

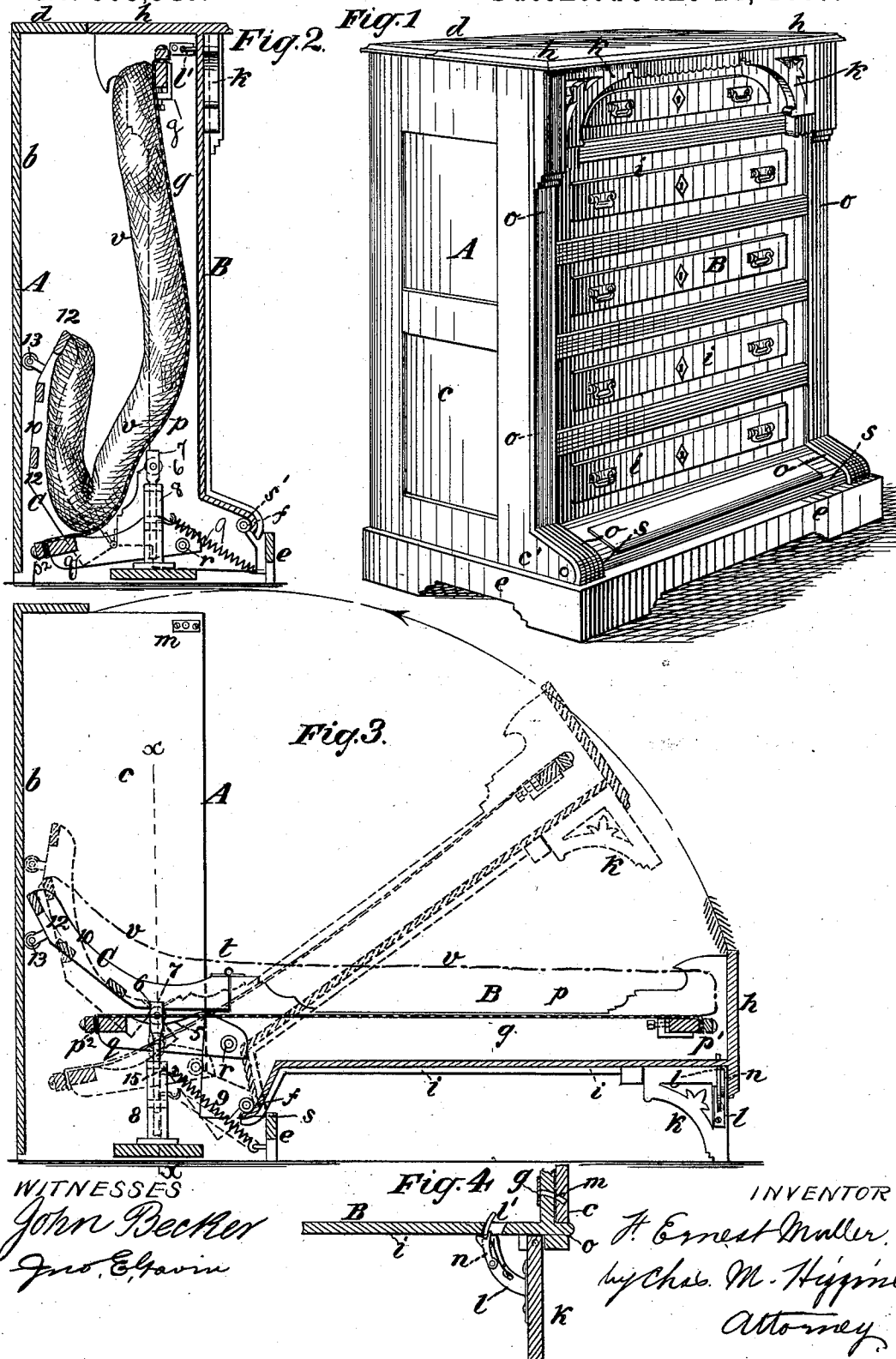
(No Model.)

2 Sheets—Sheet 1.

F. E. MULLER.
FOLDING BEDSTEAD.

No. 365,348.

Patented June 21, 1887.



(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

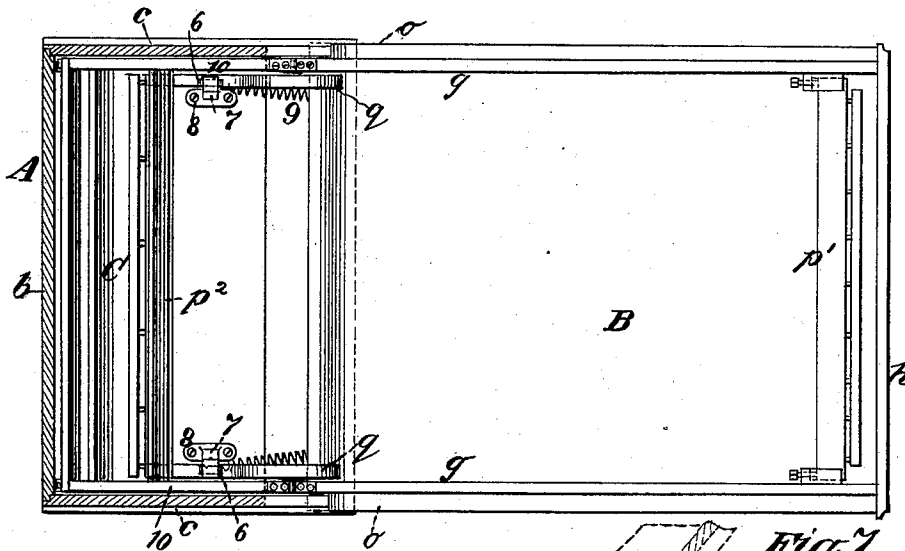


Fig. 6.

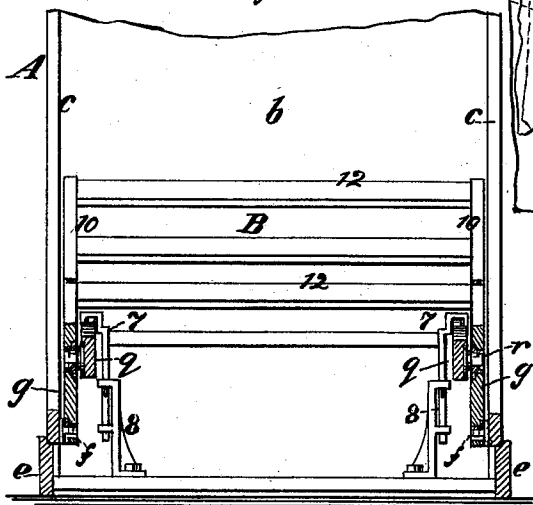


Fig. 7.

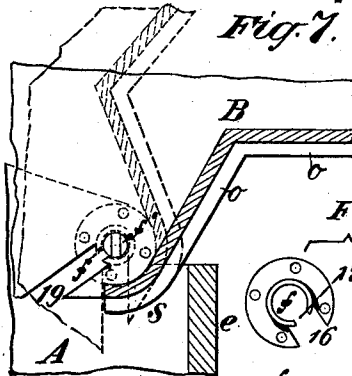


Fig. 8.

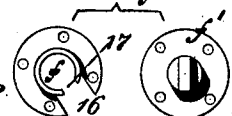


Fig. 9.

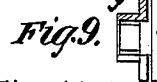


Fig. 10.

Fig. 11.

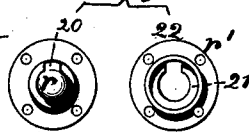


Fig. 12.



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FOLDING BEDSTEAD.

SPECIFICATION forming part of Letters Patent No. 365,348, dated June 21, 1887.

Application filed March 22, 1886. Serial No. 196,073. (No model.)

To all whom it may concern:

Be it known that I, F. ERNST MULLER, a citizen of the United States, residing at Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Folding Bedsteads, of which the following is a specification.

My invention relates to that class of folding beds in which the bed swings or folds up into an upright case having the external appearance of a chiffonier or chest of drawers, and also relates to that class in which the bed-frame is made in two sections hinged together and connected by a spring-wire web or elastic bed-bottom which becomes strained tight and level when the sections are unfolded or opened out for use.

The main objects of my improvement are to provide a longer bed in a case of shorter height than heretofore and to give the folded case a more perfect and delusive appearance of a finished chiffonier; also, to enable a separate bolster to be dispensed with and to so construct the bed-frame and dispose the mattress as to serve as a bolster, and, finally, to simplify and improve the bed in its general construction.

To these ends my invention embodies several novel features, as hereinafter fully set forth and claimed.

In the drawings annexed, Figure 1 presents a perspective view of my improved bed folded or closed up, and Fig. 2 is a vertical section of the same when so closed or folded. Fig. 3 is a longitudinal section of the bed when opened or extended out for use. Fig. 4 is a fragmentary transverse section at the foot-board end, to illustrate the folding legs and their catch. Fig. 5 is a sectional plan of the extended bed. Fig. 6 is a cross-section on line *xx*, Fig. 3, looking to the head end. Fig. 7 is a fragmentary longitudinal section near the hinges or trunnions of the bed. Figs. 8, 9, 10, 11, and 12 give detailed views of the hinges or trunnions of the bed frame.

Referring to Figs. 1, 2, 3, 5, and 6, A indicates the upright case of the folding bedstead; and B indicates the hinged or folding bed-frame, which is pivoted to the case and may be swung vertically into the case, as seen in Figs. 1 and 2, or may be opened out and placed horizontally, as seen in Figs. 3 and 5. The case

A is closed on three sides—viz., on the back *b* and the ends *c c*, the back *b* forming practically the head-board of the bed. The case is also closed about half-way on the top, as shown at *d*, the front portion of the top being open. The case is open at the base and is constructed with a continuous rectangular base-frame, *e*, which extends around and incloses the entire base of the case, as well shown in Fig. 1. This base-frame is wider than the ends *c c* of the case, and the lower front corners of the case are extended into the front corners of the base-frame in the form of triangular consoles or extensions, as shown at *e'* in Fig. 1. Now, the bed-frame B is hinged or pivoted within the base-frame *e* and within the ends *c c*, just at the corners of the extensions *e' e'*, as shown at *f* in Figs. 2, 3, and 6. The side rails, *g g*, of the bed-frame fit snugly within the ends *c c* of the case B, as seen in Figs. 4, 5, and 6.

The end *h* of the bed-frame, which connects the side bars, *g g*, forms the foot-board of the bed when the bed is extended, as seen in Fig. 3, and closes the open top of the case flush with the top section, *d*, when the bed is folded, as seen in Figs. 1 and 2.

The bottom *i* of the bed-frame is formed on the exterior to represent the finished drawer-front of a chiffonier or similar piece of furniture, as shown best in Fig. 1, and at the top of this front, close to the foot-board *h*, are pivoted two brackets or consoles, *k k*, which, when the bed is folded up, fit close to the front and form ornamental consoles at the top of the chiffonier front, but which, when the bed is extended, are swung down and form legs to support the foot of the extended bed, as seen in Fig. 3. These leg-brackets *k k* are provided with an arc-shaped iron or flange, *l*, which projects through a slot in the front or bottom *i*, and terminates in a round bolt-like prong, *l'*, which is curved concentric with the pivot of the leg-bracket and coincident with a tangential bolt-hole, *m*, through the side bars, *g g*, and through the case ends *c c*, as seen best in Fig. 4.

On the arcs *l* are pivoted spring-latches *n n*, which, when the leg-brackets are swung out, catch against the bottom *i* and hold the leg in its extended and supporting position, as shown on the right of Fig. 4. When, however, the spring-latch *n* is pressed inward, the leg can

be folded back flush with the front or bottom *i*, as seen in Fig. 1 and on the left of Fig. 4, and when thus folded the bolt-prong *m* passes through the side bar, *g*, into the end *e* of the case B, and thus locks the bed firmly in its folded position in the case, as will be readily understood from Figs. 1, 2, and 4. By this construction of the legs they serve as ornaments on the top of the folded front, and the act of extending the legs unlocks the bed from its case, and vice versa, which is a very advantageous feature.

It will be further seen on reference to Figs. 1, 2, and 3 that by my construction I pivot the bed-frame in the case at a point much lower down and farther forward than usual, and hence I am enabled to use a much lower or shorter case than usual, and yet use a bed of longer length. In this way I provide a bed a little longer than usual, which is very desirable, and yet make the case more near to the usual height of chiffoniers, thus presenting a better appearance when the bed is folded and giving greater capacity when the bed is extended.

In order to further improve the appearance of the bed when folded and to improve the delusion of a finished chiffonier, I pivot the bed-frame within the case B and its base-frame *e* in such a way as to form a cylindrical or rolling joint, as shown at *ss* in Figs. 1, 2, and 3, which encircles the hinge *ff* and revolves in the base-frame *e*, so as to make a perfect finish at the joint between bed-frame and case, and conceal the nature of the piece of furniture very perfectly. For the same purpose the bed-frame is provided with an ornamental marginal bead or molding, *o*, which projects laterally therefrom and overlaps the front edge of the case ends *e* when the bed is folded, as seen in Figs. 1, 4, and 5, thus making no joint observable on the front when the bed is folded, as illustrated in Fig. 1. This molding *o* of course runs down over the inclined extensions *c'*, and is curved around the curved ends thereof at the hinging points, as shown in Figs. 1, 2, and 3, thus making a finished concealing border on the front of the case, as seen best in Fig. 1.

Now, referring to Figs. 2 and 3, *p* represents the elastic wire web or spring-bottom, the foot end of which is secured, as usual, to a cross-bar, *p'*, which is held in iron brackets or sockets *g'*, attached to the side bars, *g*, and provided with set-screws, as usual, for adjusting the tension of the web. The head end of the web is fixed to a cross-bar, *p''*, which is secured at opposite ends to lever-arms *q*, which are pivoted to the head end of the side bars, *g*, above the hinge *f*, as shown at *v*. These lever-arms *q* are formed with a curved or cam face, 5, at the top, which projects under rollers 6 6 on the top of vertical sliding rods 7 7, which are supported in the upright guides 8 8 and are acted upon by strong springs which tend to constantly pull the rods and their rollers

downward, as will be understood from Figs. 1, 2, and 6.

Now, a particularly advantageous feature of my bed in combination with the other parts of the bed-frame is the inclined head-rest or bolster-frame C, which is hinged to the side rails, *g g*, of the bed-frame, as shown at *t t*, and forms, in fact, the head-section of the bed-frame. This head-frame consists of two curved side bars, 10 10, hinged at *t* to the main side bars, *g g*, and connected by the bottom slats, 12, and also provided with a roller, 13, which rests on the back *b* of the case A, as well shown in Figs. 2 and 3. The stuffed mattress *v* is placed on the wire web *p* with its head end resting on the inclined head-rest or bolster-frame C, as shown by full and dotted lines in Figs. 2 and 3, and it will thus be seen that the inclined frame C supports the head end of the mattress in a raised position in such manner as to serve as a bolster, and thus enable a separate bolster to be dispensed with, which is a great advantage in economy, convenience, and compactness.

The general construction of the bed having been now explained, it will be seen that when the bed is extended, as shown by full lines in Fig. 3, the bed-frame B will extend horizontally from the case A, the foot end being supported on the outswinging legs *k k*, while the head-frame C will be held in a curved or inclined position, forming a continuation of the bed-frame within the case A, with its high end resting against the back *b*, as shown in Figs. 3, 5, and 6.

It will be seen by reference to the dotted lines in Fig. 3 that in the act of swinging down the bed-frame into the extended position the arms *q q* will catch under the rollers 6 6, which will thus obstruct the movements of the arms and put a resistance thereon, which will retard the arms relatively to the bed-frame, and thus act to take up the slack in the wire web *p*. The arms *q q* will, however, rise up slowly as the bed-frame is depressed, thus forcing up the rollers 6 and bars 7 against the tension of the springs 9 until the arms *q* assume a nearly-horizontal position with the bed-frame, as shown by full lines in Fig. 3, when a stop or hook, 15, on the bars 7 strikes a shoulder on the guides 8, at which point the bed will be fully extended, as shown, and the web *p* will be strained taut and level, as will be readily understood from Fig. 3. The mattress *v* will now be supported on the strained web *p* and on the inclined head-frame C, as shown by dotted lines in Fig. 3, in a perfect position to receive the sleeper and without requiring a separate bolster at the head, as before described. When, on the other hand, the bed is to be folded up, the bed-frame B is swung up, as indicated by the arrow in Fig. 3, and is finally closed into the case A, as shown by full lines in Figs. 2 and 1. In this position the web *p* will be greatly slackened and the mattress *v* will be bent at the head end within the bottom

of the case, the head-frame C assuming a vertical position in the lower part of the case, while the lever-arms *q* assume a nearly-horizontal position in the bottom of the case far below the rollers 6 and sliding rods 8, which latter will be drawn down to their limit of motion by the contraction of the springs 99, thus causing all parts of the bed-structure to fold very easily and compactly within the case. It will be here again seen that by having the hinge *f* of the bed-frame so much farther forward and downward than usual greater space is provided between the hinging-point and the back of the case to allow the mattress, &c., to bend or double itself into the case, and thus enable the mattress and bed clothes to fold in easily without squeezing or pressing the same too much, which is a very desirable feature.

Any suitable form of hinge or pivot may be used to joint the bed-frame to the case; but I prefer to use the peculiar form of trunnion-hinge shown best in Figs. 8, 9, and 10. The barrel part *f* of this hinge or trunnion is attached to the side bars, *g*, as seen in Fig. 6, while the pintle part *f'* is secured to the inside of the extensions *c'* on the case ends *c c*, both sections having flanged bases with screw-holes, by which they are secured in place, as seen in Fig. 8. The pintle on the section *f'* is cylindrical at the base, but is reduced to a flat tenon-like stem at the outer end, as seen in end view in Fig. 8 and in side view in Fig. 9. The barrel-section *f* has a radial slot, 16, in its base-flange of the same width as the round part of the pintle, and has a narrower slot, 17, through the barrel equal to the width of the tenon of the pintle, as seen in Figs. 8 and 10. It will therefore be seen that this tenoned form of the pintle and the slotted form of the barrel will allow the slotted barrel to be slid laterally over the pintle in one position, which corresponds to the dotted lines in Fig. 7, and hence the bed-frame can be lifted on or off its pintles in the case at the angle or position shown in Fig. 7, and may thus be removed or inserted, as occasion may require. At all other angles the pintles will bear against and be embraced firmly by the unslotted part of the barrel, and cannot be removed, but will be socketed pivotally secure, as will be readily understood. When the bed-frame is at the removable angle, as shown by dotted lines in Fig. 7, there will of course be no tendency for the hinge to become disengaged, as the weight and strain of the parts will keep the hinge in engagement unless the bed-frame is purposely lifted up at that angle for the purpose of removal. For this purpose the side rails, *g g*, have an angular slot, 19, to permit passage over the pintles, as will be understood from the full and dotted lines in Fig. 7.

The hinges which joint the lever-arms *q* to the side bars, *g*, are of similar character to those already described, but different in their details, as shown in Figs. 11 and 12. In this case the pintle-sections *r* are secured to the lever-arms *q* and the barrel-sections *r'* to the

side bars, *g*, as seen in Fig. 6. The pintles *r* are formed with an overhanging lug or projection, 20; and the barrels *r'* are formed with an overhanging flange, 21, having a slot, 22, at one point to admit the lugged pintle; hence by this means the pintles can be inserted endwise in the barrels or removed therefrom at one particular angle, and at all other angles the pintles will be free to turn in the barrels and be pivotally secured therein, and therefore the arms *q*, having these pintles attached, as seen in Fig. 6, may be easily hinged onto the barrels on the side bars, *g*, and may be removed therefrom at a particular position whenever removal is necessary. These forms of hinges are therefore very strong and simple, and may be easily made of malleable iron, and admit of easy attachment and detachment of the parts, which is a desirable detail in the construction of the bedstead.

I am aware of the construction shown in Patents Nos. 207,975 and 232,805, in which the hinged or folding legs are provided with spring catches or pawls. In these cases, however, the spring catch or pawl is pivoted directly on the leg and extends to and engages with a slot in the bed-frame. In my case, however, a curved flange extends from the leg and passes through the slot in the bed-frame, and the spring catch or bolt is pivoted on the extremity of this curved flange to engage the slot. This construction has the important advantage that the curved flange steadies the legs, and the spring-catch, being short and pivoted on the end of the flange away from the leg, is not likely to become tripped by any object striking against the leg, as is the case where the curved flange is omitted and where the catch is made long and pivoted directly on the leg, as in the former instances.

What I claim is—

1. In a folding bed, the combination, with the outswinging bed-frame B, made in two toggle-like sections, *g* and *q*, of the elastic web *p*, attached to the opposite ends of said sections and strained by the straightening toggle action of said sections when the bed-frame is outswung, and the inclined head-frame C, jointed to the main section *g* and extending in an inclined position beyond and above the end of the web and the minor section *q*, substantially as shown and described.

2. In a folding bed, the combination, with the main bed-frame B, made in the two sections *g g*, of web *p*, strained thereon, and inclined head-frame C, hinged to the bed-frame and extended beyond the web *p* and section *q*, with a mattress supported on said web and extended beyond the end thereof in an inclined position up over the head-frame C, thus giving the effect of a bolster, substantially as herein shown and described.

3. An improved folding bed formed by the combination, with an inclosing-case, A, and a folding bed-frame, B, of the auxiliary folding frame C, attached to the head end of the main frame, and the lever-arms *q*, also hinged to the

head end of the main frame, with the web *p* attached to the arms and bed-frame at opposite ends, and means to retard and stop the said arms when the bed-frame is swung down and out of the case, substantially as shown and described.

4. In a folding bed, the combination, with the outswinging bed-frame, of the lever-arms *q*, pivoted to the head end of the bed-frame, an elastic bed-bottom or web, *p*, fixed at one end to the lever-arms and at the other end to the foot of the bed-frame, sliding retarders arranged to engage the lever-arms, and springs arranged to depress the retarders, substantially as and for the purpose set forth.

5. The combination, in a folding bed, with the outswinging bed frame and the web *p*, secured to the foot of the bed frame, of the arms *q*, hinged to the head of the bed-frame and secured to the head of the web, said arms being formed with the cam-faces 5, with retarding-rollers 6 engaging said cam-faces, and a yielding resisting device, such as 7 9, connected to said rollers, substantially as set forth.

6. In a folding bed, the combination, with the inclosing-case and hinged bed-frame, of

the lever-arms *q*, the web *p*, attached, respectively, to the arms and bed-frame, the sliding rods 7, engaging the arms, guides 8, and springs 9, arranged and operating substantially as shown and described.

7. In a folding bed, the combination, with the inclosing-case and folding bed-frame fitting into the same, of pivoted legs *k*, provided with a curved bolt projecting therefrom concentric with the pivots and adapted to pass through the side of the bed-frame into the ends of the case when the bed-frame is swung into the case and the legs folded, substantially as and for the purpose set forth.

8. The combination, in a folding bed, with the folding bed frame and folding legs *k*, pivoted to the bed-frame, of the curved flange *l*, projecting from the legs concentric with the pivot thereof and projecting through a hole in the bed-frame, with the spring-catch *n*, pivoted on said curved flange near the extremity thereof, substantially as set forth.

F. ERNST MULLER.

Witnesses:

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