

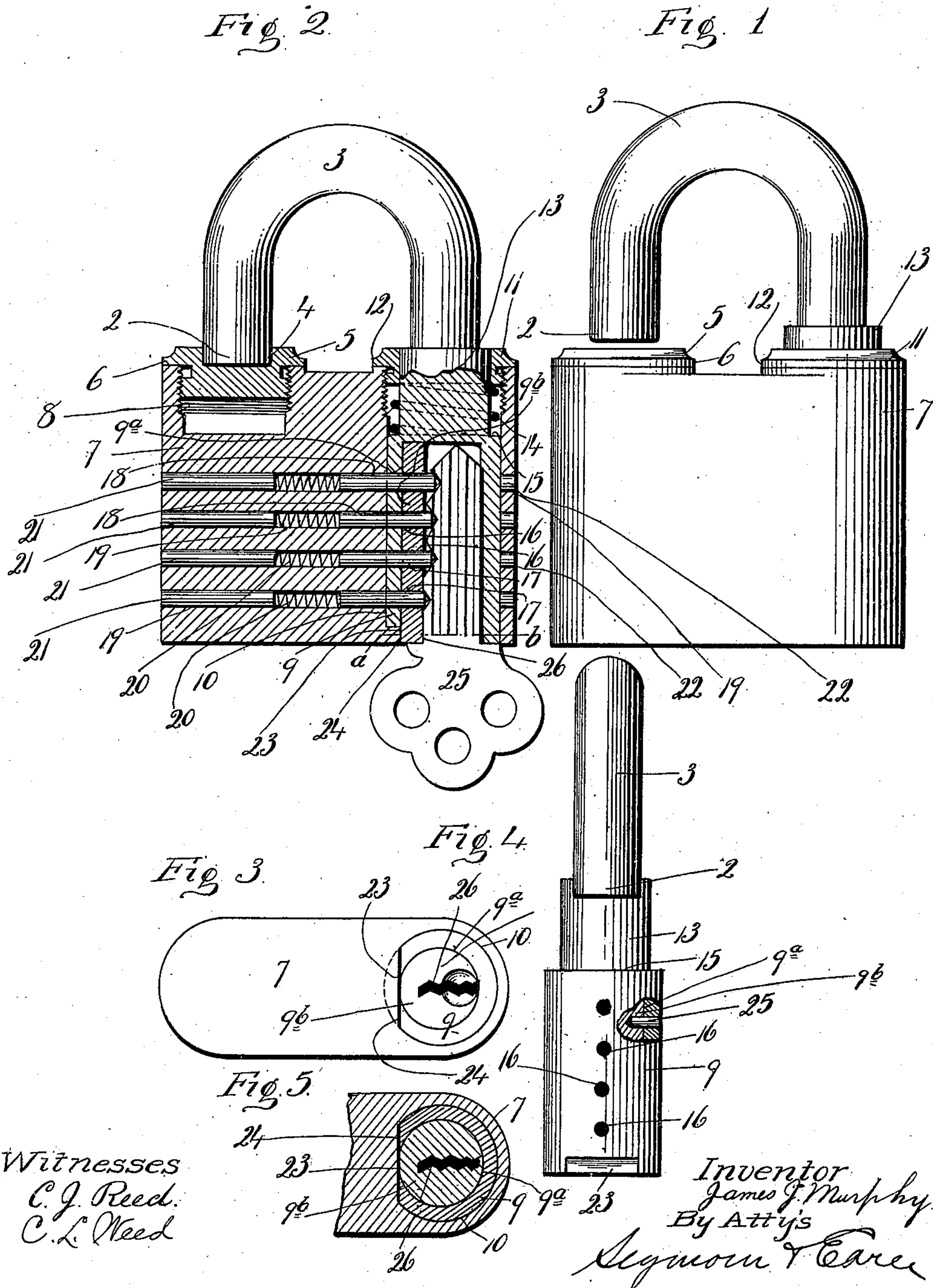
J. J. MURPHY.

PADLOCK.

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Patented Feb. 7, 1911.



UNITED STATES PATENT OFFICE.

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983,637.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES J. MURPHY, a citizen of the United States, residing at Terryville, in the county of Litchfield and State of Connecticut, have invented a new and useful Improvement in Padlocks; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a view in elevation of a pin-tumbler padlock constructed in accordance with my invention, the shackle being shown as disengaged from its bushing-like keeper preparatory to being swung to one side. Fig. 2 a view of the padlock in vertical section, the shackle being shown in elevation. Fig. 3 a reverse plan view of the padlock. Fig. 4 a detached view in elevation of the shackle and plug, showing the pin-tumbler holes and locking face of the latter. Fig. 5 a broken view in horizontal section on the line *a—b* of Fig. 2.

My invention relates to an improvement in pin-tumbler padlocks, the object being to produce a convenient, durable and reliable pin-tumbler padlock designed with particular reference to adapting it to be used with a corrugated key.

With these ends in view my invention consists in a padlock having certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claims.

In carrying out my invention as herein shown, the nose 2 of the shackle 3 is entered into a shallow socket 4 in a threaded bushing-like keeper 5 having an annular flange 6 bearing upon the top of a chambered case 7 formed near the outer end of its upper face with a threaded recess 8 for the reception of the said keeper 5. The shackle 3 is carried by, and preferably made integral with, a longitudinally and rotatably movable chambered stem or trunnion 9 located in a cylindrical chamber or bore 10 extending entirely through the case 7 from top to bottom, as clearly shown in Fig. 2. For holding the shackle-stem 9 in place, I employ a sleeve-like nut 11 having a bearing-flange 12, screwing into the threaded upper end of the bore 10 and adapted in size to form a jour-

nal for a trunnion 13 produced by slightly reducing the upper end of the stem in diameter. A helical spring 14 encircling the trunnion 13, is interposed between the lower end of the nut 11 and a bearing-shoulder 15 formed at the base of the trunnion 13. This spring exerts a constant effort to draw the stem 9, and hence the shackle 3, inward, and thus keep the nose 2 of the shackle entered into the socket 4 of the keeper 5. The said stem is formed with a concentric longitudinal circular chamber 9^a for the reception of a circular plug 9^b which is first formed with a key-slot 26 and then driven into the said chamber 9^a in which it is permanently located and from which it is not removed after having been once driven into place. Under this construction I am enabled to form a waved key-slot 26 extending from one end of the plug 9^b to the other end thereof and adapted for the reception of corrugated as distinguished from flat keys. The said chambered stem 9 is formed with four pin-holes 16 for the reception of the sections 17 of four two-part pin-tumblers the sections 18 of which are located in the adjacent ends of aligned holes 19 extending transversely through the case 7 from one side thereof to the other, this being the most practical mode of forming them. The sections 18 aforesaid are constantly pushed toward the sections 17 aforesaid by means of helical springs 20 located in the long ends of the said holes 19 and held in place by long pin-plugs 21. Short plugs 22 are employed to close the short ends of the holes 19 as shown in Fig. 2. The plug 9^b is also formed with four pin-holes 9^c arranged to register with the pin-holes 16 in the stem 9 and receiving the outer ends of the sections 17 of the two-part pin-tumblers. It will be understood, of course, that when the padlock is complete the shackle 3, stem 9 and plug 9^b operate as one piece.

The stem 9 is normally locked against rotation in the bore 10 by the entrance into its holes 16, of the adjacent ends of the sections 18 of the two-part pin-tumblers. In order to take the strain of locking from the sections 18 of the two-part pin-tumblers, I form the lower end of the stem with a locking-face 23 which engages with a corresponding shoulder 24 extending from the case 7 into the bore 10 at the lower end thereof as shown in Fig. 4.

To operate my improved padlock, the key 25 is introduced into the key-slot 26 in the shackle-stem, whereby the bittings of the key operate the two-part pin-tumblers so that they will break joints, as it were, on the periphery of the stem. Supposing the shackle 3 to be passed through a staple at the time, the case 7 of the padlock will now be pulled downward or outward, whereby the tension of the spring 14 will be overcome and the stem 9 and case 7 will be moved longitudinally with respect to each other for a sufficient distance to permit the nose 2 of the shackle 3 to clear itself from the socket 4 in the bushing 5 after which the stem 9 will be rotated sufficiently to swing the shackle to one side and permit its disengagement from the staple which is not shown. Or, the stem 9 may be longitudinally moved by inward pressure upon the key 25 after which the plug may be rotated by the key.

To lock the padlock, the shackle is swung into its locking position when the spring 14 acts to enter its nose 2 into the socket 4 at which time the holes 16 in the stem 9 will be brought into registration with the adjacent ends of the holes 19 in the case 7, whereupon the springs 20 will act to enter the sections 18 of the pin-tumblers into the outer ends of the holes 16, the key being at this time removed.

The stem 9 and the two-part tumblers correspond to the plug and pin-tumblers of an ordinary pin-tumbler lock while the case 7 corresponds to the cylinder, so called, of such a lock. To guard against the possibility of the removal of the plug 9^b, I may permanently secure it in place by a pin 25 as shown in Fig. 4.

I claim:—

1. In a padlock, the combination with a lock-case having a longitudinal bore, of a shackle provided with a stem having longitudinal and rotary movement in the said bore and formed with a concentric longitudinal chamber, a key-plug permanently fixed in the said longitudinal chamber of the stem and formed from end to end with a key-slot, and spring-actuated pin-tumblers located in pin-holes formed in the said case, in the said chambered stem and in the said plug and preventing the rotary and longitudinal movement of the stem of the shackle when the key is not inserted into the said plug.

2. In a padlock, the combination with a lock-case having a threaded recess entering its top and with a longitudinal bore, of a keeper threaded for being screwed into the said recess and formed with a concentric socket, a shackle the nose of which is adapted to enter the said socket in the keeper and provided with a stem having longitudinal

and rotary movement in the said bore of the case, and means applied to the said stem for locking it against longitudinal and rotary movement in the said bore.

3. In a padlock, the combination with a case having a longitudinal bore, of a shackle provided with a stem having longitudinal and rotary movement in the said bore, a helical spring encircling the upper end of the said stem, a sleeve-like nut entering the said bore, forming a bearing for the upper end of the said stem and holding the said spring in place, and means applied to the said stem for locking it against longitudinal and rotary movement in the bore of the case.

4. In a padlock, the combination with a lock-case having a longitudinal bore, of a shackle provided with a stem having longitudinal and rotary movement in the said bore, a helical spring encircling the said stem at the upper end thereof, a sleeve-like nut entering the said bore, forming a bearing for the upper end of the said stem and holding the said helical spring in place, a removable keeper mounted in the top of the case and formed with a socket for receiving the nose of the shackle, and means applied to the said stem for locking it against rotary and longitudinal movement in the bore of the case.

5. In a padlock, the combination with a case having a longitudinal bore formed at its lower end with a locking-shoulder, of a shackle having a stem located in the said bore in which it is rotatably and longitudinally movable, and formed at its lower end with a locking-face coacting with the said locking-shoulder, and means applied to the said stem for locking it against longitudinal and rotary movement in the said bore of the case.

6. In a padlock, the combination with a case having a longitudinal bore, of a shackle provided with a stem having rotary and longitudinal movement in the said bore, its upper end being reduced in diameter to form a trunnion which terminates at its lower end in a bearing-shoulder, a sleeve-like nut screwed into the upper end of the bore, and encircling the upper end of the said trunnion, a helical spring interposed between the said nut and bearing shoulder, and spring-actuated tumblers located in pin-holes formed in the said case and stem for locking the stem against rotary and longitudinal movement in the said bore.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

JAMES J. MURPHY.

Witnesses:

OTIS B. HOUGH,
H. C. CLOW.