No. 610,886. Patented Sept. 20, 1898.

G. BORTMANN & R. MUNKWITZ.

DOOR STOP.

(Application filed May 29, 1897.)

(No Model.)

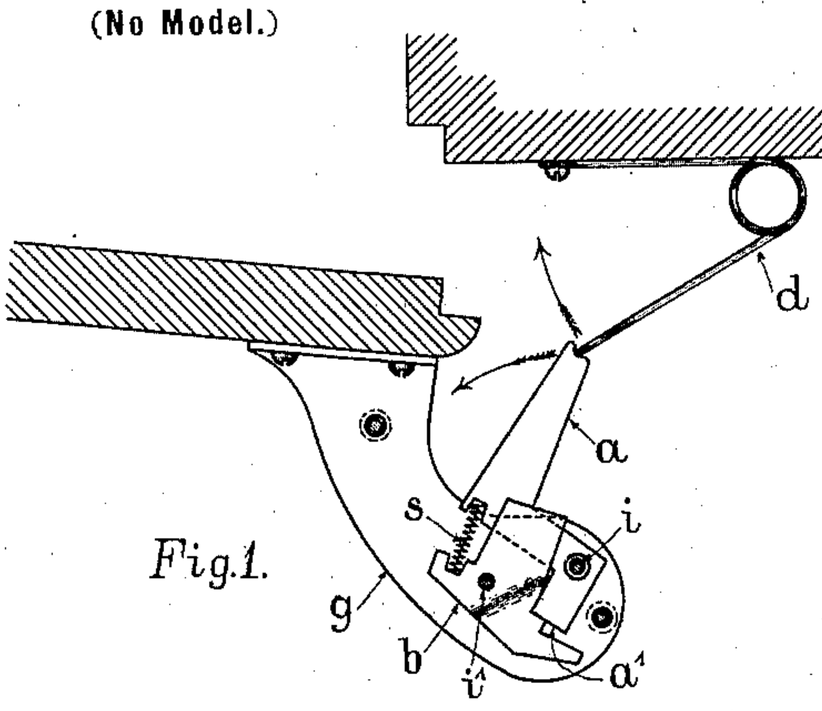


Fig. 1.

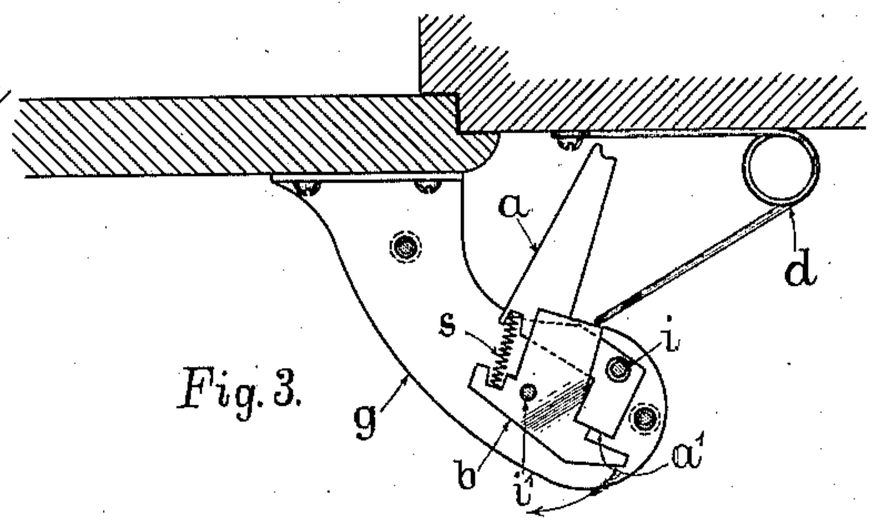


Fig. 3.

Fig. 2.

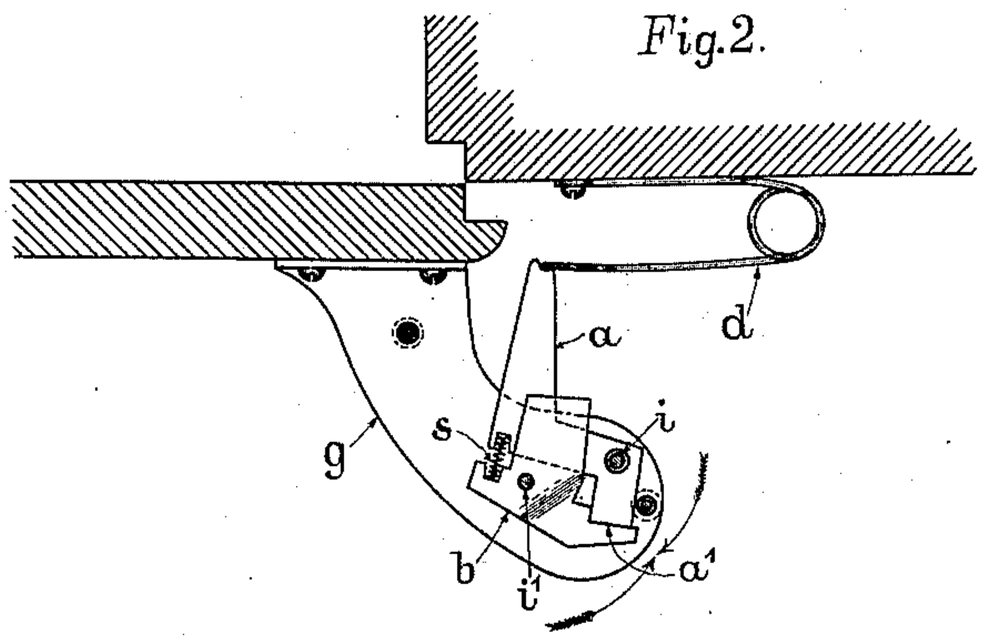


Fig. 5.

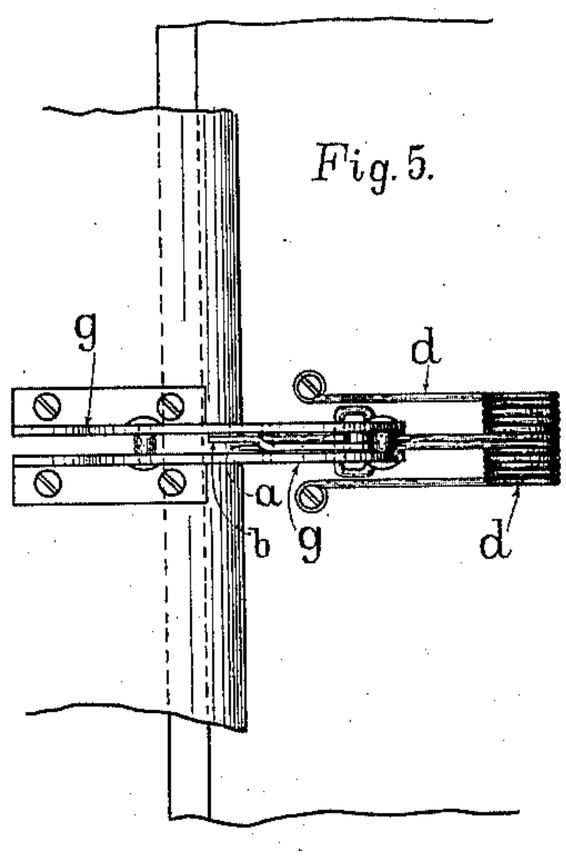


Fig. 6.

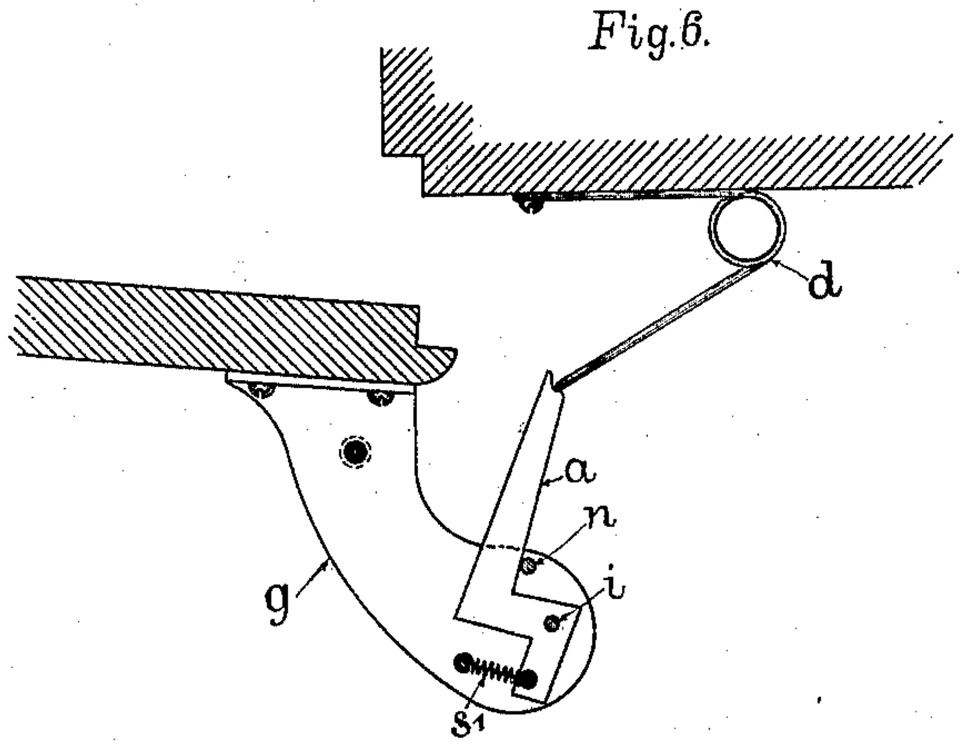
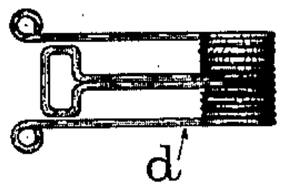


Fig. 4.



Witnesses
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by their Attorney R. Maddan

UNITED STATES PATENT OFFICE.

GUSTAV BORTMANN AND REINHOLD MUNKWITZ, OF LEIPSIC, GERMANY.

DOOR-STOP.

SPECIFICATION forming part of Letters Patent No. 610,886, dated September 20, 1898.

Application filed May 29, 1897. Serial No. 638,805. (No model.)

To all whom it may concern:

Be it known that we, GUSTAV BORTMANN and REINHOLD MUNKWITZ, subjects of the King of Saxony, residing at Leipsic, Saxony, Germany, have invented certain new and useful Improvements in Door-Stops, of which the following is a specification.

This invention relates to a device for avoiding the violent closing of doors by cushioning the movement of the door as it is about to close.

In the annexed drawings, Figures 1, 2, and 3 are sectional plans showing this device arranged on a door in three different positions. Fig. 5 shows the front view of Fig. 3. Fig. 4 shows a detail of the device, while Fig. 6 shows a modified construction.

This device consists, essentially, of the lever *a*, arranged correspondingly with a spring *d* and pivoted on the arm *g*, and of the lever *b*, also pivoted on the arm *g*. The spring *d* is here fixed on the wall and the arm *g* on the door. The lever *a* is pivoted on pin *i* and the lever *b* on pin *i'* on the arm *g*, and both lie in parallel direction side by side. The step-like end of the lever *b* is so formed that it stands in the same plane in which the lever *a* lies and abuts against the end *a'* of the lever *a* when the levers *a* and *b* are turned round the pins *i i'* in the direction of the arrows in Fig. 2.

The spring *s*, which stands with its ends in slots on the levers *a* and *b*, tends to turn these levers in the direction of the arrows, Fig. 2, round the pins *i i'*, so that the end *a'* of the lever *a* is kept lying on the step-like end of the lever *b*, and when one of the levers *a* and *b* is turned the other lever follows this movement. As these levers *a* and *b* have no common turning axis, the end *a'* of the lever *a* when the levers are turned slides on the step-like end of the lever *b*, on which it is kept lying by the spring *s*.

This device operates in the following manner: When the door is about to close, the lever *a* pushes with its free standing end against the free standing end of the spring *d*, as shown in Fig. 1, and takes with it the spring *d* until the force moving the door is balanced by the tension of the spring *d*. Throughout this course of the spring *d* the end of the latter has described an arc and has turned the lever *a* so far round the pin *i* that, as shown in Fig. 2, the end *a'* of the lever has slid on the step-like end of the lever *b* from the one step to the other, and thus the lever *a* is kept in this position and cannot turn back. By the tension further given to the spring *d* the lever *a*, and therewith the door, is again turned a little backward, whereupon the spring *d* slides off the lever *a* and swings back, as the latter is kept in this position and cannot turn backward. When the door, which has thus been freed from the pressure of spring *d*, is brought from the position in Fig. 2 into that of Fig. 3—that is to say, when the door is closed, which is effected either by means of one of the usual door-closing devices or by hand—the spring *d* pushes, as shown in Fig. 3, against the lever *b* and turns it so far in the direction of the there-shown arrow backward on the pin *i'* that the lever *a*, influenced by the spring *s*, springs back into its original position, Fig. 1. When the door is again opened, the lever *a* is moved a little as it passes the spring *d* without the end *a'* sliding on the other step of the lever *b*, so that when the door is again shut the lever *a* operates in the same manner as before described.

The construction of this device shown in Fig. 6 differs from that previously described only in the lever *b* being omitted and the lever *a* combined with a stopping-pin *n* and with a spring *s'*, fixed on the arm *g*. The spring *s'*, fixed at one end on the arm *g* and at the other end on the lever *a*, tends to keep the lever *a* lying on the stopping-pin *n*, in the position shown in Fig. 6. In this position the lever *a*, when the door is shut, as in the previously-described construction of the device, pushes against the free standing end of the spring *d* and takes the spring with it when the latter is tensioned, thereby balancing the force moving the door partly or completely until the spring slides from the lever *a* and swings back, whereupon the door can be closed simply by pressing it to. When the door is opened, the lever *a* escapes past the spring *d*. When the door is then again shut, the lever *a* operates in the same manner as described.

Having now described our invention, we claim—

The combination with a door and its frame

of an arm g on the former, a lever a having a tail a' pivoted in a horizontal plane at i on said arm, a second lever b pivoted at i' on said arm g and forming a detent for said lever a in either of two positions, a spring d on the door-frame adapted on the closing of the door to be met by the end of the lever a and be tensioned thereby to deflect the lever a until it is held by the detent-lever b in its second position, and afterward to trip the lever a and on further closure of the door to strike and deflect the detent-lever b, and a spring for returning the lever a and detent-lever b into their first position, after deflection of the lever b by the spring d, substantially as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GUSTAV BORTMANN.
REINHOLD MUNKWITZ.

Witnesses:
T. MORGNEZ,
RUDOLPH FRICKE.