

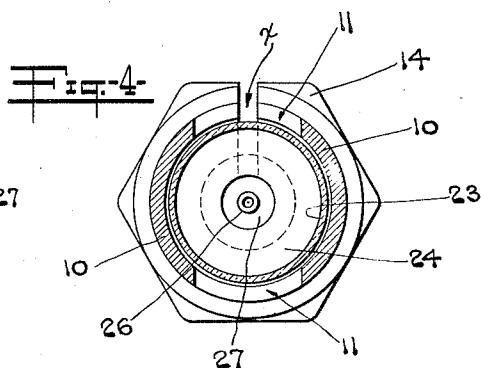
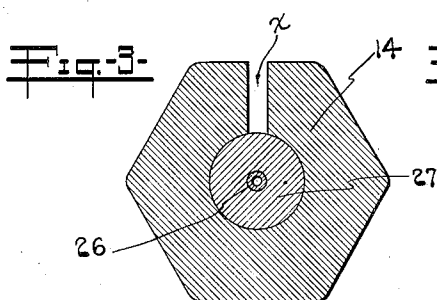
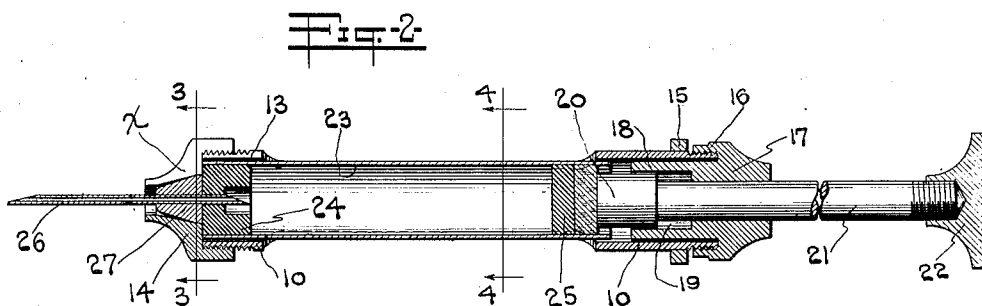
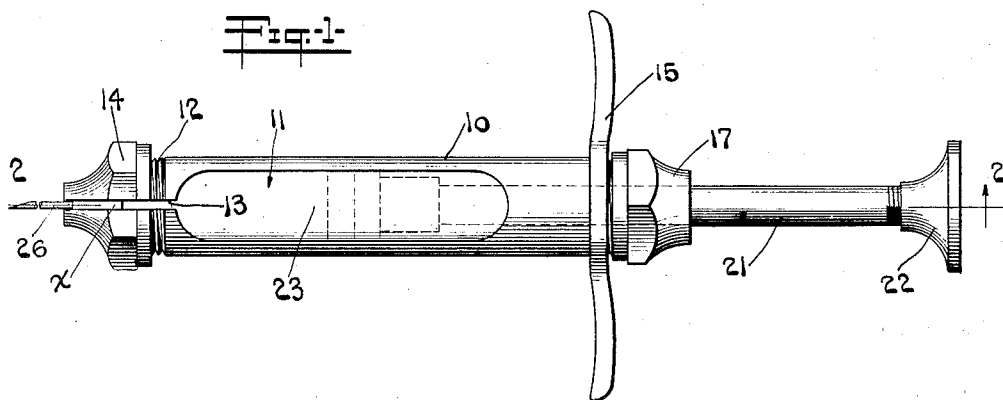
Dec. 11, 1928.

1,694,766

H. K. BROWN

SYRINGE

Original Filed Nov. 23, 1921



Inventor
Henry K. Brown
By *Emory Wood Jannay & Henry*
Attorneys.

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UNITED STATES PATENT OFFICE.

HENRY KINSEY BROWN, OF CHICAGO, ILLINOIS, ASSIGNOR TO COOK LABORATORIES, INC., OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE.

SYRINGE.

Application filed November 23, 1921, Serial No. 517,318. Renewed January 20, 1928.

My invention relates to hypodermic syringes, and particularly to syringes employing medicament dispensing packages or cartridges.

5 Among other objects, the invention aims to provide a syringe so constructed that its needle may be placed in operative position without contamination, and may be secured against longitudinal movement during an
10 injection by simple but effective means. The invention also aims to combine a medicament package and holder therefor to provide an operative syringe which is superior in many particulars to syringes of the
15 type disclosed in Cook Patent No. 1,231,497, June 26, 1917.

The invention may be understood by reference to one illustrative embodiment shown in the accompanying drawings, in which:—

20 Figure 1 is a side elevation of a syringe embodying my invention.

Figure 2 is a longitudinal central section of the same, taken on dotted line 2, 2, Figure 1, illustrating the needle exaggerated in
25 diameter.

Figure 3 is a transverse section taken on dotted line 3, 3, Figure 2, looking in the direction of the arrows.

30 Figure 4 is a transverse section taken on dotted line 4, 4, Figure 2, looking in the direction of the arrows.

The syringe shown has a cylindrical barrel or casing 10 providing a holder for a medicament package or cartridge 23, and has diametrically opposite longitudinal openings 11 to permit inspection of an inserted
35 cartridge and its contents. Preferably, as shown, the barrel is open at both ends to permit insertion of a cartridge from either end. To close the barrel, removable barrel heads
40 14, 17 are provided, which are shown as secured by screw-threads 12 and 16 respectively.

The barrel head 14 has an internal conical
45 seat for the conical or conoidal enlargement 27 of the syringe needle 26 (Fig. 2), said enlargement preferably being of metal, and secured to the needle intermediate its ends, so that when the needle is seated, its inner point
50 may pierce the end plug 24 of the cartridge to conduct the medicament therefrom. One of the drawbacks of syringes as previously constructed has been the difficulty of preventing contamination of the injection point
55 either by touching with the hands, or by con-

tact with the syringe. In order that an unskillful or hurried practitioner may position a needle without likelihood of contamination, the syringe head 14 is longitudinally
60 slotted as at *x* so as freely to admit the needle by a lateral movement until the needle is axially alined with its seat, whereupon it may be seated by a longitudinal movement through the axial bore provided for it in
65 head 14. Because of the arrangement of the parts, this is readily done without touching either end of the needle. In the operation of seating a needle, the needle enlargement
27 serves as a convenient handle; thus contamination of the needle shank is easily
70 avoided.

Inasmuch as it may be desirable to seat a needle without removing barrel head 14, the barrel 10 has a longitudinal slot 13 which
75 may be registered with slot *x* to provide a continuous slot extending from the end of the barrel to one of the sight openings 11, Fig. 1. With such a construction, the needle is introduced laterally as before, but its enlargement is passed through opening 11
80 until the needle is axially alined, whereupon it may be dropped into its seat without liability of contaminating either end of the needle.

The opposite barrel head 17 slidably carries the usual plunger 21 whose enlarged end
85 20 pushes the slidable plug 25 of the cartridge in order to eject the medicament through the needle. An extension 18 of the barrel head 17 is counterbored as at 19 to
90 provide a seat for the plunger end 20. The usual finger-grips 15 are secured to head 17, while the outer end of the plunger has the customary knob or handle 22.

The needle is shown held firmly in its
95 seat by means of the cartridge 23, which usually comprises a glass tube sealed at opposite ends by the tight-fitting plugs 24, 25 of rubber or the like. The plug 24 has an axial cavity whereby piercing of the plug
100 is facilitated. Plug 25 is a solid cylindrical stopper which may consist of united disks of rubber and cork, and is slidable through the tubes. The cartridge fits or nearly fits
105 the chamber provided within the barrel, as shown in Fig. 2, so that when the plunger is moved to dispense the medicament, as during an injection, the cartridge is thrust by the reaction from the frictional resistance of
110 plug 25 against the needle enlargement 27,

thereby holding the needle firmly. While the hydrostatic pressure created in the cartridge during an injection is considerable, no leakage occurs either around the needle or past plug 24. During an injection, the outer face of plug 24 is pressed against the needle enlargement and the barrel head 14 and will not be pushed out of the cartridge by the internal pressure. If the needle is withdrawn from the cartridge for any reason, the resilient plug seals itself without loss or contamination of the medicament.

When preparing the syringe for use, either the cartridge may be initially positioned, and the needle thrust into it, or the needle may be initially seated and the cartridge moved against it. In the former procedure, the cartridge may be inserted into the barrel from either end, and after barrel head 17 is applied, the needle, seated in the loose barrel head 14, is passed through plug 24. In this operation, the screw threads by which head 14 is secured greatly facilitate the piercing because of their mechanical advantage, while the head itself serves as a convenient and non-contaminating needle-handling means. If the head 14 is on the barrel, the needle may be inserted laterally, as above described, and the cartridge put in the barrel from the opposite end, and thrust either by the operator's fingers or by the plunger against the needle point to effect the piercing.

Obviously the present invention is not restricted to the particular embodiment thereof herein shown and described.

I do not claim the cartridge per se herein shown and described, nor do I broadly claim a syringe embodying or comprising such cartridge or a cartridge having in its fore end the kind of pierceable plug herein shown and described, in conjunction with holding and operating means including a removable needle to pierce the recessed plug and a plunger to push in the opposite plug, as such cartridge and syringe comprising the same and such associated means are the subjects of prior inventions of Harvey S. Cook, and claimed by him in prior applications now pending.

What I claim as new is:

1. A hypodermic syringe comprising, in combination, a barrel having an opening in its wall and a longitudinal slot extending from said opening to the end of the barrel; a screw-threaded barrel head having a seat and having a slot in its side, said slot being registerable with the barrel slot; a hypodermic needle having an intermediate enlargement fitting said seat; the parts being so constructed and arranged that the needle may be manually seated by lateral movement into alinement with the seat, and then by longitudinal movement against said seat, without liability of contamination either by con-

tact with the syringe or with the operator's fingers.

2. A hypodermic syringe comprising, in combination, a cartridge holder constructed and arranged for endwise insertion of the cartridge; a screw-threaded needle-securing head on one end of said holder having a longitudinal slot constructed and arranged for lateral insertion of the needle; and a double pointed needle having an intermediate enlargement by which the head may clamp it.

3. A hypodermic syringe comprising, in combination, a cartridge holding body substantially open at one end; and a needle-seating barrel head screw-threaded on that end to close it and hold the needle in place; said barrel head provided with an axial opening and a longitudinal slot extending to said opening to permit lateral introduction of a needle into axial alinement with the seat.

4. A hypodermic syringe comprising, in combination, a hollow barrel having a longitudinal opening in its wall; a barrel head secured to one end thereof and having an axial opening to provide a seat for the syringe needle; said barrel head also having a slot extending laterally to said seat and longitudinally between the barrel opening and the end of the syringe; a hypodermic needle pointed at both ends and having an intermediate enlargement shaped to fit said seat; said barrel opening and slot permitting lateral insertion of the needle; a removable barrel head at the opposite end; a plunger slidable through the removable barrel head; and a medicament-dispensing package insertible in the barrel and constructed and arranged to be contracted interiorly by the plunger; said package having a perforatable end which is pierced by the inner end of the needle when the syringe is ready for use, and which is in contact with the needle enlargement to hold the needle seated.

5. A hypodermic syringe comprising, in combination, a hollow barrel having a longitudinal opening in its wall; a barrel head secured to one end thereof and having an axial opening to provide a seat for the syringe needle; said barrel head also having a slot extending laterally to said seat and longitudinally between the barrel opening and the end of the syringe; a hypodermic needle pointed at both ends and having an intermediate enlargement shaped to fit said seat; said barrel opening and slot permitting lateral insertion of the needle without necessary contact with any part of the syringe.

6. A hypodermic syringe comprising, in combination, a cartridge holder constructed and arranged for convenient insertion of a cartridge; a hypodermic needle having an enlargement intermediate its ends and being double pointed so that the inner end thereof

may pierce the cartridge; means at one end of the cartridge holder for seating the needle by means of its enlargement; a cartridge fitting the holder and cooperating with the seating means for holding the needle in operative position; and means at the other end of the cartridge holder for reducing the interior volume of the cartridge to expel its contents.

7. A hypodermic syringe comprising, in combination, a medicament cartridge; a cartridge holding barrel; a barrel head at one end thereof providing a substantially conical seat; and a hypodermic needle having an intermediate substantially conical enlargement fitting said seat; the cartridge holding the needle seated during use of the instrument.

8. A hypodermic syringe comprising, in combination, a medicament cartridge having a pierceable end and a plug movable there-through to eject the medicament; a cartridge holding barrel; a barrel head at one end thereof providing a seat; and a needle having an intermediate enlargement fitting said seat; the cartridge being pierced by the needle and engaging the needle enlargement to hold the needle seated during use of the instrument.

9. A hypodermic syringe comprising, in combination, a barrel having a chamber to receive a cartridge; a plunger rod at one end of the barrel; the barrel having a seat at the other end thereof opening into the cartridge chamber; a needle having an intermediate enlargement fitting the seat; and a cartridge fitting said chamber to hold the needle seated.

10. A hypodermic syringe comprising, in combination, a cartridge holding barrel; a plunger rod at one end of the barrel; the other end of the barrel having a seat opening into the cartridge chamber; a needle having an intermediate enlargement fitting

the seat; and a cartridge comprising a tube sealed at its ends by two plugs, one designed to be moved through the tube by the plunger rod, the other constructed and arranged to be easily pierced by the needle when seated; said pierceable plug being in contact with the needle enlargement when the parts are ready for use, thereby holding the needle in its seat.

11. A hypodermic syringe comprising, in combination, a barrel provided at one end with a substantially conical needle seat; and a needle having an intermediate enlargement shaped to fit said seat; said barrel slotted so that the needle may be seated by lateral movement thereof into axial alignment with its seat, without necessary contact with any portion of the syringe.

12. In a cartridge syringe, a cartridge-holding barrel having a longitudinally slotted fore end with a seat therein for a needle enlargement; and a separate double-pointed needle having an intermediate enlargement, said needle adapted to be positioned in said holder by inserting the needle laterally and then moving it longitudinally to lodge its enlargement in said seat, the holder having a lateral opening continuous with the slot in its fore end through which slot and opening the needle may be passed to insert it laterally in the holder.

13. In a cartridge syringe, a cartridge-holder, a double-pointed needle having an intermediate enlargement, said holder having a seat for said enlargement, the parts constructed and arranged so that the inner end of the needle is adapted to pierce the fore end of a cartridge in said holder and the cartridge cooperates with said enlargement to hold the needle seated.

In witness whereof I have hereunto set my hand this 31st day of October, 1921.

HENRY KINSEY BROWN.