IRA BUCKMAN, Jr.

Improvement in Hinges.

No. 120,032. Patented Oct. 17, 1871.

Fig. 1.

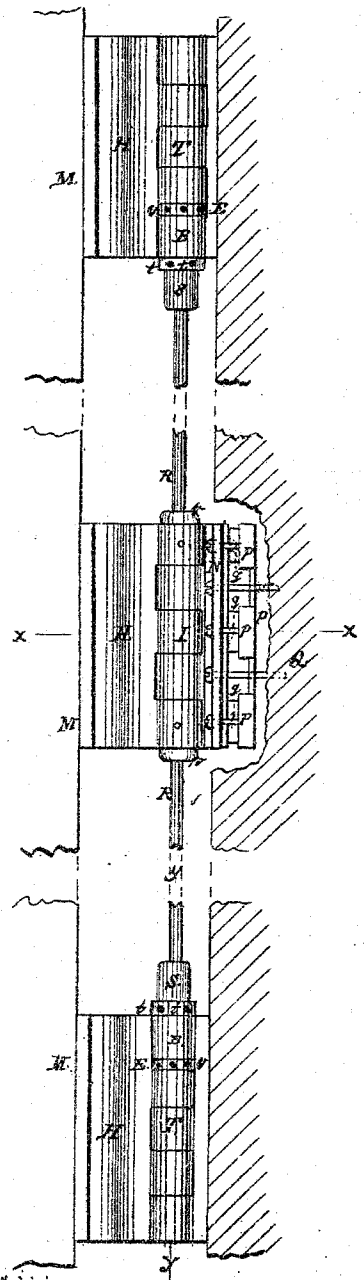


Fig. 4.

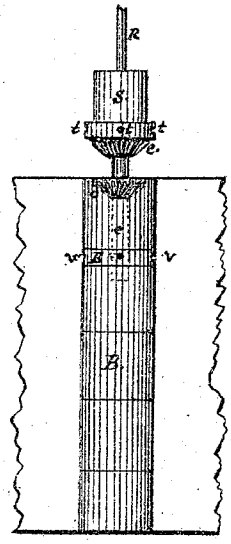


Fig. 2.

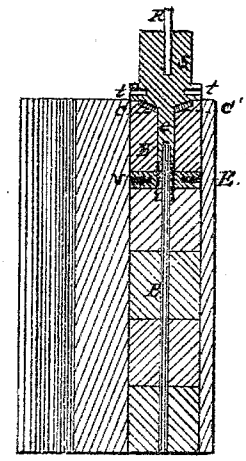
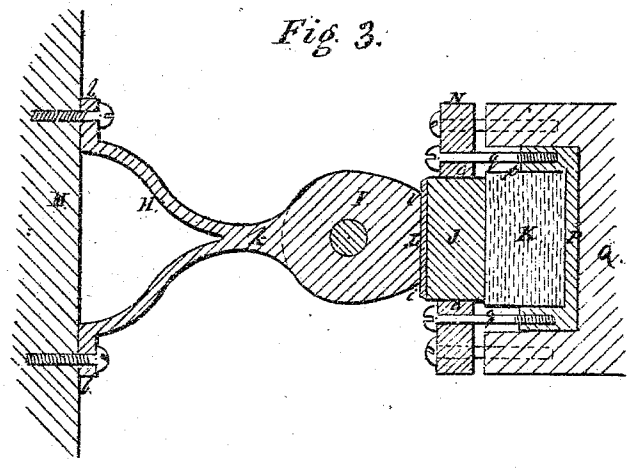


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

IRA BUCKMAN, JR., OF WILLIAMSBURG, NEW YORK.

IMPROVEMENT IN HINGES.

Specification forming part of Letters Patent No. 120,032, dated October 17, 1871.

To all whom it may concern:

Be it known that I, IRA BUCKMAN, Jr., of Williamsburg, in the county of Kings and State of New York, have invented certain new and useful Improvements in Butt-Hinges, and system of hanging doors for vestibules, banks, court and State-houses, and for public buildings generally; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure I, Plate I, represents a set of three of my improved butt-hinges as they are placed in relation to each other, and arranged to operate on doors for vestibules, banks, &c. Fig. 2, Plate I, is a vertical section of either upper or lower hinge, showing the pintle entering the hollow sleeve, for adjusting the torsion-spring to any required degree of tension by the screw-nut in the joint operating on the sleeve. Fig. 3, Plate I, shows a cross-section of the middle butt-hinge with its eccentric knuckles, and ground for attaching the butt to the jamb; also the adjustable springs and follower let into the stile of the door. Fig. 4, Plate II, is a plan view of the knuckle of the upper or lower hinge, showing the head with its serrated disk and sleeve elevated above the knuckle.

The object and nature of my invention or improved system of hinging doors, gates, &c., is, in the first place, to make them stronger, much neater, and more durable, and if needs be, highly ornamental. In the second place, in a special device to enable the door or gate to be supplied with any required amount of spring to hold it closed against a strong wind or current of air, to have all of the spring power so incased and protected that it cannot be disarranged or injured by accident, while at the same time the torsion of the springs can be regulated, and their action upon the door reversed without removing anything or part of the fixtures. My invention consists, first, in the knuckles of the hinge being made eccentric or cam-shaped, with a flat face, so that when it is impinged against by a follower and yielding substance or spring arranged in the other half or portion of the butt, the door will stand in a direct line closed; also, in the application of torsion-rods connecting the eccentric knuckle-joints with chilled sockets of the top and bottom hinges. The second part of my invention consists in the construction of the chilled sockets and their serrated couplings, sleeves, and screw-nuts, and their arrangement within the knuckle of the hinge, whereby the torsion-rods can be strained and adjusted to any degree of tension, to operate in either direction, to hold the door closed or opened.

To enable others to make and use my improved butt-hinges and system of hanging doors for vestibules, banks, and public buildings, I will describe them more in detail, referring to the draw- and the letters of reference marked thereon.

To accomplish my purposes, I construct the ground bracket H, the portion of the hinge that is secured to the jamb M, forked or hollow, with flanges *b b*, to screw it to the jamb, as shown in Fig. 3, the fork or hollow concentrating to a narrow or thin plate, *k*, in order to give sufficient space for the door to turn in either direction beyond an angle of ninety degrees; the knuckle I forming a portion of the hinge H extending out from the door-jamb M two or more inches, as may be necessary, according to the thickness of the door. The knuckle I of this portion of the butt is made eccentric or cam-shaped; the sides narrowed up so as to relieve the friction or great pressure on the knuckle after the door has passed the point *i;* the inner face L of the knuckle being flat to rest against the follower J, which is fitted in openings or recesses *o* through the plate N on which the corresponding knuckles I′ are made to form the other portion of the hinge. In the rear of the knuckle-plate N and follower J is another plate, P, provided with boxes or recesses *p p p*, in which are fitted blocks of elastic vulcanized rubber K, or other yielding spring substance. The plate P is made adjustable by screws *q q q* passing through the plate N, so that any degree of pressure of the follower upon the knuckle can be produced. The flat ends or edge L of the knuckles I keep the door closed in a direct line, yet allow it to start freely in opening, and after the point *i* has passed the center of the follower J, the friction and pressure caused by the spring K is relieved and the door moves easily the greater portion of the distance. All of the adjustable parts of the above-described spring mechanism are let in and secured from accident and injury within the stile of the door Q. The ends of the knuckles I are provided with sockets *r r*, in which to put torsion-rods R,

to connect with the sockets S on the ends of the upper and lower hinges T T, by which any additional force of spring power may be applied, to either hold the door closed or folded back into a recess in a vestibule or other place, so that it will not be moved by a strong current of air or wind to bang it together; the door being swung round beyond the angle of ninety degrees, when there is sufficient room for it to open thus far, will take the wind on the quarter and force it back rather than to close it. In the upper and lower butts the sockets S are provided with a very simple and efficient means for adjusting the tension of the rods R, which consists of the socket-head, in which is a series of holes *t t*, in which to insert a pin-lever; the socket having a serrated disk, *c c*, as seen in Figs. 3, 4, &c., and a screw-sleeve, *e*, and nut E, working on the screw-sleeve within the knuckle of the hinge-joint B, the nut E being also provided with a series of holes, *v v*, for inserting a pin-lever to turn it with. In the end of the knuckle B of the butt there is a recess, in which is a corresponding serrated disk, into which the serrations *c c* on the socket-head S fit, so that by turning the nut E on the screw-sleeve *e* the serrations are forced apart sufficiently to allow the head S to be turned in either direction, by which means the torsion-rod R can be set to ply its force on the door to aid it in opening or closing, and any desired degree of tension applied that may be necessary, when the nut E is turned, locking the serrated disks together firmly. The adjusting can all be done without disturbing the hinges.

Doors hung to operate in the manner above described, with the butt-hinges constructed and arranged as shown in Figs. 1, 2, and 3, would leave large open spaces between the top, middle and bottom butts. For the closing of the said spaces I provide a shield of metal made exactly the contour of the ground H of the hinge, which is fitted in the interstices, covering the torsion-rods R and socket-heads S, protecting them from exposure and accident, and giving the joint of the door an elaborate finish, it having the appearance of being one continuous hinge.

What I claim, and desire to secure by Letters Patent, is—

1. The knuckle-joint I, having a flat face, L, and curved sides, forming an eccentric cam, the said knuckle serving to hold the door closed by its action on the follower J, and relieving it from pressure when the door is opened either way, after the points *i* pass the center of the follower.

2. In combination with the cam-knuckle I, as above, the torsion-springs R R, connected with the sockets *r r* of the middle hinge and the socket-heads S S of the upper and lower butts, to retain the door after it passes to one side, and so hold it either open or shut.

3. The movable box-plate P, provided with recesses *p p p*, in which the yielding substance K is secured, in combination with the plate N and set-screws *q q*, for adjusting the spring, so that the follower J may have any required degree of pressure on the knuckle I, as shown and described.

4. The movable socket-head S, provided with a serrated disk, *c c*, to fit corresponding serrations in or on the knuckle of the hinge F, in combination with the sleeve *e* and screw-nut E within the knuckle of the hinge, for adjusting the torsion-spring R, substantially as herein shown and described.

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Witnesses:
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