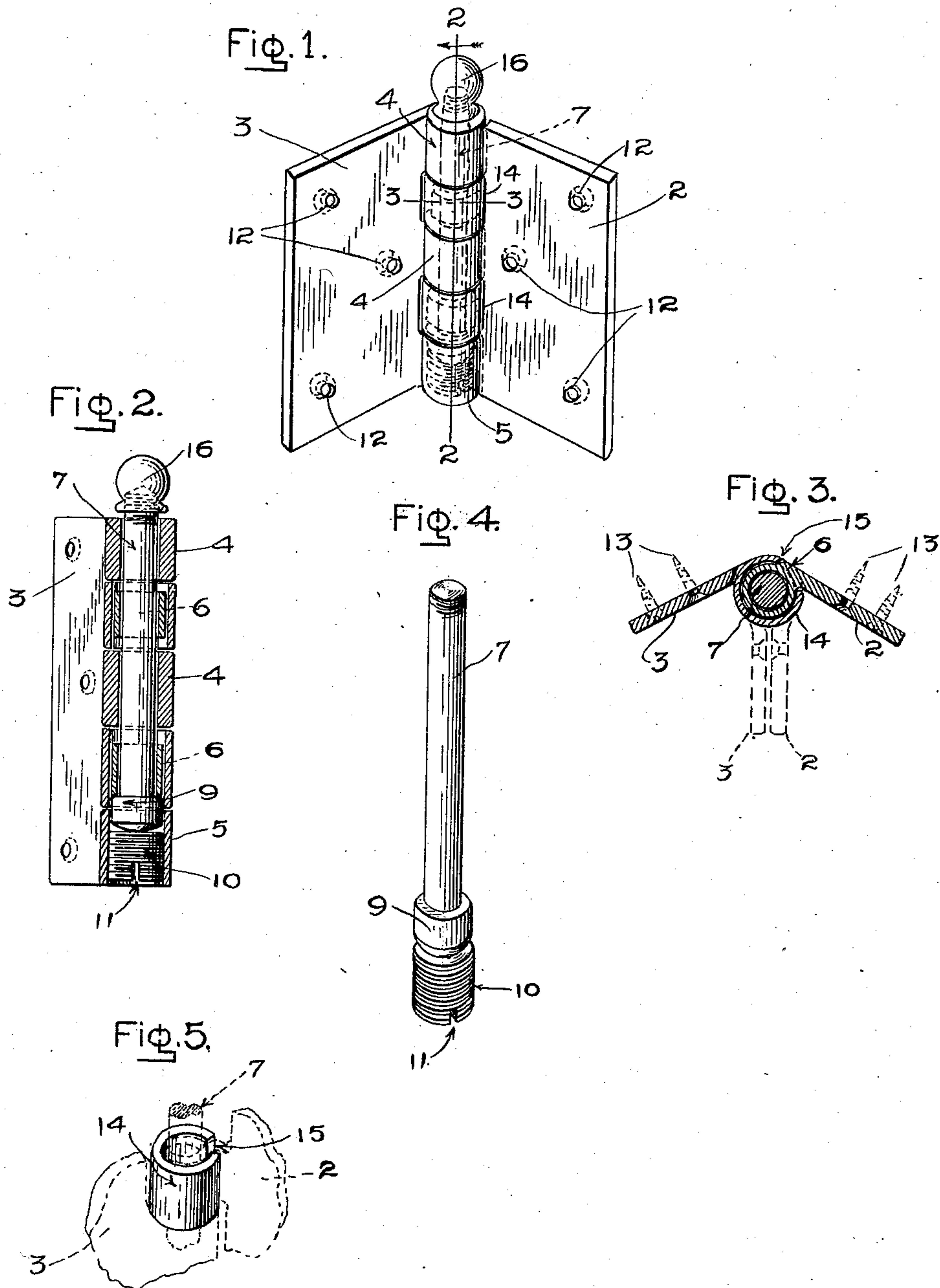


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W. H. FITZGERALD.
HINGE.

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Witnesses:
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UNITED STATES PATENT OFFICE.

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HINGE.

No. 843,081.

Specification of Letters Patent.

Patented Feb. 5, 1907.

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To all whom it may concern:

Be it known that I, WILLIAM H. FITZGERALD, a citizen of the United States, residing at (near) Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Hinges, of which the following is a specification.

This invention relates to improvements in hinges designed for use in connection with doors, gates, and other like pivoted or swinging parts; and the invention relates particularly to improvements in adjustable hinges for employment on doors and gates whereby the latter may be raised or lowered within a certain range of movement without necessitating the unhinging of the door or gate or the disconnecting or removing of any of the parts comprising the hinges.

The object of the invention is to provide a hinge of the class known as "separable-butt" hinges which is simple, durable, and inexpensive and which is adapted for use in connection with doors or gates of any size or weight.

A further object is to provide a hinge for hanging doors or gates which is so constructed and arranged that when a door or gate has become sagged or binds either at the top or bottom it may be adjusted or shifted upward or downward a sufficient distance to allow the same to open, close, or swing freely, and the said adjustment may be accomplished in a simple manner by the manipulation of certain parts of the hinge, thereby obviating the necessity of unhinging or altering the door or gate or of detaching or changing the position of the hinge.

The invention consists principally in providing two leaves similar in form and function to like parts of the common separable-butt hinges, which are employed for attaching the hinge to pivoted or swinging members, such as doors or gates, as well as to door-frames or fence-posts. Each of said leaves or parts having a series of eyes or loops formed on one edge, the eyes or loops of one leaf are arranged to interfit with like parts of the other leaf, and the loops or eyes of both leaves are held in line and in operative position by means of a detachable pin, which passes through and engages all of said parts.

The invention further consists in providing means for setting one of the leaves in different positions with reference to the opposing leaf without removing or withdrawing said pin, the object of this feature being to permit

the raising or lowering of a door or gate which is supported by or hung upon my hinges without requiring the unhinging of the door or gate.

The invention further consists in providing a novel and simple part to cooperate with the pivot-pin for effecting the adjustment of the movable parts of the device and also in providing simple means for concealing and protecting certain parts of the hinge.

Other features and parts of the invention will be understood from the detail description which follows, as well as by reference to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view showing my complete hinge. Fig. 2 is a sectional view substantially on the line 2 2 of Fig. 1, showing the manner of connecting the opposing leaves of the hinge by means of a common pivot-pin, also showing the construction and disposition of the adjusting parts, also showing the location of the sleeve members carried by the male leaf with reference to the other parts of the hinge. Fig. 3 is a sectional view substantially on the line 3 3 of Fig. 1, showing the manner of applying the sleeve to one of the eyes of the male leaf. Fig. 4 is a detail perspective view of the pivot-pin, showing the shouldered enlargement on the lower end, also showing the threaded adjusting plug or stud by means of which the pin is raised or lowered and also supported. Fig. 5 is a detail view of the sleeve member, showing a slot in one side by means of which it is applied to the male leaf, also showing in dotted lines portions of the two leaves and the pin.

Similar reference-numbers are assigned to corresponding parts throughout the several figures.

In the drawings, 2 and 3 represent respectively, the male and female leaves or parts of my adjustable hinge, which may be made of any suitable kind of metal—such as brass, bronze, steel, or iron. In applying my improved hinge in service the leaf 3 is intended to be attached to the frame of a door or to a like part and is designated as the "stationary" leaf or part of the hinge as distinguished from the other leaf, which is movable. Leaf 3 is provided on one edge with a plurality of integral pivot eyes or loops 4 and 5, the number of which may vary from two to three or more, according to the size or style of the hinge. The eyes 4 are preferably of the same length; but the eye 5 should be made slightly

longer in order to suitably provide for the adjustment of the hinge, which will be explained below. Leaf 2 is provided with one or more integral eyes or loops 6, which are
 5 formed substantially the same as loops 4; but leaf 2 should have one less eye than leaf 3 in order to carry out the objects of my improvement. Each of the eyes or loops 4, 5, and 6 are bored out lengthwise to receive a
 10 round pivot-pin 7, which serves to connect the two leaves operatively together. Pin 7 is preferably formed as shown in Fig. 4, the upper portion having a smaller diameter than the shouldered part 9. The pivot-holes in
 15 eyes 4 and 6 are preferably of the same diameter as the smaller portion of the pin. The hole through eye 5 is first bored out the size of the enlarged part 9 of the pin, and then it is tapped or threaded its entire length to re-
 20 ceive the adjusting screw plug or stud 10. The plug or stud 10 is preferably provided at its lower end with a slot or groove 11, to which a screw-driver may be applied for the purpose of screwing the plug in or out. The
 25 outer end of plug 10 may, if desired, be formed square or hexagonal to facilitate the employment of a wrench to operate the same. 12 12 represent a series of perforations or holes formed in leaves 2 and 3 to receive the screws
 30 13, employed for securing the hinge to a door, gate, or other parts.

In order to provide for the adjustment of the hinge in a simple manner, I have constructed and arranged the loops or eyes of
 35 the two leaves in such manner that the loops or eyes of one leaf only partially fill the gaps or spaces between the like parts of the other leaf. The hinges for employment in connection with common house or office doors are
 40 preferably provided with a maximum adjusting range of about one-half inch, and in such cases the eye of one leaf will be one-half inch shorter than the spaces or gaps between the opposing eyes. For example, if the eyes 6 of
 45 leaf 2 are one-half inch in length then the corresponding spaces between the eyes 4 and 5 of leaf 3 will be one inch in length, and the eyes and spaces of each size or style of the hinges should be made in uniform lengths, so
 50 that the same range of adjustment may be maintained throughout each hinge and each set of hinges. When the leaves are pivotally joined by the insertion of pin 7, as shown, if either one of the leaves is held stationary the
 55 other leaf may be moved (upward or downward, as the case may be) a distance equal to the clear spaces or gaps between the opposing eyes. When assembling the several parts, the pivot-pin 7 is inserted from the
 60 bottom of the hinge, first through loop 5 and then through the alternating loops 6 and 4 in the order shown. The small portion of pin 7 should operatively fit the eyes 4 and 6. Screw-plug 10 is then screwed into the
 65 threaded hole in loop 5, following the pin,

and its upper flat end will engage the lower rounded end of the pin and force the latter upward. As plug 10 is screwed into loop 5, it will revolve on the threads and the pin will
 70 move upward; but because its rounded end offers so little frictional resistance the pin will not revolve. Before applying my hinges to a door or gate they should all be adjusted so that the loops or eyes 6 of leaf 2
 75 will be disposed about the center of the spaces or gaps between the opposing eyes 4 and 5, as shown in Fig. 2. To accomplish such adjustment, plug 10 should be screwed into loop 5 a sufficient distance to bring the shoulder 9 of the pin into engagement with the
 80 under side of the lowermost loop 6. Then the further screwing in of the plug or stud 10 will effect the lifting of leaf 2 and carry it and the pin upward to the desired point or height. By reason of this adjustment and setting of
 85 the hinges when a door or gate is hung the latter may be either raised or lowered at any time thereafter by simply manipulating the screw-plug, as described. This feature becomes valuable in case a door sags or binds
 90 either at the top or bottom. When the adjusting parts are arranged as last described, leaf 2 and also the weight of the door will be supported or carried by the shoulder 9 of pin 7 as long as the shoulder 9 extends above
 95 the loop 5, and screw-plug 10 in turn will sustain the weight of the pin, leaf 2, and the door. For that reason loop 5 should be made stronger than the other loops in order to withstand the weight and strain incident
 100 to supporting and operating a door.

In constructing my hinge and providing the simple means for adjusting the same, as explained, the gaps or spaces between the oppositely-disposed eyes are not entirely
 105 filled by the other eyes, and therefore the hinge, if left in that condition, would not present a finished or pleasing appearance, and, besides, these several bearings thus exposed would be subject to injury from the accumu-
 110 lations of dust and dirt, which might hinder the free and perfect working of the hinge. In order to improve the appearance of the hinge and at the same time inclose or conceal the said gaps or spaces and protect said parts,
 115 I have provided a sleeve-like guard or part 14, preferably made from a tube or from sheet metal of the same kind as that used in making the hinge. The sleeve 14 is provided
 120 on one side with a slot or opening 15, which extends the entire length of the tubular part. The width of the slot 15 should correspond with the thickness of the web of the leaf 2 at the point where the eyes 6 are joined thereto. The inner diameter of the tube or sleeve
 125 should be about the same as the outer diameter or gage of the eyes 6, so that when the sleeve or tube is applied in the manner shown in the drawings it will fit the said eyes with
 130 just enough looseness to allow the eyes to

slide therein when leaf 2 is adjusted or moved in either direction on the pin 7. The length of the sleeve or guard 14 should be the same as the distance between the eyes of leaf 3, which have been referred to as "spaces" or "gaps," and then by reason of slot 15 leaf 2 may be shifted in either direction in said gaps or spaces with the same freedom and effect, as far as the adjustment of the hinge is concerned, as if the guard 14 were not employed. At the same time, when leaf 2 is rotated on pin 7 the slotted sleeve will revolve with said leaf and serve to close the gaps and prevent the admission of dust or dirt, whether the hinge is open or closed. In forming loops 6, in the first place, their outer diameters should be as much less than that of the loops 4 and 5 of leaf 3 as will compensate for the thickness of the sleeves 14.

When my hinge is made as herein described and shown and placed in position on a door or gate, it will present substantially the same appearance and have the same action as the separable butts now employed for hanging such parts. The sleeves 14 are applied to leaf 2 before the same is pivotally joined to leaf 3, and they cannot then be removed or displaced until the hinge is taken apart.

16 represents a knob which is detachably secured to the upper end of pin 7 by means of threads and is provided to give a finished or an ornamental effect to the top of the hinge, as well as to prevent the pin from dropping out when the plug 10 is removed. The knob 16 may be omitted entirely, if desired, without affecting the working of my hinge.

It is obvious that some changes or modifications of the parts of my hinge may be made without departing from the invention, and I therefore do not restrict myself to the precise construction and arrangement of the same as herein described and shown.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a hinge of the class described, the combination with a male and a female leaf, of a series of equally-spaced eyes integrally formed on the inner edge of each leaf, the spaces between the eyes of each leaf being wider than the corresponding eyes of the other leaf, a pivot-pin adapted to be inserted upwardly through the eyes of both of said leaves for the purpose of joining them together pivotally, a shouldered part formed on the lower end of said pin adapted to pass through a threaded hole in the lowermost eye of said hinge, but not capable of passing through any of the other eyes, a screw-plug fitting said threaded hole adapted when screwed inwardly to effect the raising of said pin and also said male leaf, and when screwed outwardly to permit the lowering of said pin and said male leaf, and means for incasing the eyes of said male leaf and also inclosing the spaces between the eyes of the female leaf.

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

WILLIAM H. FITZGERALD.

Witnesses:

JOHN C. LAMON,
HARRY DE WALLACE.