

No. 719,776.

PATENTED FEB. 3, 1903.

F. FLAVITSKY.  
POCKET LABORATORY.

APPLICATION FILED JUNE 21, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 2.

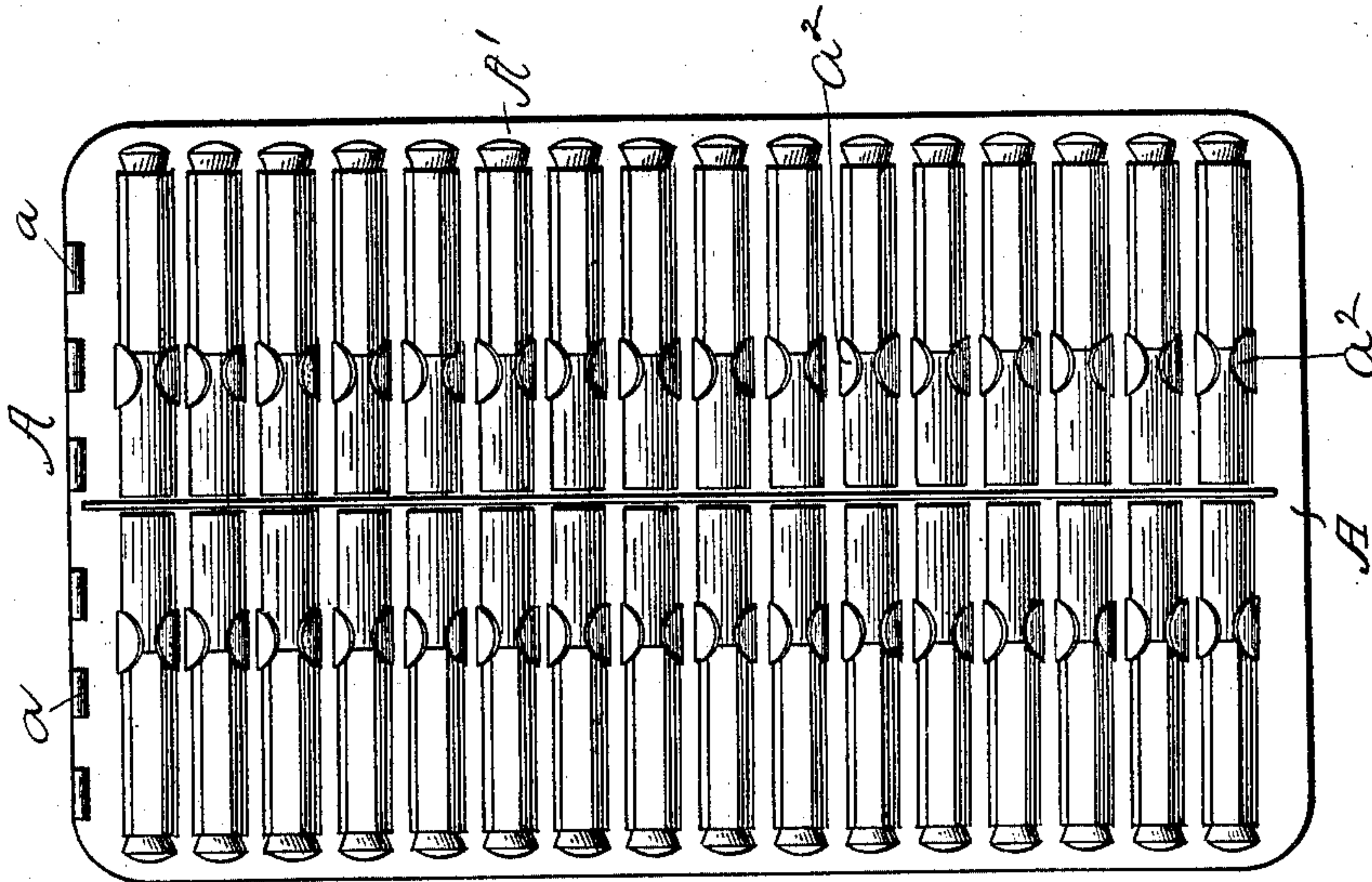
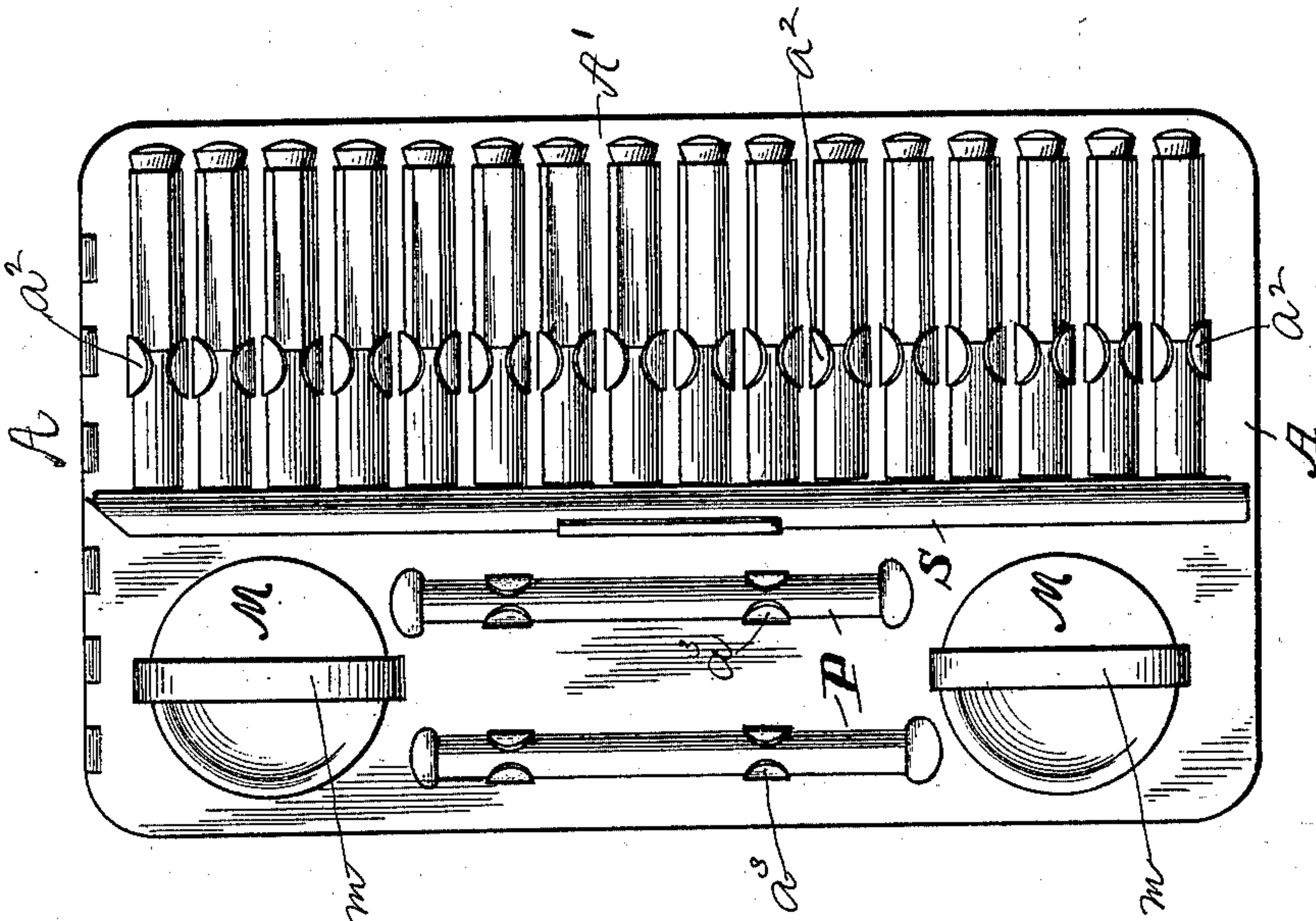


Fig. 1.



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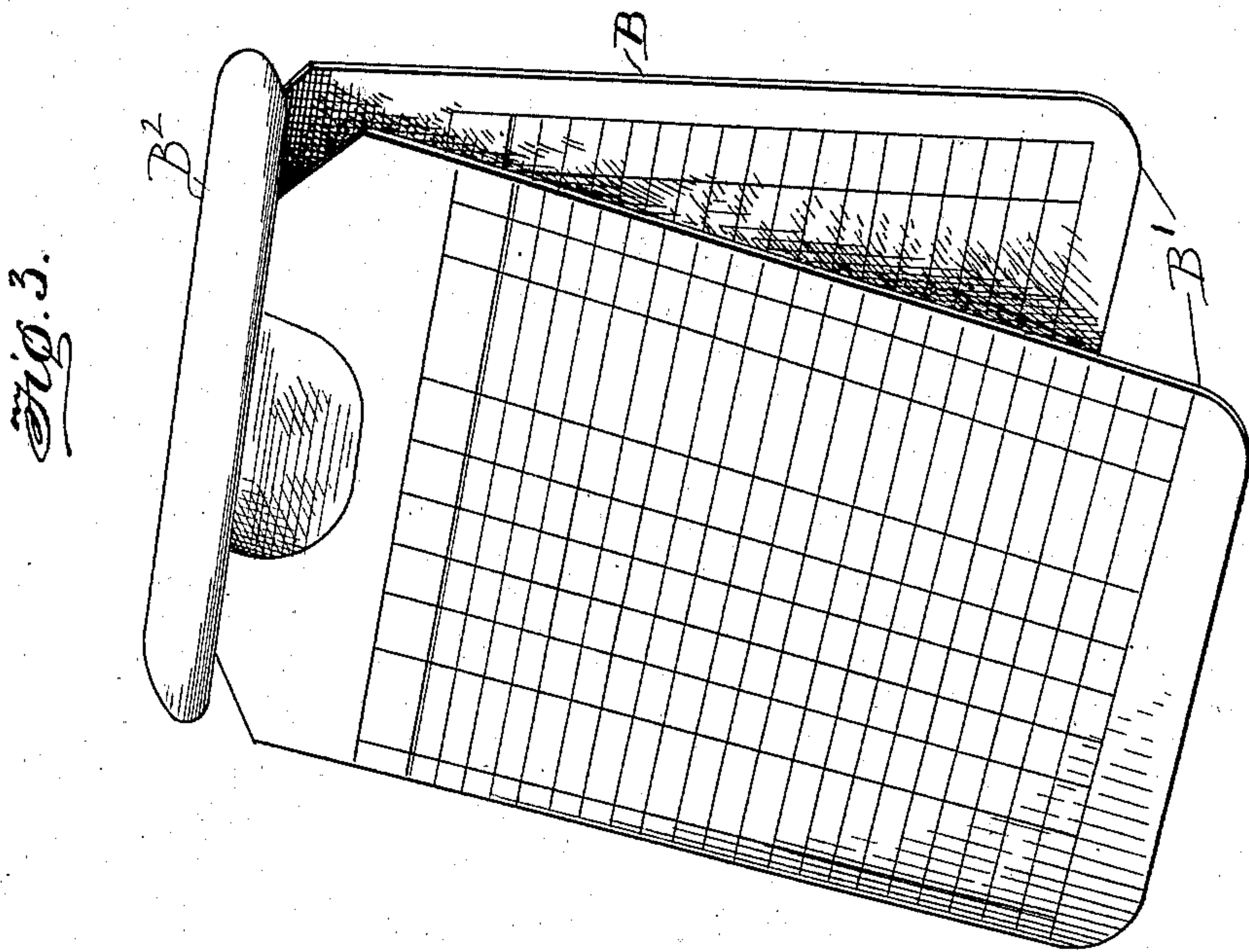
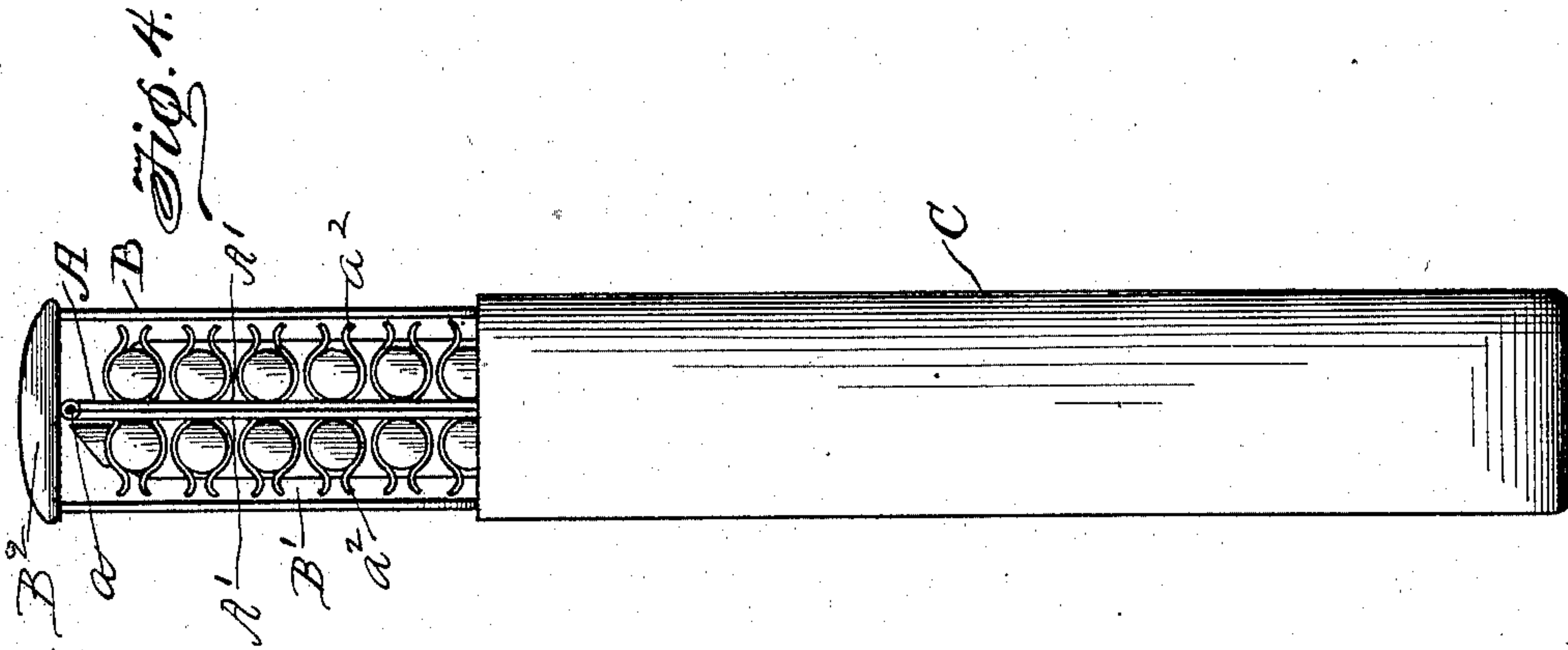
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2 SHEETS—SHEET 2.



Witnesses  
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# UNITED STATES PATENT OFFICE.

FLAVIAN FLAVITSKY, OF KAZAN, RUSSIA.

## POCKET-LABORATORY.

SPECIFICATION forming part of Letters Patent No. 719,776, dated February 3, 1903.

Application filed June 21, 1902. Serial No. 112,609. (No model.)

*To all whom it may concern:*

Be it known that I, FLAVIAN FLAVITSKY, a subject of the Emperor of Russia, and a resident of Kazan University, Kazan, Russia, have invented certain new and useful Improvements in Pocket-Laboratories, of which the following is a specification.

The object of the invention is to provide a pocket-laboratory for the study of the chemistry of solid substances and their use in chemical analysis, which consists of a set of solid substances required for the study and use in analysis of the chemical properties of some of the most important bases and acids in the form of their salts.

These objects I attain by the construction shown in the accompanying drawings, in which—

Figures 1 and 2 are side elevations of opposite sides of the folding metallic stand. Fig. 3 is a perspective of a second stand, and Fig. 4 is a side elevation of the complete apparatus with the two stands partially withdrawn from the outer case.

Salts of the following bases: lead, copper, silver, mercurous and mercuric oxid, bismuth, ferrous and ferric oxid, cobalt, nickel, manganese, chromic oxid, and ammonium. Salts of the following acids: hydrochloric, hydrobromic and hydriodic, chloric, nitric, sulfurous, hyposulfurous, sulfureted hydrogen, acetic, carbonic, oxalic, chromic, phosphoric, arsenious, [arsenicic, cyanic, sulfo-cyanic or rhodanic, hydroferrocyanic and hydroferri-cyanic.

The chemical properties of the components of solid salts is determined by their behavior toward equally solid reagents, and as such the following substances are used: potassium sulfid, caustic lime, sodium carbonate, sodium bromid, potassium iodid, potassium chromate, potassium ferrocyanid, potassium rhodanid, red litmus, copper sulfate, silver nitrate, ferrous and ferric sulfate, sodium bisulfate and ammonium carbonate.

A reaction between solid substances rarely takes place at a mere contact. In most cases it will be necessary to triturate together the air-dry pulverized substances. This may be done on a sheet of writing-paper with the aid of a little wooden stick S, cut obliquely at the end, a sample of which is to be found in the

apparatus. (See Fig. 1.) If a stronger trituration is required, white porcelain mortars M M, with porcelain or glass pestles P P, are used, the apparatus containing two of each.

The above salts and reagents, with a wooden stick, described above, two mortars, and two pestles, are placed on a folding metallic stand A, which, being folded up, can be laid inside another folding stand B. On the outer sides of the latter are fixed two printed tables, one giving the reactions of bases, the other of acids. On the inner side of the second stand are printed the formulæ and names of the substances contained in the collection, as also directions for the use of this pocket apparatus for the study of the chemistry of solid substances. The folding stand A comprises the two flat members A' A', hinged together at their upper ends, as at  $a$ , so as to lie face to face when folded, and adapted to be swung apart at their lower ends and form a  $\Lambda$ -shaped stand, like the stand B in Fig. 3. The outer faces of these members A' A' are provided with clips  $a^2$  for the bottles, clips  $a^3$  for the pestles P, and clips or loops  $m$  for the mortars M. The stand B is also formed of two flat members B' B', hinged together at their upper ends to a cross-piece B<sup>2</sup> near the longitudinal edges thereof, and these members are spaced apart sufficiently to receive the stand A and its contents. The first stand A folded up and inclosed in the second stand B, they are both laid in an étui-case C, the cross-piece B<sup>2</sup> then closing the upper open end of the outer case C and the whole forming a pocket-laboratory which can be used for the study of the chemistry of solid substances independently of any special laboratory appliances, and thus in any school or at home. As the reactions to be studied are selected with a view of their use for the purposes of chemical analysis, the pocket-laboratory can also serve for the analytical determination of those solid substances which contain the bases and acids previously studied.

I claim as my invention—

1. A pocket-laboratory, comprising a stand formed of two flat members hinged together at one edge to swing face to face, or apart into  $\Lambda$  shape, clips on the outer faces of the said members, a second stand, comprising two flat members, a cross-bar to which the ends of said



members are hinged a distance apart to receive the first stand between them, and an outer case into which the said second stand and its inclosed first-named stand may be slid; 5 substantially as described.

2. A pocket-laboratory, comprising a stand formed in hinged or folding sections provided on its outer sides with clips to hold the receptacles containing the substances in the collection, a second folding stand to inclose the first 10 one, and adapted to contain the formulæ &c., of the collection, and an outer case to receive the whole; substantially as described.

3. A pocket-laboratory comprising a stand 15 formed in sections hinged together at their upper ends and provided with clips and vials for the substances of the collection, a second stand formed in sections hinged together at their upper ends to a cross-piece and spaced 20 apart to inclose the first stand and its con-

tents, and an outer case, open at one end to receive the first-named stand, and be closed by said cross-piece; substantially as described.

4. A pocket-laboratory comprising a stand 25 formed in sections hinged together at their upper ends and provided on opposite sides with removable vials for the substances of the collection and with mixing device, a second folding stand to embrace the first and adapted to contain the names of the sub- 30 stances in the collection, the formulæ and directions for using the same, and an outer case to receive the whole, substantially as described.

In witness whereof I have hereunto set my 35 hand in presence of two witnesses.

FLAVIAN FLAVITSKY.

Witnesses:

N. TSCHÉKALOFF,

J. BLAU.