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P. LIEVENS & G. JAHN.  
SAFETY LOCK.

APPLICATION FILED JULY 29, 1905.

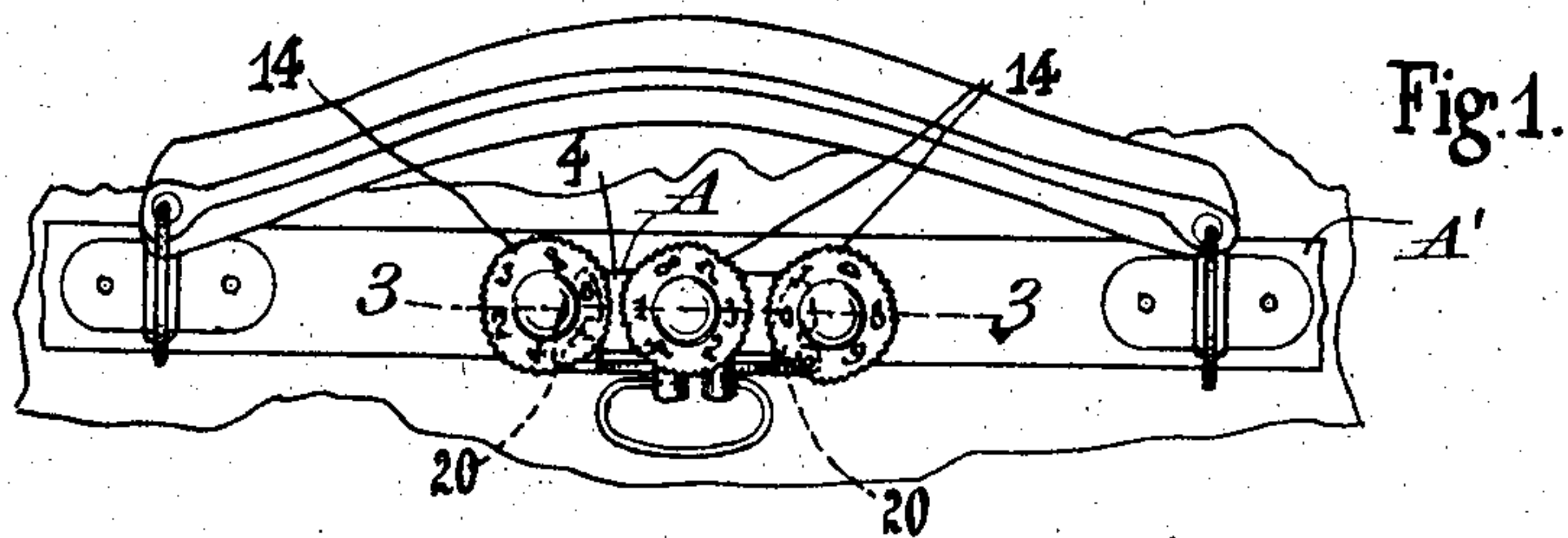


Fig. 1.

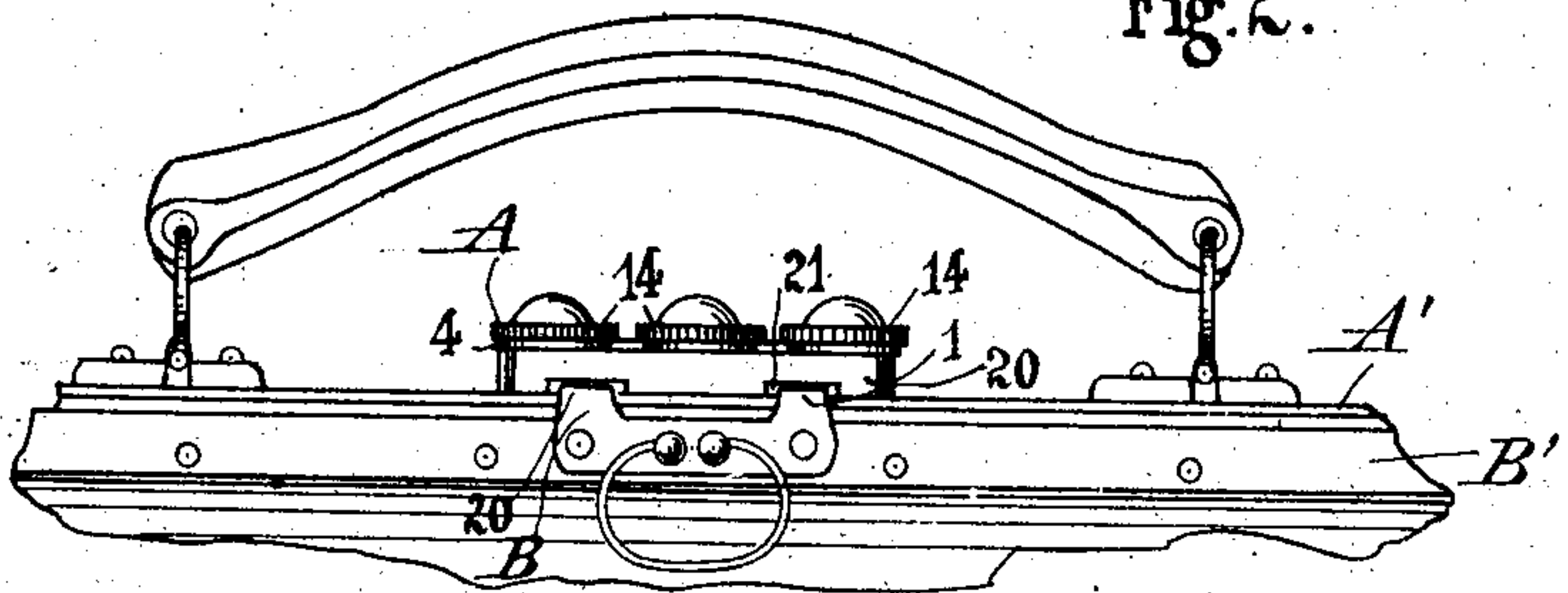


Fig. 2.

Fig. 3.

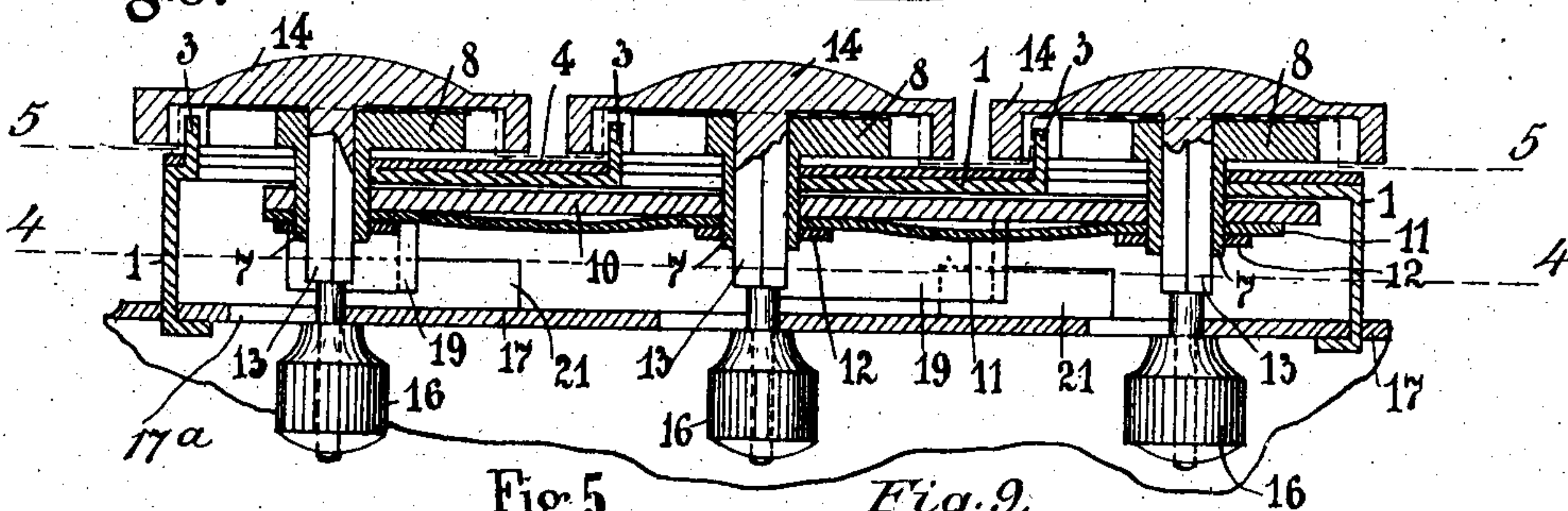


Fig. 5.

Fig. 9.

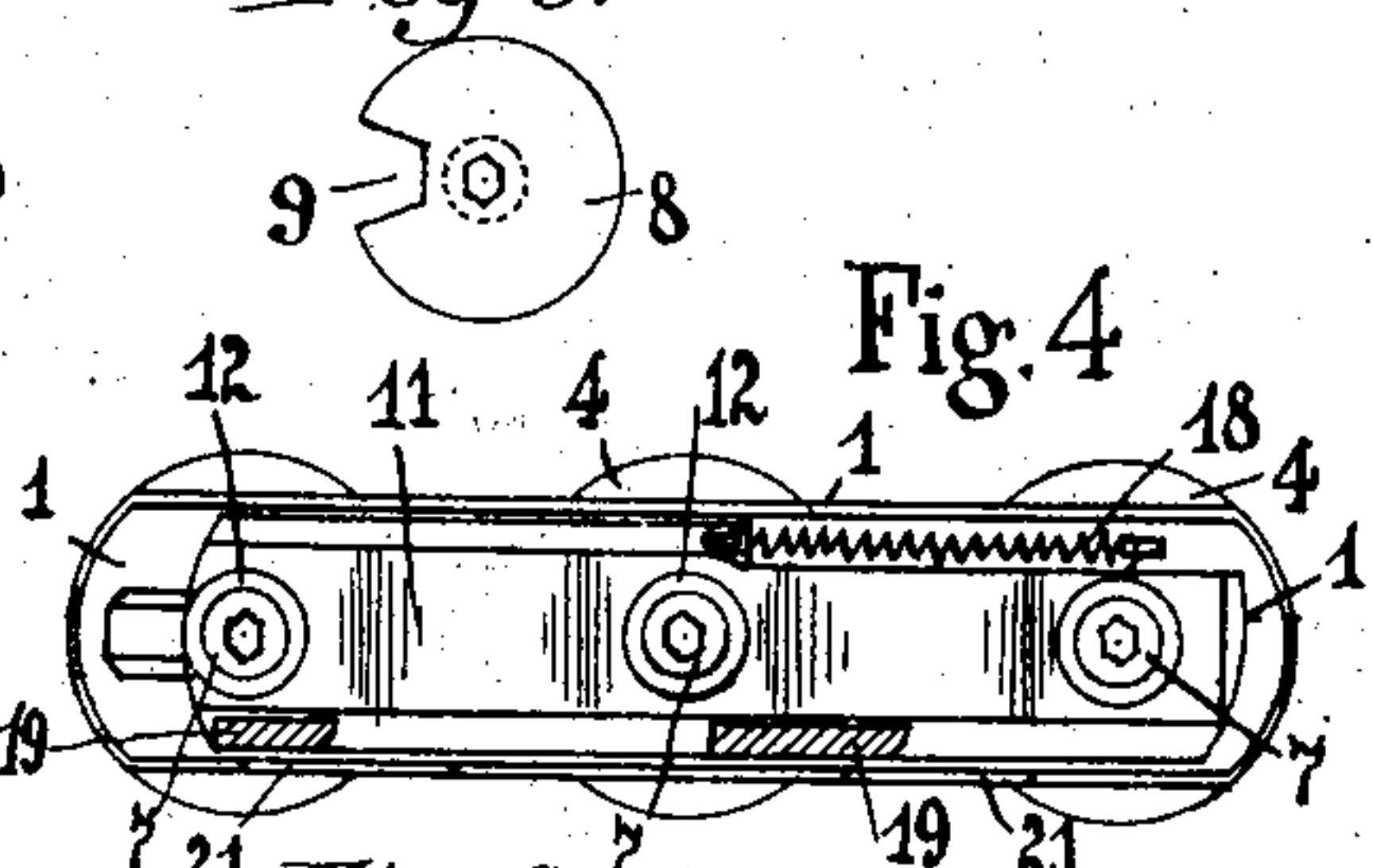
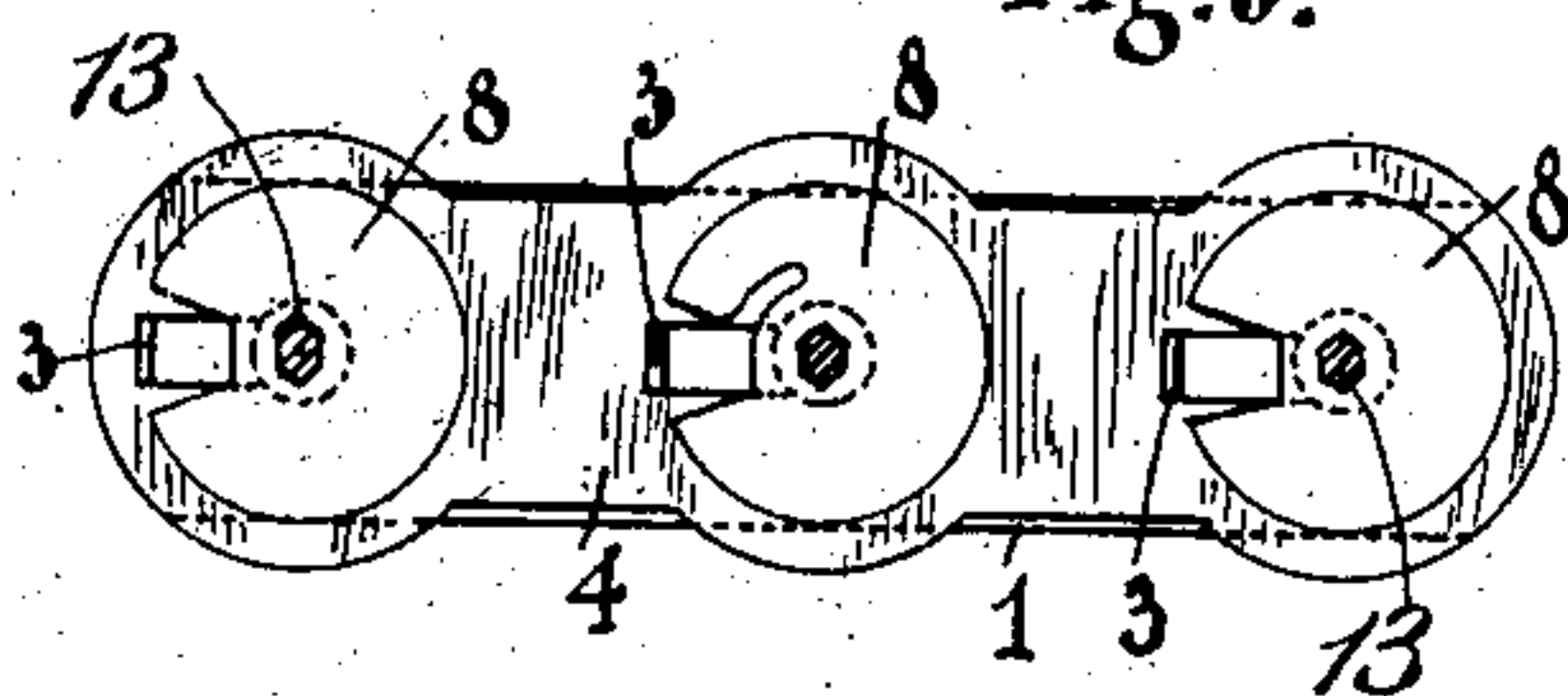


Fig. 4.

Fig. 6.

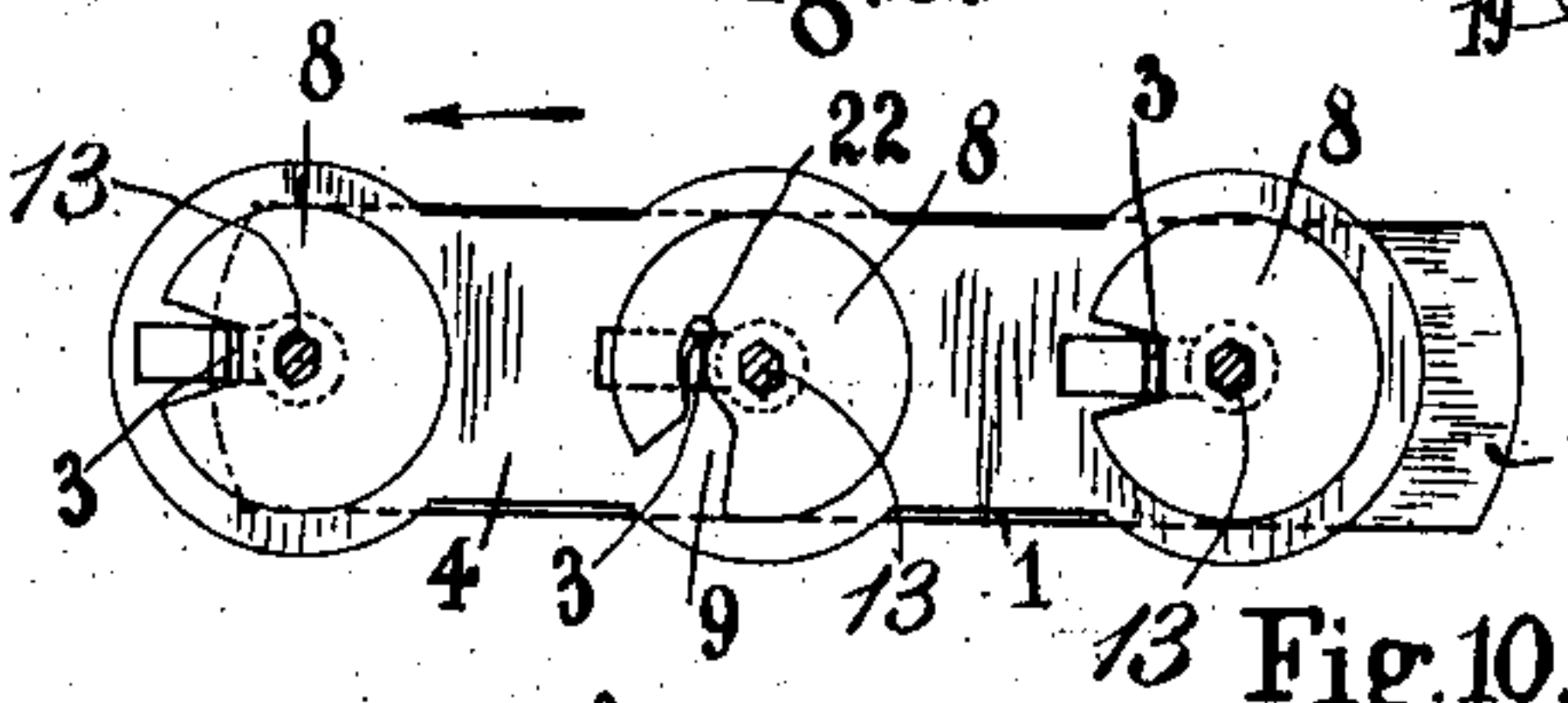


Fig. 8.

Fig. 7.

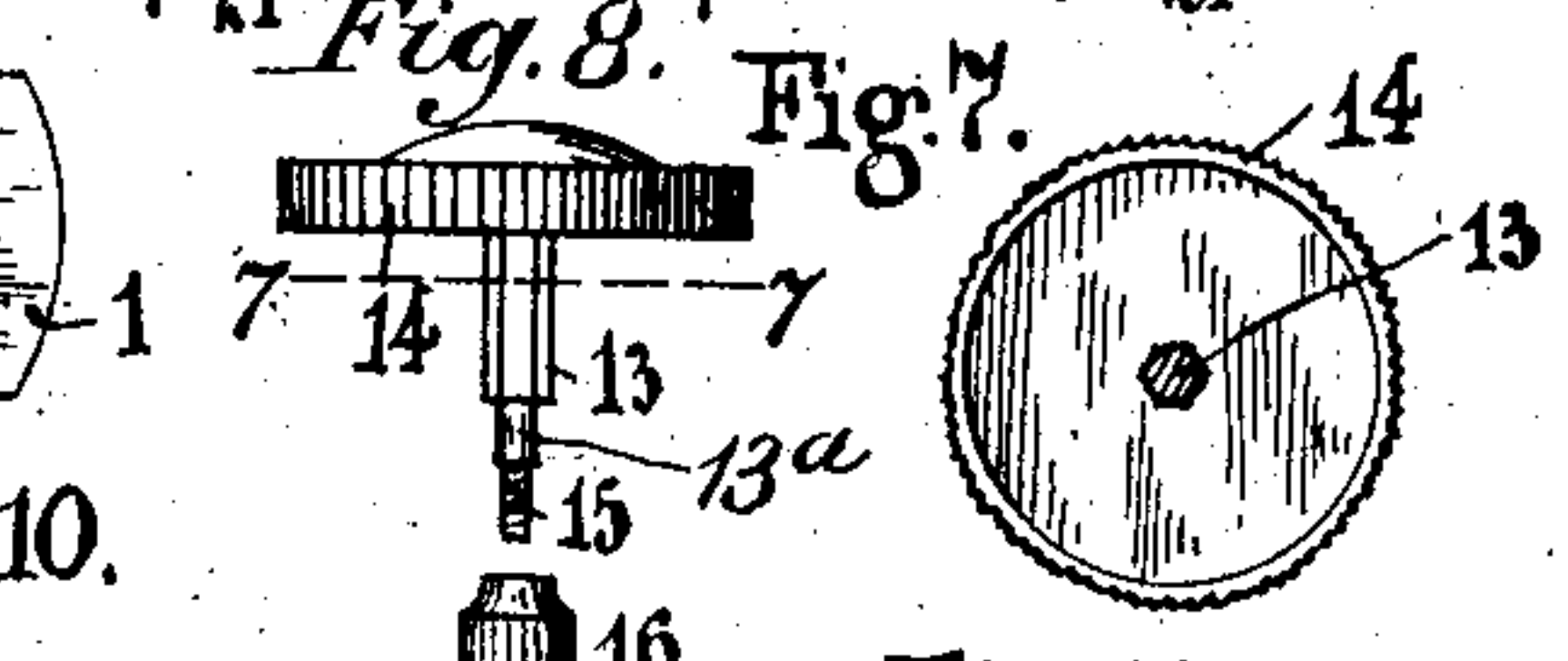


Fig. 10.

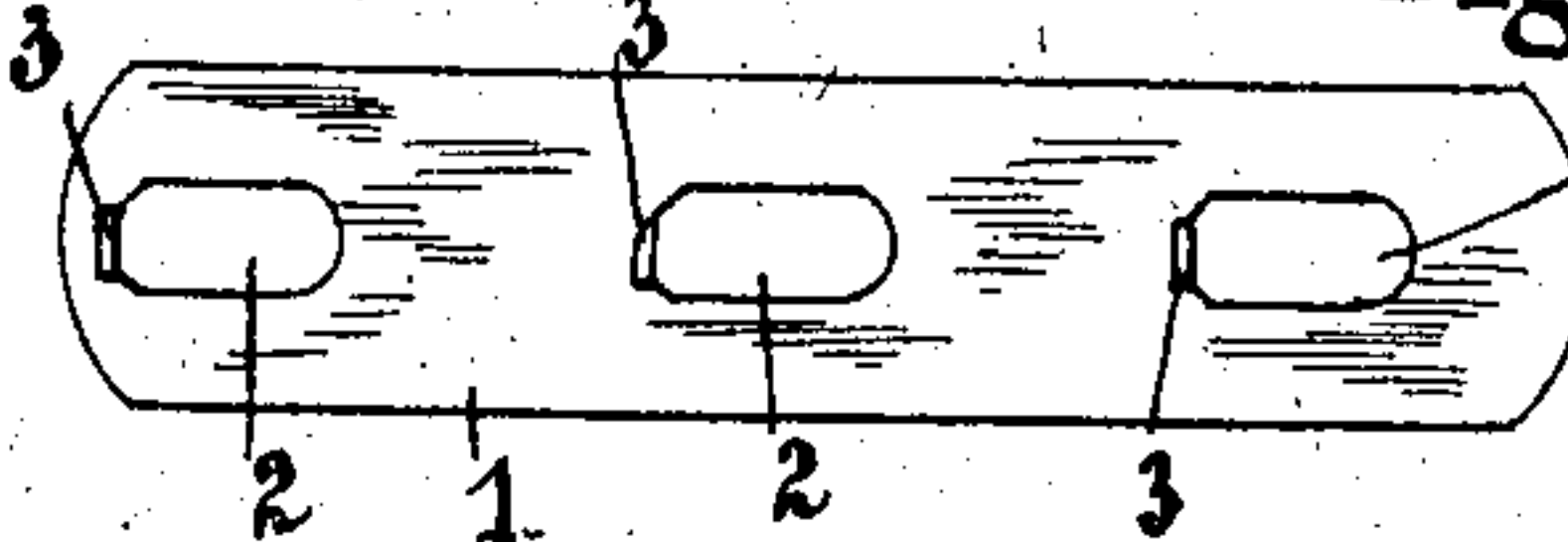
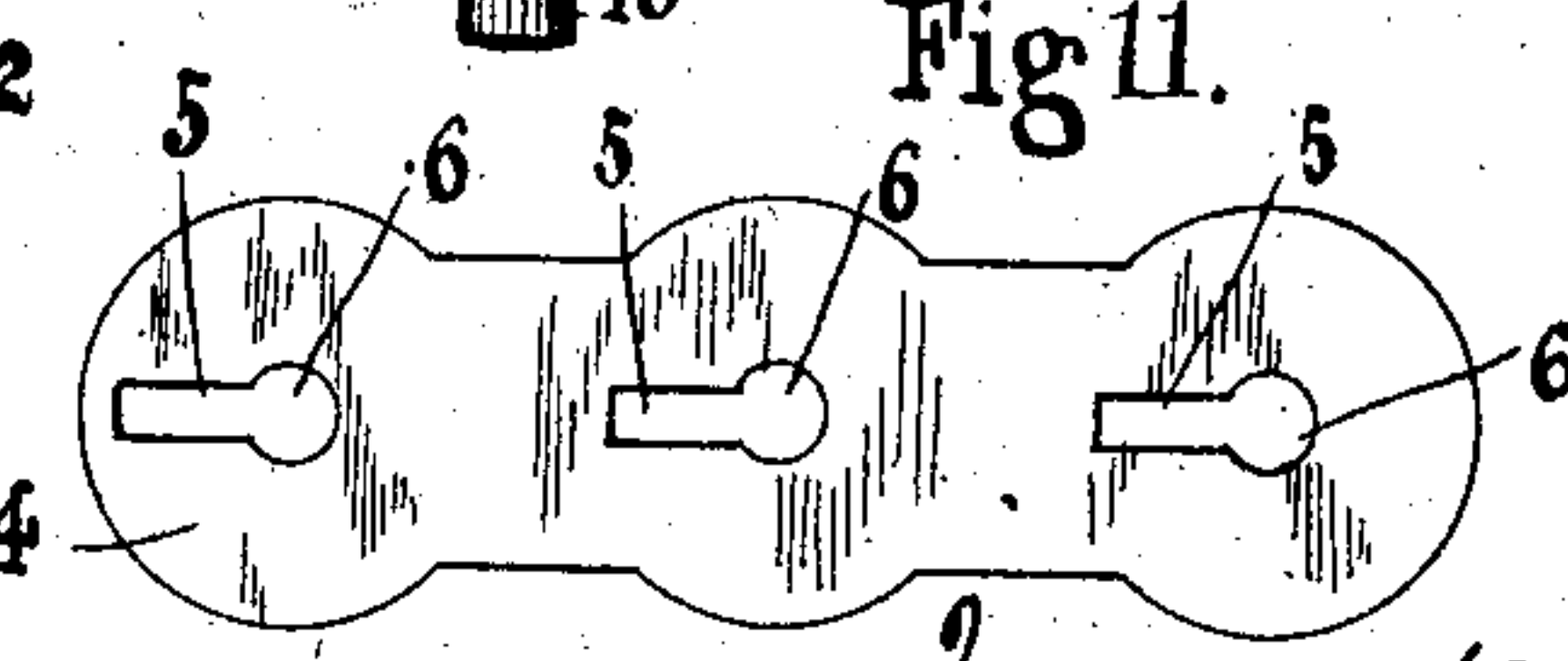


Fig. 11.



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# UNITED STATES PATENT OFFICE.

PIERRE LIEVENS AND GUILLAUME JAHN, OF BRUSSELS, BELGIUM.

## SAFETY-LOCK.

No. 834,310.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed July 29, 1905. Serial No. 271,833.

*To all whom it may concern:*

Be it known that we, PIERRE LIEVENS, a subject of the Belgian King, and GUILLAUME JAHN, a subject of the German Emperor, residing at Brussels, Belgium, have invented new and useful Improvements in Safety-Locks; and we do hereby declare the following to be a full, clear, and exact description of the same.

10 This invention relates to improved combination-locks for valises, boxes, trunks, and the like, and has for its object the provision of a lock of this character wherein the locking mechanism is opened by a prescribed movement of a plurality of combination members, wherein the lock may be retained in an open position by said members, and, further, wherein the parts may be so adjusted as to permit the owner of the valise or trunk to readily change the combination.

The invention will be more particularly described in connection with the accompanying drawings and will be more fully ascertained in and by the appended claims.

25 In the drawings, Figure 1 is plan view of the upper portion of a valise, showing in connection therewith an improved lock embodying the main features of our invention. Fig. 2 is a side elevation of the parts shown in Fig. 1. Fig. 3 is a sectional view on line 3 3 of Fig. 1. Fig. 4 is a sectional view on line 4 4 of Fig. 3. Fig. 5 is a sectional view on line 5 5 of Fig. 3. Fig. 6 is a similar view showing the parts in a different position. Fig. 7 is a detail bottom view of one of the combination members, taken on line 7 7 of Fig. 8. Fig. 8 is a side elevation of one of the combination members and the locking-nut therefor. Fig. 9 is a plan view of one of the locking-disks embodied in the operative structure. Figs. 10 and 11 are detail plan views, respectively, of operative parts of the lock.

Like characters of reference designate similar parts throughout the different figures of the drawings.

As shown, the invention comprises the lock proper, which is indicated as a whole by A and is mounted upon the frame A' of the valise, and the lock-engaging member, which is indicated by B and is mounted upon the frame B'.

Referring to the structure of the body of the lock, the same comprises a stationary casing 1, whose top wall is slotted at 2 and provided with locking projections 3, which form one of the elements of the lock proper

and will hereinafter be referred to as the "stationary plate."

4 designates a disk-plate mounted upon the stationary plate 1 and provided with slots 5, terminating in enlargements 6. The slots 5 are adapted to fit over and operatively engage the projections 3, which latter limit the movement of the disk-plate 4 in one direction.

It will also be obvious that the slots of the plates 1 and 4 are approximately of the same length and that they are adapted to register when in the position shown in Fig. 3. A plurality of locking-disks 8, equal in number to the slots provided in plates 1 and 4, are mounted upon the latter and are provided with cylindrical shanks 7, which project through the enlargement 6 of plate 4 and also through slots 2 of plate 1, the contracted slots 5 of plate 4 retaining said shanks and disks in prescribed relation with the plate 4, but permitting rotary motion of the disk. Said locking-disks are provided with locking-recesses 9, which preferably diverge from their bases outwardly, the base portions of said recesses being equal in width to the projections 3 and adapted to cooperate therewith in certain adjustments. One of said disks 8, preferably the center one, is provided with a concentric slot 22, registering with the base portion of its recess 9.

A plurality of combination members in the form of centrally-recessed knobs 14 are provided, adapted to inclose the disks 8 and the projections 3 and to extend downwardly toward the plate 4. Said combination members are provided on their upper faces with a plurality of numerals or symbols or like designating-marks and with depending shanks 13 of polygonal cross-section, being reduced cylindrically at 13<sup>a</sup> and having a further threaded reduction at 15, adapted to be engaged by nuts 16. The shanks 7 of the disks 8 are hollow and are complementary in formation with the shanks 13 to provide non-rotative engagement between the locking members 14 and the disks 8. The plate 17, which is indicated as a whole by A', is provided with slots 17<sup>a</sup>, through which the cylindrical portions 13<sup>a</sup> project, said slots 17<sup>a</sup> providing for movement of the shanks 13, locking members 14, and disks 8 in one direction. The nuts 16 engage the lower face of the plate 17 and hold the locking members 14, and therethrough the disks 8 and plate 4, in position upon the plate 1. It will be obvious



from the foregoing that the nuts 16 may be removed, thereby permitting disconnection of the locking members 14 from the disks 8 and readjustment of said members with respect to the disks 8 whenever it is desired to change the combination.

Below the plate 1 there is provided a locking-plate 10, through which the hollow shanks 7 project, said plate being yieldingly held in position by a spring 11, resting upon washers 12, secured to shanks 7. Said locking-plate is provided with locking projections 19, as shown in Figs. 3 and 4, adapted for engagement with catches mounted upon a plate 20, constituting the lock-engaging member and secured to frame member B'. Said catches project into the casing 1 through slots 21, formed therein, in a manner to be engaged by said projections 19. The locking-plate 10 is normally held in a locking or extreme right position by a spring 18, secured to lugs upon the plates 10 and 1, respectively.

The operation is as follows: The parts in their normal position, as shown in Fig. 3 and as held by spring 18, provide for a clearance between the projections 3 and recesses 9 of the disks 8, thereby permitting the latter to be freely turned through the locking members 14. Assuming that the parts are in the position shown in Fig. 3 and it is desired to lock the valise, the frames A' and B' are operated together, thereby engaging the catches of plate 20 with projections 19, there being a sufficient clearance between the projections 3 and the peripheries of the disks 8 to permit rotation of the latter. After the frames A' and B' have been secured together, as described, the combination is fixed by turning the locking members 14 to bring the recess 9 out of register with the projections 3, this operation preventing movement of the plate 10 to the left a sufficient distance to disengage the projections 19 with the catches of the plate 20. In order to position the locking members 14 in a manner to unlock the valise, it will be necessary to turn the locking members 14 to bring each of them into a registering position with the projections 3, and to do this the combination must be known to the operator. Assuming that the operator desires to unlock the valise, he will rotate the locking members 14 in a manner to bring the recesses 9 into register with the projections 3, and will thereupon move the parts to the left, thereby disengaging the projections 19 from the catches of the plate 20. If it is desired to retain the parts in position to prevent the spring 18 from bringing the projections 19 into engagement with the catches of the plate 20, the parts are moved to the left in the direction of the arrow shown in Fig. 6 until the bases of the recesses 9 are in engagement with the projections 3, whereupon the central locking member 14 is rotated to engage

the central projection 3 with the concentric slot 22, thereby holding the movable parts in an extreme left or unlocking position. If at any time it is desired to change the combination, any one or all of the locking members 14 may be disengaged from the disks 4 by first removing the nut 16 and replaced in a manner to change the relation of the recesses 9 with respect to the combination members upon the locking members 14.

We claim—

1. A combination-lock comprising a stationary slotted plate provided with disk-engaging projections, a disk-plate mounted on said stationary plate provided with slots co-operating with said projections and terminating in enlarged portions, disks mounted on said disk-plate and provided with hollow shanks extending through said enlargements and the slots of said stationary plate, said disks having locking-recesses and one of said disks having a concentric locking-slot, locking members non-rotatably engaged with said disks and carrying nuts for maintaining said members in engagement, a locking-plate secured to said shanks and having locking projections, and catches adapted to be engaged with said locking projections.

2. A combination-lock comprising a stationary slotted plate provided with disk-engaging projections, a disk-plate mounted on said stationary plate provided with slots co-operating with said projections and terminating in enlarged portions, disks mounted on said disk-plate and provided with hollow shanks extending through said enlargements and the slots of said stationary plate, said disks having locking-recesses and one of said disks having a concentric locking-slot, locking members non-rotatably engaged with said disks, a locking-plate secured to said shanks and having locking projections, and catches adapted to be engaged with said locking projections.

3. A combination-lock comprising a stationary slotted plate provided with disk-engaging projections, disks having locking-recesses and one of said disks having a concentric locking-slot, locking members non-rotatably engaged with said disks, a locking-plate carried by said disks and having locking projections, and catches adapted to be engaged with said locking projections.

4. A combination-lock comprising a stationary slotted plate provided with disk-engaging projections, a disk-plate mounted on said stationary plate provided with slots co-operating with said projections and terminating in enlarged portions, disks mounted on said disk-plate and provided with hollow shanks extending through said enlargements and the slots of said stationary plate, said disks having locking-recesses, locking members non-rotatably engaged with said disks and carrying nuts for maintaining said mem-



bers in engagement, a locking-plate secured to said shanks and having locking projections, and catches adapted to be engaged with said locking projections.

5 5. A combination-lock comprising a stationary slotted plate provided with disk-engaging projections, a disk-plate mounted on said stationary plate provided with slots co-  
10 operating with said projections and terminating in enlarged portions, disks mounted on said disk-plate and provided with hollow  
shanks extending through said enlargements and the slots of said stationary plate, said  
15 disks having locking-recesses, locking members non-rotatably engaged with said disks, a locking-plate secured to said shanks and  
having locking projections, and catches adapted to be engaged with said locking pro-  
20 jections.

20 6. A combination-lock comprising a stationary slotted plate provided with disk-engaging projections, a disk-plate mounted on said stationary plate provided with slots co-

operating with said projections and terminating in enlarged portions, disks mounted 25  
on said plate and provided with hollow shanks extending through said enlargements and the slots of said stationary plate, said  
disks having locking-recesses, locking members non-rotatably engaged with said disks, 30  
and locking means operated by said disks.

7. A combination-lock comprising a plate provided with projections, disk members provided with locking-recesses, one of said members having a locking-slot, means for operat- 35  
ing said disk members, and locking means operated by said disk members.

In testimony whereof we have signed our name to this specification in the presence of two subscribing witnesses.

PIERRE LIEVENS.  
GUILLAUME JAHN.

Witnesses:

CHARLES HOWARD,  
MAURICE GERBREAUULT.