No. 864,165. PATENTED AUG. 27, 1907.

M. HERMSDORF.

# DEVICE FOR STORING-UP POWER IN HELICAL SPRINGS.

APPLICATION FILED JAN. 15, 1906.

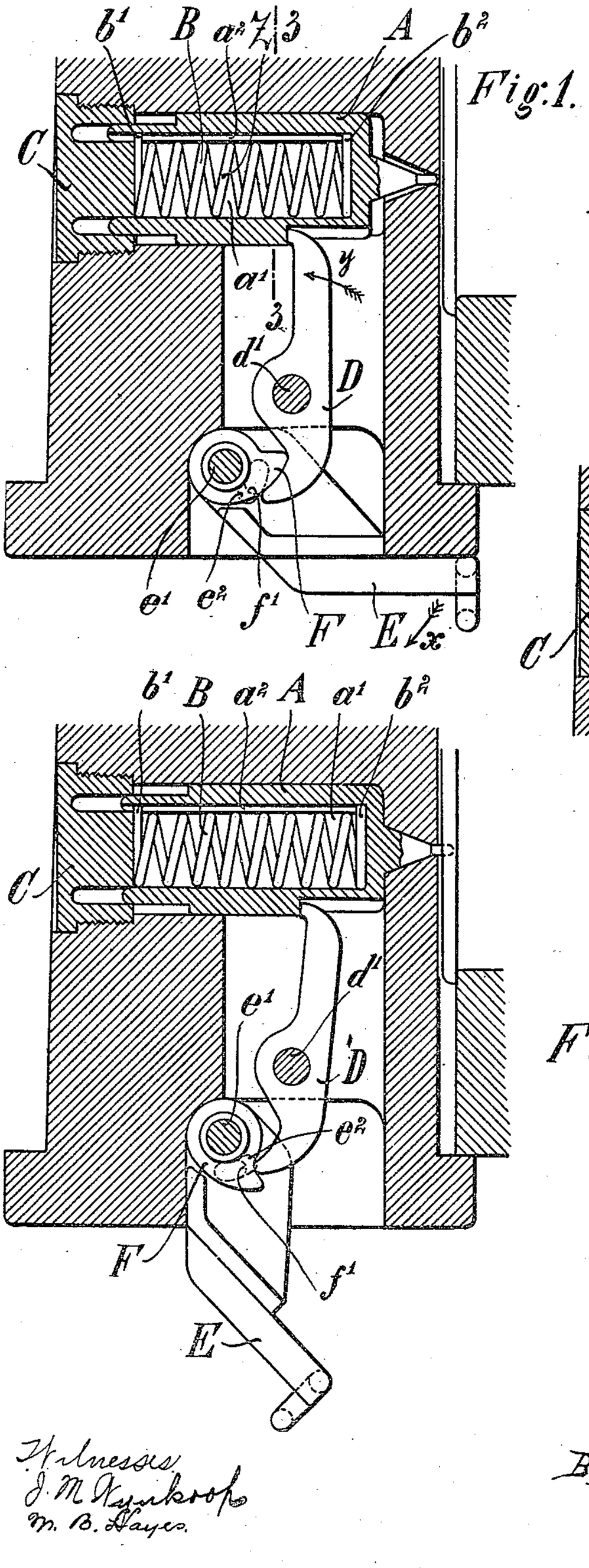


Fig: 1.

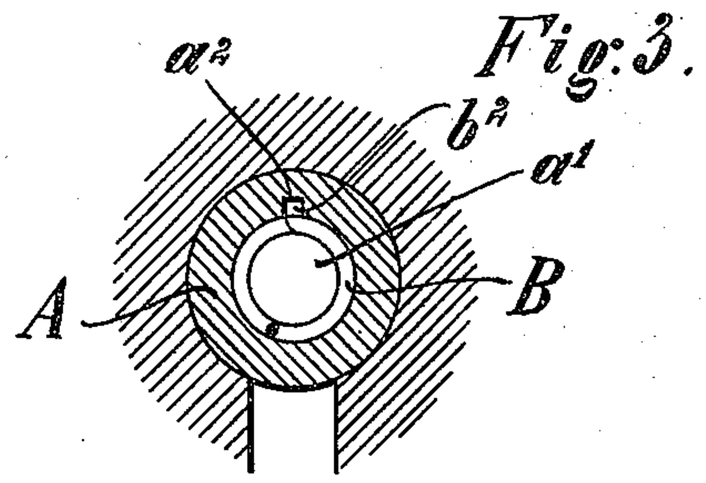


Fig: 3.

Fig: 4.

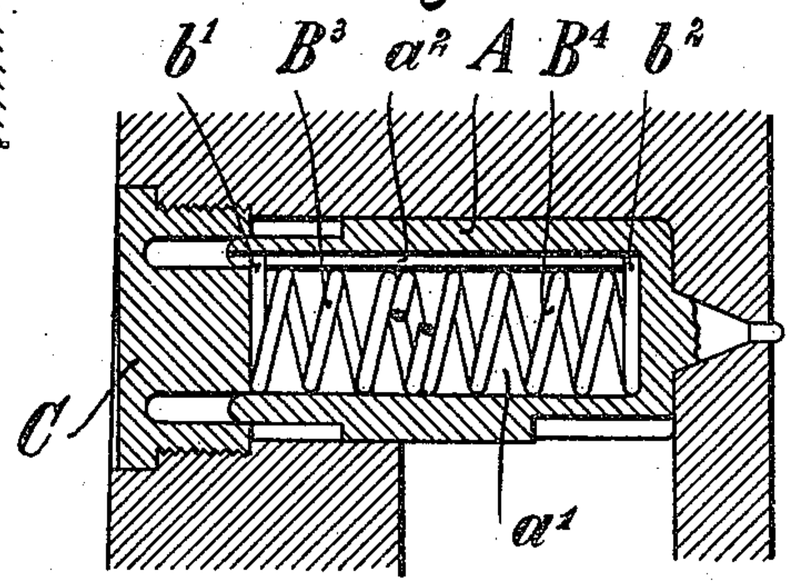





Fig: 2.

Witnesses
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## DEVICE FOR STORING-UP POWER IN HELICAL SPRINGS.

No. 864,165. Specification of Letters Patent. Patented Aug. 27, 1907.

Application filed January 15, 1906. Serial No. 296,208.

*To all whom it may concern:*

Be it known that I, MAX HERMSDORF, a subject of the Emperor of Germany, and a resident of Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Devices for Storing-Up Power in Helical Springs, of which the following is a specification.

The present invention relates to devices in which helical springs are used for the purpose of storing up power, and the object of the invention is to construct the device in such a manner that it remains operative even in case the helical spring becomes broken in one place.

For the purpose of illustration, the invention is shown in the accompanying drawing applied to a percussion lock for gun closures.

Figure 1 shows the percussion lock in the position of rest; Fig. 2 shows the lock after firing; Fig. 3 is a section on line 3—3, Fig. 1, and Fig. 4 shows a part of Fig. 2 with broken firing spring.

The whole arrangement of the percussion lock is known and will, therefore, be but briefly referred to as follows:

The firing pin forming the moving part A can be moved rearwardly against the action of the firing spring B through the medium of the two-armed cocking lever D which is rotatably mounted on the pivot pin $d'$. The cocking nut F of the trigger E engages the cocking lever D and is rotatably arranged on the pivot pin $e'$ of the trigger. A stud $f'$ on the nut F engages with a groove $e^2$ in the trigger and limits the turning of the nut relatively to the trigger. The firing spring B, which is a helical spring is under initial tension, arranged in a bore $a'$ in the firing pin and guided by the cylindrical wall of the bore. One of the end rings of the firing spring lies loosely against the bottom wall of the bore $a'$ while the other end ring abuts against the fixed part or abutment C.

The free ends $b'$ and $b^2$ of the firing spring are bent radially outwardly and engage within a groove $a^2$ (see also Fig. 3) in the firing pin, which groove extends parallel to the axis of the bore $a'$. By means of this arrangement, the two end rings of the spring B are prevented from turning relatively to each other. Moreover, the exterior forces which act on the spring during the operation of the percussion lock, can merely effect a compression of the spring and not a stretching thereof, as will be clearly understood from the following description of the mode of operation.

When the parts are in the position of rest, they occupy the position shown in Fig. 1. When it is desired to fire the gun, the trigger E is swung in the direction of the arrow $x$ (Fig. 1) and carries the cocking nut F along with it, as the stud $f'$ of the nut lies against the wall of the groove $e^2$ which is opposite the direction of movement of the trigger. The nut F, therefore, turns the lever D in the direction of the arrow $y$ (Fig. 1) so as to force the firing spring rearwardly and compress or impart tension to the spring B. During the continued turning of the trigger, and at the moment the nut F releases the lever D, the firing spring B expands and forces the firing pin forward and as both ends of the spring can move free of the moving part, a stretching or pulling of the spring is prevented (Fig. 2). When, finally, the trigger is returned to the position of rest, the compression and the expansion of the firing spring B is repeated in a similar manner.

If the spring becomes broken at one place such as Z (Fig. 1), the parts $B^3$ and $B^4$ (Fig. 4) expand to some extent so as to abut against one another. If, in such instance, the end rings of the spring were not prevented from turning relatively to one another, the parts $B^3$ and $B^4$ would gradually become screwed into one another by repeated firing of the gun and the percussion lock would finally become ineffective and the firing would have to be stopped for the purpose of renewing the firing spring. This draw-back is entirely avoided in the above-described construction of the percussion lock.

Having described my invention, what I claim as new is:—

1. The combination with the breech block, of a firing pin movable therein and provided with a longitudinal bore, and with a groove parallel to the axis of the bore, a helical spring having its ends bent outwardly and movable in the groove to prevent the end rings turning, a fixed abutment for the spring adapted to enter the pin, and a cocking lever for moving the pin.

2. The combination of the housing having a bore provided with a groove parallel to the axis of the bore, and a helical spring having its ends bent outwardly and movable in the groove to prevent the end rings turning.

3. The combination with the housing, a helical spring therein and the abutment, of means carried by the housing, securing the ends of the spring against rotation and permitting the said ends to move relatively to the abutment and to the housing.

4. The combination with a fixed part and a moving part, one of which forms a housing, of a helical spring positioned to be compressed between said parts, and means securing both ends of the spring against relative turning, said means permitting a movement of the moving part free of both ends of the spring.

5. The combination with a fixed part, a moving part, and a helical spring interposed between said parts, of means securing the ends of the spring against relative turning, said means permitting the moving part to move under the action of the spring without acting to pull or stretch the latter.

The foregoing specification signed at Düsseldorf this thirtieth day of December, 1905.

MAX HERMSDORF.

In presence of—
WILLIAM ESSENWEIN,
PETER LIEBER.