(Model.)

2 Sheets—Sheet 1.

J. CHAPMAN.

CAR LOCK AND SEAL.

No. 363,801. Patented May 31, 1887.

Fig 1

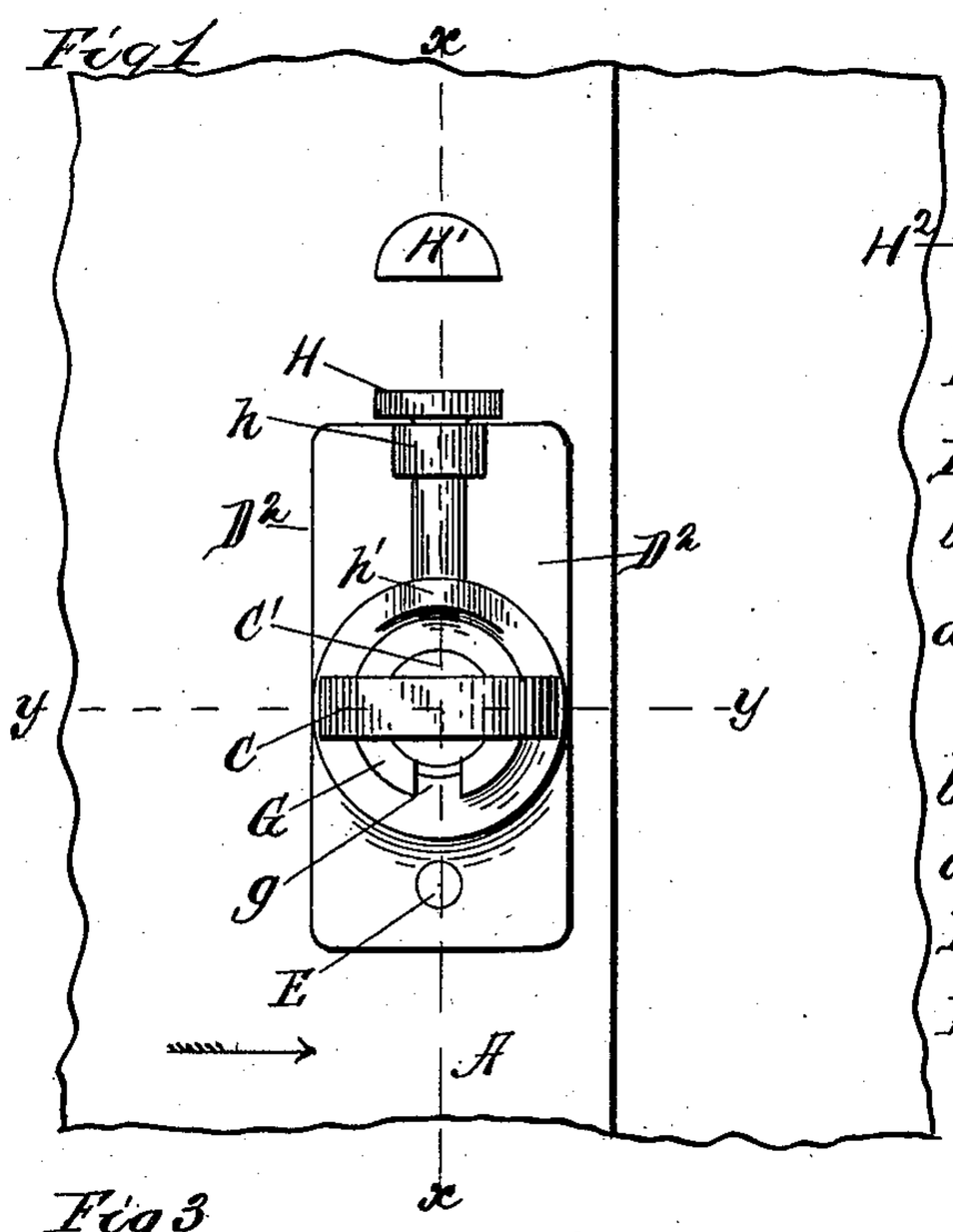


Fig 2

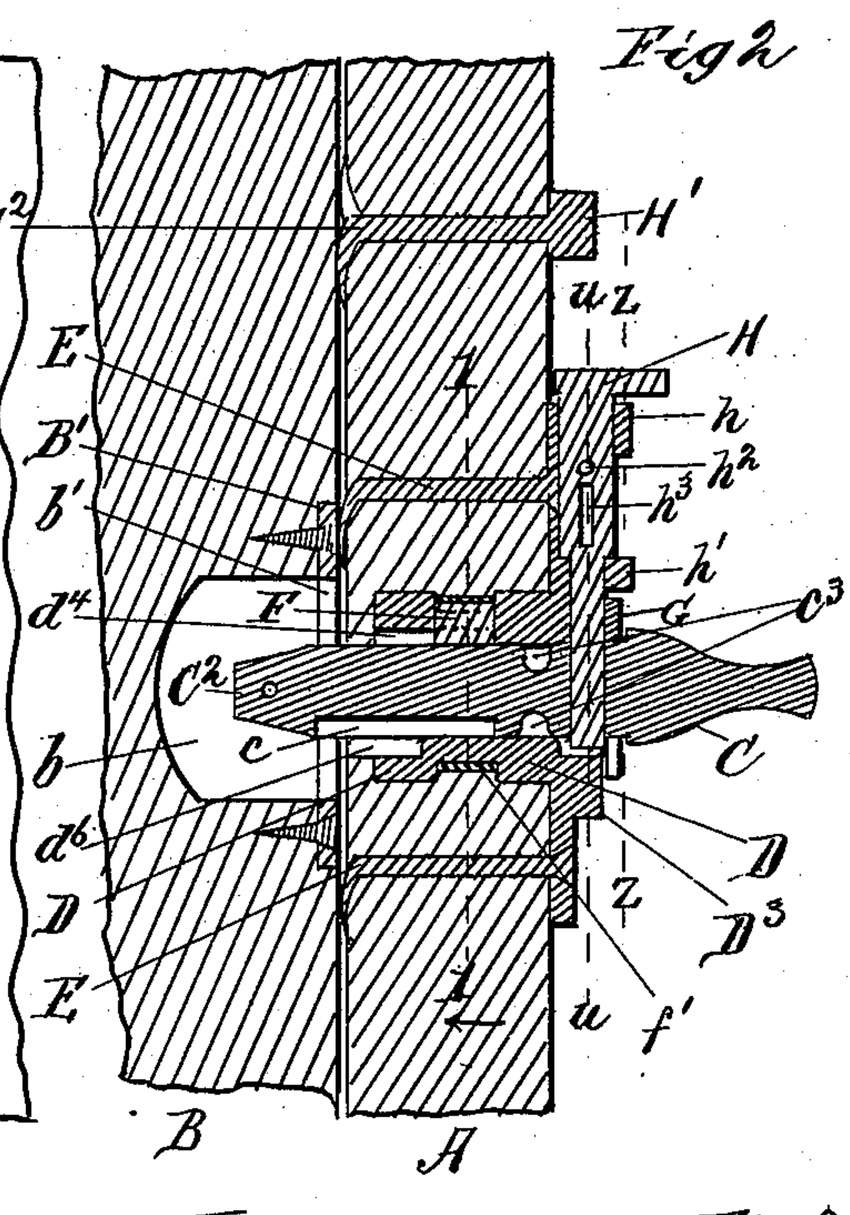


Fig 3

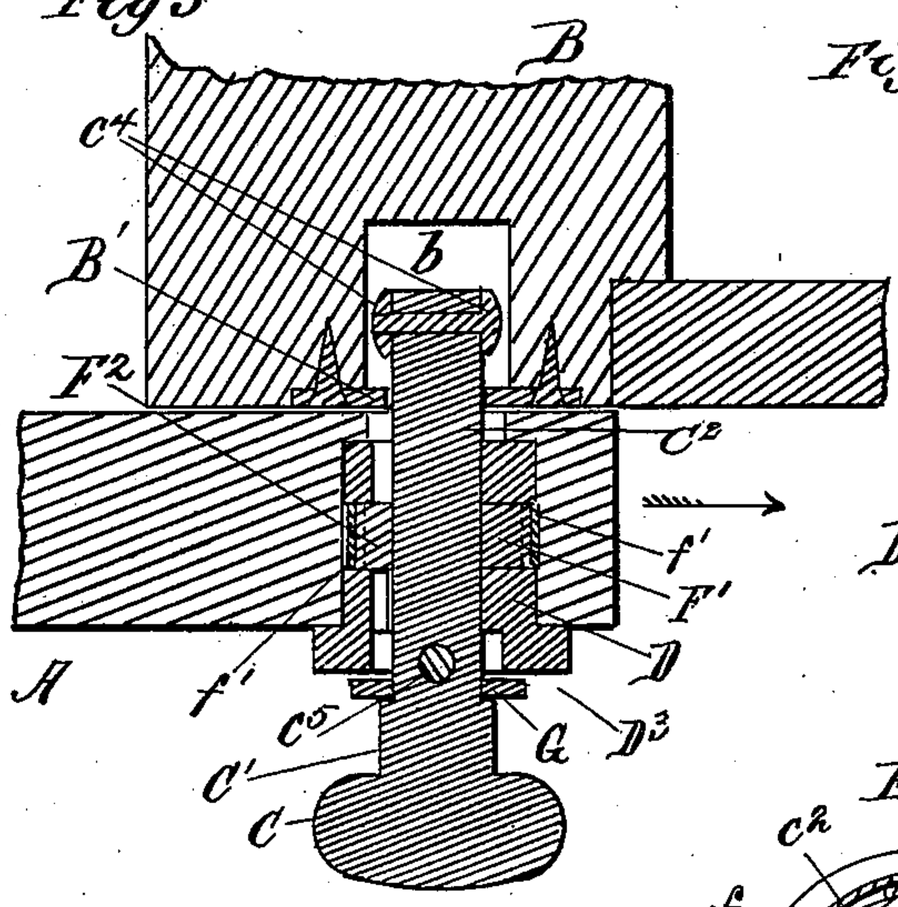


Fig 4

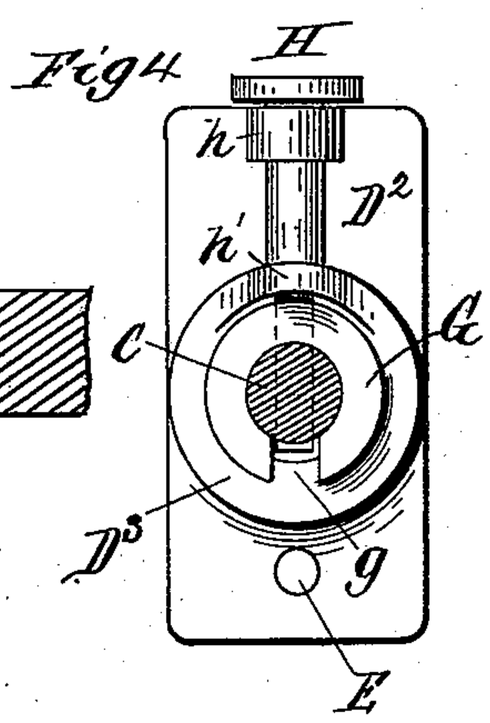


Fig 5

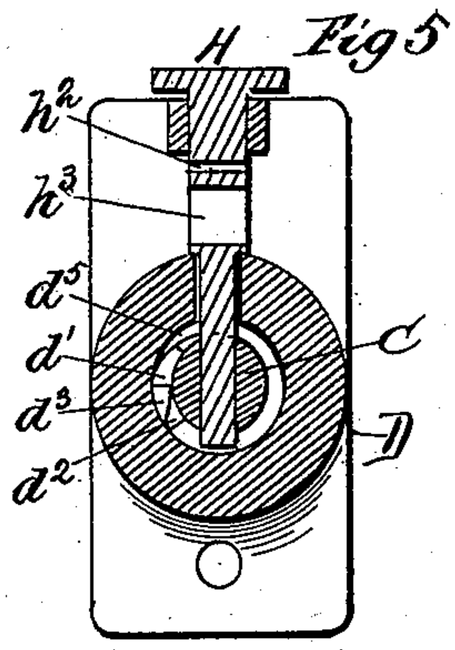


Fig 6

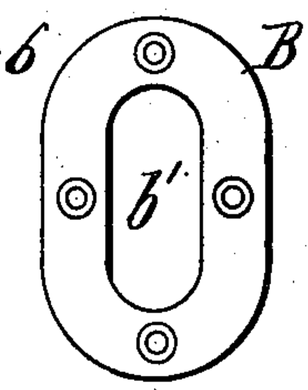
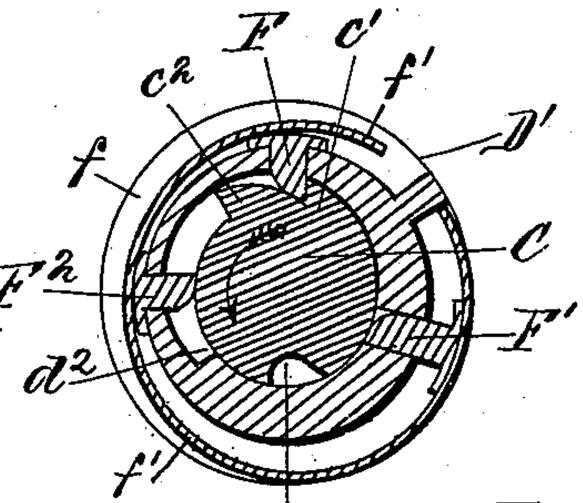


Fig 14



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(Model.) 2 Sheets—Sheet 2.

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CAR LOCK AND SEAL.

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Fig 7

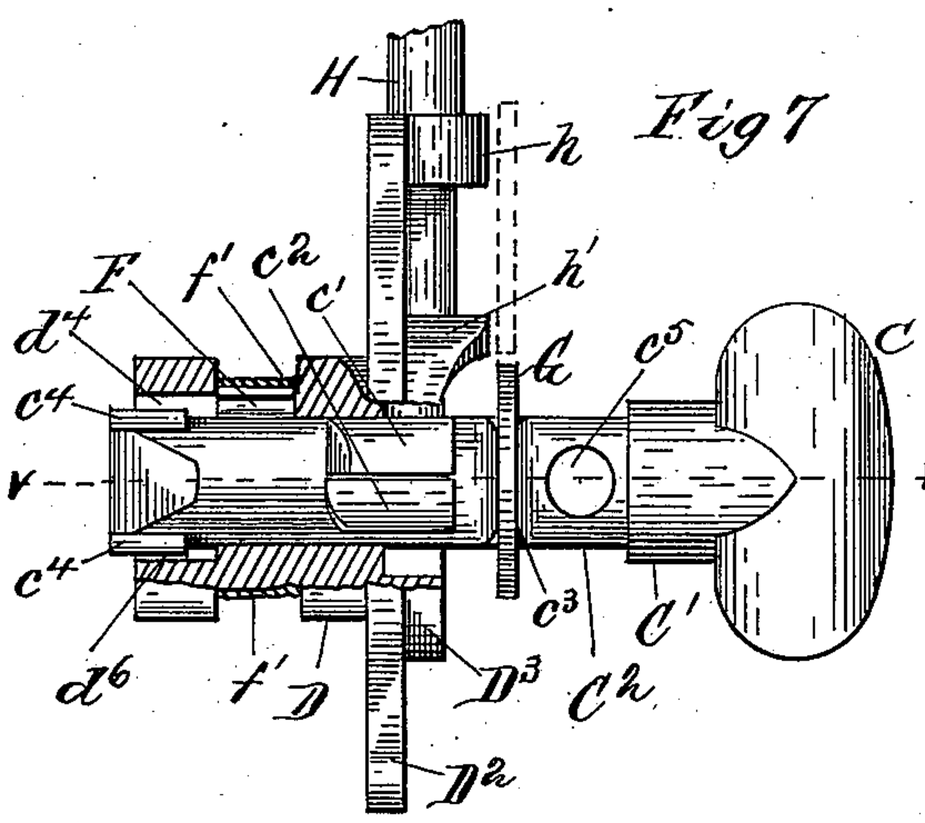


Fig 8

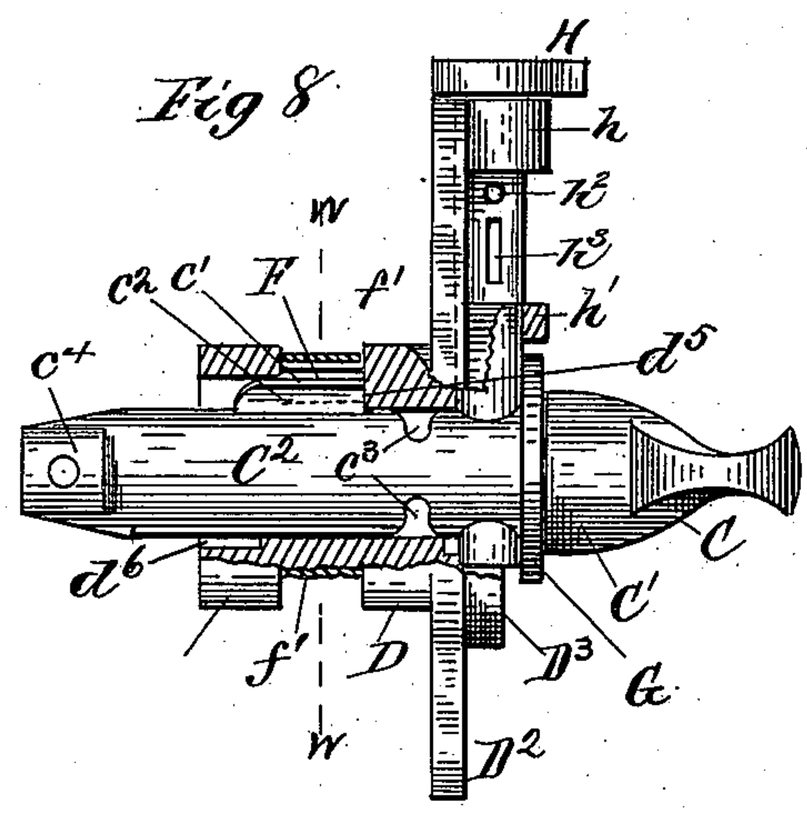


Fig 9

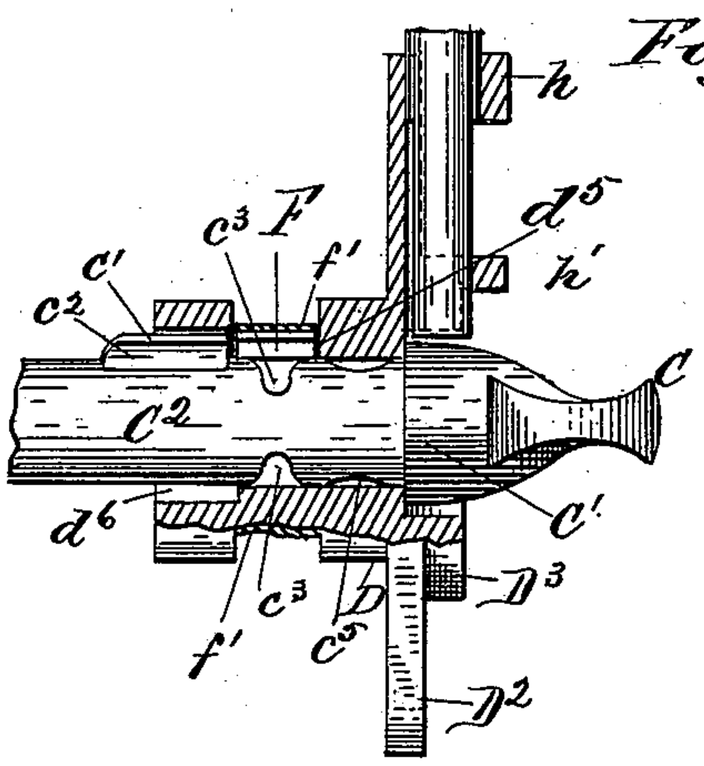


Fig 10

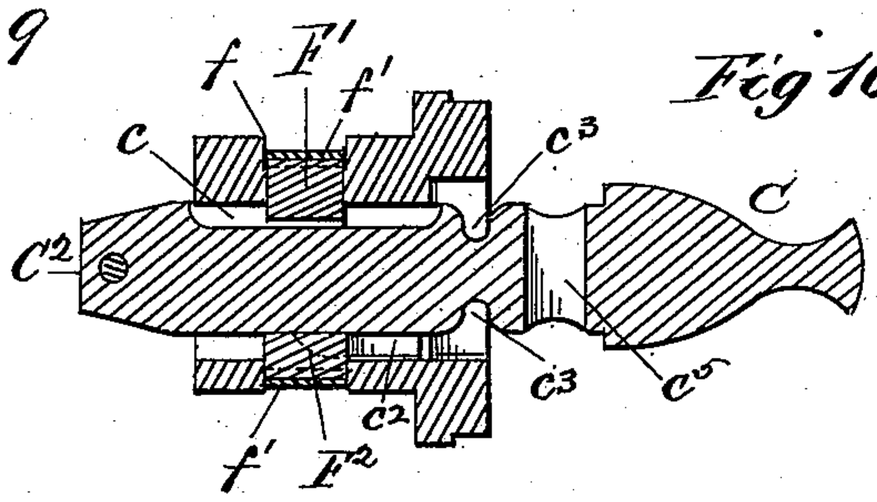


Fig 11

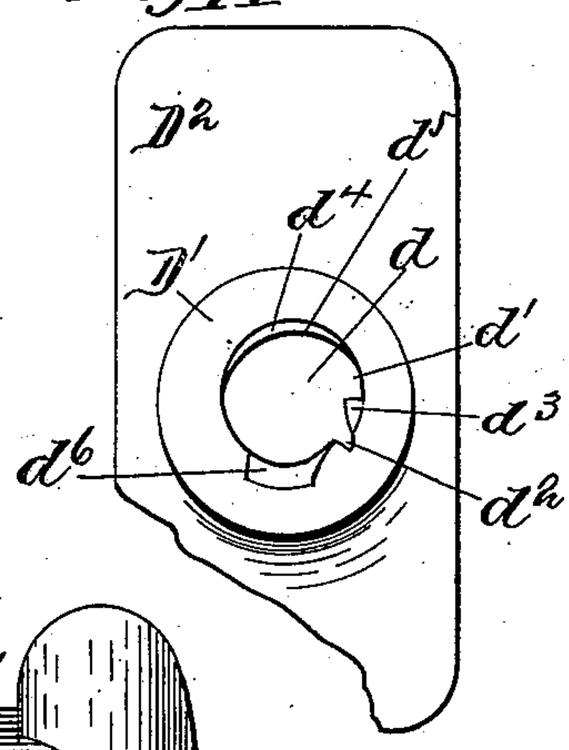


Fig 12

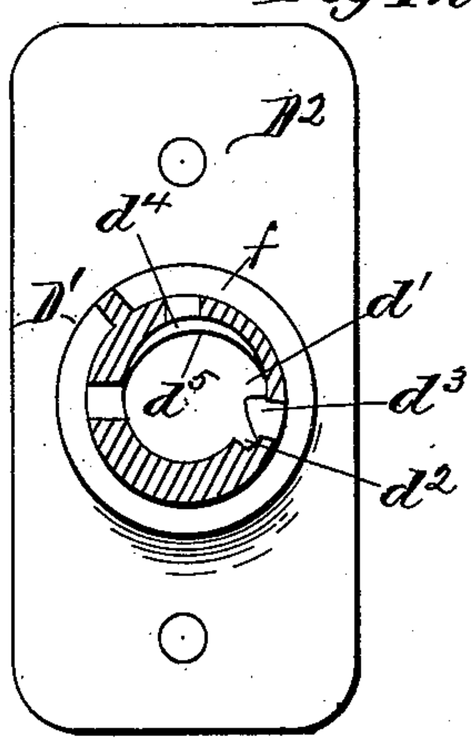
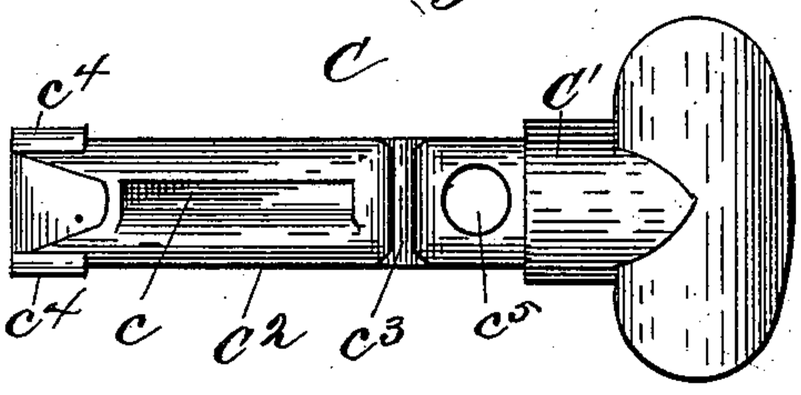


Fig 13



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UNITED STATES PATENT OFFICE.

JOSEPH CHAPMAN, OF DUBUQUE, IOWA.

CAR LOCK AND SEAL.

SPECIFICATION forming part of Letters Patent No. 363,801, dated May 31, 1887.

Application filed September 16, 1886. Serial No. 213,737. (Model.)

To all whom it may concern:

Be it known that I, JOSEPH CHAPMAN, a citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have invented a certain new and useful Improvement in Car Locks and Seals, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of a lock embodying my invention, a portion of the car-door being also shown; Fig. 2, a vertical sectional view of the same, taken on the line *x x* of Fig. 1; Fig. 3, a horizontal sectional view taken on the line *y y* of Fig. 1; Fig. 4, a sectional view of the lock, taken on the line *z z* of Fig. 2; Fig. 5, a similar view taken on the line *u u* of Fig. 2; Fig. 6, a detail front elevation of one of the parts. Fig. 7 is a side elevation, partly in section, showing the lock open and in position to receive the seal; Fig. 8, a similar view showing the lock closed and sealed; Fig. 9, a similar view showing the lock with the seal broken and the bolt pushed back preparatory to drawing the same out; Fig. 10, a horizontal sectional view taken on the line *v v* of Fig. 7, with the bolt partially drawn out; Fig. 11, a detail rear elevation of the socket, the bolt being removed; Fig. 12, a transverse sectional view of the socket, taken on the line *w w* of Fig. 8; Fig. 13, a detail elevation of the bolt detached; and Fig. 14, a detail sectional view through the socket and bolt, taken on the line 1 1 of Fig. 2. Figs. 1 to 6 are on the same scale. Figs. 7 to 13 are on the same scale with respect to each other, but on a larger scale than Figs. 1 to 6; and Fig. 14 is on a still larger scale.

Like letters refer to like parts in all the figures of the drawings.

My invention relates to seal-locks for securely closing a door or other corresponding part—such as drawers, mail-bags, pouches, and the like—in such a manner that access cannot be had to the interior guarded thereby without destroying the seal or some other part, and thereby giving positive evidence of any tampering therewith. It is more particularly intended for application to the doors of freight-cars, and is in the nature of an improvement upon the car lock and seal patented to me September 13, 1881, No. 247,011, and June 2, 1885, No. 319,184.

In the drawings, A represents a portion of the car-door to which the lock is attached, and B the door-post to which the door is to be secured. This door-post is provided with an aperture, *b*, to receive the end of the locking-bolt, the mouth of the aperture being protected by a guard, B′, having an elongated aperture, *b′*, of suitable dimensions, for the purposes hereinafter stated. The lock proper consists of a bolt, C, and a socket, D, to receive the same, the said socket being secured to the door, and the bolt being permanently retained within the socket. The bolt is cylindrical in its general form, and consists, essentially, of a head portion, C′, and a body portion, C^2, of smaller diameter, this body portion being provided upon one side with a longitudinal groove, *c*, and upon the opposite side with two cam projections, c' c^2, arranged side by side, the one in advance of the other, and each consisting of an inclined surface terminating in an abrupt radial face, as shown in the several figures of the drawings. Some slight distance from the head the bolt is provided with transverse grooves c^3—one on each side—and the extremity of the body portion C^2 is provided with projections or lugs c^4, secured thereon, after the insertion of the bolt in the socket, in order to prevent its withdrawal. An aperture, c^5, extending entirely or partially through the bolt, may be formed near the head C′, if desired, for the purposes hereinafter stated.

The socket D consists of a cylindrical body portion, D′, and an escutcheon or face plate, D^2, by means of which latter the socket is secured to the door. In the present instance I have shown nails E driven through the door and clinched on the inside as the means which I prefer for securing the socket in place; but it is of course obvious that any other suitable means which will prevent the entire removal of the lock may be employed. On the front of the escutcheon or face plate D^2 a seat, D^3, is formed, against which the seal will rest when the lock is closed. The socket D is provided with an aperture, *d*, extending entirely through it, approximately cylindrical in shape, and of a diameter corresponding to the diameter of the bolt. Along one side, however, this ap-

erture is cut away to accommodate the cam projections c' and c^2 on the bolt, as shown at d' and d^2, a projection, d^3, extending a short distance back from the front of the socket, being arranged between the two cut-away portions d' and d^2, as shown more particularly in Figs. 5, 11, and 12. Back of the point where this projection d^3 terminates the aperture d is cut away or enlarged at the top, as shown at d^4, this enlargement extending from the rear of the socket almost to the front, where it terminates in a shoulder, d^5. A groove, d^6, is cut in the lower side of the aperture d, and extends a short distance inward, as shown in the several figures. The socket D is also provided with a series of spring-dogs projecting into its interior aperture, d. One dog, F, is arranged at the top, another, F′, at one side, and the third, F, upon the opposite side, being arranged in line with and forming a continuation of the projection d^3. These dogs are each provided with an inner extremity, beveled as shown, and are thrust normally inward by means of a suitable spring. The manner in which I prefer to apply this spring is that shown in the several figures of the drawings, in which f represents a suitable external groove surrounding the outer periphery of the cylindrical body D′ of the socket D, while f' represents a circular piece of spring-steel placed within the said groove and bearing upon the heads of the dogs, as shown more particularly in Fig. 14 of the drawings, to thrust the same normally inward, the said spring allowing the dog to yield outward, however, for the purposes hereinafter stated.

G represents the form of seal which I prefer, the said seal being preferably constructed of thin cast-iron, or some other suitable frangible material, and being provided with a central opening of a diameter corresponding to the diameter of the body portion C^2 of the bolt C. A slot, g, leads from this central aperture to the outer edge of the seal, the said slot being of such dimensions as to permit the seal to be slipped upon the bolt at that point where the grooves or slots c^3 are formed therein.

The operation of my improved seal-lock is as follows: The bolt being in the position shown in Fig. 7—that is, drawn out to its fullest extent—the seal G is slipped into position, as shown in dotted and full lines in said figure, and may then be slipped forward until it bears against the shoulder of the head C′ of the bolt. The bolt C can now be moved only in one direction, since it cannot be rotated by reason of the projection d^3 being between the cam projections c' and c^2. The bolt is thrust inward until the spring-dog F′ arrests its further inward motion by coming in contact with the front end of the groove c in the bolt. The cam projections c' and c^2 on the bolt are now in the rear of the projection d^3, and the shoulder d^5 being held in position only by the spring-dogs F′ and F^2, the former of which is engaged with the groove c, while the latter is in the space between the two cam projections. The bolt may now be given a quarter-turn to the right, the spring-dogs yielding outward to permit this motion until the several parts occupy the position shown in Figs. 1, 2, 3, 8, and 14 of the drawings. In this position the cam projection c', bearing against the straight face of the dog F, prevents any rotation of the bolt in the direction of the arrow in Fig. 14, while the same cam projection, bearing against the inner wall of the aperture d in the socket, prevents any rotation of the bolt in the opposite direction. The forward end of both of the cam projections c' and c^2 prevents any withdrawal of the bolt outward by bearing against the shoulder d^5, and the seal G, held, as shown, between the head C′ of the bolt and the seat D^3, prevents the bolt from being driven inward. It will be seen that when in this position the bolt cannot be moved in any direction whatever without first breaking the seal. During the inward motion of the bolt, however, its end is projected into the recess or aperture b in the door-post B, and will prevent the door from being opened, since in case the door is a sliding door it must be moved in the direction of the arrow in Figs. 1 and 3 in order to open it—a movement prevented by the projecting end of the bolt in an obvious manner. In case the door is a swinging door, hinged at the top, bottom, or side, as is the case in certain classes of cars, the plate B′ will be necessary in order to prevent the opening of the door. When this plate is employed, the bolt C is enabled to pass through the aperture b' therein while being thrust inward, owing to the fact that the lugs c^4 thereon are at the top and bottom when the bolt is being thrust inward. The quarter-turn given to the bolt brings these lugs into the position shown more particularly in Fig. 3 of the drawings, so that the door cannot be opened by reason of these lugs catching against the rear surface of the plate B′, owing to the fact that the aperture b therein is narrowed transversely to a less diameter than the total diameter of the bolt and lugs, as clearly shown in said figure. I prefer to employ the plate B′ whether the door be a hinged or a sliding door; but it is of course obvious that it may be omitted in this latter case.

When the car has arrived at its destination and it is desired to open the same, it is only necessary to press or drive the bolt forcibly inward, thereby breaking the seal, when the parts will assume the position shown in Fig. 9 of the drawings. When in this position, the cam projections c' and c^2 are in the rear and clear of the dog F, and the bolt may be readily given a quarter-turn in the direction of the arrow, as shown in Fig. 14. When in this position, the bolt may be drawn out clear of the aperture b and guard-plate B′ into the position shown in Fig. 10 of the drawings, the outward movement being continuous until the dog F′ comes in contact with the rear end wall of the groove c, and thereby prevents further with-

drawal of the bolt. This position of the parts is shown in Fig. 7. A groove, d^6, accommodates the under one of the lugs c^4 on the end of the bolt, while the cut-away portion d^4 at the top of the socket accommodates the upper lug c^4. It is obvious that when the bolt is thus drawn out the door may be readily opened, while it may be as readily closed and sealed by applying another seal and repeating the series of operations first described.

I have also shown in the drawings a construction by means of which my improved seal-lock may be used in conjunction with other forms of seal than that just described. For this purpose I employ a locking-pin, H, which passes through suitable lugs, $h\,h'$, on the escutcheon-plate D^2, and may be inserted through the aperture c^5 in the bolt C when this latter is in proper position to receive the same. Below the top lug, h, the locking-pin H is provided with an aperture, h^2, through which a fastening-wire, provided with an ordinary lead seal, may be passed, in order to prevent the withdrawal of the locking-pin, and consequently of the bolt, without the destruction of the seal. A slot, h^3, is also provided in the locking-pin, to receive a seal consisting of a strip of sheet metal—such as tin—this being also a well-known form of seal in common use. Above the locking-pin is arranged a projecting lug, H′, which permits the lifting of the said locking-pin sufficient to clear the bolt, but prevents its entire withdrawal from the device. This lug is shown in the present instance as consisting of a head provided with one or more nail-like projections, H^2, which may be driven through the door and clinched on the inner side, thus securing the lock to the door, and preventing its removal while the latter is closed. It is obvious, however, that the escutcheon-plate D^2 may be extended upward a sufficient distance and the lug H′ attached thereto or cast in one piece therewith.

It will be seen that with the construction which I have devised I produce a seal-lock which is effective in its operation and convenient in use, the parts being so connected that none of them can become detached from the lock, it being impossible to remove the bolt from the socket or detach the locking-pin in case this latter be employed. It is obvious that various portions of the mechanism may be omitted without departing from the principle of my invention. For instance, the essential portions thereof may be regarded as consisting of the headed bolt adapted to receive the seal, as described, and provided with the cam projection c' and the socket provided with the shoulder d^5 and spring-dog F, since these parts alone serve to lock and seal the device. The spring-dog F′ serves to prevent any movement of the bolt too far in either direction—that is to say, it prevents the entire withdrawal of the bolt—and it also indicates when the bolt is in position to be turned to lock the same after receiving the seal. The spring-dog F^2 and projection d^3 serve to prevent rotation of the bolt too far in the opposite direction after unlocking, and also to guide the same during several of its various movements. The lugs c^4 serve, in addition to their other functions, hereinbefore described, as additional safeguards to prevent the withdrawal of the bolt from the socket in case the spring-dog F′ should fail to operate from any cause. Still it is, as has just been stated, obvious that these parts may be dispensed with, and it is also clear that various modifications in the details of construction may be made without departing from the principle of my invention, and I therefore do not wish to be understood as limiting myself to the precise details of construction hereinbefore described, and shown in the drawings.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a seal-lock, the combination, with the socket provided with the internal shoulder and spring-dog arranged in the rear of the same, of the locking-bolt provided with a suitable seal, and having a cam projection, said locking-bolt being arranged permanently within said socket and capable of a limited longitudinal motion therein, substantially as and for the purposes specified.

2. In a seal-lock, the combination, with the socket provided with the internal shoulder and spring-dog arranged in the rear of the same and a second spring-dog, of the locking-bolt provided with a suitable seal, and having a cam projection and a groove extending along a portion of its length, in which said second spring-dog engages, substantially as and for the purposes specified.

3. In a seal-lock, the combination, with the socket provided with the internal shoulder, d^5, and the spring dogs F, F′, and F^2, of the locking-bolt provided with a suitable seal, and having the cam projections $c'\,c^2$ and groove c, substantially as and for the purposes specified.

4. The combination, with the socket provided with the internal shoulder, d^5, grooves d' and d^2, with intermediate projection, d^3, and the spring-dogs F, F′, and F^2, of the locking-bolt provided with a suitable seal, and having groove c and cam projections $c'\,c^2$, substantially as and for the purposes specified.

5. In a seal-lock of the character described, the combination, with the bolt consisting of a head and body portion, the latter provided with transverse grooves c^3, of the seal having a central aperture of the diameter of the body portion and a slot, d, to permit the seal to be slipped upon the bolt by means of the grooves c^3, substantially as and for the purposes specified.

6. The combination, with the locking-bolt having groove and cam projections, as described, of the socket provided with an external groove, the dogs extending into the body of the socket through the groove, and the circu-

lar spring *f'*, arranged in said groove to bear upon the dogs, substantially as and for the purposes specified.

7. In a seal-lock, the combination, with the socket and locking-bolt, the latter provided with aperture c^5, of the locking-pin H, passing through lugs *h h'*, formed upon the escutcheon-plate, and the lug H', located above the same to prevent the removal of said locking-pin, substantially as and for the purposes specified.

JOSEPH CHAPMAN.

Witnesses:
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JOE E. BROWN.