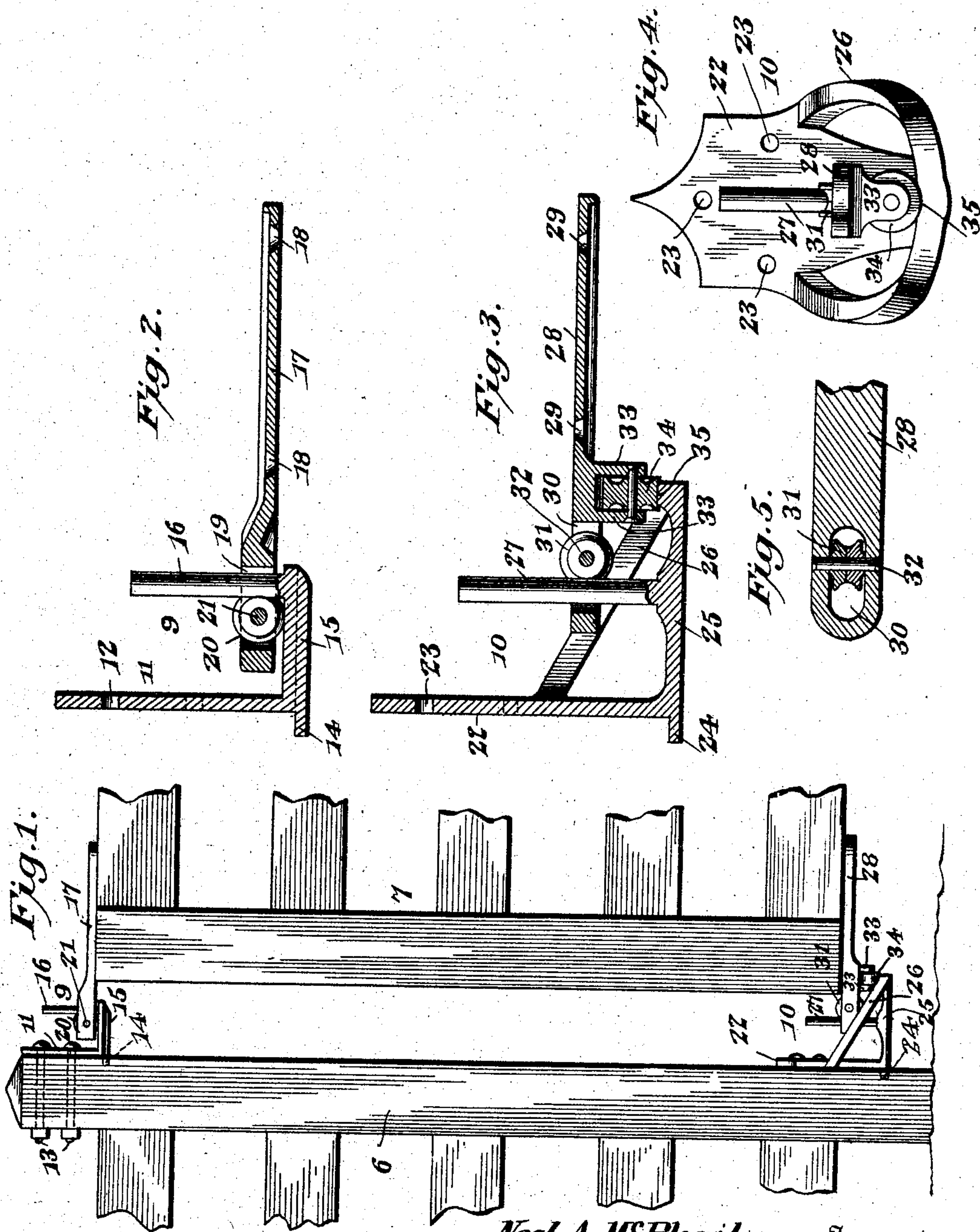


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N. A. McPHAIL.
GATE HINGE.

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GATE-HINGE.

SPECIFICATION forming part of Letters Patent No. 781,449, dated January 31, 1905.

Application filed September 5, 1903. Serial No. 172,149.

To all whom it may concern:

Be it known that I, NEAL A. McPHAIL, a citizen of the United States, residing at Bemidji, in the county of Beltrami and State of Minnesota, have invented a new and useful Gate-Hinge, of which the following is specification.

The present invention relates more particularly to that class of hinges which will automatically return the gate to closed position after it has been opened.

The object is to provide hinges of the above character that are simple in construction, so that they can be readily and cheaply manufactured and easily applied by an unskilled person. At the same time said hinges are efficient in operation and thoroughly braced and strengthened to withstand the weight and action of the gate, thus having structural advantages of merit.

The preferred form of construction is illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of a portion of a gate, showing the same hinged by the improved hinges to the gate-post. Fig. 2 is a longitudinal sectional view through the upper hinge. Fig. 3 is a similar view through the lower hinge. Fig. 4 is a front elevation of the lower hinge. Fig. 5 is a horizontal sectional view through one of the strap members.

Similar reference-numerals indicate corresponding parts in all the figures of the drawings.

In the embodiment illustrated the gate-post is designated the by reference-numeral 6, and the adjacent end of the gate by the reference-numeral 7. Said gate is supported upon the post by an upper hinge 9 and a lower hinge 10. The upper hinge consists of a stationary or post member comprising a flat attaching-plate 11, having openings 12 therethrough for the securing-bolts 13. The lower end of this plate has a rearwardly-projecting spur 14 and a forwardly-projecting web 15, said web carrying an upstanding pintle 16, that is spaced from the plate 11. In combination with this stationary member there is employed

a strap member 17, adapted to rest upon the upper edge of the gate and be secured by fastening devices passing through openings 18 formed therein. The rear end of the strap member is made somewhat heavier than the main portion and is provided with a longitudinally-disposed vertical slot 19, through the front portion of which the pintle 16 of the stationary member passes. A roller 20 is located in the rear portion of the slot and comprises two separate sections, this roller being journaled on a pin 21, passed therethrough and through the side walls of the slot in rear of the pintle.

The lower hinge 10 also comprises a stationary and a movable member. The stationary member has an upright attaching-plate 22, having openings 23 therethrough that receive the fastening-bolts. The lower end of the plate is provided with a rearwardly-projecting spur 24 and a forwardly-projecting web 25, the front end of which is attached to the lower portion of a curved and downwardly-inclined track 26, said track being substantially ovoidal in form and attached at its ends to the side edges of the plate 22 some distance above the web 25. This web carries an upstanding pintle 27, that projects above the ends of the track and is located concentric to its lower portion. The movable member, which is employed in connection with the last-mentioned stationary member, is in the form of a strap 28, that is applied to the lower edge of the gate and has openings 29, through which are passed suitable fastening devices. The rear end of this strap has a longitudinally-disposed vertical slot 30, through the rear portion of which passes the pintle 27. A grooved roller 31, comprising two independent sections, is located in the front portion of the slot and bears against the front side of the pintle, said roller being journaled upon a pin 32, passing through the slot and the walls thereof. Spaced transversely-disposed ears 33 depend from the strap 28 just in advance of the slot 30, and to and between these ears is journaled a roller 34, which rides upon the upper face of the track, the lowermost por-

tion of said face being preferably provided with a seat 35, in which the roller 34 normally rests.

The application of the hinges will be clearly apparent by reference to Fig. 1. The attaching-plates are placed flat against the faces of the gate-post 6, with the spurs embedded in said post. Bolts pass through the plates and post, thus securely holding the stationary members in position. The strap members are secured, respectively, to the upper and lower edges of the gate and are journaled upon the pintles 16 and 27. When the gate is opened, the strap members can turn freely upon the pintles, and as the roller 34 rides upon the inclined track the gate will be raised, the friction of this vertical movement upon the pintles being greatly reduced by means of the rollers 20 and 31. As soon as the gate is released, the weight thereof being upon the roller 34, said roller will gravitate down upon the track, and thus swing the gate to closed position.

In the construction illustrated the gate may be opened in either direction without interference and will as readily close.

The structure of the hinges employed is very simple and said hinges can be cheaply manufactured. Moreover, the lower hinge, upon which the greater amount of weight is brought to bear, is thoroughly strengthened by the particular arrangement of parts—namely, the flat attaching-plate having a broad bearing-surface, the inclined track attached at its ends to this plate and having an intermediate portion braced by the web extending from said plate to the same and also serving as a support for the pintle. The simple arrangement of rollers is also meritorious, as said rollers are carried by a single strap member, and thus when applied to a gate the rollers will be properly positioned with respect to the elements with which they coact.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. As an article of manufacture, a gate-hinge comprising a stationary member, said stationary member consisting of an upright flat attaching-plate having fastener-receiving openings in its upper portion and a rearwardly-extending spur at its lower end, a web projecting from the lower front face of the

plate, and an upright pintle carried by the web, in combination with a substantially flat strap member having openings through one end portion to receive fastening devices, and an inclosed slot in its other end portion through which the said pintle passes, said openings and slot extending through the strap in the same direction, and a roller journaled on the strap member and located in one end of the slot, said roller bearing against the side of the pintle.

2. As an article of manufacture, a gate-hinge comprising a stationary member having an upstanding pintle and an inclined track, in combination with a strap member having a longitudinally-disposed slot through which the pintle passes, a roller journaled on the strap member and located in one end of the slot, said roller bearing against one side of the pintle, transversely-disposed ears carried by the strap and depending below the lower face thereof contiguous to the slot, and a transversely-disposed roller located between and journaled to the ears, said roller riding upon the inclined track.

3. As an article of manufacture, a gate-hinge comprising a member having an upright attaching-plate, an inclined curved track having spaced ends attached to the opposite sides of the plate above the lower end of the same, a web connecting the lower portions of the plate and track, and an upstanding pintle carried by the web, said pintle being located between and in spaced relation to the opposite portions of said track, in combination with another member pivoted upon the pintle and having a transversely-disposed roller operating upon the track.

4. As an article of manufacture, a gate-hinge comprising a member having an upright attaching-plate, an inclined curved track having spaced sides attached to the opposite side edges of the plate between its top and bottom, a horizontal web connecting the lower end of the plate and the lower portion of the track, and an upstanding pintle carried by an intermediate portion of the web and spaced from the track, in combination with a strap member having an opening in one end through which the pintle passes, a roller journaled on the strap and bearing against the pintle, depending transversely-disposed ears carried by and projecting from the handles of the strap member, and a roller journaled between and to the ears, said roller bearing upon the track.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

NEAL A. McPHAIL.

Witnesses:

H. E. REYNOLDS,
JOSEPH J. ELLIS.