June 20, 1967 F. VAN ENDERT 3,326,478

INSTALLATION FOR BREAKING UP SCRAP

Filed Dec. 8, 1964

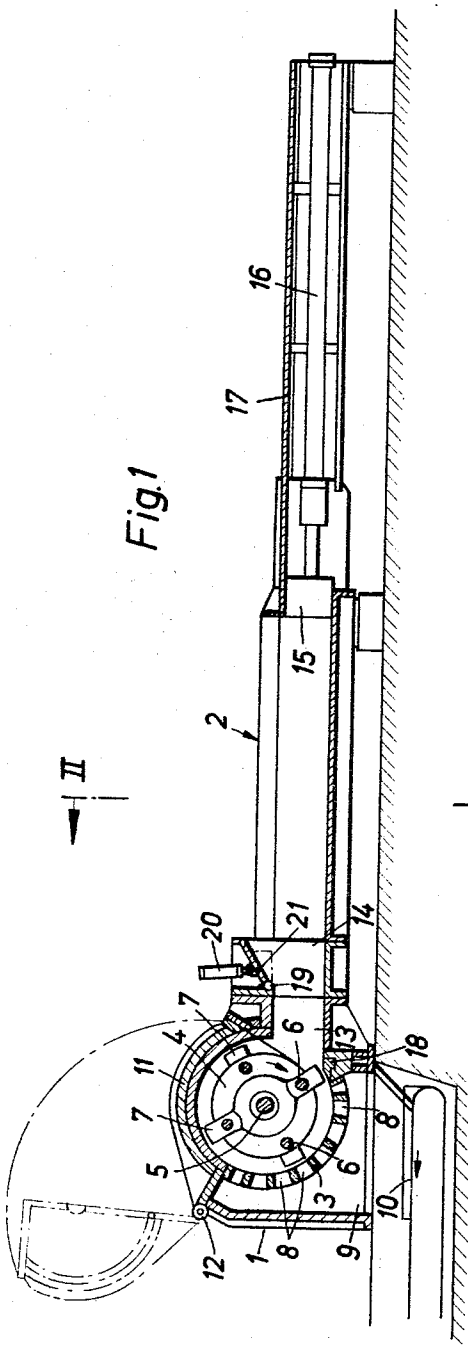

Fig.1

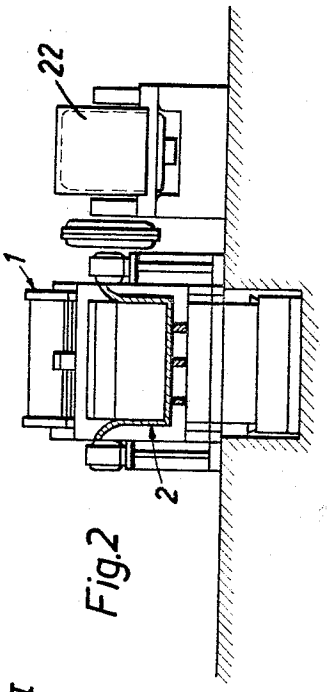

Fig.2

Inventor:
FRITZ VAN ENDERT
by
Attorney

United States Patent Office 3,326,478
Patented June 20, 1967

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INSTALLATION FOR BREAKING UP SCRAP

Fritz van Endert, Dusseldorf-Oberkassel, Germany, assignor to Lindemann Maschinenfabrik G.m.b.H., Dusseldorf, Germany, a limited company of Germany

Filed Dec. 8, 1964, Ser. No. 416,770
Claims priority, application Germany, Jan. 3, 1964, L 46,713
2 Claims. (Cl. 241—186)

My invention relates to an installation for breaking up scrap.

It is known to use rotary impact crushers to break up scrap. In such operation the scrap is allowed just to fall or to glide into the crusher wherein the scrap is exposed in unforeseeable and uncontrollable manner to the action of the impacting tools or hammers arranged on the rotor of the crusher. This results often and easily in a dangerous overloading of the crusher and in overstressing of its parts.

The avoidance of the beforesaid disadvantages is the main object of my invention. Accordingly, I provide an installation in which a rotary impact crusher operates evenly, continuously and controllably in a manner which may be compared to that of a milling cutter. To this effect I do not let the scrap as customary just fall or glide into the crusher but feed the scrap continuously and with controllable speed into the operational range of the said impacting tools.

The installation according to my invention comprises a rotary impact crusher having its feed channel sidewise of its rotor, a charging device composed of an elongated open top box or trough leading into said channel and of a ram longitudinally displaceable therein by actuating means which push the same towards the feed channel continuously and at such regulated speed that the scrap is not overfed into the crusher and overloading and dangerous stresses therein are avoided.

To permit to feed scrap including pieces which cannot or cannot easily pass through the feed channel of the crusher, I provide compacting means in front of the feed channel for example a power operated downwardly swingable cheekplate tiltable from an inclined position defining a funnel shaped feed passage to a position conforming to the feed channel of the crusher.

The said and other objects of my invention will be more fully understood from the following specification when read with the accompanying drawing in which

FIG. 1 shows a longitudinal sectional view of an assembly embodying my invention and

FIG. 2 a cross-sectional view taken along line II—II of FIG. 1.

The assembly as shown is basically composed of a rotary impact crusher **1** and a charging device including an elongated open top feed trough or box **2**. The impact crusher includes a cylindrical housing **3** in which a rotor **4** turns at high speed with its shaft **5** driven by motor **22**. Hammers **7** or other impacting tools are oscillatingly mounted on the circumference of said rotor by means of pivots **6**. The housing **3** is provided laterally of the rotor **4** with a feed channel **13** and below and opposite thereto with discharge openings **8** leading into a collecting chamber **9** which is open in its bottom and located above conveyor means **10**. The top portion of the housing **3** is constructed as a hood **11** which can be turned over axle **12** into the position shown in FIG. 1 in dotted lines to make the space and machine parts within the housing accessible from the outside.

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Into the feed channel **13** leads the elongated charging box or trough **2** which is open at its top and in which a ram **15** is movably located. A hydraulic drive **16** is adapted to forwardly displace the ram **15** continuously and with controllable speed from the shown position into close proximity of the feed channel **13**. From the flat top face of ram **15** extends rearwardly a cover plate **17** which protects the space behind the ram when the same is forwardly moved.

The assembly operates as follows:

Metal scrap or other material to be crushed such as automobile bodies or the like is placed into the charging box or trough **2** while the ram **15** is in the shown rearward position. The motor **22** is thereafter switched in to rotate the rotor **4** and the hydraulic drive **16** for ram **15** is operated. The advancing ram **15** pushes the material continuously and with properly adjusted speed towards and through the channel **13** into the operational range of the rapidly revolving hammers or similar tools **7** which separate, similar to cutters of a milling machine, small pieces from the most advanced portion of the scrap. These pieces escape through the discharge openings **8** into the collecting chamber **9** and fall upon the conveyor **10**. The forward speed of ram **15** is selected with a view to the material operated upon and to the rotational speed of the rotor. If the crusher gets overloaded and overstressed at any moment, the forward speed of the ram is just reduced.

The rear bottom edge of the feed channel **13** may be formed by or provided with an exchangeable reinforcing ledge **18** to cooperate with the rotating impacting tools **7**, both being made of high grade steel.

Between the feed channel **13** and the charging box or trough **2** compressing means shown in FIG. 1 are provided which compact any oversized scrap pushed forward by ram **15** to a size capable to pass through said feed channel **13**. This compressing means comprise a cheekplate **21** which in front of and above receiving end of the feed channel **13** is hinged thereto at **19** and is tiltable by hydraulic or other power means **20** from the shown position defining a funnel shaped feeding passage **14** into a position leading substantially straight into the feed channel **13**. If the power of the ram **15** is insufficient to press oversized scrap therethrough the cheekplate **21** is tilted downwardly by the operating means **20** thereby compacting oversized scrap to proper size. Thus continuity of feeding scrap into the crusher and a safe operation is assured.

While I have shown and described one embodiment of my invention to illustrate the principles thereof, it will be understood that my invention may be differently embodied in accordance with such principles without avoiding the scope of the appended claims.

What I claim as my invention is:

1. An installation for breaking up scrap comprising in combination a rotary impact crusher including a rotor, impacting tools thereupon, and a casing; a feed channel leading into the casing laterally of the rotor; an elongated open top charging trough leading into the feed channel; a ram displaceable in said trough; actuating means for said ram adapted to advance the same continuously at a

controllable speed; a swingable cheekplate mounted in front of the feed opening for tilting movement from an inclined position defining a feeding funnel into a position leading substantially straight into the feed channel; and means for actuating said cheekplate.

2. An installation for breaking up scrap according to claim 1 comprising an exchangeable reinforcing ledge located in the border portion of the feed opening for cooperation with the rotating impacting tools.

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ROBERT C. RIORDON, *Primary Examiner.*

D. G. KELLY, *Assistant Examiner.*