UNITED STATES PATENT OFFICE.

MARION DORSET, OF WASHINGTON, DISTRICT OF COLUMBIA, AND ROBERT R. HENLEY, OF TAKOMA PARK, MARYLAND.

PROCESS FOR THE SEPARATION OF BLOOD-SERUM.

1,270,271. Specification of Letters Patent. Patented June 25, 1918.

No Drawing. Application filed March 25, 1918. Serial No. 224,675.

(DEDICATED TO THE PUBLIC.)

To all whom it may concern:

Be it known that we, MARION DORSET, a citizen of the United States, residing in Washington, District of Columbia, and whose P. O. address is Department of Agriculture, Washington, D. C., and ROBERT R. HENLEY, a citizen of the United States, residing in Takoma Park, Maryland, and whose P. O. address is Department of Agriculture, Washington, D. C., have invented a new and useful process for the separation of blood-serum from blood-cells, and in particular for the separation of hog-cholera-serum antitoxin from the cells contained in defibrinated-blood antitoxin.

This application is made under the act of March 3, 1883, chapter 143 (22 Stat., 625), and the invention herein described and claimed may be used by the Government of the United States or any of its officers or employees in the prosecution of work for the Government, or any person in the United States without payment to us of any royalty.

Antitoxins, including hog cholera antitoxin, are obtained from the immunized animals by bleeding and the blood so drawn is usually either defibrinated by whipping or mixed with suitable anticoagulants to prevent the formation of fibrin. In either form there are present a solid, or semi-solid portion consisting principally of red blood cells, and a fluid portion which contains the antibodies. The fluid portion of the defibrinated blood is known as serum, while the fluid obtained from blood in which clotting has been prevented by the addition of anticoagulants is known as plasma.

The serum and plasma are separated from the cells by centrifugation. The amount of clear fluid that can be separated from the cells by either method varies considerably, depending upon the source of the blood. Hog's blood yields ordinarily not more than 50% and horse blood not more than 60%.

We have discovered that if neutral chemical salts in certain portions be added to blood, either defibrinated, citrated or oxalated, the yield of fluid that can be obtained therefrom may be materially increased thereby effecting a saving of antibodies which would otherwise be lost.

In operating our process we take a definite amount of antitoxin, in the form of either defibrinated blood or of blood in which fibrin formation has been prevented by anticoagulants, and add thereto a soluble neutral chemical salt. The salt, such as sodium chlorid, is added either as crystals or in solution in water, and is added in an amount sufficient to give the maximum yield of fluid without hemolyzing the cells. We have preferred to add an amount of salt sufficient to give a total concentration of from 2% to 3% salt in the final mixture. Following the addition of the salt, the fluid portion of the blood is separated from the solid portion by a suitable mechanical process. We ordinarily employ centrifugation for this purpose, but mere sedimentation may be employed.

Having described our process, we claim:

1. The process of adding to the defibrinated blood a neutral chemical salt to cause the contraction of the cells whereby their volume is diminished and the volume of clear fluid is increased without precipitation of the serum globulins or other soluble constituents.

2. The process of adding to blood, in which the formation of fibrin has been prevented, a neutral chemical salt to cause the contraction of the cells whereby their volume is diminished and the volume of clear fluid is increased without precipitation of the fibrinogen, serum globulins or other soluble constituents.

In testimony whereof, we affix our signatures in the presence of two subscribing witnesses.

MARION DORSET.
ROBERT R. HENLEY.

Witnesses:
C. N. MCBRYDE,
FRANK W. TILLEY.