Feb. 14, 1956 P. VON ARX 2,734,498

ARRANGEMENT FOR CLEANING METAL AND STONE SURFACES THROUGH IMPACT

Filed Aug. 7, 1953

Fig. 1

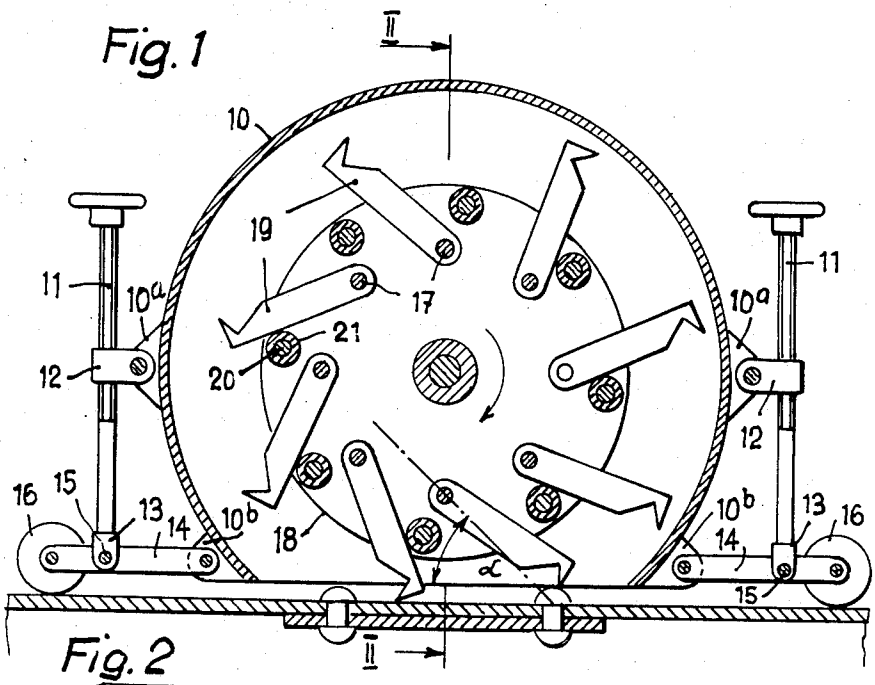


Fig. 2

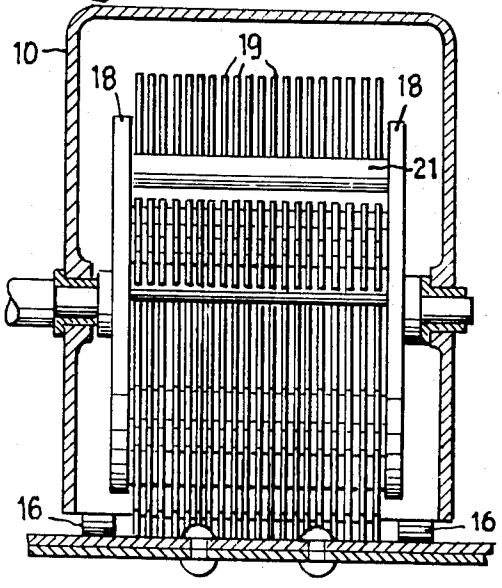


Fig. 4

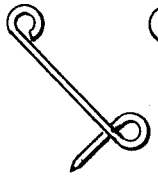


Fig. 5

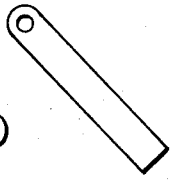
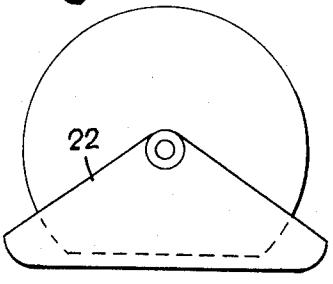


Fig. 3



INVENTOR

PAUL VON ARX

Kenderoth, Lind & Ponack

Attorneys

United States Patent Office 2,734,498 Patented Feb. 14, 1956

2,734,498

ARRANGEMENT FOR CLEANING METAL AND STONE SURFACES THROUGH IMPACT

Paul von Arx, Sissach, Switzerland, assignor to P. von Arx & Co., A. G., Sissach, Switzerland, a Swiss company

Application August 7, 1953, Serial No. 372,931

Claims priority, application Switzerland August 11, 1952

1 Claim. (Cl. 125—3)

The present invention has for its object an arrangement for cleaning metal and stone surfaces through impact, characterized by the fact that a casing mounted on suitable supports and opening downwardly carries between its terminal surfaces a rotary system including two lateral vertical plates between which spindles, extending in annular formation, carry each a series of pivoting adjacent hammers forming impact tools projecting beyond the plates, the range of operation of said tools being limited by abutment rods extending also between the lateral plates in a manner such that during the rotation of the rotary system, the hammers may exert their impact on the surfaces to be cleaned, in succession and in accordance with the sequence of the shafts carrying them, the angle of impact being always acute.

Accompanying drawings illustrate by way of example two embodiments of an arrangement according to the invention, together with two detail modifications thereof. In said drawings:

Fig. 1 is a cross-section through the arrangement in accordance with a first embodiment;

Fig. 2 is an axial cross-section through line II—II of Fig. 1;

Fig. 3 is a lateral view of the arrangement according to a second embodiment;

Figs. 4 and 5 relate to the detail modification above referred to.

The arrangement according to Figs. 1 to 2 includes a substantially cylindrical casing **10** opening downwardly and mounted on suitable supporting means which include two lateral uprights **11** standing in the medial vertical cross-section of the arrangement and each of which is connected with a lateral vertical lug **10***a* rigid with the casing **10** through a nut **12**, engaging the threaded uprights and pivotally secured to the corresponding lug. The two uprights **11** are engaged at their lower ends inside sleeves **13** through each of which a spindle **15** extends, which connects two parallel links **14** with each other. These parallel links **14**, forming with the spindle **15** a lateral support for the casing, are pivotally secured to the lower lug **10***b* provided on said casing and their outer ends are each provided with a carrier wheel **16**. The rotation of the uprights **11** round their axes provides thus for adjustment of the distance between the casing **10** and the surface of the member to be cleaned, said member on which the arrangement is laid being constituted in the present case by two metal sheets riveted to each other. In the two flat lateral walls of the casing **10** facing each other is revolubly mounted a rotary system including an annular series of carrier spindles **17** interconnecting two lateral plates **18**. On these carrier spindles **17** are pivotally secured, in adjacent relationship, a number of hammer-shaped impact tools **19** projecting beyond the periphery of the plates **18** which may also assume the modified shape illustrated in Figs. 4 and 5. For limiting the amplitude of oscillation of the hammers **19**, there are provided a plurality of abutment rods **20** extending, also in annular formation, between the lateral plates **18** on the outside of the annulus constituted by the carrier spindles, said abutment rods being provided with coats **21** constituted e. g. by small rubber sheaths; the arrangement of said abutment rods **20** with reference to the carrier spindles **17** is such that, during the rotation of the rotary system, the hammer-shaped tools may not move towards the left-hand and towards the right-hand side with reference to their carrier spindles beyond the terminal positions illustrated in Fig.1.

In operation, the rotary system is operatively connected with an electric driving motor through the agency of a flexible shaft and the arrangement is shifted onto the surface to be cleaned. During the rotation of the rotary system in the direction illustrated in Fig. 2 by an arrow, the hammer-shaped impact tools engage, in succession as defined by the sequence of the shafts **17**, the surface to be cleaned under an acute angle α of about 45°, whereby the latter is cleaned through the impact of the hammer-shaped tool. The angle α defining the direction of impact on the surface to be cleaned, may be adjusted between predetermined limits, say between 30 and 60° through an adjustment of the uprights **11**, which may be of importance according to the nature (iron or stone) and the state of material to be cleaned.

Fig. 3 shows an arrangement similar to that described hereinabove wherein, however, the distance between the axis of the rotary system and the surface on which the arrangment lies, is not adjustable by reason of the fact that the support carrying the arrangement is constituted in the present case by mere lateral carrier plates **22** assuming the shape of shoes.

Instead of carrier plates, it is possible to provide two lateral carrier wheels mounted coaxially with the axis of the rotary system and the radius of which is equal to the distance between said axis and the surface to be cleaned.

What I claim is:

In an apparatus for cleaning metal and stone surfaces and having a casing with an opening directed downwardly and a plurality of adjacent impact tools pivotally secured to a plurality of spindles mounted between two rotatable plates within said casing, said tools extending beyond the periphery of said plates a length such that said tools may pivot around their spindles without impinging against the inner periphery of said casing and are adapted, as they pass in register with the downwardly directed opening in the casing to impinge on the surface to be cleaned, that improvement comprising a threaded upright at the front and at the rear of said casing, a wheeled frame at the front and at the rear of said casing, each upright being pivotally mounted at its lower end on one of said frames to revolve freely around the vertical axis of said upright, each of said wheeled frames being pivotally secured to said casing, and a nut threadedly engaging each upright and pivotally secured to caid casing, whereby the angle of the casing relative to the surface to be cleaned may be varied and the height of the casing above the surface may be varied.

References Cited in the file of this patent

UNITED STATES PATENTS

176,569	Woods	Apr. 25, 1876
939,544	Pickard	Nov. 9, 1909
1,352,582	Clarke	Sept. 14, 1920
1,356,338	Clarke	Oct. 19, 1920
1,773,408	Rolfsen	Aug. 19, 1930
1,882,769	Bugg	Oct. 18, 1932
2,136,529	Trimble	Nov. 15, 1938
2,279,922	Kranen	Apr. 14, 1942
2,290,596	Kirchner	July 21, 1942
2,525,250	Westphal	Oct. 10, 1950
2,534,969	Hauser	Dec. 19, 1950