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MEANS AND METHOD FOR THE IDENTIFICATION OF SAMPLES FOR BLOOD TYPING

Filed July 30, 1963

Fig. 1.

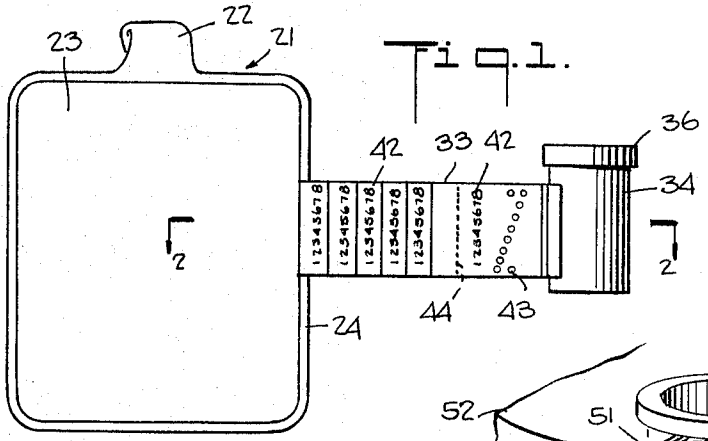


Fig. 3.

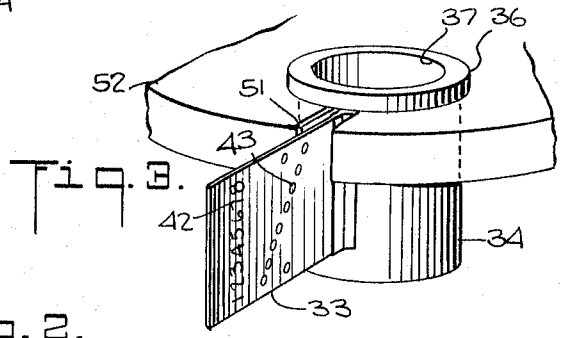


Fig. 2.

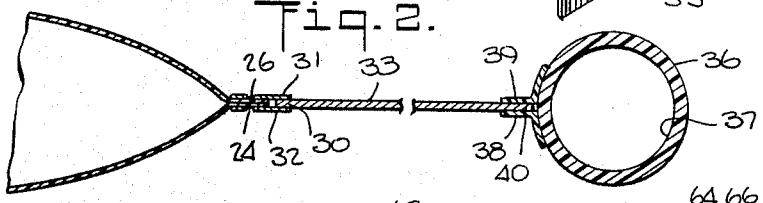
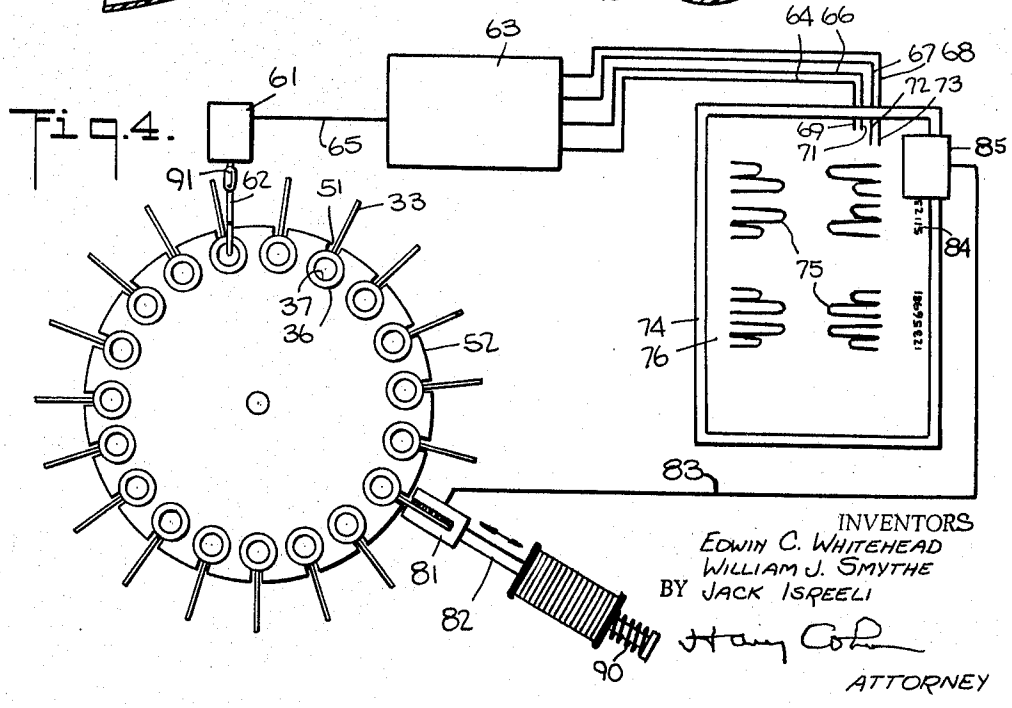


Fig. 4.



INVENTORS
EDWIN C. WHITEHEAD
WILLIAM J. SMYTHE
BY JACK ISREELI

ATTORNEY

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3,266,298

MEANS AND METHOD FOR THE IDENTIFICATION OF SAMPLES FOR BLOOD TYPING

Edwin C. Whitehead, Sloatsburg, William J. Smythe, Rye, and Jack Isreeli, Tuckahoe, N.Y., assignors to Technicon Instruments Corporation, Chauncey, N.Y., a corporation of New York

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32 Claims. (Cl. 73—53)

This invention pertains to the corresponding identification of materials in accordance with one or more related characteristics thereof, and has for a primary object the provision of a method and apparatus for the corresponding identification of containers in accordance with one or more related characteristics of substances contained therein.

Another object of the invention is the provision of a method and apparatus as above whereby the corresponding identification may be made in a convenient, economical and virtually foolproof manner.

A further object of the invention is the provision of a method and apparatus as above which are especially, but not necessarily exclusively, adaptable to the corresponding identification of blood donation receptacles and blood sample cups containing blood from the same donor, whereby the latter may be analyzed in automatic blood sample supply and analysis apparatus of the nature disclosed in U.S. Patent No. 3,038,340 issued June 12, 1962, to J. Isreeli (a joint inventor of the subject matter of this application), and the results of such analysis accurately correlated with the proper receptacle through the corresponding identification thereof.

Another object is the provision of a method and apparatus for automatically recording identifications of sample analyses in automatic analysis apparatus.

A serious problem in the operation of a blood bank resides in the ever present possibility of giving blood which is inaccurately identified, for example as to type, to a recipient whereby, if the blood to be transfused and the blood of the recipient are not of the same type, serious injury or even death may result. This problem may arise not only from instances in which blood is inaccurately analyzed as to type in the laboratory, but also through clerical error in incorrectly correlating accurate results of blood sample type analysis with the proper blood donation receptacle.

In a preferred embodiment herein disclosed, the present invention makes virtually impossible the occurrence of such clerical error and attendant serious consequences by providing for the secure attachment of a blood sample cup to the blood donation receptacle by means of a severable identification strip which is firmly affixed to both the receptacle and the cup before the filling thereof with blood from the same donor. Indicia of the identity of the blood donor in one or more forms, as for example printed numerals and/or punched holes arranged to represent the same numerals to suitable detecting means, are provided in at least two locations on the identifying strip. Only after the donation receptacle and the sample cup have been filled with blood from the same donor in the same operation, is the strip severed intermediate the said locations to provide two containers of the same blood from the same donor each having rigidly attached thereto a portion of the identifying strip bearing indicia in one or more forms of the identity of the said donor. The blood containing sample cup may then be utilized in automatic blood sample supply and analysis apparatus of the nature disclosed in the above mentioned U.S. Patent No. 3,038,340, and U.S. Patent No. 2,797,149 to L. T. Skeggs, whereby the blood contained in the cup is analyzed with respect to various properties thereof to provide a graphical

record indicative of the blood type. Detecting and recording means are in this instance cooperatively associated with the sample supply and analysis apparatus, whereby the blood donor identity indicia on the sample cup identification strip portion may be detected as the sample cup moves through the supply apparatus, and the identity of the blood donor recorded directly on, and preferably but not necessarily simultaneously with, the graphical recording of the blood type analysis results by the analysis apparatus. Thus will be provided blood type analysis results and a blood donation receptacle, each bearing corresponding indicia of the identity of the donor of the blood, leaving very little, if any, room for clerical error.

The above and other objects and advantages of the invention are believed made clear by detailed reference hereinbelow to the accompanying drawings wherein:

FIG. 1 is a side elevation of an interconnected blood donation receptacle, identification strip, and blood sample cup, of the herein disclosed preferred embodiment of the invention;

FIG. 2 is a cross sectional view taken along line 2—2 in FIG. 1;

FIG. 3 is a perspective view of a sample cup of the invention depicted in operative position within a sample plate of automatic blood sample supply and analysis apparatus of the nature referred to hereinabove; and

FIG. 4 is a block diagram of a plurality of the sample cups of the invention depicted in operative relationship with the said automatic blood sample supply and analysis apparatus.

Turning now to FIGS. 1 and 2, a blood donation receptacle of a plastic-like material is generally indicated at **21**, and seen to comprise foldover inlet and outlet spout **22**, and main body portion **23** formed by overlapped heat sealed edge portions **24** and **26**, respectively. The collection receptacle may, of course, take any suitable form and is here illustrated as of the foldable plastic type only because of the suitability and relatively widespread usage thereof. An identification strip **33** of any suitable material, as for example clear plastic, is rigidly attached to the overlapped edge portions of the receptacle, again in any suitable manner, as for example that depicted in the subject figures wherein attachment strips **31** and **32** overlap and are rigidly attached to both an adjacent end portion **30** of the identification strip and the adjacent overlapped collection receptacle edge portions **24** and **26**, respectively.

A blood sample cup **34**, which is preferably but not necessarily of the type disclosed in the above mentioned U.S. Patent No. 3,038,340, comprises lip portion **36** with opening **37** formed therein whereby blood may be introduced into and withdrawn from the cup. The cup is also rigidly attached to the identification strip, again in any suitable manner, which may take the form shown in the drawings wherein strip attachment elements **38** and **39** are fixed to the cup in the depicted spaced apart manner, and the adjacent end portion **40** of the identification strip firmly positioned and maintained therebetween in any convenient manner. Indicia of the identity of the donor of the blood which will ultimately be placed in both the collection receptacle and sample cup are provided, in one or more forms, in at least two locations on the strip. As depicted, such indicia will be seen to take the form of a blood donor identifying number **42**, reproduced at a plurality of locations thereon, and a "coded" array of punched holes **43** arranged adjacent the cup in a well known manner to represent the same number to suitable "card reading" detecting apparatus for purposes described in greater detail hereinbelow. The identifying number **42** may be reproduced more than twice on the strip in the depicted manner to provide a convenient supply of blood donor identity number labels. At this juncture it is

emphasized that the identification strip material, and the "coded" indicia provided thereon, may take any suitable form compatible with the intended purposes of the invention. For example, the strip might include an oxide coating and the "coded" indicia magnetized portions thereof detectable by one or more magnetic "heads" in a well known manner. Alternatively, the "coded" indicia might comprise portions of the strip which are either lighter or darker than the remainder of the strip whereby photoelectric detection means might be employed to detect the blood donor identity number represented by the indicia. In most instances, however, it will probably prove preferable though not necessary to include numerical indicia in addition to the "coded" indicia which are intelligible only to suitable detecting apparatus, whereby convenient visual verification and correlation of results is made possible in a manner described in detail hereinbelow.

In use, after a donation of blood has been collected from a donor in the donation receptable **21**, either the collection tube leading to the receptacle is stripped and drained into the sample cup **34** or, alternatively, a separate connection is made between the receptacle and cup whereby the blood may be transferred therebetween to result, in either event, in blood from the same donation of the same donor being placed within both the donation receptacle and the sample cup at approximately the same time. The identification numbers on the strip may then be quickly checked at a glance, if desired, to insure that all numbers are the same. The identification strip is then, but not before, severed along the dash line **44** resulting in the two containers of the same blood being separated from each other, with each container having firmly affixed thereto a significant part of the same identifying strip. In the depicted preferred embodiment, the strip portion affixed to the donation receptable would provide only numerical indicia of the identity of the blood donor, while the strip portion affixed to the sample cup would provide both numerical and "coded"—in the form of punched holes—indicia of the same blood donor identity.

FIG. 3 shows the sample cup **34** on a sample supply plate **52**, with the cup strip portion operatively positioned within slot **51** of the said plate. The sample supply plate **52** may be generally similar to that disclosed in the above-mentioned U.S. Patent No. 3,038,340. The portion of the identifying strip **33** which protrudes from the sample plate includes both the numerical and "punched hole" indicia of the blood donor identity, whereby the latter may be readily detected by a suitable "card reading" detecting means positioned in operative relationship relative thereto, while the former may be utilized for visual verification of the operation of such detecting means in a manner made clear hereinbelow.

Referring now to FIG. 4, a plurality of the sample cups of the invention are indicated in conjunction with automatic blood sample supply and analysis apparatus of the nature mentioned hereinabove. Briefly described, the said apparatus comprises the indexible sample plate **52** with a plurality of the sample cups **34** of the invention positioned thereon in plate slots **51** in the depicted manner. Blood sample take-off means **61**, including take-off crook **62**, are positioned as shown adjacent the periphery of the sample plate and operative, as the plate is indexed to position each sample cup in turn beneath the crook, for immersion of the inlet end of the crook tube in the blood contained in the cups for the aspiration of all or a portion of the blood for supply through conduit **65** to the automatic blood analysis apparatus **63**. It will be understood that the non-illustrated crook tube is threaded through the crook in the manner shown in the above mentioned United States Patent No. 3,038,340. The analysis apparatus may, for example, be of the nature disclosed in the above mentioned United States Patent No. 2,797,149. The blood samples are analyzed in respect to the effect of anti-serum thereon in the manner described in the United States application of W. J. Smythe, Serial No. 221,570 filed September 5, 1962, and assigned to the assignee hereof.

Once within the analysis apparatus, the blood is automatically tested for various properties determinative of the type thereof and the results of such tests transmitted electrically by lines **64**, **66**, **67** and **68** to recording pens **69**, **71**, **72** and **73** of multi-pen recorder **74**, whereby the pens may be moved relative to the recording chart **76** to describe curves **75** thereon as the said chart is in turn moved thereunder. It is these curves which represent graphically the results of the tests performed on the blood within the analysis apparatus, whereby proper curve interpretation will establish the type of the blood. The recorder **74** is preferably, but not necessarily, of the type disclosed in the copending application of W. J. Smythe and M. H. Pelavin, S. N. 298,762, now Patent No. 3,196,449, filed concurrently herewith and assigned to the assignee hereof.

Detecting means **81** of any suitable construction, in this case a "card reader" capable of detecting the blood donor identity indicia represented by the punched holes **43** in the protruding identification strip portions, are positioned adjacent the periphery of the sample plate **52** and movable, by a solenoid actuated plunger or core **82**, spring loaded as shown, into and out of operative relationship with the said identification strip portions as the cups are in turn indexed into alignment therewith. The detecting means **81** is biased away from operative relationship with the protruding identification strip portions by a spring **90** positioned as shown on plunger **82**. Mercury switch **91** is mounted on the crook **62** and closed only when the inlet end of the crook tube is immersed in a blood sample cup, to energize the solenoid coil and thereby move the plunger **82** and detecting means **81** into the depicted operative relationship with a protruding identification strip portion. Thus, as each sample cup is in turn indexed into position adjacent the detecting means, and the sample plate **52** brought to a temporary halt, the immersion of the tube of crook **62** in a blood sample cup will result in the closing of the mercury switch **91** and actuation of the solenoid to move the detecting means **81** against the action of spring **90** into operative relationship with the protruding identification strip portion attached to the sample cup positioned adjacent thereto. Upon the completion of the aspiration of blood by the crook, the crook is withdrawn from the cup whereby the mercury switch **91** is opened and the detecting means withdrawn from operative relationship with the protruding identification strip portion by the action of spring **90**. Thus, the sample plate **52** is free to index to the next position thereof for repetition of the operational cycles of the crook and detecting means.

The detecting means are connected by line **83** to an automatic printer **85** which is controlled by the operation thereof, whereupon the blood donor identity indicia detected by the detecting means from the sample cup identifying strip portions may be transmitted to the printing means for actuation of the latter to print the blood donor identity member **84** directly on the face of the recording chart **76** in alignment with the set of curves **75** which represent the results of an analysis upon blood from the same sample cup. The detecting means **81** will be seen in the subject figure to be spaced along the periphery of the sample plate **52** from the sample supply means **61**. This is made necessary by the fact that the supply of blood to the analysis apparatus, and the analysis thereof once supplied thereto, do not occur instantaneously after the blood is withdrawn from the sample cup by the crook **62**, but rather, require a certain period of time for the completion thereof. Thus, the detecting means must be spaced sufficiently from the take-off device to enable a sufficient time delay between the aspiration of a blood sample and the operation of the detecting and printing means, whereby it is insured that the blood donor identity number detected by the detecting means and printed by the printing means on the recording chart, is in alignment with the proper set of curves.

In the operation of the apparatus of FIG. 4, blood is aspirated from a sample cup indexed into alignment there-

with and supplied via conduit 65 to analysis apparatus 63 for the analysis thereof. In the meantime, other sample cups will be indexed into alignment with the said take-off means while the first mentioned cup is now being indexed toward the detecting means 81. After the expiration of a predetermined period of time, the analysis of the blood aspirated from the first mentioned cup will be completed and the results thereof transmitted to the recording pens 69, 71, 72 and 73 for recording on the recording chart 76. At the same time, the said first mentioned sample cup will be indexed into alignment with the detecting means 81 whereupon actuation of the solenoid actuated shaft 82 will position the said detecting means in the depicted operative relationship relative to the identifying strip portion affixed thereto. The blood donor identity indicia on the said strip portion will thus be detected by the detecting means and transmitted to the printing means 85 for printing upon the recording chart 76 in direct alignment with the group of curves 75 which represent the results of the analysis of the blood aspirated from the said first mentioned cup. At this point, all that remains is interpretation of the curves to establish blood type, and a visual comparison of the blood donor identifying number printed in alignment therewith with the same identifying number on the identification strip portion attached to a blood donation collection container, whereby the results of the analysis of blood from the same donor as that contained in the said container may be accurately correlated therewith. Thus the invention provides a method and apparatus making virtually impossible the confusion of blood donation receptacles and the results of analysis performed on blood from the same donor as that contained therein.

While we have shown and described the preferred embodiment of the invention, it will be understood that the invention may be embodied otherwise than as herein specifically illustrated or described, and that certain changes in the form and arrangement of parts and in the specific manner of practicing the invention may be made without departing from the underlying idea or principles of this invention within the scope of the appended claims.

What is claimed is:

1. In an apparatus for the corresponding identification of substances in accordance with a related characteristic thereof, at least first and second means for supporting substances, severable means affixed thereto and extending therebetween, said means being in the form of a flat strip, independently supporting said second means from said first means and bearing in at least two distinct locations indicia of said characteristic whereby the severance of the means intermediate the said locations will result in separate first and second means, each having a portion of the severable means affixed thereto and bearing indicia of the said characteristic.

2. In an apparatus for the corresponding identification of containers in accordance with a related characteristic of one or more substances contained therein, at least first and second substance containers, severable identification means extending therebetween and affixed thereto, said means being in the form of a flat strip, independently supporting said second container from said first container and having indicia of the related characteristic of the substances formed thereon in at least two distinct locations, whereby the severance of the means between the said locations will result in separate substance containers, each having affixed thereto a portion of the identification means including indicia of the related characteristic of the substances formed thereon.

3. In an apparatus as in claim 2, wherein the first container is a blood donation receptacle, the second container a blood sample cup, and the substance is blood from the same donor.

4. In an apparatus as in claim 2, wherein the indicia of the related characteristic comprise visually comprehensible indicia.

5. In an apparatus as in claim 2, wherein the indicia of the related characteristic comprise means for controlling the operation of a detecting means.

6. In an apparatus as in claim 2, wherein the indicia of the related characteristic comprise an identifying number, and means for representing the number to a detecting means.

7. In an apparatus as in claim 3, wherein the related characteristic is the identity of the blood donor, and the indicia thereof comprise a blood donor identification number and means for representing the number to a detecting means.

8. In an apparatus as in claim 7, wherein the locations of the indicia on the identification means are such that the latter may be severed to result in the identifying number appearing on both portions thereof, and the means for representing the number to a detecting means only or the portion thereof affixed to the sample cup.

9. In a method of providing for the corresponding identification of at least first and second containers in accordance with a related characteristic of one or more substances contained therein the steps of, independently supporting said second container from said first container by a flat strip and forming in at least two distinct locations on said flat strip indicia of the said characteristic, placing quantities of the substances in each of said containers, and severing said flat strip intermediate said indicia locations to make said two containers of the substances independent of each other, each having affixed thereto a portion of said flat strip bearing indicia of said related characteristic.

10. In a method of providing for the corresponding identification of a blood donation receptacle and a blood sample cup in accordance with the identity of the donor of blood contained therein the steps of, independently supporting said sample cup from said donation receptacle by a flat strip and forming in at least two distinct locations on said flat strip indicia of the identity of the blood donor, placing quantities of blood from the same donor within each of the receptacle and the cup, and severing said flat strip intermediate the said indicia locations to make said blood donation receptacle and said sample cup independent of each other and each having affixed thereto a portion of said flat strip bearing thereon indicia of the identity of the donor of the blood contained therein.

11. In an apparatus for the corresponding identification of substances and the results of analysis performed thereon, substance analysis apparatus including means for automaitically recording analysis results, substance supply means operatively associated therewith for automatically supplying substances thereto, substance container means including identifying means bearing thereon indicia for representing the identity of substances contained therein to detecting means, detecting means automatically operative to detect the said indicia, container means support means cooperatively associated with the substance supply means and the detecting means and automatically operative to in turn relatively position the container and supply means to enable the supply of substances from the container means to the analysis apparatus, and the container and detecting means to enable the detection of the substance identity indicia, and substance identity recording means cooperatively associated with the detecting means and the analysis results recording means and operative, in response to the operation of the detecting means, to automatically record the identity of a substance upon the results of an analysis performed thereon by the analysis apparatus.

12. In an apparatus as in claim 11, wherein the identifying means comprise identifying strip portions affixed to the container means and projecting therefrom, and the container means support means comprise an indexible turntable with slots formed therein, whereby the container means may be supported within the slots with the

identifying strip portions projecting therefrom for detection by the detecting means.

13. In an apparatus as in claim 12, wherein the substance supply means is positioned adjacent the indexible turntable at a first location and operable only when a substance container is indexed into a position on the turntable adjacent thereto, and the detecting means is positioned adjacent the indexible turntable at a second location spaced from said first location and operable only when a substance container is indexed into a position on the turntable adjacent thereto, whereby a time delay will occur between the supply of a substance from a container means to the analysis apparatus and the detection of the substance identity indicia affixed to the same container means.

14. In an apparatus as in claim 13, wherein the substances are blood, the substance container means blood sample cups, and the analysis apparatus automatic blood analysis apparatus operative to determine the blood type of blood samples supplied thereto.

15. In an apparatus as in claim 14, wherein the means for recording analysis results comprise a recording chart, the substance identity indicia represent blood donor identifying numbers, and the substance identity recording means a printer operable to print the said identifying numbers on the recording chart in response to the detection thereof by the detection means.

16. In an apparatus for the corresponding identification of substances and the results of analysis performed thereon, substance container means, identification means affixed thereto and projecting therefrom, said identification means including indicia for representing the identity of the substance to detecting means, and container means support means comprising slots shaped in accordance with the shapes of the container means and the projecting identification means affixed thereto, whereby the container means may be positioned in the support means with the identification means projecting therefrom.

17. In an apparatus as in claim 16, wherein the substance is blood and the container means blood sample cups.

18. In an apparatus as in claim 16, wherein the support means is an indexible turntable.

19. Automatic liquid-sample analysis apparatus, comprising a movable support for a plurality of containers for the liquid samples, an analyzer for the quantitative determination of a known constituent of the respective samples, each of said containers carrying sample-related indicia, said analyzer including a recorder having a chart on which recordings of said determinations are automatically made, means at one station for automatically transferring sample liquids from said containers in a flowing stream to said analyzer, said recorder having means to automatically print indicia on the recorder chart, detector means at a second station operable under the control of said sample-related indicia, carried by said containers, for automatically controlling the operation of said print means, and means for automatically indexing said support to move said containers individually first to said first station and thereafter to said second station.

20. A method for providing the corresponding identification of each of a given number of samples and the results of analysis respectively performed thereon, comprising the steps of: affixing to said given number of a plurality of container means different indicia respectively representative of the identity of the sample which is placed in such container means; operatively positioning each of said container means in an analysis apparatus; sequentially analyzing each of the samples and providing signals responsive to the results of each such analysis; sequentially sensing the indicia on each container means and providing signals responsive to the respective identity represented thereby; sequentially recording the signals responsive to the results of the analysis of each sample and the identity of such sample in correlation.

21. A method for providing the corresponding identification of each of a given number of samples and the results of analysis respectively performed thereon, comprising the steps of: affixing to said given number of a plurality of container means different indicia respectively representative of the identity of the sample which is placed in such container means; operatively positioning each of said container means in an analysis apparatus; sequentially analyzing each of the samples and providing signals responsive to the results of each such analysis; sequentially sensing the indicia on each container means and providing signals responsive to the respective identity represented thereby; sequentially recording the signals responsive to the results of the analysis of each sample and the identity of such sample on the same medium in correlation.

22. A method for the identification of analysis results of material in accordance with the identity of the supply of the material for a plurality of supplies of material, comprising the following steps: providing for each supply of material, a set of two containers joined by a common member with a portion of said each supply in each of such two containers, said common member having two arrays of indicia respectively disposed in different locations on said common member and each array identifying the associated container; severing each of said common members between said arrays of indicia whereby each container has an array of indicia attached thereto; operatively positioning one of said containers of each of said sets in an analysis apparatus; sequentially off-taking and analyzing the contents of each of said containers and providing signals responsive to the results of each such analysis; sequentially sensing the indicia on each of said containers in said analysis apparatus and providing signals responsive to the respective identity represented thereby; and sequentially recording the signals responsive to the results of the analysis of the contents of each container and the identity of such container in correlation while said containers are in said analysis apparatus.

23. A method for the identification of analysis results of material in accordance with the identity of the supply of the material for a plurality of supplies of material, comprising the following steps: providing for each supply of material, a set of two containers joined by a common member with a portion of said each supply in each of such two containers, said common member having two arrays of indicia respectively disposed in different locations on said common member and each array identifying the associated container; severing each of said common members between said arrays of indicia whereby each container has an array of indicia attached thereto; operatively positioning one of said containers of each of said sets in an analysis apparatus; sequentially off-taking and analyzing the contents of each of said containers and providing signals responsive to the results of each such analysis; sequentially sensing the indicia on each of said containers in said analysis apparatus and providing signals responsive to the respective identity represented thereby; and sequentially recording the signals responsive to the results of the analysis of the contents of each container and the identity of such container in correlation while said containers are in said analysis apparatus on the same medium.

24. A method for the identification of analysis results of blood in accordance with the identity of the supply of the blood for a pluraltiy of supplies of blood, comprising the folowing steps: providing for each supply of blood, a set of two containers joined by a common member with a portion of said each supply in each of such two containers, said common member having two arrays of indicia respectively disposed in different locations on said common member and each array identifying the associated container; severing each of said common members between said arrays of indicia whereby each container has an array of indicia attached thereto; operatively positioning one of said containers of each of said sets in an analy-

sis apparatus; sequentially off-taking and analyzing the contents of each of said containers and providing signals responsive to the results of each such analysis; sequentially sensing the indicia on each of said containers in said analysis apparatus and providing signals responsive to the respective identity represented thereby; and sequentially recording the signals responsive to the results of the analysis of the contents of each container and the identity of such container in correlation while said containers are in said analysis apparatus on the same medium.

25. A method for the identification of analysis results of material in accordance with the identity of the supply of the material for a plurality of supplies of material, comprising the folowing steps: providing for each supply of material, a set of two containers joined by a common member with a portion of said each supply in each of such two containers, said common member having two arrays of indicia respectively disposed in different locations on said common member and each array identifying the associated container; severing each of said common members between said arrays of indicia whereby each container has an array of indicia attached thereto; operatively positioning one of said containers of each of said sets in an analysis apparatus; sequentially off-taking and analyzing the contents of each of said containers and providing signals responsive to the results of each such analysis; sequentially sensing the indicia on each of said containers in said analysis apparatus and providing signals responsive to the respective identity represented thereby; and sequentially recording the signals responsive to the results of the anlysis of the contents of each container on a strip chart and the identity of such container in correlation while said containers are in said analysis apparatus and adjacent thereto on said strip chart.

26. Automatic analysis apparatus comprising: container means for containing a sample to be analyzed having machine sensible indicia representative of the identity of the sample contained therein; analysis apparatus for receiving said container means, for automatically off-taking the sample from said container means, for automatically analyzing the sample and for providing signals responsive to the results of such analysis, for automatically sensing said indicia on said container means and providing signals responsive to the identity represented thereby; and recording means, coupled to said analysis apparatus, for automatically recording the signals responsive to the results of the analysis and the identity of the sample analyzed in correlation.

27. Automatic analysis apparatus comprising: container means for containing a sample to be analyzed having machine sensible indicia representative of the identity of the sample contained therein; analysis apparatus for receiving said container means, for automatically off-taking the sample from said container means, for automatically analyzing the sample and for providing signals responsive to the results of such analysis, for automatically sensing said indicia on said container means and providing signals responsive to the identity represented thereby; and recording means, coupled to said analysis apparatus, for automatically recording the signals responsive to the results of the analysis and the identity of the sample analyzed on the same medium in correlation.

28. Automatic analysis apparatus comprising: a plurality of container means, each for containing a respective sample to be analyzed and having machine sensible indicia representative of the identity of the sample contained therein; analysis apparatus for receiving said plurality of container means, for automatically sequentially off-taking the respective sample from each said container means, for automatically sequentially analyzing each off-taken sample and for sequentially providing signals responsive to the results of each such analysis, for automatically sequentially sensing said indicia on each said container means and for sequentially providing signals responsive to the identity represented by such indicia; and recording means, coupled to said analysis apparatus, for automatically sequentially recording the signals responsive to the results of the analysis of each sample and the identity of such sample in correlation.

29. Automatic analysis apparatus comprising: a plurality of container means, each for containing a respective sample to be analyzed and having machine sensible indicia representative of the identity of the sample contained therein; analysis apparatus for receiving said plurality of container means, for automatically sequentially off-taking the respective sample from each said container means, for automatically sequentially analyzing each off-taken sample and for sequentially providing signals responsive to the results of each such analysis, for automaticaly sequentially sensing said indicia on each said container means and for sequentially providing signals responsive to the identity represented by such indicia; and recording means, coupled to said analysis apparatus, for automatically sequentially recording the signals responsive to the results of the analysis of each sample and the identity of such sample on the same medium in correlation.

30. In an apparatus for the corresponding identification of substances and the results of analysis performed thereon: a plurality of substance containers each having identifying means bearing thereon indicia for representing the identity of the substance contained therein; support means for supporting each of said substance containers with said respective identifying means at a predetermined orientation; said support means having a position whereat the off-taking of substance from a presented thereto container is enabled and a position whereas the reading-out of said indicia of said identifying means of a presented thereto container is enabled; said support means sequentially presenting each of said substance containers to said positions.

31. In an apparatus for the corresponding identification of substances and the results of analysis performed thereon: a plurality of substance containers each having identifying means bearing thereon indicia for representing the identity of the substance contained therein; detecting means for detecting the indicia on the identifying means of a substance container and for providing signals responsive thereto; support means for supporting each of said substance containers with said respective identifying means at a predetermined orientation; said support means having a position whereat the off-taking of substance from a presented thereto container is enabled and a position whereat the reading out of said indicia of said identifying means of a presented thereto container by said detecting means is enabled; said support means sequentially presenting each of said substance containers to said positions.

32. In an apparatus for the corresponding identification of substances and the results of analysis performed thereon: a plurality of substance containers each having identifying means bearing thereon indicia for representing the identity of the substance contained therein; detecting means for detecting the indicia on the identifying means of a presented thereto substance container and for providing signals responsive thereto; off-take means for off-taking substance from a presented thereto container; support means for supporting each of said substance containers with said respective identifying means at a predetermined orientation; said support means sequentially presenting each of said substance containers to said detecting means and said off-take means.

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LOUIS R. PRINCE, *Primary Examiner.*

RICHARD C. QUEISSER, DAVID SCHONBERG, *Examiners.*

S. CLEMENT SWISHER, *Assistant Examiner.*