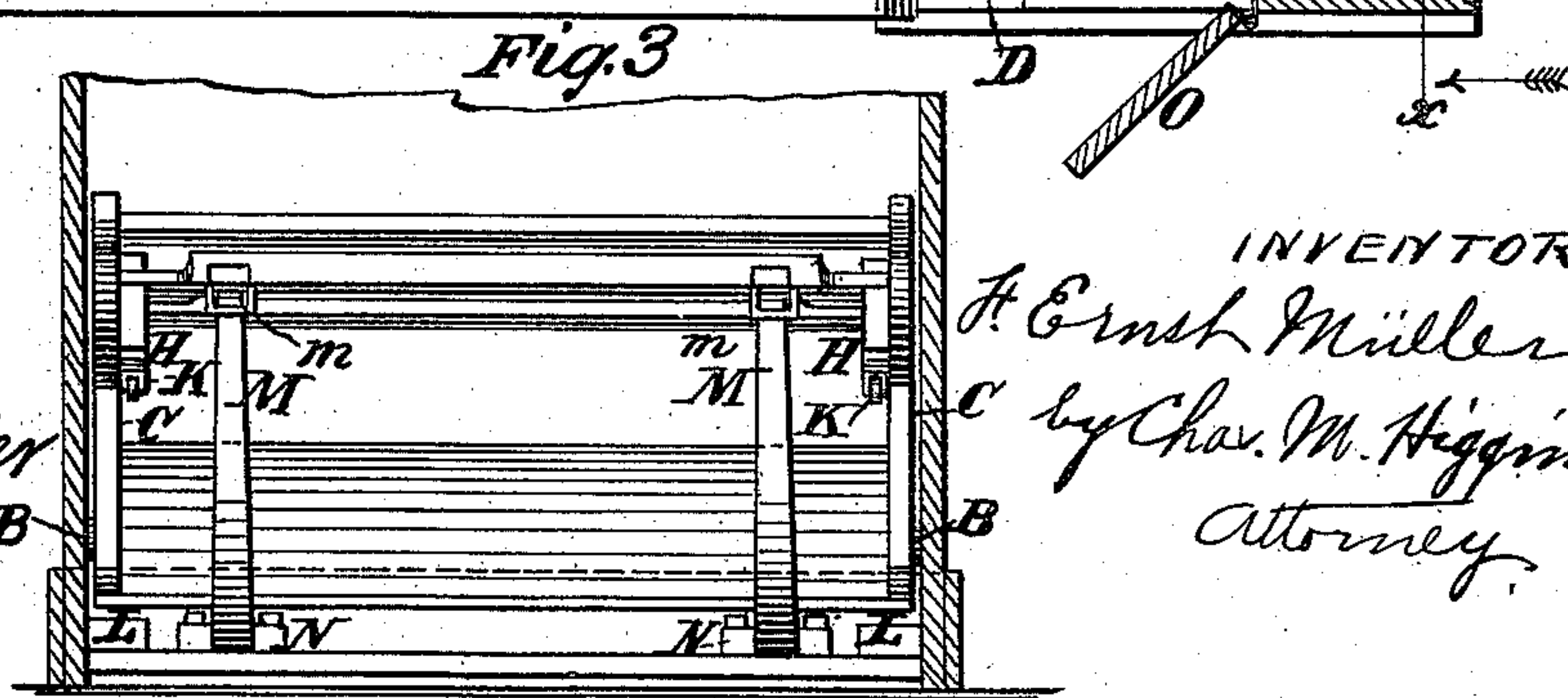
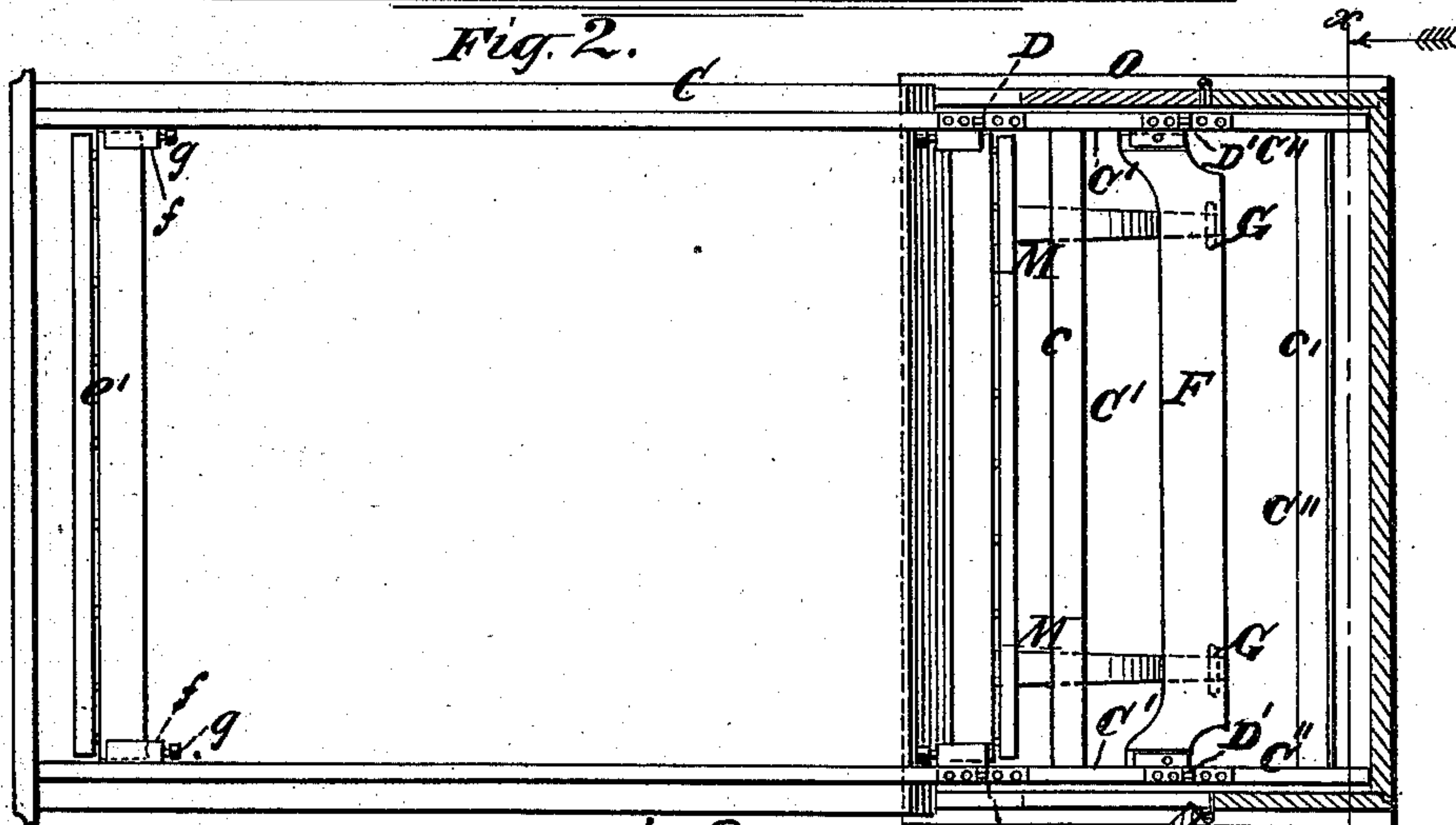
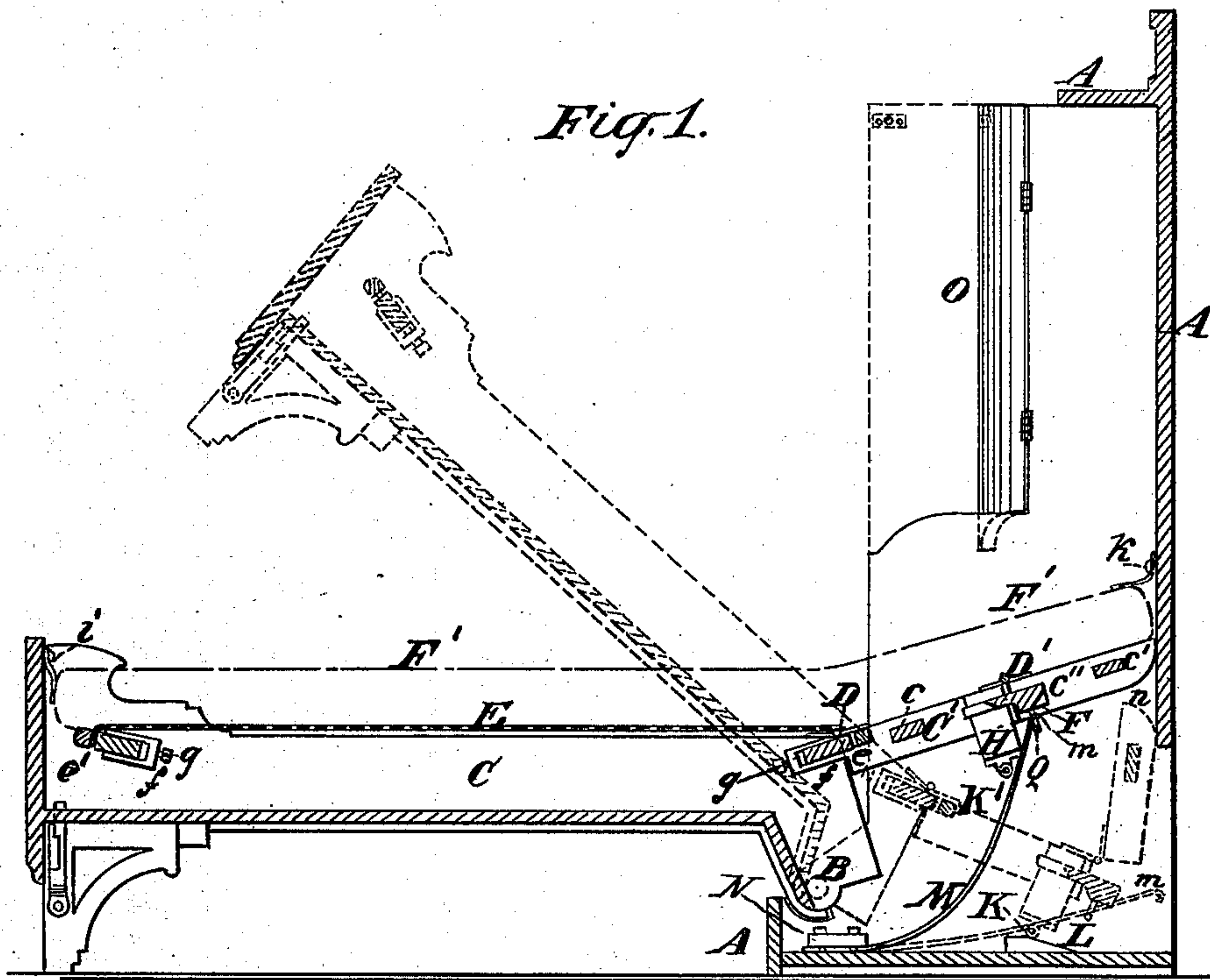


(No Model.)

F. E. MÜLLER.
FOLDING BED.

No. 402,179.

Patented Apr. 30, 1889.



WITNESSES.

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UNITED STATES PATENT OFFICE.

FREDERICK ERNST MÜLLER, OF BROOKLYN, NEW YORK, ASSIGNOR TO ANDRESEN, BLATT & CO., OF SAME PLACE.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 402,179, dated April 30, 1889.

Application filed August 19, 1886. Serial No. 211,333. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK ERNST MÜLLER, of Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Folding Beds, of which the following is a specification.

My invention relates to that class of folding beds in which the case represents a cabinet or chiffonier, out of which the bed-frame swings on a hinge or pivot near the base of the case, this bed-frame being made in two toggle-like sections, the main section extending forward of the pivot-point away from the case, while the minor section extends into the case. Several beds of this character have been heretofore devised, one of which is shown in my former application, Serial No. 196,073, filed March 22, 1886, on which my present application is a special improvement.

My present invention aims to provide a bed of more simple and inexpensive construction, which will be very easily foldable and yet be both compact and capacious. In my present bed, therefore, I provide the folding bed-frame with a strained elastic web, which is attached to the main section only of the folding frame, extending from the pivoted end thereof to the foot end, and I provide the minor section with fixed slats, and I use a mattress made in one piece, which extends continuous over the hinge-joint between the main and minor sections, and is supported jointly on the said web of the main section and the slats of the minor section. I also make the minor section in two hinged toggle-like sections, which bend or fold into the bottom of the case under the head end of the mattress when the bed is folded up, and to the first joint or section of the same I attach a counterbalance-weight, and also the free end of a bow-spring, which is fixed at the opposite end to the base of the case, and which together act to balance the main section when the bed-frame is swung in or out.

My invention therefore consists, mainly, in the features above outlined and in details connected therewith, as hereinafter fully set forth and claimed.

Figure 1 is a vertical section through my

improved folding bed, the full lines representing the position of the parts as when the bed is opened for use, the dotted lines in this figure indicating the position of the parts when the bed is about half-way unfolded. In the fully-unfolded position of the bed shown in this figure also is indicated the outline of the mattress by a line formed of long and short dashes. Fig. 2 is a plan view of the bed when unfolded into the position for use, parts shown in section. Fig. 3 is a section of Fig. 2, indicated by the line *xx*, the direction for looking at the section being indicated by the arrows in Fig. 2.

A is the body of the case, which may be constructed to resemble a cabinet or chiffonier and ornamented in any manner desired. To the lower part of said body, near the front thereof, is pivoted, as shown at B, Figs. 1 and 3, the major section C of the bed-frame, which, when the bed is unfolded, projects to the front of the body of the case.

Pivoted or hinged to the part C of the bed-frame, as shown at D, Figs. 1 and 2, is another part of the bed-frame C', which consists of two short side rails joined together by a transverse slat or rail, *c*, and to the part C' is further hinged or pivoted, as shown at D', another part, C'', of the bed-frame, which is constructed in a similar manner to that of the part C'—that is, composed of two short side rails joined together by a transverse slat or rail, *c'*. The part C' and C'' constitute what I call the "minor section" of the bed-frame.

The web, netting, or other flexible support for the mattress, is shown at E, Fig. 1, and is attached at its ends to stout rails *e* and *e'*, which rails are held by supports *f*, provided with tension-screws *g*, for tightening said web in the usual manner. The mattress F' is also attached or looped at the foot to that part of the bed-frame which, when folded, forms a portion of the top of the case, as shown at *i* in Fig. 1, and at the head it is attached in a similar manner to the back of the case, as shown at *k*, Fig. 1.

The parts C' and C'' of the bed-frame serve, when the bed-frame is extended, to support the head portion of the mattress, which is in-

clined upward, as shown in Fig. 1, so as to take the place of a bolster, and upon which the pillows of the bed are placed, thus dispensing with a separate bolster and rendering the bed more compact and foldable.

The mattress F', as shown by dotted lines in Fig. 1, is made in one piece, and therefore extends continuous over both main and minor sections, resting on the web E and slats c c' of the respective sections.

To the rear extremity of the part C' is attached a cast-iron counterpoise, F, which preferably extends in the form of a rail entirely across the space between the side rails of said part, as shown in Fig. 2. This counterpoise might, however, be made of wood and weighted with any suitable material. To the bottom of the counterpoise are attached staples G, or any other suitable form of support for springs hereinafter to be described, and from each extremity of said counterpoise, on the under side, projects downward a bracket, H, to the bottom of which bracket is pivoted a small friction-roller, K. When the bed-frame is partly closed into the position shown in dotted outline in Fig. 1, the friction-roller K bears upon the upper inclined surface of an inclined plane, L, attached to the bottom of the case A. In opening the bed the weight of the counterpoise is first supported by the inclined plane L and the counterpoise raised into the proper position to be acted upon by the springs hereinafter to be described. Friction upon the bottom of the case is thereby avoided and the opening and closing of the bed rendered easier.

At N, near the front part of the bottom of the case, are attached stout bow-springs M, which are preferably slightly hooked at their free extremities, as shown at m, and which pass through the staples G, projecting from the lower part of the counter-balance F.

The part C'' of the bed-frame has the rear extremities of its side rails rounded off, as shown at n in Fig. 1, which renders it easy for these extremities to slide up and down against the inside of the back of the case A. The combined action of the counterpoise and bow-springs renders it easy to accurately adjust the balance between the extended section C of the bed-frame and the minor section, which is not so extended, for whereas when the bed is opened the action of gravity on the major section C becomes stronger and stronger the action of the spring increases in strength, so that the part C is at all times very nearly balanced, thus rendering it extremely easy to extend the bed or close the same; but I do not confine myself to two bow-springs nor to two brackets, H, acting in the manner described. A single spring and bracket might be arranged to act in the center of the counter-balance. The nature of the action of these devices would not materially be changed by their number.

On opposite sides of the case are doors O,

which, when the bed is extended, may be opened to admit air more freely to the occupants of the bed. It will be seen that by this construction the hinged parts of the minor section of the bed-frame fold together when the bed is closed entirely below the level of the stretched web E, instead of, as heretofore, having some of these parts sliding up on the back of the case behind the mattress, thus necessitating a deeper case than is required by my improvement, and also that the entire height required for the cabinet is but very little more than that represented by the length of the major section C of the bed-frame. The arrangement therefore affords not only an extremely compact bed, but also one which is very easily operated and the parts of which are of such character as to need very little repair after long use.

I am well aware that springs have been used to assist in counterbalancing the extension part of folding beds, and I therefore do not claim, broadly, the use of springs for this purpose. Neither do I claim, broadly, the use of a counter-balance; but I am not aware that a spring and a weight have been used in the manner used by me, or in the same combination or arrangement of parts—that is, attached to the first joint on the double-jointed minor section of the bed-frame, which forms a most effective manner of counterbalancing, and yet enables the inner end of the bed-frame to be made very capacious, at the same time that it is rendered compactly foldable in the bottom of the case, by using the springs combined with the weight—but a light weight is required in lieu of the heavy weight usually employed; and in fact, in my case, the weight may be omitted altogether by making the springs stronger. By arranging the bow-springs parallel with the length of the bed and using one at each side much more powerful and durable springs can be secured in a small space than would be the case if one bow-spring were arranged transversely with its middle fixed to the base of the case and each end connected to the folding bed-frame, as heretofore.

What I consider as my invention, and desire to secure by Letters Patent, is as follows:

1. The combination, with the inclosing bed-case, of the main section C and minor sections C' C'', hinged as shown, staple or staples G, affixed to one of the minor sections, and bow spring or springs M, fixed at one end to the base of the case and hooked at the other end in said staples, substantially as shown and described.

2. The combination, with the inclosing bed-case, of the main swinging section C and minor sections C' C'', hinged as shown, with the weight F, attached to one of the minor sections, staple or staples G, and spring or springs M, arranged and operating substantially as shown and described.

3. In a folding bed, the combination, with

the inclosing-case and a swinging bed-frame
pivoted thereto and made of a main sec-
tion and two toggle-like sections, of a bow
spring or springs arranged in the base of the
5 case parallel with the length of the bed-frame,
fixed at one end at or near the joint of the
two sections, and connected at the opposite

end with the minor section, substantially as
shown and described.

F. ERNST MÜLLER.

Witnesses:

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JNO. E. GAVIN.