

O. SCHALLER.
 LOCK FOR DOORS FOR RAILWAY AND OTHER CARS.
 APPLICATION FILED JUNE 1, 1908.

924,502.

Patented June 8, 1909.

2 SHEETS—SHEET 1.

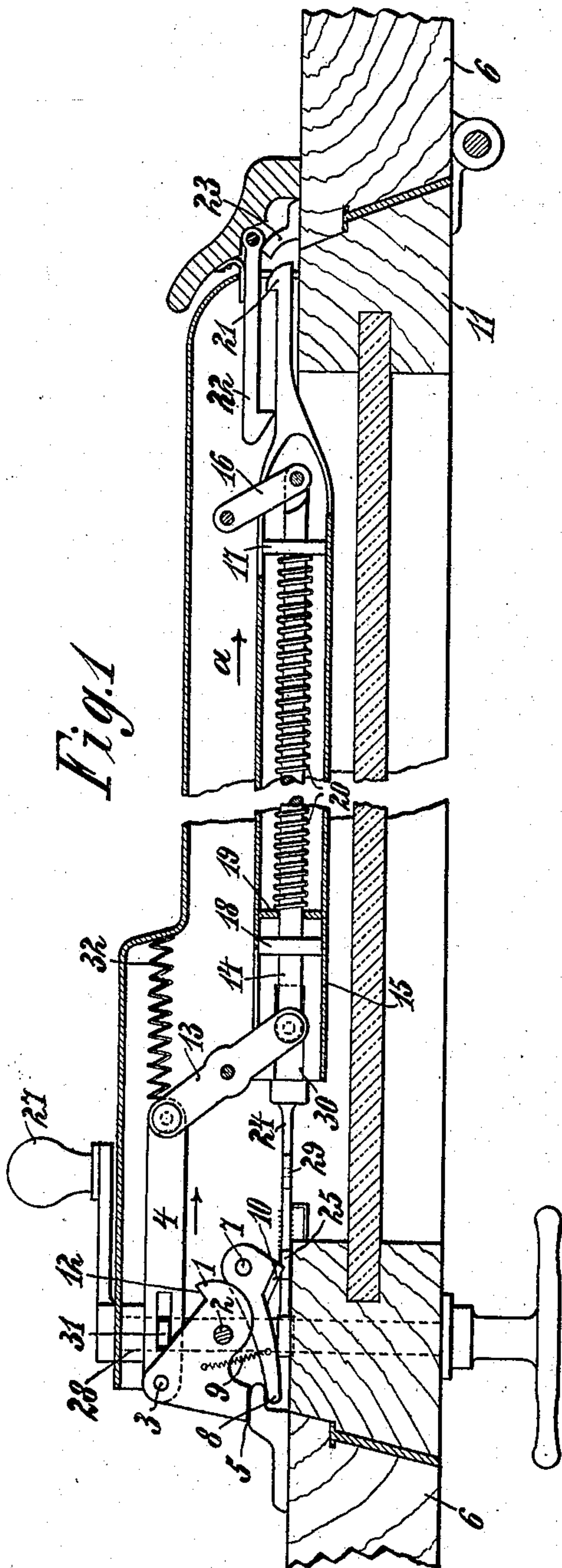


Fig. 1

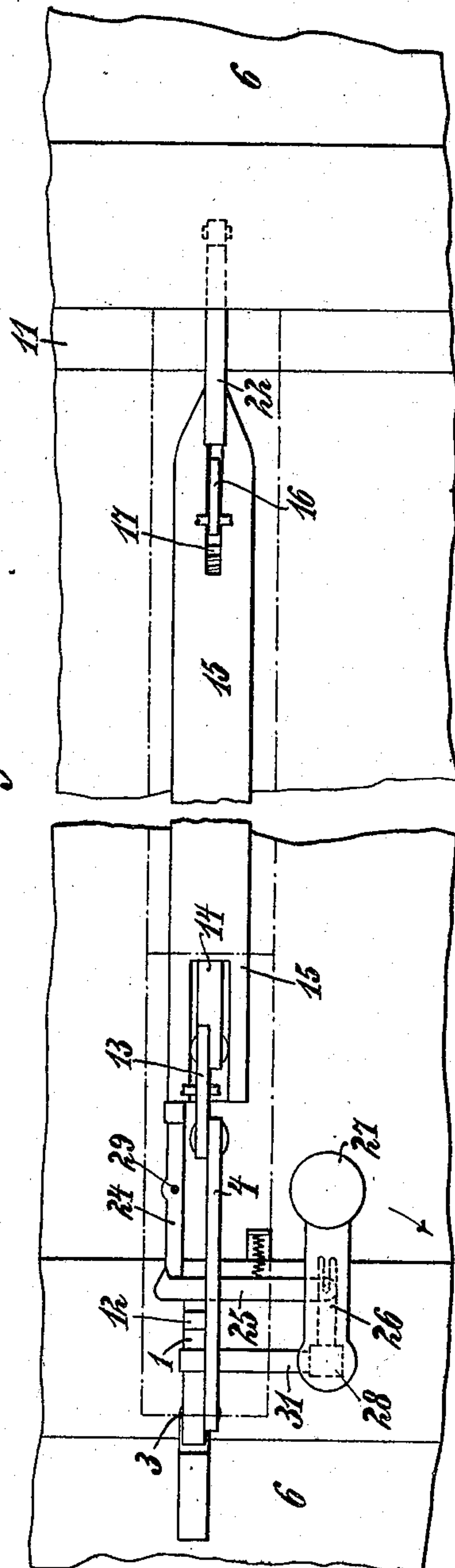


Fig. 2

Witnesses:

Mace Kirbel

Sept 10 1909

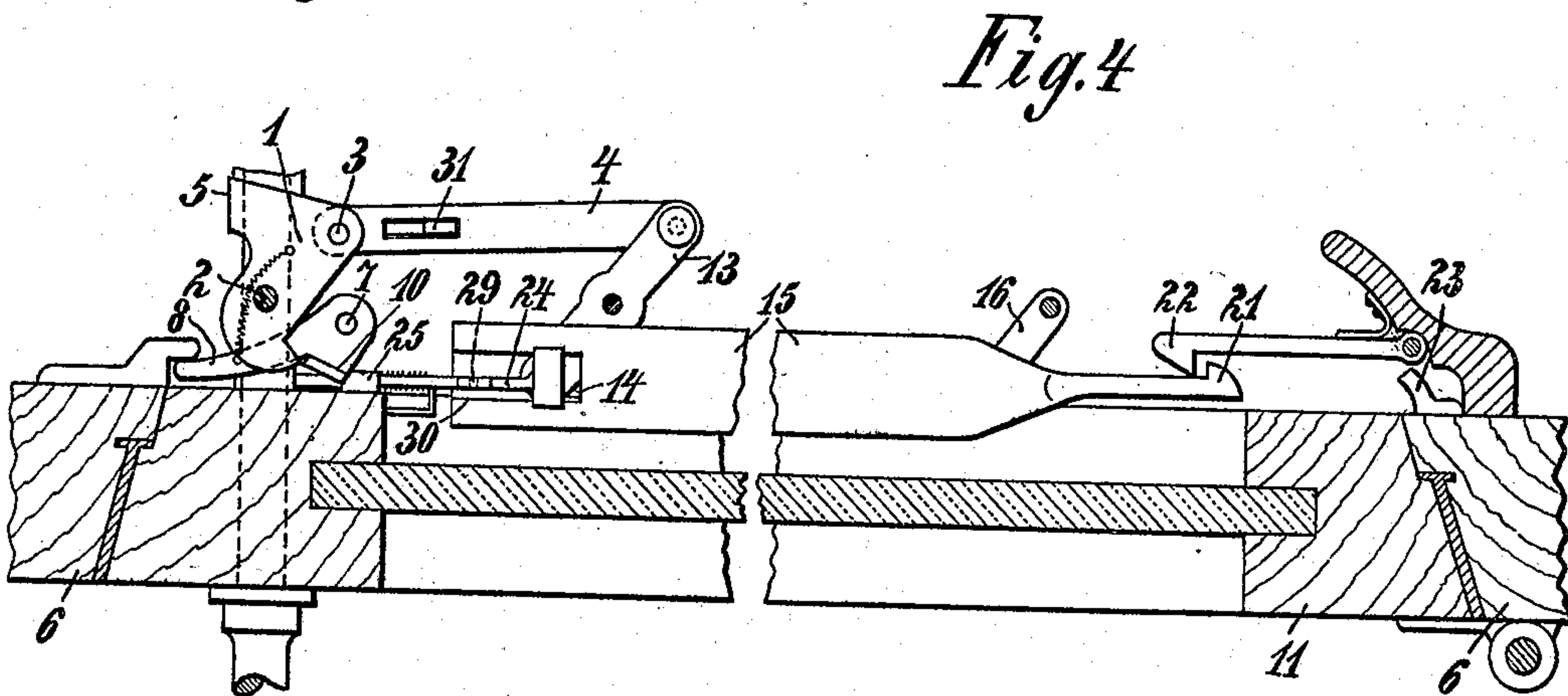
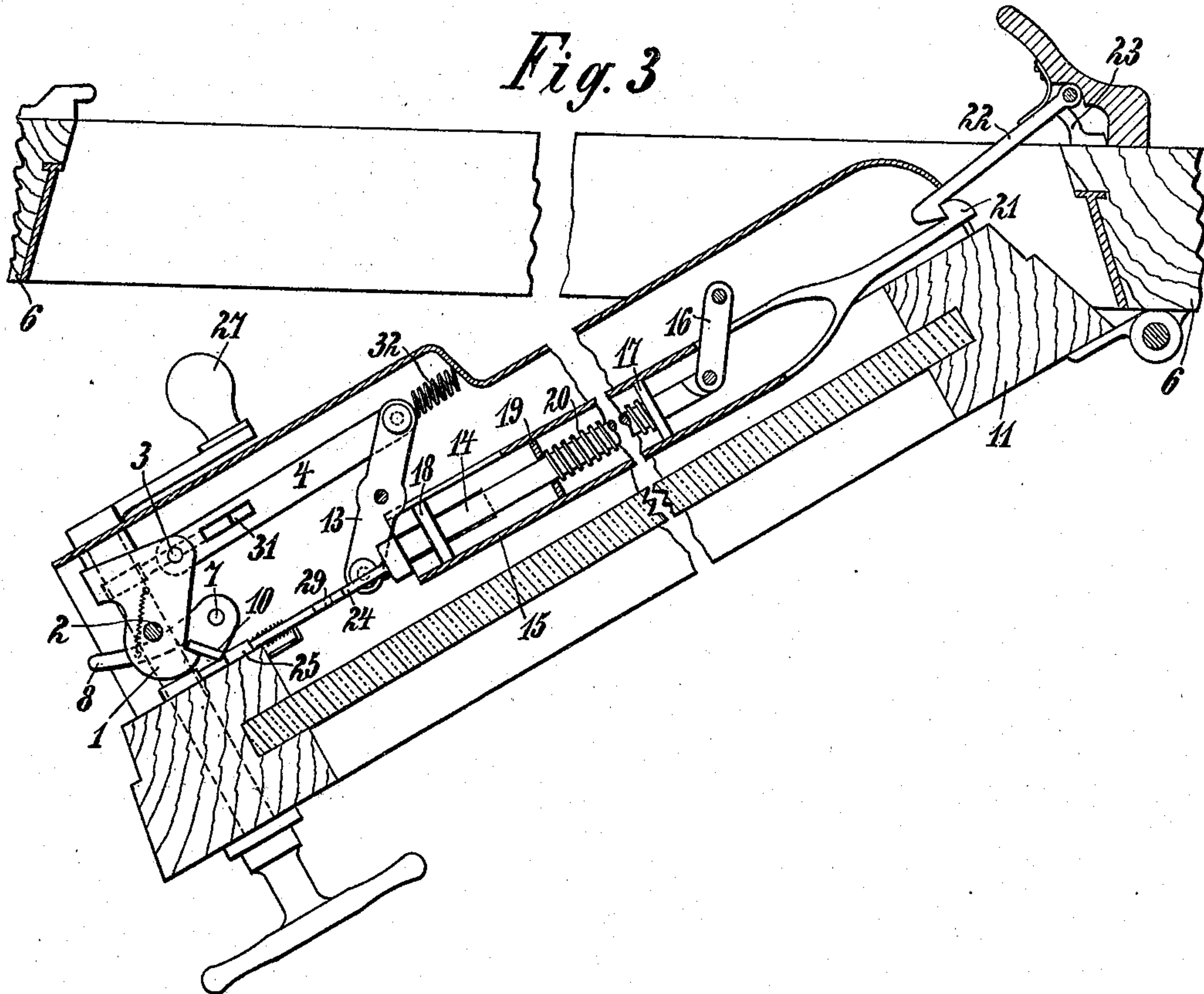
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Witnesses:

Alfred Kuntz
Max Finkel

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UNITED STATES PATENT OFFICE.

OTTO SCHALLER, OF STEGLITZ, NEAR BERLIN, GERMANY.

LOCK FOR DOORS FOR RAILWAY AND OTHER CARS.

No. 924,502.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed June 1, 1908. Serial No. 435,925.

To all whom it may concern:

Be it known that I, OTTO SCHALLER, a subject of the King of Prussia, and resident of Steglitz, near Berlin, Prussia, Germany, have
5 invented certain new and useful Improvements in Locks for Doors of Railway and Similar Cars, of which the following is a description.

In locks having automatic closing bolts
10 such for instance as those used on tram or motor cars, the spring operating the catch or bolt of the lock is generally set or stretched by the turning or lowering of the door handle. Since the leverage of the handle is comparatively short and, in turning the handle
15 by means of the wrist only comparatively small power can be exerted, it was not possible hitherto to employ a spring for operating the catch or bolt, of sufficient strength, as
20 would appear necessary in the interest of a reliable and perfect closure.

Now the object of the present invention is to render the setting or stretching of a strong spring for the catch or for any other device
25 having the same object of tightly closing the door, independent of the power applied to the handle. According to the present invention, the stretching or setting of this spring for the door closure, is attained by
30 employing the breadth of the door as a lever to set the lock spring. The setting of the spring takes place during a part of the movement of the door, so that only during this part of the movement, will a slightly greater
35 resistance to the movement of the door be offered. After the spring has been set it will remain stretched until the door is closed, a trigger device being employed to release the catch or bolt, arrested as the door was
40 opened, for instance by striking the door frame or the like, so that the strong spring can exercise its effect on the catch or bolt. Since the breadth of the door is available as a lever arm in setting or stretching the lock
45 spring, the latter may be made so strong that the door will be forced into the door frame by means of the catch. Inside the lock a trigger device is provided which operates on the spring under tension and the
50 parts connected therewith, to relieve the catch or bolt from the pressure of the spring and thus to facilitate the opening of the lock.

On the drawing an embodiment of the lock forming the present invention is illustrated,
55 Figure 1 being a plan of the lock of the pres-

ent invention, with the door closed. Fig. 2 a side elevation of this lock, while Fig. 3 shows the lock when the door is being opened and while the spring is being set or stretched. Fig. 4 shows the lock after the bolt has been
60 opened.

According to the embodiment illustrated the catch 1 is of a hook or trigger-like shape and is rotatably mounted on a pivot 2 and connected by means of a pin 3 to a link 4.
65 The catch 1 has an engaging surface 5, with which it engages the door frame 6 or in the staple plate. In the embodiment illustrated it engages behind the door frame. A trigger lever 8 is pivoted on a pin 7, said lever
70 being under the influence of a spring 9 and occupying the position shown in Fig. 1, when the lock is closed. From this figure it will be seen that the end of this trigger lever lies within reach of a stop on the door-
75 frame. The lever is provided with a projecting cam surface 10, which engages behind a nose 12 of the catch after the catch 1 has been turned and the door 11 opened, in order to lock the catch in the open posi-
80 tion. The link 4 is linked by means of a double arm pivotally supported lever 13 to a rod 14, mounted in a sleeve 15. This rod, which may also be guided by means of a link 16, is provided with two collars 17 and
85 18, while a stop ring 19 is provided within the sleeve between the collars 17 and 18. Between the ring 19 and the collar 17 a strong spiral spring 20 is arranged on the rod 14, which spring has the tendency to
90 pull the rod 14 in the direction of the arrow *a* (Fig. 1). The sleeve 15 which, together with the catch and the other parts of the lock may be mounted on the door 11, is provided with a hook 21 at its rear end, close
95 to which a second hook 22 is hinged to the door frame 6 and held against the sleeve 15 or the hook 21 by means of a spring. The door frame 6 is furthermore provided with a stop 23 which limits the movement of the
100 hook 22.

Close to the front end of the sleeve 15 a releasing lever 24 (Fig. 2) is provided, which may rest with its broadened front end against the front edge of the sleeve 15.
105 This lever 24 is connected up by means of members 25 and 26 to the axle 28 of the handle 27 in such manner as to cause the lever 24 to swing on its pivot 29 when the handle 27 is moved. As will be seen from
110

Fig. 1, a longitudinal slot 30 is provided in the sleeve 15 which allows the latter to slide over the narrow part of the lever 24. The axle 28 of the handle 27 carries a rod 31, which engages a slot of the link 4 and has a certain amount of play in this slot.

When the door is shut the parts of the lock are in the position shown in Fig. 1. In this position the cam surface 5 of the catch 1 engages tightly against the staple plate on the frame 6, the catch being under the influence of the spring 20. The latter is under tension between the collar 17 and the stop ring 19 of the sleeve 15, so that the rod 14 will be pulled backward and consequently the link 4 will be forced forward. The tension of the spring 20 is caused by the lever 24 arresting the sleeve 15. The door can only be opened when the catch 1 is swung back into the position shown in Fig. 3. This swinging movement can not take place until the catch has been released from the pressure of the spring 20 and this release is effected when the lever 24 releases the sleeve 15 on the door being opened. In the embodiment illustrated, the necessary movement of the releasing lever 24 is effected by depressing the handle 27 because when this is done the lever 24 will be swung round by means of the members 26, 25 so that its front edge is moved out of reach of the sleeve 15. Immediately this occurs the sleeve 15 will shoot out under pressure of the spring 20 until the annular stop 19 reaches the collar 18 of the rod 14 whereupon the rod will be coupled to the sleeve forming a whole rigid piece, which may be easily slid, as it is no longer loaded by the tension of the spring. On further depressing the handle 27, the rod 31 will slide in the slot of the link 4, so that on further depression of the handle 27, the link 4, released in the manner described, may be slid into the position shown in Fig. 4 together with the catch 1. This movement of the link and the catch may be assisted by a spring 32, which could be made sufficiently strong to open the catch in the manner described without the aid of the handle. The movement of the link 4 in the direction of the arrow in Fig. 1 has also caused a movement of the rod 14 with the sleeve 15 in the opposite direction to that of the arrow *a* by the operation of the lever 13, thus bringing the hook 21 close to the hook 22. Since the catch 1 now occupies the position shown in Fig. 4, the door may now be pushed open. In doing this the lever 8 will be pulled by the spring 9, after a slight movement, into the position shown in Fig. 3, whereby its cam surface 10 passes under the nose 12 of the catch 1 and arrests the latter in its rearward position. When the door is opened the hook 21 will be arrested by the hook 22 as will be readily understood in view of the usual arrangement of the

hinges of railway carriage doors. Owing to the arrest of hook 21, the sleeve 15 will be moved relatively to the door 11, so that the annular stop 19 will effect the setting or compression of the spring 20.

It will be seen that the setting of the strong spring 20 is effected solely by the long leverage due to the breadth of the door and thus the amount of power necessary to set the spring may be very small. To enable the setting of the spring 20 to take place during a part only of the movement of the door, the hook 22 is adapted to strike a stop 23, when the door has been opened a certain angle, so that this hook will thereafter no longer follow the movement of the hook 21 and will release the same. The spring 20, which is arrested with the aid of the collar 17 of the rod 14, in that the catch 1 is arrested by the trigger lever 8, will press the sleeve 15 forward, being supported by the stop 19, until the said sleeve is stopped by the lever 24 and the spring 20 is thus arrested in a condition of tension. The further opening of the door may then take place without hindrance. As the door is being closed the spring 20 is in a state of tension. As soon as the lever 8 reaches the door frame or the staple plate it will be forced from the position shown in Fig. 3 to that illustrated in Fig. 1, thus releasing the catch 1. The moment the catch 1 is released, the pressure of the spring 20 will act on the collar 17 and push the rod 14 into the position shown in Fig. 1. Thus the powerful spring 20 will force the catch 1 into the closing position and owing to its strong pressure will force the door tightly into the frame. The spring 20 and the catch 1 will remain under pressure until the lever 24 is again turned in the manner specified.

I wish it to be clearly understood that the device described and illustrated is merely one embodiment of the present invention, the device may be varied in a great many ways which will readily present themselves to the mind of those skilled in the art, without departing from the spirit of my invention.

I claim as my invention:—

1. In latches for the doors of railway and other cars, the combination of a latching catch and a stout spring to close the same against the door frame and means in connection with said spring and catch to set the spring by opening the door and to release the same to close the catch automatically when the door is closed.

2. In latches for doors for railway and similar cars the combination of a latching catch, a spring, means connected with the said spring for firmly closing the said latching catch, means for setting the spring when opening the door, means for retaining the said spring under tension, when the latching catch is closed, means for actuating said re-

taining means to release the said catch from the spring action, and means for opening the said latching catch.

3. In latches for doors for railway and
5 similar cars the combination of a latching
catch, a spring, and means connected with
the said spring for firmly closing the said
latching catch, mechanism for setting the
said spring, when the door is opened partly,
10 means for retaining the spring in its set posi-
tion after the setting mechanism is released
when the door is opened farther, and means
for unlocking the said catch.

4. In latches for doors for railway and
15 similar cars the arrangement of a latching

catch, a pin around which the latching catch
may rotate, a trigger-like lever, a cam sur-
face on the latching catch and an engaging
cam surface on the trigger-like lever, means
for turning the latching catch, spring means 20
for bringing the said cam surfaces into en-
gagement with each other, and means for
disengaging the said cam surfaces again.

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

OTTO SCHALLER.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.