(No Model.) 3 Sheets—Sheet 1.

T. W. HEERMANS.

GUIDE LUBRICATOR.

No. 467,168. Patented Jan. 19, 1892.

Fig. 2.

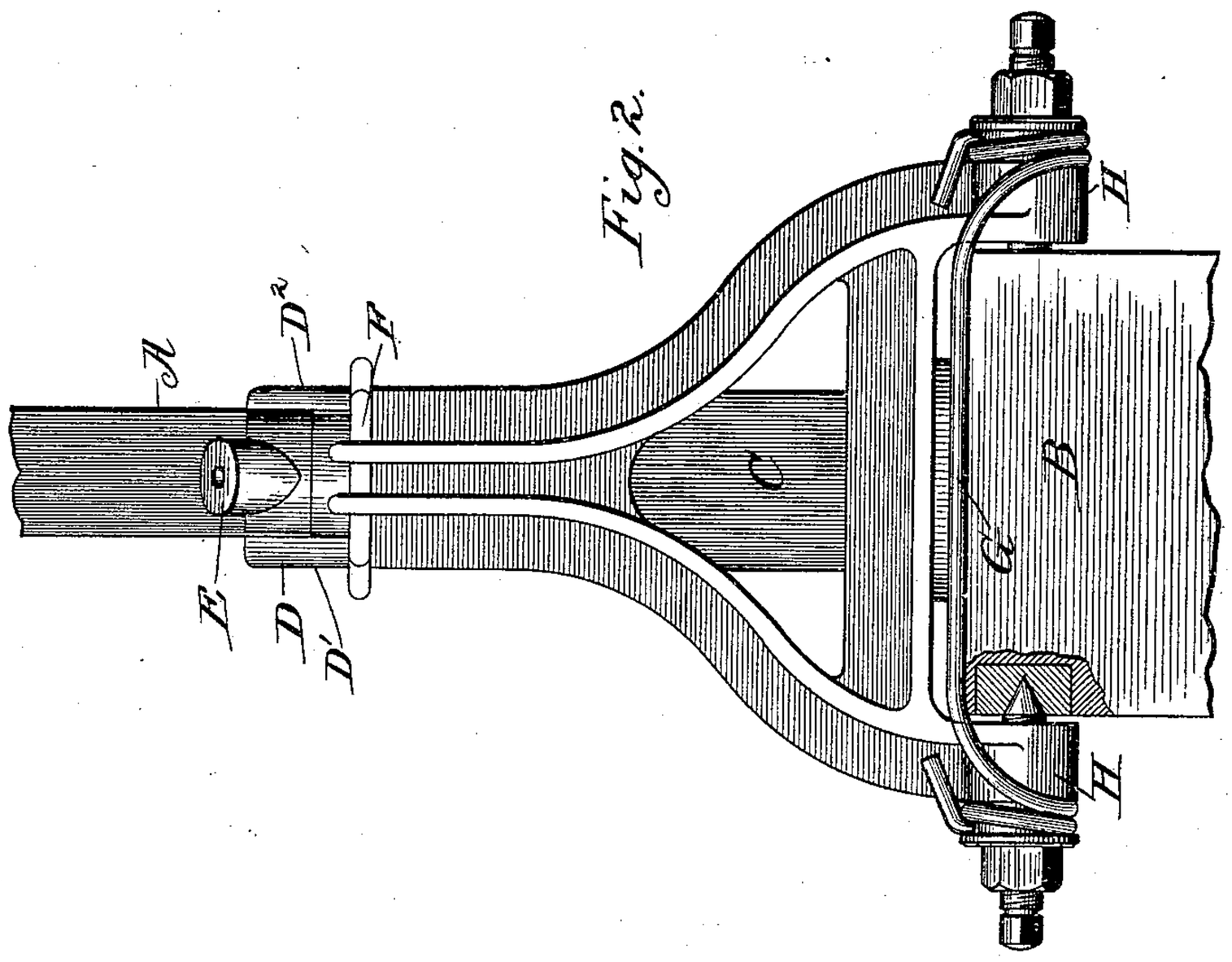
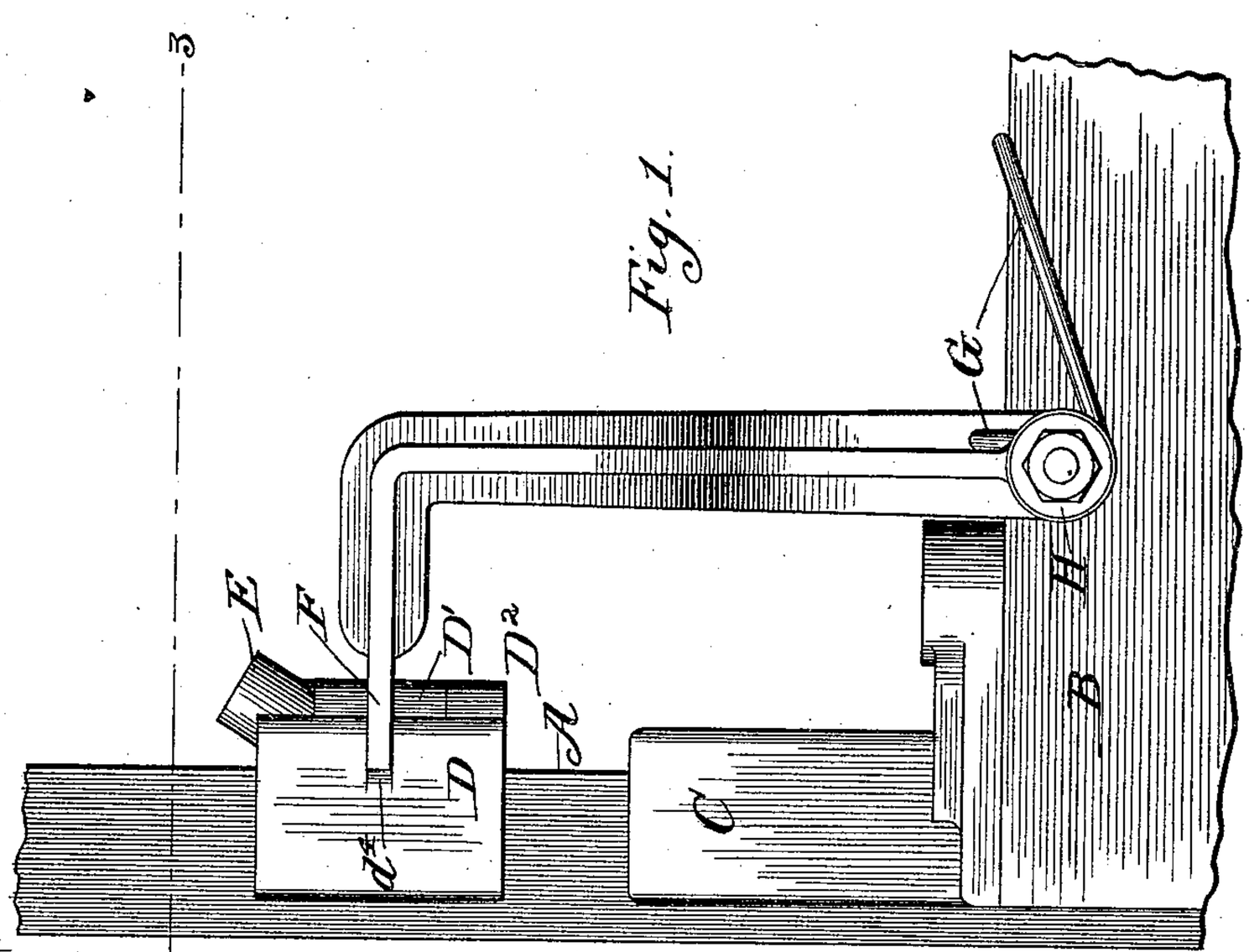


Fig. 1.



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his Atty's

(No Model.) 3 Sheets—Sheet 2.

T. W. HEERMANS.

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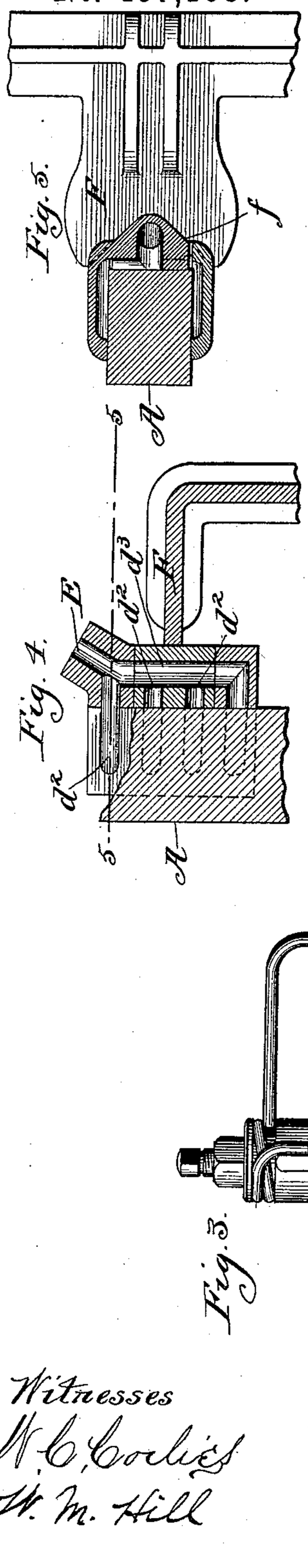

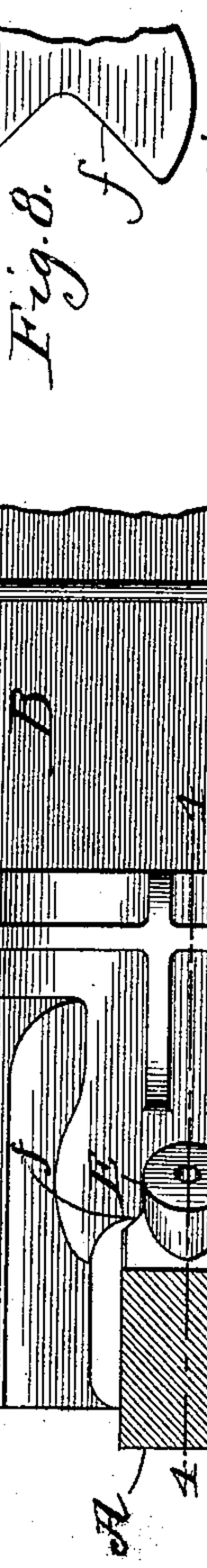

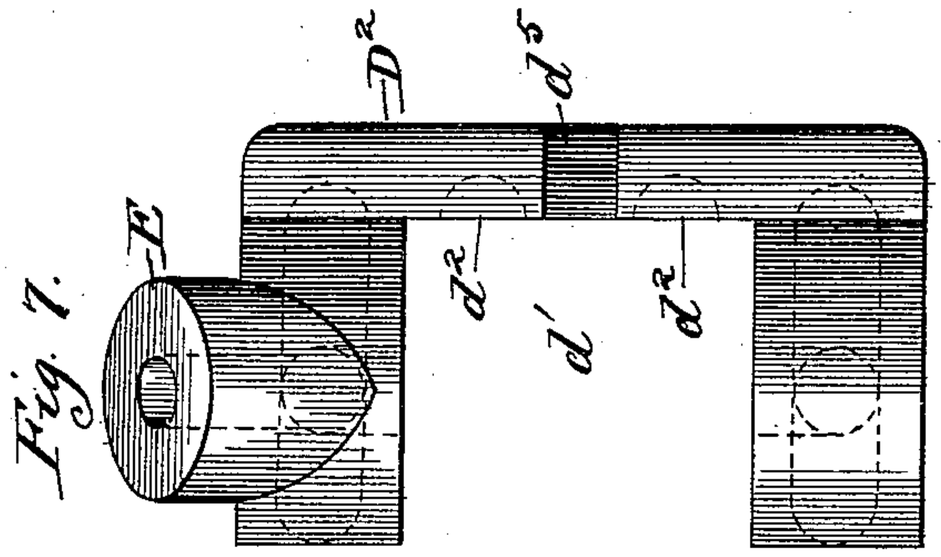

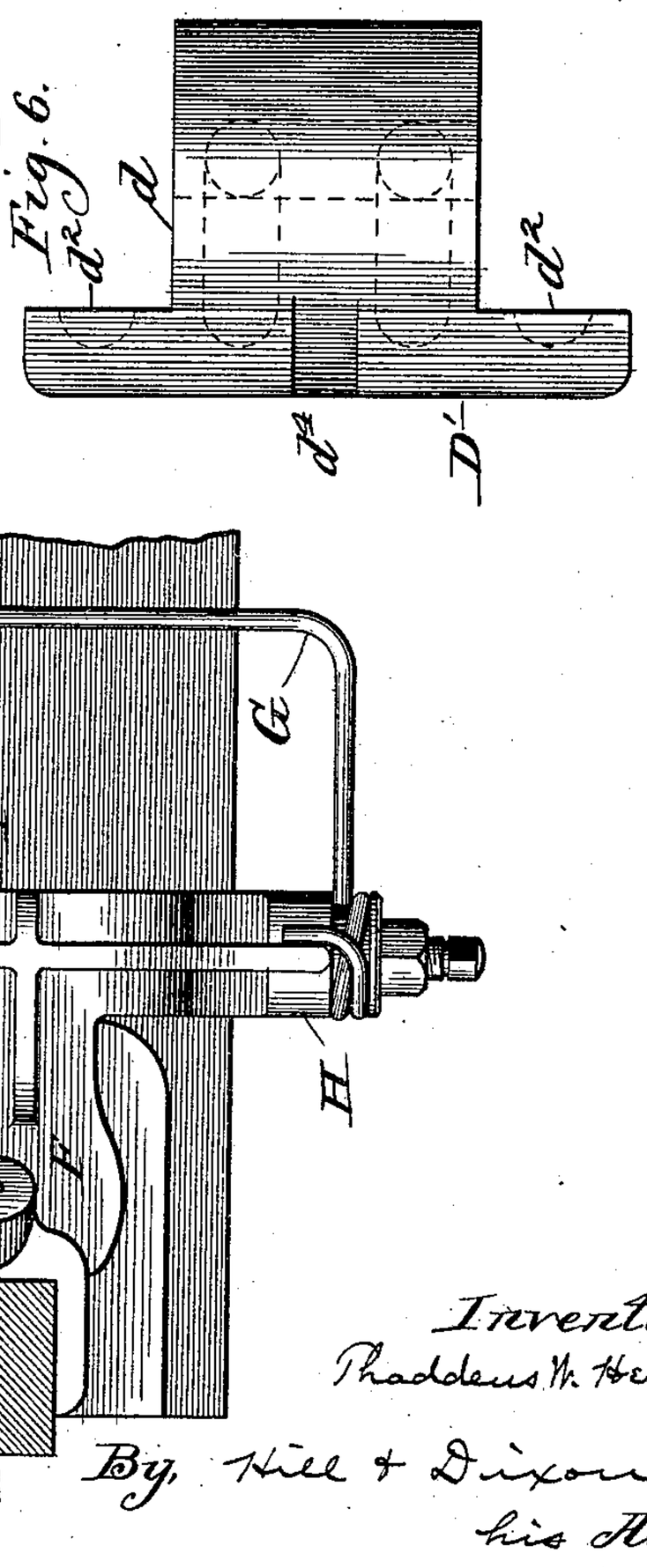

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(No Model.) 3 Sheets—Sheet 3.

T. W. HEERMANS.

GUIDE LUBRICATOR.

No. 467,168. Patented Jan. 19, 1892.

Fig. 9.

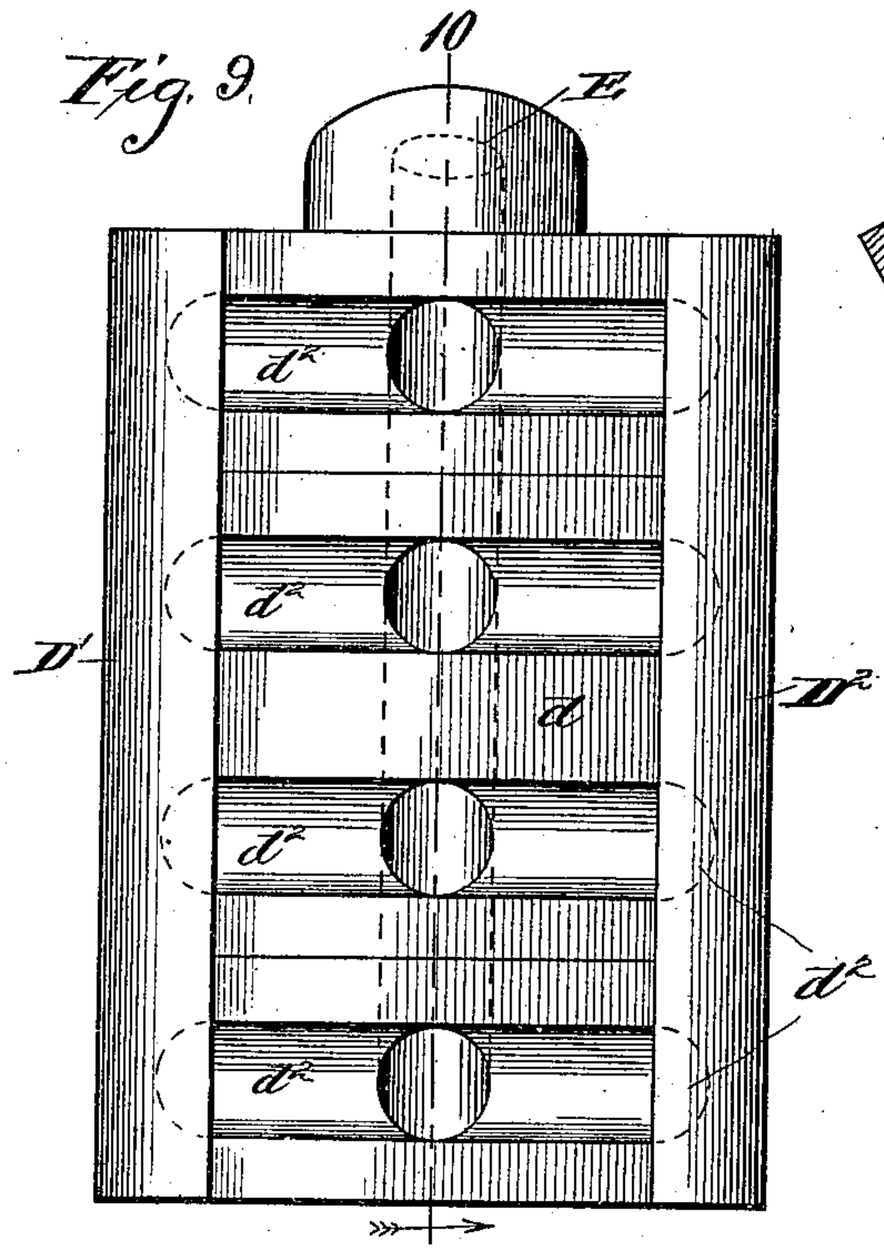


Fig. 10.

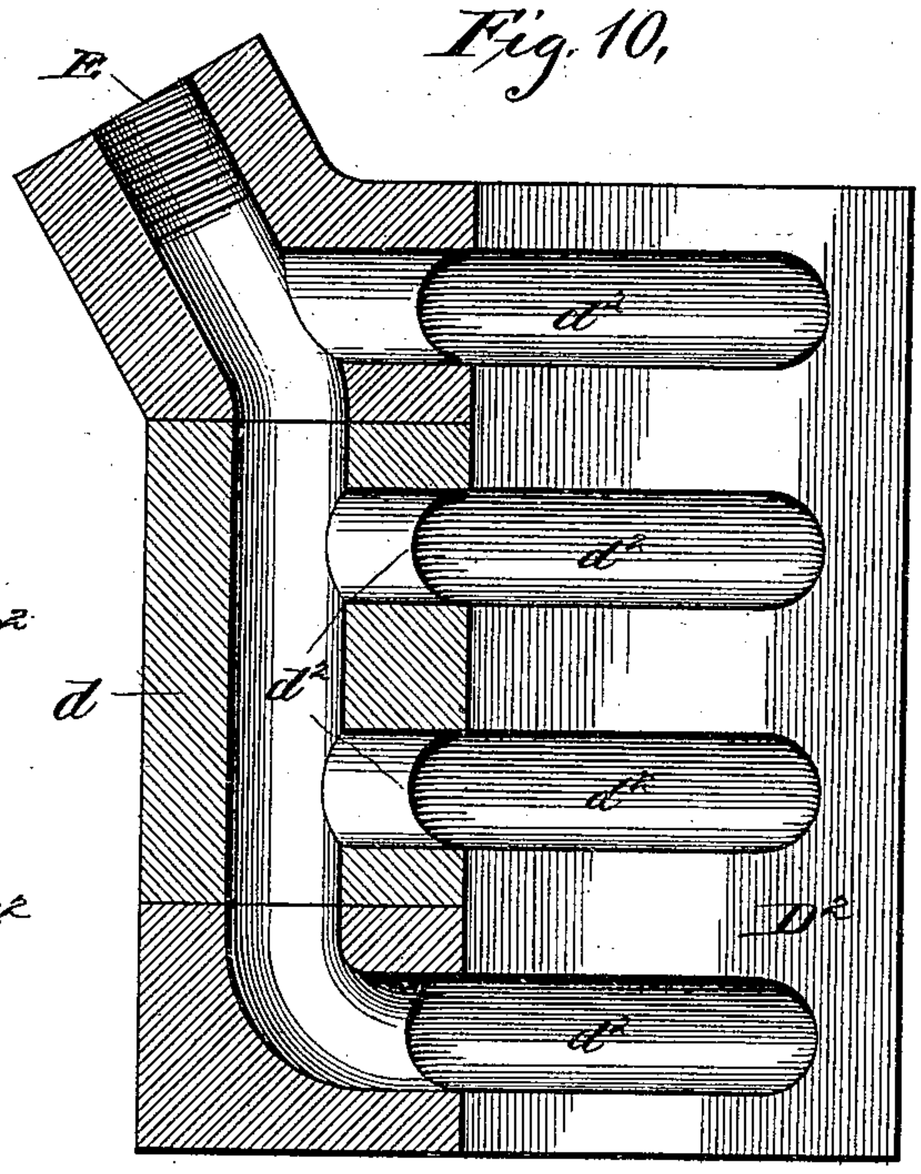
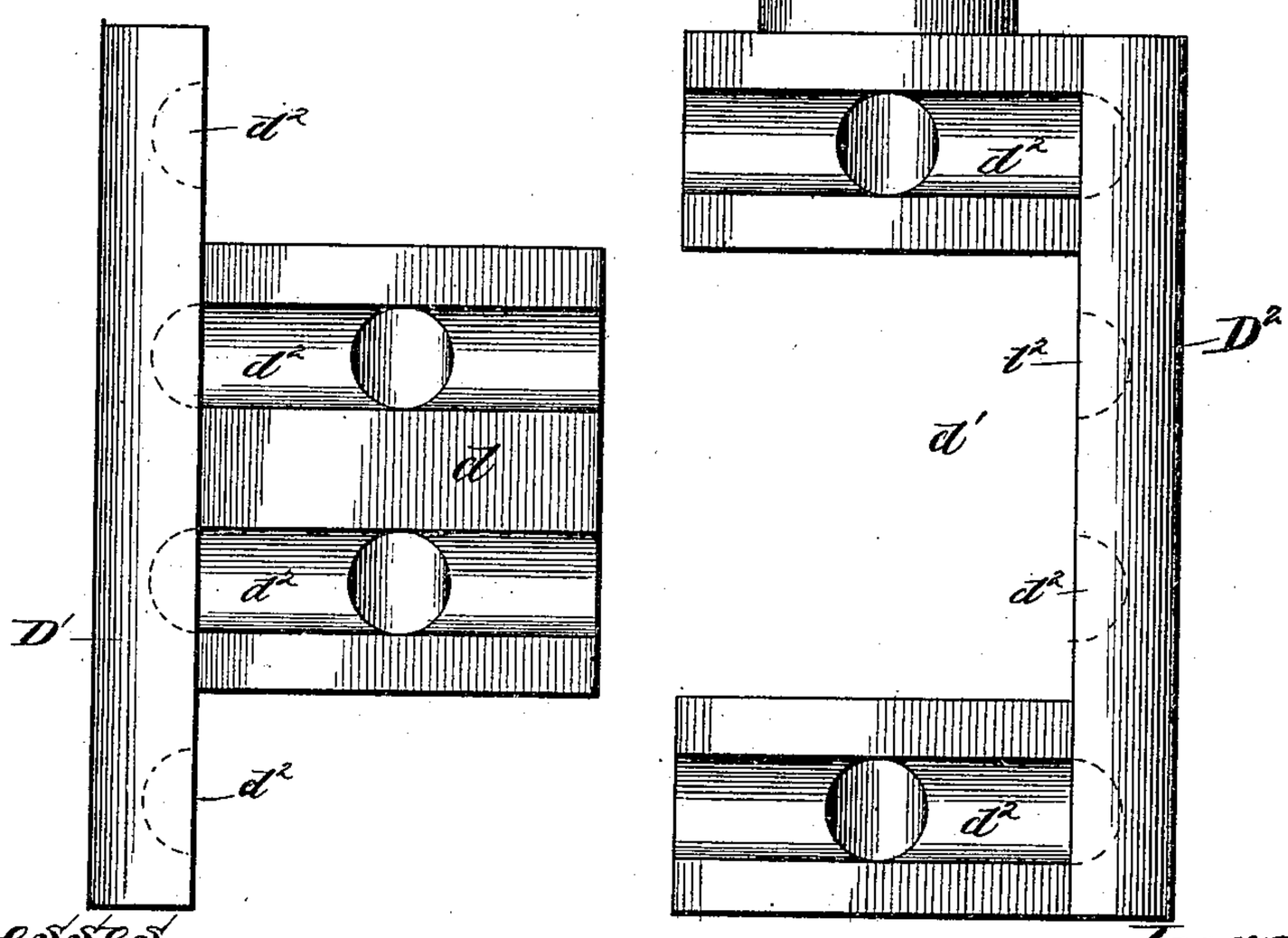


Fig. 11.



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UNITED STATES PATENT OFFICE.

THADDEUS W. HEERMANS, OF CHICAGO, ILLINOIS.

GUIDE-LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 467,168, dated January 19, 1892.

Application filed November 28, 1890. Serial No. 372,788. (No model.)

To all whom it may concern:

Be it known that I, THADDEUS W. HEERMANS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Guide-Lubricators, of which the following is a specification.

Referring to the accompanying drawings, wherein like reference-letters indicate like parts, Figure 1 is a side elevation; Fig. 2, a rear elevation and partial section; Fig. 3, a top plan; Fig. 4, a partial vertical section in line 4 4 of Fig. 3; Fig. 5, a horizontal section in line 5 5 of Fig. 4; Fig. 6, a rear elevation of one of the cup-segments; Fig. 7, a rear elevation of the other cup-segment; Fig. 8, a plan of the cup-holder; Fig. 9, a front elevation of the cup; Fig. 10, a vertical section in line 10 10 of Fig. 9, and Fig. 11 a front elevation showing the two parts of the cup-separators.

It is common in mechanics to fit a reciprocating part to a guide bar, rod, or grooved plate to compel such part to travel in a right line without lateral oscillation. When the friction upon the guide is considerable, the surfaces must be kept properly lubricated. It is often inconvenient and laborious to do this by hand, and where the range of reciprocating movement is considerable—as, for example, in the cross-heads and "valve motion" of steam-engines and the guides of freight and passenger elevators and similar structures—a stationary lubricator is not effective for the purpose, and a traveling lubricator must be and commonly is used, mounted upon and traveling with the reciprocating part and adapted to convey and apply the lubricant directly to the entire surface to be lubricated. Where the guide is in the form of a bar or rib projecting from a flat surface and fitting into a corresponding groove in the reciprocating part, so that three faces of the bar are exposed and liable to friction, the lubricating device must of course be adapted to apply the lubricant to the three exposed faces, and hence must itself be grooved to fit the guide-bar and convey the lubricant properly to the entire surfaces to be oiled or greased, and accordingly this is the common form employed in marine engines, where a vertical guide-bar and a bifurcated grease cup or "slipper," as it is sometimes termed, fitting the three exposed surfaces of the bar, are relied upon to do the work. My invention is an improvement upon this old form of guide-lubricator.

The main invention of my improvement consists, essentially, in constructing the cup or slipper in several parts, instead of in one integral structure, as heretofore, making these parts severally adjustable to the surface of the guide-bar independently of each other, and providing means for automatically adjusting and holding each of them against the surface of the guide with a yielding force, whereby at all times the cup will closely hug the three exposed surfaces of the guide-bar without danger of binding or sticking in case the latter should be out of true or not uniform in its dimensions.

Further improvements consist in the means for supporting and applying the cup and in the several mechanical combinations involved in the structure, as will be more particularly indicated by the claims hereto appended.

In the drawings, A indicates a vertical guide-bar having its front and lateral faces exposed, and B indicates the reciprocating element, whatever its form or name may be, that is to be guided by said bar. In heavy structures moving with great force there should be a solid shoe C, grooved to loosely fit the guide-bar and attached to the moving part B to guide its movements, and my improved lubricator should be made separate from said shoe, because in such cases its yielding walls are not adapted to resist lateral deflection with sufficient force to enable them to answer the purpose of guide-shoes. In light structures the shoes C may be dispensed with and my improved lubricating-cups substituted, in which case they will answer both as lubricators and guide-shoes. The construction first referred to is shown in the drawings, and this I will now describe. The grease-cup is shown at D. In its simplest form it consists of two parts D' D^2, united together by a projection *d*, formed upon the part D' and extending into a suitable recess *d'*, formed in the back of the part D^2, so that the two parts can be moved laterally to a limited extent independently of each other without becoming disconnected and so that the

projection of the one working in the recess of the other will hold both in the proper position or relation during such movement. The part D^2 fits the front and one lateral face of the guide-bar. The part D′ fits the other lateral face of said bar, so that the two parts embrace the three exposed faces thereof. Horizontal grooves d^2 are formed in the inner walls of the two-part cup D, communicating through a feed-passage d^3 with a suitable reservoir E for the lubricant. Liquid lubricants may of course be used; but I prefer solid grease, and therefore preferably employ a well-known form of solid-grease lubricator having a piston and spring to force the feed of the grease.

For the purpose of causing the two-part cup D to hug the three exposed surfaces of the guide-bar simultaneously with a yielding force, and thus rendering its two parts self-adjusting to said surfaces, the simplest and best means known to me consist in a combination of spring force with cam action, substantially as follows: I provide a suitably-mounted pressing device F, having a V-shaped recess f in its end, as shown in Fig. 8, and adapted by the action of a spring G, of any suitable form, to press the cup D against the front face of the guide-bar. On the rear side of the part D′, I form one or more inclines d^4, and on the back of the part D^2 one or more similar inclines d^5, so that the V-shaped front end of the device F will press against them under the action of the spring G, and thus by the cam action of the impinging surfaces move the two parts D′ D^2 laterally toward each other with a yielding force proportionate to the force of the spring G. Thus arranged the force of the single spring G presses the cup D against the front face of the guide-bar, and at the same time causes its two sides to hug the lateral faces of said bar, and the cup will therefore automatically adjust itself to the three exposed faces of the bar and apply the lubricant properly to all of them, while readily yielding to any inequalities of surface or irregularities of alignment. The pressing device F may also be employed to support the cup D and move it up and down on the guide-bar. To this end I construct it in the form of a curved or right-angled arm or yoke, as shown, pivoted to the reciprocating element B at the point marked H, and having the spring G arranged to press against its rear side—for example, in the manner indicated in Fig. 1. Then by causing the V-shaped upper end of the arm or yoke F to fit into a horizontal groove or gain in the back of the cup D, as shown, or a projection of cup D to fit into a slot in plate F, it will both support the cup and adjust it against the guide-bar.

It is of course obvious without illustration that the curved and pivoted portion of the element F may be dispensed with and the spring G substituted therefor by suitably anchoring the spring to the structure B, extending it upward toward the cup and attaching its upper end to a V-shaped plate adapted to enter the groove in the back of the cup.

It is only for convenience and cheapness of construction that the cup D is made in two parts instead of three, as it is obvious that a back plate may be employed with two separate side plates each connected to the back plate in the same way that the plate D′ is here connected to the plate D^2, the two side plates being provided with the respective inclines d^4 d^5, and the whole operating substantially as herein described.

The adjustable cup here shown rides easily upon the guide-bar; is very economical of the lubricant; is admirably adapted to the use of solid grease, which is much superior to any other for this purpose, and is readily applied and removed. The parts of the cup are held together and held to the supporting device merely by interlocking contact without other mechanical fastenings, and it is therefore only the work of an instant to effect its attachment or detachment without the use of tools.

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

1. In a guide-lubricator, a lubricating-cup made in separate segments held together and laterally and automatically adjustable to the sides of the guide-bar independently of each other, substantially as described.

2. In a guide-lubricator, a lubricating-cup made in separate segments held together and adjustably connected by means of projections, of one segment sliding in corresponding holes or recesses of another segment, whereby the sides of the cup are independently adjustable to the sides of the guide-bar and guide each other in their adjusting movement, substantially as described.

3. In a guide-lubricator, the combination of a lubricating-cup made in separate segments held together and adjustable to the surfaces of the guide-bar independently of each other, with mechanism for simultaneously pressing the separate segments with a yielding force against said surfaces, substantially as described.

4. In a guide-lubricator, the combination of a lubricating-cup made in separate segments held together and adjustable to the surfaces of the guide-bar independently of each other, with a spring-actuated cam-plate to yieldingly hold said segments against said surfaces, substantially as described.

5. In a guide-lubricator, the combination of the lubricating-cup, with a supporting spring-arm, one of said parts having a projection fitting in a recess or groove in the other, whereby the locking of the parts effects the support and movement of the cup, and the spring-pressure of the arm prevents acci-

dental unlocking and holds the cup to the work, substantially as described.

6. The combination of the fixed guide-bar A and movable element B, with a two-part lubricating-cup, a spring-arm pivotally connected direct to the said moving element B, and constructed to support and press both parts of the cup against the guide-bars, substantially as described.

7. In a guide-lubricator cup, the combination of back and side segments independently adjustable, having horizontal communicating grooves on their inner faces connected by a passage through the back segment to a lubricant-reservoir mounted on the cup, substantially as described.

THADDEUS W. HEERMANS.

Witnesses:
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L. HILL.