view of a marker with a board invoice holder instead of a basket as in Figs. 17 and 18.

The reels involved in the system, as shown in Figs. 1 and 2, may comprise the rotatable member or wheel 25, which is mounted on a standard 26 having a heavy base 27. The reels are preferably portable and, as indicated at the right in Fig. 1, the base may be provided with suitable casters. The standards 26 are preferably adjustable in height to accommodate different heights

of operators or long articles, such as drapes, that may be suspended from the reel.

The rim 28 of the wheel here shown consists of a relatively heavy sheet metal strip suitably slotted to provide for suspending the garments of individual invoices or orders, as will be explained. The rim may be supported by spokes 29 which may be of flat vertical metal bars or strips having their outer ends turned through a 90-degree angle and curved downwardly and upwardly, as at 30, and welded at their outer ends to the lower edge of the rim 28. This method of connection of the spokes with the rim clears the inside of the rim from any interference with garment-supporting hooks or other members adapted to be slid or moved along the rim, as hereinafter described.

The inner ends of the spokes 29 are firmly secured to the hub 31 of the reel, preferably by welding. This hub, as indicated in Fig. 14, may be a metal casting enclosing radial and longitudinal thrust and friction bearings 32, preferably of the conical roller type indicated by the dotted lines and well known to the art, the outer casings of which are seated in the casting, as indicated, and the inner races thereof mounted on the shaft 33 which telescopes at its lower part within the sleeve of pedestal 26 and is adjustably secured therein, as by set screws or bolts 34.

The shaft 33 is reduced in diameter where it passes through the said bearings, thereby producing the annular shoulder 35 on which the casing of the lower bearing 32 seats and a further reduced and threaded end portion 36 on which a suitable retainer and snubber washer 37 is located and is spring-pressed by coiled spring 38 against the bearing. The extent of this pressure may be governed by the adjustable jam or lock nuts 39 on the threaded end of the shaft, said nuts preferably bearing on the outside of the thin metal cap 40 extending over the end of the hub 31. The spring 38 bears against the inside of the cap 40. The effect of this washer pressure on the bearing is to snub the relaxed momentum of the wheel to regulate, in the way, its speed of operation and at the same time not to interfere with its rotation or turning at a touch on the rim by the operator. While the reel turns at a touch, it does not spin and the tension on the hub can be set at the exact point desired. The double tapered or conical roller bearings make the motion smooth and even, even though the load on the rim may be unbalanced.

A felt or similar washer may be kept in place at the bottom of the bearing by collar 41 on shaft 33, to prevent entrance of dust to and escape of oil or grease from the bearings, which lubricant may be introduced through aperture 42 in the hub.

While the shaft 33 is here indicated as a solid shaft, it obviously may be made of sleeved construction, that is, a central shaft of the diameter of the end 36 surrounded by or telescoped within sleeves of outside diameters, respectively, of the two steps of shaft 33, and all welded or suitably secured together to form a unit. As indicated in Fig. 2 and described, the lower sleeve part of pedestal 26 may be comparatively high to give room for a long extension of shaft 33 therein, whereby a relatively considerable higher adjustment of the reel may be made than as indicated in Fig. 1. The lower end of pedestal shaft 26 is preferably secured to the base 27 by welding. The base 27 preferably is of heavy steel, so that the reels cannot tip or sag no matter how unbalanced

the load on them may be or how high-speed the operation.

As before stated, the rim of the reel may be slotted as indicated in Figs. 1 and 2; each slot may be assigned to an invoice. The invoices are made out presumably at the time of receipt of the garments from the customer or others and each prominently bears a number. Each garment or article is listed on the invoice and tagged with the invoice number. The last two digits or numerals of these invoices or order numbers may be taken as a guide or key, and the slots are numbered accordingly. There are preferably fifty slots in each wheel. Since the operators can most expeditiously handle the invoices in lots of 100, two wheels or reels are preferably used in an operator's unit, as indicated in Fig. 1, the slots in one reel, say that at the left, being numbered, respectively and serially, from 00 to 49, as in Fig. 4, and those in the other reel from 50 to 99, as in Fig. 5.

In order that the invoices may be conveniently associated with the slots and to avoid re-handling them, means may be provided for temporarily attaching them to the rim at the appropriate slot. Thus, as seen more clearly in Figs. 3 and 10, spring clips 43 project radially from the rim of the reel and serve to receive and hold the invoices or orders and from which they may be readily detached when desired. These invoice clips may be bent in substantially the form shown from suitable spring metal strips to pass around the portions 44 of the rim 28 between adjacent slots 45 therein and with their projecting legs pressed together flatwise, one leg being slightly longer than the other and substantially straight, and the shorter leg curved away at its end from the other, whereby the invoices, which may be generally designated by the numeral 46, may be readily slipped edgewise into the clip and held therein, with the longer leg at the back of the invoice, as indicated in Fig. 2. These invoice clips are thus firmly held in radially projecting position and relation to the rim, and grip and hold the invoices in proper position throughout the operation of the reel, and, though flexible, are of sufficient rigidity and strength and so connected that they are held in proper position and are not displaced even if grasped or engaged in the turning of the reel.

A hook 47, bent from a metal strip and secured at its upper end, as by welding or otherwise, to the front leg of the clip 43 near the rim 28, as shown in Fig. 10, may serve as a hook for ties, belts and other small accessories and keeps them with the invoice to which they belong and prevents their loss.

These clips 43 may be readily applied to the rim 28 by placing the clip tangentially to the rim, inserting the longer tongue in the opening and pushing the clip along, the shorter leg remaining in front of cross bar 44 and then turning the legs outwardly and at the same time pushing outwardly on the clip until it snaps into the position shown. The clip may be readily removed by the reverse action.

With this arrangement so far described, the invoices having been made out and the articles listed thereon and correspondingly tagged and sent into the plant for cleaning or treatment, the operator at the reels takes the invoices or some of them and which may be in lots of 100, and places them in the clips, as indicated in Fig. 2, of the two reels, one invoice to each clip, using the last two numerals of the invoice numbers as a guide

and which, as a convenience in spotting same, may be encircled by a pencil circle. This she may do in the arrangement generally indicated in Fig. 1, without having to move practically from her position in front of the invoice desk 48. Likewise, when the garments or articles, after cleaning or treatment, are returned to the operator from the various departments of the plant and as they come for sorting and assembling into the groups called for by the invoices, she takes each garment, looks at the last two figures of the tag number, swings the reel around to the matching number on the invoice or the reel rim, and hangs the garment in the slot there. The ties, belts, etc., are hung on the hook 47 of the invoice clip. This she may also do without moving practically from her position.

The slots 45 in the rim are for the reception of the hangers 49 of the garments itemized on the invoice in the corresponding clip 43, as indicated in Fig. 4, and hang in radial planes therefrom. Each slot corresponds to and accommodates the articles on an invoice. The slots prevent jamming or shifting of the garments regardless of how fast the operation. The invoice holder keeps all the data on the invoice in plain view at all times, and the items may be checked off as the articles are hung in the slot or adjacent hook or subsequently. The sorting and assembling are thus automatic, and when an invoice shows that all items are checked off, the entire order can be transferred at once for bagging and the invoice removed from the clip.

If the slot 45 for a particular invoice cannot accommodate the hooks of all the garments, the excess may be hooked over the top edge of the rail or rim 28 over the slot and thus be kept with the lot for the invoice.

In case some items are delayed in coming through the plant or some have to be done over, and the operator is ready to start the next lot of invoices, the reels can be cleaned by placing such holdovers on the garment rack 50 attached to the invoice desk 48 and removing the invoice to the "incomplete" file on the desk. This rack 50 may comprise a sturdy metal rod bent to form vertical supports at the ends which are attached in any suitable way to the rear of the desk, and a horizontal portion to receive the garment hangers, said horizontal portion being preferably somewhat to the rear of the plane of the vertical legs.

The reels 28 may, if desired, be provide with a hand rail 51, as shown at the right in Fig. 1, which may be tubular or a plain flat bar suitably supported, as by the arms 52 welded or otherwise secured to the spokes 29 of the reel and to the rail. Such rail may be somewhat larger in diameter than the slotted rim of the reel so as to extend over and beyond the said rim and conveniently engageable by the hand, and is supported by the arms 52 in such a way as not to interfere with or obstruct the top or inside face of the rim. This rail 51 may also be used to support garments of a bulky or heavy nature, such as overcoats or others which may not be conveniently hung in the slots 45 or on the top of the rim. The hook of the garment holder in such cases would be hooked over the rail 51 at the portion adjacent the particular invoice listing the garment. The hand rail 51, particularly if a flat rail, may also carry the identifying numbers or data of the slots or group positions beneath the invoiced articles instead of placing such data on the suspension

rail itself where the space therefor may be more limited.

The system preferably includes an invoice sorter 53 which is conveniently placed on the invoice desk 48. This invoice sorter is shown more in detail in Figs. 15 and 16. It comprises a series of short leaves 54 hinged to the top face of a continuous back strip 55 at spaced intervals throughout its length, so as to expose the free ends of the leaves. The leaves and back are preferably of fiberboard and relatively stiff and heavy, and the hinges 56 may be of suitable fabric or paper pasted or glued to the back and leaves as indicated, or in any desired way, the object being to provide temporary filing places for the invoices 46 between the leaves, the latter to open widely for full length without sagging midway when raised by the ends, whereby freely to admit the invoices and to be smooth-surfaced to permit the invoices to be readily drawn out.

The projecting ends of the respective leaves are lettered or numbered, or both, to indicate the contents filed in the spaces between. The material may be black in color, and the lettering, etc., white, silver or the like. The markings are comparatively large, plain and distinctively colored, so that they may be easily seen and read.

Thus, as indicated in Fig. 16, the first ten leaves may be marked "00 to 09," "10 to 19," etc., to cover the last two figures of a hundred invoice numbers; the next several leaves, in this instance eight leaves, may be marked "L-1," "L-2," etc., to cover the lot numbers of the invoices, and the last may be marked "Incom," to indicate that the work for the invoices filed thereunder is for some reason incomplete and the invoices and any work completed thereon have been cleared from the reels, the work for that invoice which is finished being hung on the rack 50 on the desk 48.

The invoices being delivered to the reel operator in large batches, she may break them down into lots of 100, using the last three figures of the invoice number as a guide, and places them in the lot files of the sorter. The L-1 lot is then distributed in the files of the leaves marked with the numbers solely, using the last two numbers of the invoice as a guide. Then, if the reels are cleared, she places the invoices of this lot 1 on the reels, and in doing so does not have to do much turning of the reels back and forth. They may be filled substantially progressively from start to finish and one reel after the other.

The finished work, being also delivered to the operator's desk in corresponding lots, is then hung on the reels as per the last two figures of the invoice number, and when so sorted and assembled may be removed with the invoices for bagging or delivery.

When the reels are thus cleared of the first lot, the second lot may be taken up, further sorted, placed on the reels and the work sorted and assembled and cleared from the reels, and so on throughout the lots.

While the foregoing operation of the system involves the use of two reels in each unit, it is possible and may be desired by smaller plants to operate the system with one reel for each unit.

In such cases, the rim of the wheel is preferably numbered at the slots, as indicated in Fig. 5, with both series 00 to 49 and 50 to 99, so that each slot would have the two numbers as shown. The two invoices would be placed in the cor-

responding clip. In assembling the garments, those of the first series may be suspended from the slots and those of the second series from the upper edge of the rim above the slot, or, if not too many articles are on the invoices, they may be grouped at the opposite ends of the slots. The ties, belts and the like may be suspended from the one hook 47, and the operator in clearing the reel puts them with the proper assembly according to the invoices. Otherwise the system is operated the same as if two reels were employed in the unit.

The rim of the reel may be made as indicated in Figs. 6 to 9, instead of as shown in Figs. 1 to 5, and comprises a sheet metal strip 60 bent over at its upper and lower edges, as at 61 and 62 in Fig. 9, on the inside face of the rim to form therein a groove for receiving and holding a continuous longitudinally slidable strip 63 on the inside face of the strip 60. The rim 60 is provided with apertures 64 spaced apart the distance allowed for the invoices around the rim, and the slidable strip is provided on its face with the numbers to be shown through the openings 64. This slidable strip 63 may be of light cardboard, heavy paper or any suitable material, preferably white or light in color, and the numbers thereon are relatively large and distinctively colored, so as readily to be visible through the apertures.

The numbers on this strip 63 are arranged in groups, as indicated, to be displayed through the openings 64 in the series desired according to whether the reel is to be used as the first reel in a unit like that of Fig. 1, or the second reel, or in a single reel unit where both series of numbers are shown. Thus, as shown in Fig. 6, the numbers of the first series only show through the windows 64, that is, from 00 to 49, as heretofore explained, particularly in connection with Figs. 3, 4 and 5. In Fig. 7, the number strip has been shifted to the left and only the numbers in the series from 50 to 99 appear in the openings. In Fig. 8, the numbers of the combined series are brought into view in the openings by shifting the strip 63 back midway between the other two positions.

The shifting of the strip 63 may be readily done by grasping it at the openings 64 between thumb and finger at front and back. The strip is easily slidable in the two flanges 61 and 62 of the rim 60. It may be readily inserted in this slideway in the first instance or removed from the rim of the reel through opposed slots, not shown, in the flanges 61 and 62 at some convenient point.

With this type of rim, which is supported in the same way as rim 28, the garments in being assembled may be suspended from the top of the rim adjacent the said numbers, using, as before, the last two figures of the invoice numbers as a guide.

Or an assembly-sorting reel hook of the type shown in Fig. 13 may be used. This, as shown, may comprise a strip of metal bent to form a garment hanger portion 65, a belt and tie hook 66 showing an article 59 such as a belt or other small accessory hung thereon, the hook 66 forming a spring clamp or clip with the end of the hanger portion 65 for receiving and temporarily holding the invoice 46 (in dotted lines) and a supporting hook portion 67 adapted to hook over the top of the rail or rim of a reel.

The lower rail of the garment hanger portion 65 may be corrugated or bent to form shallow

9

depressions 68, the better to separate the hooks of the garment hangers to prevent crowding. The hook portion may have a roller 69 therein to ride on the top of the rim as a rail for enabling the same even when loaded to be pushed to the desired location on the rail, and may be outwardly curved suitably to engage a rail of rounded cross-section. Such an assembly-sorting hook may be used with straight or curved rack rails and of flat or tubular cross-section.

When used with the reel of Figs. 6 to 8, the hook is suspended over the rim adjacent the numbered apertures, and receives the invoice and the belts, ties and garments listed on the invoice.

With the garments merely hung from the rim itself, as before described, or under other circumstances, the invoices may be held by spring clips 70, see Fig. 11, which are similar to the clips 43 of Figs. 3 and 10, except that they are bent at the inner end to firmly clasp the standard 71 of the rail or rim-grasping hook 72. This standard may be of spring wire and its hook 72 be readily sprung over the rim 60 or other rim. It is slidable therealong to locate it as desired. The invoice, such as 46, is shown in dotted lines in Fig. 11.

This sliding invoice holder may also have a number-bearing disc or portion 73, on the forward face of which the key number or numbers of the invoice—"53" in this instance—may be shown. This feature of bearing its own number makes it convenient where the rim is a plain unmarked ring, as in Figs. 11 and 12, and others, and the sliding feature makes it useful where it may be desired for any reason to vary the length of the invoice spaces on the ring, rim or rail 74.

Fig. 12 is similar to Fig. 11 except that the rail or rim 75 is shown as a cylindrical tube slotted on the upper side and the sliding invoice and flag holder 70, 71, 73 is provided with a short cylindrical foot 76, shown in dotted lines, which is slidable along inside the rail 75, the standard 71 passing through the slot of the tube.

If desired, sections of the reel may be separated and prominently marked, as by marker placards, plaques or plates 80 of sheet material, as indicated in Figs. 17 to 20, the sections being marked, preferably, with the limiting numbers, as at 81, or other designations of the invoice section accommodated thereby. As here shown, the lot or section markers 80 may be provided with slots 82 to fit the rail or rim such as 28, 74, or others, the slots being curved toward the inner edge of the marker at the bottom, whereby the marker may be readily applied to the rim or rail at any point. It may be slid longitudinally along the rim, if desired, the form and connection of the ends of the spokes, such as 29, Figs. 1, 2 and 19, to the rim, or of similar supports for the rails permitting such movement of the marker without interference by the spokes or supports. This is indicated in Fig. 19. The markers are thus held in radial or transverse planes to the rim or rail and are preferably marked with the same section or lot identifying numbers on the sides facing each other. This enables the operator readily to catch sight of the section number from either direction.

As here shown, the invoices for the lots or sections may be taken care of in a group for each section or lot. For this purpose, as shown in Figs. 17 and 13, an invoice basket may be attached to the marker 80. This basket may comprise a thin metal back sheet 85 secured to the

10

back face of the marker 80, as by suitable screws or bolts 86, and the light metal horizontal and vertical strips 87 and 88 as seen in Fig. 17, or the corresponding wires of Fig. 18, bent as indicated and secured together at their intersections and to the back edge of the back plate 85, preferably by welding, thus forming an open-top receptacle or basket for the receipt of the invoices, which may be dropped vertically thereinto.

Since the invoices may vary in width, the basket may be made adjustable accordingly, as by additional screw or bolt holes in the plate 85, as indicated in dotted lines at 89, Fig. 17 for the screws or bolts 86, or by suitably slotting the said plate 85 for the clamping bolts 86, so that by merely loosening the screws or bolts 86 and sliding the plate 85 along and then tightening the bolts the basket may be so adjusted without removal of the bolts.

Belt and tie finder hooks may also be carried by the marker 80 and attached thereto or to the basket. As here shown, a U-shaped channel 90, preferably of sheet metal, is secured adjacent the lower edge of marker plate 80, as by suitable screws, rivets or bolts, and from the lower flange of said channel and preferably welded thereto the tie and belt hooks 91 project horizontally. These pins or hooks 91 accommodate the ties, belts, etc., of the invoices in the basket. The upper flange of the channel 90 is preferably wider than the lower flange and forms a protective cover, shield or hood over the articles on the hooks.

Fig. 20 shows how, instead of a basket, the invoices may be clamped to a board 95 which is suitably secured to the marker plate 80. A spring clamp 96 of usual design may be located at the top of the board 95 to temporarily clamp the invoices thereto, or the clamp may be at the side, as indicated in dotted lines at 97.

With a reel or pair of reels and unit as shown in Fig. 1, the reels equipped with markers as in Figs. 17 and 18, the normal procedure would be that the final assembly operator puts the newly received invoices under the blade of the invoice sorter by lot number for temporary storage. The invoices are next sorted one lot at a time and placed under the appropriate blades of the series marked with the last two figures of the invoice numbers. The next step is to place in the baskets or under the clamps of the section-marker separators on the reel the invoices from the last-named blades of the invoice sorter, and to place them in the respective baskets or clamps of the markers which are marked the same as the blades. And finally, as the finished garments come through, they are hung separately in the hole 45 of the ring 28 which is numbered the same as the last two digits of the number on the tag attached to the garment.

The belts and ties for any of the garments in the sections will be hung on the hooks 91 of the marker for that section and will be included in the assembled groups as they are removed with invoices from the reel.

The garments are thus sorted and assembled and may be sent together with the invoices for bagging or delivery.

In case of any "incompletes," the garments that are ready may be removed from the reel and placed on the rack 50 on the desk 48 and the corresponding invoices filed under the "Incom." blade 54 of the invoice sorter 53 on the desk. This clears the reels for the next lot and places

the "incompletes" where they may be expedited and do not interfere with the normal procedure of the system.

Without further elaboration, the foregoing will so fully explain the gist of the invention that others may, by applying current knowledge, readily adapt the same for use under varying conditions of service, without eliminating certain features which may properly be said to constitute the essential items of novelty involved, which items are intended to be defined and secured by the following claims.

I claim:

1. A horizontal rotatable reel for sorting and assembling systems of the class described having a ring-like rim for the suspension of garments therefrom, and a hand rail secured to and supported by said reel above the said rim and concentric therewith for the convenient manual operation of the reel in either direction, said rail being slightly larger in diameter than said rim and supported on the reel independently of the rim to avoid obstructing the latter and serving also as an additional suspension support for garments.

2. In a laundry and garment sorting and assembling apparatus, a rotatable reel having a rim on which the laundry or garments are suspended, said rim having a face provided therein with a plurality of spaced slots to receive the suspended laundry or garments according to designated lots, indicia on said rim adjacent each slot, said indicia corresponding to indicia on invoices identifying each of the respective lots and the garments of each lot, and means on said rim individual to each of said slots for holding the invoices in close proximity to said slots.

3. In a laundry and garment sorting and assembling apparatus, a rotatable reel having an outer circular vertically disposed rim on which the laundry or garments are suspended in radial planes, there being a plurality of slots in said rim, said slots being disposed in said rim for receiving the suspended laundry or garments according to lots, indicia on said rim adjacent each of said slots, said indicia corresponding to indicia on invoices for identifying the garments of each

lot, and invoice clips carried by said rim between each of said slots.

4. In a laundry and garment sorting and assembling apparatus, a rotatable reel having an outer circular vertically disposed rim on which the laundry or garments are suspended in radial planes, there being a plurality of slots in said rim, said slots being disposed in said rim for receiving the suspended laundry or garments according to lots, indicia on said rim adjacent each of said slots, said indicia corresponding to indicia on invoices for identifying the garments of each lot, and spring clips projecting outwardly from said rim to carry invoices in radial planes in close proximity to the laundry or garments carried in radial planes suspended from said slots, said spring clips being snapped into position on said rim between said slots holding said spring clips in mounted position.

DAVID A. FREEMAN.

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