The present invention relates to a knockdown screen frame sold as a package or "kit" for ready assembly by the purchaser or user.

An object of the present invention is to provide in one kit all necessary screen parts and tools for facilitating assembly of a metal frame screen by unskilled hands upon following simple instructions.

Another object is to provide an assembly including novel corner locks for the screen frame ends and side portions.

Still another object is to provide novel joint inserts adapted to lock the two or more side sections of the screen together.

A further object is to provide novel cross brace inserts and means for securing the same to and between the screen side sections in their adjacent spline grooves.

Yet another object is to provide a novel mounting for a finger pull to raise and lower the screen when installed.

The construction of the present invention makes it possible to provide a package of screen parts which fills a long felt need for a satisfactory, high quality, and inexpensive replacement for windows of older homes and buildings, where an aluminum frame with fiber glass cloth becomes available to users to provide a long lasting, low maintenance product. Moreover, the present invention makes it possible to provide a number of standardized size screens to the extent that approximately ninety-five percent of all types and sizes of residence windows can be covered, thus eliminating the expensive application heretofore required in most windows of irregular size and type. In addition it enables hardware and building material jobbers and dealers to carry an inventory of kits that will meet practically all demands of the existing home market.

Other objects and advantages of the invention will become apparent from the following detailed description of the several parts, and combinations thereof, when read in conjunction with the attached drawings, wherein:

Figure 1 is a front plan view of a screen assembled from the novel parts of this invention and ready for installation.

Figure 2 is a view with the several novel parts of the screen frame pulled apart and aligned for their respective assembly positions including the corner lock at each mitered end of the frame ends.

Figure 3 is a perspective view of one of the corner locks.

Figure 4 is a side elevation of the cross brace and the cross brace inserts connected to the side members of the screen frame.

Figure 5 is a detail in side elevation of a joint insert for joining the side bars of the screen frame together;

Figure 6 is an end view of the joint insert; and

Figure 7 is a fragmentary view in section of the novel finger pull and its mounting in the spline groove of the screen frame.

Figure 8 is a perspective view of the novel cross brace inserts.

Similar references designate like parts in the several views.

Referring in detail to the drawings, the novel screen frame A is disclosed assembled in Figure 1 and the frame sides, ends and corner locks are disclosed in Figure 2 pulled apart and ready for assembly.

The sides of the frame comprise four parts, namely, hollow bars 10—11 and 12—13 having opposed mitered ends 14—15 and 16—17, respectively. The hollow bars 18 and 19 at each end of the frame, as shown, are in one section and are each likewise formed with mitered ends 20—21 and 22—23, respectively.

Each adjacent mitered end of a side bar and an end bar are locked together by means of corner locks 23 comprising a substantially right angled brace structure with angularly diverging legs 24 and 25 adapted to fit within the bore of their respective adjacent mitered frame bar ends. Also, these corner locks are each formed with a V-shaped web plate 26 at the crotch of the legs, whereby when the mitered ends are positioned with their mitered edges in abutment, the lower portion of the edges seat in the notch or apex 27 of the plate. This provides a locking effect and holds the ends and sides together securely.

The side bar sections and their respective end sections may be joined together immediately by joint inserts, such as 28 (see Figure 2, 5 and 6), either before or after the corner locks 23 have been used. In either event upon connecting the side bars with their respective joint inserts 28, the screen frame A is completely assembled into a rectangular structure (see Figure 1). The inserts 28 may be formed with a sheet metal with rounded over side portions 33 from one end and a downwardly bent tongue 35 providing a U-portion, said tongue having a right angled flange 36 formed from the opposite end thereof. The tongue and flange fit snugly over the flange 31, and the flanges 36 seats on the bottom of the spline groove 30, while the opposite end of the connector 32 has its side portions adapted to frictionally telescope within the bore of a hollow cross bar 37 extending transversely of the screen frame between the side bars thereof, as disclosed in Figures 1 and 4.

The end bars 18 and 19 like the side bars of the frame are formed with similar spline grooves and the lower or bottom end bar 19 has secured over its interior offset flange 31a the tongue portion 35a and spline groove flange 36a of a finger pull 40 (see Figure 7). This finger pull 40 extends upward along the surface of the screen fabric 41 in the frame A and is bent over to provide a handle 42.

The foregoing describes the novel frame structure and its associated parts without the details of the fabric screen mesh for the frame A. This mesh is standard and the spline 43 for the spline groove 30 is made with an elongated slot throughout its length. Thus, when it is pressed into the groove 30 over the selected edge of the screen, with or without the flange 36 of the cross brace connector 32, or the flange 36a of the finger pull, it will be yieldefably resilient and expand into frictional holding contact with the groove 30, thereby positively retaining the screen parts in the groove.

The kit, not shown, is an suitable container to hold the necessary parts and tools for assembly of the screen, such as a hack saw, rubber nosed hammer and tamping block.
Without further description, it is believed the novel arrangement, combinations and construction of the parts of the novel screen frame are apparent to others skilled in the art, and it is to be expressly understood that various changes therein now likely to occur to others may be made without departing from the invention.

We claim:

A knockdown screen frame comprising right angularly disposed hollow bars having mitered ends and inner spline grooves, corner lock means disposed within adjacent ends of said bars for holding same together as a rectangular frame, a hollow brace for extending across the frame with its ends being disposed adjacent opposed spline grooves whose inner edges are defined by anchor flanges, and a connector means disposed at each end of said brace comprising a member having side flanges frictionally engaged with the inner walls of said hollow brace bar, a U-portion engaged over the adjacent anchor flange and a flange seated on the base of the adjacent spline groove.

References Cited in the file of this patent

UNITED STATES PATENTS

269,390 Crowell Dec. 19, 1882
438,544 Henderson Oct. 14, 1890
956,239 Watson Apr. 26, 1910
1,561,470 Kihm Nov. 17, 1925
1,571,661 Deacoteau Feb. 2, 1926
1,722,947 Schneider et al. July 30, 1929
1,729,586 Liebman Sept. 24, 1929
2,703,159 Van Fleet Mar. 1, 1955