

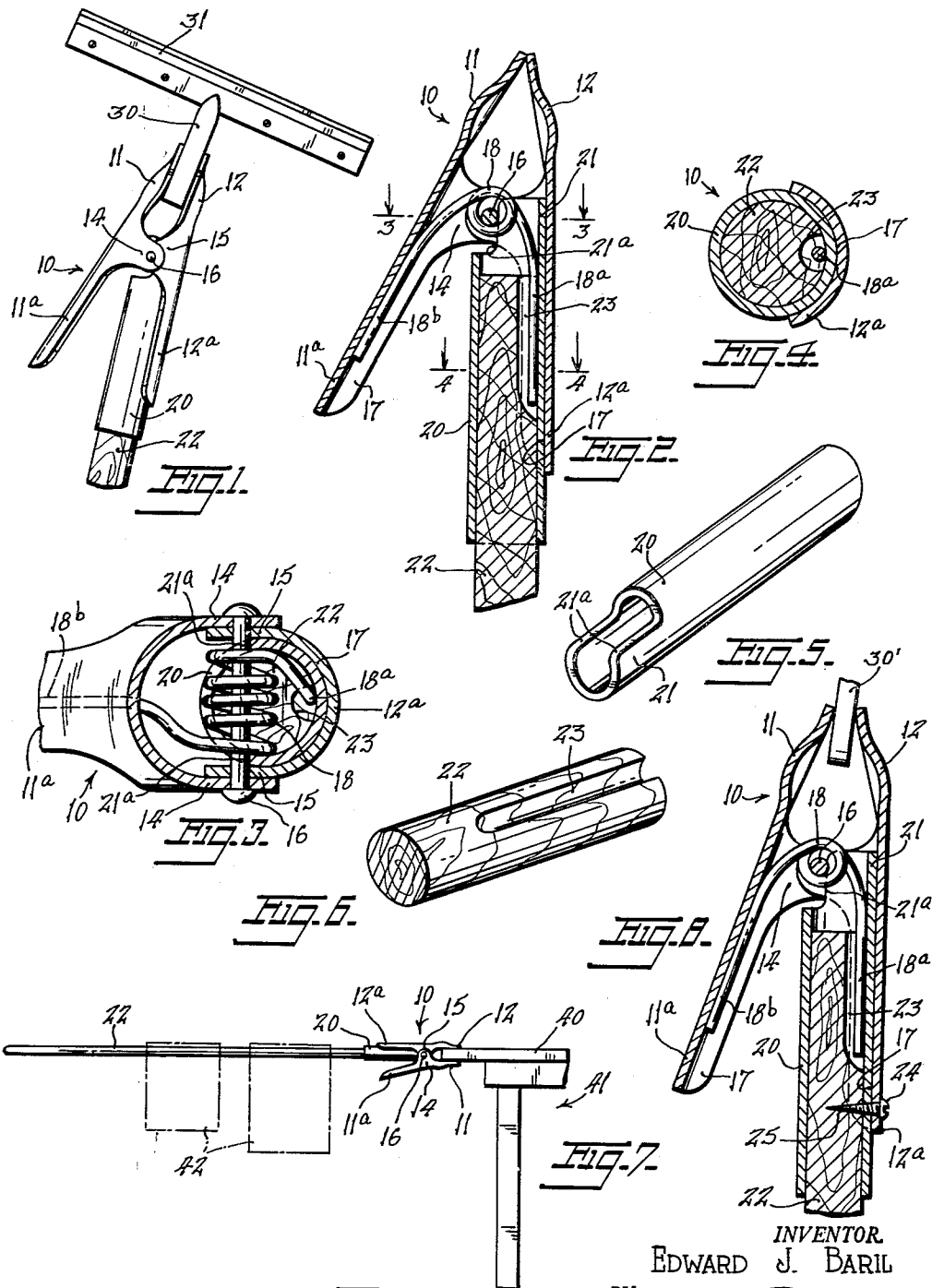
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ADAPTER ASSEMBLY FOR USE WITH SPRING CLAMPS

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ADAPTER ASSEMBLY FOR USE WITH SPRING CLAMPS

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The present invention relates to new and useful improvements in an adapter assembly for use with a spring clamp.

More specifically, the present invention proposes the construction of a novel adapter assembly including an elongated pole on one end of which a tubular sleeve is fitted to be engaged with a conventional spring clamp in a manner so that desired tools engaged with the clamp can be used to reach inaccessible places within limits of the length of the pole.

Another object of the present invention proposes constructing the tubular sleeve so that when it is engaged with one of the handles of the spring clamp, the respective end portion and coiled portion of the spring of the clamp will function to frictionally retain the sleeve in position within the concave inner side of the respective handle.

As a further object, the present invention proposes constructing the end of the pole so that it may be received within the tubular sleeve notwithstanding the presence of the end portion of the spring of the clamp within the sleeve.

The present invention further proposes a modification of the present invention in which a screw is inserted through aligned holes in the handle of the clamp and the sleeve and threaded into a complementary hole formed in the handle in a manner to provide an additional means for securing the clamp, the sleeve and the handle together as a unit.

It is a further object of the present invention to construct an adapter assembly of the type described which is simple and durable, which is effective for its intended purpose and which can be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

On the accompanying drawings forming a material part of the present disclosure:

Fig. 1 is a side elevational view of an adapter assembly constructed in accordance with the present invention and connected to a spring clamp as proposed by the present invention.

Fig. 2 is an enlarged longitudinal sectional view of the adapter assembly and clamp.

Fig. 3 is an enlarged transverse sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged transverse sectional view taken on the line 4—4 of Fig. 2.

Fig. 5 is a perspective view of the tubular sleeve of the adapter assembly.

Fig. 6 is a perspective view of the elongated pole of the adapter assembly.

Fig. 7 is an elevational view illustrating another use for the adapter assembly and attached clamp.

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Fig. 8 is a view similar to Fig. 2 illustrating a modification of the present invention and having a portion of a tool inserted between the jaws of the clamp.

The adapter assembly, according to the first form of the present invention shown in Figs. 1 to 7, is designed for use with a conventional spring clamp 10 having a pair of jaws 11 and 12 each having an integral handle 11^a and 12^a respectively. The spring clamp 10 has its jaws 11 and 12 formed of a rigid non-corrosive metal all as generally known in the art. Intermediate of their ends, the jaws 11 and 12 are formed with spaced pairs of ears 14 and 15, respectively. The ears 14 of the jaw 11 are disposed outside of the ears 15 of the jaw 12. The ears 14 and 15 are formed with aligned holes through which a pin 16 is passed for pivotally joining the jaws 11 and 12 for relative movement. The handlers 11^a and 12^a of the jaws 11 and 12 are bent laterally to have concave inner sides 17 facing one another.

Engaged loosely about the pin 16, there is a coil spring 18 which has one end portion 18^a extended along the concave inner side 17 of the handle 12^a and its other end portion 18^b extended along the concave inner side 17 of the handle 11^a. Thus, the coil spring 18 through its end portions 18^a and 18^b exerts a force tending to spread the handles 11^a and 12^a to close the jaws 11 and 12, as shown in the Fig. 2. When the handles 11^a and 12^a are squeezed together, the jaws 11 and 12 are opened against the action of the coil spring 18 so that a household total of any type can be engaged therewith.

Spring clamps 10 of the type described, are generally known in the art to which the present invention pertains so that further details of the clamp will not be given in this disclosure. Such spring clamps are manufactured by Knappe and Vogt of Grand Rapids, Michigan.

The adapter assembly, according to the present invention, includes an elongated tubular sleeve 20 formed at one end with a semi-circular extension 21, see particularly Fig. 5. The tubular sleeve 20 is extended along the concave inner side 17 of one of the handles 11^a or 12^a with its semicircular extension 21 facing the pintle pin 16. On the drawings, the tubular sleeve is shown extended along the inner side of the handle 12^a, but it is appreciated that it is equally well adapted for extension along the inner side of the handle 11^a—the handle with which it is engaged being a matter of choice. The tubular sleeve 20 has an external diameter which complements the curvature of the concave inner side 17 of the handle 12^a to be snugly received therein, as shown in Fig. 4.

When the tubular sleeve 20 is being pushed into the concave inner side of the handle 12^a from the free end thereof, the end of the end portion 18^a of the coil spring 18 is lifted away from the concave inner side of the handle 12^a so that the end portion 18^a enters the sleeve 20, as shown in Figs. 2 to 4. With the end portion 18^a of the spring 18 extended into the sleeve 20, that end portion serves to force the sleeve into facial contact with the concave inner side 17 of the handle 12^a, see Fig. 2.

Inward movement of the sleeve 20 with relation to the concave inner side of the handle 12^a is continued until diametrically opposite sides of the semi-circular extension 21 become engaged between the inner face of the handle 12^a and, more particularly, the inner faces of the ears 15 and the adjacent ends of the coil spring 18, see particularly Fig. 3. The coil spring 18 is an especially strong one and requires slight compression to permit entrance of the opposed sides of the semi-circular extension 21. The coil spring 18 then exerts its force in spreading the opposed sides of the semi-circular extension 21 into good facial contact with the inner faces of the ears 15.

The longitudinal side edges 21^a of the semi-circular

extension 21 bear frictionally against the adjacent side of the pin 16 to stabilize the positions of the inner end of the sleeve against the inner face of the handle 12^a. Contact of the longitudinal sides 21^a of the extension 21 with the pin 16 is best shown in Figs. 2 and 3.

From the foregoing description, it is apparent that when the tubular sleeve 20 is pressed completely into position within the concaved inner side 17 of the handle 12^a the sleeve is held at two places. First, the end portion 18^a of the coil spring 18 forces the outer circumference of the sleeve into good facial frictional contact with the concaved inner side 17 of the handle 12^a. Secondly, the main coiled portion of the spring 18 tends to slightly spread the opposed sides of the semi-circular extension 21 into good facial frictional contact with the inner faces of the ears 15 of the jaw 12. Thus, the tubular sleeve 20 of the adapter assembly will be held frictionally in position within the concaved inner side of the handle 12^a. Simultaneously, the position of the inner end of the sleeve 20 is stabilized within the concave inner side of the handle 12^a by the engagement of the longitudinal side edges 21^a of the extension 21 with the side of the pin 16. Engagement of those side edges 21^a with the pin 16 forces the extension 21, at the inner end of the sleeve 20, into good facial contact with the concaved inner side of the handle 12^a and further holds the sleeve against possible rotative movement relative to the handle 12^a.

The adapter assembly further includes an elongated pole 22 of wood or any other similar material. The pole 22 is inserted into the end of the sleeve 20 opposite the semi-circular extension 21 thereof and has a diameter to be frictionally received therein to maintain its position. While the frictional contact between the pole 22 and the sleeve 20 is sufficient to maintain the end of the pole in position in the sleeve, it is such that the pole can be manually pulled from the sleeve with a force which is insufficient to disengage the sleeve 20 from its engaged position with the handle 12^a.

To permit a considerable extension of the pole 22 into the sleeve 20 notwithstanding the presence of the end portion 18^a of the spring 18 within the sleeve, the side of the pole 22 at the inserted end thereof is formed with a longitudinally extended groove 23, see Figs. 2 to 4 and 6. When the end of the pole 22 is inserted into the sleeve 20, the end portion 18^a of the spring is received within the groove 23, as shown in Figs. 2 and 4.

In Fig. 1, there is illustrated one use to which the spring clamp 10 can be put when the adapter assembly of the present invention is attached thereto. In that figure, the jaws 11 and 12 of the spring clamp 10 are shown gripping the usual right angular socket extension 30 of a conventional window squeegee 31. That mounts the squeegee 31 on the end of the pole 22 so that the squeegee can be used to reach high inaccessible areas of windows when washing the same.

The squeegee 31 of Fig. 1, merely illustrates one example of a tool or household aid that can be engaged with the clamp 10. In place of the squeegee, the clamp 10 can be used to grip floor or wall mops, wisk brooms, paint brushes, dust cloths and the like.

In Fig. 7 there is illustrated another use to which the combined spring clamp 10 and adapter assembly can be put. In that figure, the jaws 11 and 12 of the spring clamp 10 are shown engaged in position on the edge of the top 40 of a table 41 which is only partially shown. The pole 22 then extends laterally from the side of the top 40 of the table to have towels 42 or the like draped thereover to dry.

The modification of the invention illustrated in Fig. 8 is characterized by the addition of a screw 24 for holding the handle 12^a, the sleeve 20 and the pole 22 to-

gether to form an integral unit of those parts. The screw 24 is passed through aligned holes formed in the end of the handle 12^a, the sleeve 20 and is threaded into a complementary hole 25 formed in the pole 22. Thus, the pole 22 cannot be freely pulled out of the sleeve 20 and the sleeve 20 cannot be readily disengaged from the handle 12^a; so that before either of the parts can be removed the screw 24 must first be removed.

From a consideration of Fig. 8, it will be clear that the screw 24 forms a third securing place for the sleeve 20 in addition to the two discussed supra in connection with the description of the first form of the present invention.

On the drawing, Fig. 8 discloses the clamp 10 with the end portion of a handle 30' of a tool or the like gripped between the jaws 11 and 12.

In all other respects, the modification of the invention shown in Fig. 8 is similar to the first form and like reference numerals are used to identify like parts.

From the foregoing description, it is apparent that the association of the adapter assembly with the spring clamp 10 is a readily detachable one so that the adapter assembly can be completely disconnected therefrom when desired permitting the spring clamp 10 to be used, without encumbrance from the adapter assembly, for the purposes for which it was designed.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as set forth in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. An adapter assembly for use with a spring clamp having a pair of jaws, a pin pivotally connecting said jaws, the jaws being extended beyond the pin to form handles having concave inner sides and by which the jaws can be spread apart, and a spring coiled on said pin and biasing said jaws toward closed position, said spring having two end portions of which one is engaged with the concave side of a said handle, said adapter comprising an elongated tubular sleeve, the second end portion of the spring being engaged within the sleeve frictionally securing the same against the concave side of the other handle, said sleeve including a semi-cylindrical extension, the longitudinal edges of which frictionally engage said pin on either side of said spring to stabilize the engagement of the sleeve against the inner side of the other handle, and an elongated pole frictionally fitted into said tubular sleeve.

2. The combination of claim 1 wherein the elongated pole includes a longitudinally extended groove receiving the end portion of the spring.

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