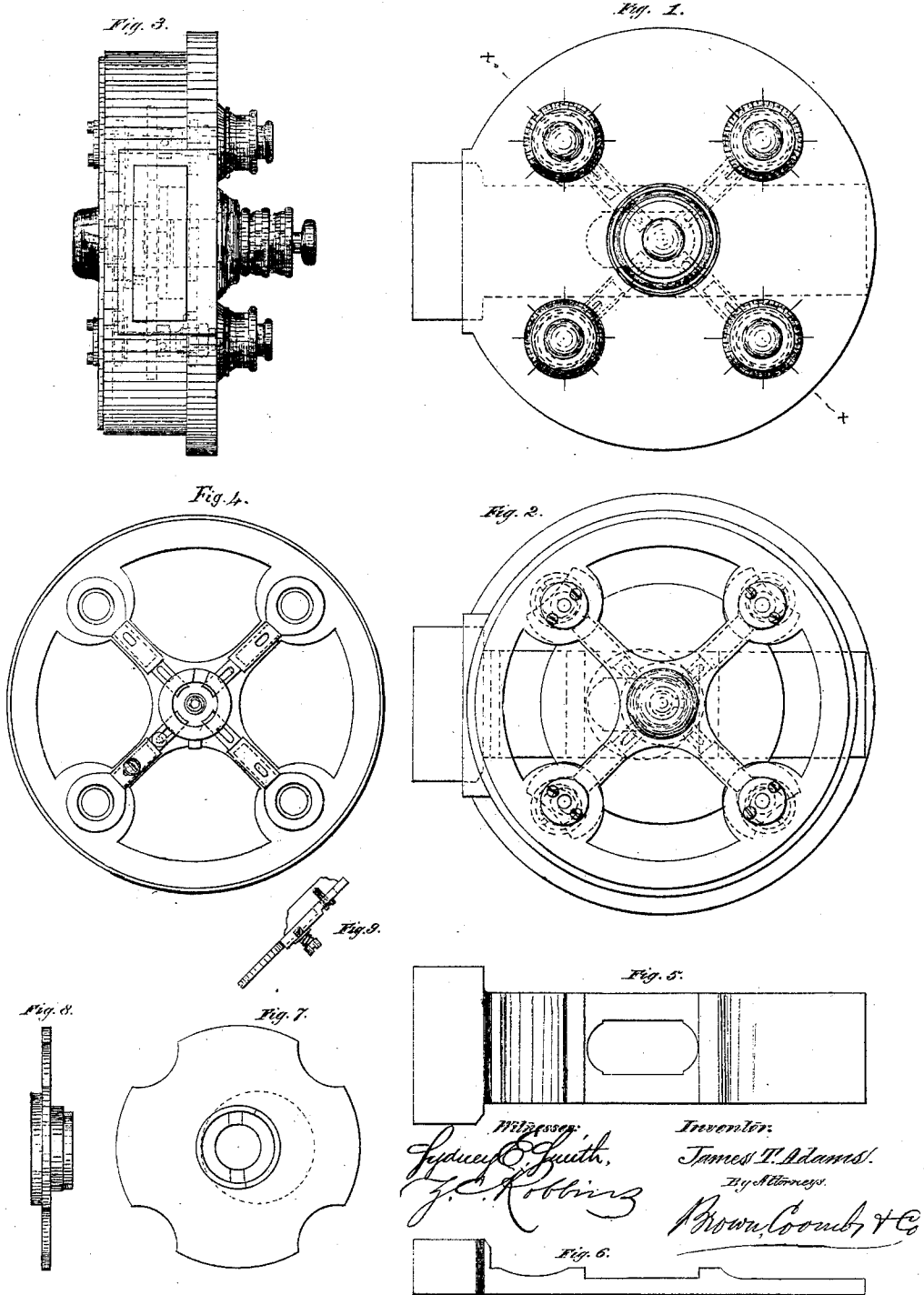


JAMES T. ADAMS.

Improvement in Permutation-Locks.

No. 114,510.

Patented May 9, 1871.



Witnesses:
Hyndes & Smith,
J. C. Robbins

Inventor:
James T. Adams.
 My Attorneys,
Brown, Coomb & Co

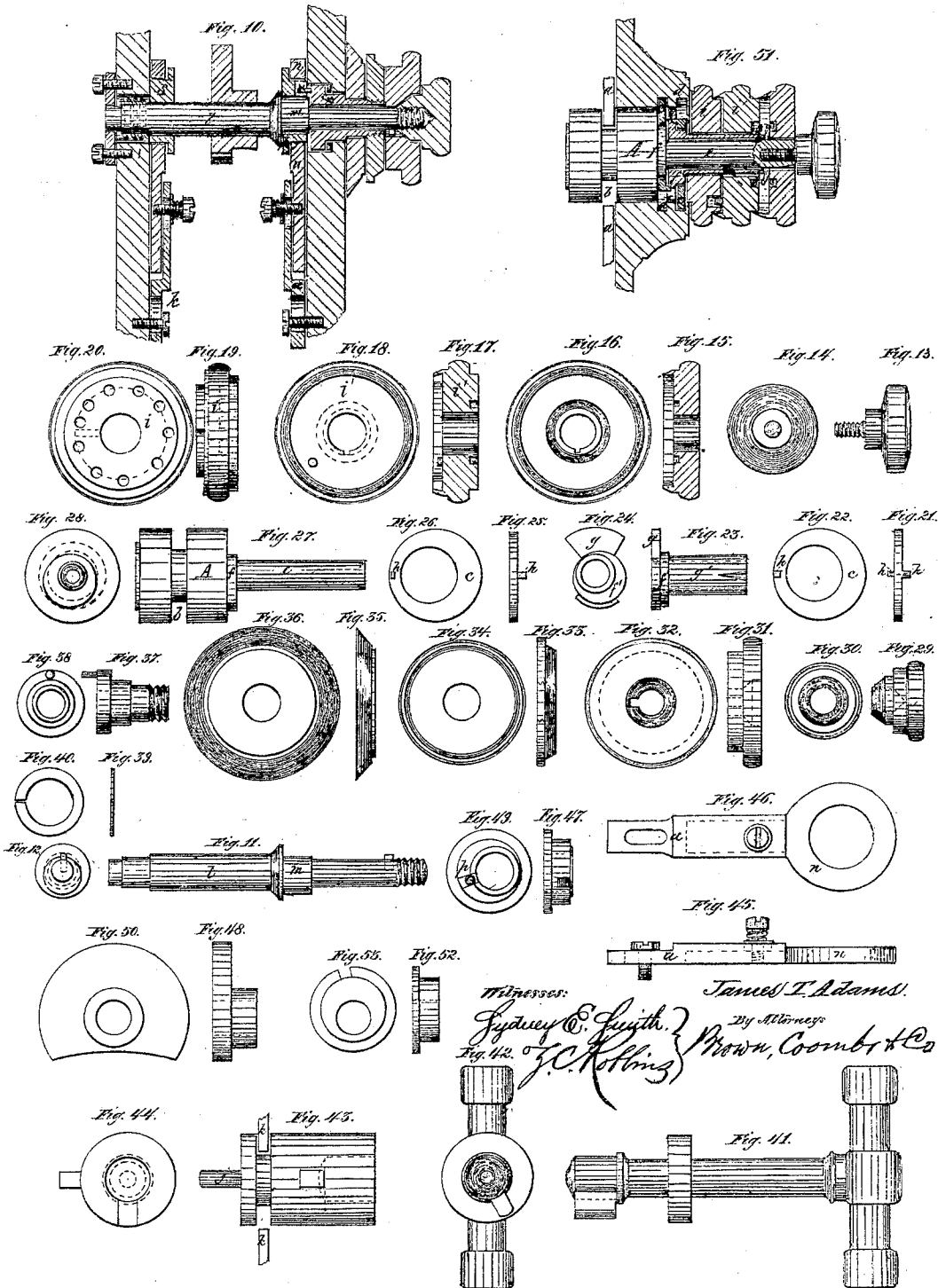
JAMES T. ADAMS.

3 Sheets--Sheet 2.

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Witnesses:

Sydney C. Smith
J. C. Robbins

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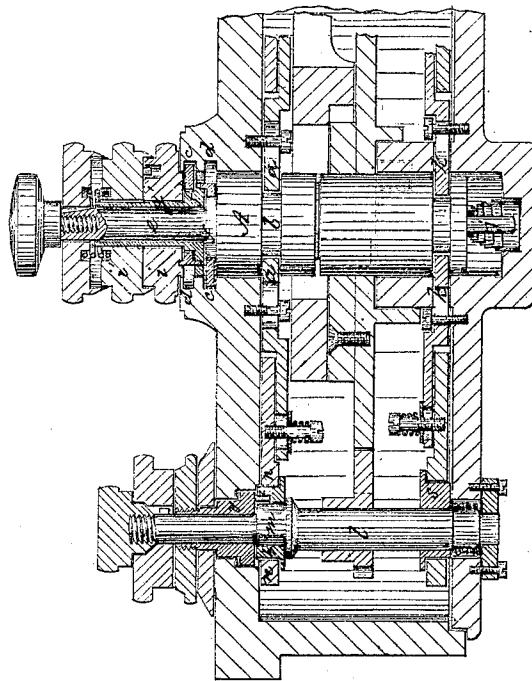
3 Sheets--Sheet 3.

Improvement in Permutation-Locks.

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Fig. 54.



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United States Patent Office.

JAMES T. ADAMS, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
TO JOEL R. LEIDY, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 114,510, dated May 9, 1871.

IMPROVEMENT IN PERMUTATION-LOCKS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES T. ADAMS of the city and county of Washington, in the District of Columbia, have invented certain new and useful Improvements in "Permutation-Locks;" and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing through letters of reference marked thereon, in which—

Figure 1 is an outside view of a lock embracing my improvements;

Figure 2 is a reverse view of the same;

Figure 3 is an edge view thereof;

Figure 4 is an inverted view of the cap or face-plate removed;

Figures 5 to 53 inclusive are detail views of the several parts of the lock detached; and

Figure 54 is a section on the line *z z* on fig. 1.

My invention has for its base the lock patented by George B. Atwood, assignor to Alfred A. Oats, dated March 26, 1867, and numbered 63,133, in records of the United States Patent Office, on which this is an improvement; it will therefore be unnecessary to describe in detail all the mechanism common to both. I shall therefore only particularly describe those portions in which my improvements exist, which consist mainly in a compound arrangement of eccentrics for operating the locking-bolts which secure the main bolt-operating devices, whereby extended combinations are obtained and greater accuracy is required in the adjustment of the permutation-disks, and consequent increased security is obtained.

The invention also embraces an application to the key-hole plug of two or more eccentric rings attached to and making part of said plug.

In the patent of Atwood heretofore referred to the locking-bolts are provided with rectangular stirrups, in which the eccentrics are rotated to effect the movement of said bolts, which slide in radial guide-ways; the rotation of these eccentrics, having comparatively but an edge bearing on the yoke, very soon wear the part on which they strike, or with which they come in contact, to such an extent that, by delicate touch and manipulation, the precise position of the bolt affected thereby may be accurately ascertained.

To remedy this objection is the design of my present invention, which consists in a combination of eccentrics, one within the other, operating to withdraw or protrude the radial locking-bolts by rotating them within circular straps. These eccentrics are each controlled by rotating dials on the face of the lock; also, in a combination of eccentrics and eccentric-rings with

the key-hole plug, which eccentrics are operated by a series of dials or exterior disks, by which the said rings may be arranged concentric with the plug, or be caused to protrude beyond its periphery into annular channels around the key-hole, and thus increase the difficulty of removal of the plug.

Referring to the drawing—

Fig. 51 represents the key-hole plug *A* secured in position within the key-hole by means of one or more radial bolts, *a*, projected into a groove, *b*, around the plug, together with the laterally-displaced eccentric rings *c* entering the annular grooves *d* in the key-hole.

On the stem *e* of the plug is an eccentric formation, *f*, and on its sleeve, *g*, is another eccentric, *f'*, around which the eccentric rings, figs. 21, 22, 25, and 26, rotate by the action of the segmental wing *g* on the sleeve *g'* being brought in contact with the stubs *h* on said rings, so that, by rotating the respective index-collars *i i*, the rings *c*, having eccentric openings through them, are rotated around their eccentric arbors, and may be arranged thereon so that their peripheries coincide with the cylindrical periphery of the plug *A*, or be extended laterally beyond its periphery to interlock with the grooves *d*.

The lower plug, represented in figs. 43 and 44, through which the key, fig. 41, operates to shoot or withdraw the bolt, is situated in the same axial line below the key-hole plug. It is supported and projected, when liberated for action, by a spring around the stem *j*, and is locked down by a bolt or bolts, *k*, entering an annular groove in its periphery.

These bolts are arranged radially around the axis of the plug, and are operated by the rotation of the spindle *l*, figs. 10 and 54, by an eccentric, *s*, at its lower end.

On this spindle *l* is also a blind or hidden eccentric *m* carrying on its periphery an eccentric ring, *p*, fig. 49, which is adjustable within the loop or strap *n*, fig. 46, of the bolt *a*, by means of the stub *z* on the sleeve *y*, figs. 10 and 54.

The advantages of this eccentric construction of the operating parts are, mainly, that their action is so smooth and delicate that the position of any internal parts cannot possibly be discovered by the sense of feeling; also, that the relative position of the one eccentric *m* within the other *p* is susceptible of such delicate adjustment that almost innumerable combinations may be effected.

In the drawing accompanying this application is shown an eccentric for operating the bolt, but this I do not claim as any part of my invention, and which

will be embraced in an application for Letters Patent for additional improvements made by the assignees hereof in another application.

What is here claimed as new, and desired to be secured by Letters Patent, is—

1. The combination of the eccentric *f* on the stem *e*, and eccentric *f'* on the sleeve *g*, of the key-hole plug; with the eccentric rings *c*, and winged sleeve *g'*, for operation substantially as set forth.

2. The combination of the eccentric ring *p*, made adjustable within the loop *n* of the bolt *k*, with the hidden eccentric *m* on the spindle *l*, substantially as and for the purpose specified.

JAS. T. ADAMS.

Witnesses:

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G. J. L. FOXWELL.