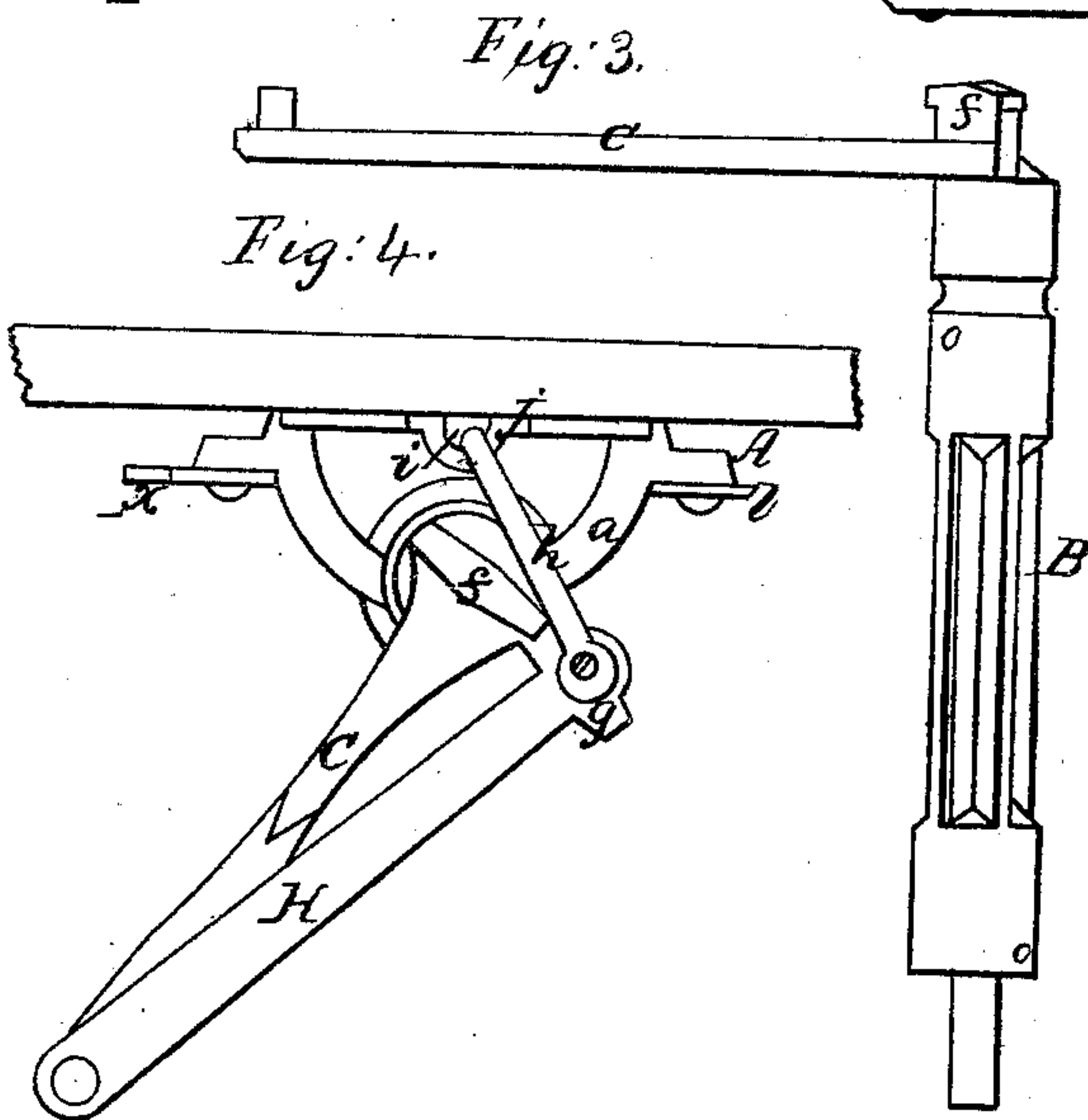
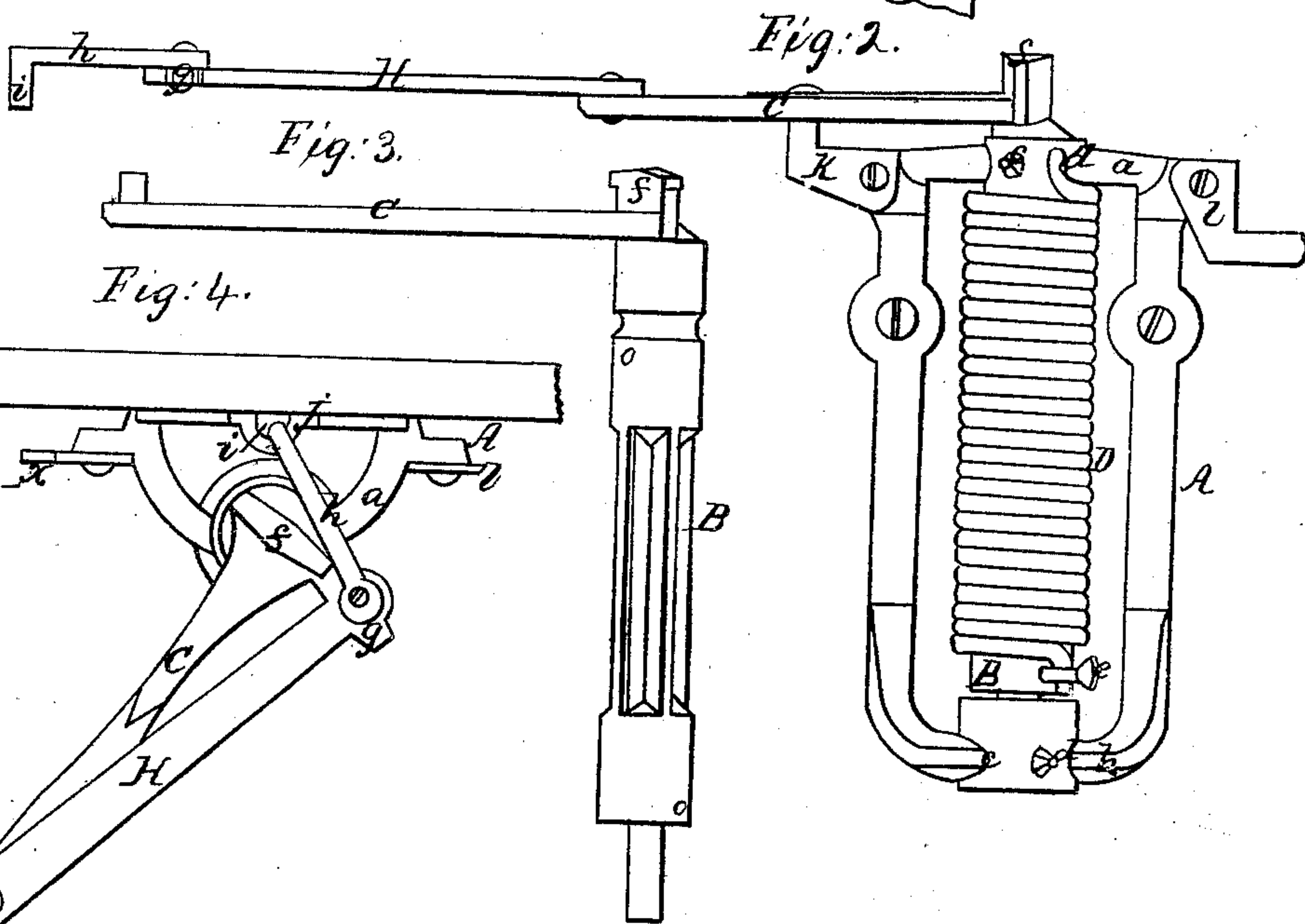
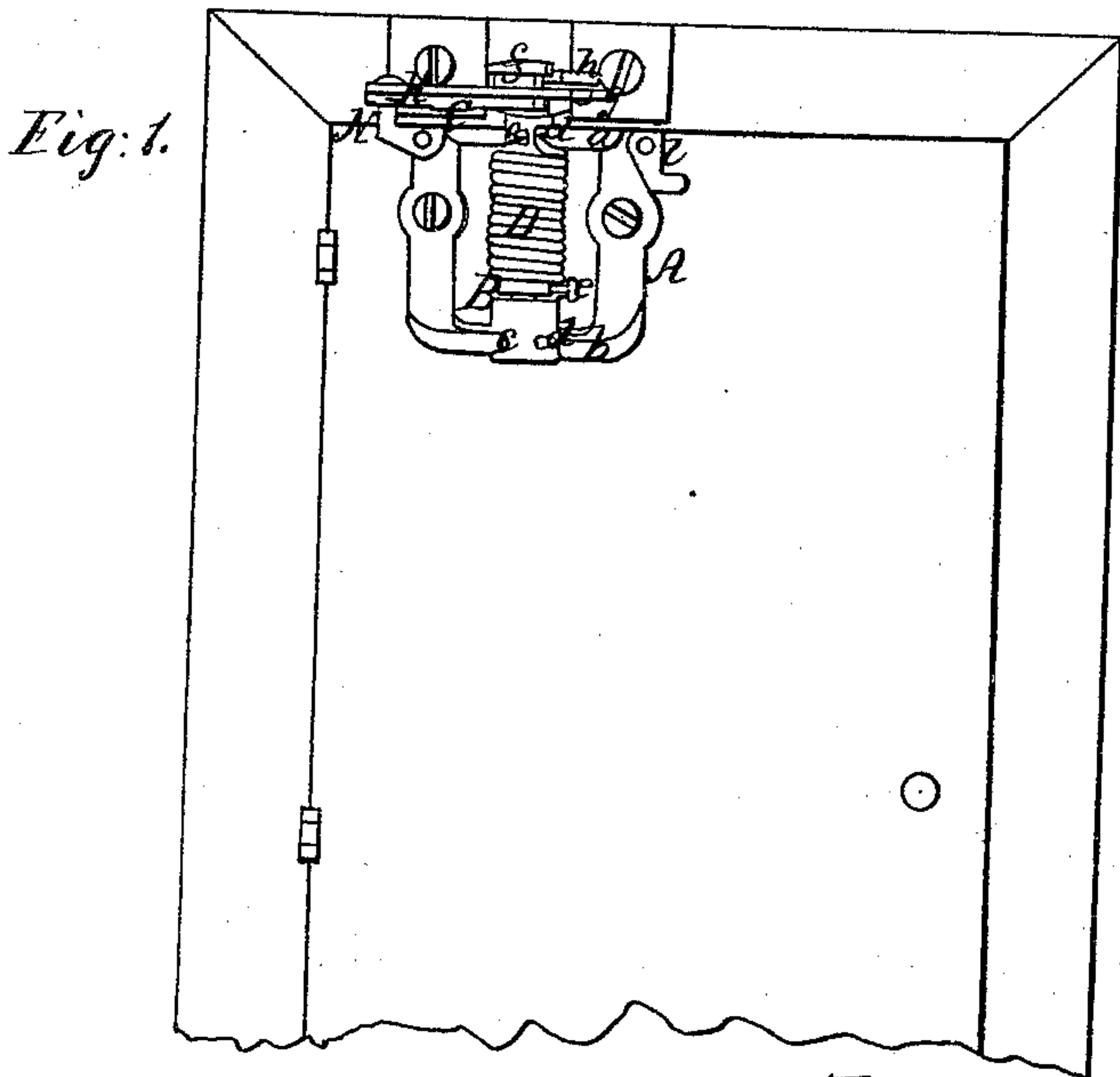


L. Hillbrand.

Door Spring.

N^o 86,228.

Patented Jan. 26, 1869.



Witnesses;
Geo. Rothwell
Phil. F. Larned

Inventor,
Louis Hillbrand
By Medsker & Co
Attys

United States Patent Office.

LOUIS HILLEBRAND, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 86,228, dated January 26, 1869.

IMPROVEMENT IN DOOR-SPRINGS.

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, LOUIS HILLEBRAND, of the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Door-Springs; and I do hereby declare the following to be a full, clear, and exact description thereof, sufficient to enable others skilled in the art to which my invention appertains, to fully understand and use the same, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a front view of my improved spring, as applied to a door.

Figure 2 is a front view of the spring, with the levers and frame.

Figure 3 is a side view of the centre-pin and lever.

Figure 4 is a top view of fig. 1.

The object of my invention is to produce a spring, which shall combine the following features, among others:

First, having the greatest acting-power at the starting-point, where it is most wanted.

Second, capable of being regulated to suit the lightest or heaviest door.

Third, its applicability to either right or left-hand doors.

Fourth, so constructed as to unhook from the door-frame, and remain inoperative when desired.

Fifth, so constructing and arranging the parts that the spring shall work with little pressure and friction, and shall exert full power on the door when in use.

In order to combine all of these features, I have invented a new and improved spring, which I will now proceed to describe more fully in detail.

In the drawings—

A is a frame, cast of suitable metal, with the upper and lower parts turned outward, as at *a b*, respectively, to form bearings for the centre-pin B of the lever C.

Around the centre-pin B the spiral spring D is placed.

On the upper and lower parts of this frame, projections *c d* are cast, against which either end of the spring may be placed.

On the centre-pin B, a removable post, *e*, is screwed, against which the other end of the spring rests. As the centre-pin B is turned, the post *e* catches the end of the spring and winds it up.

The centre-pin B and lever C are cast in one piece, with a T-shaped head or projection, *f*.

The lever H is a straight piece of metal, with a T-shaped end, *g*, and the lever *h* is formed with a hook, *i*, which is hooked into the socket *j*, fastened to the door-frame opposite the centre-pin. These, as the door closes, bring the T-shaped parts of the levers C H together, a new fulcrum is acted on, and the leverage shortened.

Two movable stop-hooks, *kl*, (or pins might be used,) are attached to the sides of the upper part of the frame A, which serve to catch or stop the lever H, and prevent it striking the door, or turning all the way around when the lever is unhooked from the door-frame.

When the spring is set for a right-hand door, the main lever points toward the left, and the stop-pin or hook *k*, on the left hand, is raised, and the right-hand stop-pin *l* turned down out of the way.

When set for a left-hand door, the main lever points to the right, and the right-hand stop-pin or hook *l* is raised in position for use.

In changing the position of the spring D and post *e*, by raising or lowering, the motion of the lever will be reversed to suit right or left-hand doors. For instance, one end of the spring is resting upon one projection of the upper part of the frame, as shown in fig. 2, and the post *e* screwed to the lower part of the centre-pin, to rest against the other part of the spring. This spring will operate on a right-hand door. In unscrewing the post *e*, and lowering the spring, to rest the end upon one of the lower projections of the frame, and screwing the post *e* to the upper part of the centre-pin, so as to operate upon the upper end of the spring, the motion of the lever is reversed, and is suitable for a left-hand door.

Should the spring be wound up in the contrary way, its position on the frame will be changed, as also that of the post, and the same result is obtained as mentioned above.

In order to reverse the action of the lever, it is necessary to put the stop-hooks or pins *kl* out of the way for the time being.

The force of the spring may be regulated by changing the end of the spring, which rests on the frame, from one of the projections, *c d*, to another. In order to do this, open the door half way, push the stop-hook *k* down out of the way, press the spring towards the post *e*, and the spring will be shortened to allow the end to be changed from one projection to another.

As the stationary end of the spring always rests (in either case) on one part of the frame, in such a manner as to be protected from rubbing on the lever, and the movable end of the spring working or moving with the lever, there is no friction, consequently no wearing out.

The construction of the whole, as arranged, allows the use of a wire spring, which can be manufactured of hard brass, which will not rust in wet weather, nor snap off in cold, as is the case with springs made of flat steel, and now in use.

Having thus described my invention,

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

1. The frame A *a b*, cast with bearings for the centre-pin, and with projections *c c*, *d d*, substantially as and for the purpose described.

2. The shifting-post *e*, in combination with the pin B, adjustable spring D, and projections *c d*, on the frame A *a b*, substantially as and for the purpose described.

3. The socket *j*, levers C H *h*, centre-pin B, spring D, and frame A, constructed, combined, and operating substantially as and for the purpose described.

4. The arrangement therewith of the stop-hooks *kl*, as and for the purpose set forth.

To the above, I have signed my name, this 22d day of December, 1868.

LOUIS HILLEBRAND.

Witnesses:

W. A. WIEDERSHEIM,
H. M. WIEDERSHEIM.