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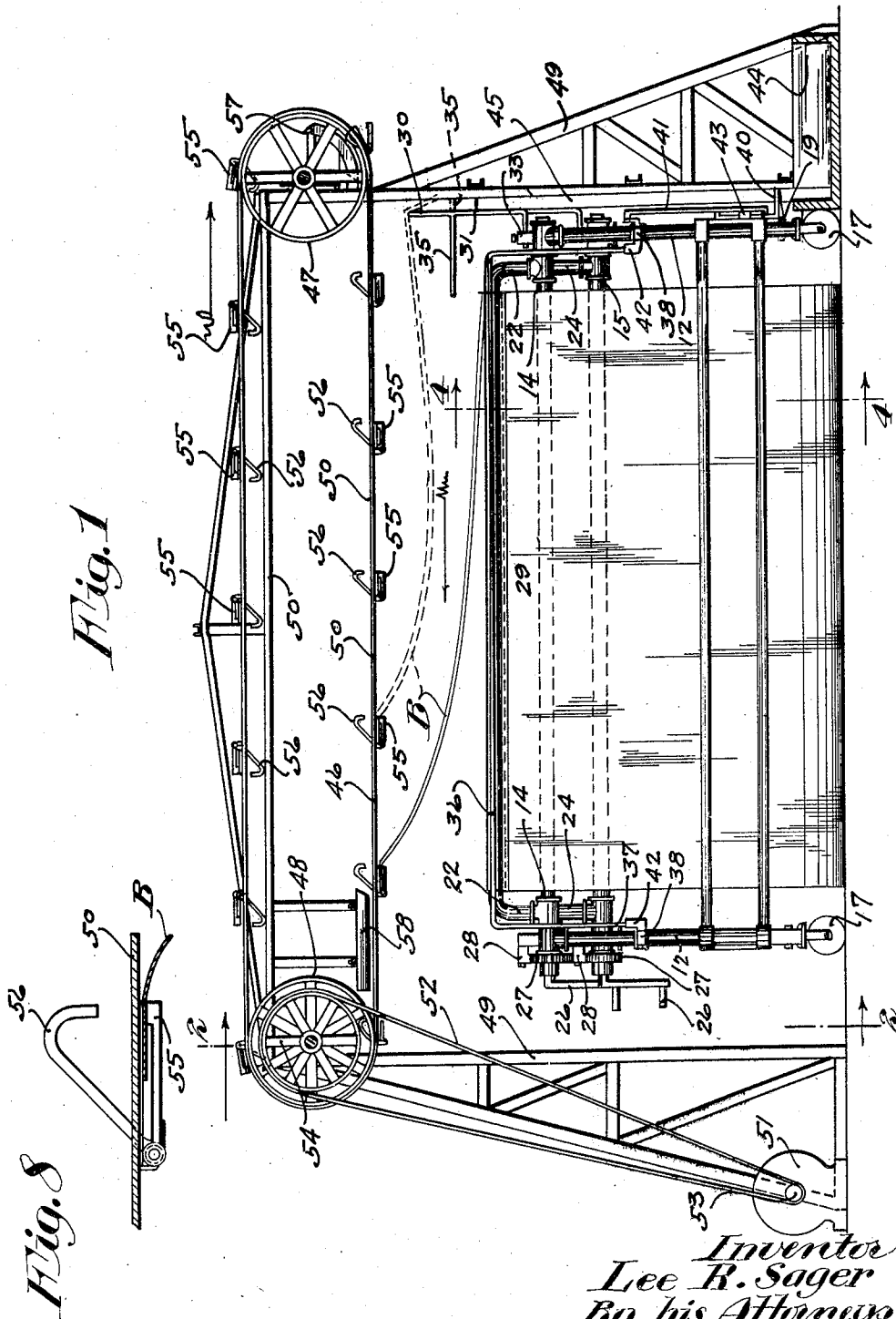
L. R. SAGER

1,827,336

LAUNDRY FLAT PIECE SPREADER AND RACK

Filed Jan. 2, 1929

3 Sheets-Sheet 1



Inventor
Lee R. Sager
By his Attorneys
Merchant and Kilgore

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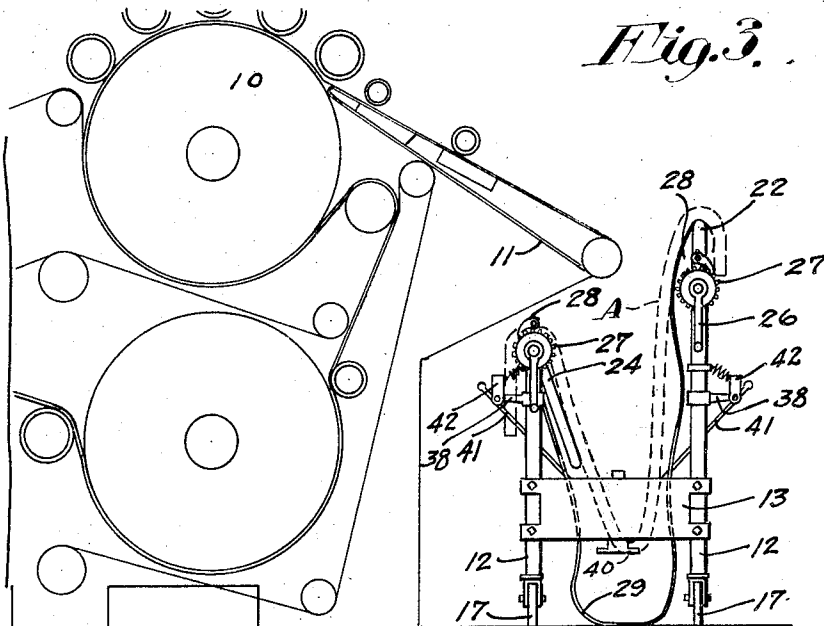
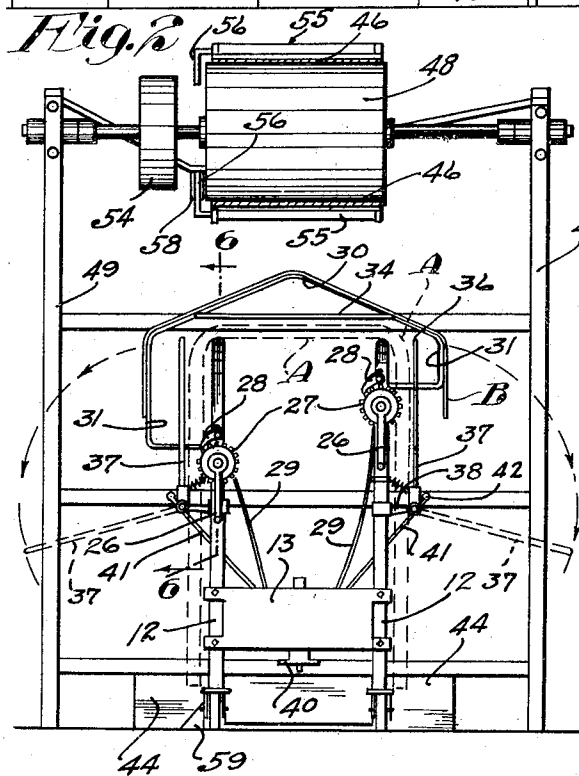
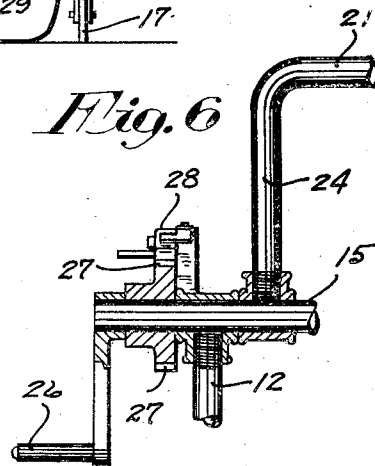
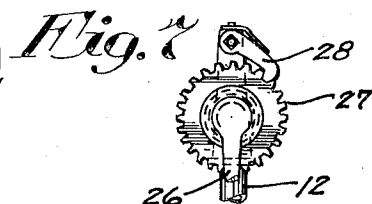
L. R. SAGER

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LAUNDRY FLAT PIECE SPREADER AND RACK

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3 Sheets-Sheet 2



Inventor
Lee R. Sager
By his Attorneys
Wareham and Kilson

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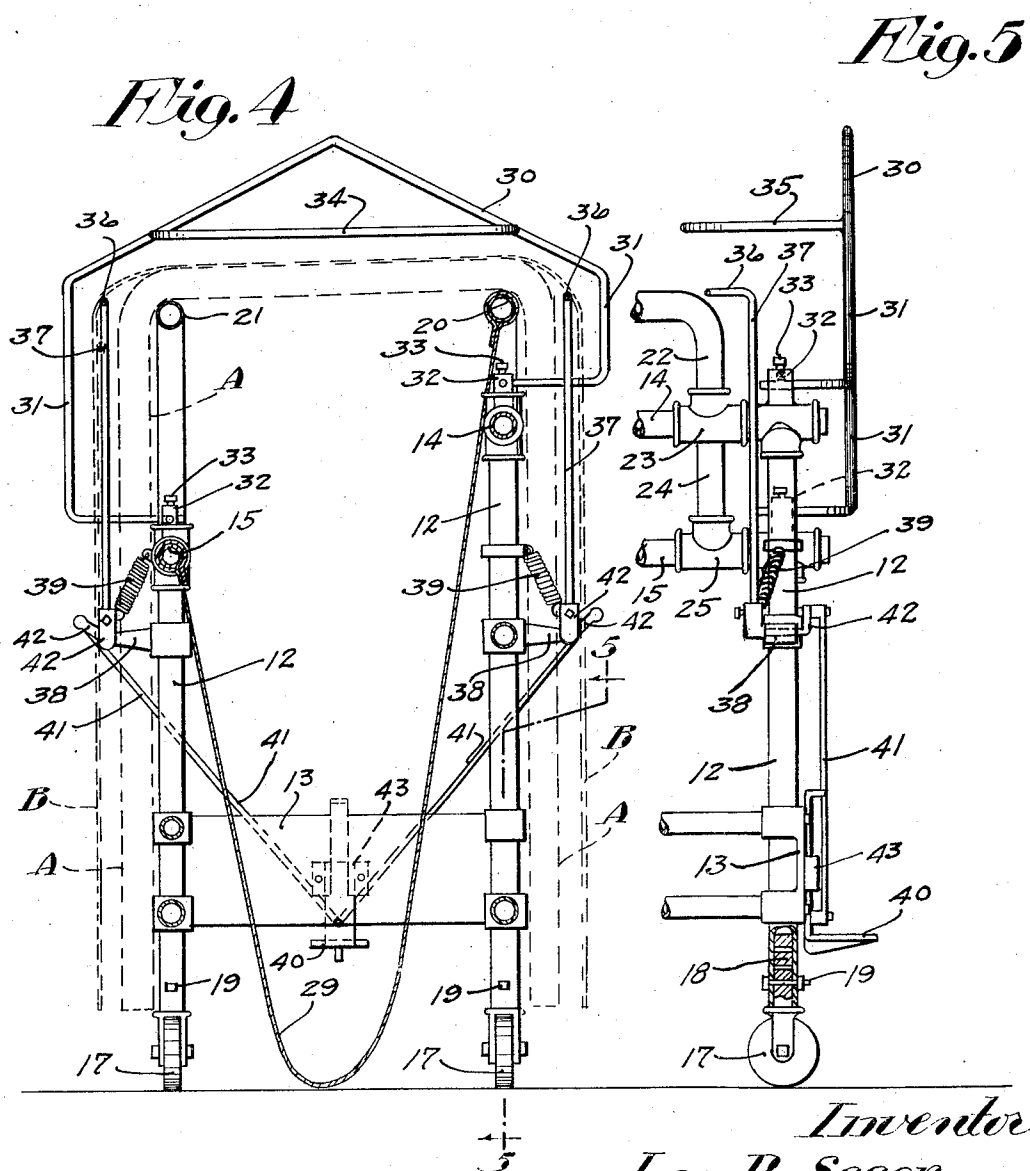
L. R. SAGER

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LAUNDRY FLAT PIECE SPREADER AND RACK

Filed Jan. 2, 1929

3 Sheets-Sheet 3



Inventor
Lee R. Sager
By his Attorneys
Merchant and Kiehn

UNITED STATES PATENT OFFICE

LEE R. SAGER, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-THIRD TO ANTONE WAYNE JULIEN, OF MINNEAPOLIS, MINNESOTA, AND ONE-THIRD TO MERTON A. POCKOCK, OF MINNEAPOLIS, MINNESOTA

LAUNDRY FLAT PIECE SPREADER AND RACK

Application filed January 2, 1929. Serial No. 329,822.

My present invention has for its object the provision of a relatively simple and highly efficient laundry flat piece spreader and rack for use in connection with a flat piece ironer.

As is well known, flat pieces particularly sheets, spreads and the like as they are received from a wringer are loosely bunched or rolled, deposited in a basket and carried to a flat piece ironer. These pieces as they are removed from the basket have to be shaken to spread the same out so that they may be fed flat to the ironer. This shaking of the pieces not only takes considerable time and work but materially reduces the life thereof. By the use of my spreader and rack pieces as they are successively removed from a basket, in which they are deposited from the wringer, are drawn, either manually or mechanically, over the spreader to smooth the pieces out and position the same over the rack on which they are deposited, the one upon the other in a pile.

The improved rack, which is portable, may be conveniently positioned and loaded as the pieces are received from the wringer and thereafter transported to the ironer and the rack so positioned in respect thereto that said pieces may be quickly fed therefrom to the ironer with undue effort on the part of the operators. The rack, which is adjustable, may be set in one position to receive the pieces from the spreader and thereafter be adjusted so that said rack may be closely positioned in respect to the ironer and the pile of pieces shifted thereon into a position in which they may be quickly and easily fed to the ironer and removed from the pile as they are being fed to the ironer without disturbing the underlying pieces.

Said invention further provides auxiliary and secondary spreaders for use in connection with the rack and a mechanical feeder for drawing the pieces over the main spreader and depositing the same on the rack, as will hereinafter appear.

To the above end, generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In the accompanying drawings, which il-

lustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a view principally in side elevation showing the improved spreader rack and carrier;

Fig. 2 is a view principally in end elevation with some parts sectioned on the line 2—2 of Fig. 1;

Fig. 3 is a view principally in diagram showing the rack positioned at the receiving end of a flat piece ironer;

Fig. 4 is a view partly in elevation and partly in transverse vertical section taken on the line 4—4 of Fig. 1, on an enlarged scale, some parts being indicated by broken lines;

Fig. 5 is a fragmentary view with some parts sectioned on the line 5—5 of Fig. 4, on an enlarged scale;

Fig. 6 is a fragmentary detail view with some parts sectioned on the line 6—6 of Fig. 2, on an enlarged scale;

Fig. 7 is an elevation of certain of the parts shown in Fig. 6; and

Fig. 8 is a fragmentary detail view of the carrier and one of its clamps.

For the purpose of showing the relative arrangement of the laundry rack in respect to a flat piece ironer, there is diagrammatically illustrated in the drawings such an ironer indicated as an entirety by the numeral 10 with the exception of the feed ribbons 11 at the receiving end thereof.

Referring now in detail to the improved laundry rack which, as shown, includes a rectangular frame having four upright corner posts 12 connected in front and rear pairs by wide cross-tie members 13. The posts 12 on one side of the rack are connected in pairs by an upper longitudinally extended bar 14 and the posts 12 on the other side of the rack are similarly connected by a like bar 15. By reference to Figs. 4 and 5, it will be noted that the bar 14 is at a higher elevation than the bar 15, for a purpose that will presently appear. These bars 14 and 15 are rotatably mounted in bearings on the posts 12 and held by any suitable means, not shown, against endwise movements therein. The corner posts 12 are further and rigidly connected on

each side of the rack by lower and intermediate longitudinally extended bars 16. As illustrated, the posts 12 and bars 14, 15 and 16 are in the form of round tubes or pipes but, of course, the rack may be of any other suitable construction.

The rack is made portable by mounting the same on wheels 17 journaled in brackets having shanks 18 telescoped into the lower ends of the posts 12. The elevation of the rack may be varied at will, by raising the same on the shanks 18 and securing the posts 12 to said shanks by bolts 19, see Fig. 5, passed through aligned holes in said posts and any one of a plurality of vertically spaced transverse holes in the shanks 18, see Fig. 5.

Horizontal flat work supporting members 20 and 21 are carried by the bars 14 and 15 respectively for rotation therewith about the axes of said bars. These supporting members 20 and 21 extend parallel to the bars 14 and 15 and the former of said members has at its ends laterally projecting arms 22 rigidly secured by couplings 23 to the bar 14 for rotation therewith and the latter of said members is also provided at its ends with a pair of laterally projecting arms 24 rigidly secured by couplings 25 to the bar 15 for rotation therewith. The supporting members 20 and 21 extend substantially the full length of the bars 14 and 15 with sufficient clearance to be rotated between the respective pairs of posts 12. By reference to Figs. 4 and 5, it will be noted that the arms 22 are considerably shorter than the arms 24 and when said arms 22 and 24 are turned upright the two supporting members 20 and 21 are at the same elevation due to the different elevations of the two bars 14 and 15. For independently rotating the bars 14 and 15 and hence the supporting members 20 and 21 carried thereby, a hand crank 26 is applied to one of the ends of each bar 14 and 15. The supporting members 20 and 21 are independently held in different rotated positions by pairs of ratchet wheels 27 and cooperating spring-pressed dogs 28. Said ratchet wheels 27 are mounted on the bars 14 and 15 adjacent to the hand cranks 26 and the dogs 28 are mounted on the adjacent posts 12.

A basket 29 is formed in the rack by attaching the longitudinal edge portions of a piece of canvas or other suitable material to the bar 15 and the supporting member 20 and allowing said canvas to loosely hang within the rack, see Fig. 4.

The main flat piece spreader 30, as shown in Figs. 2, 4 and 5, is mounted on the opposite end of the rack from the hand cranks 26 and is in the form of a relatively flat inverted V the crown of which is at the transverse center of the rack and the outwardly and downwardly diverging body portions whereof extend outward of the sides of said rack. It is important to note that the main

spreader 30 is located above the supporting members 20 and 21 and spaced horizontally outward of the rack. The spreader 30 is detachably secured to the rack by forming on the ends thereof supporting arms 31 which extend vertically downward therefrom, then horizontally toward each other transversely of the rack and then horizontally longitudinally of the rack in the planes of the sides thereof and through bores in upstanding lugs 32 on the tops of the adjacent posts 12. Set screws 33 having threaded engagement with the lugs 32 impinged against the arms 31 and hold the same in the lugs 32 with the main spreader 30 positioned, as best shown in Figs. 4 and 5. The main spreader 30 and its arms 31 are formed from a single rod but, of course, may be constructed in any suitable manner and said spreader may take various different shapes.

Cooperating with the main spreader 30 is an auxiliary spreader 34 in the form of a horizontal member which extends transversely of the rack and has at its ends arms 35 rigidly secured to said main spreader. This auxiliary spreader 34 is substantially midway between the crown of the main spreader 30 and the supporting members 20 and 21 when in their uppermost position and extends inward toward the rack and substantially over the respective ends of the supporting members 20 and 21, see Figs. 4 and 5.

At each side of the rack is a secondary spreader 36 in the form of a horizontal member which extends parallel to the supporting members 20 and 21 and at substantially the same elevation thereof when said supporting members are in their uppermost positions. These secondary spreaders 36 extend substantially the full length of the rack and have at their ends depending arms 37 pivoted to bearings 38 on the posts 12. The bearings 38 are so arranged as to hold the secondary spreaders 36 and their arms 37 spaced outward from the sides of the rack. Coiled springs 39 attached to the spreader arms 37 and anchored to the posts 12 yieldingly hold said secondary spreaders positioned, as shown in Fig. 4, with freedom for outward swinging movement from the rack.

For simultaneously operating the secondary spreaders 36 to swing the same outward and downward against the tension of the springs 39 there is provided a pedal 40 connected by a pair of links 41 to short crank arms 42 on the pivoted ends of the arms 37. The pedal 40 is mounted in a keeper bracket 43 on the cross-tie member 13 located under the main spreader 30. It is important to note that the arms of the secondary spreader 37 are removably mounted in sockets in their pivotal supports and rigidly held by set screws, see Figs. 4 and 5.

The rack, being portable, may be placed in any convenient location in a laundry while

the same is being loaded with flat work as the same is received from the wringer and then wheeled to the ironer 10. To load the rack with flat work, the basket, not shown, containing the work from the wringer is placed on the floor at the end of the rack on which the main spreader 30 is mounted. From this basket the pieces are picked up one at a time and held at one end of the intermediate portion thereof, and placed over the main spreader 30 with the body of the respective piece hanging down in the basket. With the piece thus held the operator walks backward at one side of the rack and toward the other end thereof to draw the piece over said spreader. This movement of the piece over the main spreader 30 spreads the same out flat and causes the sides thereof to hang down at the sides of the spreader.

While the operator is drawing the piece over the main spreader 30 he holds the intermediate portion thereof over the transverse center of the rack with the sides of said piece hanging down at the sides of said rack.

The main spreader 30 during the dragging of a damp piece thereover produces a pull or tension on said piece and thus keeps the same taut and free from wrinkles and creases. As the piece passes out of contact with the main spreader 30 its rear end portion comes into contact with the auxiliary spreader 34 and its arms 35 which again places the piece under a pull or tension as the same is drawn away from the main spreader 30. The auxiliary spreader 34 is materially shorter in respect to the transverse width of the rack than the main spreader 30 and prevents the intermediate portion of the piece as it passes out of engagement with the crown of the main spreader 30 from falling in a bunch on the rack. By thus shortening the width of the supported intermediate portion of the piece the relatively heavy side portions thereof draw said piece transversely taut as it drops on to the rack. As the piece is drawn out of contact with the auxiliary spreader 34 it drops on to the rack and at which time the operator releases the held end of the piece on to the rack. The weight of the sides of the piece as the same falls at the side of the rack draw the intermediate portion of the piece relatively smooth over the rack.

The width of the main spreader 30 is such as to cause the side portions of the piece to fall outward of and over the secondary spreaders 36. After a piece is deposited on the rack the operator steps on the pedal 40 to operate the secondary spreaders 36. As these secondary spreaders 36 swing downward under the action of the pedal 40 they engage the hanging side portions of the piece and are swept downward thereover and place the same under a pull or tension to draw the intermediate portion of the piece relatively taut over the rack and smooth out any wrinkles

or creases in said side portions. At the limit of the downward movement of the secondary spreaders 36 the end portions of the piece will swing inward over said spreaders and when the operator releases the pedal 40 the springs 39 return the secondary spreaders 36 to normal position and outward of the last piece laid or spread upon the rack. The above operations of spreading and laying pieces on the rack are continued until a stack of pieces are spread upon the rack in a pile, as indicated by broken lines in Fig. 4 and indicated by the letter A.

A basket or receptacle 44 is placed on the floor at the opposite end of the rack from the main spreader 30 to catch any small pieces such as napkins, pillow cases and the like which might be carried with the larger pieces on to the rack. These small pieces may be gathered out of the basket 44 and laid flat upon the pile A.

In some kinds of work the secondary spreaders 36 may be dispensed with. When washing family lots the large pieces such as sheets, spreads and the like are first placed on the rack and then the smaller pieces are placed on top thereof thus keeping the several lots separated.

After the rack is loaded the main spreader 30, auxiliary spreader 34 and secondary spreaders 36 are detached and removed from the rack and said rack wheeled to the ironer 10. Before the rack is placed in a feeding position in respect to the ironer 10, the operator turns the supporting member 21 into a depending position by means of its crank 26, so as to lower the respective side of the rack and permit the same to be positioned under the receiving end of the ironer 10, as shown in Fig. 3. This lowering movement of the supporting member 21 which is clockwise feeds the intermediate portion of the pile A into the rack and raises the respective side portion thereof, for a purpose that will presently appear. In some instances, it might be necessary to give the supporting member 21 more than a half turn in order to raise the respective side of the pile A to the desired elevation. The operator then rotates the supporting member 20 by its hand crank 26 anti clockwise to further feed the intermediate portion of the pile A into the rack to raise the respective side thereof. At the completion of the operation of the supporting member 20 the operator returns said member to its uppermost position so as to hold the respective side portion of the pile A raised, as shown by broken lines in Fig. 3. After this rearrangement of the pile A on the rack the operator moves said rack under the receiving end of the ironer 10, as shown in Fig. 3. An operator then stands at each end of the rack and takes hold of the outer edge portions of the pieces and successively feeds the same into the ironer 10.

It will be noted that the arrangement of the pile A on the rack is such that the outer edge portions of the pieces are held in a raised and convenient position so that the operators may feed the same to the ironer 10 simply by turning the same toward the ironer 10 and onto the feeding ribbons 11. One of the main purposes of positioning the pile 1 on the rack as indicated by broken lines in Fig. 3 is to cause the damp uppermost piece to be easily separated under the feeding action of the ironer from the underlying pieces and without disturbing the same. The purpose of the basket 29 is to keep the pile A clean and free from dust. During the operation of the supporting members 20 and 21 the connected end portions of the basket 29 will be wound on said members but there is at all times sufficient slack therein so that the bottom of the basket will not come in contact with the depending intermediate portion of the pile A and the wound portions of the basket 29 may be readily unwound after the load is removed from the rack.

For mechanically drawing flat pieces over the spreaders 30 and 34 and depositing the same on the rack there is provided an endless carrier 46 which, as shown, is in the form of a relatively wide belt arranged to run over wide front and rear pulleys 47 and 48, respectively. The shafts of the pulleys 47 and 48 are journaled in bearings on the upper ends of skeleton end frames 49. These end frames 49 are rigidly connected by a bridge structure 50 at their upper ends and above the shafts of said pulleys. An electric motor 51 mounted on the base of the rear end frame 49 is provided for driving the carrier 46 by means of a belt 52 in the direction of the arrow indicated in Fig. 1. The belt 52 is arranged to run over a relatively small pulley 53 on the shaft of the motor 51 and a relatively large pulley 54 on the shaft of the pulley 48. The distance between the end frames 49 is such as to permit the rack to be placed longitudinally therebetween with sufficient clearance for operating the hand cranks 23 and pedal 40 and with the carrier 46 working thereabove, see Fig. 1.

Spring closed clamps 55 are provided for attaching or securing flat pieces to the carrier 46, as indicated in Figs. 1 and 8 by the letter B. These clamps 55 are mounted on the outer face of the carrier 46 in longitudinally spaced arrangement. For automatically opening the clamps 55 to receive the pieces B and thereafter open said clamps to release said pieces each of said clamps is provided with a cam finger 56 for cooperation with front and rear cam bars 57 and 58, respectively. The cam finger 56 projects from the opposite side of the carrier 46 to which the clamps 55 are secured and at one edge thereof. The cam bar 57 is concentric with the pulley 47 and rigidly secured to the front

end frame 49 and the cam bar 58 is rigidly secured to the bridge structure 50 and located just forward of the pulley 48. Both cam bars 57 and 58 extend longitudinally in the path of travel of the cam fingers 56 and arranged when contacted by said fingers to open the clamps 55 and hold the same open until said fingers pass out of engagement with the cam bars 57 and 58.

The spreader 30 when mounted on the rack, as shown by full lines in Fig. 1, is directly under the carrier 46, just rearward of the cam bar 57 and with its crown at the transverse center of said carrier. As the clamps 55 are successively opened by the cam bar 57 the operator places one end of a piece at its transverse center in the open clamp 55 and thus holds the same until said clamp passes out of contact with the cam bar 57 and automatically closes on to the piece. Under the travel of the carrier 46 the piece is drawn over the main spreader 30 in the same manner as when operated by hand as previously described. The position of the cam bar 58 is such that when a piece passes out of engagement with the auxiliary spreader 34 the clamp 55 holding the same engages the cam bar 58, is opened thereby to release the piece and allow the same to drop on to the rack. After the rack is loaded by the carrier 46 said carrier is wheeled from under the carrier 46 and to the ironer 10 where the pieces are fed thereto, as previously described.

What I claim is:

1. A device of the class described, having a narrow upright spreader over which a flat piece may be drawn to spread the same, and a rack forward of the spreader arranged to receive the piece as the same is drawn thereover from the spreader.

2. A device of the class described, having a narrow upright spreader over which the intermediate portion of a flat piece may be drawn to spread the same with its side portions hanging down at the sides of the spreader, and a rack forward of the spreader arranged to receive the piece as the same is drawn thereover from the spreader and support the piece at its intermediate portion with its side portions hanging down at the sides of the rack.

3. The structure defined in claim 2 in which the spreader is intermediately crowned transversely of the rack.

4. The structure defined in claim 2 in which the rack is below the spreader, and further having an auxiliary spreader at an elevation between the main spreader and rack arranged to intercept the downward movement of the piece for action thereon as the same is drawn over the rack from the spreader.

5. The structure defined in claim 2 in which the spreader is mounted on the rack.

6. The structure defined in claim 2 further having a pair of secondary spreaders at

the sides of the rack, and means for operating the secondary spreaders for action on the hanging sides of the piece on the rack.

7. The structure defined in claim 2 having a pair of secondary spreaders for the hanging sides of the piece on the rack, said secondary spreader being mounted at the sides of the rack for outward movement therefrom.

8. The structure defined in claim 2 having a pair of secondary spreaders for the hanging sides of the piece on the rack, said secondary spreader being mounted at the sides of the rack for outward movement therefrom, and yielding means for holding the secondary spreaders in normal positions.

9. The structure defined in claim 2 having a pair of secondary spreaders for the hanging sides of the piece on the rack, said secondary spreader being mounted at the sides of the rack for outward movement therefrom, and means for simultaneously operating the secondary spreaders.

10. The structure defined in claim 2 further having a pair of secondary spreaders for the hanging sides of the piece on the rack, said secondary spreaders being mounted at the sides of the rack for outward and downward swinging movements therefrom, the downward movement of the secondary spreaders being such as to permit the hanging sides of the piece on the rack to swing inward thereover into positions between the rack and the secondary spreaders.

11. A rack of the class described comprising a frame having a pair of long horizontal supporting rails that are laterally spaced for holding a flat piece spread thereon at its intermediate portion with its side portions hanging down at the sides of the frame, one of said rails being mounted on the frame for movement to lower the respective portion of the piece supported thereon, and means for holding the movable rail raised.

12. The structure defined in claim 11 in which the other of said rails is mounted on the frame for movement to feed the respective portion of the flat piece supported thereon in respect to said movable rail.

13. The structure defined in claim 11 in which the other of said rails is mounted on the frame for raising and lowering movement and operable to alternately lower the respective portion of the flat piece supported thereon onto the frame and pick the same up at an offset point to feed the same in respect to said movable rail.

14. A rack of the class described comprising a frame having a pair of long horizontal supporting rails that are laterally spaced for holding a flat piece spread thereon at its intermediate portion with its side portions hanging down at the sides of the frame, one of said rails being movably mounted on the frame to feed the respective portion of the

flat piece supported thereon in respect to the other of said rails.

15. A rack of the class described comprising a frame, a pair of horizontal supporting rails that are laterally spaced for holding a flat piece spread thereon at its intermediate portion with its side portions hanging down at the sides of the frame, said rails having arms pivoted to the frame and holding the rails for parallel movement toward or from each other, and means for holding the arms with the rails raised.

16. The structure defined in claim 15 in which one of the rails is movable into a position to lower the respective portion of the flat piece supported thereon onto the frame.

17. The structure defined in claim 15 in which the arms of one of the rails are pivoted for complete rotary movement to carry the respective rail both above and below the top of the frame and cause said rail to alternately lower the respective portion of the flat piece supported thereon onto the frame and pick the same up at an offset point to feed said portion of the flat piece in respect to the other rail.

18. A rack of the class described comprising a frame having a pair of laterally spaced horizontal side bars, a pair of flat piece-supporting rails for holding a flat piece spread thereon at its intermediate portion with its side portions hanging down at the side of the frame, said rails having arms pivoted at the axes of the bars and swingably supporting said rails, and means for holding the arms with the rails in their uppermost positions.

19. The structure defined in claim 18 in which the bars are at different elevations and in which the arms of the two rails are of different length and hold the two rails, when raised, at substantially the same elevation.

20. A device of the class described comprising a crowned spreader over which a flat piece may be drawn longitudinally with the transverse center of said piece at the apex of the spreader and with the side portions of said piece hanging down from the outer ends of the spreader, the outer end portions of the spreader being unobstructed and below the crown thereof.

21. A device of the class described comprising a crowned main spreader and an auxiliary spreader spaced the one in advance of the other and over which spreaders a flat piece may be drawn longitudinally with the transverse center of said piece at the apex of the main spreader and with the side portions of said piece hanging down from the outer ends of the main spreader, the outer end portions of the main spreader being unobstructed and below the crown thereof.

22. The structure defined in claim 21 in which the two spreaders are at different elevations.

23. A device of the class described comprising a spreader over which a flat piece may be drawn longitudinally to spread the same, and a rack forward of the spreader and over which the piece is drawn from the spreader
5 and onto which rack the piece is free to drop as it leaves the spreader.

24. A device of the class described comprising a main spreader and an auxiliary spreader spaced the one in advance of the other and over which a flat piece may be
10 drawn longitudinally to spread the same, and a rack forward of the spreaders and over which the piece is drawn from the spreaders and onto which rack the piece is free to drop
15 as it leaves the spreaders.

25. The structure defined in claim 24 which further includes a pair of reversely movable secondary spreaders for transversely spreading a flat piece while on the rack.

20 In testimony whereof I affix my signature.
LEE R. SAGER.

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