

[54] **GRAIN HARVESTER EQUIPMENT**

[76] Inventor: **David John Farrant**, Welshes Farm,
Clatworthy, Wiveliscombe,
Somerset, England

[22] Filed: **Dec. 22, 1972**

[21] Appl. No.: **317,818**

2,670,845	3/1954	Bussack et al.	130/24
3,109,433	11/1963	Claas	130/24
3,202,154	8/1965	Viebrock	130/24

Primary Examiner—Russell R. Kinsey

Attorney, Agent, or Firm—Watson, Cole, Grindle & Watson

[30] **Foreign Application Priority Data**

Dec. 23, 1971	United Kingdom.....	60052/71
Apr. 25, 1972	United Kingdom.....	19098/72

[52] U.S. Cl. **130/24**

[51] Int. Cl. **A01f 12/52**

[58] Field of Search..... **130/24**

[56] **References Cited**

UNITED STATES PATENTS

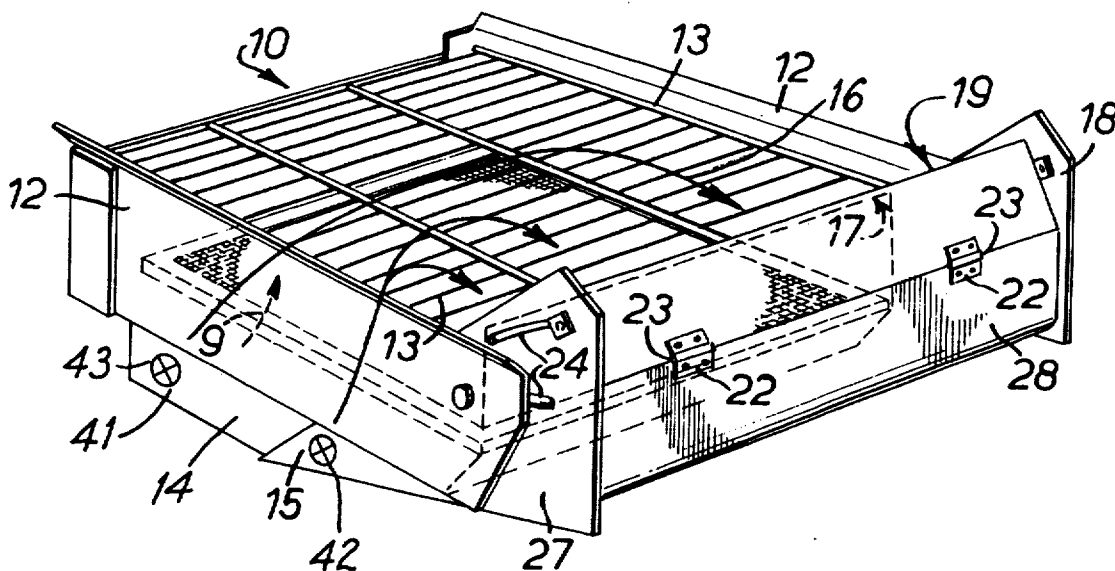
2,609,929	9/1952	King.....	130/24
-----------	--------	-----------	--------

[57]

ABSTRACT

This invention is related to a collector screen for separating grain from chaff received from a harvester and consists of an additional duct at the rear of the screen for collecting anything falling over the rear of the screen and returning it for re-threshing thereby avoiding loss of grain on to the ground.

6 Claims, 3 Drawing Figures



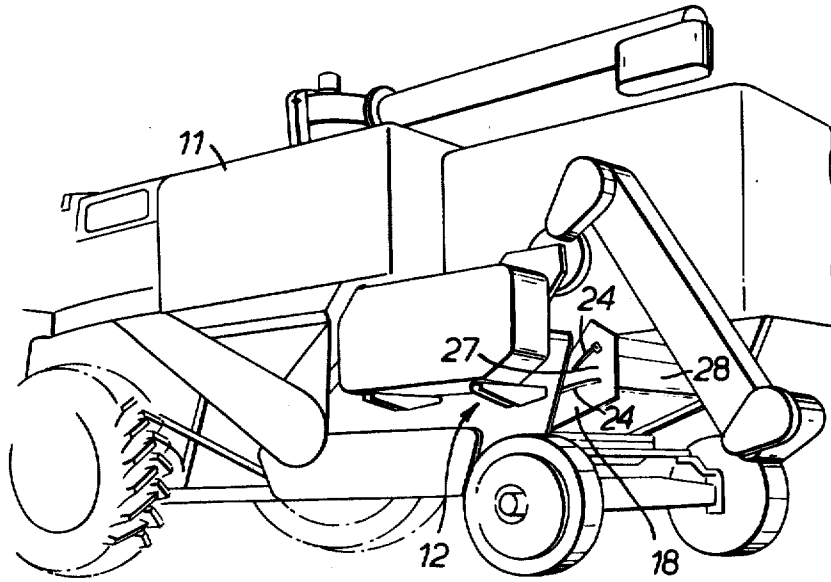


FIG. 1.

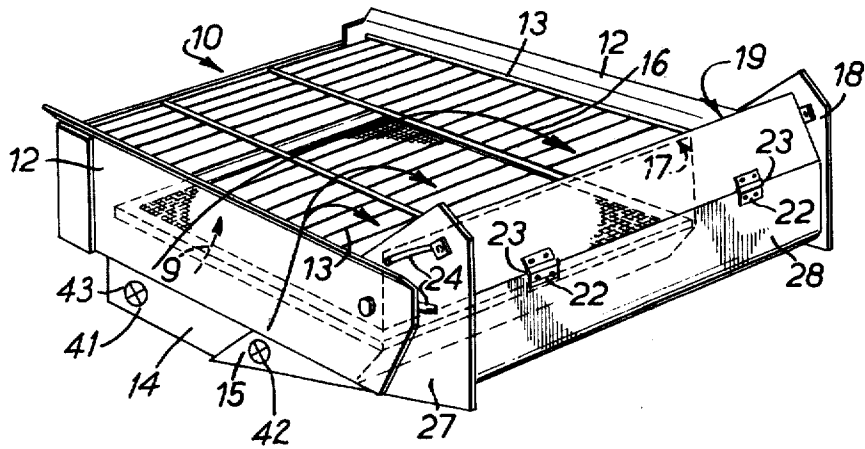
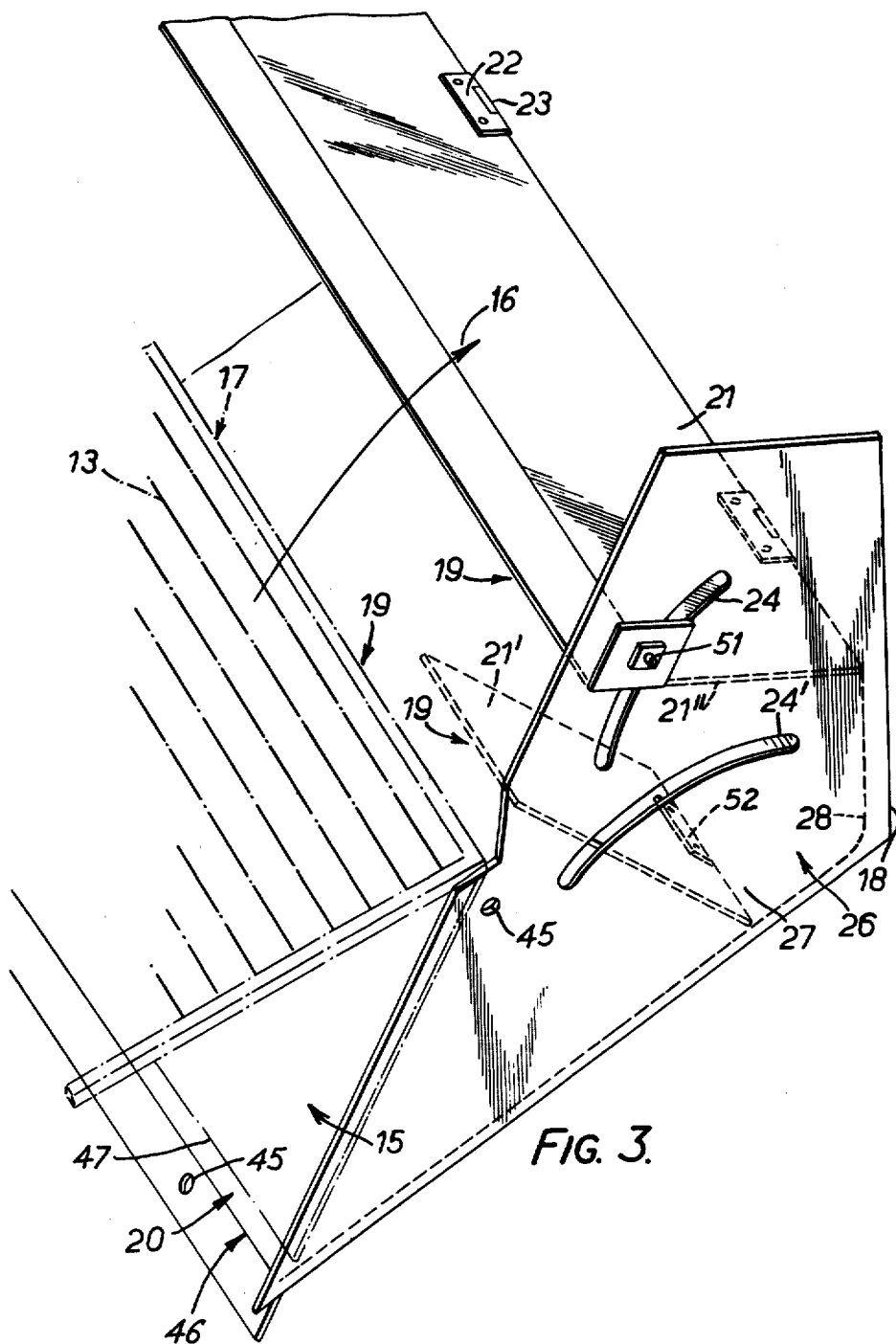


FIG. 2.



GRAIN HARVESTER EQUIPMENT

This invention relates to grain harvester equipment in which a collector screen is used for separating grain from chaff.

According to the present invention the equipment comprises a collector screen for separating grain from chaff and having an outlet duct for the grain and a return duct positioned to collect grain which passes over the screen.

It sometimes happens, particularly when harvesting over unlevel ground, that all the grain does not fall through the screen but that some of it drops over the rear edge of the screen and falls on to the field, and the present invention enables this grain to be collected and returned to be passed over the screen again possibly after rethreshing. The equipment may include two outlet ducts one for delivering separated grain and the other downstream of the first for returning grain and chaff for rethreshing and for then passing back over the screen. With such equipment the return duct can return whatever it collects to the downstream outlet duct.

The return duct preferably has an unobstructed mouth since it does not matter if some chaff is collected as well and preferably it has the size of the mouth controllable by means of an adjustable plate in the duct itself. The material collected in the return duct may be returned by the outlet duct through a controllable opening so that back draught or air for blowing chaff through the screen can be controlled in the return duct.

The return duct may be removed from the collector screen and the invention includes as one aspect a fixture for fitting to a collector screen which has means for attaching the fixture at the rear of such a screen and walls defining a return duct positioned to collect grain which passes over the screen.

The invention may be carried into practice in various ways and one embodiment will be briefly described by way of example with reference to the accompanying drawings, of which:

FIG. 1 is a view from the rear and one side of a standard harvester fitted with an attachment according to the invention;

FIG. 2 is a view of the grain collecting screen and attachment; and

FIG. 3 is a view from the front and above of the attachment showing the positional relationship between it and the screen.

The harvester indicated generally at 11 includes a thresher and a duct along which threaded grain and chaff is fed by an air stream at 10 over the top of the upper of a pair of screens 13 shown in FIG. 2. Side walls 12 above the screens define the open-topped duct. The screens act to separate grain from chaff, and grain will fall through the screens and most of it will fall into an upstream duct 14 for delivery by an auger 41 into a tank. The remainder of the grain and some chaff will fall into a downstream duct 15 for returning by an auger 42 for rethreshing.

A blower 43 provides a back draught of air 9 up the ducts 14 and 15, to assist in keeping small pieces of chaff from passing through the screen, but the grain can drop against the draught under its own weight. The chaff eventually passes over the top of the screen and is exhausted in the air stream as indicated by the arrow 16 in FIG. 3.

However, if, for example, when working uphill, the rear of the screen is tilted downwards grain sometimes falls over the back edge 17 of the screen to the ground and worthwhile quantities of grain are frequently lost.

In accordance with the invention this grain is saved by a fixture 18 in the form of sheet steel walls 27 welded or bolted to the walls 12 and a base 28 welded between the walls 27 to provide a mouth 19 just at the rear end of the screen into which such grain can fall without encountering a screen or any other impediment. The collected grain is returned to the duct 15 through an adjustable opening 20 in the rear wall of the duct, and is delivered for rethreshing and for subsequent return to the screen for separating from chaff. Thus the fixture 18 defines what may be called a return duct.

The adjustment of the opening 20 may be achieved by adjusting the position of the edge of the attachment, in relation to the bottom of the duct 15. Accordingly, openings 45 are provided at suitable locations in fixture 18 and elongated slots (not shown) are suitably provided in the harvester in registry with the openings to accommodate fasteners so that the fixture may be adjusted in an upstream and downstream direction relative to the harvester. The position of edge 46 of the fixture may therefore be adjusted relative to edge 47 of outlet duct 15 within the limits made available by the length of the elongated slots.

The fixture is shown in more detail in FIGS. 2 and 3. A lid or plate 21 can be positioned either at 21' or 21'' in FIG. 3 to assist the collection and flow of grain. In the position 21'', for operation on steep slopes, lugs 22 welded on the attachment co-operate with pins 23 on the plate 21 to define pivot axes, and slots 24 in the attachment wall and bolts 51 secured to a flange (not shown) on the plate 21, and nuts on the bolts, enable the plate to be held in any pivot position about the axes of the pins 23.

For level, or nearly level, operation, the plate 21 would be in the position indicated at 21'.

In the first position 21' the pins 25 define hinges with similar lugs 52 in the bottom of the attachment. There is a rear pocket 26 which collects any grain not entering the mouth 19. If the driver sees that grain is in the rear pocket, he knows that the plate needs adjusting. Of course it does not matter if some chaff enters the mouth 19. Slots 24' act in a similar manner to the slots 24 to allow the plate to be held in a selected position about the pivot axis.

In the example described, the fixture is an additional attachment to an existing harvester, but on a new harvester it may be built into the screen and duct arrangement to define the mouth and return duct.

In summary, it can be seen that grain and chaff are fed across screen 13 through which there is an upward blast of air which flows away the chaff while allowing the heavier grain to fall through the screen into outlet duct 15. The grain of any grain and chaff passing over the rearward or downstream edge of the screen is not lost but drops into return duct 18 through its unobstructed mouth 19. Such collected grain is returned to the outlet duct through restricted opening 20 which prevents the current of air which passes into the outlet duct from opposing movement of the grain from return duct into the outlet duct.

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

3

4

1. Grain harvesting equipment comprising a collector screen for separating grain from chaff, an outlet duct adapted to receive the grain passing through the screen, a return duct having an unobstructed mouth positioned to collect grain and chaff which passes over a downstream end of the screen, the return duct being positioned to communicate with the outlet duct for the return to the outlet duct of the grain so collected, a blower located upstream of the outlet duct for providing an upward and downstream current of air through the outlet duct and the screen and beyond the mouth of the return duct, means defining a restricted opening between the ducts for preventing a current of air from the blower which passes into the outlet duct from opposing movement of the grain from the return duct into the outlet duct.

2. In a grain harvester having a collector screen and an outlet duct arranged to collect grain passing through the screen, a fixture having means for attaching it at a rearward end of the screen and having walls defining a return duct with an unobstructed mouth positioned to collect grain and chaff which passes over the rearward end of the screen, the return duct being in communica-

tion with the outlet duct, wall means defining with a port of the harvester a restricted opening for the passage of grain from the return duct to the outlet duct, a blower located forwardly of the outlet duct for providing an upward and rearward current of air through the outlet duct and the screen and beyond the mouth of the return duct, means adjusting the opening to prevent the current of air which passes into the outlet duct from opposing movement of the grain from the return duct into the outlet duct.

3. The equipment according to claim 1, wherein means are provided for adjusting the restricted opening.

4. The equipment according to claim 1, wherein the return duct includes an adjustable plate positioned to adjust the size of the mouth of the return duct.

5. The equipment according to claim 4, wherein the adjustable plate is also positioned to define a grain collecting pocket therebehind.

6. The equipment according to claim 1, wherein means are provided for removably attaching the return duct to the screen and the outlet duct.

* * * * *

25

30

35

40

45

50

55

60

65