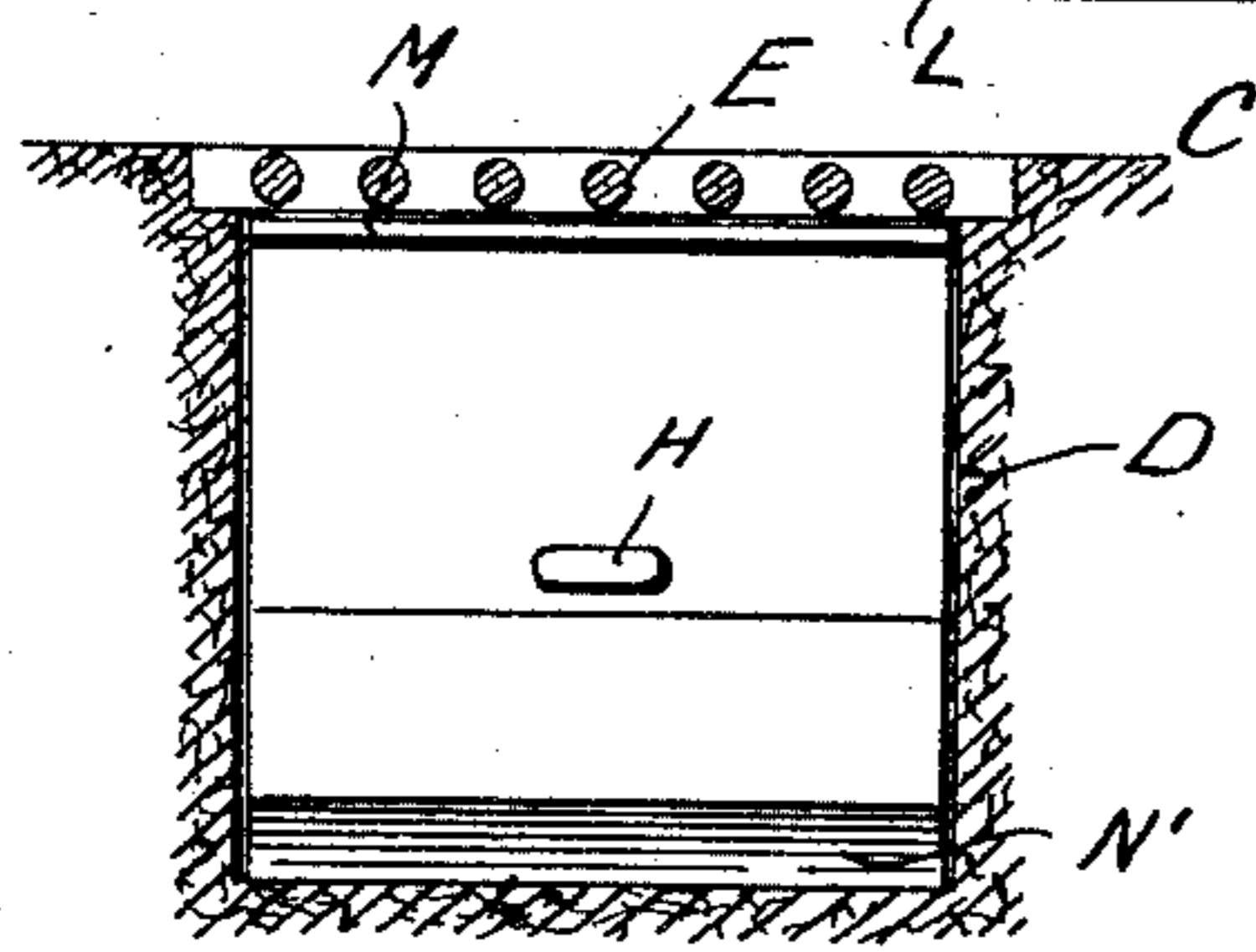
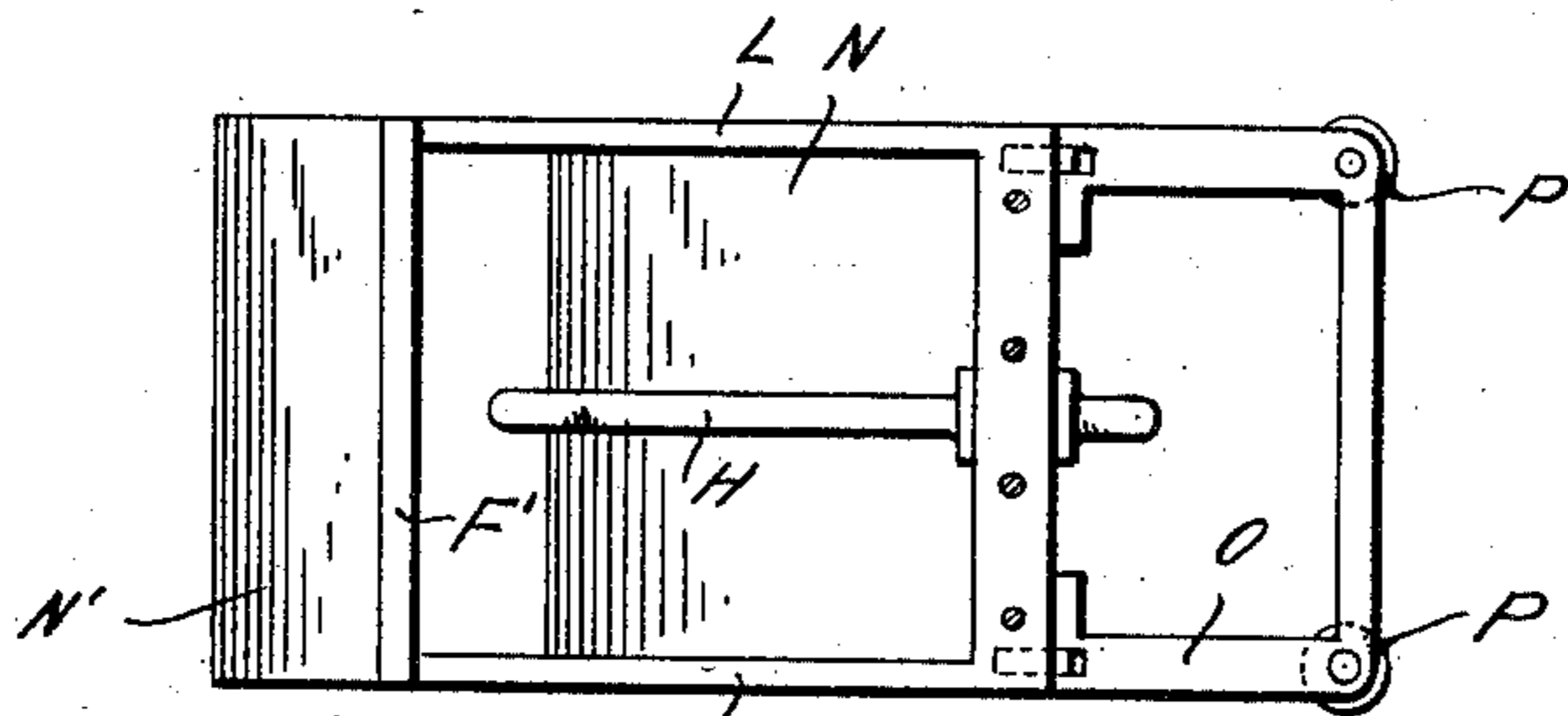
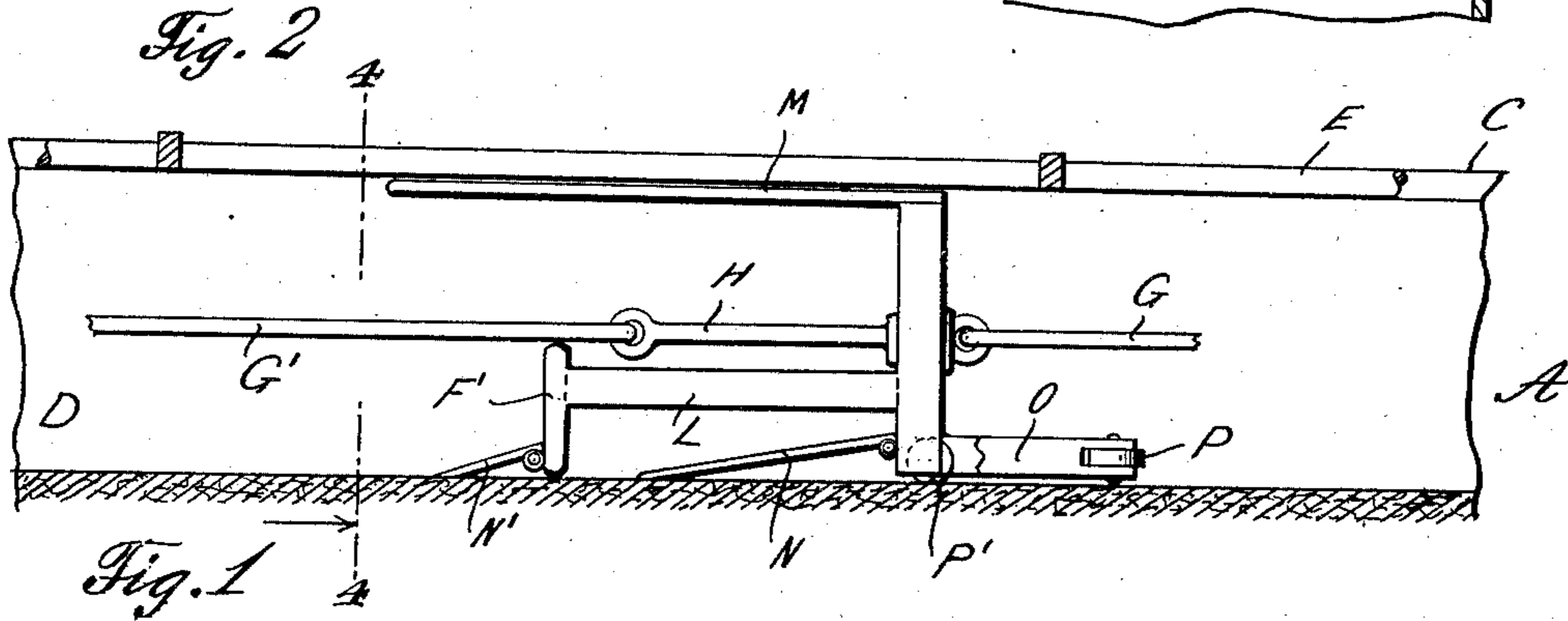
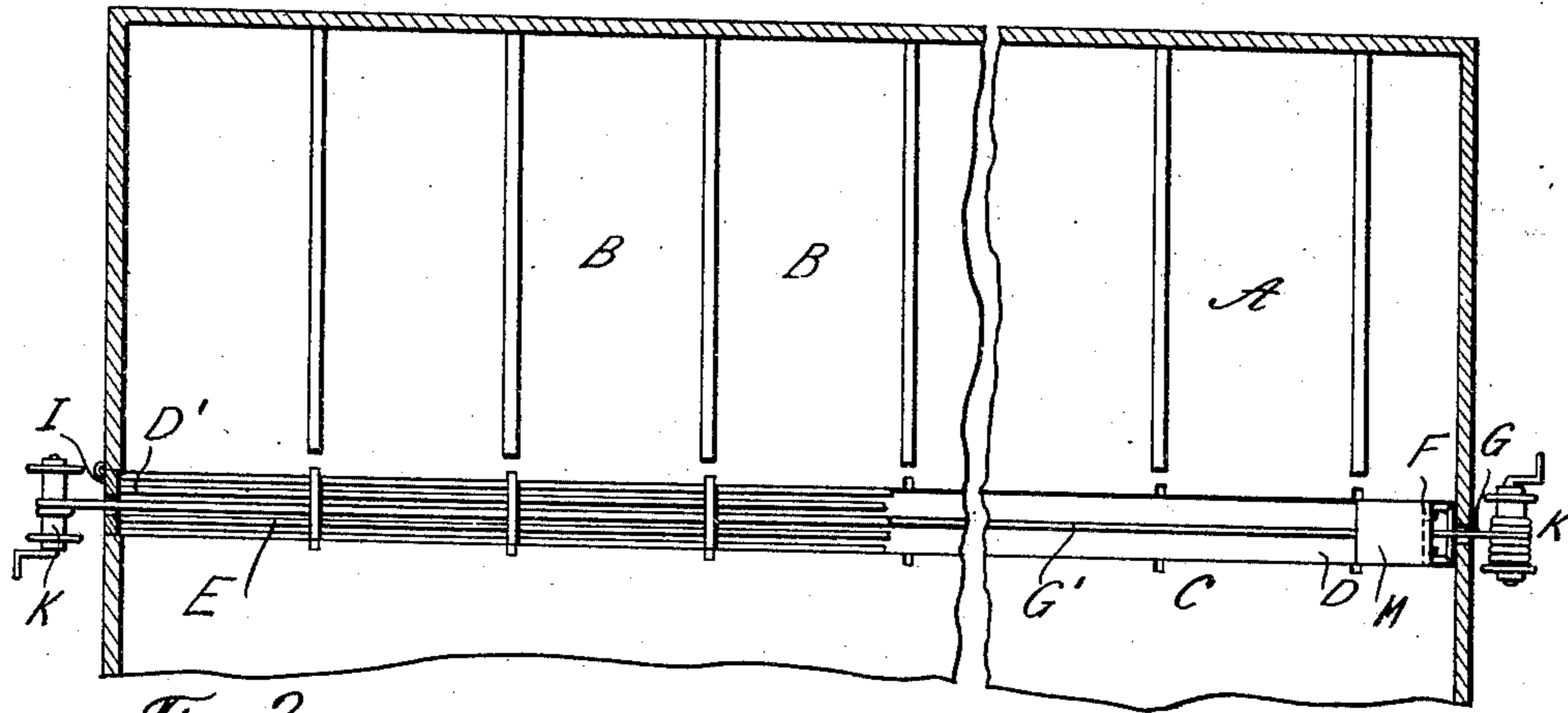


L. M. BRUNDAGE.
MEANS FOR CLEANING STABLES.
APPLICATION FILED AUG. 6, 1910.

990,700.

Patented Apr. 25, 1911.



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Fig. 4
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UNITED STATES PATENT OFFICE.

LOWELL M. BRUNDAGE, OF JACKSON, PENNSYLVANIA.

MEANS FOR CLEANING STABLES.

990,700.

Specification of Letters Patent.

Patented Apr. 25, 1911.

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To all whom it may concern:

Be it known that I, LOWELL M. BRUNDAGE, a citizen of the United States, residing at Jackson, in the county of Susquehanna and State of Pennsylvania, have invented certain new and useful Improvements in Means for Cleaning Stables, of which the following is a specification.

This invention relates to improvements in barns or stables, particularly of the type for housing cattle, and comprises primarily certain novel means for facilitating the removal of the excrement of a small or large number of animals.

This invention is especially advantageous for use in stables or barns for cows of dairy farms, which are closely supervised in reference to the provision of all possible sanitary precautions, whereby to prevent likelihood of contamination of milk.

More specifically, the present invention aims to improve the usual form of gutter or "drop" located in cow stables in the rear of the stalls for the animals, and which receives the liquid or solid excrement. In its ordinary form, this gutter or "drop" is a sort of closed trough countersunk in the floor of the stable, and the operation of cleaning the same is not only difficult, but extremely repugnant to the caretaker. In carrying out this invention, therefore, the requirement of a sanitary method of removing the excrement has been fully borne in mind, and means including a plunger operable by power, manually, or otherwise, are employed to force the voided materials in the gutter from an open end of the same, and preferably to a point exterior to the building in which the stalls are arranged. Suitable means are provided to control the movement of the mass of excrement when operated on by the plunger, so that it is absolutely unnecessary to handle it by shoveling or in any similar distasteful and laborious manner, and the utmost cleanliness of the stable floor may be preserved, entirely aside from the advantage of expediting the sanitary removal of the contents of the gutter or "drop" as is incidental to the present in-

vention, a matter of grave consideration where stables house anywhere from ten to fifty cows, as on large dairying farms, and similar places.

For a full understanding of the invention, reference is to be had to the following detail description and the accompanying drawings, in which—

Figure 1 is a vertical longitudinal sectional view showing the invention applied to a stable or barn of ordinary type; Fig. 2 is a horizontal section through the stable, bringing out more clearly the arrangement of the operating means for the plunger; Fig. 3 is a top plan view of the cleaning device, the overflow guard being omitted; Fig. 4 is a transverse section through the gutter or "drop" taken about on the line 4—4 of Fig. 1.

Throughout the following detail description and on the several figures of the drawings, similar parts are referred to by like reference characters.

Specifically describing the invention and referring to the drawings, A denotes an ordinary stable or barn construction, having the customary stalls B for the live stock, the floor C of the stable, which is ordinarily made of cement being provided with the usual longitudinal gutter or "drop" D, which latter may be covered by a grating E if desired, though in many instances, the grating will not be used. The gutter D is of course located at the rear ends of the stalls B, and said gutter may be of any suitable cross sectional form, being square as shown in the drawings.

Movable lengthwise of the gutter D and arranged therein is a cleaning device comprising a main plunger F with the opposite sides of which are connected operating cables G and G', the cable G' being directly attached to an arm H extending from one side of said plunger F.

It is contemplated of course that the excrement of the animals in the stalls B, shall be received in the gutter D in the customary way, and whenever it is necessary or desirable to clean or remove the contents of the

gutter D, the plunger F is moved longitudinally toward the end D' of the gutter which opens to a point exterior to the stable, being normally closed, however, by a gate I. The
 5 gate I is of course opened previous to movement of the plunger F in the gutter D and to permit the contents of the gutter to be forced out of the open end thereof into a suitable receptacle in which the excrement
 10 will be conveyed to any suitable point for proper disposition.

It is contemplated that any desired means be used for operating the plunger F. As shown, the windlasses K are mounted on
 15 the sides of the stable and connecting with the operating cables G and G', whereby the plunger F may be forced toward the open end D' of the gutter D to eject the contents of the gutter in the manner above described,
 20 the plunger then being returned to a normal position, preferably at the opposite end of the stable.

If a grating E is used, the plunger F will of course operate beneath said grating, and
 25 to facilitate a proper movement of the excrement as it is started toward the open end of the gutter D, in the cleaning operation, it is proposed to utilize an auxiliary plunger F' situated some distance in advance of the
 30 main plunger F, and preferably connected therewith by spaced rods L. The plunger F' is much smaller than the main plunger F, the latter being of substantially the cross sectional area of the gutter D, and it will be
 35 observed that when the plunger F is forced toward the gate I, its auxiliary plunger F' will be likewise moved in the same direction, starting the mass of excrement ahead of the main plunger to prevent clogging or likelihood of sudden overflow of said mass. Once
 40 the movement of the mass of material in the gutter D is started, said material will overflow the plunger F', but will be carried onward by the main plunger F. As a further
 45 precaution against likelihood of overflowing of the material in the gutter D, when being ejected therefrom, the plunger F may be provided with a forwardly extending overflow guard in the form of a plate M projecting
 50 from the upper end of said plunger, and just below the upper edge of the gutter D. The function of the guard M will be obvious in so far as it prevents overflow of the material moved forward by the plunger F.
 55

To insure steadiness and prevent liability of tilting of the plunger F due to greater resistance at its base portion than at its top portion, a pivoted scraper N is connected
 60 with the lower end portion of the plunger and projects forwardly therefrom, being slightly inclined with reference to the bottom of the gutter D. The object in pivoting the scraper N is to permit said scraper
 65 to drop when the plunger F reaches the open

end of the gutter D, any material upon the scraper N being discharged therefrom. The weight of that portion of the mass above the scraper N will tend to steady the movement of the plunger F in an obvious manner. 70

As shown in the drawings, the auxiliary plunger F' has a bottom scraper N' similar to the scraper N, though it is probable that the scraping device N' will not be necessary.

Projecting rearwardly from the lower end
 75 of the plunger F is a guide member O consisting of a U-shaped frame member, provided with anti-friction rollers P at its outer corners, said rollers engaging the sides of the gutter D. The frame O prevents lateral tilting of the plunger F. At its lower
 80 end, the plunger F may also have additional anti-friction rollers P' to facilitate the progress of the plunger in its movement back and forth on the bottom of the gutter D. 85

Power mechanism may be substituted for the windlasses K if desired, and it will be understood that the various parts of the invention will be made of different sizes according to the capacity of the stable to receive a certain number of animals. 90

Other modifications in the structure of the invention may be made in accordance with the scope of the claims hereto appended.

Having thus described the invention, what
 95 is claimed as new is:

1. In combination, a stable embodying a plurality of stalls and having a gutter arranged at the rear ends of the stalls, a plunger movable longitudinally of the gutter,
 100 and means for moving the plunger in said gutter, the gutter being provided with an outlet for passage of the contents thereof when ejected by the plunger aforesaid, and an overflow guard projecting forwardly
 105 from the upper portion of the plunger.

2. In combination, a stable embodying a gutter adapted to receive animal excrement, and a cleaning device for said gutter comprising a plunger movable longitudinally
 110 therein, means for moving the plunger, one end of the gutter being open, a gate for closing the open end of the gutter, a grating arranged to cover the gutter and above the plunger, and an overflow guard projecting
 115 forwardly from the plunger at its upper end and in close contact with the under side of the grating aforesaid.

3. In combination, a stable embodying a gutter adapted to receive animal excrement,
 120 a plunger movable lengthwise of said gutter, means for actuating said plunger while arranged in the gutter, and a horizontal scraping device resting on the bottom of the gutter and pivotally connected with the lower
 125 end of the plunger for movement therewith, the stable having an outlet through which the scraping device is adapted to pass and to gravitate downwardly.

4. In means of the class described, the 130

combination of a gutter adapted to receive animal excrement, and provided with an outlet at one end, a plunger arranged in said gutter for cleaning the same, means for moving the plunger longitudinally of the gutter, and a horizontal gravitating scraping device projecting forwardly from the lower portion of the plunger and adapted to pass

through the outlet of the gutter and then to gravitate downwardly.

In testimony whereof I affix my signature in presence of two witnesses.

LOWELL M. BRUNDAGE.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
