

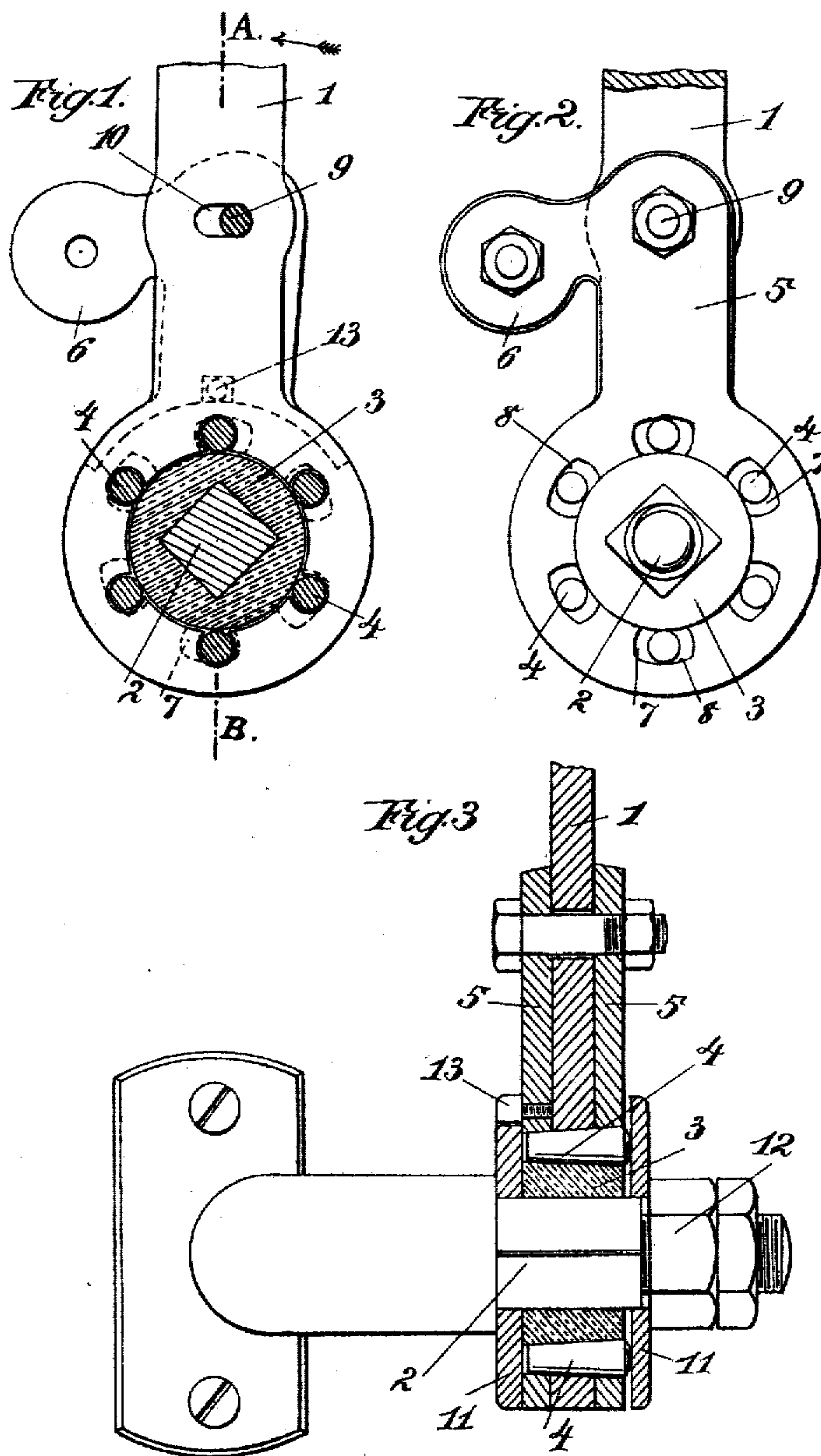
No. 814,301.

PATENTED MAR. 6, 1906.

J. KUNZ.
HAND LEVER WITH LOCKING DEVICE.

APPLICATION FILED APR. 4, 1905.

2 SHEETS—SHEET 1.



Witnesses:

Frank Reinhold
Lillie M. Perry

Inventor:
Jean Kunz
by Brienx Knauth
his Attorneys:

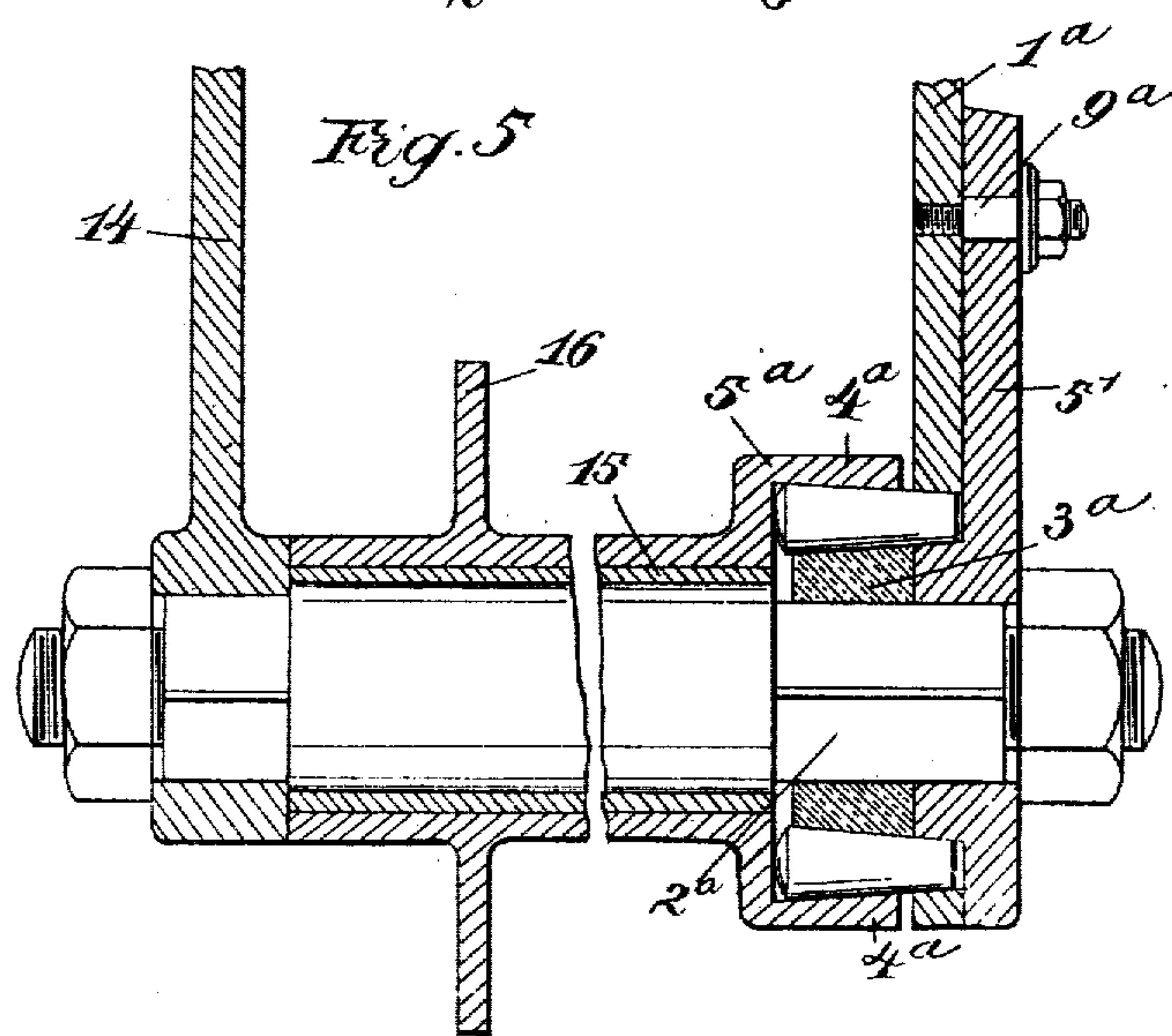
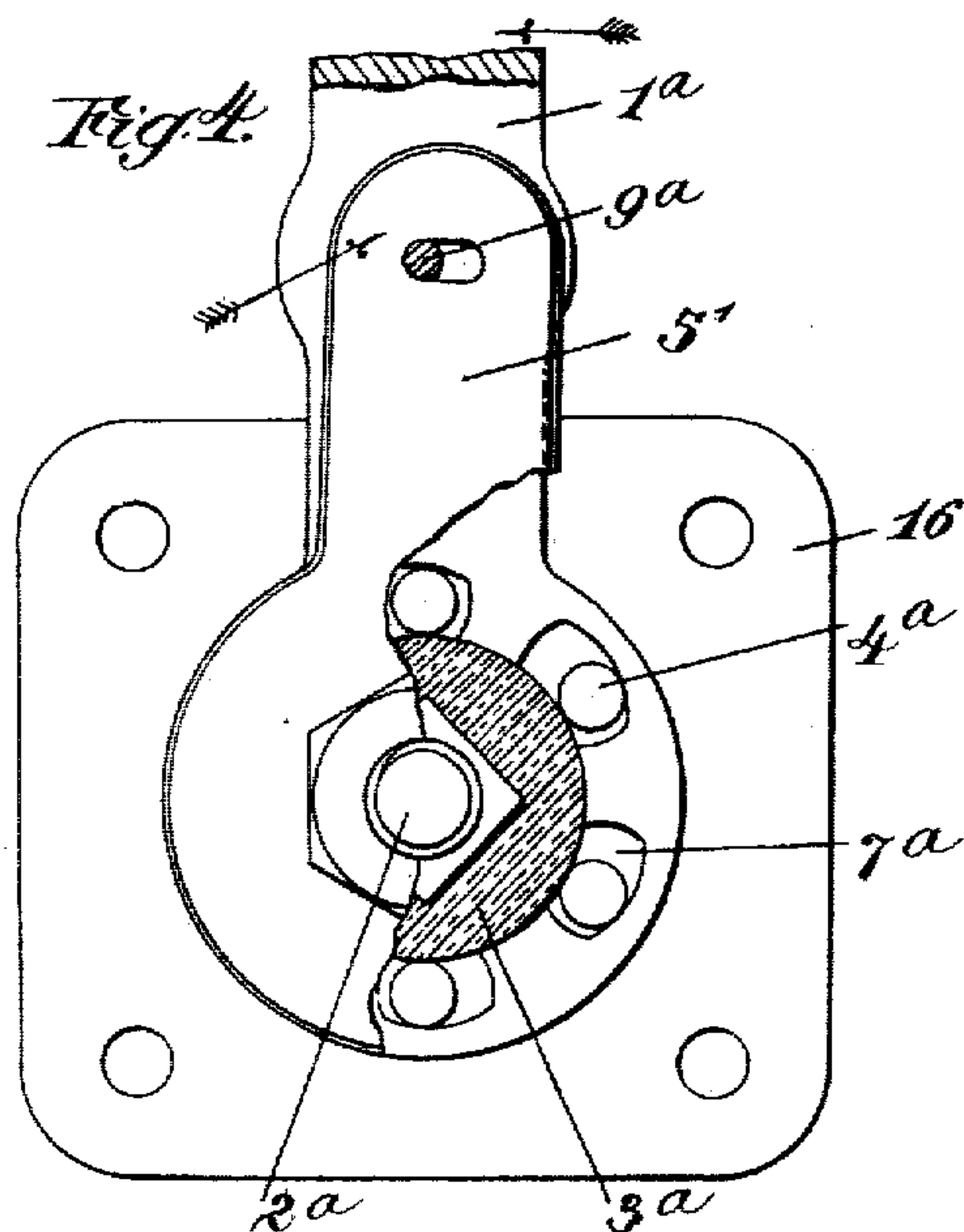
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his Attorneys.

UNITED STATES PATENT OFFICE.

JEAN KUNZ, OF CRONBERG IN THE TAUNUS, GERMANY.

HAND-LEVER WITH LOCKING DEVICE.

No. 814,301.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed April 4, 1905. Serial No. 253,800.

To all whom it may concern:

Be it known that I, JEAN KUNZ, manufacturer, residing at No. 1 Hartmutstrasse, Cronberg in the Taunus, Germany, have invented certain new and useful Improvements in Hand-Levers with Locking Devices, of which the following is a specification.

This invention relates to a construction of hand-lever for actuating brakes, steering-gear, valves, and the like, and in particular levers of that kind in which a permanent back pressure is exerted upon the lever by the connecting-gear. The lever is provided with a double-acting roller-clutch-locking device, so that it remains stationary in every position, the heretofore usual pawl and toothed quadrant device being dispensed with. In the hub of the lever is provided a roller-clutch-locking device with two oppositely-directed wedging-surfaces for each roller. By this means the concussions or blows to which the hand-lever is unavoidably exposed are prevented from effecting a loosening of the locking device, but, according to their direction, are made to press the rollers against the one or the other wedge-surface and are thus rendered innocuous. The double formation of the wedge-surfaces also has the advantage that the lever can be employed indifferently as a pulling or a thrust lever.

On the accompanying drawings is shown a hand-lever constructed according to the present invention.

Figure 1 shows a side view of the same, partly in section, with the rollers in the clutched position. Fig. 2 shows the same view, the front disk being removed and the rollers shown in the middle position. Fig. 3 shows a cross-section on line A B of Fig. 1. Figs. 4 and 5 show, respectively, a sectional front view and cross-section of a modified construction of the lever.

The brake-lever 1 is mounted with its hub rotatable upon the fixed pin 2—i. e., upon a ring 3, mounted upon the said pin. The hub of the lever is formed with a number of recesses into which are inserted the rollers 4, which are loose therein and run upon the ring 3. On each side of the hub is a cheek 5, also mounted rotatable on the ring 3, both cheeks being provided at their upper ends with eyes 6 for the connection of the brake or other gear. The two cheeks 5 are formed with recesses 7, in which the rollers 4 are en-

gaged and which at their middle part are somewhat wider than the diameter of the rollers, while the two side parts thereof constitute oppositely-inclined wedge-surfaces 8, the distance of the ends of these from the ring 3 being smaller than the diameter of the rollers. The two cheeks 5 are connected together by a bolt 9, which passes through a slot 10 of the lever, and thus allows of a certain relative motion between the lever and the cheeks. In front of and behind the lever 1 and the cheeks 5 are disks 11, which are mounted with square holes upon the pin 2, which is preferably formed of a square section, and a screw-nut 12 is screwed onto the threaded end of the pin 2 for securing the lever 1 and cheeks 5 between the disks 11. As the rollers, as also the surfaces on which they roll, are formed slightly conical, it will be seen that any wear thereof can be made good by tightening up the nut 12. The lever is preferably provided with a stud 13, which is situated in a peripheral recess in the back disk 11, or it may be between two stops formed on this disk and which serves to limit the stroke of the lever in both directions.

The action of the above-described construction is as follows: If the lever is moved in the direction of the arrow, Fig. 1, then as the rod-gear at 6 exercises a back pressure the rollers 4 will become jammed between the wedge-surfaces 8 and the ring 3, so that on leaving go of the lever it will remain in its position. The bolt 9 in that case bears against the right-hand end of the slot 10 of the lever, as shown at Fig. 1. If the lever is then moved back again, so as, for example, to take off the brake, the back pressure exerted at 6 will operate in the same direction as the motion of the lever, so that the rollers will then assume their middle position, as at Fig. 2, and the wedging action will cease, thus allowing of an easy motion of the lever. If the lever is released in any position, the back pressure will shift the two cheeks 5 relatively to the lever and in thereby wedging the rollers will hold the lever in position. If the lever is subject to a concussion or blow, this will, according to its direction, either press the rollers tighter against the wedge-surfaces or it will remove them from those wedge-surfaces and press them against the oppositely-directed wedge-surfaces, so that there will never occur an unintentional loosening of the lever. The motion resulting from this shifting of the rollers

from the one wedge-surface to the other can be made almost inappreciable by suitably proportioning the rollers relatively to the wedge-surfaces. If the lever is employed as a pulling-lever, so that, for example, on pulling on the brakes it is moved in the direction opposite to the arrow at Fig. 1, the reaction of the rod-gear will also operate as a pulling action, and the rollers will become wedged on the opposite wedge-surfaces.

The modification shown at Figs. 4 and 5 differs from that above described, in the first place, in that the rollers 4^a are mounted rotatably in one of the two cheeks 5^a and 5', while the recesses formed with wedge-surfaces are contained in the hub of the lever 1^a. Also in this case the pin 2^a of lever 1^a is not fixed, but rotatable, and carries at its other end a lever 14, which is connected in any suitable manner to the operating-rod gear. The cheek 5^a is provided with a sleeve 15, which is fixed—by means of a flange 16, for example—to the framing of a car. At the front end the pin 2^a is formed rectangular and carries the ring 3^a, upon which the rollers bear, and it also carries the front cheek 5', which is again connected to the lever 1^a by means of a bolt 9^a, fixed to the latter and working in a slot in the cheek. The lever 1^a is mounted upon a circular shoulder on the cheek 5' and is formed with the recesses 7^a, provided with the wedge-surfaces. The action of this modification is the same as that above described, with the exception that the ring 3^a, together with the pin 2^a, is turned by the motion of the lever, while the cheek 5^a remains stationary. In this case the rollers, as also the surface of the ring 3^a, are formed conical in order to allow of adjustment, as in the previous case.

Having thus described the nature of my said invention and the best means I know of carrying the same into practical effect, I claim—

1. A hand-lever for actuating brakes or other mechanism, said lever being provided with a hub, a cheek located adjacent to the lever-hub, means for allowing a limited rocking movement of the lever relatively to the cheek, and a rolling clutch member extending through the lever-hub and through the cheek, one of said parts through which the roller extends having double-acting clutch-surfaces coöperating with said clutch member.

2. The combination of the lever, the cheek adjacent thereto, means for allowing a limited rocking movement of the lever relatively to the cheek, and a rolling clutch member connected with one of said relatively movable parts to preserve a constant position with respect to said part, the other of said parts having double-acting clutch-surfaces adapted for engagement by said rolling clutch member.

3. The combination of a central member having a circular cross-section and forming a clutch-surface, a lever mounted to swing about the axis of said central member, a cheek located adjacent the lever and mounted to swing about the same axis, means for allowing a limited rocking movement of the lever relatively to the cheek, and a rolling clutch member engaging said clutch-surface and connected with one of said swinging parts to preserve a constant position with respect to said part, the other of said parts having double-acting clutch-surfaces adapted for engagement by said rolling clutch member.

4. The combination of a central member having a circular cross-section and forming a clutch-surface, a lever mounted to swing about the axis of said central member, a cheek located adjacent to the lever and mounted to swing about the same axis, and a rolling clutch member engaging said clutch-surface and carried by one of said swinging parts to preserve a constant position with respect to said part, the other of said parts having double-acting clutch-surfaces adapted for engagement by said rolling clutch member.

5. The combination of the lever and the cheek located adjacent to each other and capable of independent rocking movement about the same axis, and a rolling clutch member connected with one of said rocking parts to preserve a constant position with respect thereto, the other of said parts having double-acting clutch-surfaces adapted for engagement by said rolling clutch member.

6. The combination of the hand-lever having a recessed hub, side cheeks located adjacent to the lever-hub and having recesses with oppositely-inclined wedged surfaces, rollers arranged in the recesses of the lever-hub and side cheeks, and a central member on which the said lever and cheeks are loosely mounted, and having a bearing-surface for said rollers.

7. The combination of a lever having recesses, a central member on which said lever is loosely mounted, side cheeks likewise loosely mounted on said central member and capable of moving relatively thereto, said side cheeks being also provided with recesses, the recesses in one of said loosely-mounted parts being provided with wedge-surfaces, a connection from said lever to operate suitable mechanism, and rollers arranged in the recesses of the lever and side cheeks and in engagement with said central member.

8. The combination of a central member having a conical surface, a lever and a side cheek loosely mounted on said central member, and also capable of motion relatively to each other, each of said loosely-mounted parts having recesses which in one of said parts are provided with oppositely-inclined wedge-surfaces, rollers mounted in the recesses of said parts and in engagement with

the central member, and means for adjusting the rollers longitudinally to compensate for wear.

5 9. The combination with a central member having a conical surface, of a lever and a side cheek loosely mounted on said central member and also capable of motion relatively to each other, rollers connected with one of said loosely-mounted parts to preserve a constant position with respect to said part, the
10 other of said parts having wedge-surfaces engaged by said rollers, which are also in en-

gagement with the conical surface of the central member, and means for adjusting the rollers lengthwise to compensate for wear. 15

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 22d day of March, 1905.

JEAN KUNZ.

Witnesses:

ROBERT BÜHL.

JEAN GRUND.