

No. 638,447.

Patented Dec. 5, 1899.

W. A. DODGE.
REGISTER.

(Application filed Feb. 17, 1899.)

(No Model.)

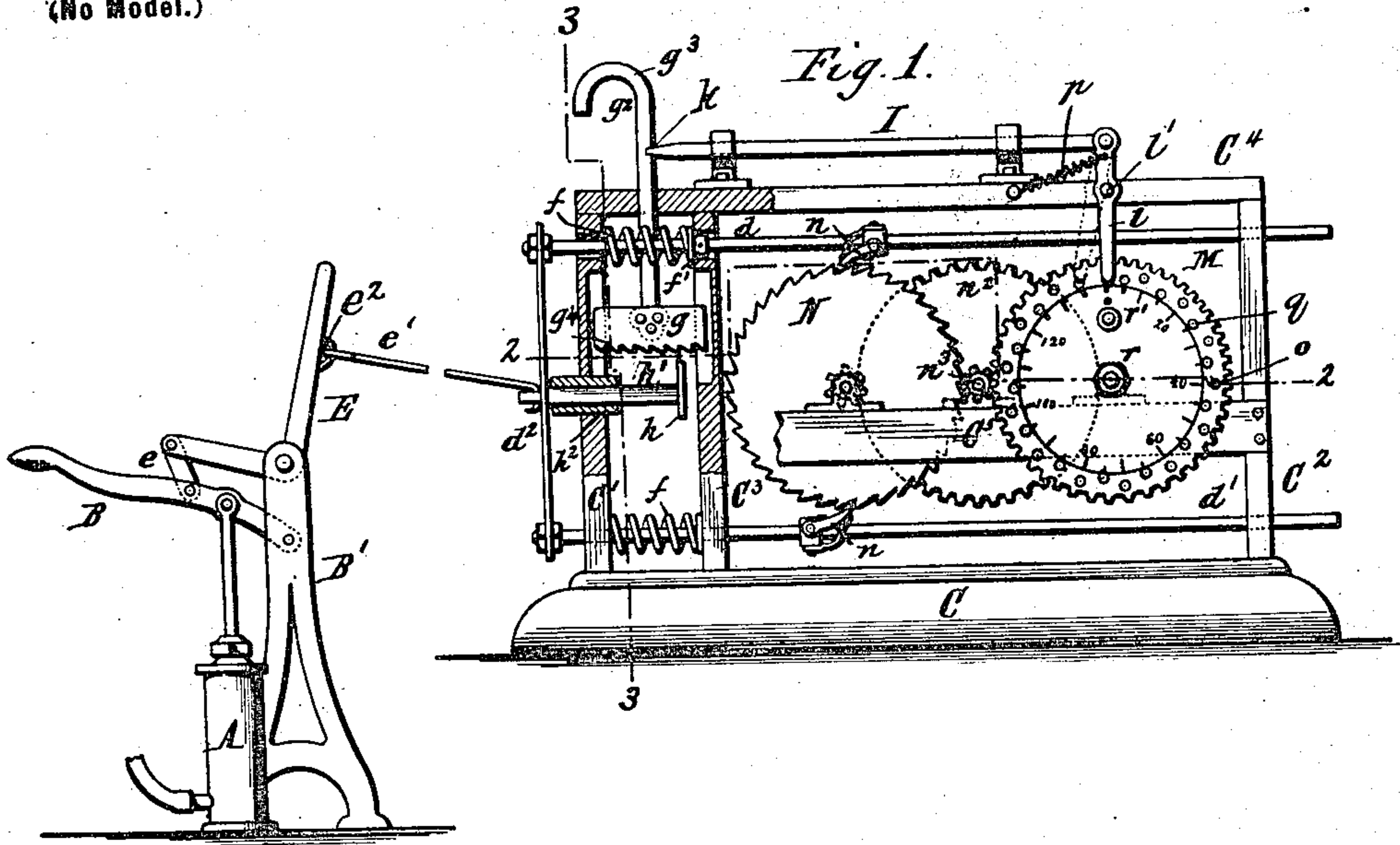


Fig. 2

Fig. 5.

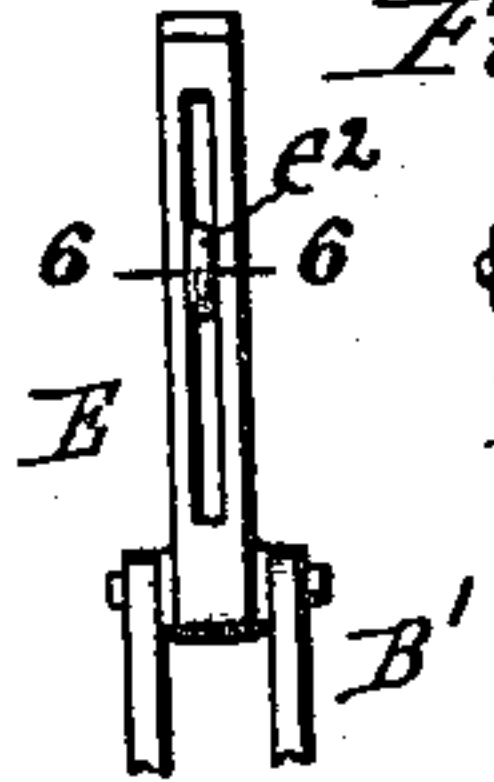


Fig. 6.

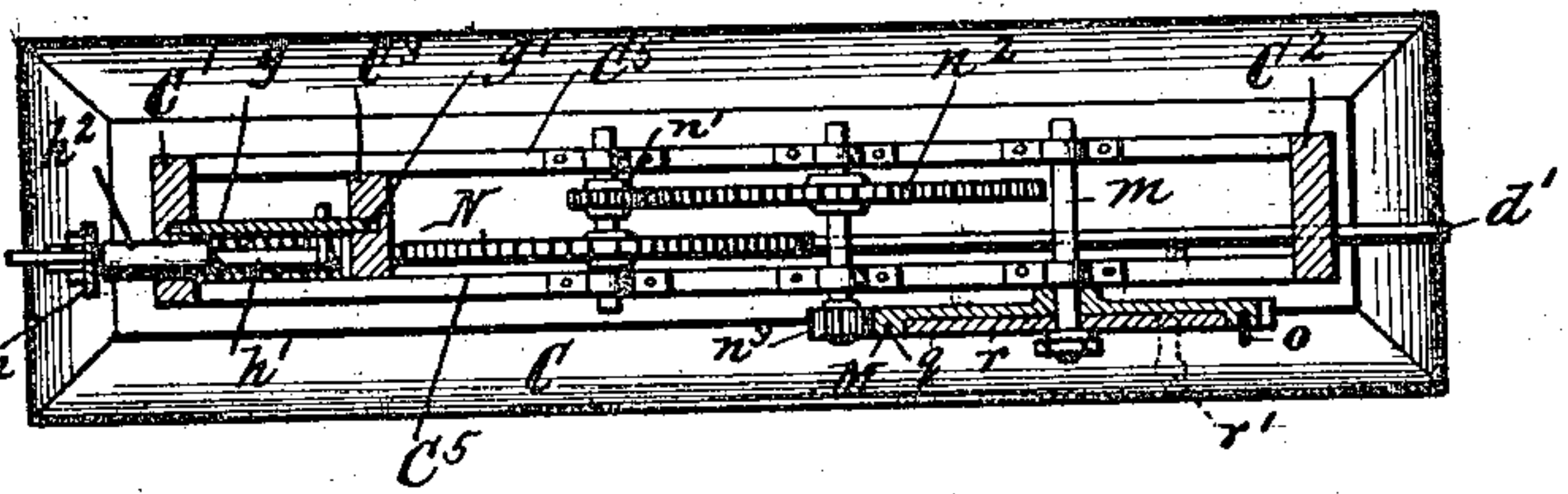
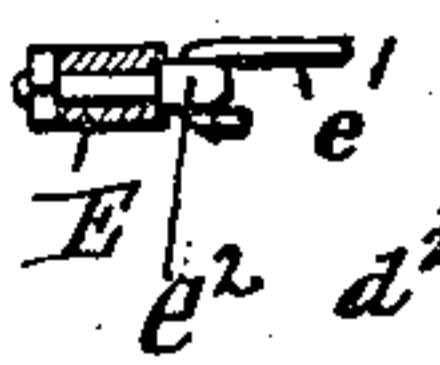


Fig. 3.

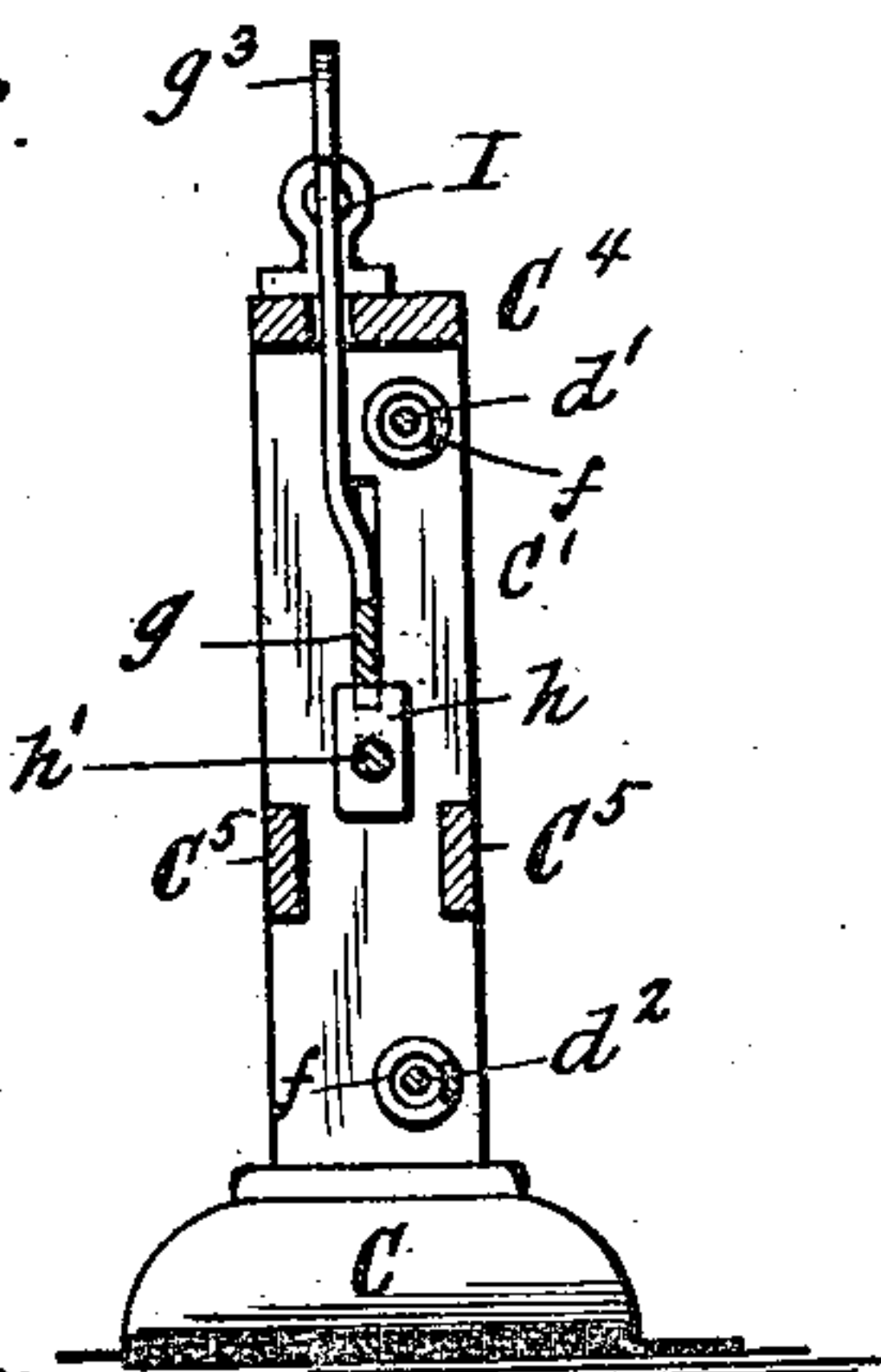
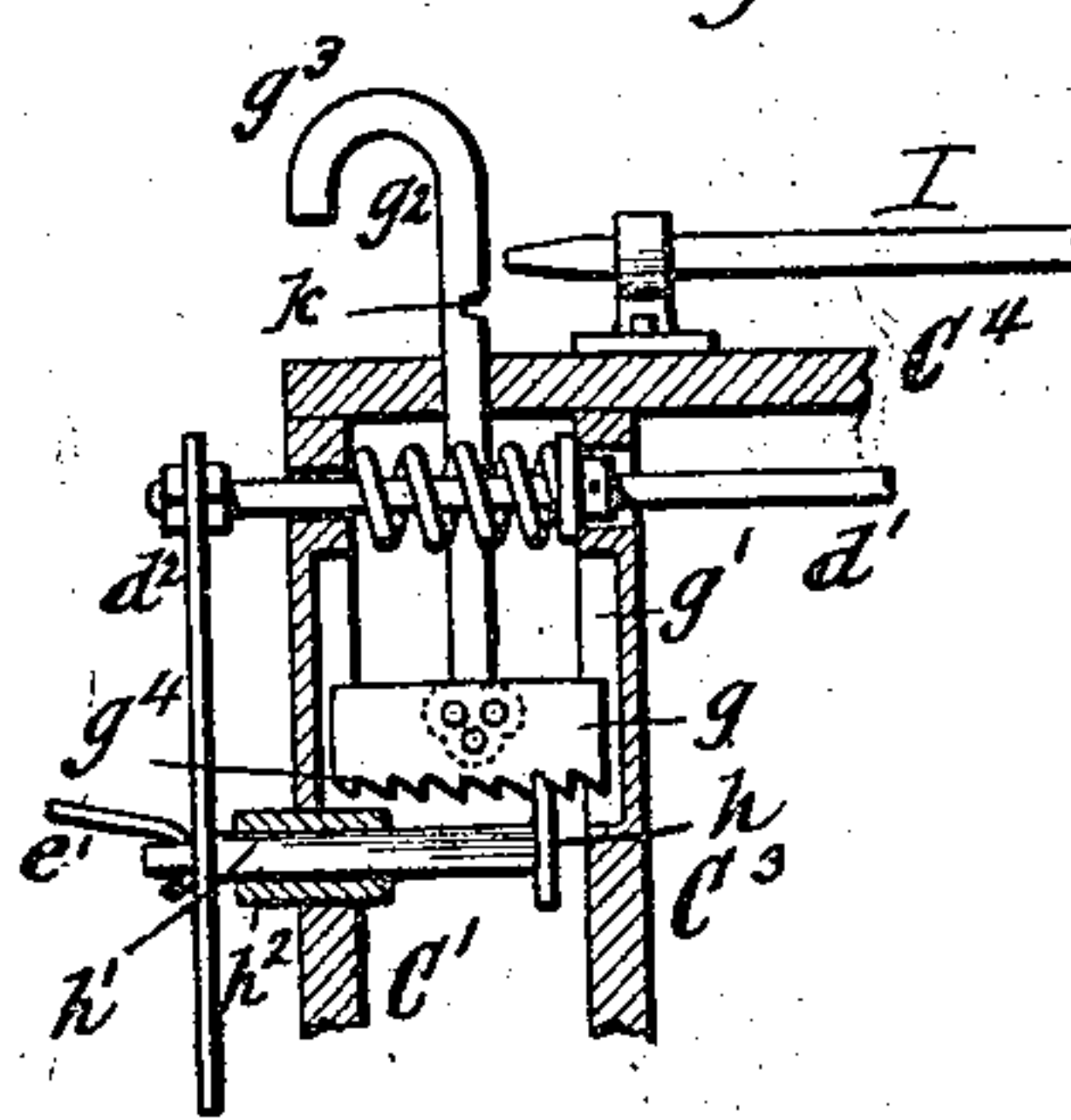


Fig. 4.



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Application filed February 17, 1899. Serial No. 705,768. (No model.)

To all whom it may concern:

Be it known that I, WILLARD A. DODGE, a citizen of the United States, residing at Petrolia, in the county of Allegany and State of New York, have invented new and useful Improvements in Registers, of which the following is a specification.

In creameries or cheese-factories conducted upon the coöperative plan or associated system of dairies each patron or farmer delivering fresh milk to the creamery is entitled to a predetermined percentage of the whey or skim-milk which remains after the butter-fats have been extracted from the new milk. The skim-milk is contained in a storage-tank, from which it is usually drawn by the farmers by means of a pump. Under this system of dispensing the skim-milk it sometimes happens that those patrons who are last to bring their milk to the creamery receive less than their share of the skim-milk.

The object of my invention is to provide a locking device and register which automatically prevents the further operation of the pump when a patron has drawn the quantity of skim-milk to which he is entitled and which can be readily set to permit the pumping of any predetermined quantity of skim-milk.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of my improved lock and register in connection with the pump of the skim-milk tank and showing the pump unlocked. Fig. 2 is a horizontal section in line 2 2, Fig. 1. Fig. 3 is a vertical cross-section in line 3 3, Fig. 1. Fig. 4 is a vertical longitudinal section of the locking mechanism of the register, showing the position of the parts when the pump is locked. Fig. 5 is a rear view of the bell-crank lever and the upper portion of its standard. Fig. 6 is a horizontal section in line 6 6, Fig. 5.

Like letters of reference refer to like parts in the several figures.

A is the pump for withdrawing the skim-milk from the usual supply or storage tank, which latter is not shown in the drawings.

B is the hand-lever of the pump, which is fulcrumed on a standard B' and connected with the plunger-rod of the pump.

C is the base of my improved indicator, on which is mounted an upright frame composed

of front and rear posts C' C², an intermediate post C³, arranged at a short distance from the front post, a longitudinal top bar C⁴, connecting the upper ends of said posts, and longitudinal lower bars C⁵, secured to opposite sides of said posts. In this stationary frame is guided a reciprocating frame composed of upper and lower longitudinal rods *d d'* and a cross-head *d²*, arranged on the front side of the stationary frame and connecting the projecting front ends of said rods. The latter are guided in horizontal openings formed in the posts C' C² C³. The frame *d d' d²* is reciprocated from the hand-lever of the pump A through the medium of an upright bell-crank lever E, pivoted to the upper end of the standard B' and having its lower arm connected with said lever by a link *e* and a rod *e'*, connecting the upper arm of the bell-crank lever with the cross-head *d²* of the reciprocating frame.

f represents springs applied to the rods of the reciprocating frame between the front post C' and collars *f'*, secured to the rods. These springs are compressed during the forward stroke of the frame and by their reaction aid in effecting the backward stroke of the frame.

g is a longitudinal locking-bar which is adapted to engage with a tooth or projection *h*, carried by the reciprocating frame, for holding the latter against movement in the stationary frame of the register and locking the pump. The locking-bar *g* slides in vertical guides or grooves *g'*, formed in the opposing faces of the posts C' C³, and is provided with an upwardly-extending stem *g²*, which passes through an opening in the top bar C⁴ and terminates in a hook *g³*, whereby the locking-bar is raised for unlocking the reciprocating frame and the pump. In the construction shown in the drawings the upright locking-tooth *h* of the reciprocating frame is arranged on a short longitudinal rod *h'*, secured at its front end to the middle of the cross-head *d²* and sliding in a bearing *h²*, supported on the post C'. The locking-bar *g* is provided at its lower edge with a series of locking-teeth *g⁴*, which extend throughout the range of movement of the reciprocating frame, so that the frame is promptly

locked upon the descent of the locking-bar regardless of the position of the frame at the moment the bar descends.

I is a longitudinal locking bolt or catch which retains the locking-bar *g* in its elevated position, in which it clears the tooth of the reciprocating frame. This bolt is guided in bearings mounted on the top bar *C*⁴ of the stationary register-frame and engages at its front end in a notch *h*, formed in the rear side of the stem of the locking-bar *g*, as shown in Fig. 1.

l is an upright releasing-lever fulcrumed between its ends on the top bar *C*⁴, as shown at *l'*, and having its upper arm pivotally connected to the rear end of the locking-bolt *I*.

M is an upright trip or releasing wheel arranged below the releasing-lever *l* and mounted on a transverse shaft *m*, which is supported in bearings secured to the lower longitudinal frame-bars *C*⁵. A slow intermittent rotary motion is imparted to this wheel from the reciprocating frame *d d' d*² by any suitable intermediate mechanism. The preferred mechanism shown in the drawings consists of an upright ratchet-wheel *N*, which is turned forward the distance of one tooth at every stroke of said frame by feed-pawls *n*, mounted on the upper and lower rods of the reciprocating frame, and a gear-train *n*¹ *n*² *n*³, the pinion *n*³ meshing with gear-teeth of the trip-wheel. The shafts of these various wheels are supported in bearings mounted on the frame-bars *C*⁵. The feed-pawls *n* face in opposite directions and engage with opposite portions of the ratchet-wheel, so as to actuate the latter both during the forward and backward strokes of the reciprocating frame.

The lower arm of the releasing-lever *l* projects downwardly into the path of a trip pin or projection *o*, carried by the register-wheel *M*, so that when this pin comes in contact with the rear side of the lever by the forward rotation of the wheel it swings the lever in the proper direction to disengage the locking-bolt *I* from the stem of the locking-bar *g*, allowing the latter to fall into engagement with the tooth *h* of the reciprocating frame and locking the pump. If desired, a spring may be employed for depressing the locking-bar instead of depending on gravity alone for this purpose. The locking-bolt *I* is yieldingly held in engagement with the locking-bar by a spring *p*, arranged on the front side of the releasing-lever and secured at its ends to the upper arm of said lever and the stationary frame.

The trip-wheel is provided in its marginal face with one or more annular rows of equidistant holes *q*, into any one of which the trip-pin *o* may be placed, so that the interval during which the pump may be operated without restraint may be shortened or lengthened by placing the trip-pin at a greater or less distance from the trip-lever.

r is an indicating-dial applied to the front side of the register-wheel, concentrically

therewith, and seated in a circular recess formed in the face of the wheel, so as to be flush with the face of the latter, as shown in Fig. 2. This dial is provided at its margin with numbered graduations, which are spaced to register with the holes of the register-wheel, these holes and graduations being spaced relatively to the volume of liquid delivered by the pump for every stroke of its plunger. In the dial shown in the drawings the graduations increase in multiples of five, indicating that five pounds of skim-milk are pumped during the time that the register-wheel moves the distance of one graduation. The indicating-dial can be turned independently of the register-disk by a knob *r'*, but the same is caused to turn with the wheel by its frictional contact therewith after the dial has been adjusted.

The operation of my improved register and lock is as follows: The register is located in the office of the factory under the control of a clerk or attendant, while the pump *A* is located at or near the skim-milk tank and connected with the reciprocating frame of the register by the rod *e'*, as hereinbefore described. In starting the register the locking-bar *g* is raised to unlock the reciprocating frame and the dial *r* is turned to bring its zero graduation opposite the releasing-lever *l*. If, for example, the first farmer is entitled to forty pounds of skim-milk, the attendant places the removable trip-pin *o* in the hole of the trip-wheel opposite the graduation "40" of the dial, as shown in Fig. 1. The farmer can now operate the pump until the trip-pin, by the forward movement of the trip-wheel, strikes the releasing-lever *l*, when the locking-bolt *I* is withdrawn from the locking-bar *g*, as shown in Fig. 4, and the latter descends and interlocks with the tooth *h* of the reciprocating frame, thereby preventing the further operation of the pump until the same is again unlocked. Say the next farmer is entitled to fifty pounds of skim-milk. The attendant raises the locking-bar *g* to again unlock the reciprocating frame and the pump, turns the dial back to bring its zero graduation opposite the trip-pin in the trip-wheel, and then removes said pin and places it in the hole of the trip-wheel opposite the graduation "50" of the dial. The pump can now be operated until the pin trips the lever and causes the pump to be locked, as before. These operations of unlocking the reciprocating frame and resetting the dial are repeated for every patron using the pump.

In order to enable the register to be adjusted to the capacity of different-sized pumps, the front end of the connecting-rod *e'* is adjustably secured to the upper arm of the bell-crank lever *E*, so that the stroke of the reciprocating frame and the movement of the trip-wheel *M* can be properly regulated with reference to the charge of liquid pumped at each stroke of the pump-plunger. Should the pump deliver more liquid by weight than that indicated by the dial of the indicator, the

connecting-rod *e* is adjusted at a greater distance from the fulcrum of the bell-crank lever, so as to increase the stroke of the reciprocating frame and cause the trip-wheel to turn faster. If the pump delivers less liquid than that indicated upon the dial, the connecting-rod is adjusted closer to the fulcrum of said lever, so that the top wheel is turned more slowly. The adjustable connection between the reciprocating frame of the indicator and the bell-crank lever may be of any suitable construction. That shown in the drawings consists simply of an eyebolt *e*², arranged in a longitudinal slot formed in the upper arm of said lever, as shown in Figs. 5 and 6.

By the use of this register each patron or farmer can take only the predetermined quantity of skim-milk to which he is entitled and for which the register is set by the attendant in charge of the same and the farmers last to deliver their fresh milk run no risk of receiving a deficient quantity, but receive their full share the same as those making an earlier delivery of fresh milk.

While my improved indicator is especially desirable for creameries, it may obviously be applied to other uses.

I claim as my invention—

1. In an automatic locking-register, the combination with a stationary frame, of a vibrating frame or actuator guided in said frame, a locking device arranged to engage with said vibrating frame or actuator for holding the same against movement in either direction, a releasing or trip wheel controlling the movement of said lock, and a feed device which transmits the movement of the vibrating frame or actuator to said releasing-wheel, substantially as set forth.

2. In an automatic locking-register, the combination with a stationary frame and a vibrating frame or actuator guided therein, of a locking device for holding said actuator, a catch for holding said lock in its inoperative position, a retracting device operating on said catch, a trip-wheel having a pin or projection adapted to engage against said retracting device and a feed device which transmits the movement of said actuator to said trip-wheel, substantially as set forth.

3. In an automatic locking-register, the combination with a stationary frame, and a reciprocating frame guided therein, of a lock arranged to engage with said reciprocating frame, a trip-wheel controlling the movement

of said lock, a ratchet-wheel geared with said trip-wheel, and a pair of reversely-arranged feed-pawls carried by said reciprocating frame and engaging with opposite portions of said ratchet-wheel, substantially as set forth.

4. The combination with the stationary frame of the indicator and a reciprocating actuating-frame guided therein, of a locking device for said frame, a bolt or catch for holding said lock in its inoperative position, a retracting device for said catch, a trip-wheel having an annular row of openings adapted to receive a removable trip-pin which is arranged to engage with said retracting device, an adjustable indicating-dial carried by said trip-wheel and capable of being turned independently thereof, and feed mechanism whereby the movement of said reciprocating frame is transmitted to said trip-wheel, substantially as set forth.

5. The combination with the stationary frame of the indicator and a reciprocating frame guided therein and having a feed-pawl, of a ratchet-wheel which is actuated by said pawl, a trip-wheel geared with said ratchet-wheel and having a pin or projection, a lock for said frame, a catch for holding said lock in its inoperative position, and a releasing-lever controlling said catch and arranged to be engaged by said trip-wheel, substantially as set forth.

6. The combination with the stationary frame of the indicator and a reciprocating frame guided therein, of a locking-bar having a longitudinal series of teeth adapted to interlock with said frame, a catch for holding said locking-bar in its inoperative position, and a releasing device for said catch, substantially as set forth.

7. The combination with a pump and a lever connected with the plunger-rod of the pump, of an indicator comprising a stationary frame, a reciprocating frame guided therein, a lock for said frame, a releasing or trip wheel controlling said lock and actuated by said frame, and a rod connecting said frame with said lever and capable of adjustment toward and from the fulcrum of the lever, substantially as set forth.

Witness my hand this 14th day of January, 1899.

WILLARD A. DODGE.

Witnesses:

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