

Dec. 22, 1942.

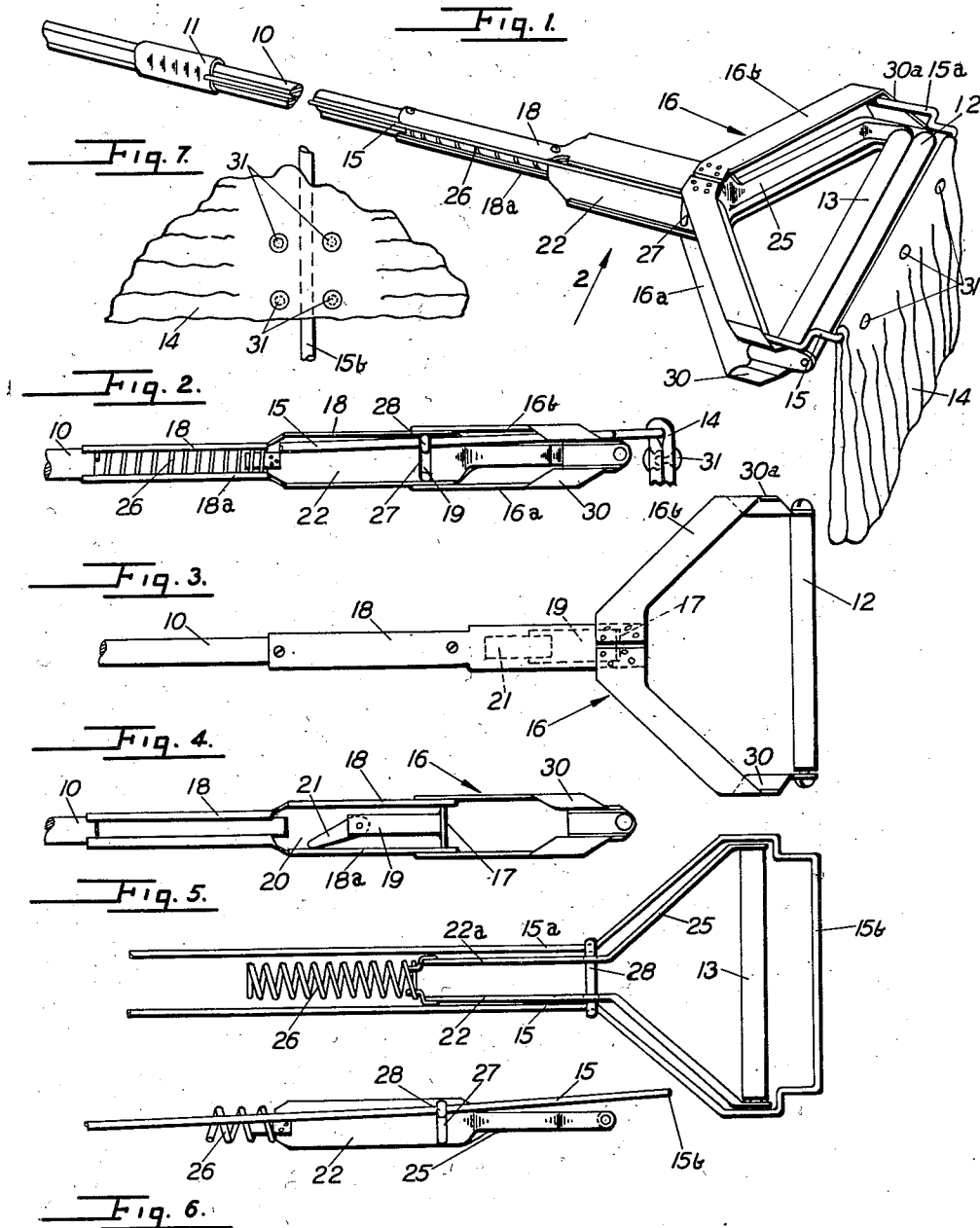
V. K. COOPER

2,306,249

SELF-WRINGING MOP

Filed Nov. 23, 1940

2 Sheets-Sheet 1



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Fig. 8.

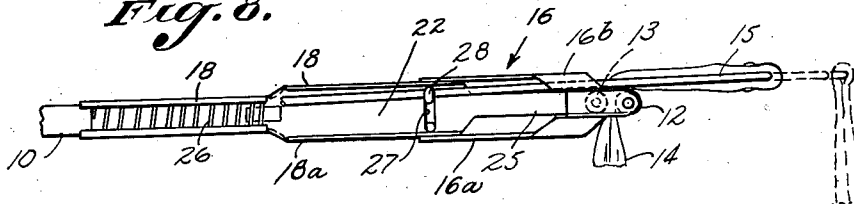


Fig. 9.

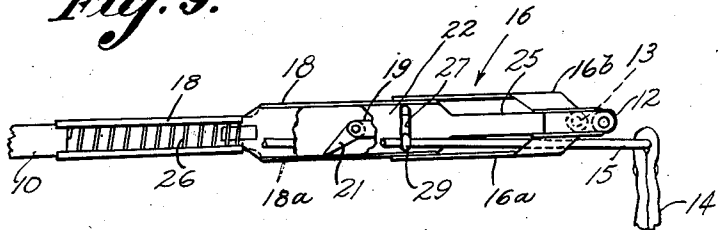


Fig. 10.

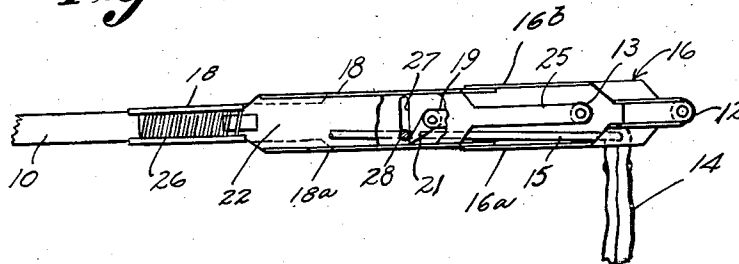


Fig. 11.

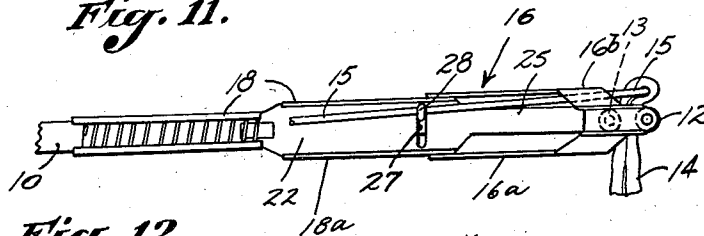
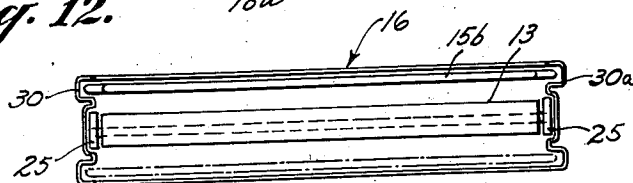


Fig. 12.



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UNITED STATES PATENT OFFICE

2,306,249

SELF-WRINGING MOP

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Application November 23, 1940, Serial No. 366,836

6 Claims. (Cl. 15—119)

My invention relates generally to mops, and more particularly to an improved type of self-wringing mop.

In my co-pending application, Serial No. 264,765, filed March 29, 1939, I have disclosed a self-wringing mop which possesses many advantages over previously known types of mops. However, I have now developed certain improvements which make it possible to produce an even better mop of that type having advantages not possessed by my previous form.

It is the major object of my invention to provide a sturdy self-wringing mop which may be easily operated by the user without the necessity of wetting his hands.

It is another object of my invention to provide such a mop which is compact and of a size permitting its use wherever the customary mop, which does not have the self-wringing feature, may be used.

It is a further object of my invention to provide a mop cloth for such a mop which may be easily and quickly changed, but which will be firmly attached to its holding member.

These and other objects of my invention will become apparent from the following description of a preferred form thereof, and from the drawings illustrating that form, in which

Fig. 1 is a perspective utility view of my improved mop;

Fig. 2 is a side elevational view taken at 2 in Fig. 1;

Fig. 3 is a top plan view showing the outer clevis, handle, pawl, and outer roller, with the other parts removed;

Fig. 4 is a side elevational view of the parts shown in Fig. 3;

Fig. 5 is a top plan view of the inner clevis, wire mop holder, spring, yoke, and inner roller;

Fig. 6 is a side elevational view of these parts;

Fig. 7 is a partial view of the mop cloth and wire holder showing my improved method of attaching the cloth to the holder;

Fig. 8 is a view in side elevation showing in full lines the mop in one of its stages in wringing the mop cloth, and in broken lines the terminal position of the mop in its wringing operations;

Figs. 9 and 10 are views in side elevation of the mop, partly broken away to illustrate the means for directing the mop cloth between the wringing rolls, and showing the mop at intermediate stages in the mop-wringing operation;

Fig. 11 is a view similar to Fig. 8 showing the mop cloth positioned between the rolls preparatory to the wringing operations;

Fig. 12 is a view in cross-section upon an enlarged scale taken on line 12—12 of Fig. 2.

Referring now to the drawings, the numeral 10 indicates a handle usually made of wood, upon which slides a sleeve 11 which is moved to effect the wringing of the mop. At the forward end of the handle 10 (the right end in all of the figures of the drawings), is a pair of rollers 12 and 13, between which passes a mop cloth 14 carried by a pair of rods 15 and 15a attached to the sleeve 11, the motion of the sleeve along the handle causing the cloth to be pulled between the rollers thus removing the surplus water from it. It is to be understood that the term mop cloth includes string type mops, and all materials natural or artificial, used in place of cloth.

The roller 12 is carried by a split clevis 16 (see Figs. 1, 2 and 3), which is formed of two parallel V-shaped flat sections 16a and 16b, held in spaced relationship at their rear ends by a spacing plate 17, and at their forward or spread ends by side sections 30 and 30a. In practice, the clevis sections 16a and 16b and the side sections 30 and 30a are all formed of one piece of flat metal by appropriate bending. The clevis sections 16a and 16b are provided with rearwardly extending parallel plates or strips which will be termed base plates 18 and 18a respectively, since they form the top and bottom members of the pawl enclosure to be described in detail later. The base plates 18 and 18a are offset toward each other in their rear portions so as to fit snugly over and partially around the forward end of the mop handle 10 to which they are securely fastened by any convenient means.

Extending rearwardly from the spacing plate 17 and between the base plates 18 and 18a is a pawl supporting member 19 which is rigidly supported at its forward end by the spacing plate 17. The rear end of the pawl support 19 is bifurcated to permit a pawl 21 to be pivotally mounted therein. As will be seen best in Fig. 4, the height of the pawl support 19 is somewhat less than the space between the base plates 18 and 18a. The pawl support is spaced equally from the plates 18 and 18a to provide upper and lower longitudinal grooves, or spaces, which, with the space between the pawl 21 and the forward end of the handle 10, form a horizontal U-shaped opening or space 20. The pawl 21 is freely rotatable about its pivot and may flop from one base plate to the other by gravity whenever the mop is turned over.

Referring now to Figs. 5 and 6, it will be seen that the roller 13 is supported by a second V-

shaped clevis 25 which is smaller both in thickness and width than clevis 16 and is mounted to slide between the clevis sections 16a and 16b. The two arms of the clevis 25 do not meet at the base of the V, as do the arms of clevis 16, but are bent to form parallel sections which extend rearwardly from the base of the V and at right angles to the base plates 18 and 18a. These rearwardly extending portions of the clevis 25 I term the side plates 22 and 22a, since they are spaced to cooperate with the base plates 18 and 18a to form a box-like enclosure for the pawl support 19 and its pawl 21.

To guide the clevis 25 in its longitudinal movement I provide parallel grooves along the edges of the base plates 18 and 18a to accommodate the edges of the side plates 22 and 22a, and also provide grooves 31 in the side sections 30 and 30a of clevis 16 in which the parallel forward ends of the clevis 25 ride and are held when in their most forward or extended position.

The forward end of the mop stick 10, which is partially enclosed by the base plates 18 and 18a, is reduced slightly in diameter forming a shoulder adjacent the rear ends of the plates 18 and 18a. A coil spring 26 surrounds this reduced portion of the mop stick with the upper or rear end of the spring bearing against said shoulder and its lower or forward end bearing against the rear ends of the side plates 22 and 22a. The spring 26 thus tends to urge the side plates and their clevis 25 forwardly at all times, which of course means that the roller 13 is always urged toward the roller 12. The tension on spring 26 is such that the rollers 12 and 13 are normally held together with sufficient force to adequately wring out a mop cloth when it is pulled therebetween, but the rollers can be separated without too much effort by pulling on the sleeve 11.

Near their forward ends, the rods 15 and 15a, supporting the mop cloth 14, are bent outwardly and then forwardly again so that they follow the general contour of the clevises 16 and 25. As seen best in Fig. 5, the forward ends of the rods 15 and 15a are joined by a lateral rod section 15b, thus forming a frame on which the mop cloth 14 may be attached, and through which the clevis member 25 may move without hitting the rods. The object of this form of construction is to permit the second roller 13 to be moved away from the first roller 12, and while the rollers are in this separated position to allow the forward ends of the rods 15 and 15a, together with the mop cloth 14, to be inserted from below, between the rollers which are thereafter closed.

To accomplish these operations I provide a vertical slot 27 in each of the side plates 22 and 22a near their forward ends, through which I pass a yoke 28, which also passes through the U-shaped opening 20 between said side plates. The yoke 28 is slidably connected at its ends to the rods 15 and 15a, and since the rearward portions of the rods are parallel, they may be moved forwardly without moving the yoke 28. However, when the rods are moved rearwardly, their divergent sections engage the yoke 28 and move it rearwardly. Since the slots 27 in the side plates 22 and 22a are fairly narrow, rearward movement of the yoke 28 carries the side plates rearwardly, thus separating the rollers 12 and 13. Assuming the mop handle 10 to be in a horizontal position, with the rod sections 15b and mop cloth 14 below the rollers 12 and 13, and hence with the yoke 28 in the lower arm of the U-shaped opening 20, when the yoke is moved rearwardly

toward the base of the opening 20, the pawl 21 will ride over the yoke and then drop down against the lower base plate 18, or 18a. If the spring 26 is then allowed to return the side plates 22 and 22a to their forward position, they will carry the yoke 28 with them, but the yoke instead of returning along the lower leg of the U-shaped opening 20 will be raised by the pawl and enter the upper leg of the opening 20, thus raising the rods 15 and 15a so that the mop cloth 14 will be inserted between the rollers 12 and 13 before they become engaged.

To provide rigidity for the structure, and to prevent any misalignment of the various members, I provide the side sections 30 and 30a of the clevis member 16 with upper and lower grooves 32 to receive the rods 15 and 15a and also intermediate grooves 31 to receive the forward ends of the clevis 25. These grooves are preferably formed by providing the sections 30 and 30a with offsets so that the grooves have their axes parallel to the mop handle 10. In this way when the sleeve 11 is pulled rearwardly along the handle 10, the rods 15 and 15a and the clevis 25 are likewise moved rearwardly and withdrawn from the grooves in the portions 30 and 30a so that the sides of the clevis 25 will be completely unsupported, and the rods may be transferred from one position to the other. As shown in Fig. 5, offsets are preferably formed at the forward end of the rods 15 and 15a, so that they will clear the clevis 16, since in this way the transfer of the rods from the lower to the upper position may be effected with less rearward movement of the rods.

To attach the mop cloth 14 to the end of the rods 15 and 15a, I prefer to use the arrangement illustrated in Figs. 1, 2 and 7, where it will be seen that the mop cloth is provided with pairs of snap fasteners 31 near its center, the individual members of each pair being aligned and separated a slight distance parallel to the axis of the mop cloth 14. In this way, to install a mop cloth it is only necessary to hang the cloth over the end of the rod section 15b so that the members of each pair of fasteners may be snapped together as illustrated in Figs. 1 and 2.

The operation of my improved mop may be briefly described as follows: In utilizing the mop for cleaning floors, the cloth 14 will be pressed between the rollers 12 and 13 close to its end where it is looped about the rod section 15b, as shown in Fig. 11. In this operative position of the mop, the outer end of the clevis 25 will be seated in the grooves 31 of the rigid clevis 16 while the rods 15—15a will be seated in the upper of the grooves 32 whereby the mop parts engaging the cloth are held in the reliable supporting position.

When the mop is to be wrung, the sleeve 11 is pushed along the handle 10, thus slidably actuating the rods 15—15a through the terminal eyes of the yoke 28 in the manner illustrated in full lines in Fig. 8, where the cloth is shown in an intermediate position in its passage between the rollers 12 and 13. The tension of the spring 26 exerted upon the side plates 22 supplies the pressure with which the roller 13 engages the cloth to wring the water therefrom. By continuing the outward movement of the rods 15—15a the cloth is drawn entirely through the rollers where it will hang vertically, as seen in broken lines in Fig. 8. The sleeve is then retracted to return said rods and connected parts to the position shown in Figs. 1 and 2, where the outwardly extending

angular portions of said rod engage the eyes of the yoke 28. Further inward movement of the rods will carry with them the yoke 28 extending through slots 27 in the side plates 22 and thus the clevis 25 will be moved rearwardly to separate the rollers against the resistance of the spring 26.

Prior to the retraction of the clevis 25, the mop is bodily reversed to assume the position shown in Fig. 9 to cause the free end of the pawl 21 to drop by its gravity into line with the lower portion of the U-shaped space in which the yoke 23 is now located. The sleeve may now be drawn rearwardly carrying the rods, yoke and movable clevis in opposition to said spring and moving the yoke past the swingable end of the pawl and into the position, substantially as shown in Fig. 10. Upon the release of the sleeve, the spring 26 asserts itself to urge the clevis forwardly to close the roller 13 upon the roller 12. In such return movement of the parts the yoke 23 engages the inclined pawl 21 and is guided into the upper portion of said U-shaped space. Due to the connection of the rods 15-15a with the yoke, the rods are similarly swung upwardly at their forward ends to cause the extremity 15b of the rods to move outwardly and between the rollers simultaneously with the outward return movements of the clevis, carrying the end of the mop cloth beyond the line of engagement between the rollers and to be engaged thereby in the closing movements of the parts, as indicated in Fig. 11, where the mop is ready for mopping operations or for being passed through the rollers to wring the water therefrom.

It will be noted that at the end of its outward travel with the clevis 25, the member 15-15a is alternately received in the oppositely disposed grooves 32 where it is supported during the use of the mop and through which the rods pass when they are extended to pull the mop cloth between the rollers.

By forming the clevis 16 of two sections 15a and 15b, which are separated so that the clevis 25 and the rods 15 and 15a may pass between them, the rollers 12 and 13 may be placed closer to the lower end of the handle 10, thus producing a mop which is but little bulkier than conventional mops, and as a result my mop may be used wherever the conventional mops may be used. Another advantage of this form of construction is that it permits of a stronger mop head which provides a minimum of opportunity for twisting, etc., to cause misalignment which might result in inoperativeness.

While I have shown and described a preferred form of my invention, it is to be understood that modifications may be made in the form or arrangement of parts, and I do not wish to be limited to the particular form shown except insofar as I am restricted by the following claims. I claim as my invention:

1. A self-wringing mop which includes: a handle; a split clevis; a roller supported by said clevis; a second clevis parallel to said split clevis and axially slidable therethrough; a roller supported by said second clevis; spring means operating on said second clevis and adapted to urge said second roller against said first roller; rod means adapted to carry a mop cloth on one end thereof, and slidably mounted with respect to said rollers whereby said mop cloth may be pulled therebetween; means for separating said rollers by the movement of said rod means including a yoke movable with said second clevis and slidably engaged with said rod means, and means for

inserting said mop cloth between said rollers while said rollers are separated comprising a rearwardly extending support providing guide-spaces on opposite sides thereof, and a rearwardly extending pawl secured to said support and arranged to guide said yoke into the respective said spaces.

2. A self-wringing mop which includes: a handle; a split clevis; a roller supported by said clevis; a second clevis parallel to said split clevis and axially slidable therethrough; a roller supported by said second clevis; spring means operating on said second clevis and adapted to urge said second roller against said first roller; rod means adapted to carry a mop cloth on one end thereof and slidably mounted with respect to said rollers whereby said mop cloth may be pulled therebetween; a yoke slidably attached to said rod means and adapted to be engaged thereby, said yoke being adapted to move said second clevis rearwardly against the urging of said spring to separate said rollers; a pawl support in said enclosure forming a U-shaped opening through which said yoke passes, said support being attached to said first clevis; and a pivoted pawl attached to said member and adapted to transfer said yoke from one arm of said U-shaped opening to the other arm of said opening whereby said rod means is actuated to pass the end of the mop cloth between the rollers to be engaged thereby in position to be pulled therebetween.

3. A self-wringing mop which includes: a handle; a first roller; a split clevis supporting said first roller; base plates connecting said clevis to the forward end of said handle; a second roller; a second clevis parallel to said first clevis and axially slidable therethrough, and supporting said second roller; side plates attached to said second clevis and slidably mounted between said base plates to form therewith a box-like enclosure; spring means adapted to urge said side plates and said second clevis forwardly whereby said second roller is resiliently urged against said first roller; rod means adapted to carry a mop cloth on one end thereof, said rod means being slidably mounted with respect to said rollers whereby said mop cloth may be pulled therebetween; means for separating said rollers by the movement of said rod means; and means for inserting said mop cloth between said rollers while said rollers are separated.

4. A self-wringing mop which includes: a handle; a first roller; a split clevis supporting said first roller; base plates connecting said clevis to the forward end of said handle; a second roller; a second clevis parallel to said first clevis and axially slidable therethrough, and supporting said second roller; side plates attached to said second clevis and slidably mounted between said base plates to form therewith a box-like enclosure; spring means adapted to urge said side plates and said second clevis forwardly whereby said second roller is resiliently urged against said first roller; rod means adapted to carry a mop cloth on one end thereof, said rod means being slidably mounted with respect to said rollers whereby said mop cloth may be pulled therebetween; a yoke slidably attached to said rod means and adapted to be engaged thereby, said yoke being adapted to move said side plates rearwardly against the urging of said spring to separate said rollers; and means for inserting said mop cloth between said rollers while said rollers are separated comprising a rearwardly extending support in said enclosure spaced from said base plates

to provide parallel spaces to receive said yoke, and a pawl pivotally mounted on said support and directed rearwardly to guide said yoke to enter said spaces.

5. A self-wringing mop which includes: a handle; a first roller; a clevis supporting said first roller; base plates connecting said clevis to the forward end of said handle; a second roller; a second clevis parallel to said first clevis and axially slidable with respect thereto and supporting said second roller; side plates attached to said second clevis and slidably mounted between said base plates to form therewith a box-like enclosure; spring means adapted to urge said side plates and said second clevis forwardly whereby said second roller is resiliently urged against said first roller; rod means adapted to carry a mop cloth on one end thereof, said rod means being slidably mounted with respect to said rollers whereby said mop cloth may be pulled therebetween; means for separating said rollers by the movement of said rod means; a yoke slidably attached to said rod means and adapted to be engaged thereby; a pawl support within said box-like enclosure which forms a U-shaped opening therein through which said yoke passes; and a pivoted pawl attached to said pawl support and

adapted to transfer said yoke from one arm of said U-shaped opening to the other arm thereof.

6. A self-wringing mop which includes: a handle; a first roller; a clevis supporting said roller; base plates connecting said clevis to the forward end of said handle; a second roller; a second clevis parallel to said first clevis and axially slidable with respect thereto, and supporting said second roller; side plates attached to said second clevis and slidably mounted with respect to said base plates; spring means adapted to urge said side plates and said second clevis forwardly whereby said second roller is resiliently urged against said first roller; rod means adapted to carry a mop cloth on one end thereof, and slidably mounted with respect to said rollers whereby said mop cloth may be pulled therebetween; means for separating said rollers by the movement of said rod means; a yoke slidably attached to said rod means and adapted to be engaged thereby; a pawl support between said base plates which forms a U-shaped opening therein through which said yoke passes; and a pivoted pawl attached to said pawl support and adapted to transfer said yoke from one arm of said U-shaped opening to the other arm thereof.

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