

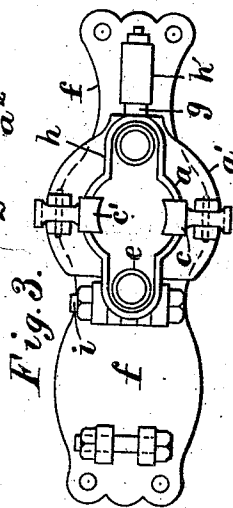
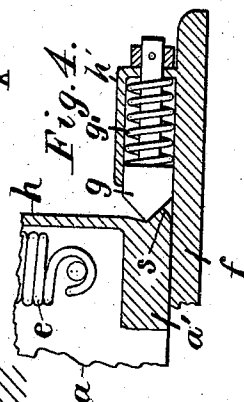
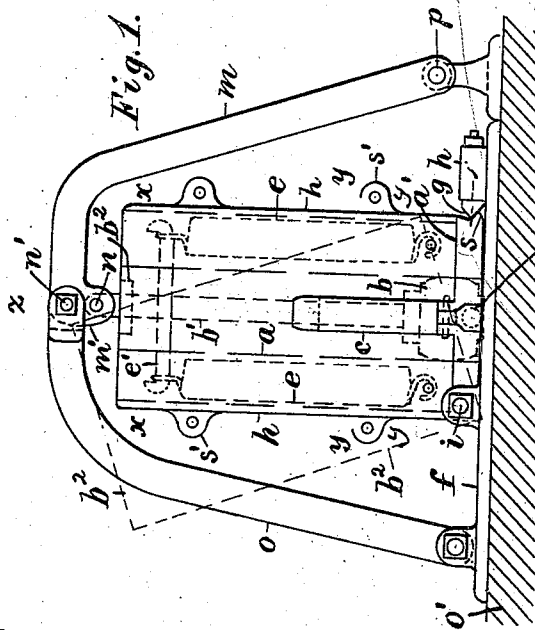
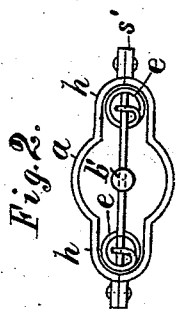
(No Model.)

C. WINCKLHOFER.

COMBINED DOOR SPRING, CHECK, AND LATCH.

No. 501,702.

Patented July 18, 1893.



Attest:
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Clerk. J. F. Kinsey

Inventor.
Charles Winckelhofer, per
Crane & Miller, Attys.

UNITED STATES PATENT OFFICE.

CHARLES WINCKLHOFER, OF NEWARK, NEW JERSEY.

COMBINED DOOR SPRING, CHECK, AND LATCH.

SPECIFICATION forming part of Letters Patent No. 501,702, dated July 18, 1893.

Application filed April 1, 1893. Serial No. 468,635. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WINCKLHOFER, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Door Springs and Latches, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to that class of door springs having a cylinder hinged upon a foot plate which is attached to the door, and in which a piston is forced inward (toward the foot plate) by a spring or springs attached to the piston rod; the rod being drawn outward in opposition to the spring or springs by the joint link attached to the foot plate and an angle lever hinged to a fulcrum upon the door. Such door springs are commonly made with air tight pistons, and the door is prevented from slamming by the cushioning of the piston upon the air near the close of the piston-stroke. In the present invention I substitute pivoted brake blocks for such air cushion, and I also attach to the foot plate a spring latch or bolt with reversely beveled nose fitted to a notch upon the inner end of the cylinder. The brake blocks make contact with the piston near the close of its stroke, and are preferably provided with sloping shoulders to arrest its motion abruptly at first; and afterward, by frictional contact, to retard the motion and thus make the door close slowly. The latch engages a beveled lug upon the inner flange of the cylinder when the door is nearly closed, and the beveled end of the nose tends to press the door tightly shut, and to assist the spring in holding it shut.

In the annexed drawings, Figure 1 is a side elevation of the apparatus, with a plan of the door frame. Fig. 2 is a cross section on line *x, x*, in Fig. 1. Fig. 3 is a cross section on line *y, y*, in Fig. 1, with a plan of the foot plate. Fig. 4 is an enlarged longitudinal section of the latch. Fig. 5 is a section on line *z, z*, in Fig. 1, with the piston upon the shoulders of the brake blocks; and Fig. 6 is a vertical section on line *z, z*, in Fig. 1, with the piston between the brake blocks.

The cylinder *a*, as shown in Fig. 2, is made with tubular casings *h* upon opposite sides

to inclose two spiral springs *e*. The cylinder is provided at its inner end with a flange *a'* hinged at one edge by pivot *i* to the foot plate *f*. The piston *b* is attached to rod *b'*, which is connected with the springs *e* by cross head *e'*, and is projected through a bridge *b²* in the outer end of the cylinder and pivoted to the angle lever *m, m'*. The arm *m'* of the angle lever is provided with two pivots, the pivot *n* being attached to the piston rod, and the pivot *n'* to the joint link *o*, which is pivoted at its opposite end to the foot plate *f*. The opposite edge of the flange is provided with a beveled lug *s*, and the latch *g* is fixed in a casing *h'* upon the foot plate adjacent to such lug. The latch is pressed toward the flange by spring *g'*, as shown in Fig. 4, and its nose is beveled upon its inner and outer sides to permit the inner side of the lug *s* to force the latch back as the door closes, the spring *g'* then pressing the latch into the notch *j*. The foot plate *f* is shown attached to the door frame *o'* with the fulcrum pin *p* engaged with the outer end of the link *m, m*. The lug *s* forces the latch back when the door is opened. The parts in Fig. 1 are represented with the door closed, and the door therefore coincident with the frame.

The operation of the links *m, m*, and *o*, when the door is opened is already well known, as it tends to tip the cylinder around the pivot *i* in the direction indicated by dotted lines *b²*; such movement operating through the link *o* to draw the piston rod outward and to extend the springs *e*. When the door is nearly closed by the springs *e*, the piston moves inward and is abruptly retarded by the brake blocks *c*, which operate through slots in opposite sides of the cylinder, and are pivoted upon the outer sides of the flange *a'* between ears *q*. Each brake block is provided with an arm *c'* extended over the edge of the flange *a'*, and spiral springs *k* are inserted within sockets *a²* in the flange to force such arms outward and press the brakes inward toward the piston.

In Fig. 5, the piston is shown when first making contact with the brake blocks in its inner movement, the piston touching inwardly the sloping shoulders *c'* upon the upper ends of the blocks, which abruptly retard the motion. The piston, pressing upon the sloping

shoulders, forces the brake blocks outward, as shown in Fig. 6, and thereafter slides between them during the remainder of its stroke, being retarded by the frictional contact so as to close the door gently. The piston is shown formed of leather in several layers, but may be made of india-rubber, of wood, or any suitable material.

My apparatus is very efficient because its operation does not depend upon a tight fit between the piston and the cylinder so as to retain air within the latter. The brake blocks have, as is shown in Fig. 6, a considerable movement, and thus compensate for wear during protracted use.

The piston may be actuated by three or more springs if required, and any number of brake blocks may be arranged about the inner end of the cylinder to operate upon the piston in the manner described.

The cylinder with the casings *h* in Figs. 1 and 2, is shown divided longitudinally and united by lugs *s'*, but may be made in one piece, or in any other suitable manner.

Having thus set forth the nature of my invention, what I claim herein is—

1. In a door spring having a cylinder with a piston actuated by a spring, the combination, with a cylinder *a* and piston *b*, of the brake blocks *c* pivoted upon the cylinder and arranged to press elastically upon the piston near the close of its stroke, as set forth.

2. In a door spring having a cylinder with a piston actuated by a spring, the combination, with the cylinder *a* and piston *b*, of the brake blocks *c* pivoted upon the inner end of the cylinder and having inclined shoulders *c'* at their outer ends to intercept the piston, and adapted to press elastically upon the piston within the shoulders, as set forth.

3. In a door spring having a cylinder with a piston actuated by a spring, the combination, with the piston *b*, of the cylinder *a* hav-

ing the flange *a'* with sockets *a²* having springs *k* therein, and the brake blocks *c* pivoted upon the flange and provided with the arms in contact with the springs, substantially as herein set forth.

4. In a door spring having a cylinder with a piston actuated by a spring, the combination, with the cylinder *a* and piston *b*, of the foot plate *f* having the cylinder hinged thereto, and a spring latch fitted to engage the cylinder detachably with the foot plate, substantially as herein set forth.

5. In a door spring having a cylinder with a piston actuated by a spring, the combination, with the cylinder *a* and piston *b*, of the brake blocks *c* pivoted upon the cylinder and arranged to press elastically upon the piston near the close of its stroke, a foot plate having the cylinder hinged thereto, and having mounted thereon a spring latch with reversely beveled nose fitted to a beveled notch upon the cylinder, as herein set forth.

6. In a door spring having a cylinder with a piston actuated by a spring, the combination, with the cylinder *a* having the bottom flange *a'*, of the tubular casings *h'*, the piston *b* having rod *b'* extended through the head of the cylinder and provided with cross head *e'*, the springs *k* attached to the opposite ends of the cross head and secured at their inner ends within the tubular casings, a foot plate having the flange *a'* hinged thereto, and brake blocks pivoted upon the flange and adapted to press upon the piston near the close of its stroke, as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES WINCKLHOFFER.

Witnesses:

T. S. CRANE,
H. J. MILLER.