My invention relates to a folding clothes rack and more particularly to such a clothes rack as may be packaged at the factory in a knocked-down condition with the side frame members completely assembled but the rungs or hanging bars disassembled, yet of such a nature that the purchaser may simply and accurately effect assembly from the comparatively compact and small package in which the disassembled parts are marketed.

Folding clothes racks are of great utility and advantage in homes, particularly those in which there are small children and also in connection with full or semi-clothing where the laundring of such things is done in the home and the clothes rack gives relatively large hanging facilities. One of the difficulties in the manufacture and marketing of such folding clothes racks has been the large amount of space occupied by the complete clothes rack in packaging and shipping and the expense of large packages for holding the clothes rack while it is being shipped and delivered. When the rungs or hanging bars are removed the side frames can be folded into compact structures which, when placed side by side, and with the rungs extending parallel, can be assembled in a small compact package which is itself inexpensive as compared to the larger packages in which the fully assembled folding clothes racks have been shipped, and which saves very greatly in the cost of shipping and also practically completely eliminates breakage, which is a source of considerable loss where folding clothes racks are shipped when fully assembled.

It is a principal object of my invention, therefore, to provide folding clothes rack side frame members fully assembled and adapted to be closed and opened as in use in a clothes rack, to form in said side members sockets adapted to receive cylindrical portions of the ends of rods which may be introduced in said sockets with a reasonable degree of force, and to provide means in the sockets such that when the rung end is turned therein a portion of the wood in the socket will be deformed thereby to lock the rung or hanging bar permanently to the side frame pieces. This assembling can be effected very easily by an agent of the seller or a householder at the latter's home. And when the assembly has been completed the resulting product will be a permanently assembled folding clothes rack adapted to be used in the home for the purposes intended.

It is a further object of my invention to provide the socket with an inner ferrule of material, such as spring steel, which may yield slightly to permit the fashioned end of a rung or hanging bar to be inserted inside the same, where it will be firmly gripped by the spring ferrule in the socket.

It is a further object of my invention to form on the inside of the ferrule above defined an inward projection such that when the fashioned end of the rung or clothes bar is forced into the same it will produce a slight deformation of the wood of the fashioned end in the way of a longitudinal groove. Then by turning the rung or hanging bar the projection may be caused to form the arc of a circumferential groove which will seat the projection in the body of the wood of the fashioned rung end, thus locking it permanently in the socket. When this has been done for each of the rungs at each of the side frames, the folding clothes rack will be fully assembled with all parts permanently secured together fitting it for use in the home.

The full objects and advantages of my invention will more particularly be given in connection with the appended specification and the novel features of the invention which secure the advantageous results of its practice are particularly pointed out in the appended claim.

In the drawing:

Fig. 1 illustrates in perspective a folding clothes rack fully assembled and ready for use, embodying my invention.

Fig. 2 is a plan view of the package containing the folded side frame members and the rungs or hanging bars with some parts broken away to show the manner in which the side members fold one upon the other.

Fig. 3 is an end view of the aforesaid package.

Fig. 4 is a side view on an enlarged scale of one of the rungs or hanging bars.

Fig. 5 is a part perspective view of one of the spring metal ferrules lining the sockets for receiving a fashioned end of a rung or hanging bar.

Fig. 6 is a sectional view taken on line 5-5 of Fig. 1.

Fig. 7 is a sectional view taken on line 7-7 of Fig. 8.

Fig. 8 is an enlarged part perspective view of a portion of one of the rungs or hanging bars, showing the manner in which the same is scored longitudinally and circumferentially in assembling within the aforesaid socket.

As clearly indicated the fully completed folding clothes rack comprises side frames 10 and 11. Each of these frames comprises main side
support bars 12 and 13, long bars 14 and 15 pivotally connected at their upper ends as at 16 to the respective bars 12 and 13, and pivotally connected to their lower ends as at 17 to short bars 16 and 19, which in turn are pivotally connected as at 20 and 21 to the side bars 12 and 13. The bars 14 and 15 are also pivotally connected together as at 22, and have pivotally connected therewith as at 23 and 24 other pairs of supporting bars 25 and 26 which are pivotally connected together at the point 27. The bars 25 and 26 have pivotally connected therewith at 28 and 29 a pair of short bars 30 and 31 which are pivotally connected at their upper ends as at 32. At each of the above-noted points of pivotal connection 16, 17, 20, 21, 22, 23, 24, 27, 28, 29, and 32, when the clothes rack is permanently assembled, as shown in Fig. 1, there will be mounted in sockets having a spring metal liner 33, a series of rungs 34. Other rungs 35 in all respects identical with rungs 34 will be assembled in the side bars 12 and 13. This arrangement is such that the side frame members may fold upon themselves as indicated at 36 in Fig. 2. The rungs 34 or 35 are cylindrical, or circular in cross-section, and of any desired length. Each end as at 38 and 40 of Fig. 4, is fashioned to provide a reduced cylindrical portion extending from shoulders 41 and 42 formed on the ends of the rungs 34 and 40. The ferrule 33, Fig. 5, is split as indicated at 43, and is provided with a flange 44 adapted to engage the outside of any frame bar, as indicated at 46 in Fig. 6. The opening 47, Fig. 5, is contracted when the ferrule 33 is inserted in a socket opening as at 48 in Fig. 6, and such contraction will substantially close the gap 43 in the side of the ferrule. When in position, as in Fig. 7, the ferrule has an inside diameter slightly less than the diameter of the reduced cylindrical end portions 33 and 40 of the rungs or hanging bars 34. There is also provided a projection 50 formed on the ferrule body 33 opposite the split 43 and extending inwardly into the circular space 47 within the ferrule which is to receive the reduced end portions 38 or 40 of the rungs 34. The ferrules passing through the several joints 17, 20, 21 and the like, between frame bars, are made long enough to extend through the two bar members and form the pivotal connection therewith.

This is the condition of the parts when the folding rack is completed at the factory, packaged and shipped, and is, of course, the condition of the parts when received by the householder. In order to complete the rack the purchaser or householder must assemble the rungs or hanging bars 34 and 35 at his home after the packaged parts have been delivered there. In doing this he will ordinarily introduce the reduced portion at one end of the rungs 34 or 35, say the reduced portions 38, into the various sockets of one of the bars. This is done by forcing said reduced portion into the socket formed by the interior of the ferrule 33, thereby forcing the projection 50 to slightly indent or deform a longitudinal path along the side of the projection 38 presented thereto. The householder will then seat the other reduced end portion 40 of the rungs or hanging bars 34 in the other set of ferrules, in each case causing a longitudinal deforming along said reduced end portion to bring the shoulders 42 against the bars, as the shoulders 41 have already been brought against its bar.

After the rungs or hanging bars have been so assembled, the householder will turn each bar a short distance, from a quarter to half a revolution. This will cause the projection 50 to deform the wood of the reduced end portions 38 and 40 over a circumferential path, as indicated at 51, Fig. 8, and will leave the projection in effect seated in the body of the end portions 35 and 40. In this position the bars of the side frames will pivot on the outside surfaces of the ferrules 33, passing through the two sets of bars, while the rungs 34 will remain immovably set at their ends in said ferrules, enabling the clothes rack to be folded together and extended as the householder may desire.

The advantages of my invention are clearly evident from the foregoing description. A primary advantage resides in the fact that a quite complex folding clothes rack which, if in fully assembled condition would require a great deal of shipping space and cost of packaging and consequent cost of shipping, with very considerable loss from breakage, may be packed in a small and compact form for storage in retail establishments and delivery to purchasers. This is a very substantial and expensive advantage which has met with large public approval, for it greatly reduces the cost of the clothes rack to the ultimate purchaser, and it has been found that purchasers do not at all object to making the assembly of the clothes rack themselves in view of this saving of expense.

A further great advantage of my invention resides in the fact that the means of assembling and in effect locking the rungs or hanging bars upon the side frame supports is accomplished with a simple light, but effective, ferrule stamping, and with no complementary metalic formed member on the ends of the rungs. The locking together of the rungs and the supporting bars is effected merely by forcing the reduced ends of the bars into the socket formed by the interior of the ferrule and subsequent deformation of the rungs which in that manner provides the complementary locking arrangement. This locking arrangement has proved very certain and effective. A further marked advantage is that, since each projection cuts its own grooves in the rungs, there is no difficulty in securing an accurate fit between these pieces, in spite of slight manufacturing irregularities. This is of prime importance, since the successful assembly and long continued service of the rack depend to a great extent on the accuracy of this fit.

I claim:

A clothes rack comprising a multiplicity of side frame bars on each side of the clothes rack, holes through said bars, sockets set in said holes formed of sheet metal cylinders split along one side, an inward projection on each said sheet metal socket member, a multiplicity of wood rungs, each having reduced end portions of greater diameter than the normal inner diameter of the sockets forced into and turned in said sockets thereby forming right-angled grooves in said end portions, whereby the frame bars are pivotally connected together and the rungs are locked upon the side frame members.