

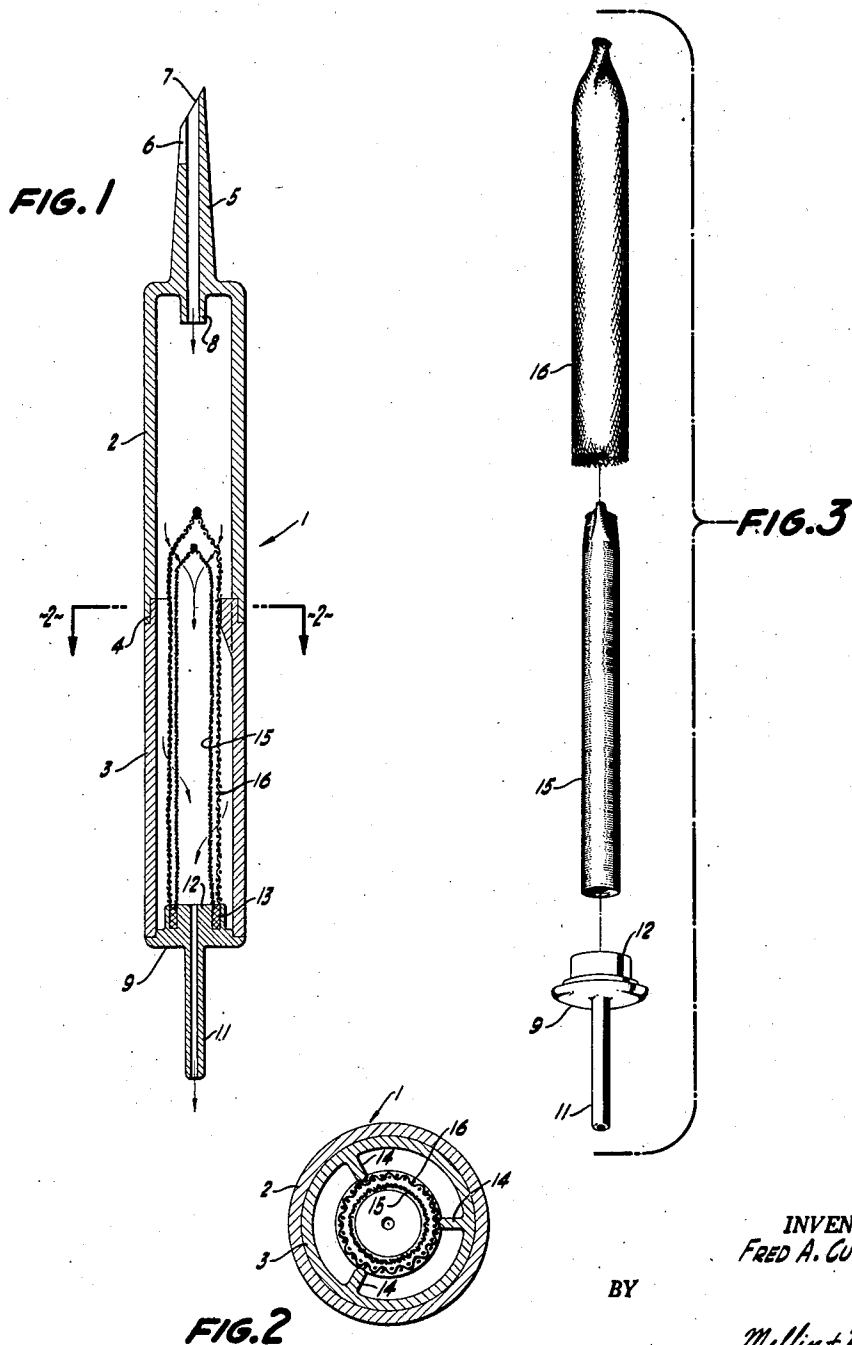
July 7, 1953

F. A. CUTTER

2,644,586

BLOOD STRAINER AND DRIP METER

Filed Aug. 1, 1949



INVENTOR.
FRED A. CUTTER

BY

Mellin & Hancock
ATTORNEYS

UNITED STATES PATENT OFFICE

2,644,586

BLOOD STRAINER AND DRIP METER

Fred A. Cutter, Oakland, Calif., assignor to Cutter Laboratories, Berkeley, Calif., a corporation of California

Application August 1, 1949, Serial No. 108,030

1 Claim. (Cl. 210—164)

1

This invention relates to blood strainers and drip meters suitable for use in making blood transfusions, and in general has for its object the provision of a device of this kind including a pair of series-arranged strainers, the first for limiting the size of the blood particles which reach the other, and the second for limiting the size of the blood particles which pass through the device.

Another object of this invention is the provision of a combination blood strainer and drip meter having a shell consisting of two or more molded plastic parts arranged to be cemented together to form an integral tubular structure for housing a pair of telescopically disposed cylindrical strainer elements.

The invention possesses other advantageous features, some of which, with the foregoing, will be set forth at length in the following description where that form of the invention which has been selected for illustration in the drawings accompanying and forming a part of the present specification is outlined in full. In said drawings, one form of the invention is shown, but it is to be understood that it is not limited to such form, since the invention as set forth in the claim may be embodied in a plurality of forms.

Referring to the drawings:

Fig. 1 is a vertical mid-section of a combination blood strainer and drip meter embodying the objects of my invention.

Fig. 2 is a transverse section taken on the section line 2—2 of Fig. 1.

Fig. 3 is an exploded view of the two strainers and casing cap shown in vertical section in Fig. 1.

Presently, blood transfusions are for the most part administered by the so-called indirect method as distinguished from the earlier method of passing blood directly from the donor to the patient. The indirect method involves the storing of the blood of a donor for several weeks in a flask containing an anti-coagulant solution. However, regardless of the use of an anti-coagulant, some blood slime and small blood clots persist in forming. Ever since the inception of the indirect method of making blood transfusions attempts have been made to strain out these solids, for as is well known the introduction into the veins of blood clot particles greater than a predetermined size cannot be tolerated. To this end, biological firms have provided various types of strainers through which hundreds of thousands of transfusions have been made. All such strainers have proved to be unsatisfactory

2

for the reason that the blood slime and blood clots have resulted in plugging the mesh and thereby materially reducing their rate of operation and capacity. Actually, the desired result is not to free the blood of all solid matter and end up with serum or fibrinogen free plasma, but merely to limit the fibrinogen particles to such a size that they will readily pass the heart valve or the cannula of the needle through which the transfusion is made. If some practical method could be devised for breaking up the blood clots and slime to a size of that order, there would be no necessity for straining the blood. Since no such method is known, applicant as above indicated has solved the problem by resorting to a pair of strainers, one for determining the particle size of the end product and the other for withholding the clotted fibrinogen and preventing it from gaining access to and plugging the first strainer.

The embodiment of applicant's invention as illustrated in the three figures above described includes a transparent casing or shell generally designated by the reference numeral 1 and made up of plastic sections 2 and 3 formed with a cemented lap joint 4. The upper end of the upper section 2 is provided with an upwardly extending tapered intake nipple 5 formed with a slot 6 and with a sharp point 7. Extending downwardly from the nipple 5 and as a continuation thereof is a test 8. Cemented to the bottom of the lower section 3 is a plastic cap or base 9 formed with a downwardly extending discharge nipple 11 and with a boss 12 extending upwardly into the section 3. Formed in the boss 12 is an annular channel 13. Molded integral with the upper end of lower section 3 are inwardly extending radial flanges or fingers 14.

Accommodated within the shell 1 are first and second telescoped cylindrical plastic screens 15 and 16 having their lower ends extending into the channel 13 and cemented therein. The upper ends of these screens are closed. The inner screen 15 may be of a mesh in the order of .004×.006" so as to preclude the passage therethrough of all blood particles of a size which might prove to be injurious if introduced into the blood stream. The outer screen 16 may have a mesh in the order of .020" and serves to prevent clots and slime from reaching the inner screen and thereby plugging it and reducing its capacity.

In the operation of this device, the inlet nipple 5 is either pierced through the stopper of the transfusion flask or connected therewith through a section of flexible tubing. The discharge nipple

3

11 is connected with a hypodermic needle through a section of tubing provided with a control valve, the needle being inserted into the vein of a patient. The blood entering the device drips from the teat 8 and in so doing its character and rate of travel can be observed by the physician or nurse. Blood clots are arrested at the outer screen and blood particles of a size larger than the cannula of the hypodermic needle are arrested by the inner screen, it being observed that the blood passes inwardly through both screens and from the interior of the inner screen to the discharge nipple 11.

From the above description it will be seen that I have provided a blood screening device capable of sustained operating capacity and of such simple and inexpensive construction that it need be used only once and then thrown away.

I claim:

A plastic blood drip meter and strainer comprising: upper and lower cylindrical shell members sealed together end for end to form a unitary structure, said upper member terminating

4

at its upper end in an upwardly extending inlet nipple and the upper end of said lower member being provided with inwardly extending spacing fingers; a cap sealed over the lower end of said lower member, said cap being provided with a downwardly extending discharge nipple and with a boss extending upwardly into the lower end of said lower member; a relatively fine cylindrical strainer fastened at its lower end to said boss over said discharge nipple, the upper end of said strainer being closed; and a relatively coarse strainer circumscribing said fine strainer; said fingers serving to hold the upper ends of said strainers centrally disposed within said shell members.

FRED A. CUTTER.

References Cited in the file of this patent
UNITED STATES PATENTS

Number	Name	Date
2,068,837	Aronson	Jan. 26, 1937
2,473,153	Lager	June 14, 1949