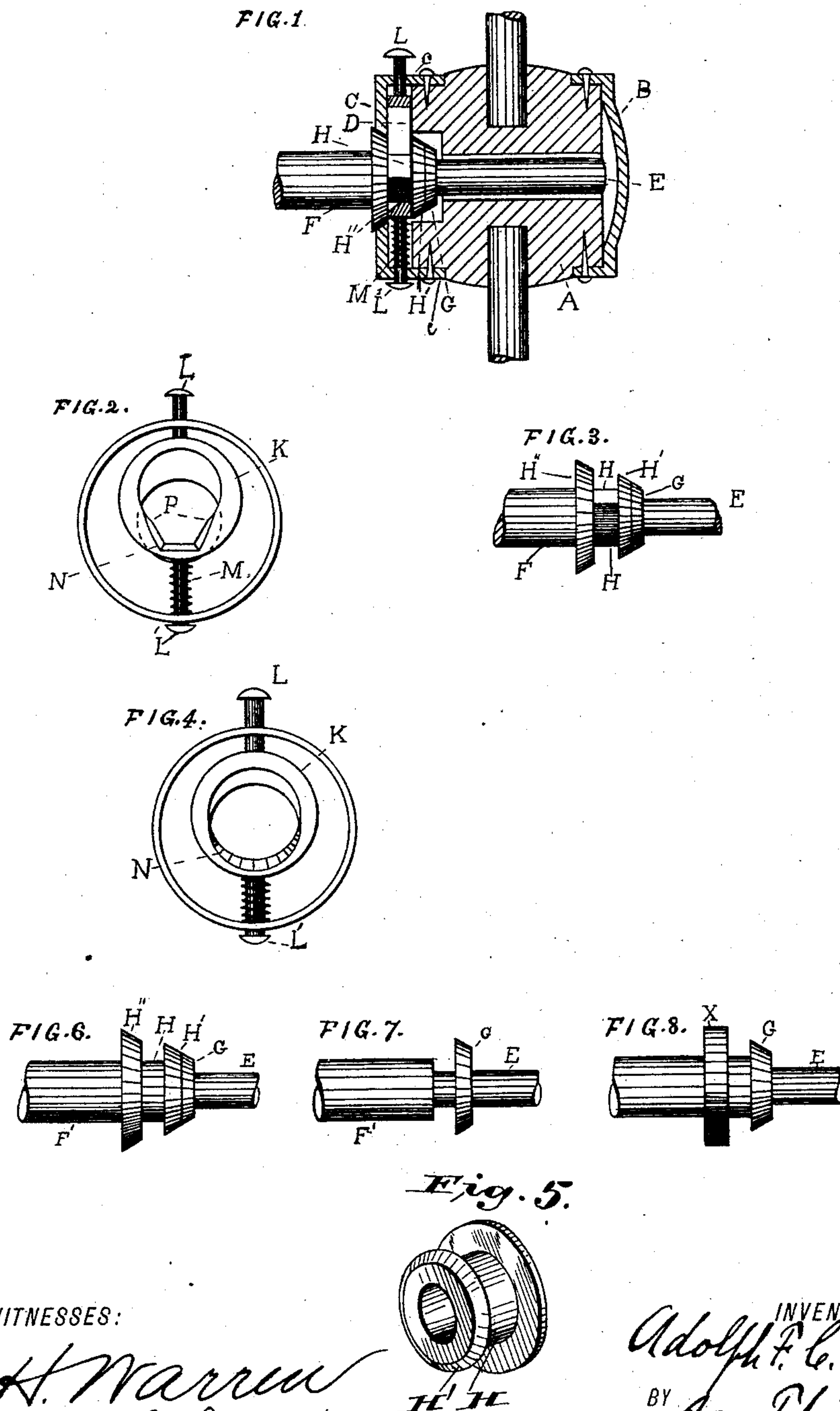


(No Model.)

A. F. C. GARBEN.  
HUB ATTACHING DEVICE.

No. 367,511.

Patented Aug. 2, 1887.



**WITNESSES:**

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# UNITED STATES PATENT OFFICE.

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## HUB-ATTACHING DEVICE.

SPECIFICATION forming part of Letters Patent No. 367,511, dated August 2, 1887.

Application filed March 4, 1887. Serial No. 239,679. (No model.)

*To all whom it may concern:*

Be it known that I, ADOLPH F. C. GARBEN, a citizen of the United States, residing at Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Hub-Attaching Devices, of which the following is a specification, reference being had to the accompanying drawings.

My invention has for its object to provide a simple, cheap, and efficient means of detachably connecting wheel hubs and axles; and it consists in the mechanism hereinafter described and particularly claimed, reference being had to the accompanying drawings.

In the drawings, like letters referring to like parts throughout, Figure 1 is a longitudinal central section of a wheel hub and spindle embodying the preferred form of my invention. Figs. 2 and 3 are details of the same, Fig. 2 showing a side elevation of the sliding catch-plate, and Fig. 3 a similar view of the spindle with rigid collar and loose washer, as combined in Fig. 1. Fig. 4 is a side elevation showing a modification of the sliding catch-plate. Figs. 6, 7, and 8 are similar views showing modifications in the spindle, Fig. 6 showing a loose washer without any hexagon surface, Fig. 7 showing a spindle without any loose washer, and Fig. 8 representing a spindle without any loose washer, but provided with a sand-disk rigid on the axle. Fig. 5 shows the loose washer.

A is the wheel-hub. B is a metallic cap covering the outer end of the same.

C is a cap provided with right-angled extensions or flanges *c*, which is attached to the inner end of the hub, the flanges *c* resting on the periphery of the hub and being secured thereto in any suitable manner. This leaves a space, D, between the cap C and the inner face of the hub. The cap C is perforated, or has its central portion cut away to an extent sufficient to allow the free passage of the spindle and its rigid collar and loose washer.

F is the axle, and E is the spindle of the same.

G is a rigid collar, which is placed on the spindle at or near the inner end of the same when hot and shrunk into position, or it may be made fast to the spindle in any other suitable way.

H is a loose washer, which is placed on the spindle intermediate the rigid collar G and the shoulder on the axle. It is provided with a disk, H', adjacent to the collar, which is a little larger in diameter than the collar, and has an inwardly inclined or beveled periphery. The loose washer is also provided with a sand-disk, H'', with beveled-edged periphery adjacent to the axle-shoulder, which is of a diameter to correspond exactly to the cut-away part of the cap C.

K is a vertically-moving catch-plate, whose central part is cut away sufficiently to allow the free passage of the spindle and its rigid collar, and also the inner disk, H', of the loose washer H. This sliding catch-plate K is provided with a pair of actuating-bolts, L L', made integral with the periphery of the catch-plates at diametrically-opposite points and projecting therefrom through holes in the flanges *c* of the cap C. This catch-plate K is placed within the space D and mounted eccentrically to the axis of the spindle E and axle F. The actuating bolts or studs L L', projecting through the flanges *c*, serve to prevent lateral displacement and as guides to keep it true in its vertical movements. A coiled resistance-spring, M, encircles the bolt L', and rests with one end against the flange *c* of the cap C, and the other against the periphery of the catch-plate. This spring M serves to keep the catch-plate in its locking position, as shown in Fig. 1, while at the same time it allows the catch-plate to be moved vertically by pressure on the bolt L, whereby the axis of its central opening may be brought in line with the axis of the spindle and the parts detached. The outer face of the central or cut-away part of the catch-plate, which is adjacent to the resistance-spring M, is beveled slightly, as shown at N, in order to permit the parts to be more readily locked into working position by simply pressing the axle and hub toward each other, the beveled surface of the rigid collar G and disk H' co-operating with the opposite bevel N to move the catch-plate sufficiently to admit the collar and washer.

In my preferred construction, as shown in Figs. 1, 2, and 3, the catch-plate is made of hexagon shape on its interior in that part of the annulus which constitutes the bearing-



surface when in its locked position, as shown at P, and the loose washer has its periphery made in hexagon shape to correspond and engage with the like surface on the catch-plate, as shown in Figs. 1 and 3. By this construction, when the parts are in working position, the loose washer is locked to the catch-plate and cannot turn within the wheel.

In the modification shown in Fig. 4 I use a catch-plate which is circular on its bearing-surface and is otherwise like Fig. 2, before described. This simple form of catch-plate will work with any of the forms of spindle shown, though if used with the loose washer it may not prevent the washer turning within the wheel.

The modifications of the spindle, as shown in Figs. 6, 7, and 8, are evident from the description already given. Fig. 6 is like Figs. 3 and 1, except that the loose washer has a circular surface. In Fig. 7 the loose washer is dispensed with entirely. The catch-plate shown in Figs. 4 and 5 will work with the spindle shown in Fig. 7 without any loose washer. So they will also with the form shown in Fig. 8; but in Fig. 8 I show a sand-disk, X, which corresponds in function to the disk H' on the loose washer H, the purpose of both being to exclude sand, dust, and dirt of all kinds from the spindle and locking mechanism, and to keep the oil where it is needed. In case the loose washer be used, the sand-disk may be beveled on its periphery, so as to wedge tightly into the cap C when in working position; but if the washer be not used, then the periphery of the sand-disk should be straight, as in Fig. 8, for the wheel must turn loosely on the same.

The catch-plates shown in Figs. 2 and 4 will both work on any of the forms of spindles shown, and either with or without a loose washer.

The operation of my device in its various forms is evident from the description already given. The spindle is placed within the hub by pressing the two toward each other until the rigid collar passes the catch-plate, when the latter is instantly forced into locked position behind the same. To withdraw the spindle, all that is necessary is to press the actuating-bolt L or the wedge-bolts L' or L'', when the catch-plate will be removed from behind the rigid collar and the parts may be freely detached. In case the loose washer is used, the same remarks apply as to locking and unlocking behind the disk H'.

The essential elements are the spindle provided near its inner end with a rigid collar and the vertically-adjustable catch-plate mounted on the rear of the hub. The remaining elements are accessories and modifications.

It will be seen that this construction, which is very efficient, is also extremely simple, cheap, and easily operated. It is especially adapted for use on baby-carriages, boys' wag-

ons, velocipedes, and light conveyances, but is also capable of use on large vehicles of all kinds.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination, with a spindle provided with a rigid collar and a hub provided with a recess within the same, of a movable catch-plate provided with an opening large enough to permit the spindle-collar to pass through the same, located in the recess of the hub, and actuating-bolt attached to said plate and protruding through the wall of said recess, forming one of the guides for said catch-plate, a guide for the catch-plate opposite to the actuating-bolt and guiding the catch-plate in line therewith, and a spring bearing against the catch-plate and holding the opening in the same eccentrically to the axis of the hub and spindle, substantially as described.

2. The combination, with a spindle provided with a rigid collar and a hub provided with a recess within the same, of a movable catch-plate provided with an opening large enough to admit the passage of the spindle-collar through the same located in said recess, a loose collar or washer on the spindle interposing a continual bearing-surface between the catch-plate and the spindle-collar and between the catch-plate and the shoulder of the axle, rectilinear guides for the catch-plate, and a spring bearing against the catch-plate and holding the opening in the same eccentric to the axis of the hub and spindle, substantially as described.

3. The combination, with a spindle provided with a rigid collar and a hub provided with a recess within the same, of a movable catch-plate provided with an opening large enough to admit the passage of the spindle-collar through the same, a loose collar or washer on the spindle interposing a continuous bearing-surface between the catch-plate and the spindle-collar and between the catch-plate and the shoulder of the axle, and closing the opening in the end of the hub, rectilinear guides for the catch-plate, and a spring bearing against the catch-plate and holding the opening in the same eccentrically to the axis of the hub and spindle, substantially as described.

4. In combination, for detachably connecting wheel-hubs and axles, the axle F, the spindle E, provided with the loose washer H, having a hexagon-shaped periphery and provided with the locking-disk H', and the sand-excluding disk H'', the hub A, provided with the cap or casing C c, the catch-plate K, mounted in the casing C c eccentrically to the axis of the hub and spindle, and provided with the hexagon-shaped engaging-surface P, resistance-spring M, and actuating-bolt L, substantially as and for the purpose described.

ADOLPH F. C. GARBEN.

In presence of—

EDMD. S. DOTY,  
J. F. WILLIAMSON.