I. A. STAFFORD.

DESK DRAWER LOCK.

APPLICATION FILED SEPT. 22, 1920.

1,422,631.

Patented July 11, 1922.

4 SHEETS—SHEET 1.

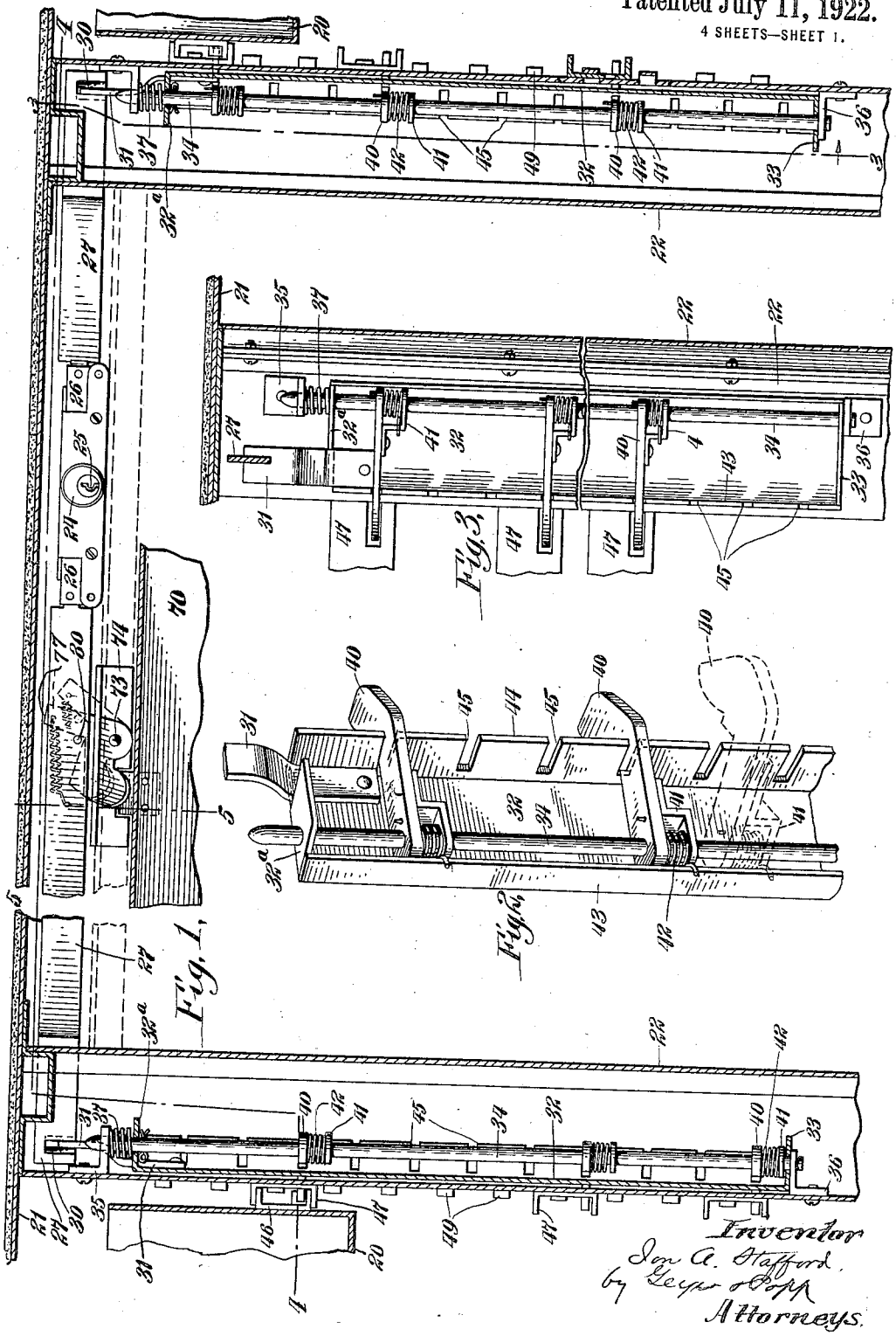


Fig. 1.

Fig. 3.

Fig. 2.

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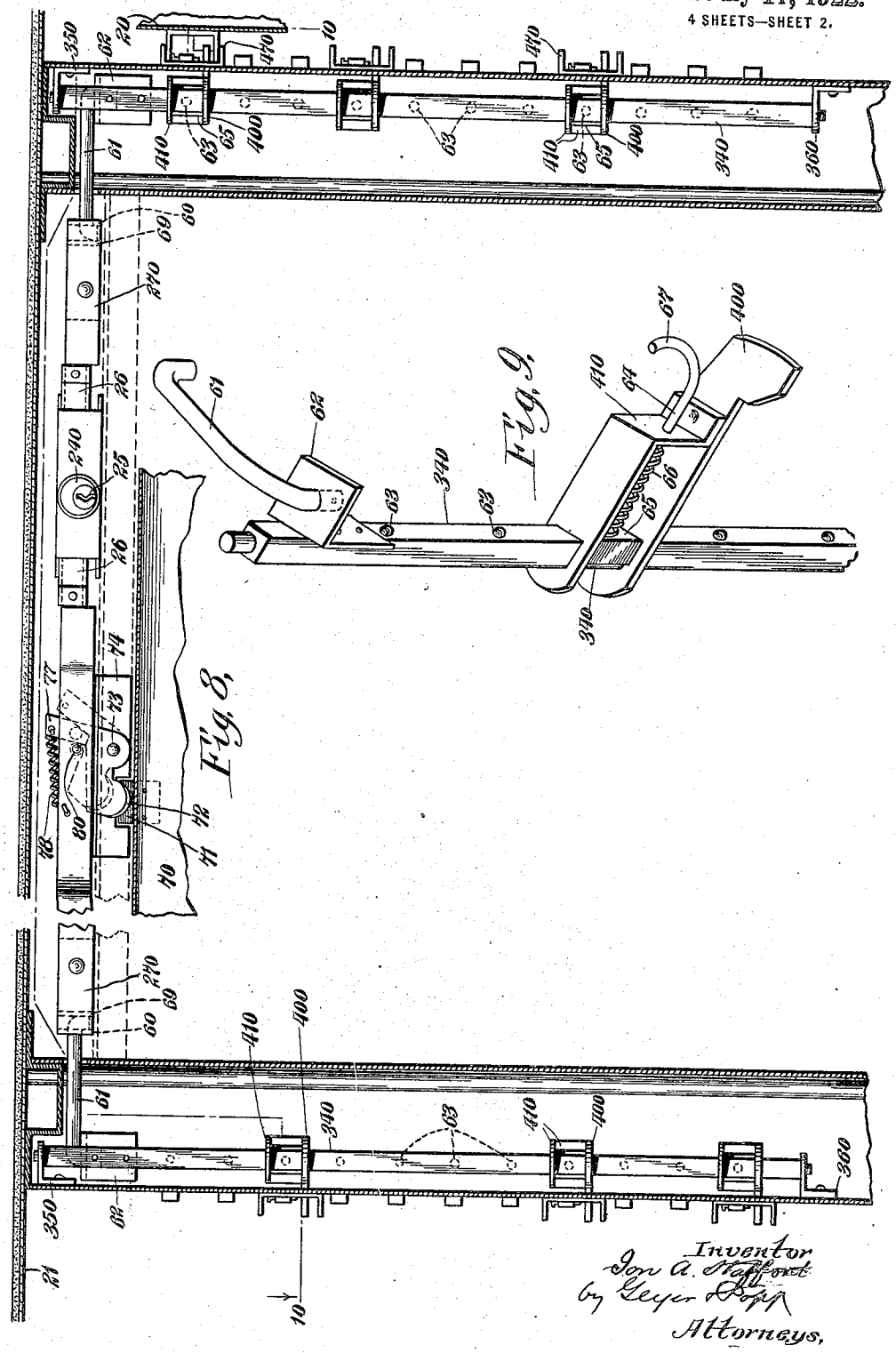


Fig. 8.

Fig. 9.

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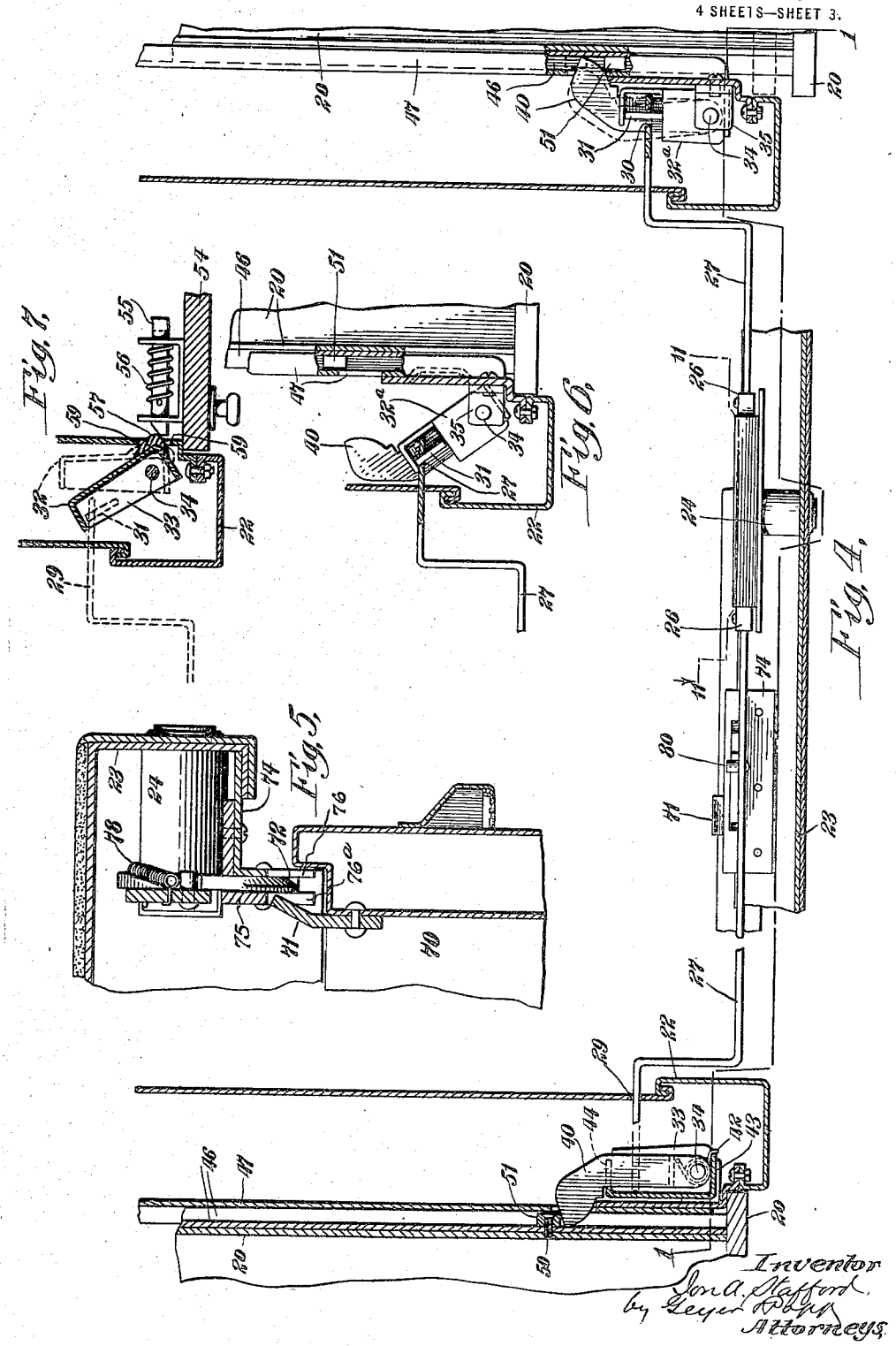
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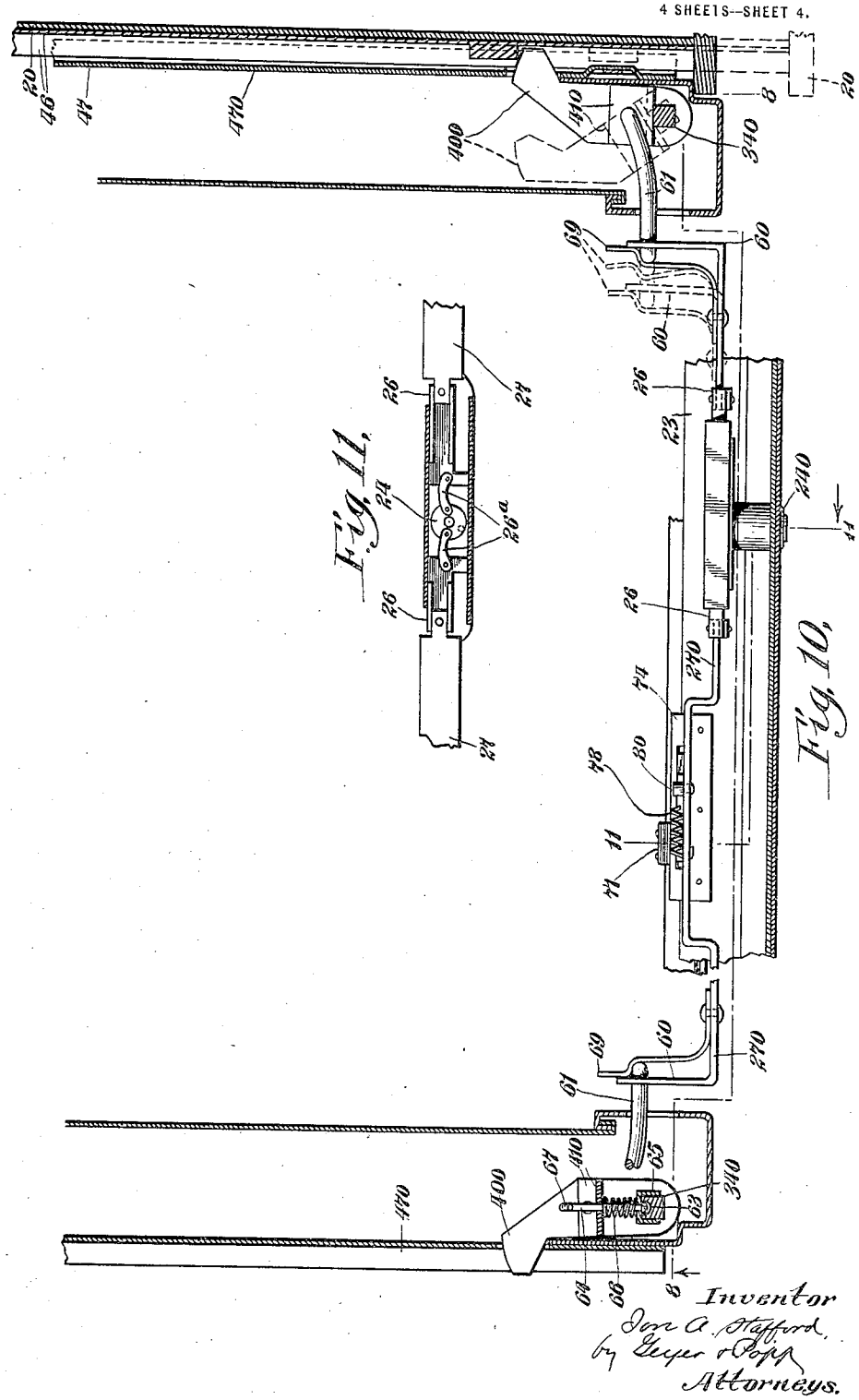


Fig. 11.

Fig. 10.

UNITED STATES PATENT OFFICE.

ION A. STAFFORD, OF JAMESTOWN, NEW YORK.

DESK-DRAWER LOCK.

1,422,631. Specification of Letters Patent. Patented July 11, 1922.

Application filed September 22, 1920. Serial No. 412,072.

To all whom it may concern:

Be it known that I, ION A. STAFFORD, a citizen of the United States, residing at Jamestown, in the county of Chautauqua and State of New York, have invented new and useful Improvements in Desk-Drawer Locks, of which the following is a specification.

This invention relates to an improved lock mechanism for the several drawers, locker doors, etc., of a desk.

One of the objects of the invention is to produce a strong and reliable lock which is particularly applicable to knockdown metal desks in which the relative position and size of the drawers, locker doors, filing trays, etc., may be changed to suit the particular needs of the user, not only at the time that the desk is first assembled but at any time thereafter.

A further object of the invention is the provision of an improved desk lock in which all of the drawers are locked by a single key and which permits one or more of the drawers to be disconnected from the locking mechanism, if desired, without in any way disturbing the locking devices of the remaining drawers.

A still further object is to produce a lock of this character which will simultaneously set the lock mechanism controlling the drawers of both desk pedestals and also the single drawer over the knee space of the desk; to so organize the mechanism that should any drawer be inadvertently left open after the desk has been locked, this particular drawer may be automatically locked by merely closing the same, and to improve the locking mechanism in other respects, as will hereinafter appear.

In the accompanying drawings:

Figure 1 is a fragmentary vertical section of a metal desk embodying one form of the invention, the same showing portions of the top and the inner pedestal legs which flank the knee space of the desk. Figure 2 is an enlarged perspective view of the upper portion of the locking mechanism which is located in one of the inner pedestal legs. Figure 3 is an enlarged vertical section showing the same mechanism applied to the desk and taken on line 3—3, Fig. 1. Figure 4 is a fragmentary horizontal section on line 4—4, Fig. 1. Figure 5 is a greatly enlarged fragmentary vertical section taken on line 5—5, Fig. 1, and showing the locking mechanism of the drawer above the knee space of the desk. Figure 6 is an enlarged fragmentary horizontal section through one of the front, inner pedestal legs showing the unlocking position of one of the dogs which control the desk drawers. Figure 7 is a similar horizontal section showing the locking devices of a locker door. Figure 8 is a fragmentary vertical section similar to Fig. 1, taken on line 8—8, Fig. 10, and showing a modified form of the invention. Figure 9 is an enlarged fragmentary, perspective view of one of the rock shafts and locking dogs of said modified locking mechanism. Figure 10 is a fragmentary, horizontal section on line 10—10, Fig. 8. Figure 11 is a vertical longitudinal section of the main lock on line 11—11, Fig. 4.

Similar characters of reference indicate corresponding parts throughout the several views.

The improved locking mechanism is herein illustrated as applied to a knockdown metal desk covered by another application for patent filed by me, but the same is applicable to other desks and furniture structures as well, whether constructed of wood, fiber or of metal.

Referring to Figs. 1–7, inclusive, the desk, generally speaking, comprises two pedestals each of which supports a number of superimposed desk drawers 20 and which are connected together across the knee space of the desk by means of the usual desk top 21, only the inner front pedestal legs 22 being shown in the drawings.

Suitably secured to the front part of the desk top and extending horizontally through the depending front flange 23 thereof, is a cylinder-lock or other suitable lock 24 which is operated in the usual way by inserting a key into the keyhole 25 and turning the barrel of the lock. This operation causes a movement of two horizontal thrust bars or slides 26 in opposite directions lengthwise of the desk, these bars moving simultaneously either outwardly or inwardly relatively to each other, as the barrel of the lock is turned in one direction or the other. For this purpose, the slides 26 are connected with opposite sides of the barrel of the lock 24 by links 26^a or other suitable means, as shown in Fig. 11. Secured to the outer ends of said thrust bars are a pair of slidable push bars or extensions 27, the outer portions of which

are guided in apertures 29 in the pedestal legs 22. The outermost part of each of said push bars extends into its companion pedestal leg 22 and is provided in its lower edge with a vertical notch 30 which is suitably beveled on its opposite faces. Each of these pivot notches receives the upper end of a rock arm or bar 31 (Fig. 2) secured to a vertical rocking plate or member 32. Preferably, these plates are entirely housed and concealed within the front pedestal legs 22. Each of these plates is provided at its upper and lower ends with horizontal ears or flanges 32ª and 33, respectively, through which passes an upright rock shaft 34 which is secured to said ears and whose upper and lower ends are journaled in bearings or brackets 35 and 36 secured to the desk frame.

The rocking plate 32 rests upon the lower bracket 36, while the upper bracket 35 is normally positioned some distance above the upper end of said plate, the intervening space being occupied by a compression spring 37 preferably of helical form which encircles the upper end of the rock shaft 34 and is attached to same.

Mounted on this shaft are a number of superimposed locking dogs 40 for the desk-drawers of various sizes or depths, one for each drawer, which dogs are vertically adjustable on said shaft to accommodate various drawer arrangements, according to the fancy or particular needs of the user. These dogs are horizontally disposed and extend rearwardly from said shaft. To the lower side of each locking dog is preferably secured, by spot welding or otherwise, a bracket plate or brace 41, which serves to give the dog a firm bearing upon said rock shaft. Interposed between each of said bracket-plates 41 and the corresponding locking dog is a torsion spring 42, one end of which is secured to or engages the locking dog while its other end engages a vertical flange 43 formed at the forward edge of the rocking plate 32 and extending laterally and inwardly therefrom. The vertical rear edge of said rocking plate has a similar vertical flange 44 which is provided with a vertical row of horizontal retaining notches or slots 45, any one of which is adapted to receive the free rear portion of the locking dogs 40, as best shown in Figs. 2 and 3, so as to hold the dog from vertical displacement on the rock shaft and the rocking plate 32. The torsion spring 42 of each dog tends constantly to swing it against the inner end of the co-operating notch 45. To shift one of the dogs from one position to another position (Fig. 2) it is merely necessary to press its free rear end outwardly against the resistance of the spring 42 until the dog clears the respective notch 45, and then bodily move the dog, together with its spring 42 and bracket plate 41, to the desired new position, and finally interlock the dog with another one of the retaining notches 45.

Each of these drawers 20 is provided at each of its sides with a longitudinal, channel-shaped slide bar 46 adapted to slide back and forth in a companion, longitudinal, channel-shaped drawer slide 47. Each of the latter is adapted to be removably engaged with any companion pair of blisters or apertured brackets 49 which are arranged in vertical rows on the desk frame as more fully shown and described in my aforementioned patent application. With this adjustable arrangement of the drawer slides, various arrangements of differently-sized drawers may be obtained to suit the particular requirements of the user of the desk. It is obvious that such an elastic arrangement of the drawers necessitates a corresponding adjustability of the locking dogs 40, such as already described.

Each of the slide bars 46 of a drawer has secured to it by a screw 50 or otherwise, a lock block 51, which is adapted to engage with the rear face of its companion locking dog 40, as shown at the left hand side of Fig. 4, to lock the companion drawer in place.

To unlock the drawers, the lock 24 is manually operated to simultaneously shift both push bars 27 toward each other. This movement is transmitted by said bars to the actuating arms 31 of the rocking plates 32, causing the latter to be retracted to the position shown in Fig. 6, and carrying with them all the locking dogs 40 which are thus swung entirely clear of the respective lock-blocks 51, allowing the various drawers to be freely withdrawn.

To lock the closed drawers, the barrel of the lock 24 is turned in the opposite direction, whereby the plates 32 are rocked outwardly to a position in which the dogs 40 are allowed to project in front of said lock-blocks, as shown at the left of Fig. 4, preventing withdrawal of the drawers. During these movements the several locking dogs together with their companion rocking plate 32 swing as a single unit about the rock shaft 34 as an axis.

Should a drawer be left open inadvertently (as shown by full lines at the right of Fig. 4,) after operating the locking mechanism to lock the drawers, the open drawer need merely be pushed in and closed which action will first cause the companion lock block 51 to trip the companion locking dog 40 aside, against the resistance of the torsion spring 42, while the continued inward movement of the drawer permits the dog to snap in front of said block, thereby locking the drawer. During this operation, all the parts of the locking mechanism remain stationary except said drawer-tripped locking dog.

The desk is also sometimes equipped with a hinged locker door 54 (Fig. 7) which is provided in its inner side with a sliding horizontal locking bolt 55 having a suitable spring 56 for projecting it. This bolt is adapted to interlock with an opening 59 in the adjacent wall of the pedestal or desk-frame, for locking the door, as shown by dotted lines in Fig. 7. The bolt is normally held in its unlocking position by a cam 57 which is secured to the front inner corner of the adjacent rocking plate 32 and adapted to project through said opening 59 and push back said spring-bolt to release the door, as shown by full lines in Fig. 7, whenever said rocking plate is moved to the position in which the dogs 40 release the desk-drawers. When, however, said rocking plate is swung to its locking position, said cam 57 is withdrawn from the opening 59, permitting the spring bolt 55 to enter it and locking the door. Thus, the door-lock or bolt is set in locking position simultaneously with the movement of the drawer-locking dogs to the corresponding position.

The spring 37, while normally holding the rocking plate 32 and the rock shaft 34 in position, permits the ready removal of these parts from the pedestal. To do this, it is only necessary to push said plate upwardly against the pressure of said spring, until the lower end of said rock shaft is withdrawn from the lower bracket 36. By a lateral movement of the lower portion of the rock-shaft, followed by a downward movement thereof, its upper end is withdrawn from the upper bracket 35 and the whole locking mechanism, including said plate, rock shaft and the dogs 40 can be removed from the pedestal leg, access to which is obtained by first removing one of the desk drawers 20.

A modification of the locking mechanism is shown in Figs. 8–11 inclusive. In this case, a cylinder lock 240 is used as before, the turning of its barrel causing a simultaneous outward or inward movement of a pair of push bars 270. Each of these push bars is provided at its outer end with an arm 60 which is perforated to receive the inner, downturned end of a thrust link 61. The outer end of the said link (as best shown in Fig. 9) is pivotally connected to a rock arm or bracket 62 secured to a square, vertical rock shaft 340. The latter is journaled in brackets 350 and 360 secured to the frame of the desk and carries a plurality of locking dogs 400 which while being compelled to turn with the shaft are vertically adjustable thereon. To the upper face of each of these dogs is secured a bracket or brace plate 410 through which the rock shaft 340 passes. The latter is provided in one side with a vertical row of recesses 63 any one of which is adapted to receive the head of a spring bolt 64 for locking the corresponding dog to the rock shaft. This bolt is guided in the vertical part of the brace 410 and its front end carries a U-shaped guide-plate 65 which embraces the shaft so as to center the bolt thereon. This guide plate as well as the bolt 64 is forced toward the rock shaft 340 by the bolt-spring 66 which encircles the bolt and bears with its opposite ends against said guide-plate— and the inner face of the bracket plate 410 as best shown in Fig. 10. At its outer end, each of said spring bolts has a suitable handle 67 for retracting it to release the corresponding dog 400. The dog can then be adjusted up or down on the shaft as may be required, the same being again locked in place by engaging the bolt with the nearest recess 63 of the shaft.

If it be desired to leave one or more drawers permanently unlocked, it is only necessary to shift the respective dog or dogs out of register with the corresponding drawer-slides 470. This also applies to the dogs of the first-described construction.

Secured to the rear face of each push bar 270 near its outer end, is a spring 69 which bears against the inner lipped end of the adjacent thrust link 61, so as to normally hold the link aganst longitudinal movement in the arm 60 of the push bar 270 and compel it to move therewith, the spring being stiff enough for this purpose. When, however, one of the drawers is inadvertently left open (as indicated by dotted lines in Fig. 10) after moving the dogs to locking position, the spring 69 upon closing said drawer, yields and permits said link 61 to slide in the arm 60 sufficiently to allow the dog of said drawer to recede under the tripping action of the drawer-block, said spring again projecting said dog to locking position after the block has passed behind it.

If desired, the center drawer 70 located above the knee space may be locked simultaneously with the pedestal drawers by the same locking mechanism. In the example shown in the drawings, Figs. 1 and 5, the front wall of said center drawer carries a fixed lug 71 projecting above its upper edge and adapted to engage behind a vertically-swinging locking catch 72 in the depressed locking position of the latter, shown by full lines in Fig. 1. This catch forms the lower arm of a bell crank which is pivoted at 73 to a longitudinal rail 74 secured to the desk-top, this rail and the adjacent flange 75 of the desk top being notched in line with the lug 71, as shown at 76 and 76a, to permit said lug to pass rearwardly to a position behind the locking catch 72. To the upper arm 77 of said bell crank is attached one end of a tension spring 78, the other end of which is fastened to a fixed part 79 of the desk-top. This spring tends to swing the catch down

into its locking position, while a pin or projection 80 carried by the adjacent thrust bar 27 and engaging the arm 77 retracts said catch clear of the drawer-lug 71 when the thrust bar is shifted inwardly by the partial rotation of the barrel of the cylinder lock 24. It will now be understood that when the locking dogs 40 of the pedestal drawers are moved to locking position, the pin 80 recedes from the catch-arm 77, allowing the spring 78 to lower the catch to locking position. When said dogs are moved to unlocking position, the pin 80 swings the arm 77 toward the lock 24, withdrawing the catch 72 to the corresponding position, as shown by dotted lines in Fig. 1.

To permit this center drawer to be closed and automatically locked, in case it should be left open after moving the dogs 40 to locking position, the catch 72 has a beveled lower edge 81, which causes the catch to be deflected aside when the drawer lug 71 trips over said edge.

It will be observed that in both embodiments of the invention herein shown and described, a vertical series of locking dogs is carried by a rock member by which they are simultaneously moved into and out of locking position; that in both cases the locking dogs are individually adjustable on said rock-member to adapt them to different drawer arrangements, and that in both cases the dogs are capable of yielding to permit the full closure and automatic locking of any drawers which may have been left open, after moving the dogs to their locking position.

In addition to the advantage of ready adjustability of the locking dogs to a variety of drawer arrangements, all of the drawers are locked and unlocked at the same time by a single key and no one drawer controls the locking devices of other drawers, thus rendering the lock more convenient.

The lock is also very strong, durable and reliable, particularly on account of the arrangement of the locking dogs which extend rearwardly from their rock shafts.

Moreover, by locating the locking mechanism at the inner sides of the pedestal drawers instead of at the back thereof, the drawers can be extended to the extreme back of the desk, increasing their capacity.

I claim as my invention:

1. The combination with a desk having a pedestal containing drawers, of an upright rock member journaled in the front portion of said pedestal at the inner sides of the drawers, and locking dogs for the drawers controlled by said rock member.

2. The combination with a desk frame and drawers arranged therein, of an upright rock shaft journaled in the front portion of the desk-frame, and substantially horizontal locking dogs extending rearwardly from said rock shaft and adapted to interlock at their free rear ends with the sides of the drawers.

3. In a desk drawer lock, the combination with a desk frame and a plurality of desk drawers arranged therein, of an upright rock member mounted in said frame, a plurality of locking dogs for said drawers mounted on said rock member and vertically adjustable thereon, and means for actuating said rock member to move said dogs to locking and unlocking positions, each of said dogs when in locking position being yieldable to the pressure of a desk drawer independently of the remaining dogs.

4. In a desk drawer lock, the combination with a desk frame and a plurality of desk drawers arranged therein, of a rock shaft mounted in said frame, a plurality of locking dogs longitudinally adjustable on said shaft and adapted to lock said drawers, a rocking plate bearing against said locking dogs for controlling their position, and means for actuating said rocking plate.

5. In a desk drawer lock, the combination with a desk frame and a plurality of desk drawers arranged therein, of a vertical rock shaft mounted in said frame, a plurality of locking dogs vertically adjustable on said rock shaft and adapted to lock said drawers, a rocking plate pivotally mounted on said frame coaxially with said rock shaft and provided with a vertical row of retaining devices for said locking dogs, and means for actuating and locking said rocking plate.

6. In a desk drawer lock, the combination with a desk frame and a plurality of desk drawers arranged therein, of an upright rock shaft mounted in said frame, a vertical rocking plate provided with a vertical row of retaining slots, a plurality of locking dogs mounted on said rock shaft and each adapted to engage with any one of said retaining slots, springs tending to hold said dogs in said slots, and means for actuating and locking said rocking plate.

7. In a desk drawer lock, the combination with a desk frame and a plurality of desk drawers arranged therein, of a vertical rock shaft mounted on said frame, a rocking plate mounted on said rock shaft and provided with a flange having a vertical row of retaining slots, a plurality of locking dogs vertically adjustable on said rock shaft and mounted to swing thereon, said dogs being adapted to engage in said slots, torsion springs one for each dog applied to said shaft and tending to hold the dogs in said slots, and means for actuating and locking said rocking plate.

8. In a desk drawer lock, the combination with a desk frame and a plurality of desk drawers arranged therein, of a rock shaft removably journaled in bearings carried by said desk frame, a vertical rocking plate

whose opposite ends are pivoted on said rock shaft and terminate short of the ends thereof, a spring interposed between one end of said plate and the adjacent bearing of said rock shaft for removably holding the shaft and the rocking plate in place, and a plurality of locking dogs for the desk drawers mounted on said rock shaft and controlled by said rocking plate.

9. In a desk drawer lock, the combination with a desk frame and a plurality of desk drawers arranged therein, of a vertical rock shaft removably journaled at opposite ends in bearings carried by said desk frame, a vertical rocking plate secured to said rock shaft and provided with a vertical row of retaining slots, a retaining spring encircling said rock shaft between one of its bearings and the adjacent end of said rocking plate, locking dogs for the desk drawers adjustably arranged on said rock shaft and adapted to engage any one of said retaining slots, springs for yieldingly holding the dogs in said slots, a push bar for actuating said rocking plate, and locking means for said push bar.

10. In a desk drawer lock, a rock shaft, means for actuating and locking said shaft, a locking dog for a desk-drawer adjustably mounted on said shaft, and a brace connecting the dog with said shaft and adjustable therewith.

11. The combination with a desk having a plurality of drawers and a locker-door provided with a locking-bolt, of a rock member mounted on the frame of the desk, and a plurality of locking dogs for said drawers controlled by said rock member, said rock member having means for shifting said door-bolt to unlocking position when said dogs are moved to the corresponding position.

12. The combination with a desk having pedestals separated by a knee space, drawers in said pedestals and a drawer above said knee space, locking dogs for said pedestal drawers, an actuating member for said dogs carrying a projection, a locking catch for said knee space drawer mounted on the desk frame and having a retracting arm arranged in the path of said projection, and a spring tending to move said catch to its locking position when released by said projection.

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