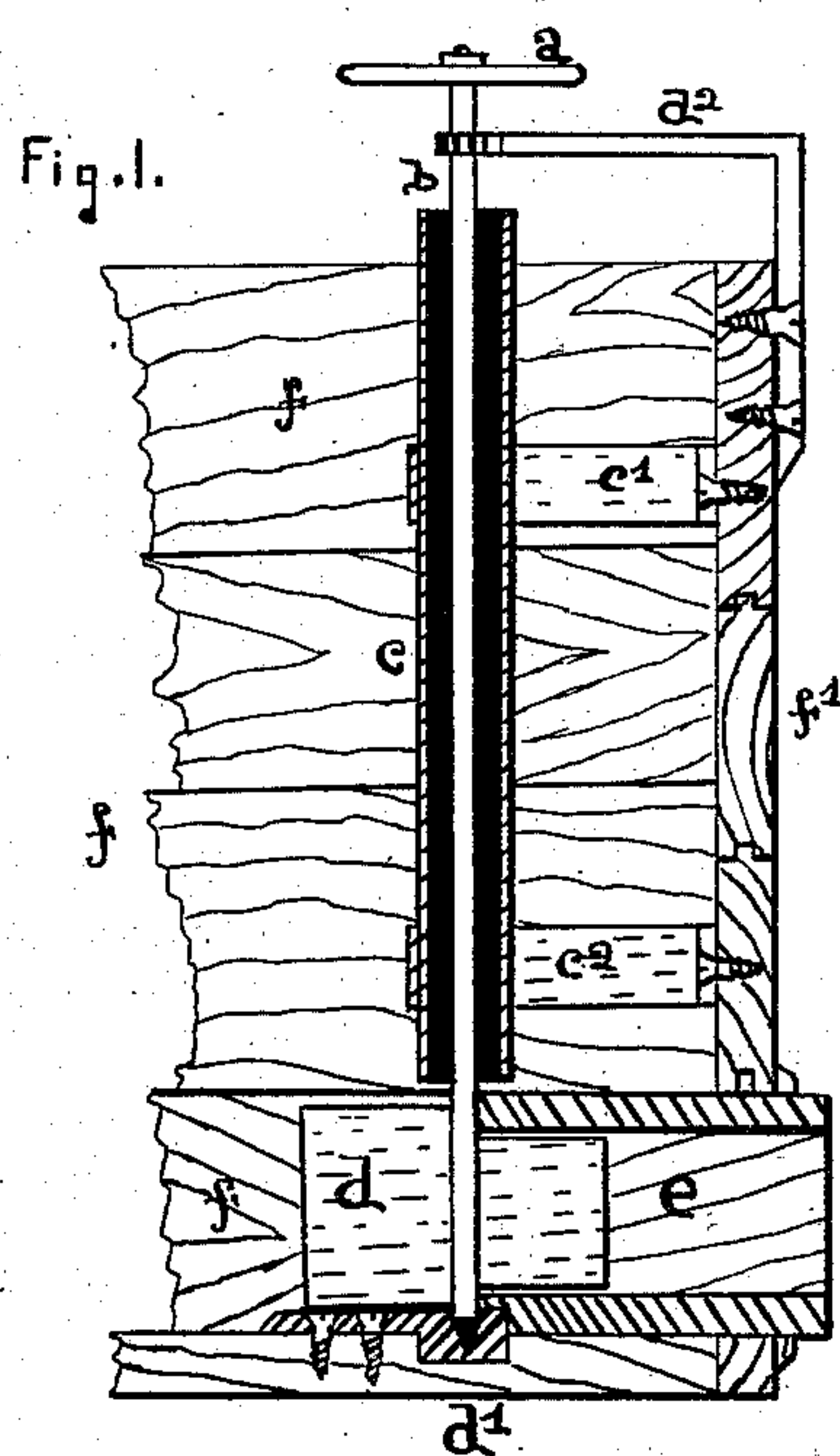


H. S. AKINS.  
Preventing Shafts of Water-Wheels, Gates, &c.,  
From Freezing.

No. 154,941.

Patented Sept. 15, 1874.



*J. J. Parker*  
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Witnesses.

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Inventor.

# UNITED STATES PATENT OFFICE.

HENRY S. AKINS, OF BERKSHIRE, NEW YORK.

IMPROVEMENT IN PREVENTING SHAFTS OF WATER-WHEELS, GATES, &c., FROM FREEZING.

Specification forming part of Letters Patent No. **154,941**, dated September 15, 1874; application filed August 10, 1874.

*To all whom it may concern:*

Be it known that I, HENRY S. AKINS, of Berkshire, Tioga county, New York, have invented an Improvement for Preventing the Shafts of Water-Wheels and Flume-Gates, or Gate-Rods Passing through Water, from Freezing, of which the following is a specification:

My invention relates to that class of flumes and water-chests or bulk-heads open at the top, liable to some fluctuation in the water-level, and exposed to freezing, and through which water-gate rods or shafts, as well as the shafts of water-wheels, pass, as is the case in most ordinary saw and other mills; and the nature of my invention will be apparent as I describe it.

Figure 1 is an elevation of my device in a flume, and represents it applied to a rotating shaft of a water-wheel gate.

In Fig. 1, *a* is a hand-wheel, by which the partial rotation of the gate rod or shaft *b* is made in opening and closing the two-parted gate *d* at its base. This shaft or gate rod goes through the tube *c*, (seen in section,) and which tube is filled, to any degree necessary, with kerosene, oil, or similar fluid which floats on water, and does not congeal by cold, nor mingle with the water, and thus the gate rod or shaft is prevented from freezing.

The ordinary water-level in the flume is at or near the top of the flume, which flume is represented as made by various planks, *f*, in the figure. The front of the bulk-head or flume is represented as made of the tongued-and-grooved planks *f*<sup>1</sup>, and to which the tube *c* is held by the metallic straps *c*<sup>1</sup> and *c*<sup>2</sup>. The shaft *b* in the tube *c* is supported at the top by the metallic arm *d*<sup>2</sup>, and at the bottom by the metallic step *d*<sup>1</sup>. The water-passage *e* (seen partially in section) leads to the water-wheel. It is apparent that the gate *d* may be changed for a water-wheel without violence to the device of the tube *c* or shaft *b*, the hand-

wheel *a* being replaced by a pulley, by which to drive the machinery of a mill, or to a cog-wheel for the same purpose. It is also clear that the shaft *b* is the same, substantially as described, when it is not in whole or partially rotated, but, by a hand-lever, is simply raised and lowered in the tube *c* and its non-freezing fluid, as is the case in my use of lifting-gates. The tube *c* is carried above the water, as far as is necessary, to prevent the overflow of the kerosene-oil or other fluid, and as far below the level of the level of the water as the freezing extends, with also allowance for the variation of the level of the water in the flume or bulk-head.

Practice with my tubes shows that kerosene and crude petroleum float long on the water, as does oil; that in a bulk-head or flume, for example, nine feet deep, a tube may be filled two feet deep or more with these or other like fluids, and is a perfect prevention of the freezing.

The further advantages and uses relating to my invention, for shafts and rods in mill-races and flumes or bulk-heads, are apparent to those skilled in the art to which it appertains.

I claim—

1. The tube *c*, fixed immovably about rods or shafts, passing through water in raceways, flumes, and bulk-heads, in combination with the movable rods or shafts *b* and the non-freezing fluid in the tube and about the rods or shafts, as set forth.

2. The tube *c*, about the rod or shaft *b*, with its lower end below the water-level line, and its upper end above the water, and filled in part or wholly with kerosene, oil, or other non-freezing fluid, substantially in the manner and for the purpose set forth.

HENRY S. AKINS.

Witnesses:

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