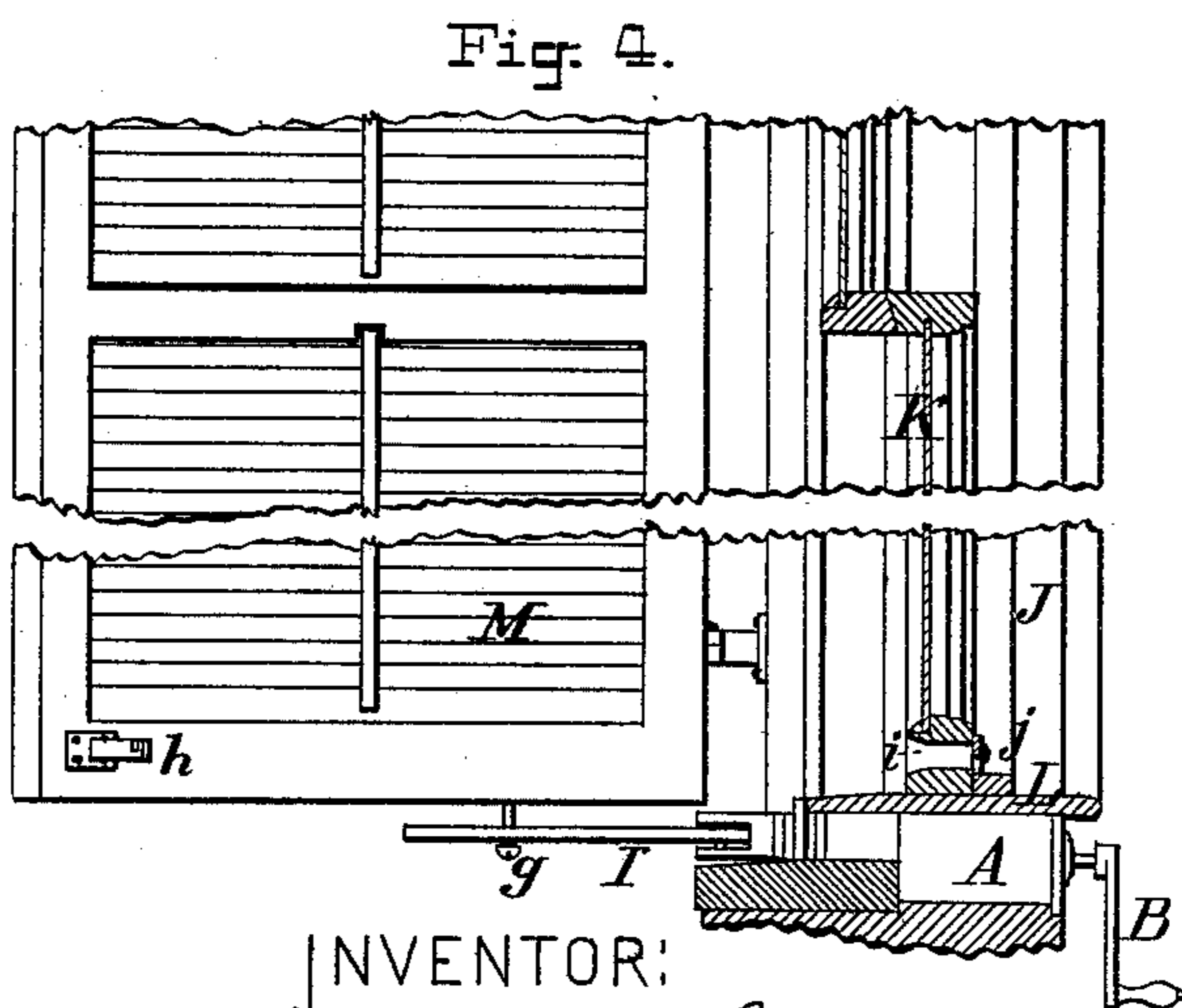
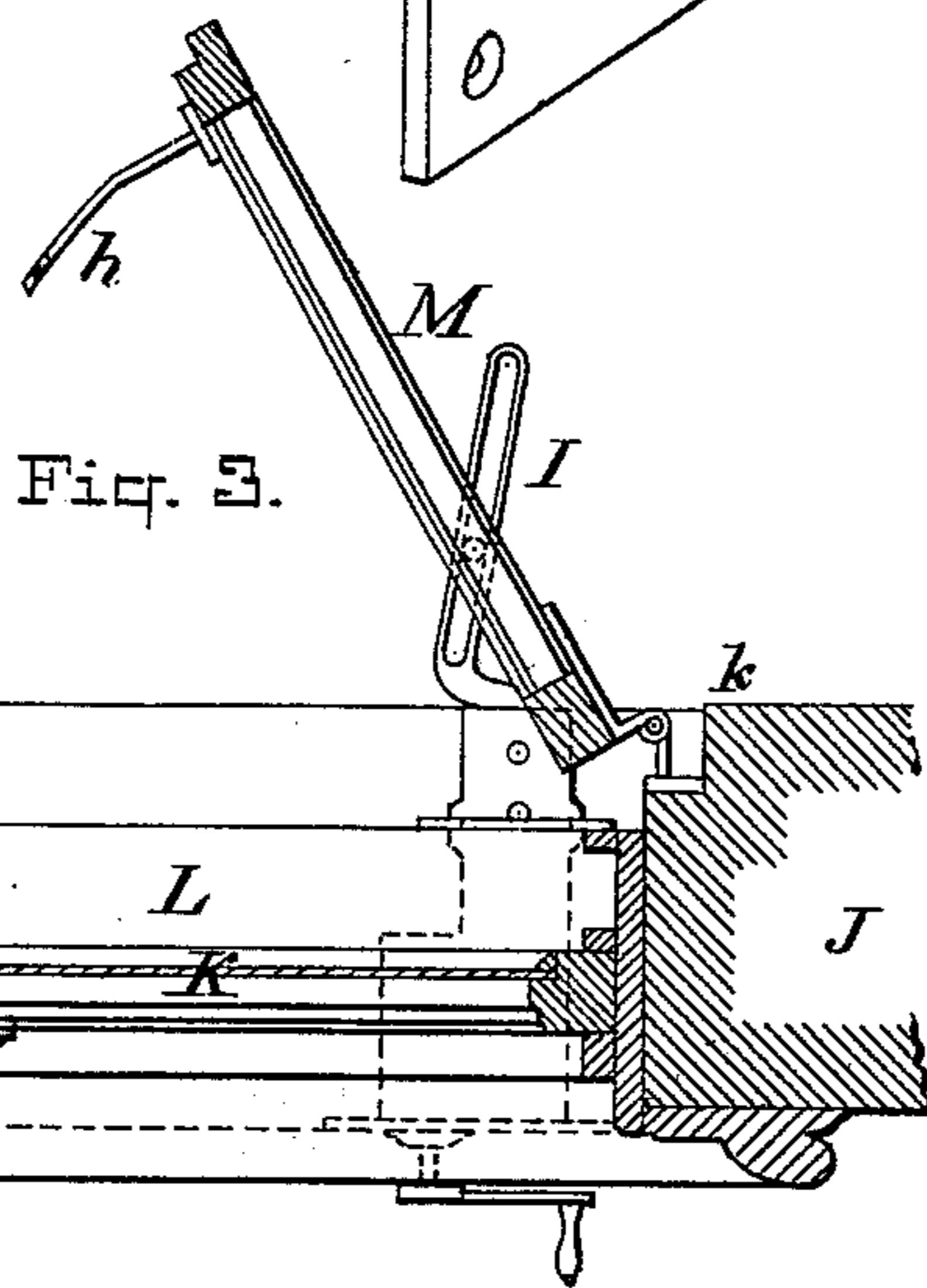
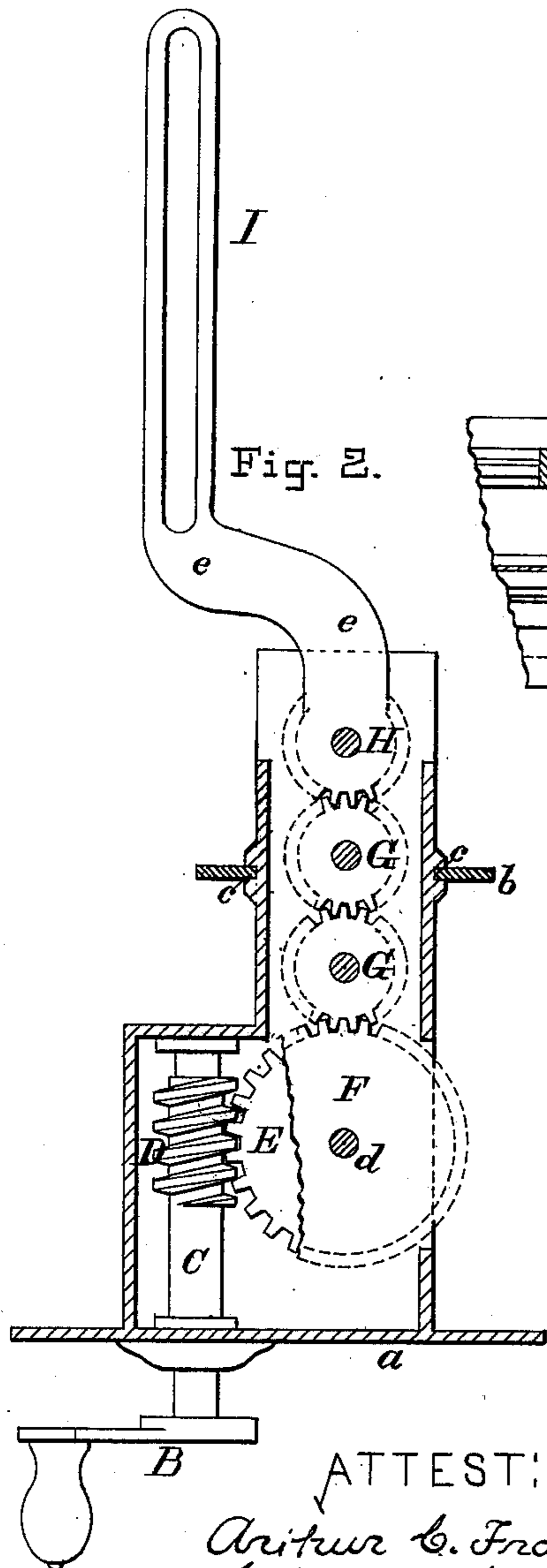
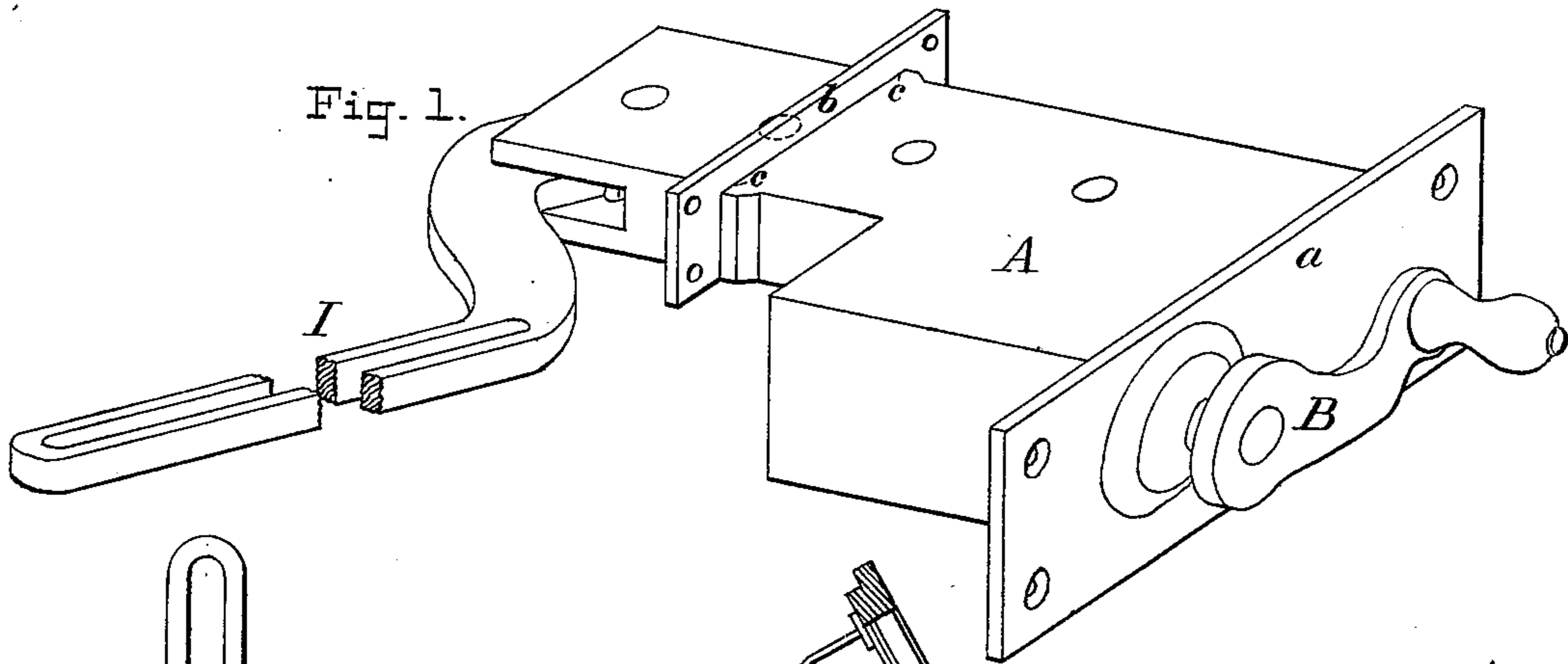


H. SMIDT.
Shutter-Worker.

No. 198,470.

Patented Dec. 25, 1877.



ATTEST:
Arthur C. Fraser.
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INVENTOR:
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Attys.

UNITED STATES PATENT OFFICE.

HENRY SMIDT, OF NEW YORK, N. Y., ASSIGNOR OF FIVE-EIGHTHS OF HIS
RIGHT TO WILLIAM V. SMITH, OF SAME PLACE.

IMPROVEMENT IN SHUTTER-WORKERS.

Specification forming part of Letters Patent No. **198,470**, dated December 25, 1877; application filed
June 14, 1877.

To all whom it may concern:

Be it known that I, HENRY SMIDT, of the city, county, and State of New York, have invented certain Improvements in a Shutter Worker and Detainer, of which the following is a specification:

My invention consists in an improved box to contain the shutter-working mechanism hereinafter described, the said box being provided with an inside plate, and with a removable sliding plate fitting in grooves of the box, to form a suitable finish on the outside of the casing, to exclude air, and to assist in retaining the box in position, all substantially as hereinafter more fully described and claimed.

In the drawings, Figure 1 is a perspective view of the case or box containing the mechanism. Fig. 2 is a plan of the same with the cover removed. Fig. 3 is a plan view, on a small scale, illustrating the application of my device to a window and shutter. Fig. 4 is a vertical section through a window, illustrating the same.

A represents a box or case, provided with a front plate, *a*, by which it is secured to the window-facing inside, and a loose sliding plate, *b*, cut away to fit around the box, and arranged to slide in grooves *c c* formed in or on the box A, as shown. This plate serves to form a finish on the outside of the sill, to exclude air, and to assist in holding the box in place. It is to be secured to the sill when in place.

B is a crank, fixed rigidly to a shaft, C, which has bearings in the box A. This shaft bears a worm, D, which meshes with a worm-wheel, E, on a vertical spindle or axis, *d*. Mounted on the same axis with the said worm-wheel, and turning with it, is a spur-wheel, F, which meshes with and forms one of a train of four gears, the two internal ones being lettered G G, and the fourth H. This last gear is attached to, or forms a part of, a slotted lever, I, which is bent or formed with two angles or reverse curves, *e e*. When the crank B is turned it transmits, through the train of gears, a sweeping movement to the lever I.

In Figs. 3 and 4 I have shown the application of my improved shutter-working device to a window. J is the window-frame; K, the sash; L, the sill; and M, the shutter, one only being shown.

The box or case A containing the mechanism is placed in a cavity or mortise in or through the sill, or beneath it, and there fastened firmly in place by attaching the plates *a* and *b* with screws or otherwise. A screw, pin, or other equivalent projection, *g*, is fixed to the lower edge of the shutter M, and caused to engage the slot in the lever I.

When thus arranged, turning the crank B in one direction will close the shutter, and in the other direction open it; and as the worm-wheel cannot become the driver in a worm-gear, as here shown, it will be seen that the shutter will stand wherever placed without other fastenings, and it cannot be moved except through the medium of the crank. To compensate for the natural slowness of worm-gear, and give the shutter a more rapid movement, the gear-wheel F is made as large as it can be conveniently, and the wheel H as small as possible.

The object in curving the lever I at *e e* is, that the slotted part may not interfere with the corner of the house-wall, (as at *k* in Fig. 3,) but pass around the same, as the shutter does, and rest beneath the latter.

I claim—

The box A, having a front plate, *a*, and grooves *c c*, in combination with the plate *b*, and suitable mechanism for operating the shutter inclosed therein, the whole being arranged substantially as herein set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HENRY SMIDT.

Witnesses:

HENRY CONNETT,
SAM. TRO. SMITH.