This invention relates to locks in general, and particularly to padlocks, the body of which is made of one solid block of metal.

The main object of my invention is to provide a lock of the above character which will operate with a combination of locking pins and circular tumbler disks, and which will permit a great variety of combinations with very simple means.

Another object of my invention is to provide a lock of the above description which will be exceptionally strong and durable in construction, and which will show a great resistance to unauthorized opening or burglarizing of the same.

Still other objects of my invention are: to provide a lock which will be simple in construction and operation, inexpensive, adapted to mass manufacturing, and adapted to be opened by a simple key of special construction.

Further objects and advantages of the invention will be evident from the description of the same, to follow hereinafter.

The invention also resides in certain novel features of construction and organization, which will be fully set forth hereinafter and pointed out in the claims.

Reference is to be had to the accompanying drawings, which illustrate as an example the preferred embodiment of my invention, in which drawings like characters of reference indicate like parts in the several views, and in which:

Fig. 1 is a sectional view of my assembled lock, together with its key, certain portions having been removed, the section being taken on the line 1—1 of Fig. 2;

Fig. 2 is a horizontal sectional view of my lock fully assembled, the section being taken on the line 2—2 of Fig. 1, but with certain parts omitted.

Fig. 3 is a side elevation of the lock, the key having been removed therefrom;

Fig. 4 is a front elevation of a key of particular construction to be used in connection with my padlock, while

Fig. 5 is a top view of said key.

Referring now to the drawings with characters of reference, 10 indicates the main body of my lock, being in the form of a rectangular block of metal, preferably of brass, so as to make my lock more resistant to the injurious effects of the weather and to rust. In the block of metal 10, I first provide a bore 11 of comparatively large diameter to receive the extreme end of the leg 12 of shackle 13 and the cylinder of the locking and opening elements combined therewith. The bore 11 stops short of the opposite end 14 of the metal block 10, as at 15, and is continued in a concentric through bore 16, of considerably smaller diameter, so as to provide a sliding fit for the leg 12 of the shackle.

A collar 17 is provided on said leg, limiting its downward movement, but mainly for the purpose of protecting the bores 11 and 16, and the elements contained therein, from water and other atmospheric influences. The lower end of the leg 12 is provided with a plurality of recessed portions 18, leaving collars 19 therebetween. Each of said collars is provided with two opposingly set slots 20 in them, the slots 20 being cut in axial registering relations. The bottom end of the lock is provided with a disk 21, secured thereto by any suitable means, as by a flat headed screw, disk 21 normally resting on a cup shaped plug 22 of the same material as block 10, said plug being secured in the bore 11 with its outside surface flush with the corresponding surface of the block 10 and being finished in a similar manner so as to make it practically impossible to distinguish the plug from the rest of the block. The rest of the bore 11, above the cup shaped plug 22, is filled with a plurality of alternately set tumbler disks 23 and spacing washers 24, the thickness of the tumbler disks corresponding to the height of the recesses 18, and the thickness of the spacing washers 24 being equal to that of collars 19, and said tumbler, and spacing washers being placed in an exact registering relation with said recesses and said collars, respectively. Each of the tumbler disks 23 and the spacing washers 24 are also provided with central openings or holes 25, of substantially equal diameters, and of such dimension that said holes should permit an easy movement of the leg 12 of the shackle with its collar in them. The tumbler disks 23, however, are also provided with two inwardly projecting lugs or noses 26 which will normally be turned underneath the intact portions of collars 19, thereby locking the leg 12, but which, when placed in registering relation with the slots 20, will be adapted to pass through said slots and thereby permit a sliding movement of the lower end of the leg 12.

A helical spring 27 is placed between the disk 21 and the lowest spacing washer, tending to pull the leg 12 downwards when its
sliding movement is permitted into a position where tumblers 23 may be turned into their locking position under the influence of means to be described presently. The block 10 has a plurality of further bores of smaller diameter, set in two rows, 28 and 29, transversely to the bore 11. A pin 30 is placed in each bore 28, being urged into bore 11 by a spring 31 resting on a firmly fitting plug 32. Tumbler disks 23 have arcuate recessed portions 33, on which the pointed ends 34 of the pins 30 may play and said tumbler disks will normally be turned to the locking positions described above, and limited by the pins 34' in bores 29, at the same time pins 34' are the elements to be used to set the tumbler disks into the opening positions described hereinafore. Said pins are slideable in bores 29 and a cross pin 35 serves to limit their play in both directions by playing in the slots 36 in said pins. Slots 36 in said pins are in such positions and of such length in pins 34' that when said pins are pushed in an outward direction to the fullest limit until the inward ends 37 of the slots 36 will hit the cross pin 35, noses or lugs 26 will be turned into locking positions as shown in Figure 2.

In order to open the lock, the tumblers 23 must be turned in such a position that their lugs 26 should register with the slots 20 in collars 19. The key shown in Figures 1, 4 and 5 is used for this purpose, said key consisting of an angular piece 38 with the two sides 39 and 40, of which 39 is a key proper with the pins 41 set therein to operate the pins 34', while the side 40 has a transversely set single pin 42 adapted to engage in the hole 43 of the block 10 to pivotally support the key and to permit the operator to press it down so that the pins 41 will enter bores 29 and push the pins 34' inwardly. The pins 41 of the key 39 are made of different heights in such a manner that when the key is fully pressed down on the surface 10' of block 10, pins 34' will turn their respective tumblers 23 into registering positions between all the lugs 26 and slots 20. In such positions of the tumblers, the pins 30 will be pressed outwardly, against the springs 31, and the lock is in an open position so that leg 12 of the shackle can be pulled upwardly against the action of spring 27 and the termination 44 of its other leg 45 lifted out of the recess 46, provided for the same in block 10 and the padlock opened in the usual manner. When it is desired to lock my device, the same operation is repeated, through the use of key 39, the termination 44 replaced into recess 46, the key removed and tumblers 23 permitted to snap back into their different locking positions, under the influence of pins 30 and springs 31. The lower portion 40' of the branch 40 of the key is provided for the reason to protect the hand or pocket of the user from injury through the pins 41, but it also is helpful in guiding the key to its right position on block 10. Hole 47 in the key 38 can be used to attach the key to a key holder.

Various changes in the form, proportions, and minor details of my invention may be resorted to at will without departing from the spirit and scope thereof. Hence I consider myself entitled to all such variations as may lie within the terms of my claims. What I claim as new, is:

1. In a lock of the character described, the combination of a casing, a shackle, said casing being provided with two parallel passages to receive the legs of the shackle, one of the said legs being longer than the other, said longer leg having a plurality of spaced collars, a plurality of tumblers in said casing concentric with said collars, each tumbler registering with a space between two collars, and having a central bore to permit the passage of said collars, said casing having a plurality of openers bores transverse to the longer leg and opening on said tumblers at the one side thereof; a slideable opener pin in each bore engaging the respective tumbler; means to limit the movement of said opener pins in either direction, said casing also having a second row of locking bores opening on said tumblers at the opposite side thereof; a locking pin in each of said locking bores and springs to actuate said pins into engagement with the tumblers to rotate the same against said opener pins; a projection on each tumbler normally engaging the respective bar on the shackle; said collars being provided with aligned recesses adapted to permit said projections to pass through them when placed in alignment with them through the operation of said opener pins.

2. In a lock as set forth in claim 1, said tumblers being arranged in a cylindrical bore in said casing; spacing disks between said tumblers, said disk being substantially of the same thickness as said collars on the shackle.

3. In a lock as set forth in claim 1, said casing being of a solid piece of material, said tumblers being arranged in a cylindrical bore in said casing; spacing disks between said tumblers, said disks being substantially of the same thickness as said collars on the shackle; a cup like plug for said bore on which said tumblers and disks rest, a washer on the end of said longer leg, and a spring between the column of disks and tumblers and said washer.

Signed at New York, in the county of New York, and State of New York this 20th day of October, A. D. 1925.

PETER RADOSEVIC.