Dec. 24, 1929. P. KRAUSE 1,740,863

TUBULAR CAN BODY HORN

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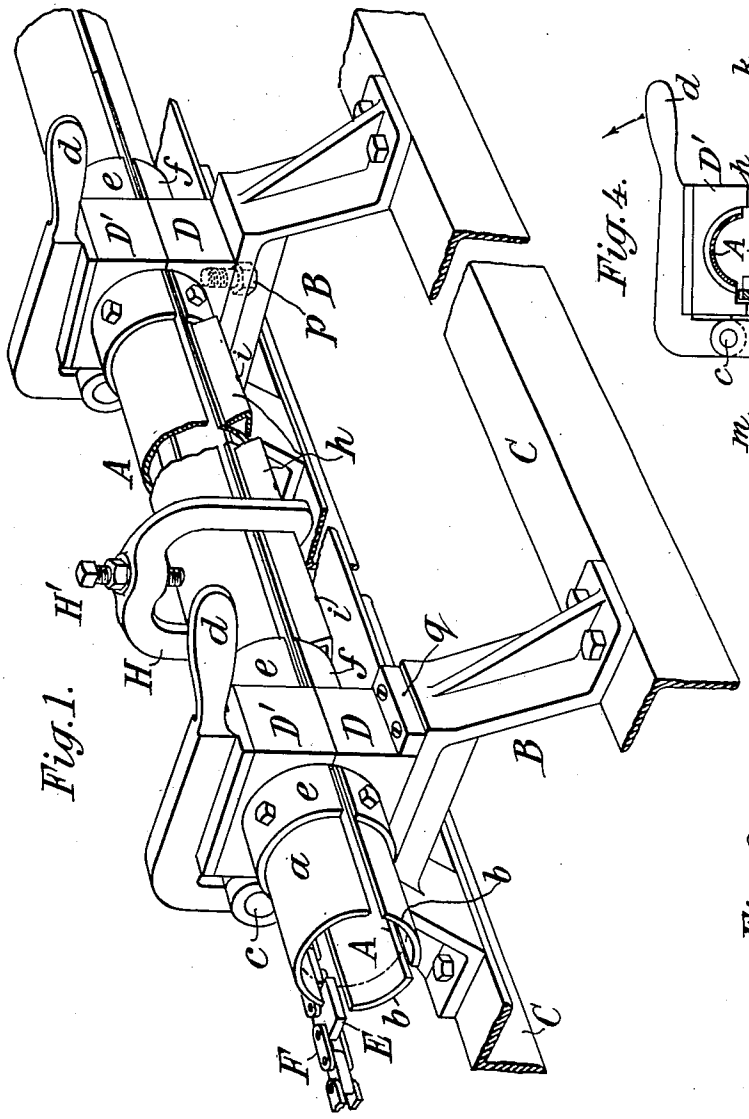


Fig. 1.

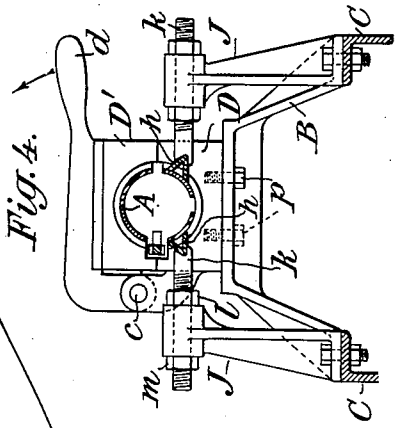


Fig. 4.

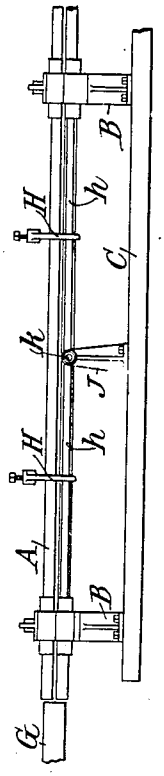


Fig. 2.

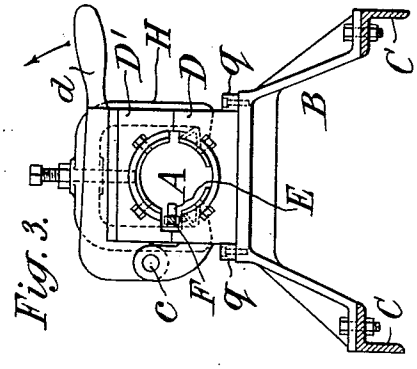


Fig. 3.

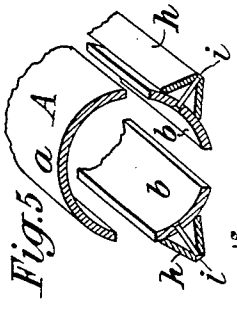


Fig. 5

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UNITED STATES PATENT OFFICE

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TUBULAR CAN-BODY HORN

Application filed September 14, 1928. Serial No. 306,081.

This invention relates to horns or horn-extensions for can-body-making or soldering machines. It further relates to tubular horns which encircle the can-body, the body being pushed along within the horn.

Such horns have heretofore been made of a cage or skeleton of rigid bars or rails of cast metal, which are externally supported at intervals, and are bored out internally to make a smooth runway for the can bodies within the horn. According to the present invention, the horn is made of a wrought metal tube,—either an integral tube which is longitudinally divided, or a series of rolled segments of a tube; in either case the segments or sections of the complete tube are fastened at intervals within external supporting frames to give them suitable rigidity. The division between the segments are diametrically opposite, so that the tube is in halves which may be separated to open the tube for the removal of any can bodies which may become stuck or clogged within it.

In the accompanying drawings which illustrate the preferred embodiment of the invention,—

Figure 1 is a perspective or oblique elevation partly broken away.

Fig. 2 is a side elevation on a reduced scale.

Fig. 3 is an elevation viewed from the left-hand end in Fig. 1.

Fig. 4 is a transverse section at an intermediate point.

Fig. 5 is a fragmentary view in cross-section and oblique elevation.

Referring to the drawings, A is the tubular horn, which in this example is composed of three segments, *a*, *b*, *b*. These are supported at or near opposite ends and at one or more intermediate points, by supporting frames B B which may rest on the longitudinal members or rails C C of a main frame. On the frames B B are blocks D D′, each consisting of a lower block D mounted on the frame B, and an upper block D′ resting on the block D and preferably hinged thereto at *c* so that it may be turned back. The lower blocks D D have fastened to them the lower tube members *b*, *b*, and the upper blocks D′ D′ have fastened to them the upper tube member *a*. The upper blocks are conveniently provided with handles *d*, *d*, by which they may be lifted and thrown back on their hinges in order to get access to the interior of the tubular horn.

The horn members *a*, *b*, *b*, are of rolled or drawn wrought metal, being either sections cut from a tube, or rolled sections of preferably the cross-section shown in Fig. 5, the several members being arcs of equal radius and assembled concentrically so as to form segmental portions of a complete tube of such size that the can bodies as they come from the body-forming mechanism, may pass freely through it. The upper member *a* approximates to a half circle with the gaps or spaces between it and the lower members located oppositely in a horizontal plane, so that when the upper blocks are thrown back, the top or upper half of the composite tube is thus lifted off, leaving the lower members in place and exposing the can bodies which are within the horn. These separations or gaps between the members constitute in effect slots in the complete horn, one function of which is to permit the can bodies moving within the horn to be seen from outside, while another function is to afford room for the movement of pushers E, one of which is shown in Figs. 1 and 3, and which are preferably mounted on an endless chain F to move while projecting within the horn sufficiently to engage and propel the successive can bodies. The two lower members *b*, *b*, are preferably somewhat less than a quarter circle, and are separated at the bottom by a gap or slot which in addition to having a ventilating function, serves also when the horn is used in a can body soldering machine, to permit the soldering iron or other soldering device to project up through it in order to apply solder to the side seam of the can bodies.

Ordinarily the horn shown in Fig. 1 will be used as a soldering horn, and constitutes in effect an extension of the body-forming horn. The two horns are arranged coaxially, as shown in Fig. 2, where G is the delivery end of the body-forming horn or horn-extension of the can-body-making mechanism.

The can body being formed by wrapping around this horn G, is pushed forward by the usual feeding device and enters within the tubular horn A, being caused to move therein either continuously or intermittently by the pushers E on the chain F. The horn A may be of varying lengths, according to the purpose required. For example, for a can-soldering machine it may approximate 12 or 15 feet in length, and may be supported by the two frames B B at or near the opposite ends, and one or more similar frames located between at suitable intervals to give the requisite support.

With a structure so long and formed of tube segments *a*, *b*, *b*, which are relatively thin, the supports must be sufficiently frequent to prevent sagging or distortion, or else some stiffening means should be employed. As one such stiffening means there are shown lateral extensions *e*, *f*, from the respective blocks D D′ to either side. As the segments *b*, *b*, are inherently less stiff than the upper segment, it is desirable to strengthen or stiffen them by applying angle-irons *h*, *h* to them at intervals by rivets *i*, *i*, or by spot-welding or otherwise. As the lower segments are liable to sag down slightly under the weight of the can bodies within them, it is desirable to resist this and support their weight by suitable stirrups or clamps H, H, one of which is shown in perspective in Fig. 1, and mainly in dotted lines in Fig. 3. These may be located as shown at H H in Fig. 2, or otherwise. These stirrup clamps have inturned toes which come underneath the angle-irons *h*, and at top each one has a screw H′ which bears down upon the top of the tubular segment *a*, so that by adjusting the screw the clamp will lift more or less the lower segments.

Also, since the lower members *b*, *b*, are liable to spring laterally, it is desirable, to hold them in perfect parallelism, to embrace them laterally by means of adjustable abutment brackets J J which are shown in detail in Fig. 4, and one of which is shown in elevation in Fig. 2. These comprise upright brackets forming supports for adjustable bars *k* notched at their ends to engage the angle-irons *h* and screwthreaded and adjustable out or in by means of nuts *l*, *m*.

Since in a can-body-soldering machine the horn is liable to be subjected to widely different temperatures at different times, it is desirable to provide for its longitudinal expansion and contraction. For this purpose one or more of the blocks D D may be mounted slidably on the brackets B B. It is preferable to anchor the horn fixedly at some intermediate point, which may be done by screwing fast the block D to the bracket B, as shown at the farther bracket in Fig. 1, and as shown in Fig. 4, where the fastening means are tap screws *p*. The other blocks D are mounted so that they rest freely on the tops of the brackets B, being guided between pieces *q*, *q*, constituting slideways, as shown at the left in Fig. 1 and in Fig. 3.

The improved horn, being built up of rolled or otherwise forged sections of wrought metal, may be assembled without any machining or finishing, and the horn thus constructed is compact and of light weight, so that when it becomes desirable to open it, the throwing back of the blocks D′ carrying the upper horn member *a* is accomplished without material effort.

I claim as my invention:

1. A tubular can body horn extension consisting of channel-shaped sections of wrought metal pipe, each being a segment of a hollow cylinder, with external supporting frames to which the sections are united concentrically, with longitudinal separations to form a slotted tube, the separations being on opposite sides to form two half tubes, an upper and a lower half, the frames for the lower half being stationary and the frames for the upper half being movable to permit the upper half to be lifted to open the horn.

2. A horn extension consisting of tubular segments comprising an upper channel forming approximately a half tube and two separated lower channels forming together approximately a half tube.

3. A horn extension consisting of tubular segments comprising an upper channel forming approximately a half tube and two separated lower channels forming together approximately a half tube, and longitudinal ribs applied to strengthen the lower channels.

4. A horn according to claim 2, with external braces applied to engage and hold the channels.

5. A horn according to claim 2, with an external brace adapted to engage beneath portions of the lower channels and adjustably supported on the upper channel.

6. A horn according to claim 2, with external lateral braces applied to prevent spreading of the lower channels, consisting of fixedly-supported adjustable bars.

7. A horn according to claim 2, the horn fastened to one of the supporting frames and having a longitudinally-sliding engagement with another frame to permit of longitudinal expansion and contraction.

In witness whereof, I have hereunto signed my name.

PETER KRUSE.