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PATENTED AUG. 7, 1906.

E. C. GRAHAM.

RECORDING ATTACHMENT FOR LIQUID DISPENSING APPARATUS.

APPLICATION FILED JUNE 13, 1905.

2 SHEETS—SHEET 1.

Fig. 1

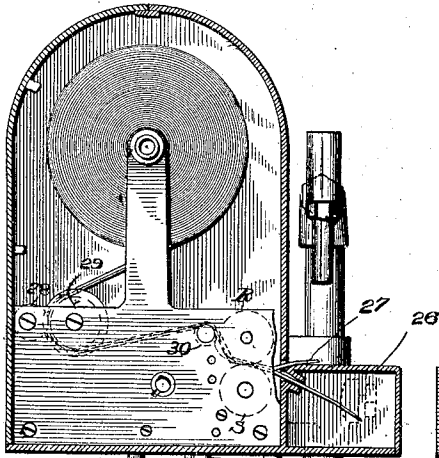


Fig. 2

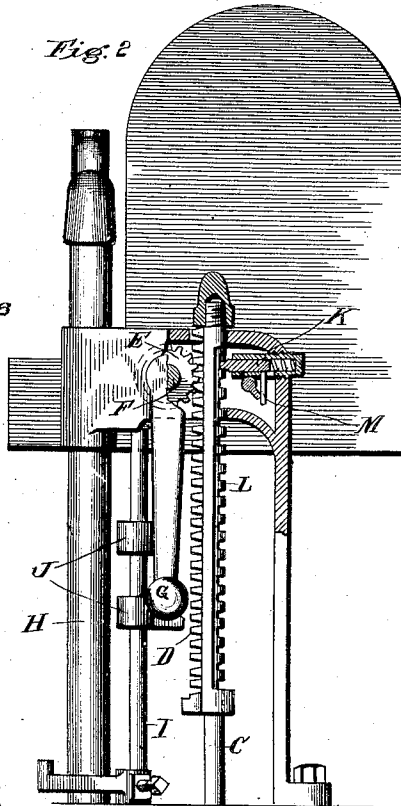


Fig. 5.

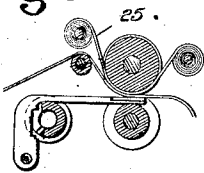


Fig. 4

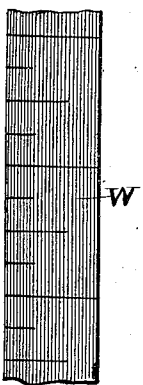
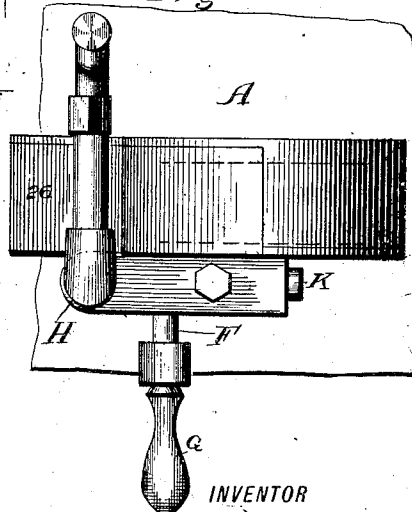


Fig. 3



WITNESSES:

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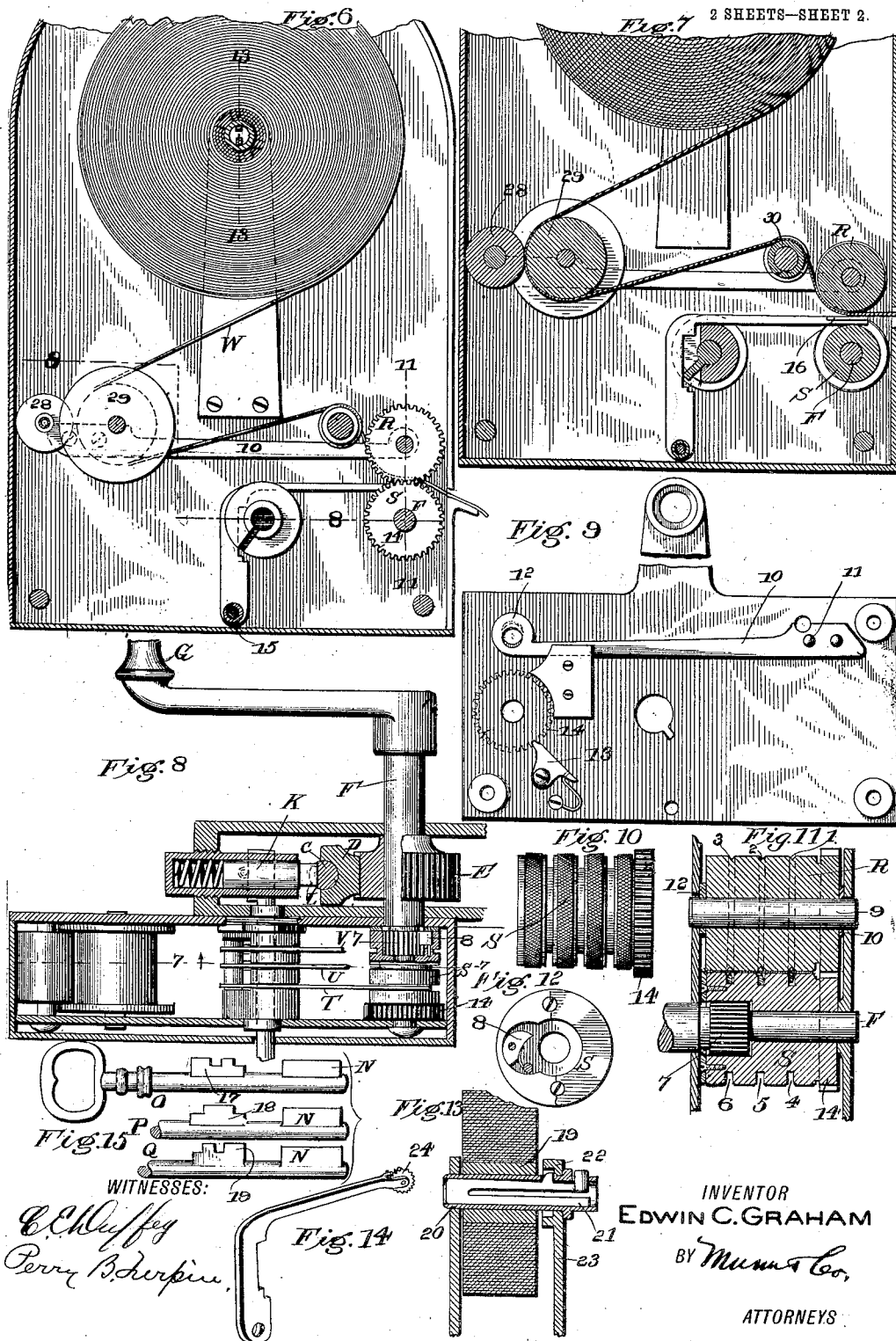
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

EDWIN C. GRAHAM, OF WASHINGTON, DISTRICT OF COLUMBIA.

RECORDING ATTACHMENT FOR LIQUID-DISPENSING APPARATUS.

No. 827,798.

Specification of Letter's Patent.

Patented Aug. 7, 1906.

Application filed June 13, 1905. Serial No. 285,050.

To all whom it may concern:

Be it known that I, EDWIN C. GRAHAM, a citizen of the United States, and a resident of Washington, in the District of Columbia, have made certain new and useful Improvements in Recording Attachments for Liquid-Dispensing Apparatus, of which the following is a specification.

This invention is an improvement in recording mechanism, and has for an object to provide a novel recording mechanism and a recording mechanism by which to indicate the amount of liquid dispensed and the person dispensing the liquid from a dispensing apparatus; and the invention consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation, partly in section, of an apparatus embodying my invention. Fig. 2 is an elevation, partly in section and partly broken away, from the opposite side of the apparatus from that shown in Fig. 1. Fig. 3 is a partial top plan view of the apparatus. Fig. 4 is a detail view of a portion of a record-strip calibrated, as shown. Fig. 5 is a detail sectional view illustrating the use of a carbon in carrying out the recording operation. Fig. 6 is a detail sectional view on about line 6 6 of Fig. 8. Fig. 7 is a detail section on about line 7 7 of Fig. 8. Fig. 8 is a horizontal section on about line 8 8 of Fig. 6. Fig. 9 is a detail elevation, partly broken away, of one of the side plates of the frame for the recording mechanism. Fig. 10 is a detail side elevation of the lower feed roller or drum of the recording mechanism. Fig. 11 is a detail vertical section on about line 11 11 of Fig. 6, showing the feed-rollers of the recording mechanism. Fig. 12 is an end elevation, partly broken away, of the lower feed-roller. Fig. 13 is a detail section on about line 13 13 of Fig. 6. Fig. 14 is a detail perspective view showing a recording-bar provided with a perforating-wheel. Fig. 15 illustrates in detail a set of three keys.

By my invention I seek to provide in connection with a pump a means for recording the amount of liquid pumped thereby and to so construct the recording mechanism that it will indicate the person pumping such liquid, and I also arrange the recording mechanism for operation in connection with the pump and provide a lock for restraining the operation of the pump, which also operates to re-

strain the operation of the recording mechanism and provide the recording mechanism with movable parts which are operated by suitable insertible and removable devices in the form of keys to set the independent removable parts individually into position to effect the recording operation.

In the embodiment of my invention illustrated in the accompanying drawings I have shown my invention in connection with a tank A, a pump having a cylinder B, and a piston-rod C, provided with a rack D, meshed with a wheel E on a crank-shaft F, having a handle G, so that the shaft F may be turned first in one direction and then in the other to effect a reciprocal operation of the piston-rod C and to discharge by the pumping operation the contents of the tank A through the outlet-pipe H. These devices A to H, inclusive, broadly speaking, and so far as described in the foregoing, are not of my invention nor is the rocking gage I, having the stop parts J, as illustrated in Fig. 1, and my invention is shown in connection with this particular form of pump for purposes of illustration, and it should be understood that my invention may be applied to various other forms and constructions of pump without departing from its broad principles, as the specific construction of the pump forms no part of the present invention.

In connection with the pump I provide a lock for restraining the operation of the pump. This lock is shown as comprising a bolt K, spring-actuated into engagement with a rack on the piston-rod C, which rack L is, preferably separate from and on the opposite side from the rack D. This is simply preferred for convenience in assembling and combining the several parts of the apparatus. The bolt K is provided with a projecting lug or portion M, which is arranged for engagement by a bit N on the keys O, P, or Q, as shown in Fig. 15 and more fully described hereinafter. The bits N of the several keys may be alike, as they all operate similarly in unlocking the bolt K or freeing it from engagement with the piston-rod C.

The recording mechanism includes a drum R, suitably driven and arranged to feed the paper in connection with an opposing device S and a series of marking-bars T, U, and V, which are movably supported and may be pressed individually toward the drum R such manner as to effect the marking upon the ribbon W, passed between the said drum

and the marking-bars. As shown in Figs. 1, 6, 7, and 11, the marking is preferably effected by forming a longitudinal crease in the ribbon W, and, as shown in Fig. 11, to facilitate this operation the drum R is grooved circumferentially at 1, 2, and 3, corresponding to the bars T, U, and V, so that when the said bars are pressed by the operation presently described toward the drum R they will operate to press the ribbon into the grooves 1, 2, or 3, and so crease the ribbon longitudinally as it is fed through the recording mechanism, this feeding of the ribbon being preferably effected by the passing of same between the drum R and the opposing device S, which is also in the form of a drum, is grooved circumferentially at 4, 5, and 6 in line with the grooves 1, 2, and 3 of the drum R, is geared with the said drum R, as shown in Figs. 6 and 11, and is driven from the shaft F, as shown in Figs. 8 and 11. As shown, the drum S fits over the shaft F and is clutched thereto by means of the ratchet 7 on the shaft F and the pawl 8, supported in the drum S, as will be understood from Figs. 11 and 12, so that during the return movement of the shaft F in lowering the piston-rod C the recording mechanism will not be disturbed or operated. While I have shown the shaft F as concentric with and arranged to directly drive the drum S, it will be manifest that where desired the drum S may be driven from the shaft F in other ways, and it may be desirable in some instances to employ reducing-gear between the shaft F and the drum S in the well-known manner. In securing the desired pressure or tension of the drums R and S toward each other I prefer to support the shaft of the drum R in one end of spring-bars 10, (see Figs. 9 and 11,) the opposite ends of said bars 10 being secured to the casing at 11, so that their free ends 12 will operate to press the roller R toward the roller S, as desired. To prevent any accidental movement of the recording mechanism, I prefer to employ a pawl 13, (see Fig. 9,) arranged to engage the gear 14 (see Fig. 11) of the lower drum S and adapted to permit the turning of the drum S under the force exerted by the shaft F and at the same time prevent any accidental movement of the drum, as will be understood from the drawings.

The recording-bars T, U, and V are movable independently and are operated by the keys O, P, and Q, as will be more fully described, but cause them to move toward the drum R in order to effect the recording operation upon the paper ribbon in the use of the invention. As shown, the recording-bars are preferably I shape, having the upright arms pivoted at their lower ends at 15, and the forwardly-extending arms, which project from the upper ends of the upright arms and are arranged to be moved with the drum R in the operation of setting the recording mechanism.

By setting the recording mechanism I intend to be understood as meaning the adjustment of the parts of the recording mechanism to such position that when the recording mechanism is operated the record will be effected. Thus it will be understood that in the position of parts shown in Fig. 7 the recording-bars rest in the grooves 4, 5, or 6 of the lower drum, and if the ribbon were fed between the drum R and the recording-bar no marking would be effected thereon. If, however, the key shown in Fig. 7 as inserted be turned it will rock the recording-bar shown in said Fig. 7 from the full-line position to the dotted-line position indicated in such figure, thus moving the free end of the bar, which may preferably be tapered at 16 to conform to the grooves of the drum R, up to press the ribbon into its corresponding groove, and so operate to crease the ribbon longitudinally so long as it is fed through the recording mechanism and the recording-bar remains in its raised position.

It will be noticed that the recording-arms are arranged side by side and the keys, which may be inserted in suitable openings in the case are arranged to operate their respective recording-bars. Thus the key O has a bit 17 to engage and operate the recording-bar T and set the same into engagement with the ribbon, the key P has a bit 18 to engage and operate the middle recording-bar U, and the key Q has a bit 19 to engage and operate the recording-bar V, the keys being cut away or notched, so they will escape engagement with the recording-bars other than that which they operate. This will be understood from Figs. 8 and 15 of the drawings. Each of these keys, it will be noticed, is provided with a bit N for unlocking the pump at K M, so that the operation of the key releases the pump and at the same time sets its respective recording-bar into position to produce the record upon the record-strip. Manifestly the number of recording-bars may be increased indefinitely; but I have thought it sufficient to show three bars and three keys, and it will be understood that in increasing the indicating capacity of the recording mechanism the number of keys will be increased to correspond with the number of recording-bars.

As shown, the ribbon W is wound upon the central sleeve 19, having a central bore receiving a tube 20, in which is fitted a latch 21, having a projecting stud 22, which may be sprung outwardly into engagement with a side plate 23, in which the sleeve 20 is fitted, as best shown in Fig. 13, the latch 21 being arranged to be compressed to free the projection 22 from engagement with the bearing 23 when it is desired to remove the sleeve 20 in order to apply or remove a ribbon-roll.

It may in some instances be desired to perforate instead of crease the paper in forming

the record, and for such purpose I may provide the marking-bars with toothed rollers, as shown at 24 in Fig. 14. Again, a carbon may be employed in effecting the record, as shown at 25 in Fig. 5.

In Fig. 1 I show the recording mechanism suitably incased to prevent interference, and I also show a receptacle 26 for the record-ribbon. In this figure I show in connection with the record-ribbon a supplemental record-ribbon 27, which is deflected after the record is effected and is discharged independently of the main record-strip and may be used by the operator as a charge-slip in charging up the amount of liquid to the customer to whom the sale has been made.

In the operation of my invention it will be understood that where several employees in an establishment sell liquid from a given receptacle separate keys may be given to such employees and may be operated by them to set their individual recording-bars into position to effect the record. The length of the record will operate in connection, preferably, with a suitable calibrated ribbon to indicate the quantity of liquid dispensed, and no difficulty will be experienced in connection with the charge and cash record of the sales to determine whether the quantity of liquid dispensed has been properly accounted for, thus preventing any of the employees of an establishment from disposing of any portion of the liquid without properly accounting for same. In effecting this result it will be noticed I not only lock the pump to restrain its operation, but I provide a recording mechanism and devices operating in connection with the recording mechanism and with the lock, so that when the pump is unlocked the same operation sets a part of the recording mechanism, so that the operation of the pump to dispense the liquid will indicate not only the extent of operation of the pump, and consequently the amount of liquid dispensed, but will also indicate who operated the pump in effecting such dispensing of the liquid, so that the pump cannot be operated without effecting the record, and as the record is effected through the operation of the pump no record can be effected without releasing the pump to permit its operation. In the passage of the ribbon W to the recording mechanism it is preferably directed between tension-rollers 28 and 29 and thence over a guide-roller 30, the latter being arranged adjacent to the upper drum R, as shown in Fig. 7.

In Fig. 15 I show the set of keys. In Fig. 7 I show one of the keys applied and ready to operate its corresponding recording-bar. In Fig. 2 I show one of the keys inserted and ready to release the bolt for locking the pump, and in Fig. 8 I show one of the keys inserted in position to operate both the pump-lock and its corresponding recording-bar.

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

1. The combination of a pump, a recording mechanism having means for longitudinally scoring a ribbon or strip, and means for operating the recording mechanism from movable parts of the pump, the length of the scoring corresponding to the extent of operation of the pump.

2. The combination of a pumping mechanism, a recording mechanism, a lock for the pump, gearing between the pump and recording mechanism whereby restraint of the pump will also operate to restrain the recording mechanism, the recording mechanism including individual devices arranged laterally to each other, and a series of keys corresponding to said laterally-disposed devices and arranged for operation to release the pump-lock and to operate their respective recording devices.

3. A pump, a recording mechanism, a lock for the pump, and means for operating the recording mechanism from the pump whereby the extent of the record will correspond to the extent of operation of the pump, the lock for the pump also operating to restrain the operation of the recording mechanism.

4. The combination of a pump, recording mechanism operating in connection with the pump whereby the extent of the record will correspond to the extent of operation of the pump, a lock for the pump, and an insertible and removable device for unlocking the pump and for setting the recording mechanism.

5. An apparatus for dispensing liquids, comprising means for discharging liquid, a lock for restraining the operation of said means, a recording mechanism operating in connection with the discharging means whereby the extent of the record will correspond to the extent of operation of said means, and a key for said lock provided with means for setting the recording mechanism.

6. The combination of the pump having a reciprocating rack, a lock for the pump, a recording mechanism having a drum geared with the rack and having a series of independently-operable devices whereby to produce records at different points on a ribbon or strip, and keys for the lock having means for operating their respective independently-operable recording devices.

7. The combination substantially as herein described, of the pump having a piston-rod provided with a rack, a bolt engaging said rack, a shaft geared with the piston-rod to operate the same, a recording mechanism having a pair of drums geared together, means whereby the pump-shaft operates one of said drums, a series of recording-bars operating in connection with one of said drums, and a series of keys each having means for

operating the bolt for releasing the pump and for setting its respective recording-bar, substantially as and for the purposes set forth.

8. A recording mechanism comprising a drum having a series of circumferential grooves, independently-movable recording-bars, movable into and out of said grooves in a direction to project their side edges into said grooves, and means whereby these bars may be independently operated.

9. The combination in a recording mechanism, of a drum, a series of L-shaped recording-bars, operating in connection with said drum and comprising upright arms pivoted at their lower ends, and arms extending from said upright arms and movable toward and from the drum in a direction to present its side edge to the drum, and keys arranged to engage the upright arms, substantially as set forth.

10. The combination in a recording mechanism, of a pair of opposing drums, one of which is grooved circumferentially for the reception of record-bars when at rest, and the other of which is grooved circumferentially to cooperate with record-bars when set into operation, record-bars passing between said rollers in line with the grooves therein, and means for setting said recording-bars, substantially as set forth.

11. In an apparatus substantially as described, the combination of a pump and a recording mechanism provided with means for forming a longitudinal record whereby to indicate the extent of the transaction recorded, and with means whereby said record may be produced at different points laterally to indicate the person effecting the record, substantially as set forth.

12. The combination of a pump having a rack-bar, a lock for the pump, a recording

mechanism geared with said rack and having a series of independent recording devices, and a series of keys having common with each other, means for operating the pump-lock and also having distinctive means for operating their respective recording devices.

13. The combination of a pump, a lock for the pump, a series of independently-movable recording devices arranged side by side and a series of rotarily-operating keys having devices for operating the pump-lock and also having devices arranged at different points longitudinally along the different keys and adapted to be rotated to operate their respective recording devices.

14. The combination of a pump, a recording mechanism operating in connection with the pump whereby to secure a correspondence between the extent of operation of the pump and the record produced, a lock, a series of keys having, common with each other, devices for operating a lock, and having independent of said lock-operating devices, distinctive means for operating the means for producing the record and a pump controlled by the said lock.

15. A lock-controlled pump, a series of keys having, common with each other, devices for operating a lock, and having independent of said lock-operating devices, distinctive devices located at different points longitudinally along the several keys for operating means for producing a record, combined with said lock and recording mechanism, the extent of operation of the latter corresponding to the extent of operation of the pump.

EDWIN C. GRAHAM.

Witnesses:

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PERRY B. TURPIN.