No. 886,474. PATENTED MAY 5, 1908.

F. BRUCKER.

SPRING HINGE.

APPLICATION FILED NOV. 23, 1907.

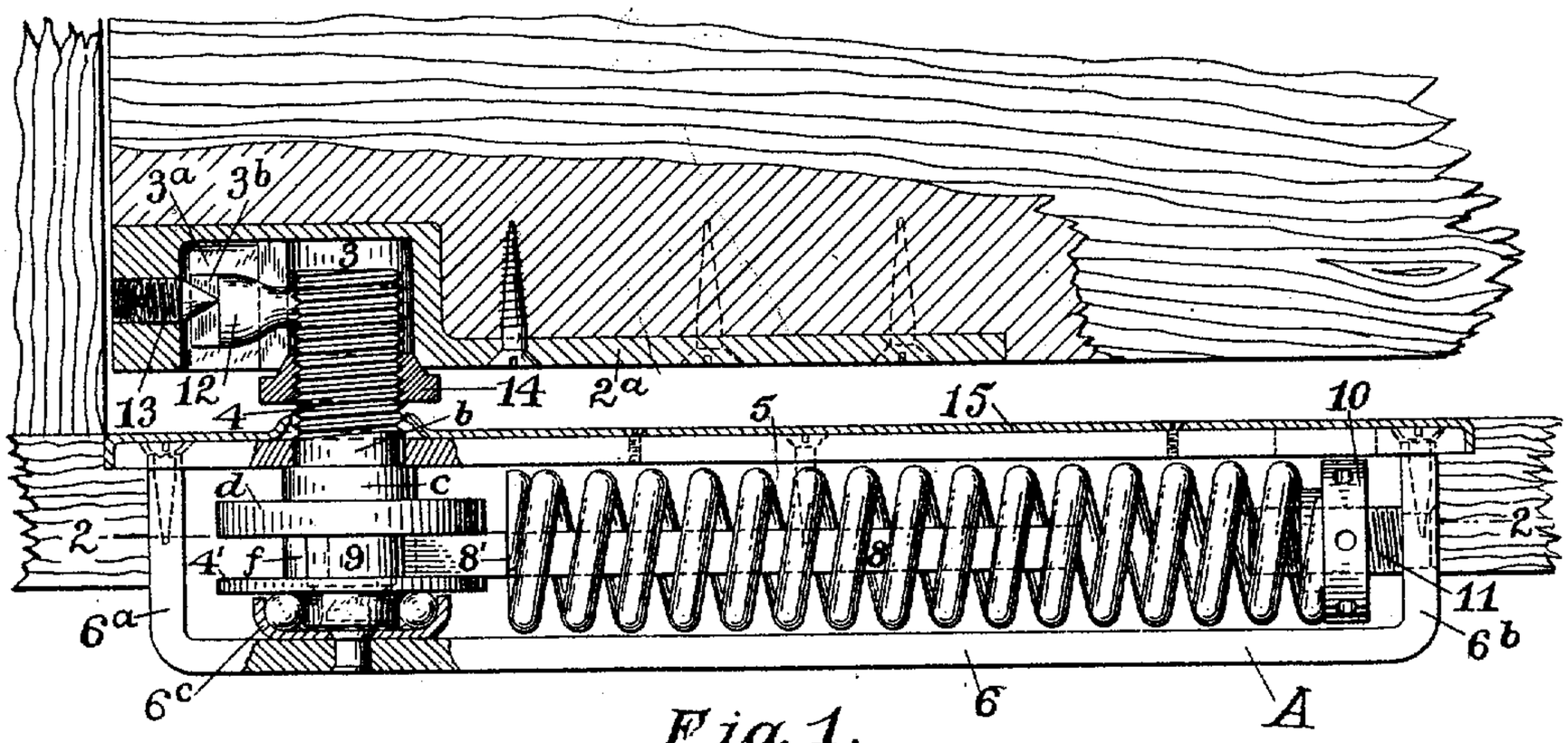

Fig. 1.

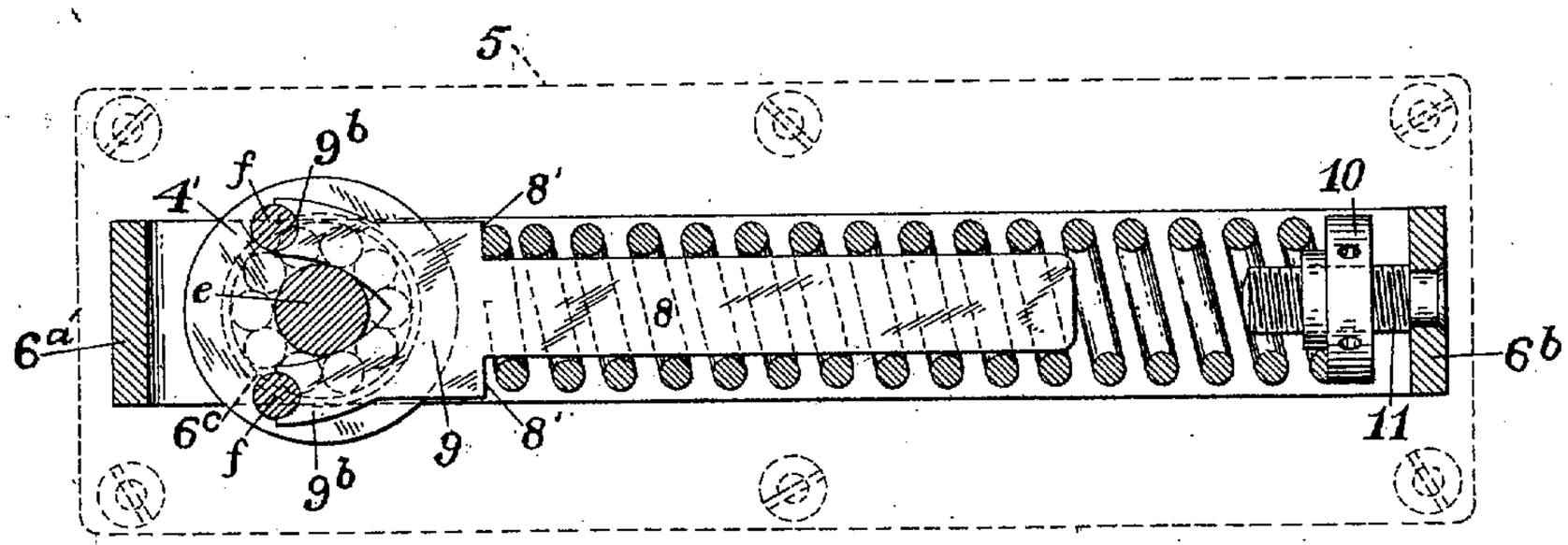

Fig. 2.

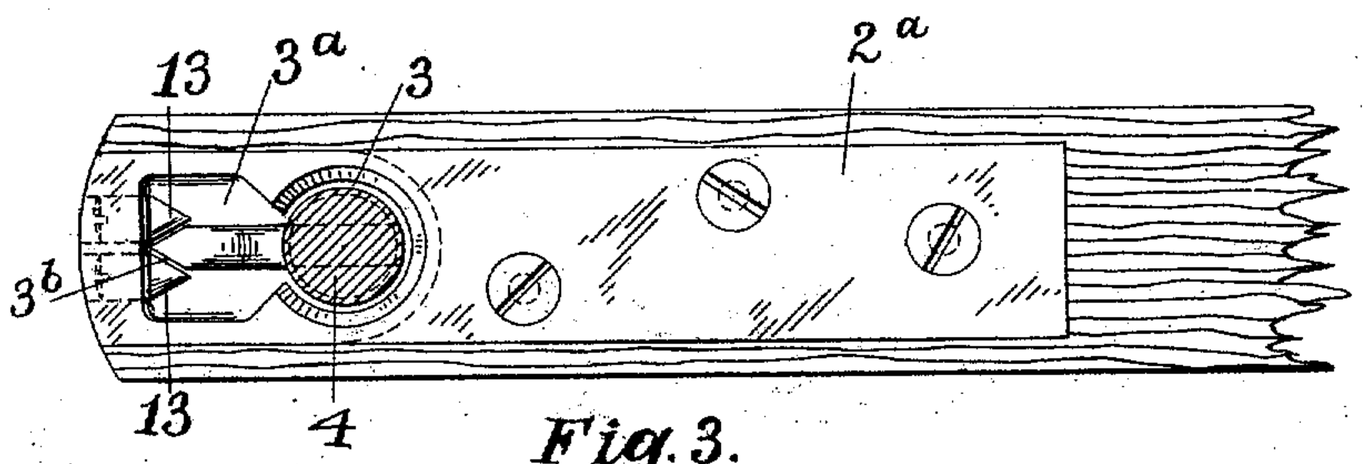

Fig. 3.

Attest:
Edwd L. Tolson
Edward N. Lawton

Inventor,
Francis Brucker,
By Spear, Middleton, Donald & Spear
Atty's.

UNITED STATES PATENT OFFICE.

FRANCIS BRUCKER, OF SHELBY, OHIO.

SPRING-HINGE.

No. 886,474. Specification of Letters Patent. Patented May 5, 1908.

Application filed November 23, 1907. Serial No. 403,530.

To all whom it may concern:

Be it known that I, FRANCIS BRUCKER, citizen of the United States, residing at Shelby, Ohio, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification.

My invention relates to improvements in double acting spring hinges for doors and more particularly to hinges of the type known as floor hinges, and of that class in which a post or stem acts, as the door is turned, upon a plunger and against a spring, the reaction of which tends to return the door to its normal or closed position.

The invention includes the improved details of construction, in this form of spring hinge, the nature and purpose of which are hereinafter fully set forth, and illustrated in the accompanying drawings, in which:

Figure 1 is a sectional elevation of a portion of a door and its frame, disclosing the hinged construction embodying my invention as applied thereto. Fig. 2 is a horizontal sectional plan, on the line 2—2. Fig. 3 is a sectional detail.

In these drawings is shown a frame A, which is adapted to be seated in a recess in the floor at the hinge edge of the door and containing the spring, plunger and parts operating thereon. The frame is shown as formed of two parts, the upper 5 and lower 6, the lower of which is turned at its ends to contact with the other and form the complete frame, the turned ends being marked 6^a and 6^b.

The frame is made of metal (preferably steel) sufficiently strong to withstand the strain. In the upper part 5 is a round hole in which is inserted the lower part of a post 4, made cylindrical as at *b* to fit the hole snugly and yet freely turn in the frame A shoulder *c* fixed on the post or formed therewith bears against the under side of the part 5. Below the collar and on the post is a fixed plate *d*, preferably circular, carrying near its opposite outside edges two stout studs *f*, *f*. Below this is another plate 4′ also preferably circular As disclosed in Fig. 1 the plate 4′ is formed with a downwardly disposed hub having at its juncture with the plate a cone like surface to form the inner bearing of a ball race-way for the anti-friction rollers and also a bearing for the post on the part 6 of the frame. The lower and outer walls of the race-way are formed by an inverted cup 6^c fixed to the lower plate 6, so that the rollers rest on the cup 6^c and the plate 4′ upon the rollers, which thereby support the weight of the door. The space between the upper and lower plates is sufficient to permit the entrance and movement of the head 9 of the spring plunger 8, the arms 9^b of which extend around the reduced part *e* of the post, and bear upon the studs, as shown.

The plunger 8 is a bar extending horizontally between the parts of the frame. It is surrounded by a coiled spring, which is supported at one end by the plunger and at that end bears also against shoulders 8 on the head of the plunger. At the other end it extends beyond the plunger, and is supported upon an independent bearing supported on the end of the frame and in line with the spring. As shown, this spring bearing is in the form of a nut 10 and is threaded onto a screw stem 11 fixed in the end of the frame. Sufficient space is left between the end of the stem and that of the plunger to permit the necessary movement of the latter. The bearing nut has holes in its periphery for turning to adjust the tension of the spring. The free end of the plunger is therefore held laterally by the spring which is free to yield laterally and thus rattling of the plunger is prevented.

The upper end of the post projects above the frame and adapted to be seated in the lower edge of the door. The mechanism above described, contained within, or attached to the floor, is complete within itself and requires for its operation only that the post be held to the door. For this purpose a plate 2^a is attached to the lower edge of the door. It is formed with a recess 3 to receive the end of the post, the recess having an extension 3^a to receive an arm or extension 12 with which the post is provided. This arm has a wedge shaped end 3^b resting between the pointed ends of adjusting screws 13, which prevent the post from turning in the door and at the same time permit of adjustment so as to bring the door, when the spring is in its normal position, accurately in line when the door is closed. The outer ends of these set screws are readily accessible on swinging the door and may be adjusted while the door and post are free to have relative movement under adjustment of the screws. Further the surface of the door is left clear and is not disfigured by the screws.

It is desirable in a hinge of this class to pro-

vide means for quickly adjusting the height of the door. I accomplish this by threading the post and securing thereto a nut 14 upon which the door rests. The nut is preferably made with a conical part fitting a correspondingly flared part in the socket. By this and the wedge shaped arm and pointed adjusting screws the post and door plate are held firmly together in proper position, and yet the door may be quickly raised to clear a rug or carpet or lowered to secure a snug fit to the floor or adjusted for any desired purpose.

The frame is shown as covered by a finishing plate 13.

I claim:

1. A spring hinge comprising a floor frame, a case, a post rotatably mounted therein, spring reacting means within the case coacting with the post, means for securing said post to a door, and means interposed between the post and door for varying the elevation of the door, substantially as described.

2. A spring hinge comprising a floor frame or case, a post rotatably mounted therein, spring reacting means within the case coacting with the post, a nut or collar threaded upon said post, and a door plate seated upon said collar and having means for attachment to a door, substantially as described.

3. A spring hinge comprising a floor frame, or case, a post rotatably mounted therein, spring reacting means within the case coacting with the post, said post having a laterally extending arm with a wedge shaped end, a door plate having a socket to receive said post and arm, and screws passing through said plate and impinging against said wedge shaped end.

In testimony whereof, I affix my signature in presence of two witnesses.

FRANCIS BRUCKER.

Witnesses:
H. W. HILDERBRANT,
ESTELLA CLOWES.