

(57) A conveyor 20 for a metal shear 10 comprises a readily detachable attachment 202 for fixing the conveyor 20 to the shear 10. The attachment may be a caravan type ball and socket joint 202. The conveyor may be constructed from aluminum to give said conveyor a lightweight construction enabling easy handling so that a plurality of bins 30 can be filled by a single operator. Also disclosed is a scrap metal cutting shear 10 having fixing means suitable for detachably fixing a conveyor to said shear in a position such that metal cut by said shear falls by gravity on to said conveyor.

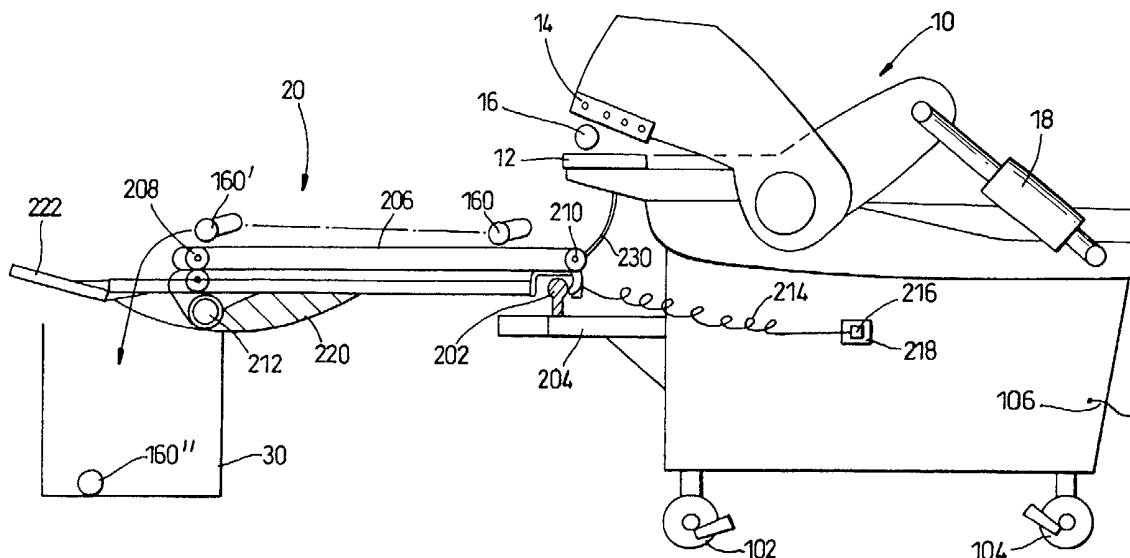


Fig. 1

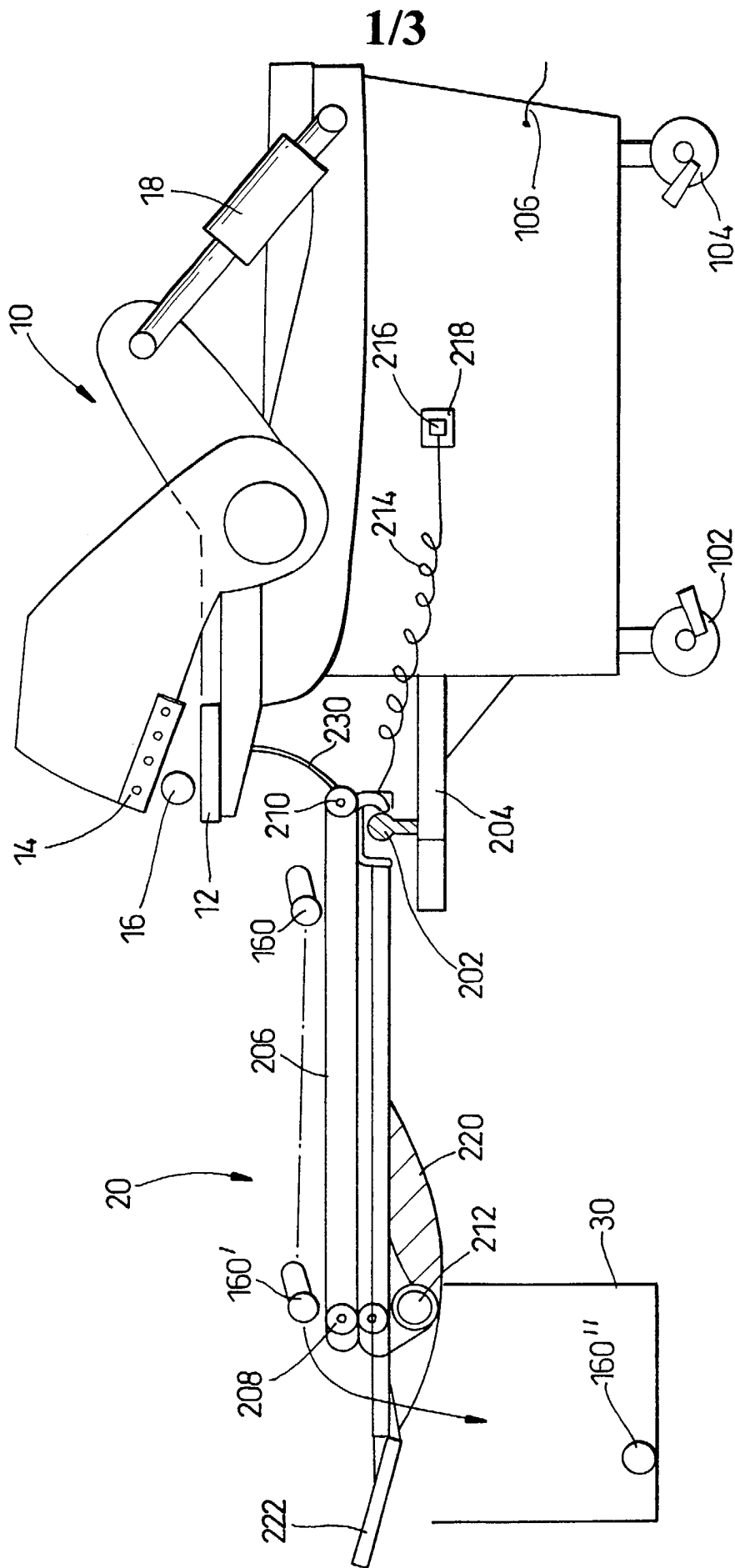


Fig. 1

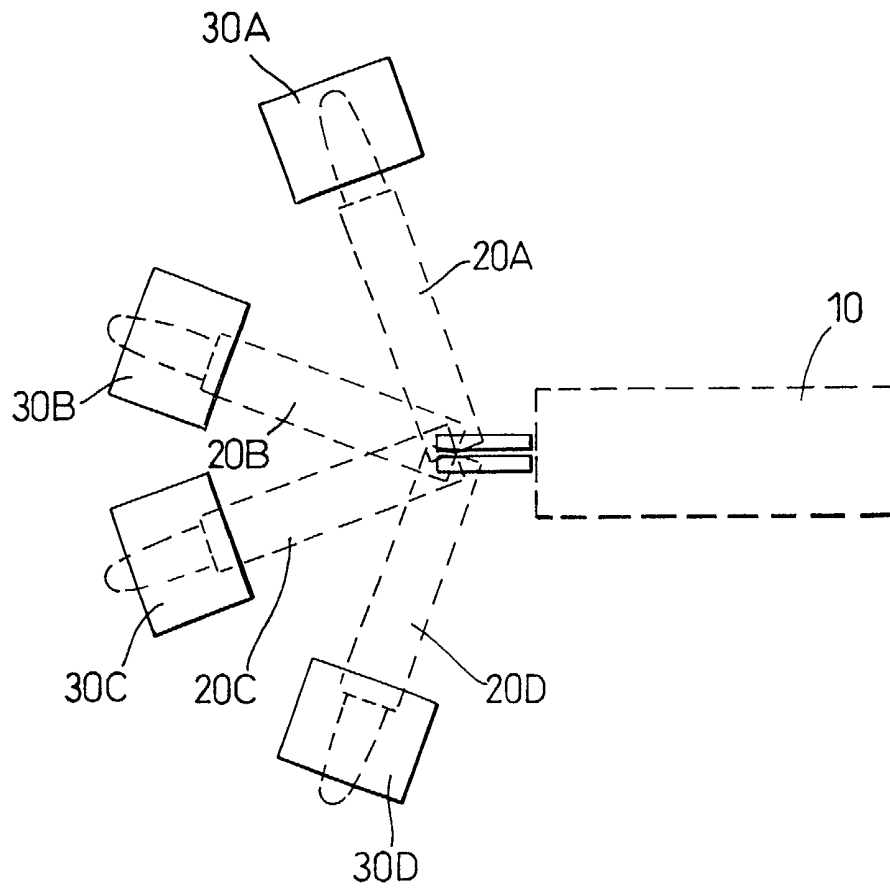


Fig. 2

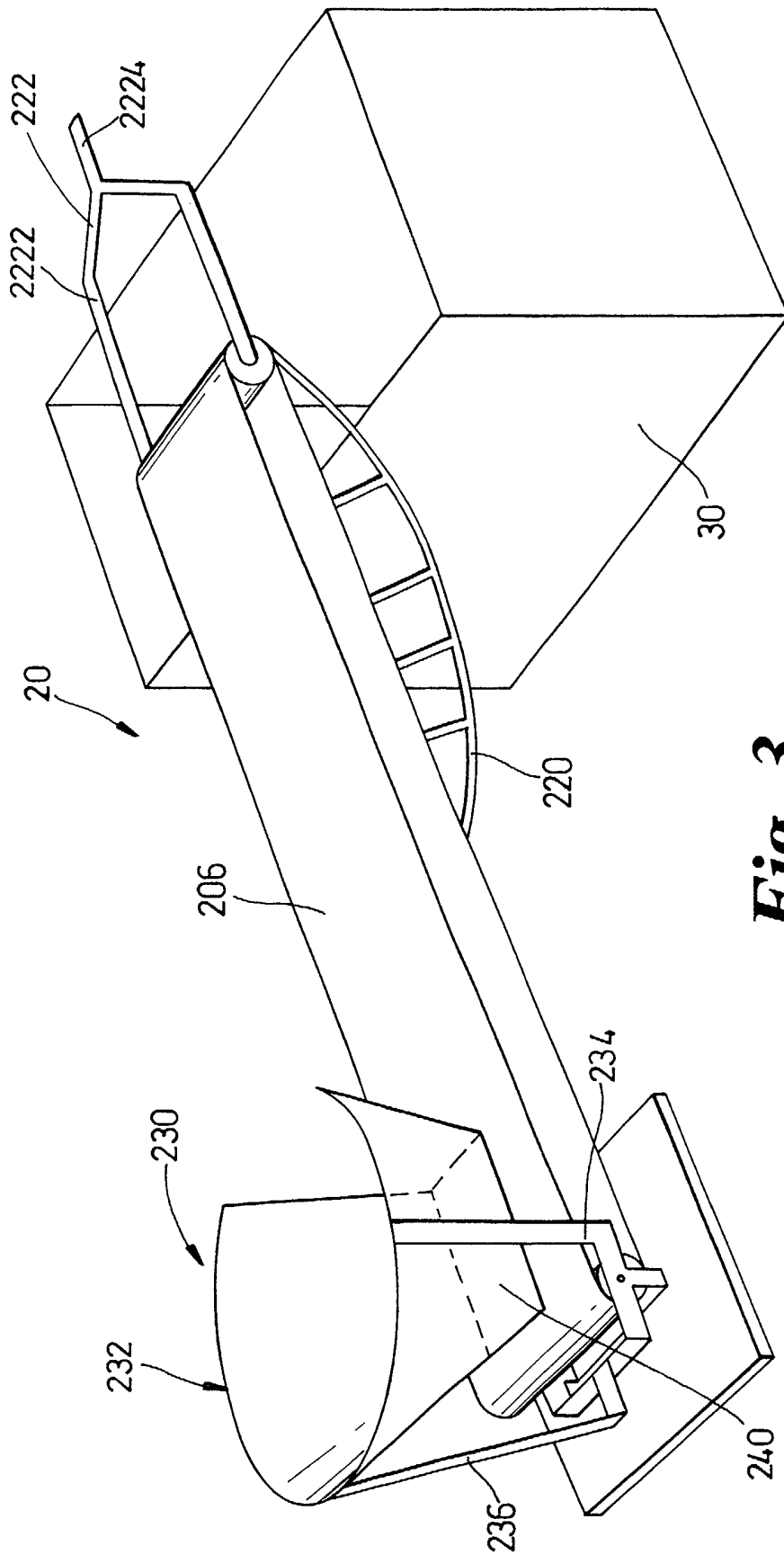


Fig. 3

SHEAR CONVEYOR SYSTEM

The present invention relates to a shear conveyor system and more particularly to a conveyor system for a scrap metal shear.

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Scrap metal shears are well known and comprise an upper and lower jaw, the upper jaw being operated hydraulically with great force to shear metal, plate tube or bar placed between the jaws. The shears can be operated manually to close the jaws under control of an operator or can be
10 operated in a continuous cycling mode in which the jaws close and open cyclically at a predetermined rate.

Specifically when operating at the cyclical rate a shear can produce a large number of small metal sections, which in the case of metal bars can be
15 fairly heavy, and in the case of for example aluminum sections can be fairly bulky.

The normal method for a scrap metal shear is to either allow the parts to fall on the floor or for the operator to remove the shorn pieces and throw
20 into appropriate bins.

The former method leads to a build-up of scrap on the floor which is dangerous and the latter slows down the operator.

25 It is an object of the present invention to provide a conveyor which is readily attachable to the shear and which is also readily movable to enable scrap material to be deposited into a plurality of bins. The conveyor is also preferably light enough to be easily moved by one person.

The conveyor does not require any support from the ground the ends of the conveyor being supported by the shear at one end and by the bins or compound wall or other bay that it may discharge into.

5 The present invention provides a conveyor for a metal cutting shear, the conveyor including means for detachably fixing the conveyor to the shear.

10 The present invention also provides a metal cutting shear, said shear having fixing means for detachably fixing a conveyor to said shear in a position such that metal cut by said shear falls by gravity on to said conveyor.

15 Preferably, said fixing means comprises a caravan type ball joint fixture.

20 In a preferred embodiment said conveyor is electrically driven and is powered by electric cable and plug connection to a socket fixture on said shear.

 Preferably, a frame of said conveyor is constructed from aluminum and in a specifically preferred embodiment all of the aluminum comprises a specific alloy rendering the conveyor easily recyclable.

25 The conveyor is preferably provided with a lift handle arrangement at an end of the conveyor or remote from said ball joint to enable the conveyor to be moved.

30 Preferably, said lift handles are of a size to enable the conveyor to be lifted from an opposite side of a bin to the shear.

Preferably, the conveyor is provided with a scrap metal guidance chute at the end of the conveyor adjacent to said ball joint. The guidance chute will ensure that scrap cut by the shear falls on to the conveyor.

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Embodiments of the present invention will now be described by way of example, with reference to the accompanying drawings in which:

Figure 1 shows schematically a shear and conveyor combination in accordance with the present invention,

Figure 2 shows diagrammatically in plan view the operation of the conveyor in feeding a plurality of bins; and

Figure 3 shows a preferred embodiment of a conveyor for a scrap metal shear in accordance with the present invention.

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With reference now to the drawings, Figure 1 shows diagrammatically a metal cutting shear 10 and a conveyor 20 according to the present invention.

Metal cutting shears of this type are well known and thus the shear 10 will not be described in detail.

The shear includes a lower jaw 12 and an upper jaw 14, the upper jaw 14 being movable either in a single action or a cyclical action by a hydraulic ram 18 to cut material 16 presented between the jaws.

The conveyor 20 is attached to shear 10 by means of an easily detachable mount such as, for example, ball joint 202 mounted on a suitable plate 204, rigidly fixed to shear 10. The ball joint fixing may, for example,

be of the type used for towing a caravan and will therefore be readily attached and detached.

5 The conveyor 20 further comprises a belt 206 mounted on rollers 208, 210 with, for example, roller 208 being driven by an electrical motor 212.

Electric motor 212 is preferably powered via electrical lead 214 which, via plug 216, is connected to a socket 218 on shear 10.

10

The conveyor 20 is therefore easily connected both mechanically and electrically to shear 10 in a matter of a few minutes, no other mount or power source being required since shear 10 has its own stable mount in four lockable wheels 102, 104 (only two shown) and will also be provided with
15 electrical power via cable 106 to power the hydraulics and control electronics.

Conveyor 20 is provided with a support frame 220 which guards electric motor 212 and also serves to enable conveyor 20 to be rested onto a
20 bin 20.

The conveyor does not require any support from the ground the ends of the conveyor being supported by the shear at one end and by the bins or compound wall or other bay that it may discharge into.

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Scrap 160 cut from the metal 16 will fall onto belt 266 of conveyor 20 and follow path 160,160', 160'' to be contained in bin 30.

The conveyor 20 is preferably provided with a handle 222 which enables the operator to lift the end of the conveyor opposite to ball joint 202 and move the conveyor as explained with reference to Figure 2.

5 In Figure 2, shear 10 is shown only as a dotted outline as is conveyor 20.

Four bins are provided 30A, B, C and D and the conveyor 20 may be moved on pivot 202 to any position 20A, B, C or D by the operator.

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Because the conveyor is lifted by handle 222, it can be left running with the safety of the operator guaranteed, as he will be on the opposite side of the bins.

15 In operation, the operator can select where to move the conveyor dependent on the type of scrap being cut.

If all scrap is the same type, for example iron bar, he can commence with bin 30A and when this bin is filled he can lift the conveyor standing on
20 the far side of the bins using handle 222 to position 20B to fill bin 30B.

Bin 30A can then be removed by, for example, fork lift truck (not shown) and replaced by an empty bin.

25 The operator can then fill bin 30C and 30D, thus having four bins to fill which can mean that the fork lift could remove two or more bins in quick succession, thus enabling more efficient use of the fork lift.

Alternatively, if the operator wishes to cut various types of scrap, for
30 example iron, copper and aluminum he can move the conveyor from, for

example bin 30A for iron, to bin 30B for copper to bin 30C for aluminum and also possibly to bin 30D for aluminum if this is the majority of the scrap.

5 Since the conveyor needs to be moved it is beneficial to make it from an aluminum alloy and preferably the frame parts should be all of the same known alloy, thereby enabling easy recycling of the conveyor.

10 With reference now to Figure 3, a preferred design of the conveyor is shown with the parts referenced as in Figure 1.

15 Figure 3 shows in detail a guide chute 230 shown only diagrammatically in Figure 1. Guide chute 230 comprises a metallic or possibly heavy grade plastic funnel shaped member 232 supported by stays 234, 236, 238 (not shown) above conveyor 206. Preferably, chute 230 has a floor member 240 to protect conveyor belt 206 from falling metal pieces which in the case of iron bars can be very heavy. Once chute 232 fills, the parts will “bounce” out on to the conveyor due to the shape of funnel shaped member 232.

20 As discussed above, handle 222 comprises a fork 2222 and a broom stick handle position 2224 which is usable by the operator to move the conveyor from bin to bin whilst standing on the far side of the bins from the shear. There is therefore no possibility of the operator dropping the conveyor on to his leg or foot and therefore this is an important safety feature.

30 The conveyor can be any suitable length, but will generally be fairly short, for example between 3ft to 6ft (1 meter to 2 meters) in length. The conveyor also does not have to be very wide because it is transporting cut

scrap material and can therefore typically be between 3" to 7" (7.5 cm to 17.5 cm) wide or possibly up to 12" (30 cm) for very long conveyors.

Thus, when made of aluminum the conveyor can be relatively light
5 with two persons easily attaching it to the shear and one person moving it
from bin to bin.

CLAIMS

1. A conveyor for a metal cutting shear, the conveyor including means for detachably fixing the conveyor to the shear.

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2. A metal cutting shear, said shear having fixing means for detachably fixing a conveyor to said shear in a position such that metal cut by said shear falls by gravity on to said conveyor.

10 3. A conveyor as claimed in claim 1 in combination with a shear as claimed in claim 2 in which said fixing means comprises a caravan type ball joint fixture.

4. A conveyor as claimed in claim 1 in which said conveyor is
15 electrically driven and is powered by electric cable and plug connection to a socket fixture on said shear.

5. A conveyor as claimed in claim 1 in which a frame of said conveyor is constructed from aluminum and in a specifically preferred embodiment
20 all of the aluminum comprises a specific alloy rendering the conveyor easily recyclable.

6. A conveyor as claimed in claim 5 in which the conveyor is preferably provided with a lift handle arrangement at an end of the conveyor
25 or remote from said ball joint to enable the conveyor to be moved.

7. A conveyor as claimed in claim 6 in which said lift handles are of a size to enable the conveyor to be lifted from an opposite side of a bin to the shear.

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8. A conveyor as claimed in any one of claim 1, 4, 5, 6 or 7 in which the conveyor is provided with a scrap metal guidance chute at the end of the conveyor adjacent to said ball joint.



INVESTOR IN PEOPLE

Application No: GB 0020168.1
Claims searched: 1,2-8

10 Examiner: Paul Makin
Date of search: 13 August 2001

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): B8A (AA, AF, AGA, AGB, AGC)

Int Cl (Ed.7): B21D 43/00, 43/28 ; B23D 33/00 ; B65G 47/00

Other: Online : WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	US 5325953 (DOSTER) see particularly detachable fixing 38	1
A	US 3793916 (JARMAN) whole document	
X	US 3782536 (TONEY) see particularly detachable fixing 117	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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