A. M. Knowlson,

Suppository Machine.

No. 79,840. Patented July 14, 1868.

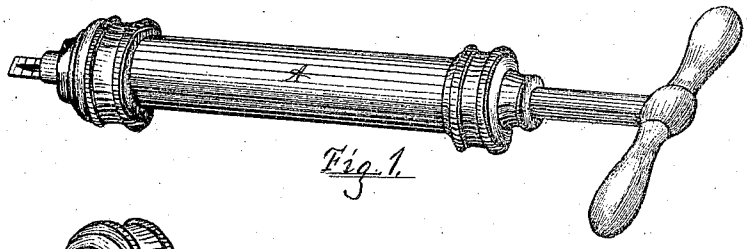

Fig. 1.

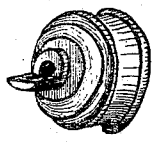

Fig. 5.

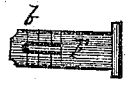

Fig. 6.

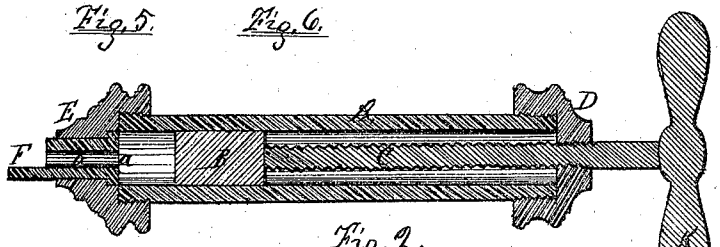

Fig. 2.

Fig. 4.

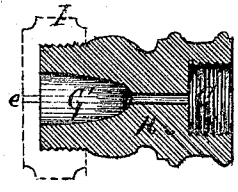

Fig. 3.

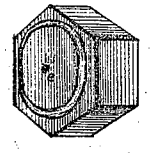

Fig. 7.

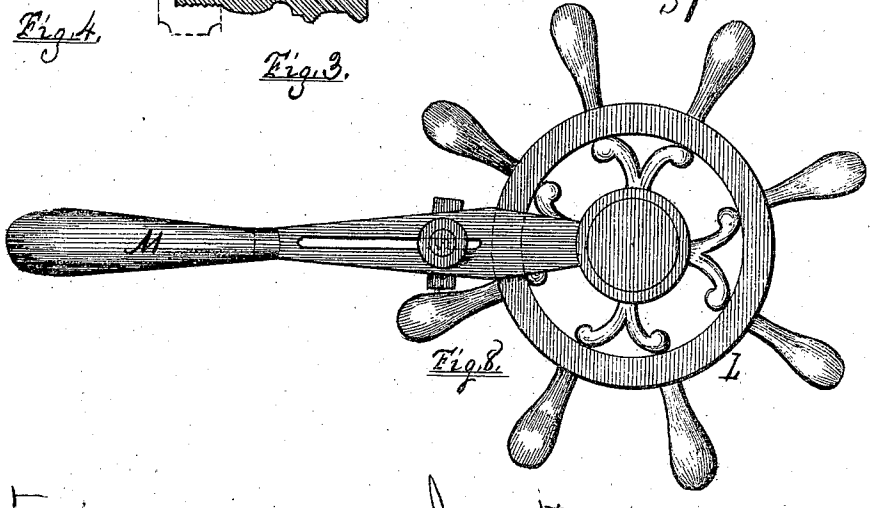

Fig. 8.

Witnesses.

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UNITED STATES PATENT OFFICE.

A. M. KNOWLSON, OF TROY, NEW YORK.

SUPPOSITORY-MACHINE.

Specification forming part of Letters Patent No. 79,840, dated July 14, 1868.

To all whom it may concern:

Be it known that I, ALEXANDER M. KNOWLSON, of the city of Troy, county of Rensselaer, and State of New York, have invented certain new and useful improvements in machines for the making or manufacture of suppositories, and which I hereby denominate a "Suppository-Machine," for use by druggists, physicians, or other suitable person or persons; and I do hereby declare that the following is a full, clear, and exact description of the construction, object, and operation of the same, reference being hereby had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

Like letters represent and refer to like and corresponding parts.

Figure 1 is a perspective view of the machine, hereinafter described and set forth, and for the purpose of constructing and manufacturing suppositories containing any kind of property or medicine desired to be used as, for, and in the manner of a physician's prescription, when the same cannot well be used in other form with satisfactory results. Fig. 2 is a view of said machine on a vertical line through the center of the same, and showing parts of said machine hereinafter fully described and set forth. Fig. 3 represents a section of a vertical and central line of the same, and containing the form or mold in which the suppository is made or formed, substantially as hereinafter described and set forth, while Fig. 4 represents the suppository itself after having been molded and forced from the said mold in the manner substantially as hereinafter set forth. Fig. 5 represents another form of mold, in which suppositories of uniform size or diameter are made and cut, or made of a certain and given length in the manner substantially as hereinafter described and set forth. Fig. 6 represents the die or mold contained in that part represented at Fig. 5, and by which uniform size or diameter of the suppository is formed, substantially as hereinafter set forth, and more fully described hereinafter. Fig. 7 represents a nut fitted upon the immediate end of the die or mold, (seen at Fig. 3,) by means of the usual screw, and which is constructed and arranged thereon in the manner and for the purposes substantially as hereinafter described and set forth. Fig. 8 represents a windlass-wheel and lever, hereinafter more fully described, as the means and power by which the said machine is operated for the use and purposes herein contained and set forth.

Suppositories are solid bodies containing the desired medicine to be introduced into the rectum with the view of evacuating the bowels by irritating the mucous membrane of the rectum or of producing a specific effect on the neighboring parts, or on the system at large, as the case may be. They are also used by being introduced into the vagina and containing the proper medicine for the relief and cure of all that class of cases known as "female weaknesses," or similar complaints or diseases. Each suppository will contain the medicine intended for the relief and cure of the disease of, and with which the person is or may be afflicted. They will be placed in the rectum with and by means of an instrument constructed for that purpose. They may generally be placed within the vagina without the use of any instrument; but, if necessary, an instrument properly constructed may be used for the purpose of properly placing such suppository in the proper place in order to more effectually arrest the disease intended to be reached with the medicine. Such suppositories may in form be cylindrical, conical, spherical, or other suitable form or shape desired, and they will in all cases be of such a consistence as to retain their form or shape, and yet so soft as to incur no risk whatever of wounding the rectum or vagina or parts when applied. They may be of any length or size deemed best to use, and to contain the medicine to be used or applied for the relief and cure of the disease. Hitherto such suppositories have always been made by the melting of the material of which the same were to have been made, and then the pouring of such material into suitably-shaped molds made of some metallic substance and properly suspended in a box or other vessel containing cold water or ice for the purpose of cooling the suppository immediately after the pouring or casting of the same. This method was always or has always been attended with a great deal of trouble and labor in getting perfect ones as to

shape or form, and the material thereof being thus melted with the medicine therein suspended, there was and is very great danger of such medicine sinking to the bottom of the mold, and of course would become unequally distributed throughout the entire body part or portion of the suppository. It is quite manifest that the medicine ought to be distributed evenly or equally throughout the said suppository in order that the desired results and effects may be had and produced.

By the means herein contained and set forth I am enabled to make suppositories in which the medicine shall be evenly distributed in and throughout the entire body or material forming the consistency of the suppository. After the medicine is evenly distributed through such material, I form or shape or make the suppository while the material is in a cold or solid state or condition, which is done in the manner and by the means substantially as hereinafter described and set forth.

The nature of my said invention therefore consists in the employment of an instrument or machine so constructed and arranged as to form and make suppositories which shall contain evenly and thoroughly distributed or suspended in and through every part or portion thereof the proper and desired medicine or medicines to be used in treatment of the disease intended to be relieved or cured, by means of forcing or pressing such suppositories into any desirable form or shape to be used, and which of course is done while the material to be used is in a somewhat cooled or solid state or condition after it shall have been thoroughly and evenly impregnated with the medicine to be used, in the manner and by the means substantially as herein contained, described, and set forth.

It also consists in the employment of a suppository mold or die arranged and combined with a receiving-tube and plunger operating within such tube for the purpose of forcing out therefrom the material therein contained for the molding, shaping, or forming of a suppository in and within the mold or die thereof and therefor by pressure, in the manner substantially as herein described and set forth.

Having thus stated the object and also the nature of my said invention and improvement, I will now and here describe the construction and operation of my said suppository-machine in order that others skilled in the art to which my said invention relates may construct and use the same, which is substantially as follows, to wit:

I construct a receiving tube or cylinder, A, of any suitable capacity, and which is evenly and smoothly bored out upon the inner side, and which is for the purpose of receiving the material from which the suppository is to be constructed. I then construct a plunger, B, of size to correspond to and with the inner part of said tube or cylinder A, and which plunger may be of any length required in order to give it sufficient strength to perform the work required of it. To one end of said plunger B, I construct the screw-rod C, which contains upon its full length a screw of suitable strength, and which runs into and through a corresponding screw-nut in the nut-head D, which head is securely fastened to and upon the one end of said receiving tube or cylinder, substantially as seen at Fig. 2 of accompanying drawings. At the opposite end I arrange the suppository die, form, or mold E, substantially as seen at said Fig. 2, which is secured thereto by means of screw of proper construction or arrangement.

In the accompanying drawings I have shown two forms of suppositories—to wit, cylindrical, as seen near the end piece, E, of said Fig. 2, also conical, as seen at Fig. 4. The die or mold for the forming or making of the cylindrical-shaped suppositories may be seen upon inspection of Figs. 5 and 6, as well as Fig. 2. The said die or mold F, Figs. 2 and 6, has a hole or opening, *a*, of the exact size of which it is desired to form the cylindrical-shaped suppository. The material to be used being upon the inside of the said tube or cylinder A, it is forced, by means of the plunger B and said screw C, into said mold *a*, and as it passes out therefrom the same is cut into the required length by knife upon a series of gage-marks upon an outward projection, *b*, Figs. 1, 2, and 6, and thus the process of making such cylindrical suppositories continues until all the material required to be used or which is contained within said cylinder A is worked up. When it is desirable to make other forms than such cylindrical ones, then I remove the screw-nut E, containing the die or form or mold *a* within the same, substantially as shown at Fig. 2, and put upon and in place thereof the die or mold shown at Fig. 3, in and by which I make a conical-shaped suppository, G, Fig. 4, which was or is molded in the die or mold G′ in the die or mold frame H, Fig. 3. To make the said die or mold G′ complete, I screw upon the one end of said frame H the cap or nut I, which has a hole or vent, *e*, in and through the same, and which serves as a vent for the die or mold G′, and also shows the perfect filling up of said die or mold G′, as the material will press outward from the said hole *e*, Fig. 3. The said mold or die G′ is supplied with material to form the suppository desired to be made through the channel or supply-opening *c*, Fig. 3, in and through which such material as to be used is forced out and from the cylinder A by the means of the plunger B and screw drive-rod C, in the manner substantially as aforesaid, by the use of the handle K, Fig. 2, or by means of the power-wheel L, with the lever M, Fig. 8, applied and used therewith when more power is required in order to pack firmly and correctly the material forming the suppository in and within the said die or mold G′. The said lever M is so constructed and arranged as to

be movable upon the periphery of said power-wheel L from point to point, in order for the rapid and easy working of the entire machine.

At Fig. 7 may be seen the cap or screw-block 1, containing the air or vent hole *e*, for the purpose aforesaid, which is screwed upon the outer end of the mold-frame H, Fig. 3, and close to and against the immediate end thereof, and then and there said die or mold G′ is completed, ready for use in the formation of the suppository, in the manner substantially as aforesaid.

When it is desirable to remove the suppository which has been formed by means of pressure, as aforesaid, within the mold G′, the cap 1, Figs. 3 and 7, is removed from the said frame H. To supply the machine or tube or supply-cylinder A with the material to be used in the formation of suppositories, as aforesaid, I remove the frame H, containing the die or mold G′, from the said cylinder A by unscrewing the same, and then I withdraw said plunger or piston B back to the screw-cap D, and then I fill said cylinder A with suppository material, and thereafter return said frame H to its place upon said cylinder A by means of the screw thereon; or the screw-cap or head D, &c., may be removed by unscrewing it from that part of the cylinder A shown at Fig. 2, and then withdraw the plunger or piston B and screw drive-rod C, attached to the handle K, in the manner seen at Fig. 2. I then supply said cylinder A with the material containing the medicine to be used, and then return the plunger to the cylinder A and put the cap D back to its place, and then by turning or revolving the said screw C, the plunger or piston B is forced against the suppository material within said cylinder, and the same is forced or driven through said channel-opening *c*, Fig. 3, into the said suppository die or mold G′, and by the continued force and operation of said plunger B, as aforesaid, said material is pressed and forced into said suppository-mold until the same is well and most thoroughly packed, and the suppository perfectly formed within said mold, which is ascertained by the throwing out of the material at the said vent *e*, Figs. 3 and 7. I then uncap or remove the cap I, which, when done, I continue to operate the said plunger B, and the suppository material continues to pass through said opening *c*, and thereby ejecting the suppository made and in the mold from said mold, and then the material is separated from the small end of such suppository, and the material remaining within such mold or die G′ will go into the next one to be thus formed therein, and so the operation of manufacture continues until the desired number of suppositories are completed. When the cylindrical ones are made by means of the said die *a*, Figs. 2, 5, and 6, the same are cut off, as hereinbefore set forth, to any length desired, and they may also be of any diameter required in order to contain the required quantity of medicine to be used; and so may be increased any other form or shaped suppository, which is done simply by enlarging the size of the die or mold in which the same is to be formed or made. The size will depend upon the circumstances of the case, when the same is to be used, and the amount of medicine required. I arrange the said machine upon some platform or frame-work suitable to hold the same while the operation is going on in the manufacture of suppositories, and I use all the power necessary to form the suppository, as aforesaid, while the material is in a cold or solid state or condition, as aforesaid. I prefer to use "cocoa-butter" as the material to contain the medicine and of a more exact consistence and fusibility for the formation or molding of the suppository, as aforesaid. However, any suitable material for such purposes may be used. The machine aforesaid may be of any size of construction or capacity desired, and the suppository die or mold may be so constructed and arranged in combination with said supply-cylinder A as to form a series of suppositories in one frame before opening the same to eject or discharge from such dies or molds such suppositories; but I have not deemed it best to describe such an arrangement in this specification further than to mention the fact.

It is manifest that my said machine described herein, and shown in and by the accompanying drawings, is superior to any other known method, manner, or machine for the manufacture or formation of suppositories containing medicine, as herein stated and set forth.

The tube or die or mold-block F, Figs. 2 and 6, is made to fit closely to and within the cap or screw end E, in the manner substantially as shown at Fig. 2.

The head or cap I may be applied to and combined with said cylinder A, for the purposes aforesaid, in some other manner than by means of the male and female screw, if deemed best so to do; but I usually prefer it as shown in the drawings.

Having thus described the object, nature, construction, arrangement, and operation of my said suppository-machine, what I claim, and desire to secure by Letters Patent of the United States of America, is—

1. The mode or manner herein contained, described, and set forth for the manufacture or formation of suppositories from the medicated material while in a cold or solid state or condition, substantially as herein described and set forth.

2. The combination of the plunger B with the suppository-molds *a* and G′, each being arranged with the supply-tube or cylinder A, in the manner and for the purposes substantially as herein described and set forth.

3. The employment of the frame H, having combined therewith the mold or die G′, the supply-channel *c*, and the cap I, containing the

vent *e*, each being arranged in the manner and for the purposes substantially as herein described and set forth.

4. The arrangement and combination of the die or mold *a* with the cap E, in the manner and for the purposes substantially as herein described and set forth.

In testimony whereof I have, on this 12th day of February, 1868, hereto set my hand in presence of two witnesses.

A. M. KNOWLSON.

Witnesses:

MARCUS P. NORTON,

CHARLES D. KELLUM.