

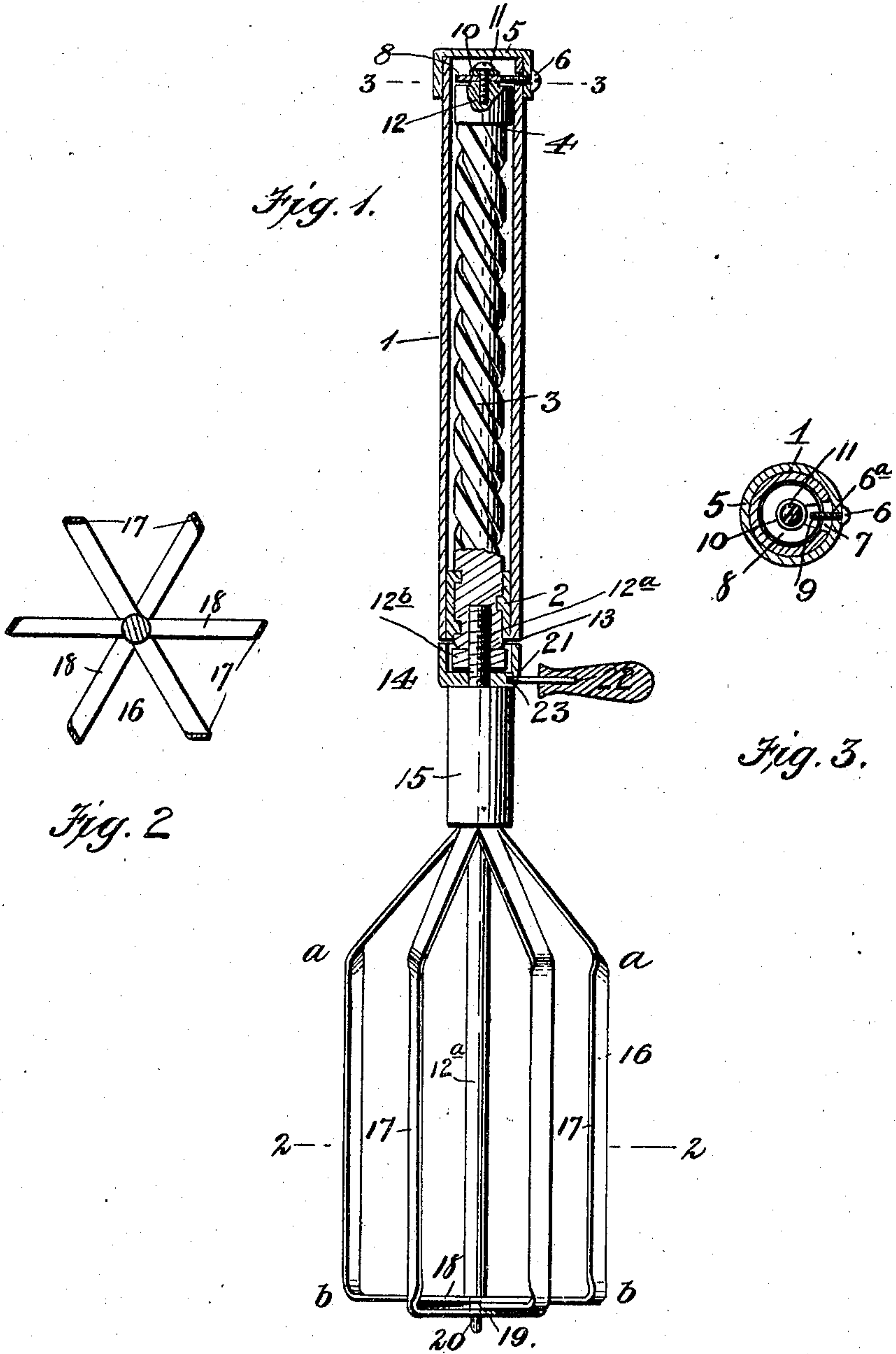
No. 654,526.

Patented July 24, 1900.

E. T. DOWNING.  
LIQUID MIXER.

(Application filed Dec. 28, 1899.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

ELMER T. DOWNING, OF NAPA, CALIFORNIA.

## LIQUID-MIXER.

SPECIFICATION forming part of Letters Patent No. 654,526, dated July 24, 1900.

Application filed December 28, 1899. Serial No. 741,859. (No model.)

*To all whom it may concern:*

Be it known that I, ELMER T. DOWNING, a citizen of the United States, residing at Napa, in the county of Napa and State of California, have invented new and useful Improvements in Liquid-Mixers, of which the following is a specification.

My invention relates to liquid-mixers; and the objects of the same are to provide a simple and effective implement for use by barkeepers or others in mixing drinks, and also to provide a tool of this character which can be operated by one hand for mixing a small quantity of liquid or which may be actuated by both hands for agitating a larger quantity of liquids.

Another object is to provide simple and positive means for locking the spiral shaft to the reciprocating sleeve to prevent the dasher from revolving whenever it is found necessary either when withdrawing the implement from the liquid when mixed or for cleaning the tool.

I attain these objects by means of the construction shown in the accompanying drawings, which form a part of the specification, and in which—

Figure 1 is a side view and partial section of a liquid-mixer made in accordance with my invention. Fig. 2 is a transverse section of the dasher-blades, taken on the line 22, Fig. 1. Fig. 3 is a transverse section on line 33, Fig. 1.

Like numerals designate like parts wherever they occur in the different views of the drawings.

The numeral 1 designates a sleeve which serves as a handle for the implement and is provided at its lower end with a nut 2, having threads which conform to the threads on the spiral shaft 3. This nut is rigidly fixed to the sleeve and the shaft 3 revolves smoothly therein. A suitable stop 4 prevents the sleeve and shaft from detachment at the limit of outward movement of said parts. A cap 5 fits over the top of the sleeve 1 and is held thereon by a set-screw 6, passing through the perforation 6<sup>a</sup> in the side wall of said cap and through a slot 7 near the upper edge of the sleeve. The upper end of the spiral shaft 3 has secured to it a washer 8, having a recess

in its periphery, said recess being of the same length as the slot 7 in the sleeve 1. A smaller washer 10, of ordinary construction, may be placed under or on top of the recessed washer 8 to compensate for wear of the parts. A set-screw 11 passes through both washers and into a threaded aperture 12 in the end of the spiral shaft. The cap 5 is provided with a perforation 6<sup>a</sup>, and the sleeve 1 has a slot which registers with said perforation. The recess 9 in the washer 8 also registers with the perforation 6<sup>a</sup> and the slot in the sleeve. A set-screw 6 extends through the perforation 6<sup>a</sup> in the cap, through the slot in the sleeve, and into the recess 9 in the washer 8. Referring to Fig. 3, when the cap is turned so that the set-screw 6 occupies a position at the lower limit of the recess 9 in the washer 8 the sleeve and shaft are locked together and will not rotate. When the cap is turned so that the set-screw 6 occupies a position at the upper end of recess 9, the upper end of the shaft and the washer 8 clear the set-screw in the first part of the revolution and disengage the shaft and sleeve to permit them to revolve relatively. Owing to the quick pitch of the screw-threads of the spiral shaft 3 the recess 9 in the washer 8 is of sufficient length to carry the set-screw 6 below the washer and clear it when said set-screw is adjusted at the upper portion of the recess, Fig. 3, and the shaft is revolved. The spiral shaft 3 has a threaded spindle 12<sup>a</sup>, screwed into its lower end, and a nut 12<sup>b</sup> fits the spindle and is seated in a recess in a collar 14. This collar 14 is loosely mounted to revolve on the spindle 12<sup>a</sup> immediately under a shoulder 13, and said collar is held in place against longitudinal displacement by the tube 15, within which tube the upper end of the dasher wires or blades 16 are secured. The tube 15 is rigidly attached to the spindle 12<sup>a</sup>.

The dasher wires or blades 16 may be conveniently formed of flattened wires, and as many of them as desired may be used. These blades extend out of the tube 15, are bent to form beater-arms 17, lying in parallel vertical planes around the lower smooth portion of the spindle 12<sup>a</sup>, and are extended inward at their lower portions at right angles to the arms 17 to form cross-bars 18, each of which is apertured at 19 to engage the reduced end



20 of the spindle. The terminal end of the spindle projects beyond the cross-bars 18 to form a bearing for the implement within the liquid-receptacle, and this end may be rounded  
5 off to produce as little friction as possible at that point.

The collar 14 has a threaded aperture or socket 21 therein to accommodate a handle 22, having a threaded shank 23. This handle  
10 may be used when it is desired to mix a large quantity of liquids, and when so used both hands of the operator are required to actuate the implement. When only a small quantity of liquid is to be mixed, this handle is removed  
15 and the tool is operated by one hand, which is moved up and down with the sleeve 1. When the handle 22 is attached, the dasher may be revolved by moving the collar up and down with one hand or by reciprocating the  
20 sleeve on the spiral shaft.

The beater-arms 17 are bent at their upper and lower ends at *a* and *b* to set the arms out of the plane of the spindle, so that they will operate to throw the liquid outward by cen-  
25 trifugal action when the sleeve is depressed and draw the liquid inward by centripetal

action when the sleeve is raised. In this way the liquid is thoroughly mixed.

Having thus fully described my invention, what I claim is—

1. A liquid-mixer consisting of a spiral shaft, a sleeve fitted thereto, a cap fitting the top of the sleeve, a set-screw passing through the cap and through a slot in the sleeve, a recessed washer secured to the shaft,  
35 the recess in the washer and the slot in the sleeve arranged coincidently, and the set-screw adapted to lock the shaft and sleeve by turning the cap, substantially as described.

2. A liquid-mixer consisting of a spiral shaft, a sleeve surrounding it, a locking-cap at the top of the sleeve, a collar below the sleeve, and a detachable handle fitted to the collar, substantially as described.

In testimony whereof I have hereunto set  
45 my hand in presence of two subscribing witnesses.

ELMER T. DOWNING.

Witnesses:

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