FIG. 3, which is an enlarged section of detail III in FIG. 2, shows the funnel element 26 whose inner part 31, made of some plastic material, has a flow channel therethrough which defines a funnel-shaped outlet opening 32 which is sealingly contacted by the point 33 of the hollow needle 34 if the sample input device is in the initial position shown. The inner part 31 of the funnel element 26 is held in a fitting 35 which is inserted into an opening of a carrier plate 36 and fastened by a ring 37.

The opposite end of the flow channel in the funnel element 26 defines an inlet opening within a nipple 38 to which the feed pipe 21 is connected. Besides, via orifices 22,23 configured as T-elements, the feed pipe 21 is connected to the hose pipes 17,18 leading to the vessels containing the standard media, for example, in a manner not shown here, and to fitting 24 for the supply of outside air.

The valves 19,20,25 are pinch valves in this variant, permitting the hoses running in suitable guides to be squeezed shut by means of pin bolts 39 actuated by lifting magnets or similar such devices.

The carrier plate 36 carrying the funnel element 26 is supported by springs 40 relative to a supporting part 41 fixed in the housing, and may be pushed away from the hollow needle 34 in the direction of the needle axis against the force of the springs 40, by means of two guiding sleeves 43 sliding along guide rods 42. Further details of the shifting mechanism will be discussed below (cf. FIGS. 4 to 6).

With regard to FIG. 3, it should be noted that only one of the valves 19,20,25 will be open if the hollow needle 34 is in the initial position of the sample input device (as shown), and that the medium entering the input opening 4 located in the point 33 of the hollow needle 34 is permitted to flow in only from one of the hose pipes 17,18 or from fitting 24.

FIG. 4 presents the sample input device in its initial position, with the actuator flap 44 shown in FIGS. 5 and 6 removed for the sake of clarity. With its point the hollow needle 34 is in sealing contact with the outlet opening of the flow channel through the funnel element 26 described above (cf. FIG. 3); at the bottom of the funnel the nipple 38 is shown which provides a connection for the feed pipe (not indicated here). The remaining parts presented in FIGS. 4 to 6 and mentioned before in the description of the drawings, again have their former reference numbers.

In FIG. 5 the actuator flap 44, which may be made from moulded plastic, forms part of the housing of the analyzer (not shown here) in the initial position of the sample input device, covering the whole area of the sample input device. At its upper end the actuator flap 44 is connected to a tilting lever 53. This tilting lever includes a generally U-shaped swivel bracket 45 which includes a base 45*a* to which the actuator flap is connected and two arms 45*b*. It also includes a shaft 46 which extends through the arms 45*b* and is fixed at its opposite ends in the respective guide rods 42 of the supporting part 41, and a cross axle 45′ which extends through the arms 45*b* near their free ends. The swivel bracket 45 is rotatable about shaft 46 when the actuator flap 44 is tilted away from the front face of the analyzer by an angle 47 (e.g., 90°). In the tilted position of the actuator flap 44 (indicated by a dash-dot line) its upper end 48 will rest against a stop 49 (made from some elastic material, for instance) which is attached to the housing. The lower end 50 of the actuator flap 44 has a slight upward bend to facilitate handling; in the initial position the lower end 50 rests against a stop 51 on the carrier plate 36, which stop again may be made from some elastic material.

Attached to the cross axle 45′ of the bracket 45 are the upper ends of arms 55 of a lever mechanism 52. The lever mechanism 52 also includes a cross element 56 which is connected between the lower ends of the arms 55 and through aligned openings in the guiding sleeves 43. The tilting lever 53 and lever mechanism 52 together provide a two-part articulated lever system. When the actuator flap 44 is tilted upwardly, this causes the swivel bracket 45 to rotate about shaft 46, which in turn causes the cross axle 45′ to initially move along a circular arc (toward the carrier plate 36). As a result, the arms 55 of lever mechanism 52 are moved downwardly, causing the guide sleeves 43 to slide downwardly along the guide rods 42 (in parallel with the central axis of the hollow needle 34), thus lowering the carrier plate 36 and compressing the springs 40. The carrier plate 36 will assume the position shown in dash-dot lines in FIG. 5. In this manner the funnel element 26 is moved away from the point of the hollow needle 34 when the lower end 50 of the actuator flap 44 is lifted.

Once a given tilting angle of the actuator flap 44 has been reached, the cross axle 45′, due to the continued rotation of the swivel bracket 45 around the fixed shaft 46, will contact the hollow needle 34 from within the analyzing apparatus, carrying it along if the actuator flap 44 is lifted any further until the feed position (not shown in this drawing) has been reached. As is seen in FIG. 4, the cross-element 56 of the lever mechanism 52 is provided with an elastic cover 57 in order to protect the needle when the needle is in its initial position. The configuration of the tilting lever 53 and its cooperation with the hollow needle 34 may also be seen in FIG. 2.

Furthermore, FIGS. 4 and 5 show the positioning of a photoelectric sensor 58 which is mounted on part 41 fixed within the analyzer housing by screws 59, and may be adjusted to the initial position of the hollow needle 34, and which will provide, via a connecting plug 60, information on the particular position of the needle to the evaluation and control unit of the analyzer (not shown here).

Due to the configuration and design of the swivel bracket 45 and the linkage of the two levers 52, cooperation with the springs 40 will ensure that the actuator flap 44 will be arrested either in the initial position indicated by a full line, or in the feed position indicated by a dot-dash line, after a threshold point has been passed, and will remain there until movement towards the other position is initiated by the operator.

FIG. 6 shows that the upper end of the hollow needle 34 is held in a needle support block 61 which also rotates around the shaft 46 between the arms 45*b* of the swivel bracket 45 and is carried into feed position by the tilting lever 53 (cf. FIG. 4) when the actuator flap 44 is lifted. Continuous contact between the hollow needle 34 and the elastic cover 57, or cross-element 56 of the tilting lever 53, is ensured by a spring 62 between the swivel bracket 45 and the needle support block 61.

We claim:

1. An analyzing apparatus for analyzing liquid or gaseous samples which comprises

a sample input device including a movable hollow input needle which defines a central axis and has a point end in which an input opening is located, and a tilting mechanism to move said hollow input