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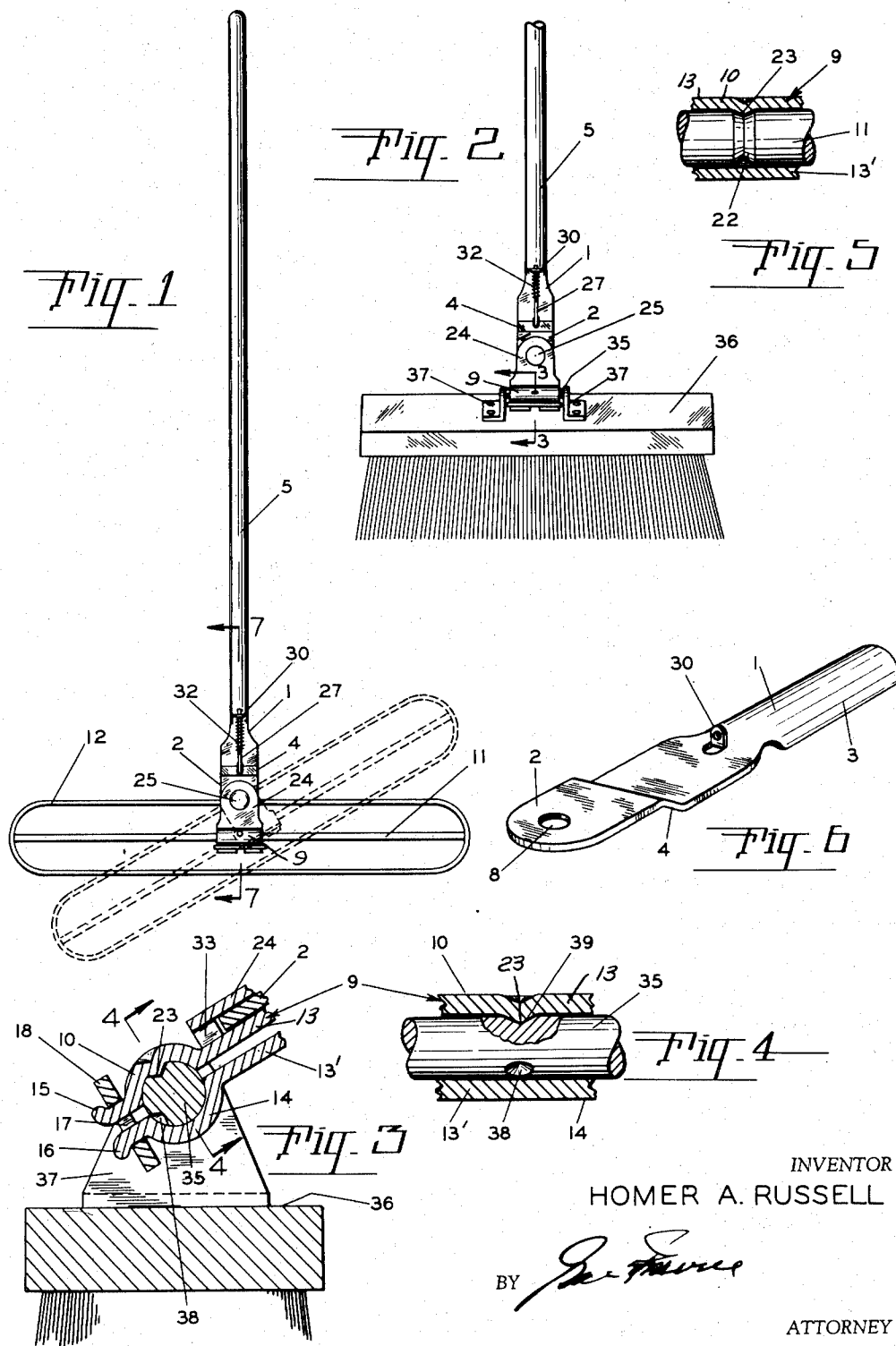
H. A. RUSSELL

2,655,413

ADJUSTABLE CONNECTOR DEVICE FOR MOP OR BROOM HANDLES

Filed May 16, 1951

2 Sheets-Sheet 1



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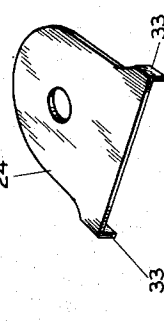
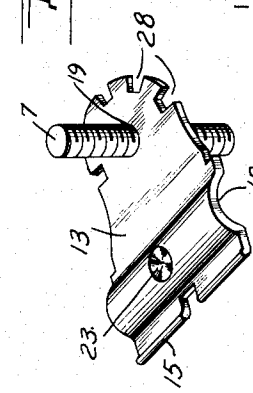
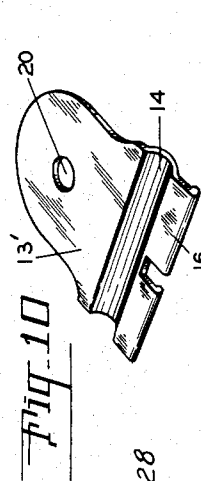
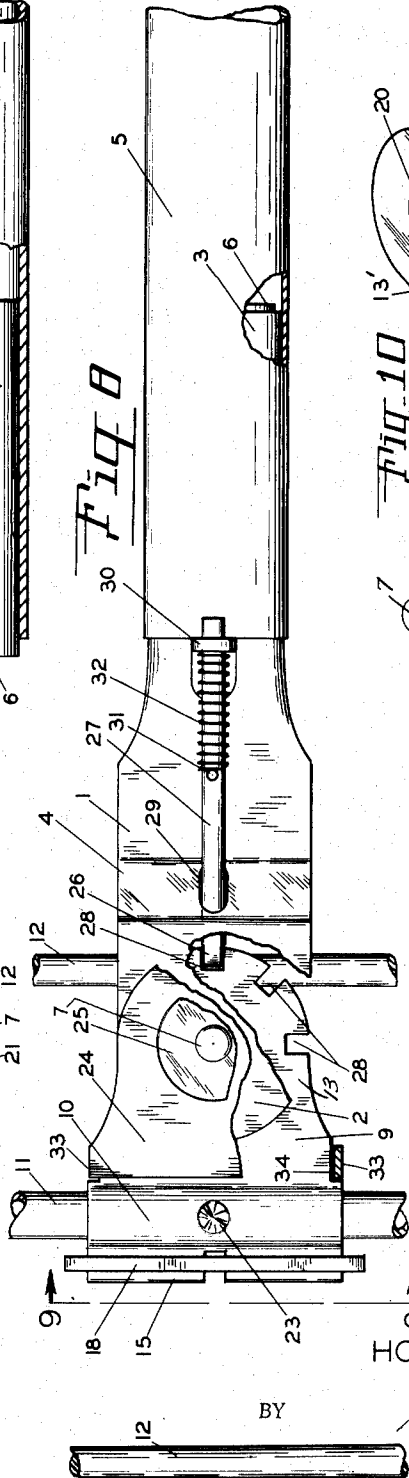
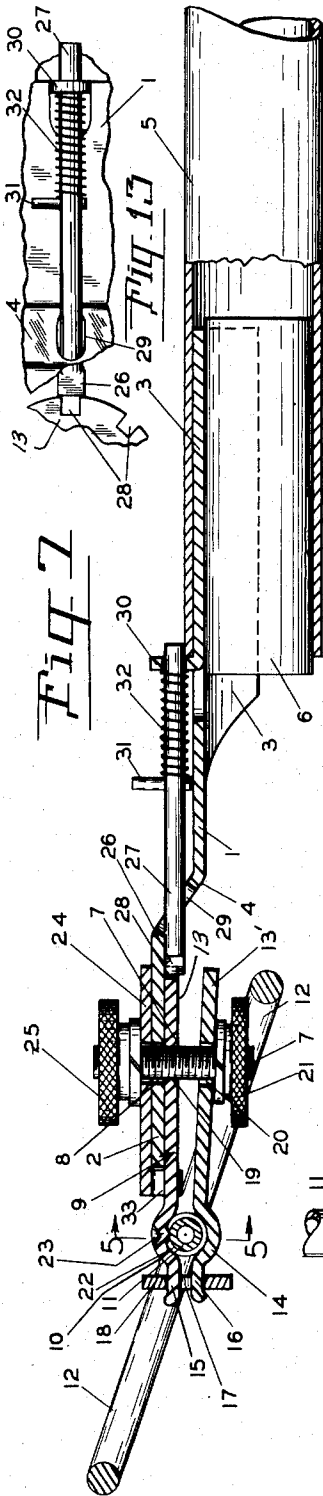
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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ADJUSTABLE CONNECTOR DEVICE FOR
MOP OR BROOM HANDLES

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4 Claims. (Cl. 306—15)

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This invention relates to adjustable connector devices and more particularly to devices for connecting handles to mops and brooms. This application is a continuation-in-part of application Serial No. 140,023, filed January 23, 1950, now abandoned.

The primary object of the invention is to provide a universal attachment between the mop or broom and the handle which enables the mop or broom to be operated at variable angles relative to the handle as well as enabling a universal swivel action between the mop or broom and the handle. This flexibility of adjustment accommodates operation underneath furniture, in corners and hard to get at places.

Another object of my invention is to provide a handle attachment device for mops or brooms that is easy to attach and detach and is constructed of light and strong material, preferably metal.

A further object of the invention is to provide an adjustable mop and handle attachment device that has simplicity of organization, economy of construction and efficiency in operation.

The novel features that are considered characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of a specific embodiment when read in connection with the accompanying drawings, wherein like reference characters indicate like parts throughout the several figures and in which:

Fig. 1 is a front view of my new and improved handle connector device attached to a mop frame;

Fig. 2 is a fragmentary front view of my new and improved handle attached to a conventional type of broom;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2;

Fig. 4 is an enlarged detail sectional view taken on line 4—4 of Fig. 3, parts being broken away for convenience of illustration;

Fig. 5 is an enlarged detail fragmentary sectional view taken on line 5—5 of Fig. 7;

Fig. 6 is a perspective view of the basic frame member of the device;

Fig. 7 is a fragmentary sectional view taken on line 7—7 of Fig. 1;

Fig. 8 is a plan view of Fig. 7, parts being broken away for convenience of illustration;

Fig. 9 is a fragmentary end view taken on line 9—9 of Fig. 8;

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Fig. 10 is a perspective view of the lower clamp member;

Fig. 11 is a perspective view of the upper clamp member;

Fig. 12 is a perspective view of the friction plate associated with the universal assembly; and

Fig. 13 is a fragmentary plan view of the handle adjusting mechanism.

Referring now to the drawings, specifically to Figs. 1, 2 and 7, an adjustable connector device, in accordance with the present invention, comprises a frame member 1 articulated to a clamp member 9 by means of a stud bolt 7. The frame member 1 is attachable to a handle 5 and the clamp member 9 is attachable, as desired, to a mop frame 12, as shown in Fig. 1, or a broom 36, as shown in Fig. 2.

The clamp member 9 comprises a pair of jaw elements 13—13', best shown in Figs. 10 and 11, which are hingedly connected at one end and respectively provided with clamp portions comprising opposed semi-cylindrical grooves 10 and 14 adjacent the hinged end for embracing a cross-shaft 11 of the mop frame 12, as shown in Figs. 1 and 7, or a cross-shaft 35 on a broom 36, as shown in Figs. 2 and 3.

The hinge connection between the jaw elements, preferably, is dismountable and comprises lips 15 and 16 on the ends of the jaw elements 13—13' respectively, said lips being insertable through an opening 17 in a ring-like keeper 18, as best shown in Figs. 3 and 7, the lips being oppositely flared to prevent accidental removal of the keeper 18. Preferably, the lips 15 and 16 are bifurcated and the keeper 18 has two openings or slots 17 for respectively receiving the lip bifurcations, as shown in Figs. 8 and 11, to retain the keeper and jaw elements in proper hinge relation and prevent the keeper from sliding along the elements.

The jaw element 13 is in the form of a plate and has an aperture 19 in which the stud bolt 7 is rigidly mounted, preferably, the aperture 19 being threaded for cooperating therewith. The bolt 7 is disposed perpendicularly of the jaw plate 13 and at right angles to the clamping portions or grooves 10 and 14. The bolt 7 extends from both sides of the jaw plate and is threaded to both ends thereof. The jaw element 13' has an aperture 20 for freely fitting over the adjacent end of the bolt 7, and a thumb nut 21 is threaded on the bolt 7 for adjustably holding the jaw elements 13 and 13' together.

The jaw element 13 is provided with a centrally located protrusion 23 extending inwardly within

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the groove 10 for cooperation with mating depressions in the cross-shaft for retaining the clamp member 9 and cross-shaft in relative position. As shown with respect to the cross-shaft 11 in Fig. 5, the shaft may have a circumferential groove 22, for receiving the protrusion 23, which will retain the clamp member and shaft in selected axial position but will permit relative rotation thereof if the clamp member is not gripping the shaft too tightly. On the other hand, as shown with respect to the shaft 35 in Fig. 4, the shaft may have selectively spaced depressions 38-39 for receiving the protrusion 23 and thereby retain the clamp member and shaft in fixed relation.

The frame member 1 comprises a flat portion 2 at one of its ends and an intermediate offset 4, the other end portion 3 being adapted for attachment to a handle 5. While the handle connection may partake of any desired form, it is preferred that it be adapted for use with a handle having a hollow end or sleeve-like portion. In this event, the end portion 3 of the frame member 1 is of semi-cylindrical form to be inserted within the end of the handle 5 and retained by a plug 6 also inserted within the end of the handle.

The flat end portion 2 has an aperture 8 for freely mounting over one end of the stud bolt 7 to fit flat against the plate jaw element 13 on the opposite side from the jaw element 13'. A thumb nut 25 is threaded on the bolt 7 for applying the desired tension between the end portion 2 and the plate jaw element 13. To prevent the turning of the nut 25 with the end portion 2 when the latter is swivelled, a friction plate 24 is interposed therebetween, the plate 24 having an aperture for freely fitting over the bolt 7. The friction plate 24 is retained against rotation with the end portion 2 when the latter is swivelled by an integral pair of ears 33 depending from opposite sides thereof to straddle the jaw element 13 and engage the notches 34 (Fig. 11) in the opposite sides of the jaw element 13.

Obviously, in use, the nut 25 must be threaded as desired to enable a swivelling action or to tightly hold the handle 5 and member 1 in selected angular relation to the clamp 9. When it is desired to provide a positive lock between the frame member 1 and clamp member 9, this lock may suitably comprise a construction that is best shown in Figs. 7, 8, 11 and 13.

Referring to Figs. 8 and 11, it will be seen that the plate jaw element 13 has a semicircular rear or free edge on a radius from the axis of the aperture 19 and bolt 7, and in which are provided a series of notches 28. These notches preferably are rectangular in shape for positively cooperating with the rectangularly shaped end 26 of a locking pin 27 that is slidably carried by the frame member 1, as best shown in Figs. 7, 8 and 13.

The locking pin 27 is slidably supported by an apertured lug 30 struck up from the frame member 1 and a slot 29 in the offset portion 4 of the member. The pin 27 is positioned above the member 1 with its rear end slidably in the aperture in the lug 30 and the front or locking end 26 of the pin extends through the slot 29 in the offset 4 to underlie the flat end portion 2 and for engagement with the edge of the jaw element 13. A control element 31 is fixed to the locking pin 27 for manipulating the pin 27 relative to the notches 28, and a spring 32 is interposed between said element 31 and the lug 32 to bias the pin 27

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against the edge of jaw element 13 and into a notch 28.

In one dimension, the end 26 of the pin 27 is of a width to freely but snugly fit in a notch 28, as shown in Fig. 8. In the other dimension, the end 26 is of a width greater than that of the notches 28 and thus spans the notches and abuts the edge of the jaw element 13, as shown in Fig. 13. Thus, the pin 27 may be turned by the control element 31 for cooperation with the notches 28, or it may be retracted and turned through an angle of ninety degrees to span the notches and, if the thumb-nut 25 is loosened, permit angulation of the handle 5 relative to the mop or broom during use.

It may be desirable to vary the resistance to movement of the handle, and this is controlled by the pressure applied by means of the nut 25 between the jaw element, the end 2 of the frame member 1 and the friction plate 24. The friction plate 24 cooperates with the jaw element 13 in clamping the end portion 2 therebetween, the downwardly extending ears 33 of the friction plate 24 straddling the element 13 and snugly engaging the edges 34 thereof to prevent relative angular movement between the friction plate 24 and bolt 7 through the jaw element 13. Thus, during use, the friction plate 24 prevents tightening or loosening of the nut 25 regardless of the swivelling of the end portion 2.

In the application of the device to a broom, as best shown in Figs. 2, 3 and 4, a cross-shaft is supported by brackets 37 mounted to the upper surface of a broom body 36. The clamping member 9 embraces the shaft 35, the handle being maintained at an angle to the broom by the action of the projection 23 registering with either of the depressions 38 or 39 formed in the cross-shaft 35, thereby preventing rotation between the clamp jaws 13 and 13' and the shaft 35, maintaining the handle at a definite radial angle to the axis of the broom, but still permitting the handle to be adjusted at an angle to the longitudinal axis of the broom as hereinbefore described in relation to the mop.

My new and improved handle connecting device can be transferred from one mop or broom to another, giving many years of service.

The operation of the device should be evident from the foregoing description. Obviously, the device is capable of adjustment about two axes, the cross-shaft 11 or 35 and the bolt 7, which are perpendicular to each other, and this adjustment may be fixed by tightening the nuts 21 and 25 and engaging the pin 27 in a notch 28, or it may be freely operative during use if the nuts are loosened and the locking pin retracted and turned to inoperative position.

The device may be readily transferred from one implement to another by releasing the clamp member 9 by means of the nut 21 and applying the member to the cross-shaft of another implement. Because of the clamping of the handle attached end portion 2 between the plates 13 and 24, there is substantially no wear to eventually render the clamp inoperative.

Although certain specific embodiments of the invention have been shown and described, it is obvious that many modifications thereof are possible. The invention, therefore, is not to be restricted except in so far as is necessitated by the prior art and by the spirit of the appended claims.

What I claim is:

1. An adjustable connector device for mop and broom handles comprising a member for attach-

ment to a handle and including a flat end portion having an aperture, a bolt in said aperture, a clamp device having a pair of arm plates relatively adjustable toward and from each other, said arm plates being mounted on said bolt on one side of said flat end portion and pivotal relative to said flat end portion, said clamp device having clamp portions disposed at right angles to said bolt for clamping a cross-bar on a mop or broom frame, a friction plate mounted on said bolt on the opposite side of said flat end portion from said clamp device, downturned ears on said friction plate beyond the flat end portion and straddling the nearest clamp plate to retain said clamp and friction plates in fixed angular relation with respect to the flat end portion sandwiched therebetween, and a nut on each end of said bolt for respectively adjusting the tension between said friction plate and said clamp device and the tension between said clamp portions and the frame cross-bar by adjustment of said clamp plates.

2. An adjustable connector device for mop and broom handles comprising a member for attachment to a handle and including a flat end portion having an aperture, a bolt in said aperture, a clamp device having a pair of arm plates relatively adjustable toward and from each other, said arm plates being mounted on said bolt on one side of said flat end portion and pivotal relative to said flat end portion, said clamp device having clamp portions disposed at right angles to said bolt for cooperatively clamping a mop or broom element, a nut on said bolt for selectively closing said clamp plates, one of said plates having an end formed on a radius from said bolt and radial notches in said end, a plunger pivotally slidable on said member and spring biased toward said notches for selective cooperation therewith to hold said clamp device at the selected angle on said bolt, a flat rectangular notch engaging end on said plunger that will cooperate with one of said notches in one position and span said notches in another position at 90 degrees from said one position, and means for rotating said plunger through said 90 degrees.

3. An adjustable connector device for mop and broom handles comprising a clamp device having a pair of jaw elements relatively adjustable toward and from each other at least one of which comprises a plate, a bolt intermediately secured perpendicularly to said jaw plate and being threaded to both ends thereof, the other of said jaw elements having an aperture freely receiving one end of said bolt to enable the adjustment of said jaw elements, said clamp device having clamp portions disposed at right angles to said bolt and actuated by adjustment of said jaw elements for clamping a cross-bar on a mop or broom frame, a member for attachment to a handle and including a flat end portion having an aperture for freely receiving said bolt and positioned on the other end of said bolt adjacent said bolt carrying jaw plate for relative pivotal adjust-

ment therebetween, a friction plate mounted on said bolt on the opposite side of said flat end portion from said clamp device, downturned ears on said friction plate beyond said flat end portion and straddling said bolt carrying jaw plate to retain said two plates in fixed angular relation with said bolt and having the flat end portion pivotally sandwiched therebetween, and a nut on each end of said bolt for respectively adjusting the tension between said friction plate and said jaw plate and the tension between said clamp portions and the cross-bar by adjusting said jaw elements, whereby angular movement of said flat end portion about said bolt will not affect said nuts.

4. An adjustable connector device for mop and broom handles comprising a clamp device having a pair of jaw elements relatively adjustable toward and from each other and at least one of which comprises a plate, a bolt intermediately secured perpendicularly to said plate and being threaded to both ends thereof, the other of said jaw elements having an aperture freely receiving one end of said bolt, said jaw elements having cooperative clamp portions disposed at right angles to said bolt for clamping a cross-bar on a mop or broom frame, a nut on said one bolt end for adjusting said jaw members to regulate the tension between said clamp portions and the cross-bar, a member for attachment to a handle and including a flat end portion pivotally mounted on the other end of said bolt, a friction plate freely mounted on said other bolt end and having a pair of down-turned ears beyond said flat end portion and straddling said jaw plate to retain said friction and jaw plates in fixed angular relation and with said flat end portion pivotally sandwiched therebetween, a nut on said other bolt end for adjusting the tension between said friction and jaw plates and said flat end portion, one of said plates having an edge formed on a radius from said bolt and having a series of radial notches in said edge, a plunger pivotally slidable on said member and spring biased toward said notches for selective cooperation therewith to hold said member and clamp device at a selected angle, said plunger having a flat notch engaging end for seating in a notch with said plunger in one angular position and for spanning the notch when the plunger is turned 90 degrees, and means for pivoting said plunger to control the relation between said end and said notches.

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