To all whom it may concern:

Be it known that I, CARL JUDYCKI, a citizen of Poland, residing at Athol, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Combined Key and Permutation-Padlocks, of which the following is a specification.

This invention relates to certain new and useful improvements in padlocks and has particular reference to a combined key and permutation padlock wherein a pair of differently constructed keys are adapted for operating the lock.

A further object of the invention is to provide a combined key and permutation padlock wherein the key for the permutation element of the lock is normally retained within the lock and only removable thereafter from upon the proper working of the combination of the permutation lock to permit the insertion of a different key for operating the locking mechanism for the shackle of the padlock structure.

With the above and other objects in view, the present invention consists in the novel form, combination and arrangement of parts hereinafter more fully described in connection with the accompanying drawings, and in which like reference characters indicate similar parts throughout the several views.

In the drawings,

Figure 1 is a side elevational view of a combined key and permutation padlock constructed in accordance with the present invention.

Fig. 2 is an end elevational view of the device showing the permutation disk carrying one of the keys.

Fig. 3 is a longitudinal sectional view through the barrel casing of the padlock with the shackle moved to open position.

Fig. 4 is an end elevational view of the lock shown in Fig. 3 with the permutation disk and key removed therefrom.

Fig. 5 is a side elevational view of the outwardly positioned stationary disk of the permutation lock mechanism.

Fig. 6 is a side elevational view of one of the spacing disks.

Fig. 7 shows side and edge views of an inwardly positioned stationary permutation disk member.

Fig. 8 shows side and edge views of a rotatable permutation member.

Fig. 9 shows side elevational and cross sectional views of the rotating member of the permutation mechanism shifted by the key.

Fig. 10 is a side elevational view of a part of the bolt supporting mechanism, and

Fig. 11 shows side and end elevational views of the sliding bolt of the padlock.

Briefly described, the present invention has for its main object to provide a combined key and permutation padlock wherein a barrel contains the permutation and padlock mechanism with a shackle hinged to the barrel. A key carrying a permutation disk is normally retained within the padlock barrel and locked therein by the shiftable permutation members. Before access can be obtained to the sliding bolt for retaining the shackle in locked position, it is necessary to remove the key of the permutation lock, whereupon the padlock key is inserted for operating the sliding bolt.

Referring more in detail to the accompanying drawings, there is illustrated a combined key and permutation padlock including a barrel 1 provided upon one end thereof with a strap 2 extending laterally to provide spaced lugs 3 between which a curved shackle arm 4 is pivotally mounted upon the bolt 5. As shown in Fig. 3 the swinging end of the shackle arm 4 is provided with a projection 6 apertured as at 7 and adapted for passage through the side opening 8 in the wall of the barrel 1 for engagement by the sliding bolt positioned within the barrel.

The permutation lock mechanism is shown more clearly in Figs. 3 to 9 and comprises in detail a disk 9 having a central opening 9’ and a peripheral lug 10, the disk 9 being positioned in the open end of the barrel 1 and retained therein by the lug 10 engaging the inner face of the side wall of the barrel as shown in Fig. 3 while diametrically opposite recesses 11 are provided in the wall of the opening 9’ to permit the passage of the permutation key. A spacing ring 12 is positioned adjacent the disk 9 and has a central opening 12’ of greater diameter than the extreme measurements between the bottom walls of the recesses 11 of the disk 9. A second permutation disk 13 is positioned adjacent the ring 12 and is held in the barrel 1 against rotation, the disk 13 being provided with a
central opening 13', the wall of which opening 10 is provided with an inwardly directed arcuate shoulder 14, the greatest diameter of the opening 13' being similar to the distance 15 between the recesses 11 of the disk 9, and being in constant registration therewith. A third permutation disk 15 is rotatably mounted in the barrel 1 and spaced from the disk 13 by a spacing ring 12 and is provided with a central opening 15', the wall of which is provided with an inwardly directed arcuate abutment 16 of the same size as the opening 13' and abutment 14 of the member 13, while one face thereof is provided with spaced lugs 17. A rotatable operating ring 19 shown in Fig. 9 is channeled in cross section as illustrated to provide an annular pocket 19 within which oppositely positioned spring fingers 20 are mounted, the free ends of the spring fingers projecting beyond the adjacent edges of the ring as shown in Fig. 9. The disk 15 and ring 18 are rotatably mounted within the casing and a stationary end disk 21 is positioned inwardly of the ring 18 and secured to the barrel 1 and cooperates with the stationary end disk 9 for retaining the permutation members in their proper position. As shown in Fig. 3, the walls of the openings in the disks extend inwardly of the spacing rings 12 and spacing collars 22 are positioned between said inwardly projecting walls, the collar 22 associated with the ring 18 being the only one secured to a permutation member, said collar being secured to the ring 18 by the pin 23.

The key for operating the permutation lock is shown more clearly in Figs. 1 to 3, the same embodying a disk-shaped key head 24 carrying a finger grip 25 and a key plate 26, the edge of the plate being provided with projecting wards 26'. When the key plate 26 is inserted in the permutation lock mechanism, the opposite side edges thereof pass through the grooves 27 in the collars 22, and through the openings of largest diameter in the permutation members. The inner end of the key engaging in the slot 27 of the collar 22 that is fixed to the ring 18, will rotate said ring in either direction to cause the spring fingers 20 positioned in the channel 19 of the ring and projecting outwardly thereof to engage the lugs 17 upon the disk 15 to shift the disk in the proper direction to cause the shoulder 16 of the disk 15 to be positioned between the wards 26' of the key plate 26, thus to retain the key in the lock. In this manner the key plate 26 is retained in the permutation lock and the employment of the key 38 for shifting the sliding bolt is prevented, as the outer end of the barrel 1 is closed by the retained key. When it is desired to remove the key plate 26, the same is rotated to shift the collar 22 and the ring 18 attached thereto for rotating the disk 15 to displace the shoulder 16 from between the key wards 26' and to present the opening 15' of greatest diameter in registration with the opening 13' in the disk 13 and the recesses 11 in the disk 9. The proper working of the combination of this lock is accomplished by matching certain permutation characters 24' on the key head 24 with the permutation characters 2' on the shackles mounting collar 2.

A sliding bolt supporting member is positioned within the barrel 1 adjacent the closed end thereof and embodies a central hub portion 28 having end flanges 29 and 30 engaging the inner walls of the barrel 1 while the disk 30 is provided with forwardly directed arms 31 secured at their ends to the end wall 1' of the barrel. The sliding bolt cooperating with the shackle extension 6 embodies a disk head 32 having one end of a screw 33 swiveled axially thereof while the free end of the same is provided with a key portion 34. The opposite sides of the disk head 32 are provided with notches 35 for sliding reception on the arms 31 of the bolt supporting member 28. The upper edge of the disk head 32 is cut away as at 36 and carries a keeper finger 37 for reception in the opening 7 of the shackle extension 6. A key 25 having a socket end is inserted through the open end of the barrel 1 and receives the key end 34 of the screw 33, rotating the screw that extends through the axial opening 28' in the barrel 28 and is threaded into the outer end 100 of the barrel as at 39, shown in Fig. 3. By rotating the key 38, the screw 33 is rotated in the desired direction to receive the disk head 32 of the bolt which is prevented from rotation by engagement with the extension 105 arms 31 of the bolt support. A coil spring 40 is positioned within the barrel and engages at its opposite ends the permutation and padlock mechanism to hold the parts in their proper relation. As shown in Figs. 1 to 3, the pivoted end of the shackle 4 carries an eye 4' to which a cord 41 is secured for suspending the key 38 while the finger grip 25 of the permutation lock key is also suspended on said cord.

From the above description of the drawing, it is believed the construction and operation of the device will at once be apparent, it being noted that the permutation key head 24 is normally retained within the barrel of the lock with the key 38 displaced therefrom. To operate the disk head 32, it is necessary to permit the withdrawal of the key head 24, at which time the key 38 is inserted into the barrel for engagement with the key end 34 of the bolt screw 33.

While there is herein shown and described what is believed to be the preferred embodiment of the invention, it is nevertheless to be understood that minor changes may be made.
in the form, combination and arrangement of parts without departing from the spirit and scope of the invention as claimed.

What is claimed as new is:

1. A combined key and permutation padlock comprising a padlock barrel, a shackle pivoted thereto, permutation lock mechanism within the open end of the barrel, a permutation lock key normally retained in the permutation lock mechanism, a sliding bolt within the closed end of the barrel and a key for operating the sliding bolt adapted for insertion within the barrel upon removal of the permutation key.

2. A combined key and permutation padlock comprising a barrel, a shackle pivoted thereto, a key operated sliding bolt within the closed end of the barrel, a permutation lock mechanism at the open end of the barrel, and separate keys for operating the sliding bolt and permutation lock mechanism.

3. A combined key and permutation padlock, a shackle pivoted thereto, a key operated sliding bolt adapted for engagement with the shackle mounted in the closed end of the barrel, a permutation lock mechanism within the open end of the barrel, a key within said lock mechanism, said permutation lock including rotatable members shiftable by the key to permit removal of the 39 permutation key for operation of the key operated sliding bolt.

4. A combined key and permutation padlock, a shackle pivoted thereto, a key operated sliding bolt adapted for engagement with the shackle mounted in the closed end of the barrel, a permutation lock mechanism within the open end of the barrel, a key within said lock mechanism, one of said permutation members being shifted by said key for moving an adjacent permutation member in either direction to permit the removal of the permutation key and the subsequent operation of the key operated sliding bolt.

5. In a portable lock structure, wherein a barrel carries a pivoted shackle with a sliding bolt in one end of the barrel cooperating with the shackle, a key operated permutation lock mechanism in the other end of the barrel having a passage opening therein with the key normally retained in the lock, and a separate key insertible through passage opening in the permutation lock to operate the sliding bolt.

In testimony whereof I affix my signature.

CARL JUDYCKI.