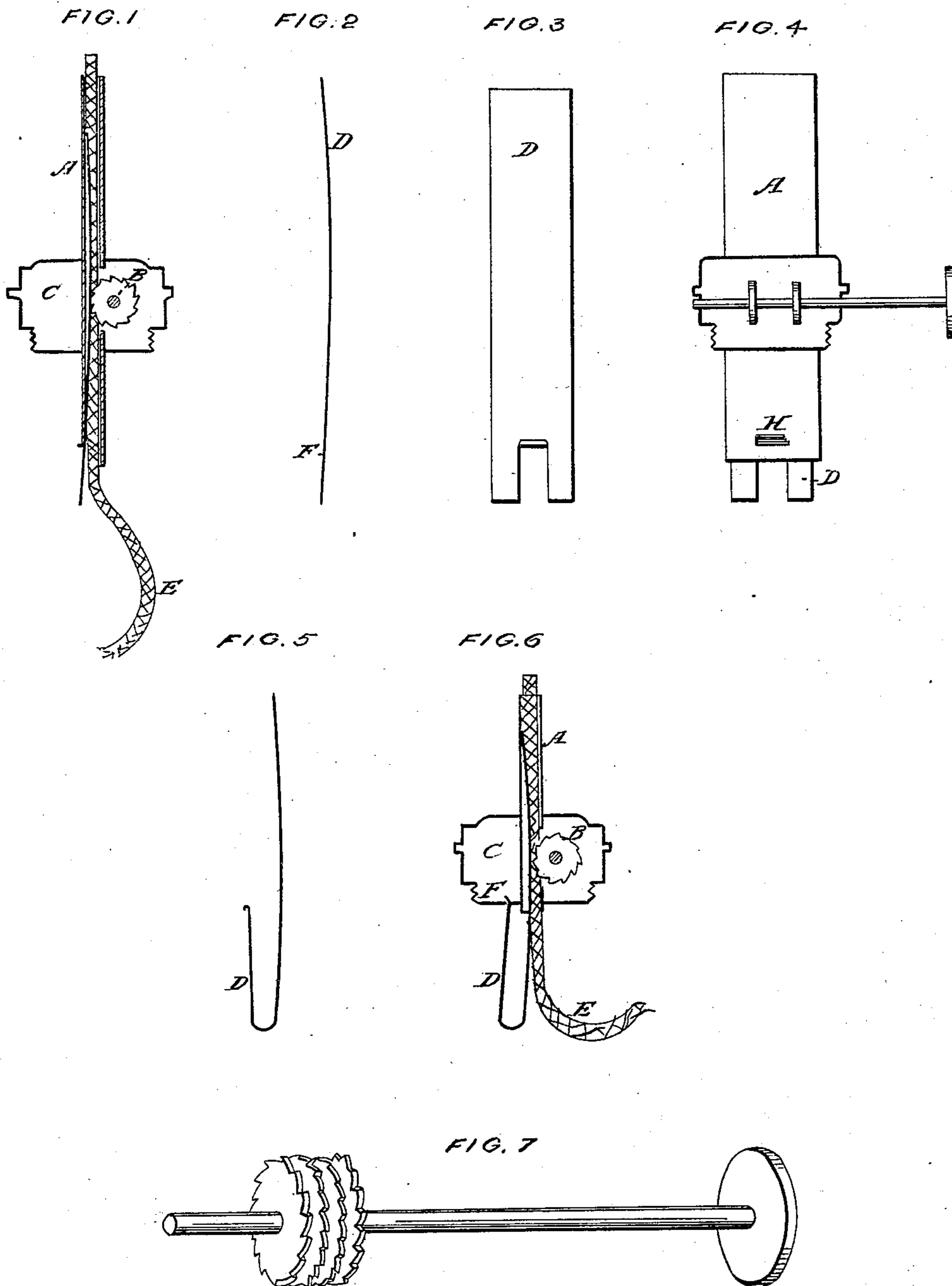


J. D. WILLOUGHBY.

Wick Raiser.

No. 102,457.

Patented April 26, 1870.



WITNESSES:

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J. D. WILLOUGHBY, OF SHIPPENSBURG, PENNSYLVANIA.

Letters Patent No. 102,457, dated April 26, 1870.

IMPROVEMENT IN LAMP-BURNERS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, J. D. WILLOUGHBY, of Shippensburg, in the county of Cumberland and State of Pennsylvania, have invented certain new and useful Improvements in Lamps; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this specification and to the letters of reference marked thereon.

To enable others skilled in the art to construct and use my invention I will proceed to describe it.

My invention relates to improvements for moving the wick in the tube of a lamp, as necessity may require, to give more or less light, and for other purposes; and

It consists, first, of a detachable spring inserted in the wick-tube to maintain the wick constantly in contact with the ratchet-wheel; and, second, in the manner of constructing the wick-moving ratchet, *i. e.*, with the hooked teeth and with different ratchets on the same shaft, with teeth reversed so as to move the wick either up or down with equal facility.

As wicks are now elevated and depressed great inconvenience is experienced when the wick is above or below a certain thickness, because the ratchet-teeth will only penetrate the wick when it is in thickness more than sufficient to fill the space between the ratchet and the opposite side of the tube.

When the wick is too thin it is not firmly caught by the teeth of the device for moving it, and when it is too thick there is not room for it between the teeth and side of the tube; in either case the wick is not properly acted upon or moved.

And, if all wicks were made precisely the same in thickness that would not remedy the evil, because the space between the teeth of the moving device and the side of the wick-tube against which the wick is now pressed, in order to be moved, is not the same in all tubes.

Another defect is seen in the form of the teeth now used for moving the wick.

The teeth are made in the form of a triangle, with their base toward the center of the wheel or disk, of which they form a part, and a dull point at the furthest extremity from the center.

Teeth of this form present an inclined plane to the wick rather than a hook or shoulder resembling a saw-tooth and are very liable to slip on the wick without moving it.

To remedy these defects I make the teeth of a form better calculated to catch the wick, and also, by a yielding pressure, hold the wick against the teeth of the device for moving it.

Figure 1 is a vertical section through the tube and burner.

Figure 2 is an edge view of spring D detached.

Figure 3 is a side view of spring D detached.

Figure 4 is an elevation of tube with spring in position.

Figure 5 is an edge view of modified spring D detached.

Figure 6 is a vertical section through burner and tube with spring D in position.

Figure 7 is a perspective view of ratchets and shaft or wick-moving device.

A, in fig. 1, is the wick-tube.

B, in the same figure, is the shaft and ratchet-wheels, called the device for moving the wick.

The device here shown is the same as that in public use.

C, in the same figure, is a box or frame for holding the device B in its proper position. It has a thread or screw on its lower end, by means of which it is attached to the oil vessel.

D is a spring inserted into the tube A. The form of this spring is such that its two ends press against the side of the tube furthest from the device B, while the middle part of it presses in the opposite direction against the wick B, and holds it against B, thus insuring proper contact between the wick and the device for moving it without regard to the thickness or thinness of the wick.

The tube A extends a greater distance below B than is seen in lamps now in use. This extension is made to give a bearing to the lower end of the spring so far below B as to enable the spring to act well and hold the wick with sufficient firmness against the device for moving it.

The tube must be made large enough to receive the spring and the largest wick suitable to be put into it.

Fig. 2 shows the form and edge of the spring D as seen in fig. 1, and also shows a catch, F, at its lower end, which catch fits into a recess or hole H, as seen in tube A, in fig. 4, where a different view of the tube and lower end of the spring D is shown.

A portion of the spring or piece projecting from it extends below the tube, as seen in fig. 3, so that the hand of the operator can take hold of it to put the spring into the tube and catch or remove it therefrom when desired.

The spring may be made without the projecting piece, which is only a matter of convenience.

The device B, in fig. 6, for moving the wick, and more fully shown in fig. 7, contains features that I have not seen elsewhere.

Figure 6 also contains a modification of spring D. An edge view of it is seen in fig. 5.

The tube A in this figure does not extend down so far as in the first figure, but to give the spring

sufficient length below the device B to insure tension, its lower end is extended down some distance, and is then bent outward and upward until the end touches the lower side of the box c, to which it is attached by a catch on its lower end, which enters into a hole or recess in the bottom of the box, and is held there by its own tension. The same tension causing the middle part of the spring to press against the device B or against the wick E, which is between them, and thus hold the wick against the teeth of the device for moving it, the same as is done in fig. 1.

If preferred, the bend in the spring may be such that the outer end may come upon the inside of the tube far enough to allow the catch on its lower end to fit into a hole or recess in the tube as it does in fig. 1.

If made in this form it will be an advantage to make the tube with a wide mouth to receive the spring.

The modification of the spring D, as seen in fig. 6, does not have its lower end pressing against the tube A, as shown in fig. 1, but instead thereof is made to press against the box c, which produces the same result.

Various modifications of the spring D might be made and also various modes of attaching it to the wick-tube or lamp-burner.

The catch F, which is now on the lower end of the spring, might be made on its upper end to fit into a recess or hole prepared for it in the upper end of the tube; or a catch might be made on both ends of the spring to fit on the under and upper edge of the tube, and thus avoid making any hole or recess in the tube for the catch; though, if desired to make the upper edge of the tube perfectly uniform in height, it will be necessary to cut out of the top of the tube where the catch rests the breadth and thickness of the catch, so that when the spring is put into its place the upper side of the catch will be just as high as the surrounding parts of the tube.

A further modification in the mode of attaching the spring to the burner might be made by making the hole or recess in the spring instead of in the tube, and then the catch should be on the tube instead of being, as now, on the spring. But all these modifications are regarded as the same thing to accomplish the same end.

It will be observed that the spring D is supported at or near each of its ends, and that its tensile force is exerted from its central portion against the wick opposite to the ratchet.

An equal force can be secured from a spring arranged in this way with less material than if the spring should be secured at one end and exert its power at the other end; that is to say, the spring D may be made of thinner metal and more cheaply than if it should be secured at one end and free at the other.

A spring permanently attached to the burner would necessarily be inferior to a removable spring, because its elasticity would become impaired by the heat of the burner, and it could not be replaced by a new one at an expense much, if any, less than the cost of a new burner.

The accumulation of viscid oil, cinder, and lint behind such a spring would also soon render it inoperative.

With a spring readily detachable replacement is easy when elasticity has been destroyed by heat, and thorough cleansing of the burner is possible.

When a new wick is to be inserted the operation is facilitated by removing the spring and thus enlarging the aperture of the tube.

When so removed, the spring itself may be employed as a tool to facilitate the introduction of the new wick.

The spring D may be employed in any burner already in use, and when employed the thickness of the wick will be entirely immaterial, as the ratchet will operate a thin strip of muslin as readily as the thickest wick which can possibly be introduced.

The device B for moving the wick, as fully shown in fig. 7, has two sets of teeth, one set inclined forward, the other backward, so that when the wheels or disks on which the teeth are cut are turned to elevate the wick, the forward teeth catch it firmly, and when they are turned to depress it, the backward teeth catch with equal firmness and move the wick as desired.

The teeth can be varied in amount of edge or shoulder presented to the wick.

The object aimed at is to present just so much hook edge or shoulder that the teeth will not slip on the wick nor hook fast to it so as to be objectionable.

The number of wheels or ratchets used as a wick-raising device can be varied as may be desired.

In some cases it may be desired to construct the tube A with more room for the wick and spring where the device B operates than is required at the top of the tube.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement upon the shaft of the wick-raiser of two or more ratchet-wheels, so that the teeth of the one wheel will point in a direction opposite to that of the teeth of the other, as and for the purpose set forth.

2. The removable spring D, with the elastic portion or fold below the wick-tube, as described, in combination with the burner A.

3. The combination of a removable spring, D, with a burner, A, substantially as described, and for the purpose set forth.

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Witnesses:

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