July 16, 1946. J. WORTH 2,404,117

PHOTOGRAPHIC FRAME RACK

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Fig. 1

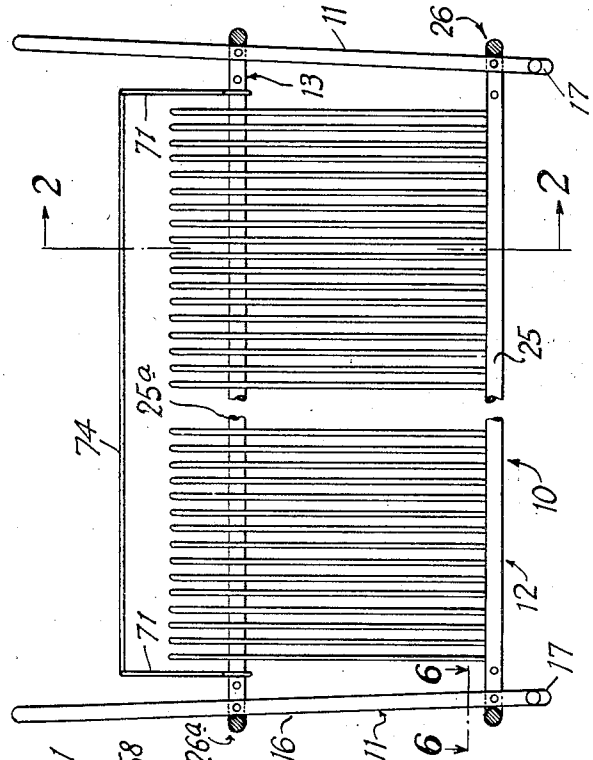


Fig. 2

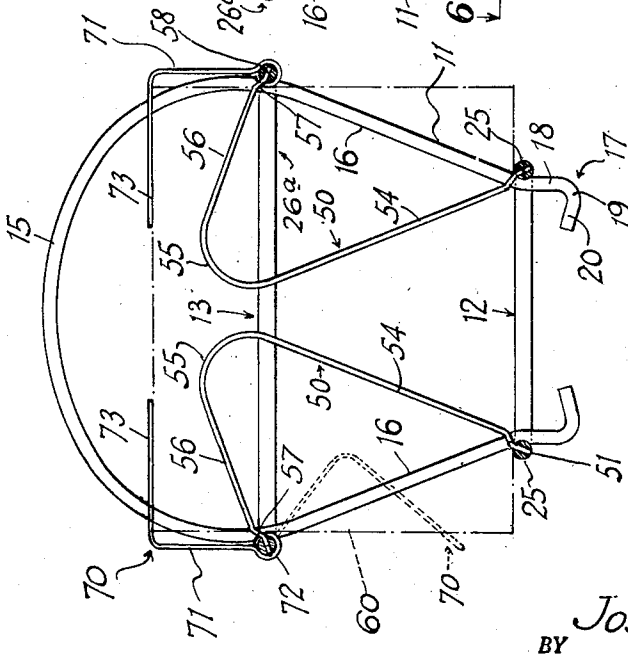


Fig. 4

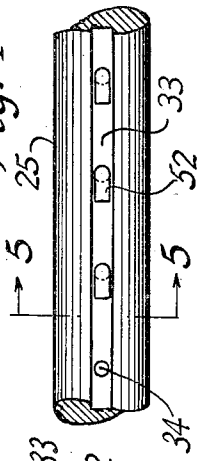
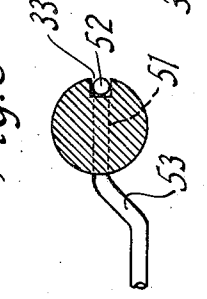


Fig. 5



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PHOTOGRAPHIC FRAME RACK

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Fig. 3

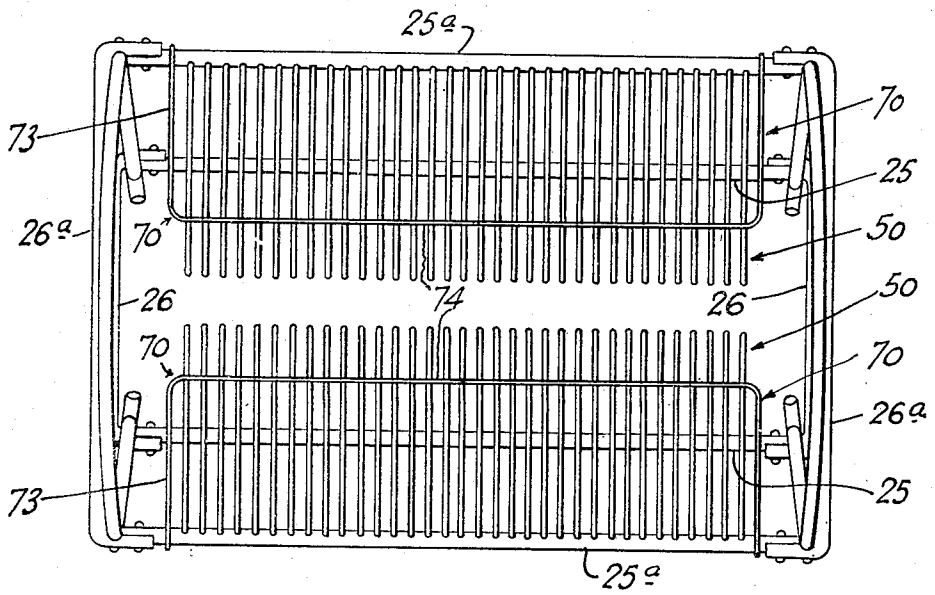


Fig. 6

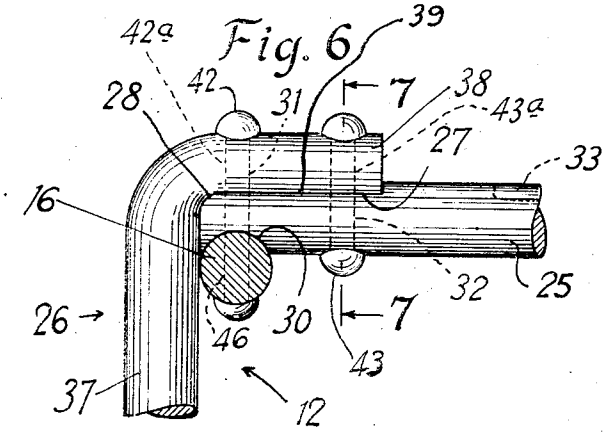
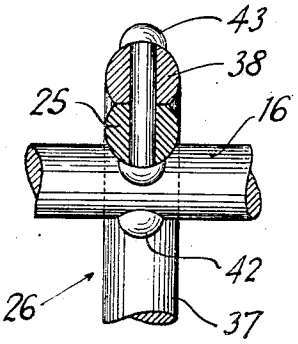


Fig. 7



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PHOTOGRAPHIC FRAME RACK

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17 Claims. (Cl. 95—100)

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This invention relates to photographic frame racks.

An object of this invention is to provide a frame rack of the character described which may be used both for photographic printing and developing—that is for carrying either negatives or positives, the construction being such that liquid such as developing fluid will not be permitted to accumulate when the racks are lifted out of the tank and to flow freely all around the prints thoroughly covering each.

A further object of this invention is to provide a highly improved rack of the character described which can be cleaned and dried easily and which can be readily washed clean.

Yet another object of this invention is to provide a rack of the character described comprising a frame and wires attached to the frame to form spaces for receiving photographic prints or negatives, said wires being constructed without welding or soldering in such manner that they will not accidentally loosen or move out of place, but which can nevertheless be easily replaced in case of breakage. The spaced wires are furthermore so constructed that they cannot move out of said position and remain rigidly in position.

Certain papers, such as printing paper placed in the rack, have a tendency to float to the surface of the liquid when the rack is placed in the tank. It is therefore yet another object of this invention to provide a rack of the character described having means to hold the papers or sheets down on the rack and to prevent them from floating upward.

Still another object of this invention is to provide a rugged and durable rack of the character described which may be easily assembled, which shall be relatively inexpensive to manufacture, and which shall be easy to handle and manipulate, and yet practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawings, in which is shown various possible illustrative embodiments of this invention,

Fig. 1 is a side elevational view of a rack embodying the invention;

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Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a top plan view of the improved rack;

Fig. 4 is an enlarged side elevational view of one of the side bars of the frame;

Fig. 5 is a cross-sectional view taken on line 5—5 of Fig. 4;

Fig 6 is an enlarged cross-sectional view on line 6—6 of Fig. 1; and

Fig. 7 is a cross-sectional view taken on line 7—7 of Fig. 6.

Referring now in detail to the drawings, 10 designates a photographic frame rack embodying the invention. The same is preferably made all of metal. It comprises a pair of end members 11 interconnected by a bottom substantially rectangular frame 12 and a top substantially rectangular frame 13 larger than the bottom frame. Each of the end members 11 is made of a single piece of bent or shaped round rod stock.

Each member 11 comprises a top curved portion 15 substantially semi-annular or semi-elliptical in shape. Extending from the ends of the curved portion 15 are downwardly and inwardly inclined portions 16. From the lower end of the inclined portion 16 extends legs 17. Each leg 17 comprises a vertical portion 18 from which there extends an inwardly curved portion 19 terminating in an upwardly inclined portion 20.

It will be noted, as shown in Fig. 1 of the drawings, that end members 11 are disposed in planes somewhat inclined upwardly and outwardly.

The bottom frame 12 comprises a pair of parallel, similar, symmetrically disposed side rods 25 interconnected by end frame members 26. The side rods 25 are preferably of round rod stock. Each is formed at the ends thereof with a flat outer, vertical surface 27 curved at the end as at 28. On the inner side of each rod 25 and adjacent each end thereof is a part-cylindrical vertical notch 30 for the purpose hereinafter appearing. Each rod is formed at each end with a pair of horizontal through rivet holes 31 and 32 at right angles to the flat surfaces 27 thereof. The holes 31 extend to the bottom of recesses 30, whereas openings 32 are disposed between openings 31 and the ends of the flat surface 27. Each rod 25 is furthermore formed with a longitudinal milled groove 33 terminating short of the flat surfaces 27. The rod 25 is furthermore formed with equally spaced diametric through openings 34 communicating with the bottom of groove 33. The openings 34 of rods 25 are inclined upwardly and inwardly as shown in Fig. 2 of the drawings for the purpose hereinafter appearing.

Each end frame member 26 is also preferably formed of round rod stock. It comprises portion 37 from the ends of which there extends at right angles thereto, short arms 38. Arms 38 have on the inner sides thereof, flat surfaces 39 contacting the flat surfaces 27. Between portions 37 and arms 38 are curved corners contacting the curved surfaces 28 of rod 25. Member 26 is attached to members 25 by means of a pair of rivets 42 and 43 passing through the rivet openings 42*a* and 43*a* in said arms and the rivet holes 31 and 32 registering therewith, respectively.

The leg portions 18 of end members 11 are partly received within the recesses 30 and said leg portions are formed with through openings 45 registering with openings 31 to receive the rivets 42.

The upper frame 13 comprises side rods 25*a* interconnected by end members 26*a*. The rods 25*a* are somewhat longer than the rods 25, and the end members 26*a* are somewhat longer than end members 26. They are constructed the same however, and integrated with the end frame members 11 in the same manner as frame 12 is integrated therewith. The rods 25*a* are also formed with a longitudinal groove 33 and through openings 34 the same as rod 25. However, the through openings 34 are inclined upwardly and inwardly at an angle less than the angle of inclination of the openings 34 in the rod 25. The openings in the rods 25*a* are in the respective planes of the openings in rods 25. Thus in each plane are a pair of openings 34 in the upper rods and a pair of openings 34 in the lower rods.

Attached to a pair of complementary openings in the rods 25*a* and 25 at each side of the frame is a shaped wire 50. Each wire 50 comprises a portion 51 passing through an opening 34 and a leg 52 bent at right angles thereto and disposed within groove 33. Extending from portion 51 of each wire 50 is a wire portion 52 extending at an angle to the wire portion 51. Extending from wire portion 53 is a wire portion 54 inclined upwardly and inwardly substantially at the same angle as wire portion 51. Extending from wire portion 54 is a curved back portion 55 from which there extends a downwardly and outwardly inclined portion 56 substantially parallel to the openings 34 in the upper rods 25*a*. Extending from wire portions 56 are more steeply inclined portions 57 extending to the openings 34 in the upper rods. Extending from said portions 57 are wire portions 58 located within the openings 34 in the upper rods 25*a*. Extending from the wire portions 58 are arms extending at right angles thereto and disposed within the grooves 33 of said upper rods 25*a*.

Wires 59 have space between curved portion 55 to allow for finger room to facilitate loading and unloading.

It will be noted that there is a pair of wires 59 in each plane. The wires 59 do not contact one another since the curved portions 55 are spaced apart. The spaces between adjacent pairs of co-planar wires 59 are adapted to receive photographic prints or negatives 60 or other sheets. Thus prints or negatives 60 inserted into the rack rest on the lower frame 12 and will be prevented from moving sideways by the side members 25*a* of upper frame 13. The wires 59 will be prevented from becoming accidentally loosened by reason of the fact that the wire portions 53 and 57 are inclined to the portions 51 and 52 which are within the rods 25 and 25*a* respectively.

It will be noted that the rack may be easily

cleaned since there is a space between the wires 59 on opposite sides of the rack, for hand room to reach every portion of the wires to wipe with rag or the like cleaning implement. There is nothing in the rack which will carry up liquid or accumulate liquid in the rack as the same is lifted out of the tank. The curved portions 15 of the end frame members 11 serve as handles. The prints are spaced apart by the wires 59.

Wires 59 are so designed and proportioned as to offer maximum support with minimum contact of print or negative and yet offer enough support to prevent the prints from buckling when soaked in solution. Also by allowing side clearance for the prints it allows backward and forward motion of the prints while agitated to wash off any possible mark left by the wires.

Some types of printing papers float in the liquid. Means is therefore provided to prevent floating of such papers or sheets above wires 59 and thus buckle and contact each other, which will prevent their thorough soaking. To this end there is swiveled on each of the upper rods 25*a* a retainer member 70. Each retainer member 70 may be made of a single piece of wire comprising end portions 71 formed with loops or eyelets 72 surrounding the rod 25*a*. Extending at right angles to portions 71 are portions 73 disposed in the planes perpendicular to rods 25*a*. The portions 73 are interconnected by a portion 74 extending lengthwise of rods 25*a*. Portions 71 of members 70 are disposed between the end wires 59 and the ends of the upper frame 13. When members 70 are swung upwardly to the position shown in Fig. 2, portions 74 thereof will contact the upper edges of the prints or negatives 60 in the rack. When it is desired to remove the prints, members 70 are swung outwardly to the dotted position of Fig. 2 and will hang by gravity. Arms 73 are preferably longer than arms 71 so that portions 74 will be disposed beyond the side edges of the prints so as not to contact the same.

It will be noted that the spacing wires 59 are inclined upwardly and inwardly and that the curved portions 55 form narrowed upwardly extending tongues which facilitate insertion of prints or negatives into the rack as such prints, negatives or other sheets, are moved downwardly they would first engage the uppermost projecting portions of the spacing wires and such engagement is easier than would be an engagement with horizontal wires. Thus curved portions 55 are disposed above frame 13, thereby facilitating loading of prints, negatives or other sheets into the rack.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A photographic rack comprising a pair of similar end members, an upper frame and a lower frame, said frames being substantially rectangular, the upper frame being wider than the lower frame, and said end members being attached to the ends of said upper and lower frames, and pairs of aligned spacers attached to the opposite

sides of the upper and lower frames forming spaces therebetween to receive photographic prints or negatives.

2. A photographic rack comprising a pair of similar end members, an upper frame and a lower frame, said frames being substantially rectangular, the upper frame being wider than the lower frame, and said end members being attached to the ends of said upper and lower frames, and pairs of aligned spacers attached to the opposite sides of the upper and lower frames forming spaces therebetween to receive photographic prints or negatives, said end members having handle portions extending above the upper frame.

3. A photographic rack comprising a pair of similar end members, an upper frame and a lower frame, said frames being substantially rectangular, the upper frame being wider than the lower frame, and said end members being attached to the ends of said upper and lower frames, and pairs of aligned spacers attached to the opposite sides of the upper and lower frames forming spaces therebetween to receive photographic prints or negatives, said end members having handle portions extending above the upper frame, and said end members having leg portions extending below the lower frame.

4. A photographic rack comprising a pair of similar end members, an upper frame and a lower frame, said frames being substantially rectangular, the upper frame being wider than the lower frame, and said end members being attached to the ends of said upper and lower frames, and pairs of aligned spacers attached to the opposite sides of the upper and lower frames forming spaces therebetween to receive photographic prints or negatives, and means on the upper frame to retain prints or negatives inserted in the rack frame from floating up when the rack is inserted into a tank of liquid.

5. A photographic rack comprising a pair of similar end members, an upper frame and a lower frame, means to connect the upper and lower frames to spaced portions of said end members, each of said frames having side bars formed with spaced through openings, the openings in the upper side bars being aligned with the openings in the lower side bars, and wires on each side of the rack, having portions passing through pairs of aligned openings in the side bars of the upper frame and lower frame on the same side of the rack, said wires having portions interconnecting the portions which pass through said openings and extending inwardly of the side bars.

6. A photographic rack comprising a pair of similar end members, an upper frame and a lower frame, means to connect the upper and lower frames to spaced portions of said end members, each of said frames having side bars formed with spaced through openings, the openings in the upper side bars being aligned with the openings in the lower side bars, and wires on each side of the rack, having portions passing through pairs of aligned openings in the side bars of the upper frame and lower frame on the same side of the rack, said wires having portions interconnecting the portions which pass through said openings and extending inwardly of the side bars, said side bars each being formed with a longitudinal groove communicating with said through openings, and said wires having offset end portions disposed at an angle to the portions of the wires which pass through said openings, and located within said groove.

7. A photographic rack comprising end frame members having handles at their upper ends, upper and lower frame members connecting upper and lower portions of said end members, spacer members attached to the upper and lower frames on each side of the rack and projecting inwardly toward each other, the spacing members on one side of the rack being in the respective planes of the spacing members on the opposite side of the rack and terminating short of each other whereby a space is provided between the spacing members on one side of the rack and the spacing members on the opposite side of the rack, and means swiveled to the side portions of the upper frame adapted to contact the upper edges of sheets placed on the rack and between said spacers.

8. A rack of the character described having a pair of upper parallel side portions and a pair of lower parallel side portions, a plurality of spacers interconnecting one of the upper side portions with the lower side portion on the same side of the rack, and parallel spacers interconnecting the other upper portion with the other lower portion, the spacers on one side of the rack being in the respective planes of the spacers on the other side of the rack, said spacers being made of wire and being looped inwardly between said upper and lower portions.

9. A rack of the character described having a pair of upper parallel side portions and a pair of lower parallel side portions, a plurality of spacers interconnecting one of the upper side portions with the lower side portion on the same side of the rack, and parallel spacers interconnecting the other upper portion with the other lower portion, the spacers on one side of the rack being in the respective planes of the spacers on the other side of the rack, said spacers being made of wire and being looped inwardly between said upper and lower portions, the spacers on one side of the rack terminating short of the spacers on the other side of the rack.

10. A rack of the character described having a pair of upper parallel side portions and a pair of lower parallel side portions, a plurality of spacers interconnecting one of the upper side portions with the lower side portion on the same side of the rack, and parallel spacers interconnecting the other upper portion with the other lower portion, the spacers on one side of the rack being in the respective planes of the spacers on the other side of the rack, the spacers on one side of the rack terminating short of the spacers on the other side of the rack, each spacer comprising a single piece of wire, and the upper and lower frame portions being formed with through openings through which portions of each spacer passes.

11. In a photographic rack, a pair of upper and lower parallel rods on each side of the rack, each of said rods being formed with a plurality of equally spaced, parallel through openings, the through openings in one rod being in the respective planes of the through openings in the other rod, spacing wires interconnecting said upper and lower rods, each spacing wire having portions passing through co-planar openings in the upper and lower rods, and a portion interconnecting said first-mentioned portions and projecting inwardly of said rack.

12. In a photographic rack, a pair of upper and lower parallel rods at each side of the rack, each of said rods being formed with a plurality of equally spaced, parallel through openings, the through openings in one rod being in the re-

spective planes of the through openings in the other rod, said rods each being formed with a longitudinal groove communicating with the through openings in said rod, spacing wires interconnecting the upper and lower rods at each side of the rack, each spacing wire comprising portions passing through co-planar openings in the upper and lower rods, respectively, at one side of the rack, a portion interconnecting said first-mentioned portions and projecting inwardly from one side of said rack toward the opposite side of the rack, and portions extending from the first-mentioned portions, at right angles thereto, and received within the grooves in said upper and lower rods at said one side of said rack.

13. In a photographic rack, a pair of upper and lower parallel rods at each side of the rack, each of said rods being formed with a plurality of equally spaced, parallel through openings, the through openings in one rod being in the respective planes of the through openings in the other rod said rods each being formed with a longitudinal groove communicating with the through openings in said rod, spacing wires interconnecting the upper and lower rods at each side of the rack, each spacing wire comprising portions passing through coplanar openings in the upper and lower rods, respectively, at one side of the rack, a portion interconnecting said first-mentioned portions and projecting inwardly from said one side of said rack toward the opposite side of said rack, portions extending from the outer ends of the first-mentioned portions, at right angles thereto, and received within said groove, and portions extending from said inner ends of the first-mentioned portions at an inclination thereto.

14. In a photographic rack, a pair of upper and lower parallel rods on each side of the rack, each of said rods being formed with a plurality of equally spaced, parallel through openings, the through openings in one rod being in the respective planes of the through openings in the other rod, spacing wires interconnecting said upper and lower rods, each spacing wire having portions passing through co-planar openings in the upper and lower rods, portions interconnecting said first-mentioned portions and projecting inwardly of said rack, said rods each being formed with a longitudinal groove, said spacers having portions extending from the outer ends of the first-mentioned portions at right angles thereto and

received within said grooves, each spacer further including portions extending from the inner ends of the first-mentioned portions at an inclination thereto, and members swiveled to the upper rods, and including portions parallel to said upper rods and spaced therefrom.

15. A photographic rack comprising a pair of similar end members, an upper frame and a lower frame, said frames being substantially rectangular, the upper frame being wider than the lower frame, and said end members being attached to the ends of said upper and lower frames, and pairs of aligned spacers attached to the opposite sides of the upper and lower frames forming spaces therebetween to receive photographic prints or negatives, said spacers comprising members projecting upwardly and inwardly from the opposite sides of said frames and terminating short of each other at points above the level of the upper frame.

16. A photographic rack comprising a pair of similar end members, an upper frame and a lower frame, said frames being substantially rectangular, the upper frame being wider than the lower frame, and said end members being attached to the ends of said upper and lower frames, and pairs of aligned spacers attached to the opposite sides respectively of the upper and lower frames, forming spaces therebetween to receive photographic prints or negatives, each spacer being connected to portions of the upper and lower frames on one side of the rack, said spacers comprising members projecting upwardly and inwardly from the opposite sides of said frames and terminating short of each other at points above the level of the upper frame, the inner ends of said spacers being narrower than their outer portions.

17. A photographic rack having side portions and end portions, said side portions including supports for the underside of sheets placed in the racks, and aligned pairs of spacers extending from the side portions, inwardly toward each other and terminating short of each other, said spacers being inclined upwardly and inwardly and the inner ends of said spacers being disposed above the side portions of said rack, and said spacers gradually becoming narrower from their outer ends toward their inner ends.

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