

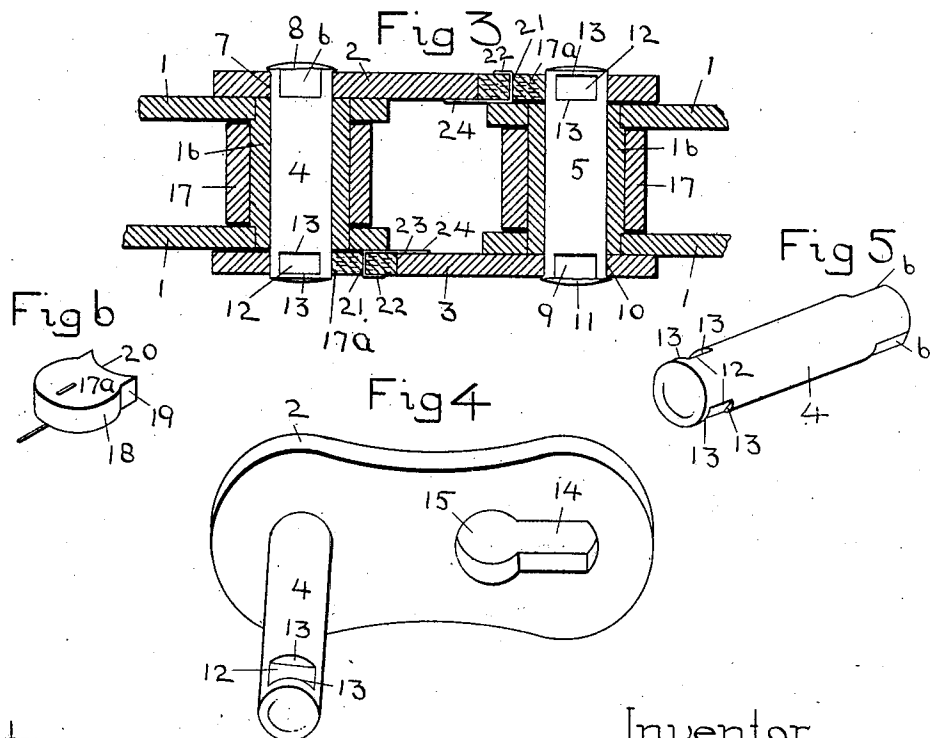
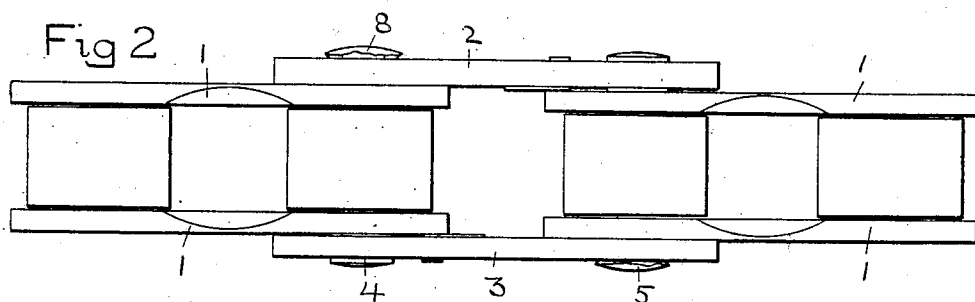
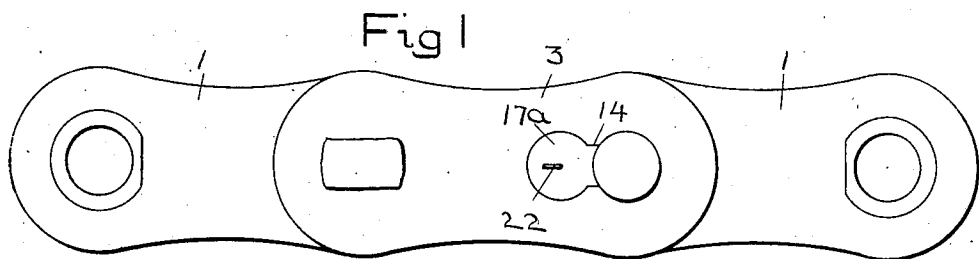
No. 762,045.

PATENTED JUNE 7, 1904.

W. H. GATES.
DRIVE CHAIN.

APPLICATION FILED MAR. 19, 1904.

NO MODEL.



Witnesses

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DRIVE-CHAIN.

SPECIFICATION forming part of Letters Patent No. 762,045, dated June 7, 1904.

Application filed March 19, 1904. Serial No. 198,885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GATES, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Drive-Chains, of which the following is a specification accompanied by drawings forming a part of the same, in which—

Figure 1 represents a side view of a portion of the drive-chain embodying my invention. Fig. 2 is a top view of the same. Fig. 3 is a central sectional view. Fig. 4 is a perspective view of one of the side links with one of the hinge-pins connected therewith. Fig. 5 is a perspective detached view of one of the hinge-pins, and Fig. 6 is a perspective view of one of the flexible retaining-blocks for holding the hinge-pins against movement in the slotted ends of the side links.

Similar reference-figures refer to similar parts in the different views.

My present invention relates to that class of drive-chains comprising central links pivoted to hinge-pins which are held in the ends of connecting detachable side links; and the object of my invention is to prevent the hinge-pins from sliding in the slotted ends of the side links, which would enable the latter to be detached; and it consists in the employment of a flexible compressible plug filling the slotted opening of the side link not occupied by the hinge-pin and also in means for preventing the accidental removal of the retaining-plug, the novel features of my device being fully described in the following specification and pointed out in the annexed claims.

Referring to the drawings, 1 denotes the central links of the drive-chain, and 2 3 the connecting side links, said side links being arranged in pairs and carrying at their opposite ends hinge-pins 4 5, upon which the central links 1 1 are pivoted. The hinge-pin 4, which is shown in detached view in Fig. 5, is preferably slabbed or flattened on opposite sides at one end, as at 6 6, Fig. 5, and is inserted in a corresponding hole 7, Fig. 3, in one end of the side link 2 and is slightly headed at 8 to prevent its removal therefrom. Similarly the

hinge-pin 5 is slightly slabbed or flattened, as at 9, Fig. 3, and is inserted in a corresponding hole 10 in the opposite end of the opposite side link 3 and is likewise headed at 11 to prevent its withdrawal. The opposite or free ends of the hinge-pins 4 and 5 are slabbed or flattened on opposite sides, as at 12, to form a neck having shoulders 13, and the ends of the side links 2 3 are slotted, as at 14. The width of the slots 14 are equal to the thickness of the hinge-pins between the flattened sides 12 12, and the inner ends of the slots 14 are enlarged, as at 15, to form a circular opening equal to the diameter of the hinge-pins. By sliding the side links and bringing the hinge-pins nearer together the end of the hinge-pin 4 can be inserted through the circular opening in the side link 3, and the end of the hinge-pin 5 can be inserted through the circular opening in the side link 2, and by then moving the central links to separate the hinge-pins the flattened portions 12 or necks are moved into the narrow slots 14, and as the distance between the shoulders 13 13 is equal to the thickness of the side links the ends of the hinge-pins are thereby held from longitudinal movement, and the two side links 2 and 3 are securely locked together by their connecting hinge-pins 4 and 5, on which the central links 1 1 have previously been pivoted. In the present instance the central links 1 1 are connected by a sleeve 16, on which is journaled a roller 17; but a precise construction of the central links is not essential to the embodiment of my present invention.

By the employment of slotted side links arranged in pairs and connected in the manner described by hinge-pins securely riveted at one end to the side links and connected at the opposite ends of the side links by necks inserted in slots the entire drive-chain may be assembled by pivoting each of the central links upon the proper hinge-pins, connecting the side links by inserting the free ends of the hinge-pins through the slotted ends of the side links, and moving the central links to separate the hinge-pins and bring their necks within the narrow portions of the slots or openings 14. By reversing the move-

ments required in assembling the chain the several parts may be detached and any one of the side links or central links removed and renewed in case of wear or breakage. So long as the proper tensile strain is applied to the drive-chain the pulling force exerted by the central links will be sufficient to hold the hinge-pins separated to the fullest extent and prevent the detachment of the side links; but in case the drive-chain is slackened I prevent the accidental displacement of the hinge-pins from the slotted side links by inserting within the circular openings 15 and so much of the narrow slots 14 as are unoccupied by hinge-pins a flexible and compressible plug 17^a, preferably made of leather and represented in perspective view in Fig. 6. The plug 17^a is provided with a circular portion 18, adapted to fill the circular opening 15, a neck portion 19, adapted to enter the narrow slot 14, and a circular end 20, fitting the curved side of the cylindrical hinge-pin. The plug 17^a is normally slightly larger than the opening in the side link it is designed to fill and is forced therein and compressed by the retaining-walls of the slot to prevent its accidental removal and close the slot in the side link to the admission of dirt. As an additional safeguard to prevent the displacement of the flexible plug 17^a I insert therein an elastic staple 21, of steel wire, having its legs 22 and 23 an unequal length, with the shorter leg 22 pressing against the outside of the plug 17^a and the longer leg 23 pressing against the inner side of the plug and extending beyond its edge and adapted to be first inserted through the slotted opening of the side link and overlap the surfaces of the side link, as shown at 24, Fig. 3. By the insertion of the plug 17^a I securely hold the hinge-pins from being moved toward each other in the slots of the side links, and as the thickness of the plugs is substantially that of the side links smooth surfaces are presented on both sides of the link.

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

1. In a drive-chain, the combination with a central link and a pair of side links, one of said side links having a slot with an enlarged opening to receive a hinge-pin and a hinge-pin provided with a neck held in said slot, of a compressible plug adapted to fit said enlarged opening and bear against said hinge-pin, substantially as described.

2. In a drive-chain, comprising a series of hinged links, the combination with a link having a slot for a hinge-pin, and a hinge-pin held in a portion of said slot, of a compressible plug filling the remainder of said slot to hold said pin from movement, substantially as described.

3. In a drive-chain comprising a link having a slot to receive a hinge-pin and a hinge-pin held in a portion of said slot, a compressible retaining-plug filling the remainder of said slot to hold the hinge-pin from movement therein, and means for retaining said plug in said slot, substantially as described.

4. The combination in a drive-chain of a link having a slot to receive a hinge-pin, a hinge-pin held in a portion of said slot, a plug filling the remainder of said slot to hold said pin from movement and a staple held in said plug with one of its legs projecting over said link, substantially as described.

5. The combination of a drive-chain, of a central link, a pair of side links, a hinge-pin rigidly held in one end of said side links, a slot in the corresponding end of the opposite side link to receive the free end of said hinge-pin, and a compressible plug held in said slot and filling the space between the end of the slot and said hinge-pin, substantially as described.

Dated this 17th day of March, 1904.

WILLIAM H. GATES.

Witnesses:

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RUFUS B. FOWLER.