

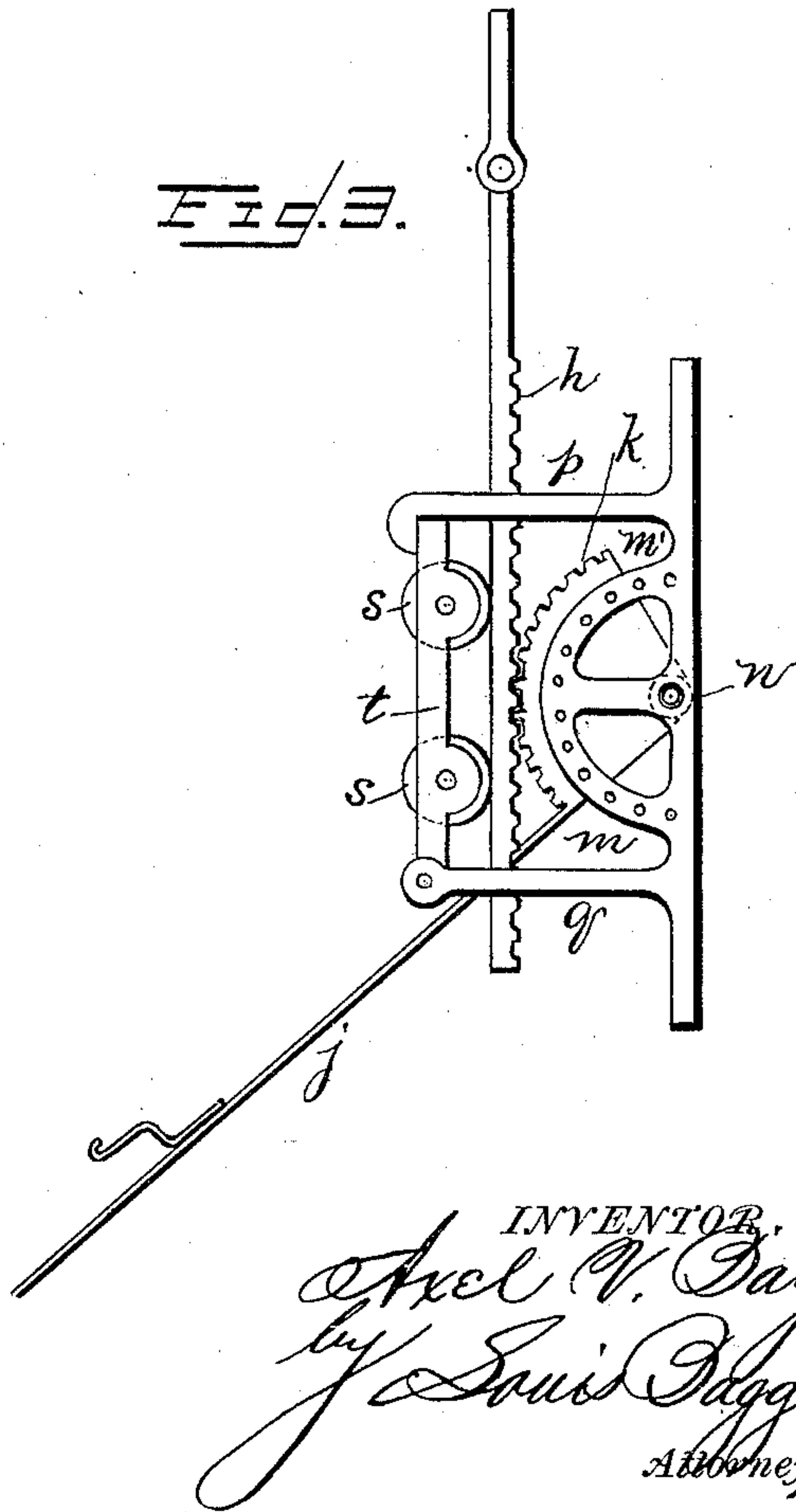
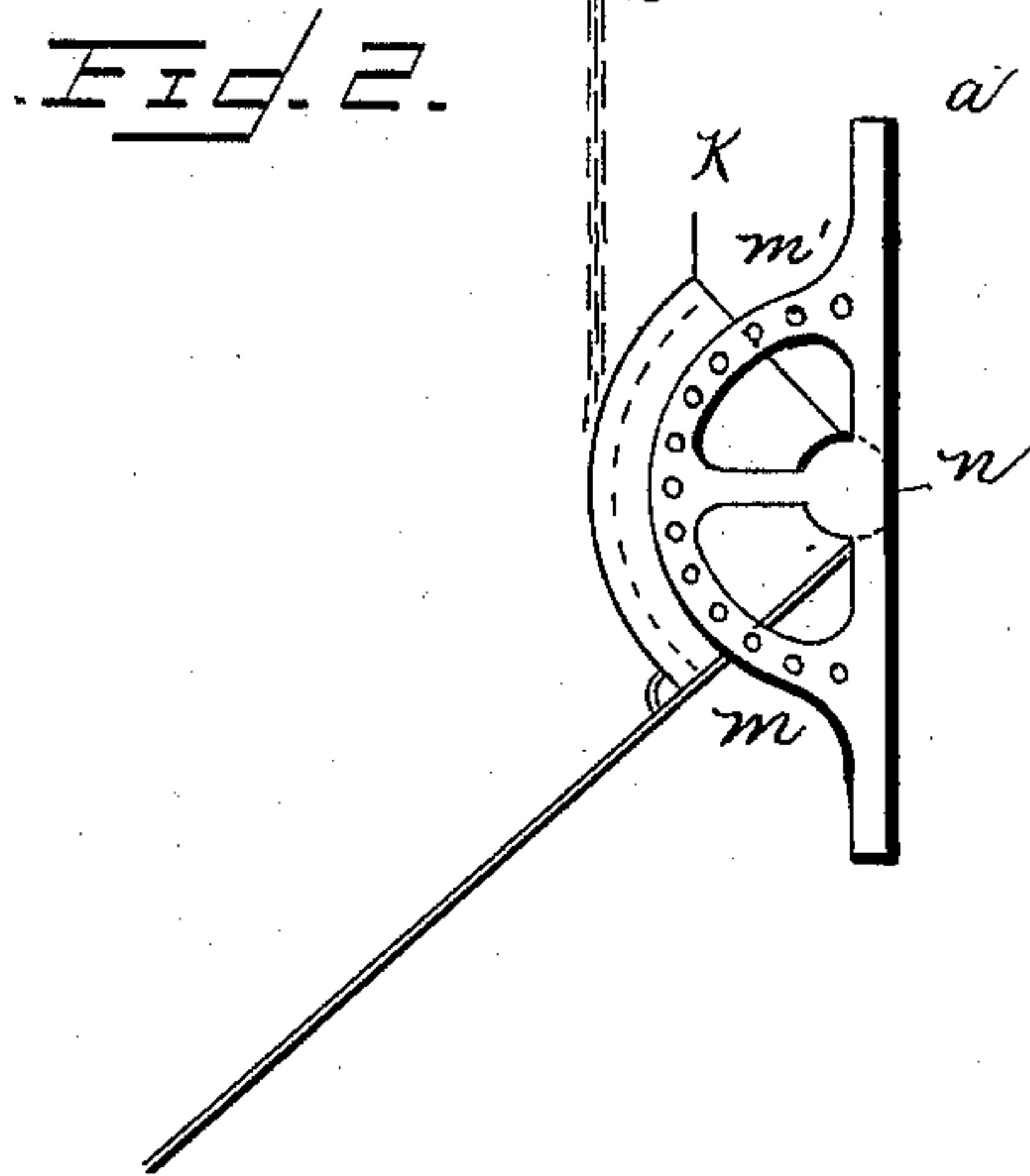
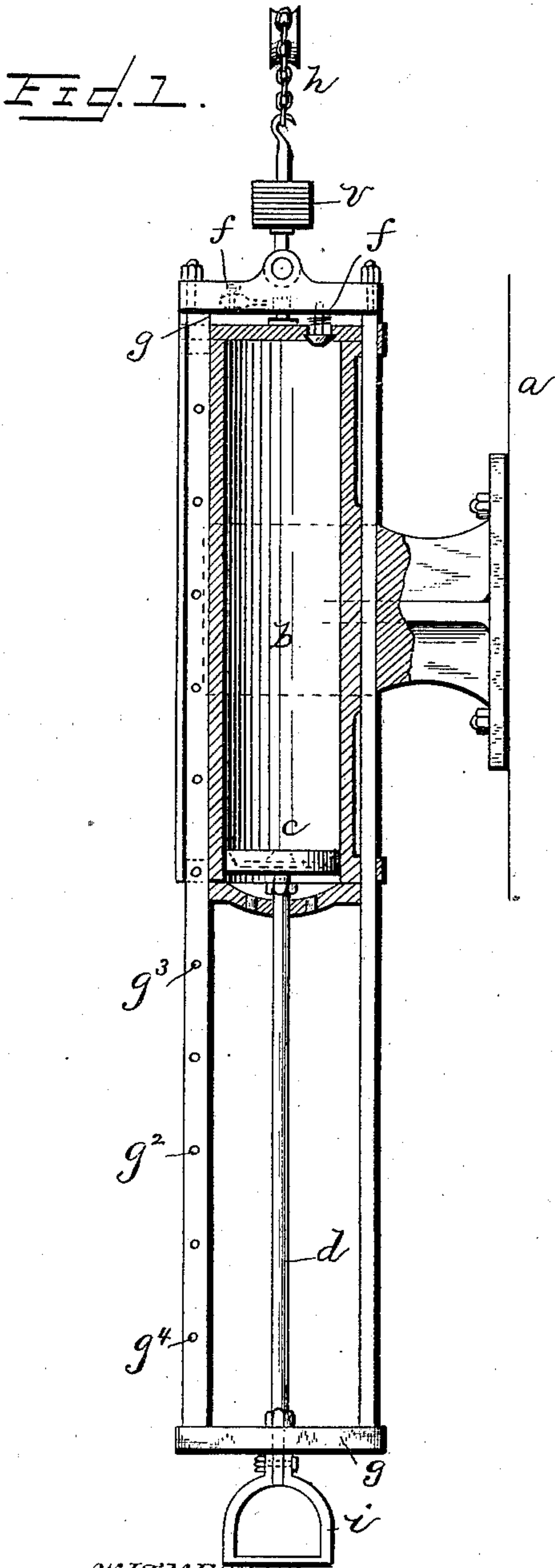
(No Model.)

A. V. BAÿ.

DEVICE FOR OPERATING DAMPERS FOR FIRE PLACES, &c.

No. 401,625.

Patented Apr. 16, 1889.



WITNESSES,

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UNITED STATES PATENT OFFICE.

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DEVICE FOR OPERATING DAMPERS FOR FIRE-PLACES, &c.

SPECIFICATION forming part of Letters Patent No. 401,625, dated April 16, 1889.

Application filed January 30, 1888. Serial No. 262,311. (No model.)

To all whom it may concern:

Be it known that I, AXEL VALDEMAR BAÿ, a subject of the King of Denmark, residing at Naskov, in the county of Laaland and Kingdom of Denmark, have invented certain new and useful Improvements in Devices for Automatically and Adjustably Operating Dampers for Fire-Places, &c.; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention has relation to devices for automatically and adjustably regulating dampers for furnaces or fire-places, and it has for its object to provide a device capable of various modifications, in which the damper for a furnace or fire-place may be opened when fuel is fed to the fire and thereupon gradually and automatically be closed, or partly closed, as the fuel is consumed; and it consists to that end in the improved construction and combination of parts of such an apparatus or device in which the resistance of air, steam, fluids, or similar liquid or gaseous fluids against a plunger or piston may govern the closing of the damper, as will be more fully described, and particularly pointed out in the claims. It is well known that in all kinds of fire-places or furnaces it is desirable to open the dampers either in the smoke-stack or chimney or below the fire at the ash-pan, or both, more when the fuel is fed and draft is required than after the fuel has commenced to burn up, when it will again be desirable to close the dampers, so as to partly cut off the draft; and the object of this invention is to provide an automatic and adjustable device by means of which this closing may be performed, after the damper has been opened by the person feeding the fuel into the fire-place, immediately after feeding the fuel.

Various modifications of the devices which may be employed in carrying out my invention are shown in the accompanying drawings, in which the same letters of reference indicate the same or corresponding parts in all the figures, and in which—

Figure 1 is a vertical sectional view of one

form of the device, air being the resisting medium in this apparatus. Fig. 2 is a side view of one form of damper and operating mechanism for the same, and Fig. 3 is a similar view of another form of damper and operating mechanism.

In Fig. 1 of the drawings the regulator consists of a vertical cylinder, *b*, secured upon a wall, *a*, by a suitable bracket, and having its upper head closed and its lower head formed with perforations and with a central perforation or stuffing-box. The piston-rod *d* of a piston, *c*, slides in this central perforation, and the lower end of the piston-rod is secured to the lower one of two cross-pieces, *g*, of a frame, having side pieces or rods, *g*², sliding in suitable ways in the sides of the cylinder. One of these vertically-sliding rods is formed with a number of perforations, *g*³, into which a pin, *g*⁴, may be inserted to act as a stop, stopping the upward or downward throw of the frame at whatever point desired.

The lower end of the frame is provided with a suitable stirrup, *i*, by means of which the frame may be drawn down, and the chain *h*, by which the damper is operated, is secured to the upper end of the frame, having, preferably, a number of weights, *v*, secured to its lower end for drawing it down or counterbalancing the weight of the damper, which closes by its own weight and against the weights upon the chain, the chain passing over suitable pulleys or similar guides to the damper.

The closed upper head of the cylinder is provided with an inwardly-opening valve, *f*, and with an outlet-cock, *f'*, having any ordinary means for adjusting its plug to admit any desired quantity of air out of the upper part of the cylinder.

When the fire is fed with a new supply of fuel, the piston in the cylinder and the sliding frame are drawn down by means of the stirrup, the person feeding the fire and operating the device placing the foot within the stirrup and drawing it down, and it will be seen that the inwardly-opening inlet-cock in the top of the cylinder will allow air into the cylinder, so that the cylinder above the piston will be filled with air. The damper will now commence to close by its own weight, drawing upward upon the chain at its con-

nection with the frame, and consequently drawing against the weight of the frame and of the added weights *v*, as well as against the pressure of the air within the cylinder, which escapes through the adjustable cock at the top of the cylinder, the said cock having been adjusted to allow a suitable quantity of air to escape, to admit of the piston rising, and the damper consequently closing with the desired speed.

If desired, the chain *h* may be dispensed with and a rigid bar can be secured to the frame and be connected with and operate the damper by direct pressure.

In Fig. 2 is shown a form of damper which is used especially with the form of regulator forcing the piston-rod down, and in this damper the piston-rod has a cogged bar, *h'*, pivoted to its lower end, which bar meshes with a cogged segment, *k*, secured concentric with the pivotal rod, *n*, of the damper *j*, and this cogged bar or rack-bar is guided by apertures in a bracket, *q*, having a front piece, *t*, hinged to its outer end and provided with rollers *s*, guiding the back of the rack-bar, and by an aperture in a hooked arm, *p*, which engages the upper end of the front piece holding the rollers against the rack-bar.

It will be seen that when the rod is pushed down it will tilt the damper down, and when drawn up it will open the damper, and the hooked arm may be unhooked from the swinging front piece, when the rack-bar may be swung out of engagement with the segment.

The support for the damper is provided with sector-shaped guides *m*, having perforations near the edges and removable stop-pins *m'* in the perforations for limiting the play of the damper.

Another form of damper is shown in Fig. 3, where the damper is operated by the chain and raised by the same; but the play of the damper is governed in the same manner as in the formerly-described form—by means of the sector-shaped guides, pins, and segments upon the damper.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a device for automatically and adjustably operating dampers for fire-places, &c., the combination of a cylinder having an inlet-valve and an outlet at one end, and a piston sliding in the cylinder and having its rod connected to the damper, as shown, and for the purpose specified.

2. In a device for automatically and adjustably operating dampers for fire-places, &c., the combination of a cylinder having an inlet-valve and an outlet-cock at the upper end and having a perforated lower head, a frame having rods traveling in ways in the sides of the cylinder and having the lower end provided with a stirrup, the piston-rod and piston in the cylinder, the lower end of the rod being secured to the lower end of the frame, and the damper-operating chain having weights and secured to the upper end of the frame, as shown, and for the purpose specified.

3. In a device for automatically and adjustably operating dampers for fire-places, &c., the combination of the cylinder *b*, having the inlet-valve *f* and cock *f'*, the piston *c*, having the rod *d*, the frame having the end pieces, *g*, and side pieces, *g'* and *g''*, the piece *g''* having the perforations *g'''* and pin *g''''*, the stirrup *i*, and the damper-operating chain *h*, having the weights *v*, as shown, and for the purpose specified.

4. In a device for automatically and adjustably operating dampers for fire-places, &c., the combination of the damper *j*, having pivotal rod *n* and cogged segments *k*, sector-shaped guides *m*, having perforations and stop-pins *m'*, the operating-rod having the rack-bar *h'*, engaging the cogged segment, the bracket *q*, the hinged piece *t*, having the guide-rollers *s*, and the hinged hook *p*, as shown, and for the purpose specified.

In testimony whereof I have hereto affixed my signature in presence of two witnesses.

AXEL VALDEMAR BAY.

Witnesses:

FREDERIK WOLFF,
SIGVARD REDDERSEN.