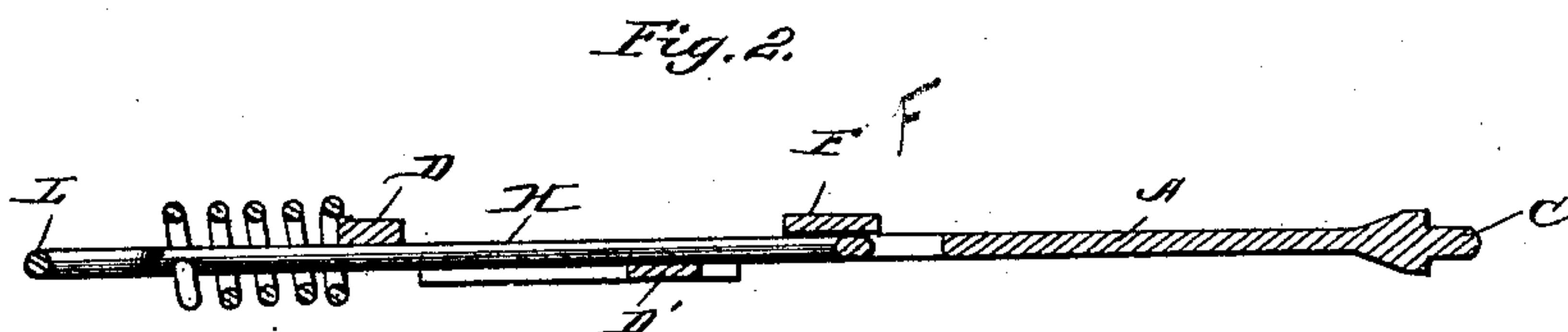
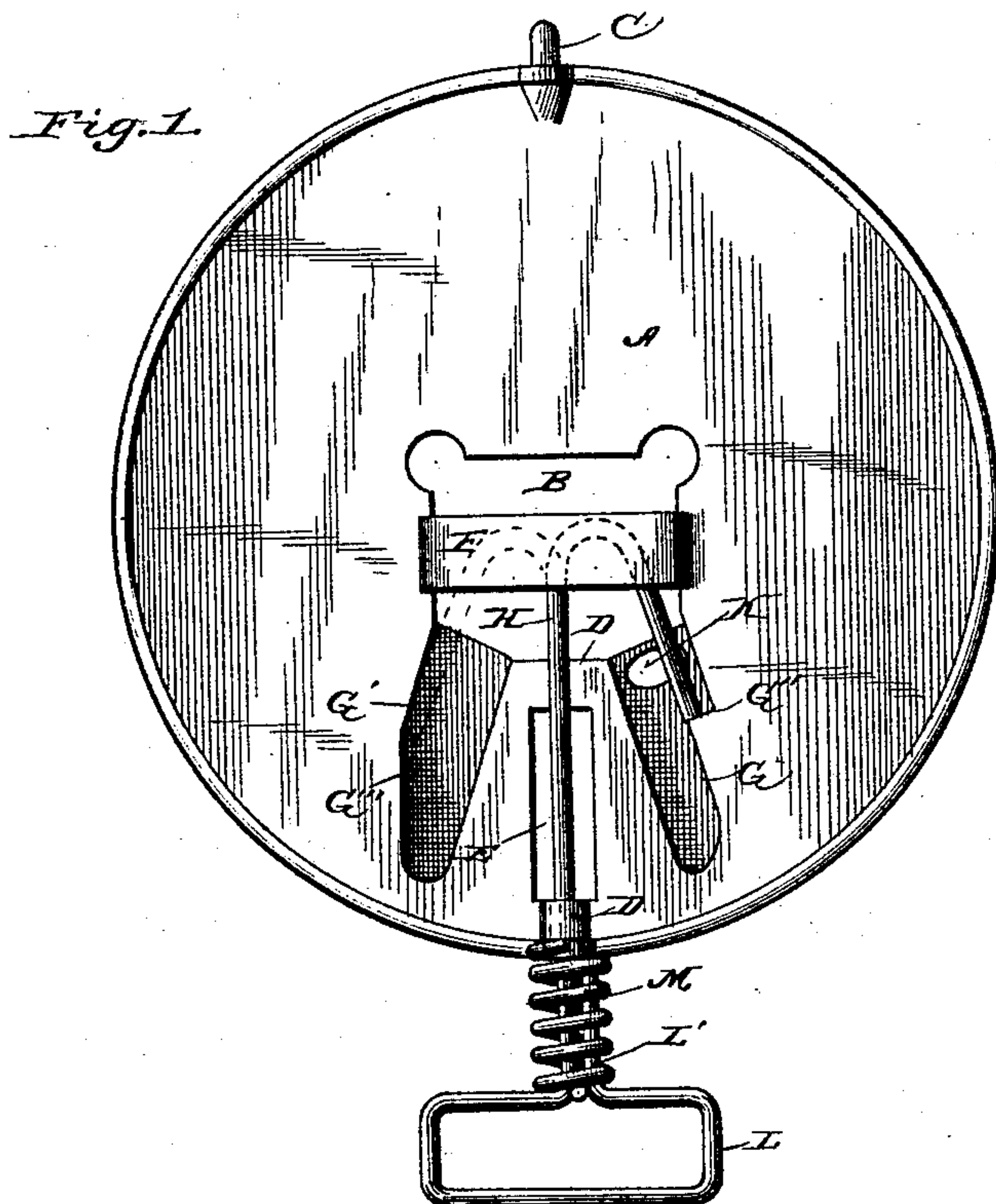


(No Model.)

G. W. WARNER.
DAMPER.

No. 452,740.

Patented May 19, 1891.



Witnesses:
Harry S. Rohrer.
L. J. Atwater

Inventor:
George W. Warner
By Wiles & Greene,
Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE W. WARNER, OF FREEPORT, ILLINOIS, ASSIGNOR TO THE WARNER MANUFACTURING COMPANY, OF SAME PLACE.

DAMPER.

SPECIFICATION forming part of Letters Patent No. 452,740, dated May 19, 1891.

Application filed October 10, 1890. Serial No. 367,658. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. WARNER, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Dampers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention is in dampers having spring-wire handles whose detachment from the plates is resisted by the elastic force of the wire which is formed into a spring within the line of the damper's margin.

In the accompanying drawings, Figure 1 is a plan of the complete damper. Fig. 2 is a section on the line 2 2, Fig. 1.

In the figures, A is the damper-blade, having a central opening B and at one side the integrally-formed gudgeon C. Diametrically opposite the gudgeon is the usual handle-shank bearing, formed by depressing from the opposite faces of the plate two segments D D' and cutting away the intervening metal at E. The central aperture is spanned by a bridge F, whose inner face is a plane tangent to the shank when in its normal position. Upon each side of the line of the bearing are shoulders G G', diverging toward the margin and preferably formed by depressing a portion of the plate's surface. A steel wire H lies in the bearing, with its inner end recurved beneath the bridge and resting in one or the other of the depressions. In either case the bridge prevents the rotation of the wire with reference to the plate, and if the wire be in the position shown its free end rests against an offset G'' in the shoulder G, rendering the withdrawal of the wire from beneath the bridge impossible until the wire end is sprung inward past the offset. The bottom of the depression is cut away at K, so that any pointed instrument may be conveniently inserted for springing the wire. If this permanent locking is not desired, the wire is rotated one hundred and eighty degrees and sprung into the other depression before being advanced beneath the bridge. If the advance be then made, the free end of the wire rests against the inclined shoulder G^s at its

inner limit, and evidently a strong direct pull upon the handle will withdraw the wire from beneath the bridge, for the end is forced along the incline and pressed inward. The wire being withdrawn from its position beneath the bridge by any means whatever, the handle is readily detached by rotating it ninety degrees and slipping it out through the aperture E.

The outer end of the wire is bent into a convenient loop L, terminating in an end L^s, lying alongside the body of the shank or wire. A short independent coil M encircles both the end and the shank, its outer terminal coil being bent closely about the latter and pressing against the loop, while its inner end reacts against the edge of the damper-plate in position to clamp the pipe when the damper is in practical use.

The middle portion of the bridge is not essential to the operation of the devices, but it adds to the strength without adding to the cost.

What I claim is—

1. The combination, with the damper-plate having the bearing for the handle-shank and the shank-retaining bridge, of the shank lying in said bearing, extending beneath the bridge and having its inner end bent upon itself, said plate being provided with a shoulder lying in the normal path of the recurved end and resisting the withdrawal of the shank.

2. The combination, with the plate having the shank-bearing, the shank-retaining bridge, and the shoulders at each side of the line of the bearing, of the spring-wire shank lying in the bearing, extending beneath the bridge and having its inner end bent back to rest against one of the shoulders, the loop formed from the outer end of the shank, and the coil encircling the shank, pressing against the loop and reacting against the edge of the plate, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE W. WARNER.

Witnesses:

F. R. BARTLETT,
FREDERIC BARTLETT.