

No. 767,004.

PATENTED AUG. 9, 1904.

K. MUCHOWICZ.

LOCK.

APPLICATION FILED APR. 24, 1902.

NO MODEL.

FIG. 1.

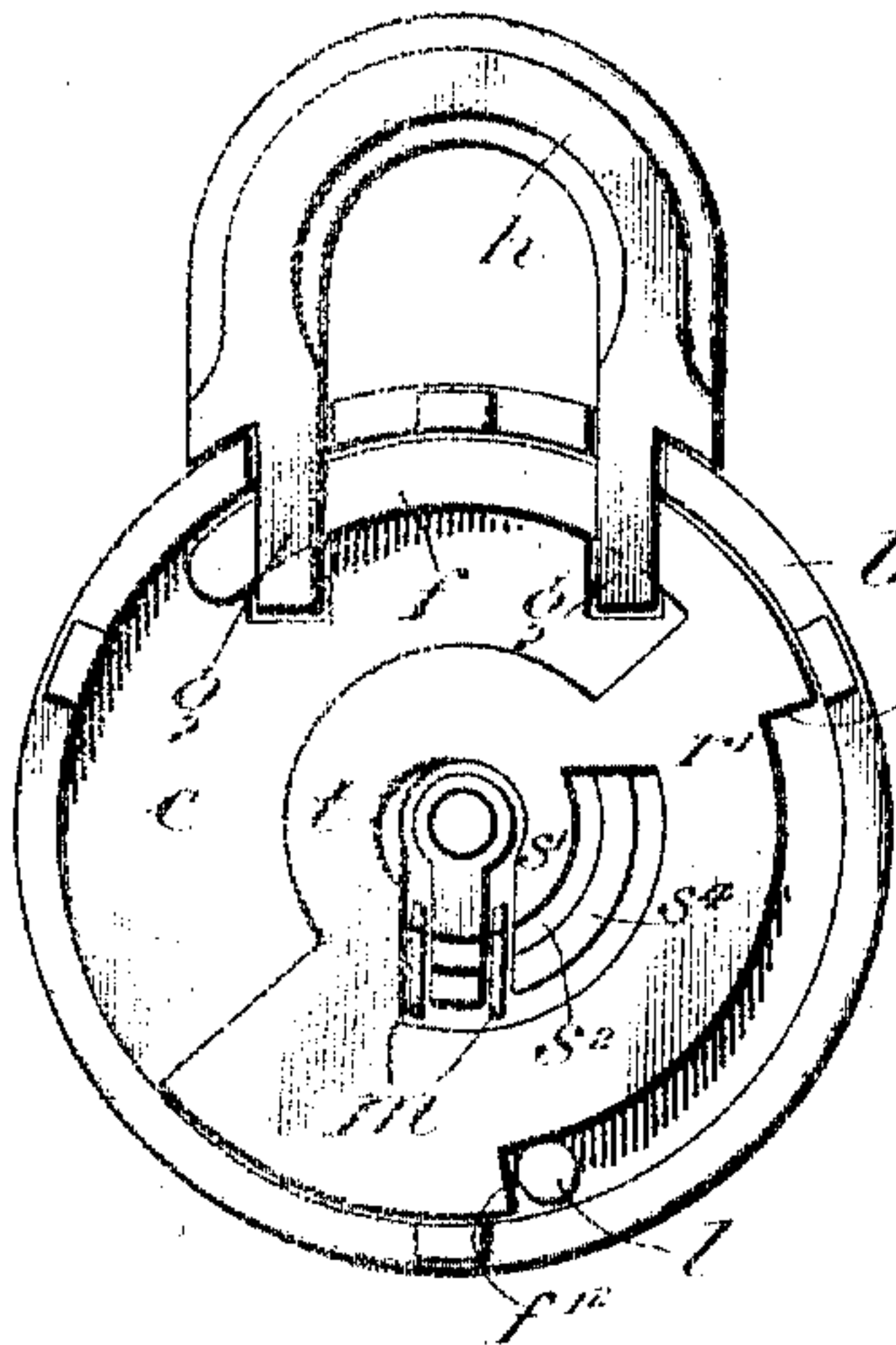


FIG. 2.

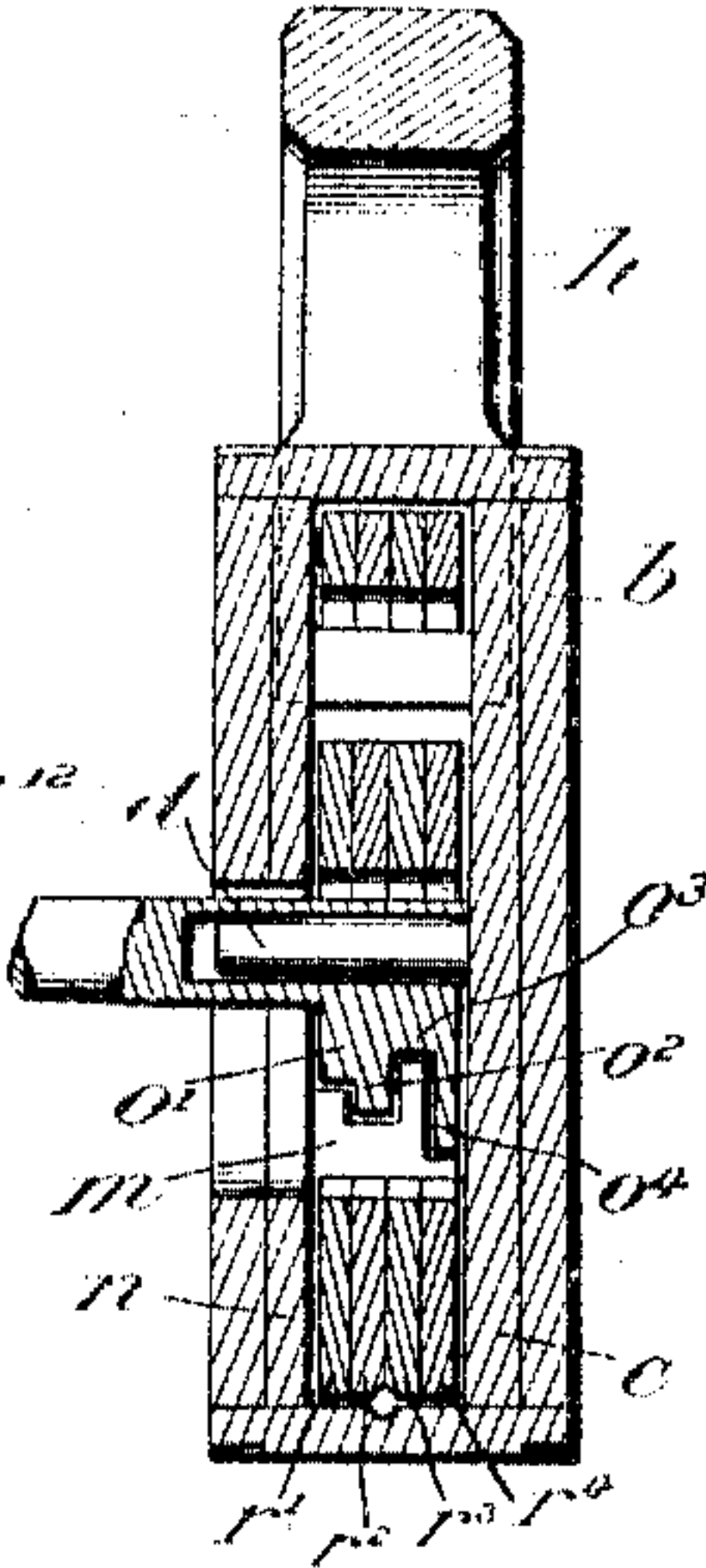


FIG. 3.

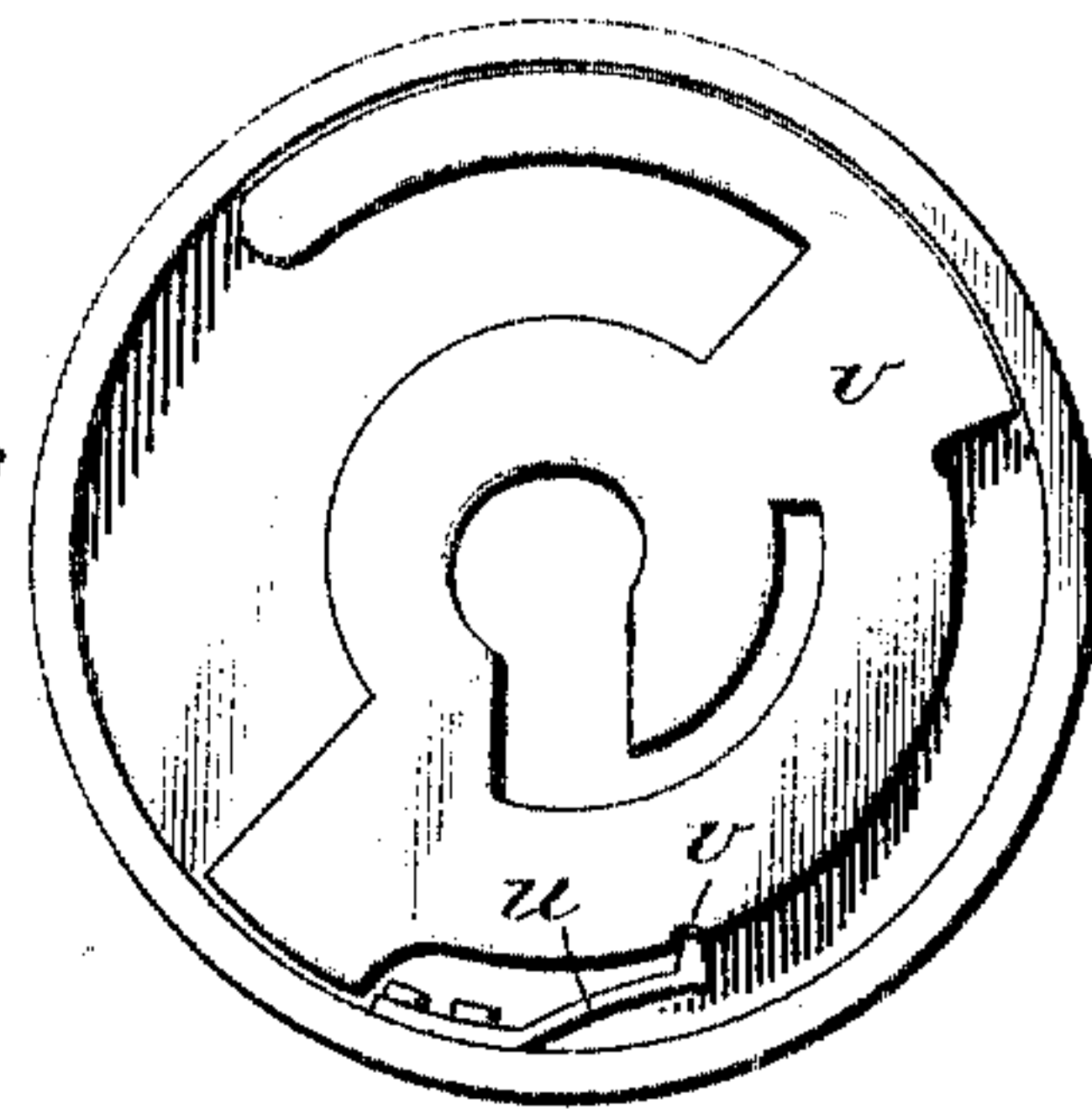


FIG. 4.

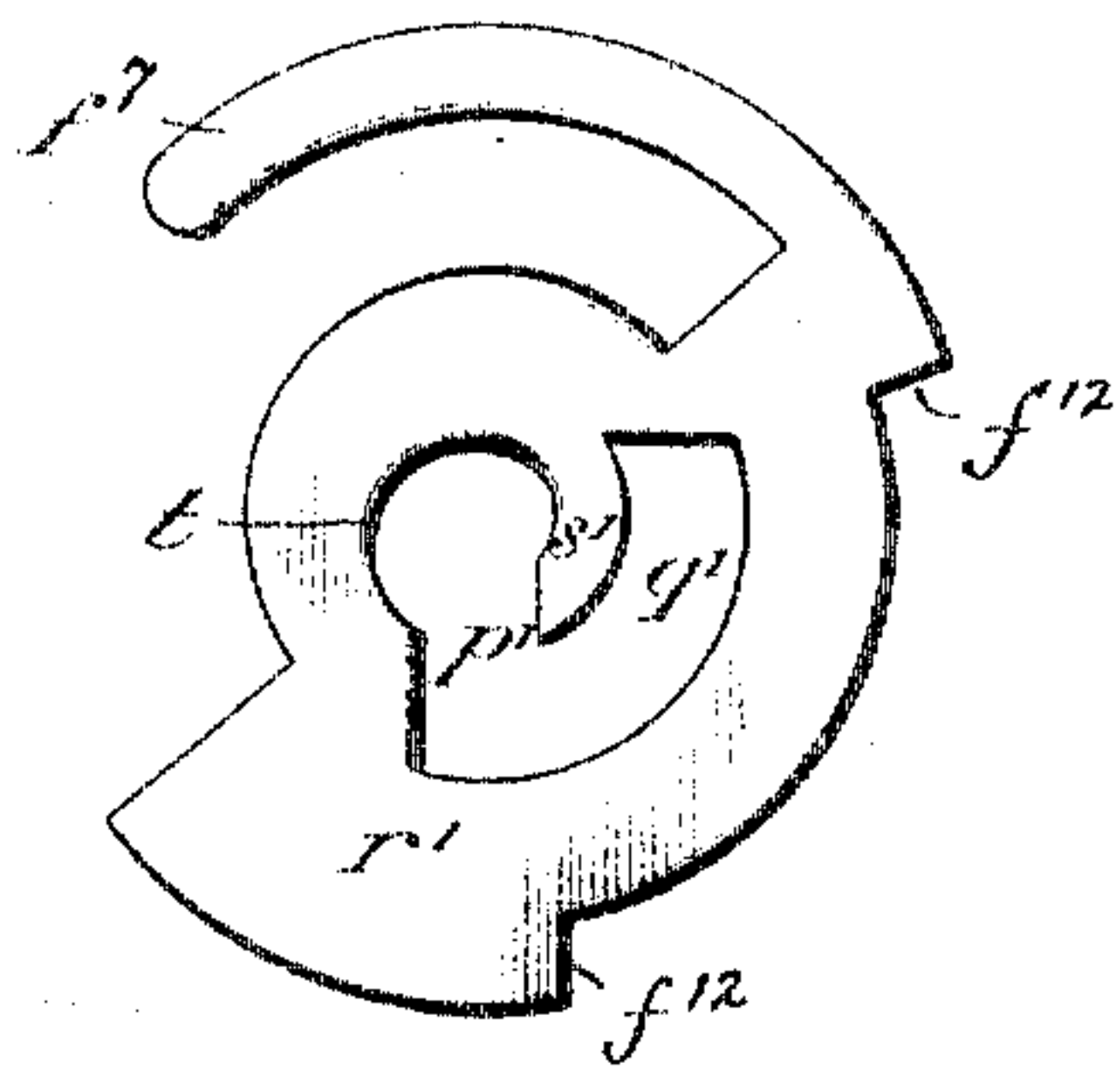


FIG. 5.

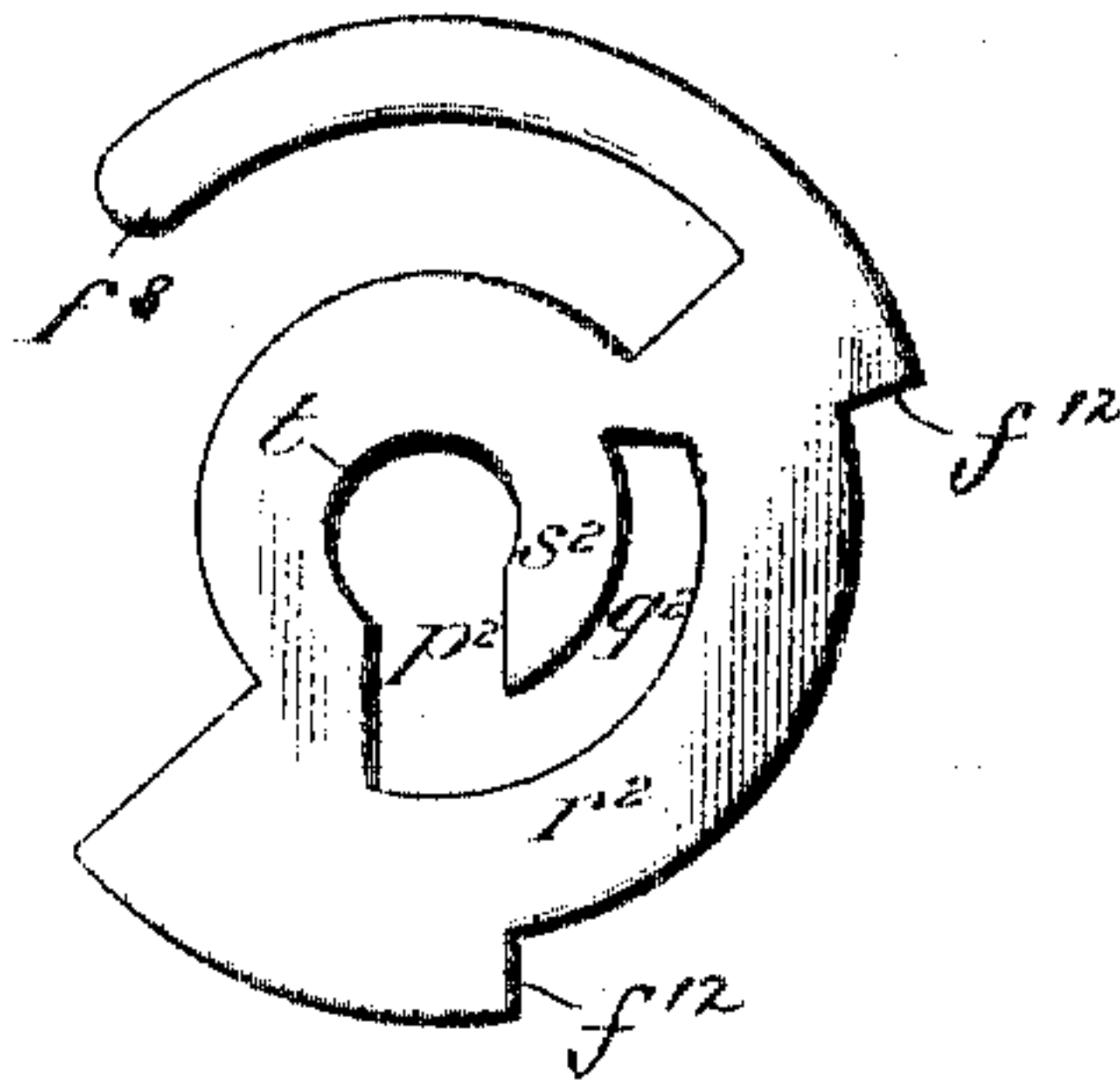


FIG. 6.

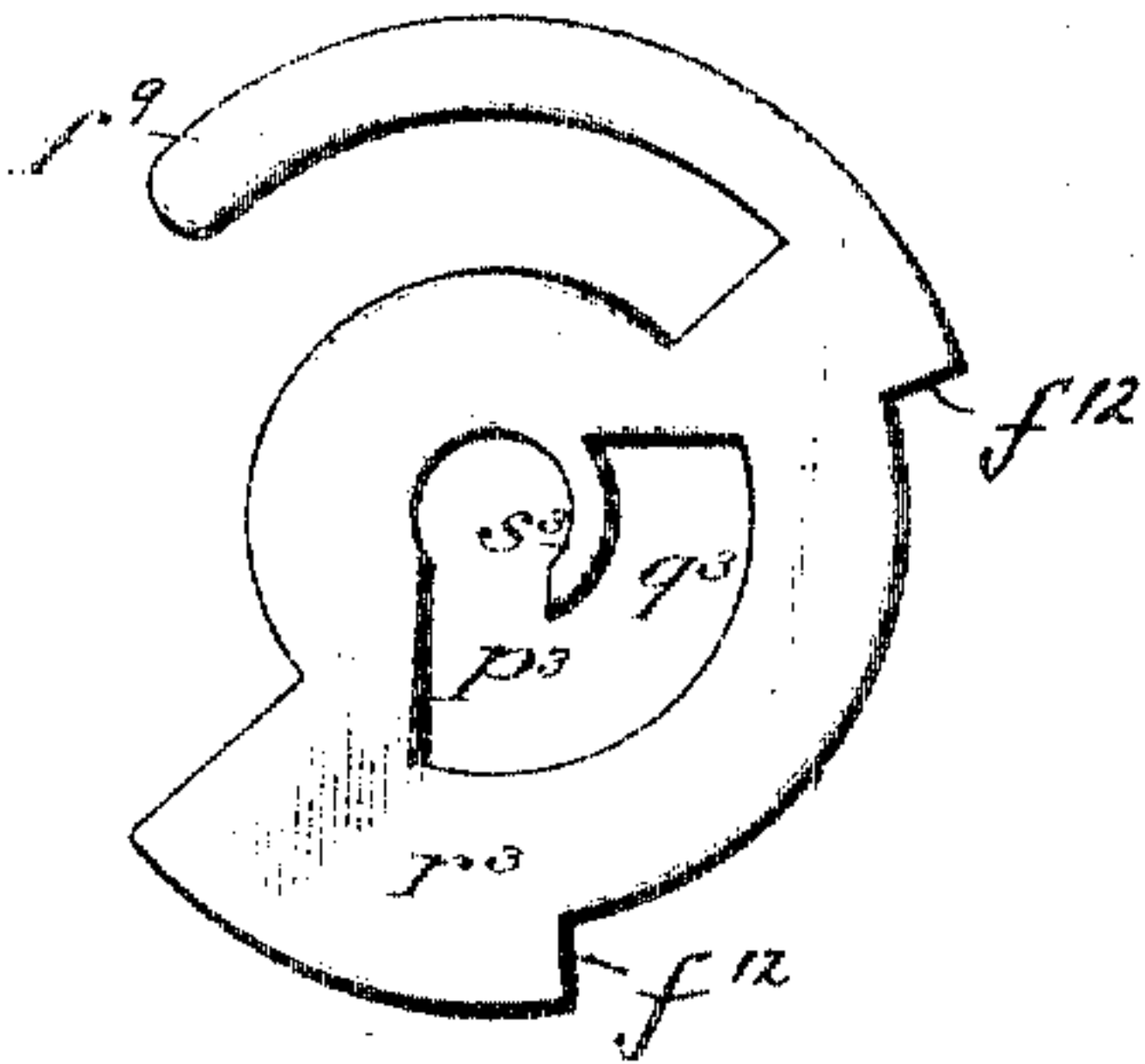
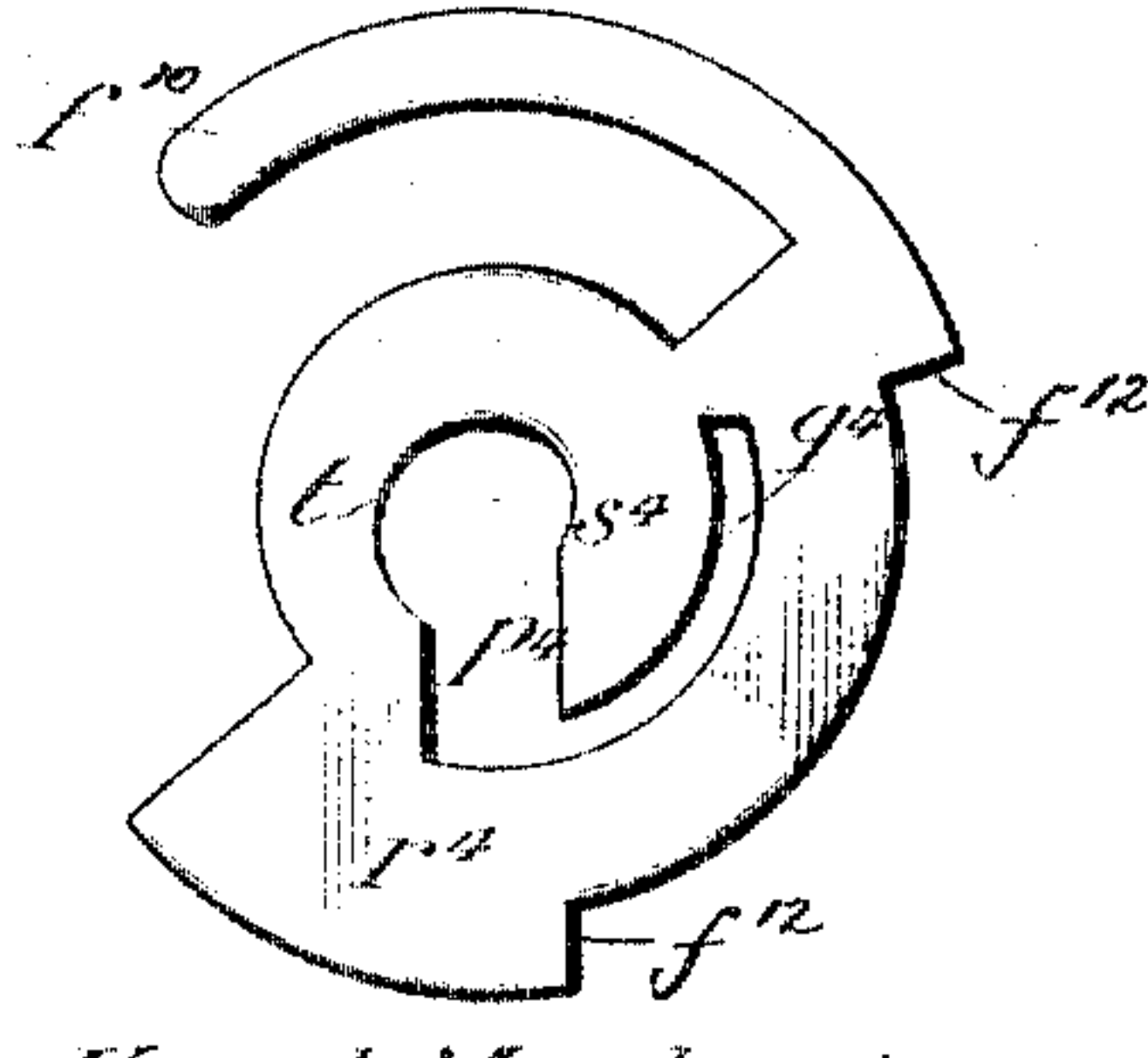


FIG. 7.



Inventor

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KAROL MUCHOWICZ, OF WARSAW, RUSSIA.

LOCK.

SPECIFICATION forming part of Letters Patent No. 767,004, dated August 9, 1904.

Application filed April 24, 1902. Serial No. 104,577. (No model.)

To all whom it may concern:

Be it known that I, KAROL MUCHOWICZ, residing at Warsaw, Poland, Russia, have invented certain new and useful Improvements in Locks with Tumbler-Bolts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention has relation to locks, and has for its primary object to provide a lock employing a series of circular tumblers operated by a key, said lock being so constructed as to render it extremely difficult if not entirely impossible to pick the same; and the invention consists in the novel construction, arrangement, and combination of parts, as hereinafter fully described, illustrated in the drawings, and pointed out in the appended claims.

20 In the accompanying drawings, Figure 1 shows a padlock constructed in accordance with this invention, the front plate and front wall of the lock-case being removed. Fig. 2 is a vertical central cross-section of Fig. 1, showing the key in position. Figs. 3, 4, 5, and 6 are detached views of the tumblers. Fig. 7 shows a modification in the means for limiting the motion of the tumblers.

30 In carrying out my invention, I employ a series of tumblers—say four, as $r^1 r^2 r^3 r^4$ —of circular form, each having a corresponding slot and arranged side by side in the cylindrical lock-case b against the bottom plate c , in the center of which latter is formed a pin d for the bore of the key.

40 In the upper portion of each tumbler an elongated arched slot is cut, thereby forming on the circumference of each tumbler a nose, the four noses being designated $f^7 f^8 f^9 f^{10}$, and shoulders $f^{11} f^{12}$, limiting the movement. All these noses jointly constitute the bolt, which in the locked state of the padlock is passed through the ears g of the shackle h . As a matter of course the shackle can also open on a hinge-joint, as is common; but in the present instance preference is given to a two-eared shackle inserted into appropriate openings in the side wall of the lock-case, for the reason that the latter form of

shackle renders it possible in practice to replace this part by other shackles of any desirable size, with the sole condition that the interchanged shackles close the parts to be locked without leaving space enough for a tool that would allow of the padlock being forced.

55 Into the keyhole of the padlock is adapted to be inserted the key, having steps $o^1 o^2 o^3 o^4$. To the steps $o^1 o^2 o^3 o^4$ of the key correspond in the same succession the tumblers $r^1 r^2 r^3 r^4$. The tumblers are provided with slots $p^1 p^2 p^3 p^4$, shaped in such a manner that in the locked state of the padlock, the passage formed by the safety-guards m , presently described, is not obstructed by the tumblers. The key is not confined to the one particular form of the bit shown, thus rendering it possible to infinitely vary and modify the disposition of the tumblers. The possibility of modifying the tumblers both as regards their form and disposition is provided for by the application in this padlock inside the case at both sides of the keyhole of two safety-guards m , provided between the bottom plate c and the plate n , covering the tumblers on the front side. These safety-guards, jointly with the appropriate slots in the tumblers, form a free passage accessible for keys with any form of bit; but said safety-guards being provided with steps or shoulders, whereby said guards exactly correspond in shape to the profile of the proper key, as is apparent from Fig. 2, any key will pass through the passage, but none, with the exception of the proper key, will turn within said passage.

65 At the right-hand side, as viewed on the drawings, of the passage of the tumblers are provided arched slots $q^1 q^2 q^3 q^4$, intended on the tumbler turning to give passage to the corresponding step of the safety-guard m when the tongues or projections $s^1 s^2 s^3 s^4$, penetrating into the passage, obstruct same.

70 In case of an attempt to open the padlock, as described, with a picklock, provided even that one of the tumblers might be turned, its tongues would follow the picklock and not allow the latter to be withdrawn otherwise than on the tumbler being brought back to its initial position. It is evident that the

same takes place in opening the padlock with the proper key. The key cannot then be withdrawn in the open state of the padlock. It is only on the padlock being locked that
 5 the key is released. Thus the bearer of the key has always the certainty that the padlock is locked.

In order to prevent the opening of the padlock by means of a key with an ordinary bit
 10 fitted so as to answer in height to the shortest step o^3 of the proper key, all the tumblers, with the sole exception of the tumbler r^3 , corresponding to that step, are provided on the right-hand side of the passage with sector-
 15 slots t of a larger radius than the height of said slot.

The movement of the tumblers in both directions is limited by a stop l , engaging shoulders f^{12} f^{12} , provided on the periphery of the
 20 tumblers.

The construction of locks with the circular tumblers can vary with regard to the number of the tumblers as well as with regard to the form and dimensions of the slots provided in
 25 them. The stop l , previously mentioned, can be replaced, as shown in Fig. 7, by a spring u , engaging the indentation v on the circumference of the tumblers with an audible click, which, as well as the change in the pressure
 30 exerted by the key upon the palm of the hand, gives notice of the completely opened or locked state of the padlock.

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

35 1. In a lock, the combination with a casing

provided with a hasp-receiving opening, of a series of tumblers revolubly mounted in the casing, each provided with a slot and with a shoulder or projection, the said projections being adapted to be engaged by bits on an operating-key, guard-plates arranged to form a
 40 passage for the insertion of an operating-key, said plates being provided with steps or shoulders, as set forth, and an arm or projection on each tumbler adapted to engage a hasp inserted through the opening in the lock-casing.

2. In a lock, the combination with a casing provided with a hasp-receiving opening, of a series of tumblers revolubly mounted in the casing and provided each with a slot, the said
 50 slots being of varying widths, and each tumbler being provided with a shoulder or projection, the said projection being adapted to be engaged by bits on an operating-key, guard-plates arranged to form a passage for the in-
 55 sertion of the operating-key, said plates being provided with steps or shoulders, as set forth, an arm or projection on each tumbler adapted to engage a hasp inserted through the opening in the lock-casing, each of the tumblers
 60 with the exception of the one having the widest slot being provided with a sector-slot t for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

KAROL MUCHOWICZ. [L. s.]

Witnesses:

W. BEYER,
 UTABOLOUZ.