P. HURM.
Hinge.

No. 221,963. Patented Nov. 25, 1879.

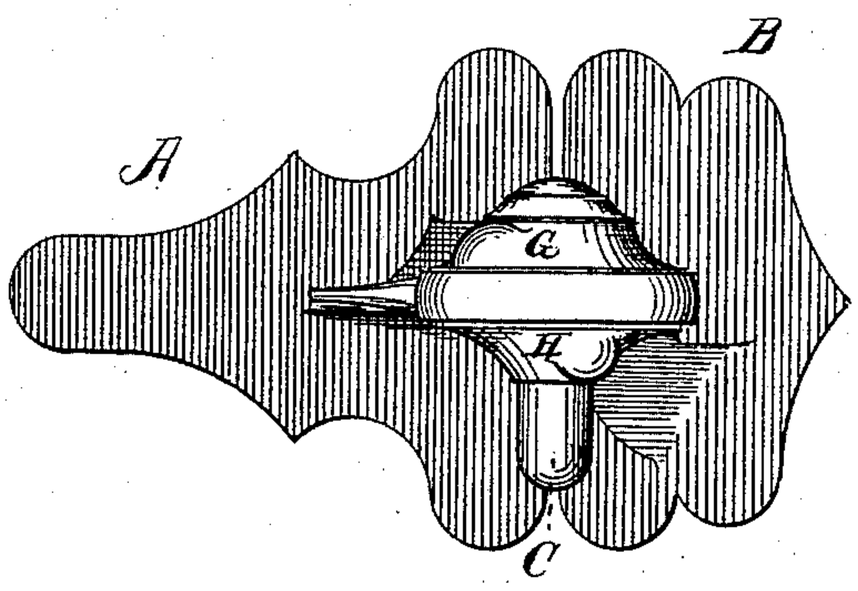

Fig 1.

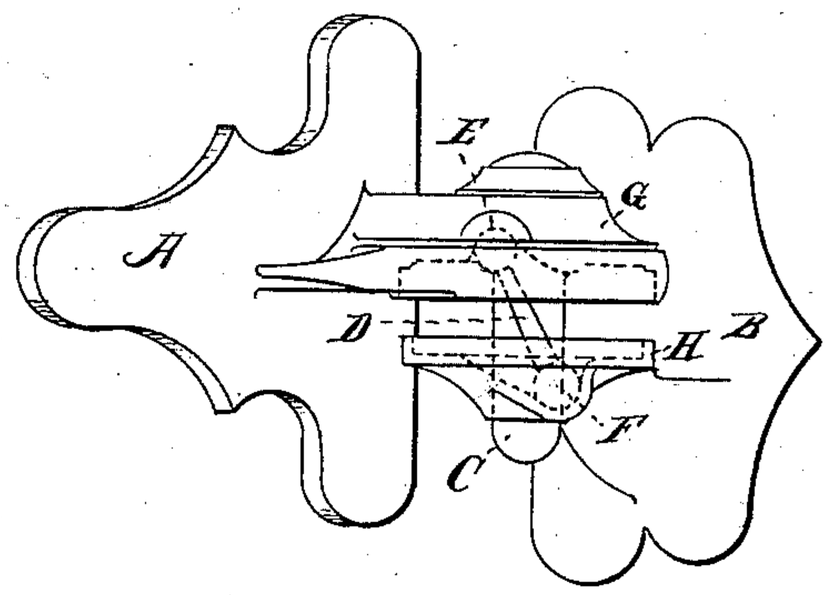

Fig 2.

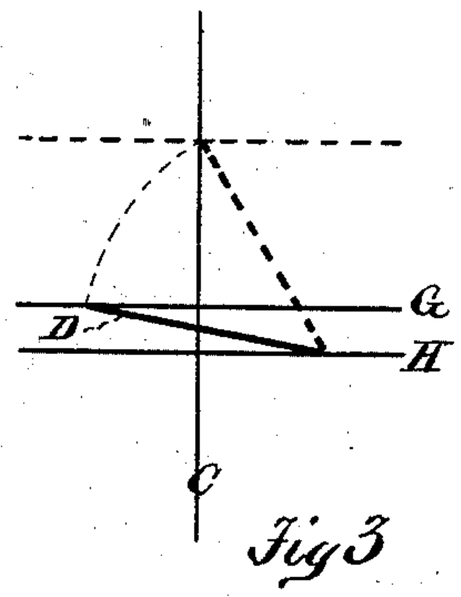

Fig 3

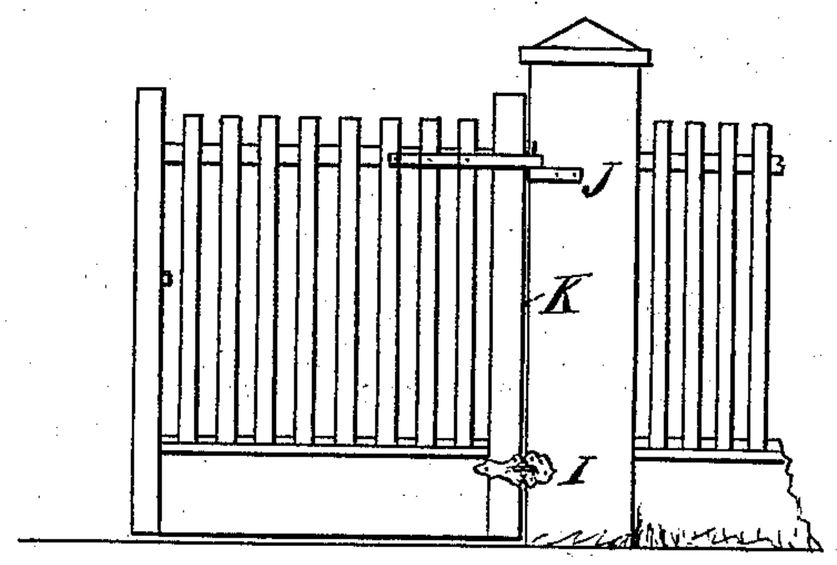

Fig 4

WITNESSES:
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UNITED STATES PATENT OFFICE.

PHILLIP HURM, OF HAMILTON, OHIO.

IMPROVEMENT IN HINGES.

Specification forming part of Letters Patent No. **221,963,** dated November 25, 1879; application filed July 22, 1879.

To all whom it may concern:

Be it known that I, PHILLIP HURM, of Hamilton, Butler county, Ohio, have invented certain new and useful improvements in Gate-Hinges, of which the following is a specification.

This invention belongs to that class of gate-hinges known as "self-closing hinges."

My invention consists of a hinge of the usual form, but having a concave socket formed in each of the halves, and combined with a toggle-post whose spherical ends are seated in said sockets, the toggle-post occupying a nearly horizontal position when the gate is closed, the whole so arranged that opening the gate tends to erect the toggle-post, and thus lift the gate, which, by its gravity, tends to depress the toggle-post, and thus close the gate.

In the accompanying drawings, Figure 1 is an elevation of my improved hinge in a closed position; Fig. 2, the same in a partially-open position; Fig. 3, an elemental diagram of the action of the parts, and Fig. 4 an elevation of a gate having the hinge attached.

As shown in Fig. 1, the hinge is, in external appearance, similar to many well-known hinges, the two elements being provided with cup-like flanges to exclude water and dirt. In this the upper portion is the gate part, and is the male element of the hinge.

Each of the flanges G and H is provided with a concave socket, as at E and F, near the outer edge of the flange. The sockets are so located that when the gate is in a closed position the toggle-post D will bear in each of them and lie in a nearly-horizontal position, the direction of its slight inclination being such as to resist the opening of the gate.

It will readily be seen that the gate can only open when it rises, as shown in Fig. 2, and that the weight of the gate will tend to depress the toggle-post, and thus close the gate. The greatest resistance is seen to be at the start of the opening motion, and the greatest closing force at the end of the closing motion, just where the most force is wanted to overcome the resistance of a latch. This acceleration of the closing motion is an important result, which is not attained by other devices so far produced. The slight inclination of the toggle-post serves not only to accelerate the closing force, but, when the gate is closed, it imposes such a resistance to the opening motion as to almost serve as a latch substitute.

The action of the parts will be understood from an inspection of Fig. 3.

In practice I so proportion the parts that the toggle-post will never, even when the gate is wide open, assume a vertical position, whereby a self-opening tendency is avoided.

The sockets are arranged, as shown, in what we may call "ratchet form," so that the toggle-post will find its own position, no matter how it may be put into the hinge.

In practice I also arrange double sockets, so that a hinge will answer for a right or left handed gate.

I do not claim as my invention the application of the weight of the gate to close it. This has been done for years, and has been carried out by putting inclined faces upon the acting surfaces of the hinge, as in common shutter-hinges; again, by inclining said surfaces and placing an anti-friction ball or wheel between them; again, by forming the male element into a coarse screw and the female element of the hinge into a nut to fit; again, by an arrangement of angular chains, which lift the gate as it opens; again, by a long toggle-post placed between the hinges, and acting on precisely the same principle as my toggle-post; again, by throwing the axis of the bottom hinge outward; and, again, by putting an inclined circular track under the gate, on which runs a wheel attached to the gate. Nor do I claim as my invention the toggle-post movement. This is old, having been used for years on hand printing-presses, and known as "Stansbury's rotary toggle."

I claim as my invention—

In a hinge, the combination, with the central stem, of the flanges G and H, having hemispherical sockets E and F, and the spherical-ended toggle-post D, the whole arranged substantially as set forth.

PHILLIP HURM.

Witnesses:
J. W. SEE,
W. N. GRAY.