July 31, 1956 E. A. MATTSON 2,756,453

DUST MOP

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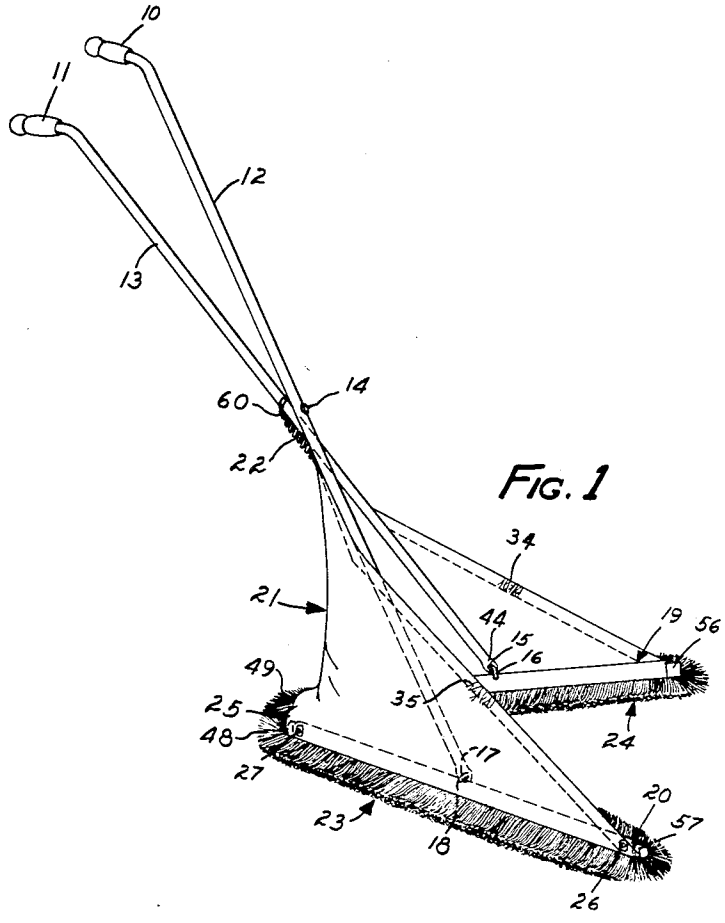


FIG. 1

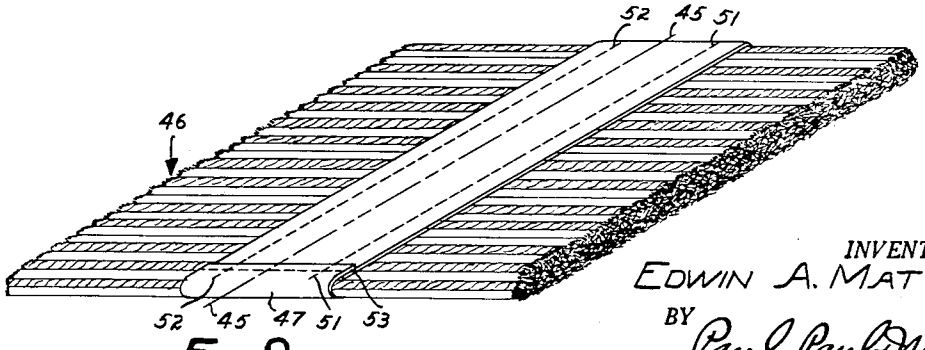


FIG. 9

INVENTOR.
EDWIN A. MATTSON
BY Paul, Paul & Moore
ATTORNEYS

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FIG. 2A

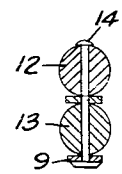


FIG. 2

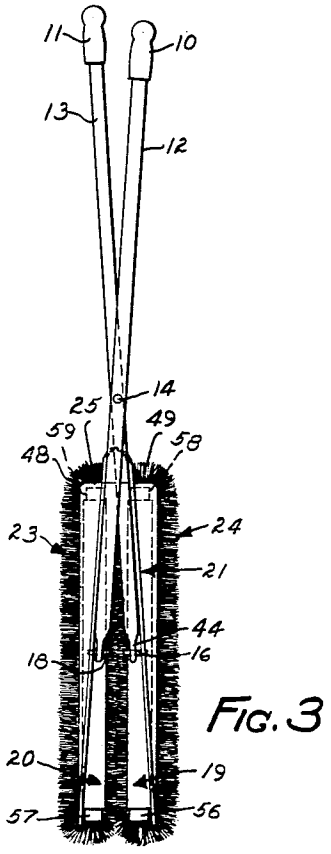


FIG. 3

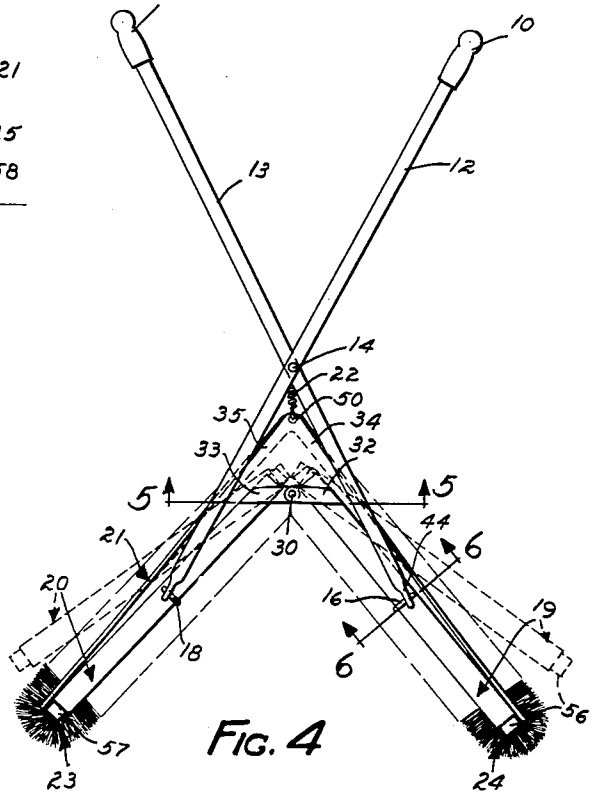


FIG. 4

INVENTOR.
EDWIN A. MATTSON
BY Paul, Paul & Moore
ATTORNEYS

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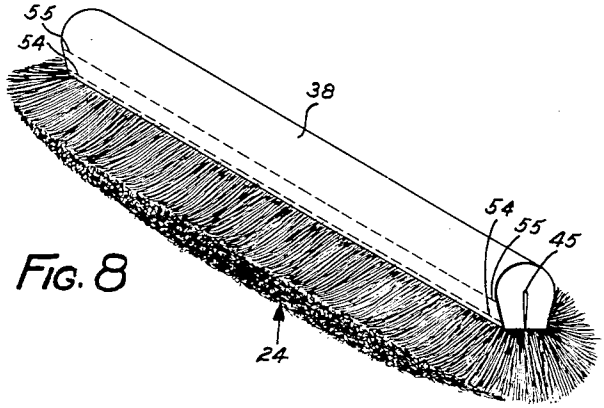


FIG. 8

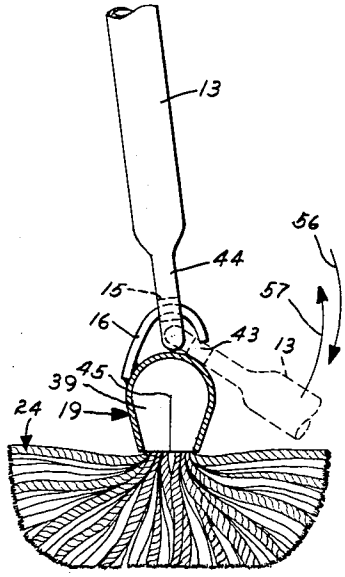
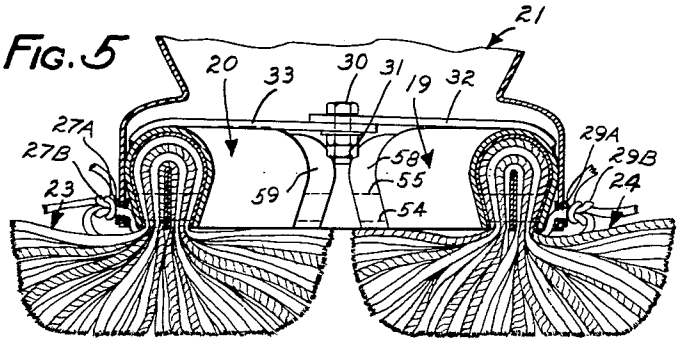


FIG. 6

FIG. 5



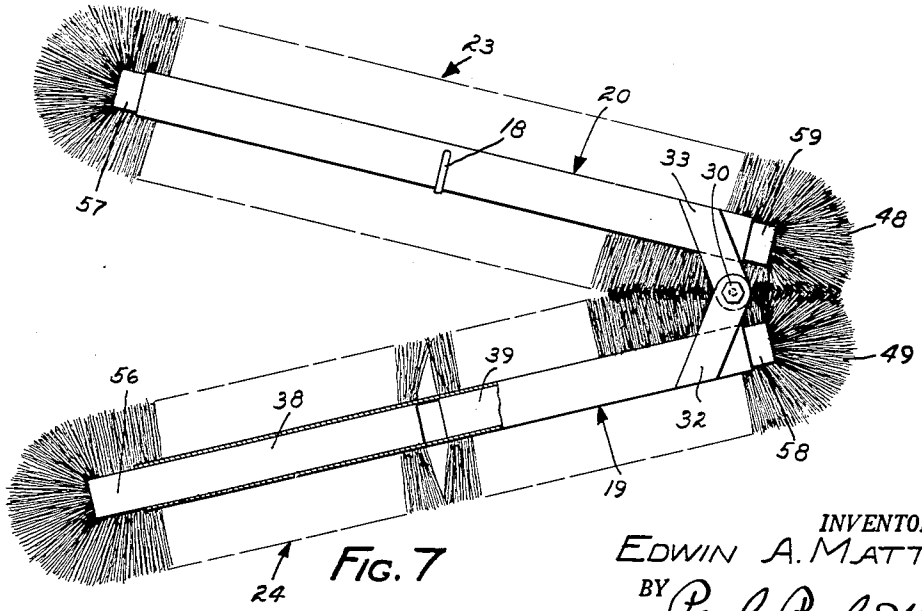


FIG. 7

INVENTOR.
EDWIN A. MATTSON
BY Paul, Paul & Moore
ATTORNEYS

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2,756,453

DUST MOP

Edwin A. Mattson, Minneapolis, Minn., assignor to G. H. Tennant Company, Minneapolis, Minn., a corporation of Minnesota

Application July 13, 1950, Serial No. 173,611

8 Claims. (Cl. 15—229)

The present invention relates to an improved dust mop of a V-type which provides greater than ordinary dust and trash-holding capacity, ease and flexibility of operation, and intended particularly for use wherever it is desired to produce a sweeping path of varying width without interrupting the continuous forward movement of the mop as in factory areas, shops and the like. Usually the mopping of floor surfaces has been accomplished by using a small triangular-shaped mop, or a large single-bar push type mop. These have the disadvantage of being of small capacity and have no provision for holding a load of paper, trash, etc. Other deficiencies of these standard type mops are fixed width of the mop, lack of ease of adjustment of the angle of the mop handle with the floor, while maintaining a substantially stable apparatus and a mop holder parallel to the floor; and inadequate means for assembling the mop brushes in the mop holders.

It is an object of the present invention to overcome the deficiencies of the prior art mopping structures and to provide a new form of mop capable of having its width of effective mopping area varied while the mop is in use so as to be projected in and under adjacent machines, desks, etc.

It is a further object of the invention to provide an improved mopping structure of generally V-shaped configuration wherein the angularity of the V-shape may be varied while in use for varying the effective width of the mopping device.

It is a further object of the invention to provide an improved assembly of mop holders and mop handles and to provide an improved mop assembly having provision for the accumulation of large trash and litter such as papers, etc.

It is another object of the invention to provide an improved mop structure of all steel construction having removable mop heads.

It is an additional object of the invention to provide an articulated dust mop structure having each dust mop portion independently controlled by a handle and yet articulated together for simultaneous use and variation during operation.

It is another object of the present invention to provide a mop wherein two handles independently control two mop sections for varying angularity of the mop sections relative to each other and hence mopping width of the device.

It is also an object of this invention to provide a mop wherein the height of the control handles can be automatically adjusted to the height of the controller.

It is also an object of this invention to provide a mop wherein the control handles may be readily raised and lowered so as to provide ease of mopping under objects.

It is a further object of this invention to provide a mop

wherein the width of the mopping surface may be varied while in use and without interruption of the continuous forward movement of the mop.

It is a further object of this invention to provide a mop of increased capacity for the accumulation of sweepings before dumping or shaking is necessary.

It is a further object of this invention to provide a mopping apparatus wherein means is provided for the accumulation and catching of litter.

It is a further object of this invention to provide a mop wherein the method of attaching the mop holders and handles is easily accomplished without tools and makes assembly easy and inexpensive, and allows for adjustment of the handles while in use.

It is a further object of this invention to provide a mop brush of improved construction, longer wearing capacities and adaptable for easy assembly with the mop frame.

Other and further objects of the invention are those inherent in the apparatus herein illustrated, described and claimed.

The invention is illustrated with reference to the drawings in which corresponding numerals refer to the same parts and in which—

Figure 1 is a view of the complete mop assembly in perspective, showing the mop in sweeping position;

Figure 2 is a side elevational view of the mop in sweeping position;

Figure 2A is a view taken along the line 2A—2A of Figure 2;

Figure 3 is a plan view of the mop illustrating the mop in closed or folded position;

Figure 4 is a plan view of the mop illustrating the mop in open or sweeping position and also illustrating the manner of adjustment of the angular position of the mop holders;

Figure 5 is a sectional view substantially along the line and in the direction of the arrows 5—5 of Figure 4 and illustrating the construction of the adjustable V and of the method of inserting the mop brushes and also illustrating a modified means for attaching the apron;

Figure 6 is a sectional view substantially along the lines and in the direction of the arrows 6—6 of Figure 4, illustrating the manner in which the mop handles are adjustable on the mop holders;

Figure 7 is a plan view, partly in section, illustrating the assembly of the mop brushes in the mop holders but with the handles removed;

Figure 8 is an isometric view of one of the mop elements before being assembled into the apparatus;

Figure 9 is a plan view of a mop brush element showing its construction.

The mop comprises two cordage mop elements or brushes generally designated **23** and **24**. These mop elements or brushes **23** and **24** are inserted in mop holders or stiff frame-members generally designated **20** and **19**, right and left respectively, as will be more fully explained hereinafter. On the top rear of each mop holder is a short pivot bar, thus bar **32** for holder **19** and **33** for holder **20**, Figure 7, which extends in a rearwardly direction and at an angle with the mop holder so as to meet for pivotal attachment at pivot bolt **30**. The angle at which these pivot bars **32** and **33** are fastened to the mop holders **20** and **19** is of no especial significance so long as they permit the mop holders to move from a parallel position as in Figure 3, wherein the bristles of the two mop brushes, generally designated **23** and **24** are inter-

twined at their juncture with sufficient pressure to pick up dust and litter when the mop is lifted to an extended angular position (i. e. a wide V-shape) as in Figures 1 and 7, wherein the heels 48 and 49 of the two mop brushes 23 and 24 are still intertwined with sufficient pressure to form a continuous barrier and thus prevent the passage of any dirt or litter between them, but do not bind upon one another so as to prevent further increase in the angular movement as to Figure 4. The pivot bolt 30 extends through a hole in the pivot bars 32 and 33 and is capped by a washer and nuts 31. Two nuts are provided so as to prevent disassembly of the pivot during operation of the mop or a rivet, or one slightly peened nut may be used.

To each of the mop holders 19 and 20 there is also attached on the top of each, a hook 16 and 18 with the opening of the hook facing the outside of the V-shaped mopping trough which is formed when the two mop holders are pivoted together as shown in Figures 6 and 7. Hooks 16 and 18 are passed through eyes 15 and 17 in left and right mop handles 12 and 13 respectively and serve to attach mop holders 19 and 20 to the mop handles 12 and 13, as shown in Figures 1–4 and 6. Each of the mop handles 12 and 13 is flattened out at the terimnal end as for mop handle 13 in Figure 6, wherein a flat plate 44 is provided with an eye 15 through which the hook extends.

The mop handles 12 and 13 extend upwardly from the mop holders 20 and 19 and cross slightly below their mid-point, through which crossing point a pivot bolt or a rivet 14 is passed. Thus, when viewed from the front or the top, as in Figure 4, the handles appear in the shape of an X with the point of crossing of the bars of the X slightly below the mid-point. Pivot bolt or rivet 14 is provided with a washer between mop handles 12 and 13 and with a washer 9 and a nut or flattened end so as to hold the mop handles 12 and 13 securely together, yet to permit scissors-like operation of the two handles. Each of the mop handles 12 and 13 is bent at a point a few inches from its upper end so as to provide a comfortable handle when the mop is in normal pushing position, as shown in Figure 1. Rubber handle grips 10 and 11 are provided for mop handles 12 and 13 for good gripping.

An apron or shield is provided which is generally designated 21. This apron is fastened by two snaps 26 and 27 on the outer side of mop holder 20 and by two corresponding snaps 28 and 29 on the outer side of mop holder 19, as illustrated in Figures 1 and 2, or the apron may be provided with eyelets 26A and 27A for mop holder 20 and 28A and 29A for mop holder 19 and fastened to the mop holders 19 and 20 by passing strands of mop brush cordage through the eyelets and tying these passed-through strands with adjacent strands into suitable knots 26B and 27B for mop holder 20, and 28B and 29B for mop holder 19, as shown in Figure 5 for eyelets 27A and 29A and knots 27B and 29B. Eyelets 26A and 28A and knots 26B and 28B are not illustrated, but it is to be understood that they are identical with eyelets 27A and 29A and knots 27B and 29B as shown in Figure 5. The apron 21 is of cloth and is substantially in the form of a triangle, as shown in Figure 1, and the base vertices 26 and 28 of the triangle are at the forward ends of mop holders 19 and 20, respectively. Thus, the base of the apron extends continuously from the forward portion of mop holder 20, along the outside of mop holder 20, around the heels 25 of mop holders 20 and 19, and along the outside of mop holder 19 to the front of mop holder 19, thus providing an unbroken barrier for the collection of litter as shown in Figures 1–4. The apex of the triangular apron is provided with a reinforced eye 50, Figure 4, which is passed over a hook on the bottom end of a light coil spring 22 which in turn is fastened loosely around the rear mop handle 13 at a point 60 directly above the pivot point 14. As mentioned, the continuous barrier formed by the passage of apron 21 around the sides and heels of the mop holders 19 and 20 prevents the loss of litter which would otherwise pass over the tops of mop holders 19 and 20 and be lost as the mops are pushed forward.

The spring 22 insures that the mop apron 21 shall be kept taut from the heels of the mop holders at 25 to the pivot point of the two handles 14 at all times, while allowing the handles 12 and 13 to be raised or lowered for various mopping operations.

Figures 7, 8 and 9 show the construction and assemblage of the mop brush elements. Referring now to Figure 9 the mop brush element is composed of standard mop cordage, generally designated 46 which is bound around the middle with strong canvas or other suitable material as at 47. This binding material is sewn along the lines 51—51, 52—52. The binding material is overlapped slightly at 53 and sewn along the overlap. Then the thus formed flat mop element is folded along the center line 45—45 and preferably folded in a direction so that overlap 53 is then on the inside of the fold. This is done to impart greater strength to the binding. The mop element is then stitched in the folded position along the dotted lines 54—54 and 55—55 in Figure 8, and the bound portion is then ready to be slipped into the hollow cave-like shell of mop holder 19 or 20, as shown in Figures 5, 6 and 8. Mop holders 19 and 20 are of sheet metal rolled or formed as illustrated by mop holders in Figure 6 and Figure 7 into an elongated hollow cave-like shape with a cross section resembling a bulb. The mop brush elements of Figure 8 are slipped into the open ends of mop holders 19 and 20 and are held securely by the grip of the mop holders along the line 54—54 upon the stitched and bound portions of the mop elements as shown in Figures 5–8. This provides for an easy method of assembly of the mop elements in the mop holders and yet permits disassembly for renewal or cleaning.

In practice the mop element of Figure 8 may consist of one complete unit or may consist of a plurality of smaller elements as 38 and 39 in Figure 7. The latter is preferable for it allows the inexpensive replacement of sections of the brush as they wear without replacing the whole brush. It also keeps the brush sections shorter and hence stronger. The mop elements extend out beyond the ends of the holders 19 and 20 as at 57 and 59, and 56 and 58, as shown in Figure 7. This feature allows ease of extraction of the mop elements from the mop holders, provides for a pliable joint of the mop heels as at 25, and also insures that no metal parts will be exposed to scratch stationary objects while mopping. It also allows for subsequent shrinkage of the mop heads. The method of construction of the mop brush element by folding along the center line 45 and sewing along the line 54—54 insures that the mop brush cordage 46 will be crowded together and thus push out and form the shape of a mop brush generally designated 24 in Figure 8. This insures cordage extending to each side of the mop holder, which is highly desirable for mopping coverage and for the prevention of scratching stationary objects.

The assembly of the mop handle 13 to the mop holder 19, which is also illustrative of the assembly of mop handle 12 to mop holder 20, as shown in Figure 6, provides for a firm yet flexible union which may be readily disassembled. The hook 16, Figure 6, is so constructed as to prevent the disconnection of the eye 15 while the flat portion 44 of the handle is in an upright position even though the handle is raised and lowered in use. This situation obtains whether the mop handles are in the position shown in Figure 2 or in the position shown in Figure 3 wherein the mop handles are parallel with the floor. This construction is accomplished by making the opening 43 of the hook 16 of such a size as to allow the disconnection of the eye 15 only when the handle 13 and the holder 19 are rotated until the flat portion 44 is rotated to the dotted line position of Figure 6.

This may be accomplished by rotating the mop handle **13** in the direction of the arrow **56** or by rotating the mop holder **19** around its axis in the direction of the arrow **57** or by a combination of both. In order to rotate the mop handle **13** in the direction of the arrow **56**, the pivot bolt or rivet **14** must be removed, thus releasing the mop handles. In order to rotate the mop holder **19** around its axis in the direction of the arrow **57**, it is necessary to remove pivot bolt **30**, thus releasing the mop holders. The latter is easier, and hence preferable. While this procedure of disconnecting the mop holders from the mop handles is very simple, it cannot be accomplished until either pivot bolt **30** or pivot bolt **14** is removed, thus insuring that disconnection will not happen accidentally. In order to remove mop holder **20** from mop handle **12**, the same procedure is followed except that the mop handle **12** and the mop holder **20** are each rotated in directions opposite to that described above for mop handle **13** and mop holder **19**.

In use, the mop is grasped by the handle grips **11** and **10** and the handles **12** and **13** are raised or lowered to a comfortable height, the tautness of the apron **21** meanwhile being maintained by the tension of the spring **22**. The mop is then pushed forward by pressure upon the handle grips **10** and **11**. Side pressure upon said handle grips causes a scissors movement to increase or decrease the angle between the two mop holders **19** and **20**, thus providing a mopping surface of greater or lesser width as is desired for mopping in open spaces or crowded places, and for ease in maneuvering around stationary objects. Upward or downward pressure upon the handle grips **10** and **11** will raise or lower the handles **12** and **13** for ease in getting under objects. All of the foregoing may be accomplished without interrupting the continuous forward motion of the mop. Dust and dirt will collect upon the mop brushes **23** and **24**, and litter will pile upon and over the mop holders **19** and **20** and be collected in the apron **21**. Thus, when a load of litter and dust has been collected the mop handles **12** and **13** may be pushed together and the load picked up and held by the scissors action of the mop holders **19** and **20**, and then deposited in a desired place or a desired container.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that I do not limit myself to the specific embodiments herein.

What I claim is:

1. A dust mop comprising a pair of stiff frames each having a cordage mop element removably carried thereby, means connecting an end of one frame to an end of the other frame for pivoting movement of the frames relative to each other, crossed handles for propelling the mop frames and mop elements thereon and for pivoting the frames relative to each other from a parallel to an open V position, and a fabric shield attached to and draped around the mop frames from the free end of one, thence around and behind the pivotal connection of said frames and to the free end of the other, and means attaching another portion of said shield to one of the handles, said handles being straight throughout their extent except at an upper end grip portion and extending inside of the fabric shield draped around the mop frames and the lower ends of said handles being directly connected to the respective stiff frames approximately midway between the ends of said stiff frames.

2. A dust mop comprising a pair of relatively elongated stiff mop frame members adapted to carry cleaning devices having their ends pivotally connected together for movement from a position in which the frames are adjacent and substantially parallel to an open V position, a pair of handles pivotally connected together in crossed relation, adjacent lower ends of the handles being pivotally connected directly to the mop frames at points approximately midway between the free ends of said elements and their pivotally connected ends, so as to be movable upwardly and downwardly with respect to floor level while the mop frame members are generally parallel to the floor level, said handles being substantially straight throughout their extent except their upper ends being formed as hand grips.

3. The dust mop of claim 2 further characterized in that a shield of flexible material is attached to the stiff mop frames from adjacent the free end of one, thence past and behind the pivotal connection of said frames and to the free end of the other, said shield also having a mid-portion thereof operatively attached to one of the crossed handles adjacent the pivotal connection of said handles.

4. A dust mop comprising a pair of relatively elongated stiff mop frames having their ends pivotally connected together for movement from a position in which the frames are adjacent and substantially parallel to an open V position, a pair of handles pivotally connected together in crossed relation, adjacent ends of the handles being pivotally connected to the mop frames at points between the free ends of said frames and their pivotally connected ends, the other ends of said handles being formed as hand grips, a shield of flexible material attached to the stiff mop frames from adjacent the free end of one, thence past and behind the pivotal connection of said frames and to the free end of the other, said shield also having a mid-portion thereof operatively attached to one of the crossed handles adjacent the pivotal connection of said handles, said mop frames carrying strands of mop cordage and said shield being attached to the stiff mop frames by strands of the mop cordage passed through eyelets in the shield of flexible material, said strands of mop cordage being tied to adjacent strands of the mop cordage.

5. A floor cleaning device comprising left and right stiff frame-members, means pivotally connecting said frame-members together adjacent one end for movement from a position in which they are generally parallel to each other to a position in which they are angularly disposed, the ends of said left and right frame-members opposite said pivoted ends being free, floor cleaning devices attached along what is normally the under side of each of said frame-members, a handle assembly for propelling the frame-members along a path generally parallel to a floor that is to be cleaned and in a direction such that the means pivoting said frame-members together is rearwardly disposed and the free ends of said left and right frame-members are forwardly disposed in respect to the direction of movement, said handle assembly comprising right and left handles each of a length so as to extend from the frame-members when they are in floor cleaning position thence upwardly and rearwardly to the level of an operator's hands when the operator is standing erect, means loosely pivoting the lower end of the right handle to a point on the left frame-member intermediate the free and pivoted ends thereof, said right handle in use being extended rearwardly and upwardly to the level of the operator's right hand, means loosely pivoting the lower end of the left handle to a corresponding point on the right frame-member between the free and pivoted ends thereof, said left handle when in use being similarly extended rearwardly and upwardly to the level of the left hand of the operator, said handles being crossed and pivoted together at the point of crossing, said handle assembly as a whole being movable pivotally so as to move the handles up and down in respect to floor level while the frame-members are generally parallel to the floor and movable with respect to each other about their point of pivoting so as to move their lower ends toward and away from each other for pivoting the frame-members with respect to each other.

6. The apparatus of claim 5 further characterized in that the vertical projection of the pivot point of the crossed handles is rearward of the pivotal connection be-

tween the frame-members when the upper ends of the handles are in normal operating position at operator level.

7. The apparatus of claim 5 further characterized in that the means pivotally connecting the frame-members together is on a line midway between the frame-members when the frame-members are moved pivotally to a position in which they are parallel to each other.

8. The apparatus of claim 5 further characterized in that the floor cleaning devices are cordage mops.

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