The invention relates to a device for tapping beer from containers and especially from kegs as described in the introductory part of Claim 1.

A device of this kind is known from DE-A-2 531 697. A dispensing tap of another kind is known from US-A-1 995 098 in which a kind of distributor element is fastened directly to the container by means of a tube-like prolongation. Finally, GB-A-1 068 055 and US-A-3 327 899 show flexible tubes between the air pump and the extractor tube of a tapping device.

The aim of the invention is to improve a device of this general type so that it can be more easily manufactured and fitted.

The objective is achieved according to the invention by means of the characterizing features A to F in Claim 1.

The following description of preferred embodiments of the invention, together with the accompanying drawings, provides a more detailed explanation. In the drawings :

Figure 1 is a cross-sectional view of a tapping device for beer or other drinks containing carbon dioxide;

Figure 2 is a view of the device from above seen in the direction of the arrow A in Figure 1 and

Figure 3 shows schematically an alternative embodiment of a distributor-coupling bushing.

The tapping device shown in Figure 1 for beer or other drinks containing carbon dioxide comprises a housing 1 having an arm 2, directed to the right in Figure 1, inside which extends a beer outlet pipe, formed by a flexible tube 3, which for its part opens to the outside at an outlet end 4 of the arm 2. On the underside of the housing 1 a lug 5,

fixed to the housing, and an elastically movable lug 6 are provided by means of which the housing 1 can be clipped, in a known way, on the upper rim 7 of a keg 8 filled with beer or the like the lid 9 of which is closed by a plug 11.

An extractor tube 12, the length of which approximately corresponds to the height of the keg 8, projects downwards from the housing 1. This extractor tube 12 is passed through the appropriately constructed plug 11 in a known way. Then the extractor tube 12 is pushed through the plug 11 until the housing 1 can be clipped onto the rim 7 of the keg by means of the lugs 5, 6. As a result of this the bottom opening 13 of the extractor tube 12 is located just above the bottom of the keg 8.

The housing 1 also carries an air pump 15 on its upper side comprising a fixed piston housing 16 on the outer side of which a cap 17, which covers the housing and comprises a gripping part 18, can be pushed with a sliding movement. On the top side of the piston housing 16 there is an annular disc-shaped flexible membrane 19 which bears by means of its outer edge on the inner side of the cap 17. Inside the piston housing 16 there is also a pipe for pressurized air, for example in the form of a flexible tube 21, which is connected to a nonreturn valve 22 fixed to the upper wall of the piston housing 16.

When the cap 17 covering the piston housing 16 is moved upwards, the edge of the membrane 19 moves away from the inner side of the cap 17 and external air streams from below into the space formed between the top side of the piston housing 16 and the inside of the cap 17. If the cap 17 is then pushed downwards again, the edge of the membrane 19 bears in a sealing manner against the cap 17 and the air between the piston housing 16 and the cap 17 is transferred through the nonreturn valve 22 into the pipe for pressurized air formed by the flexible tube 21.

A distributor element 25 is fixed, for example by adhesion or screwing, inside the housing 1, which element protrudes freely in the topmost region of the extractor tube 12, by means of a downwardly

projecting coupling bushing 26, forming a relatively wide annular gap between the external wall of the coupling bushing and the internal wall of the extractor tube. The distributor element 25 contains at the top a tapping valve 27 which can be operated by means of a tapping lever 28 pivotably fastened to the housing 1. The tapping valve 27 is pressed by means of a spring 29 against the upper edge of the coupling bushing 26 so as to form a seal. When the tapping lever 28 is pressed down the valve 27 is lifted from its seat in the coupling bushing 26.

Furthermore, a first flexible tube nipple 31 is formed on the distributor element 25 for connection of the flexible tube 21 and a second flexible tube nipple 32 for connection of the flexible tube 3.

As shown, the extractor tube 12 is screwed by means of an external thread into the internal thread of a collar 33, which also is formed on the distributor element 25, and an annular seal 35 is inserted between the collar 33 and a shoulder 34 on the extractor tube 12.

The extractor tube 12 comprises lateral air outlet openings 36 which in the operating condition of the device are located below the plug 11 and above the level 37 of the liquid which is present in the keg 8. Below these air outlets 36 the bottom edge of the coupling bushing 26 is sealed against the internal wall of the extractor tube 12 by means of an annular seal 38. Thus on operating the pump 15, air flows through the flexible tube 21, the nipple 31, the annular space between the extractor tube 12 and the coupling bushing 26, and the air outlet openings 36 into the space between the level of the liquid 37 and the lid 9 of the keg. The liquid in the keg is thereby pushed downwards so that it rises inside the extractor tube 12, enters the coupling bushing 26 and fills this up to the tapping valve 27. During this the coupling bushing 26 provides a barrier between the air introduced and the liquid. If the tapping valve 27 is now opened by operating the lever 28, as a result of the effect of the prevailing air pressure the liquid (beer) passes outwards through the flexible tube 3 into a vessel held ready for it.

The construction of the tapping device described above has the following advantages compared with the state of the art: a special, narrow, ascending pipe extending over the entire length of the extractor tube 12 is no longer necessary. The cross-section of the beer outflow channel is in practice determined by the relatively large internal diameter of the extractor tube 12, the likewise also relatively large internal diameter of the coupling bushing 26 and the likewise large internal diameter of the flexible tube 3. Because the dispensed beer does not have to pass through any narrow region on its way from the keg through the extractor tube 12 and the coupling bushing 26, relatively large amounts flow at a low speed to the outlet end 4 of the device. Consequently the beer releases almost no carbon dioxide on passing through the extractor tube 12 and the coupling bushing 26. It can therefore be tapped without foam formation. Foam is formed from the beer only after it has flowed into the vessel to be filled. Consequently it can be dispensed up to approximately 30% faster then with devices having the afore-mentioned narrow ascending tube.

The following measurements have been found to be particularly advantageous :

internal diameter of the extractor tube 12 : between 8 and 10 mm,

external diameter of the coupling bushing 26 : between 7.5 and 9.5 mm,

Internal diameter of the coupling bushing 26 : maximum 9 mm.

Particularly preferred values are 9, 8 and 6 mm for the internal diameter of the extractor tube 12, the external diameter of the coupling bushing 26 and the internal diameter of this bushing respectively.

As shown, in contrast to the state of the art the annular space between the extractor tube 12 and the coupling bushing 26 which is involved in the admission of air also has a relatively large cross-

sectional area so that the supply of pressurized air is proportionately facilitated and improved.

In the case of the embodiment of the invention shown in Figure 1, the coupling bushing 26 which forms part of the distributor element 25 is fixed to the housing 1. In another preferred embodiment of the invention the coupling bushing 26, which is responsible for the separation of the air from the beer, can also be constructed separately from the remaining functional parts of the distributor element 25, namely the nipples 31, 32 and the seat for the tapping valve 27. Such an embodiment is indicated schematically in Figure 3. A coupling bushing 126, corresponding to the coupling bushing 26 in Figure 1, is in this case inserted in the extractor tube 12 and is fixed forming a seal with the tube 12 below the air inlet openings 26. At the upper end (not shown in Figure 3) of the extractor tube 12 and the coupling bushing 126 a seal is made in the customary way with the housing 1 of the device. Otherwise the embodiment shown in Figure 3 operates just like the embodiment shown in Figure 1.

In another embodiment, the coupling bushing 126 can also be inserted as a separate intermediary element between the extractor tube 12 and the housing 1.

In the case of the two last mentioned embodiments the nipples 31, 32 and the seat for the tapping valve 27 are constructed so that they are fixed in another way in the housing in which the extractor tube 12 can also be installed, for example by a screw connection.

The air pump 15 with the manually displaceable cap 17 described in connection with Figure 1 can also be replaced by another source of gas pressure, for example by a carbon dioxide cartridge.

As can be seen from Figure 1, according to the invention the flexible tube 21 which forms the pressurized air supply line is located between the nipple 31 of the distributor element 25 and the stationary piston housing 16 of the air pump 15. The nonreturn valve 22 is inserted

in this tube 21 in its end nearest the piston housing 16. This results in the advantages that the end of the flexible tube which contains the nonreturn valve 22 is held tightly sealed in the recess 41 provided for this purpose and simultaneously the nonreturn valve 22 is fixed to the piston housing 16. Consequently the construction and assembly of the pump are particularly simple since a special seating device for the nonreturn valve 22, which previously had to be provided, is not necessary. The flexible tube 21 can consequently also be replaced by another channel for pressurized air, for example a rigid tube. As shown, the nonreturn valve 22 comprises a plurality of circumferential sawtooth-like ribs 42 at its upper end for sealing and fixing purposes.

CLAIMS

1. A device for tapping beer from containers, especially from kegs, comprising a housing, which can be fixed to the container, having a tapping valve, a closable outlet passage passing through the tapping valve, an air pump, an extractor tube connected to the outlet, which can be introduced into the container forming a channel for the outflow of beer and comprising lateral air outlet openings, and a thin walled coupling bushing, located only in the upper region of the extractor tube, having a smaller external diameter than the internal diameter of the extractor tube and a smaller length than the extractor tube, which coupling bushing forms a seal against the beer outflow channel below the air outlet openings and separates this channel from the flowpath of the air supplied so that air can be introduced into the container above the level of the beer from the air outlets through an annular space formed between the coupling bushing and the extractor tube, and wherein the housing comprises an arm, equipped with the outlet, which can be fixed to the rim of the container;

characterized in that

A. a permanently attached piston (16) of the air pump (15) is formed on the housing (1);

B. the coupling bushing (26) is a component of a distributor element which can be fixed to the housing (1);

C. a first flexible tube nipple (32) and a second flexible tube nipple (31) are provided on the distributor element (25) to which the first flexible tube (3) and the second flexible tube (21) are fastened respectively;

D. the distributor element (25) contains the tapping valve (27);

E. a first flexible tube (3) extending inside the arm (2) which can be fixed to the housing (1) connects the outlet (4) to the outlet from the tapping valve (nipple 32) on the distributor element (25); and

F. a second flexible tube (21) extending inside the piston (16) connects the air pump (15) to the annular space between the coupling bushing and extractor tube.

2. A device according to Claim 1, characterized in that

G. a nonreturn valve (22) is disposed in that end of the second flexible tube (21) which is connected to the air pump (15) which holds this end in a sealed manner in a recess (41) surrounding the tube (21) externally and is itself fixed thereby.

3. A device according to Claim 2, characterized in that, for sealing and fixing purposes, the nonreturn valve (22) comprises a plurality of circular ribs (42) having a sawtooth-like cross-section.

4. A device according to Claim 1, characterized in that the distributor element (25) comprises a collar (33) with an internal thread into which the extractor tube (12) which has a corresponding external thread is screwed.

5. A device according to Claim 1, characterized in that the internal diameter of the extractor tube (12) is between 8 and 10 mm, the external diameter of the coupling bushing (26) is between 7.5 and 9.5 mm, and the internal diameter of the coupling bushing is not greater than 9 mm.

6. A device according to Claim 5, characterized in that the internal diameter of the extractor tube (12) is approximately 9 mm, the external diameter of the coupling bushing (26) is approximately 8 mm, and the internal diameter of the coupling bushing is approximately 6 mm.