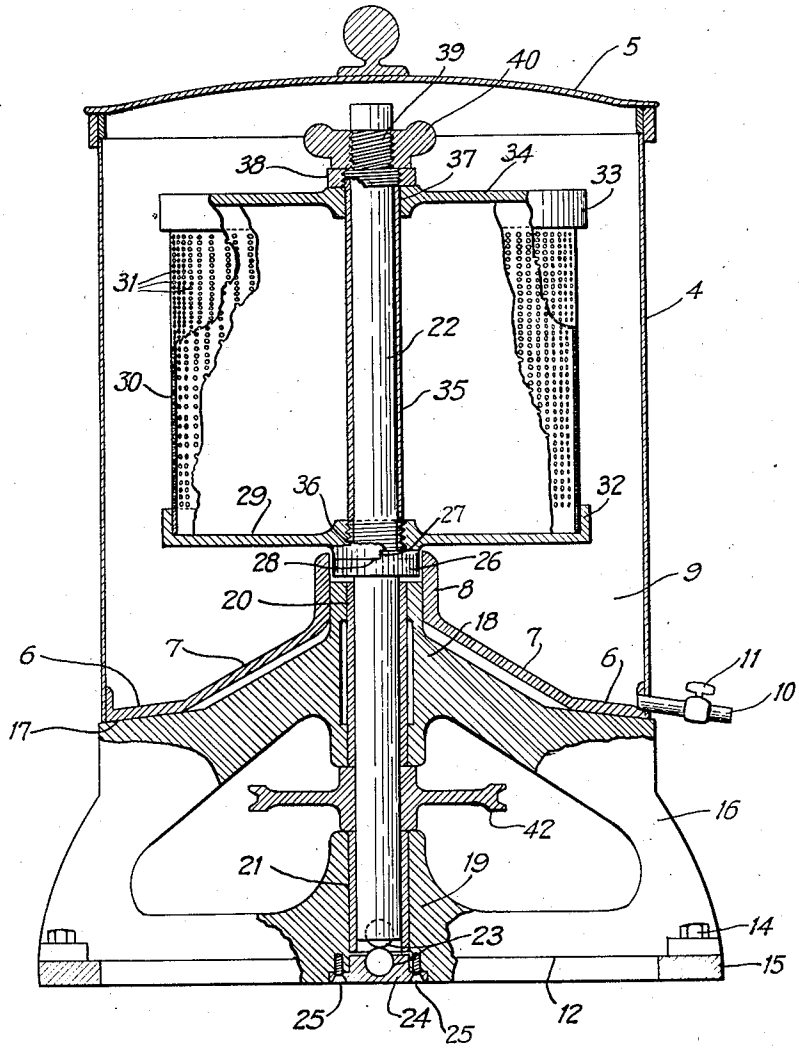
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CENTRIFUGAL BLOOD SEPARATING MACHINE FOR SERUM PLANTS

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CENTRIFUGAL BLOOD-SEPARATING MACHINE FOR SERUM PLANTS

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The present invention relates to serum extracting appliances, and aims to provide an improved and efficient apparatus of this character operating on the centrifugal action principle for effecting the serum separating or extracting function, when removing the serum content of the mixture placed in the machine.

Accordingly, the invention comprises a rotary container provided with suitable filtering openings for the discharge of the serum fluid extracted from the mixture into an outside drum or receptacle, where the serum settles and is conveniently drawn off in a relatively pure state free from any particles of foreign matter of any appreciable size.

It is also sought to provide an improved construction of this character in which the operation may be carried on in a substantially continuous manner, by interchangeability of parts, and in such a way that the material being handled may be kept practically free from any danger of contamination. It is also sought to provide a construction which may be efficiently operated either by hand power, or by power derived from a suitable motor.

With the foregoing objects in view, the invention will now be described by reference to the accompanying drawing, illustrating one practical form of construction devised for embodying the proposed improvements, after which those features and combinations deemed to be novel will be particularly set forth and claimed.

In the drawing—

The figure shown represents a vertical sectional view, with parts broken away, illustrating a serum extracting machine constructed in accordance with my invention.

Referring now to the drawing in detail, this illustrates the improved apparatus as comprising a cylindrical receptacle having the drum or body portion 4 fitted with a suitable cover member 5, and the bottom of the receptacle being of circular form having inwardly and upwardly inclined portions at slightly different inclines, as indicated at 6 and 7, and a central sleeve or hub portion 8, serving to form a settling well 9 for the collection of the serum fluid during the operation of the machine as hereinafter explained. The base of this well 9 thus is formed with continuous slope outwardly to effect the proper drainage of the serum fluid when this is drawn off through a bottom outlet pipe 10 which is equipped with a suitable valve 11.

The receptacle is supported in operative position by means of a casting providing an open framework comprising a base 12 secured by screws 14 to a base ring 15, the upper portion of the casting having a plurality of legs 16 formed with inclined supporting surfaces 17 for flat supporting engagement with the outer portion 6 of the bottom member of the receptacle 4. The central portion of the supporting base is formed with an upper bearing 18 and a lower bearing 19, provided with bearing bushings 20 and 21, respectively, for the mounting of the vertical shaft 22 having at its lower end a thrust bearing made up of the balls 23 retained in place by the cup element 24 secured to the bottom base of the casting member by screws 25.

The intermediate portion of the shaft 22 is provided with a collar portion 26 received within the hub portion 8 and formed with clutch teeth 27 adapted for removable clutching engagement with similar teeth 28 formed on the bottom face of the central portion of the bottom member 29 of the rotary receptacle designed to be operated by the rotation of the shaft 22. This receptacle comprises a suitably perforated drum 30 having separating or filtering openings 31 of appropriate size, the lower edge of the drum 30 being fitted inside the flange 32 of the collar member 29, and the upper margin of said drum 30 being similarly fitted within the flange portion 33 of the top head member 34 of said

receptacle. The central portion of the bottom member 29 is threaded (as indicated at 36) to the lower end of a sleeve 35 telescoping over the upper portion of a shaft 22 and slidingly engaging an opening 37 in the top or head member 34. The upper end of the sleeve 35 is threaded for engagement with a clamping washer 38 for securing the head member 34 in place upon the drum 30, and the upper end of the shaft is also provided with a thread 39 (of relatively higher pitch) for a wing nut 40 adapted to be turned down for clamping the rotary receptacle in place.

Preferably the lower end portion of the shaft 22 is provided with a belt pulley 42 intermediate with bearings 18 and 19, as shown, for the convenient application of a belt (not shown) designed to be driven from a suitable motor in the operation of the shaft 22 to rotate the drum or receptacle 30 as required.

In serum producing operations, as now conducted, a considerable waste is incurred due to the relatively incomplete extraction of the serum fluid from the blood and cloths as now used in such operations. The comparatively crude methods of extraction now employed rely upon the use of gauze cloths and manual instruments for extracting the serum fluid from the blood mass and after such operation the cloths and the fluid adhering thereto are simply thrown aside as waste. Nevertheless, a considerable quantity of the serum fluid is contained in this material and it is the purpose of the present invention to reclaim such otherwise lost serum products. Accordingly, I do away entirely with the use of gauze for containing the serum producing materials, (though the machine may be operated to extract the serum still retained in such gauze cloths if desired), the material from which the serum is to be extracted being placed directly in the receptacle 30, and the serum removed by the centrifugal action as produced by the rotary movement imparted to said receptacle through the medium of the shaft 22 and the drive to the pulley 42. After the material is placed in the receptacle 30 and its cover secured in place by means of the nut 38, said receptacle is mounted upon the shaft by threading the shaft through the sleeve 35 and secured in position for rotary movement by means of the lock nut 40. The cover 5 is then applied to the stationary receptacle 4, and the drive started for the rotation of the shaft and the drum or receptacle 30. As this receptacle is rotated, the serum fluid is driven out of the whirling mass, into the outer drum, where the fluid collects in the well 9, ready for withdrawal through the outlet tube 10 on opening of the valve 11.

After the operation has been completed with reference to any given contents in the receptacle 30, the wing nut 40 is removed and the receptacle simply withdrawn from the shaft, thereby automatically disconnecting the clutch teeth 27 and 28, and thereupon a second receptacle, which may be prepared for operation, may be immediately applied to the shaft in place of the one removed, thus enabling the operation to be maintained substantially continuous without any other interruptions than that necessary for replacing the receptacles 30 as often as necessary.

It is apparent that by this means the serum fluid present in any serum-producing material may be thoroughly and efficiently extracted by whatever degree of centrifugal action is necessary for completely removing the serum content from the mass placed in the receptacle. It is found that a considerable and important quantity may still be reclaimed from the product regarded as waste in the present operations employed for this extracting function. It is also apparent that the construction of the present appliance is such as to maintain the material being treated, and the resultant serum fluid extracted from such materials, practically free from any dangerous contamination from outside sources, the sleeve 35 and parts 7—8 shielding the material being treated from any contact with the shaft or driving mechanism, and the cover member 5 protecting the entire interior of the stationary drum during the operation of the machine.

It is thus apparent that I have devised a practical, simple and compact machine adapted to efficiently carry out the desired objects of the invention, and while I have illustrated what I now regard as the preferred form of construction for embodying the proposed improvements, I desire to expressly reserve the right to make all such changes or modifications as may fairly fall within the scope of the following claims.

Having thus described my invention, what I claim to be new and desire to secure by Letters-Patent is:

1. A serum extracting machine comprising an exterior receptacle, a perforated rotating receptacle mounted centrally within said first receptacle, the bottom of said exterior receptacle being inclined to form a serum collecting well draining to the lower outer margin thereof and formed with an inwardly projecting hub portion, a shaft mounted axially of said hub portion, and means shielded within said hub portion for forming a disconnectible drive connection between said shaft and rotating receptacle.

2. A serum extracting machine comprising a base member formed with a central vertical bearing surrounded by supporting shoulders, an upright shaft journaled in said bearing, an exterior receptacle carried by said shoulders, the bottom of said receptacle being inclined to form a serum-collecting well draining to the outer margin thereof and also formed with a central hub portion surround-

ing said bearing and providing an annular recess around the shaft above said bearing, a perforated rotating receptacle removably sleeved upon said shaft, and clutch means housed within said annular recess and providing a disconnectible drive connection between said shaft and the bottom of said rotating receptacle.

In witness whereof I hereunto affix my signature.

CECIL E. MITCHUM.