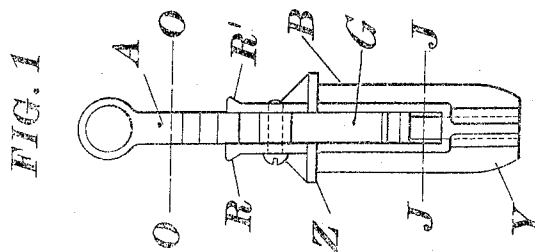
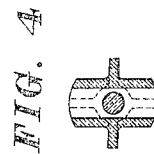
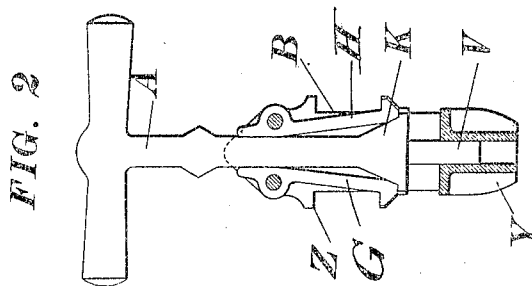
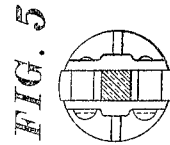
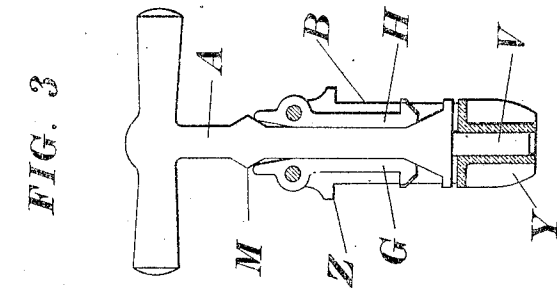


No. 813,384.

PATENTED FEB. 20, 1906.

K. KIEFER.
LIFTING DEVICE.
APPLICATION FILED MAR. 27, 1905.



Witnesses.

G. W. Warden
E. J. Appleton

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KARL KIEFER, OF CINCINNATI, OHIO.

LIFTING DEVICE.

No. 813,384.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Original application filed November 21, 1904, Serial No. 233,647. Divided and this application filed March 27, 1905. Serial No. 252,268.

To all whom it may concern:

Be it known that I, KARL KIEFER, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Lifting Devices, the operativeness of which is acquired by novel means, of which the following is a specification.

This invention has been described in my application for an improvement in a filter, Serial No. 233,647, filed November 21, 1904, and is herein claimed.

The object of my invention is to provide means for the insertion and extraction of filter layers in a filter. The drums of such filters are three feet deep or more, and the insertion of the first filter elements requires the leaning of the man into the drum and makes it desirable to be able to insert the filter element with one arm. After insertion he then should release the lifting device with one hand. The operation of insertion and withdrawal of this instrument should also be done quickly and easily.

This new and improved lifting device is illustrated by the accompanying drawings, of which—

Figure 1 is a side view of the lifting device, showing position of the lifting-hooks when held or suspended by the handle. Fig. 2 is a vertical cross-section of the lifting device, showing same position of lifting-hooks as Fig. 1. Fig. 3 is a vertical cross-section showing position of lifting-hooks when the device is held or suspended by the frame part. Fig. 4 is a cross-section on lines J J, Fig. 1; and Fig. 5 is a cross-section on line O O, Fig. 1.

The lifting device consists of four parts—the frame part B, the handle part A, and the two lifting-hooks G and H.

If the handle part A is held or suspended and the frame part B, carrying the lifting-hooks G and H, is allowed to drop, as shown in Fig. 2, the lifting-hooks are seen to be actuated and spread automatically by the inclined-plane part K. This action takes place when the device has been inserted in the filter layers, and the handle part A is taken hold of in the act of removing said filter layers from filter. If, however, the frame part B is held by means of the two projections R and R', as shown in Fig. 1, the handle part A drops and by means of the inclined-plane part M, as shown in Fig. 3, spreads the upper

part of the lifting-hooks G and H, which causes them to release their hold and be contained entirely within the frame part B, offering no resistance when extracting same from the filter layer. This action takes place automatically when it is desired to have the device release its hold and to remove same from the filter layer. The handle part A is guided on the frame B by means of a cylindrical guide V and also between the lifting-hooks G and H.

The frame part B is turned off so that it fits into the cylindrical hole of the filter layer. There is an offset Z, which prevents insertion beyond a certain limit. This offset is so regulated that the hook part of the lifting-hooks G and H is opposite projections contained within the filter layer. The offset also comes into play if on account of dirt or any other mechanical obstacle the lifting-hooks G and H do not return to their natural perpendicular position for the purpose of extraction. The handle part A can then be forced downward against the frame part B, that is held by means of this offset Z against the cylindrical hole of the filter layer. The relative position of the handle cross-bar proper and the two projections R and R' of the frame part is such that while the hand of the operator surrounds the cross-bar it may by stretching the fingers take hold of the projections R and R' without changing the position of the hand. In extracting the frame part by means of the projections R and R' the palm of the hand can push the handle downward, while the fingers lift the frame part upward. This motion brings the lifting-hooks G and H within the frame part B. The part K of the frame part not only spreads the lifting-hooks G and H, as shown in Fig. 2, but also supports them at the end of its motion. The weight is therefore directly on the handle part, and the pins around which the lifting-hooks G and H swivel are released from all strain. This is important, as the lifting-hooks have to enter holes of one and one-eighth inches diameter, which size does not give much opportunity for strong wearing parts.

The frame part B at its lower end is coneshaped, which facilitates insertion in the filter layer. The part B is made long enough so that it pinions one filter layer and also enters the filter layer immediately below with

its part Y and causes, therefore, the filter layer to be deposited to come exactly concentric to the filter layer immediately below.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a filter-layer-lifting device, the combination with a frame part, of a handle part, means to take hold of the frame part without changing the position of the hand on the handle part, and a plurality of lifting-hooks operated by the handle part.
2. In a filter-layer-lifting device, the combination with a frame part, of a handle part adapted to be taken hold of by means of a handle proper and to spread, when moving upward, a plurality of lifting-hooks.
3. In a filter-layer-lifting device, the combination with a frame part, of a plurality of lifting-hooks suspended normally vertically on pins around which they loosely swing and adapted to be spread by an upward movement of the part which is taken hold of when extracting the filter layer, and released by a reverse movement of the same part.
4. In a filter-layer-lifting device, the combination with a frame part having a projection to prevent overinsertion, of a plurality of lifting-hooks, a handle part for taking hold of and extracting the filter layers, and means attached to such handle part to spread and release said lifting-hooks.
5. In a filter-layer-lifting device, the combination with a frame part, of a plurality of

lifting-hooks, a handle part for taking hold of and extracting the filter layer, and means attached to such handle part to spread and release said lifting-hooks.

6. In a filter-layer-lifting device, the combination with a handle part and a frame part, the handle part consisting of a vertical part centrally and longitudinally movable in the frame part, and also having a cross-bar to be taken hold of by the hand when extracting the filter layer, of means to take hold of the frame part situated immediately below said bar, and a plurality of lifting-hooks spread by the handle part when moving upward relatively to the frame part.

7. In a filter-layer-lifting device, the combination of a handle part and a frame part, the handle part consisting of a vertical part centrally and longitudinally movable in the frame part, and also having a cross-bar to be taken hold of by the hand when extracting the filter layer, means to take hold of the frame part in close vicinity of the cross-bar of the handle part, and a plurality of lifting-hooks spread by the handle part when moving upward relatively to the frame part.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

KARL KIEFER.

Witnesses:

G. W. WERDEN,
E. J. APPLETON.