

United States Patent

Williams, deceased et al.

[15] 3,703,210

[45] Nov. 21, 1972

[54] MOLD BOARD MATERIALS GATE FOR MOTOR PATROLS

[72] Inventors: **Ray J. Williams, deceased**, late of Route 3, P.O. Box 74C, Moscow, Idaho 83483 by Marion Williams, administratrix; **Raymond R. Miller**, Route 3, P.O. Box 74C, Moscow, Idaho 83483

[22] Filed: **June 28, 1971**

[21] Appl. No.: **157,142**

[52] U.S. Cl. **172/784, 37/50**

[51] Int. Cl. **E02f 3/12, E01h 5/00**

[58] Field of Search **37/42, 50; 172/777, 781, 784, 172/225; 94/44**

[56] References Cited

UNITED STATES PATENTS

2,964,862	12/1960	Lotz	37/50
2,988,831	6/1961	Burns	37/50

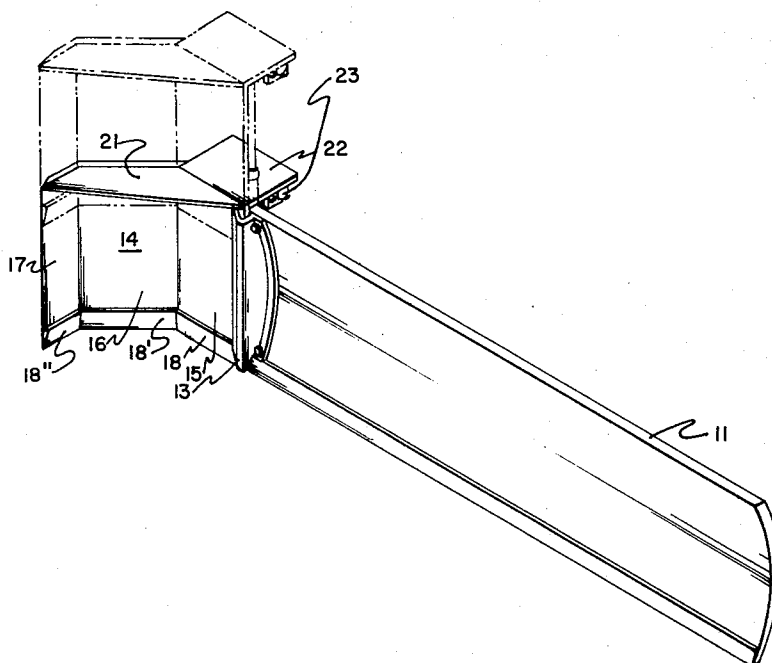
3,039,209	6/1962	Cron et al.	172/777
3,055,126	9/1962	Emhof	37/42 R
3,411,590	11/1968	Batko	37/50 X

Primary Examiner—Robert E. Pulfrey
Assistant Examiner—Eugene H. Eickhold
Attorney—John W. Kraft

[57] ABSTRACT

The invention comprises a substantially hook-like materials gate including a moldboard wall, a collector wall and materials wall disposed distally at one of the terminal ends on the materials engaging side of a moldboard of a commonly known motor patrol, and a materials diverter carried between the moldboard and the moldboard wall of the materials gate. The materials gate may be operable to be selectively raised and lowered relative to the moldboard of the motor patrol in response to fluid or air under pressure supplied from a suitable source by means such as hydraulic or pneumatic cylinders.

4 Claims, 6 Drawing Figures



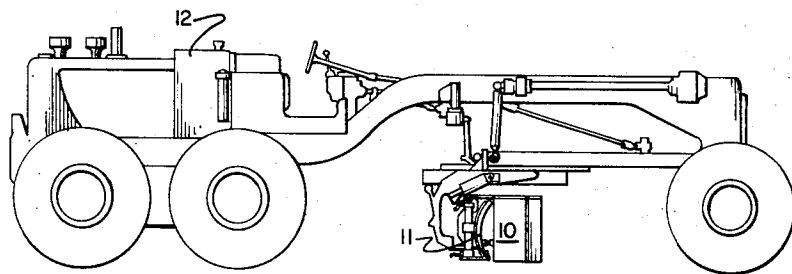


FIG. 1

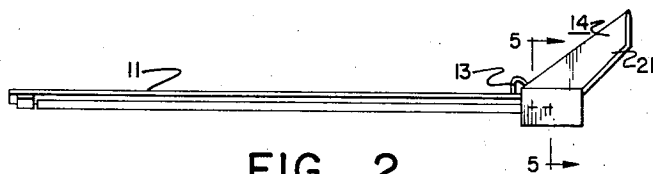


FIG. 2

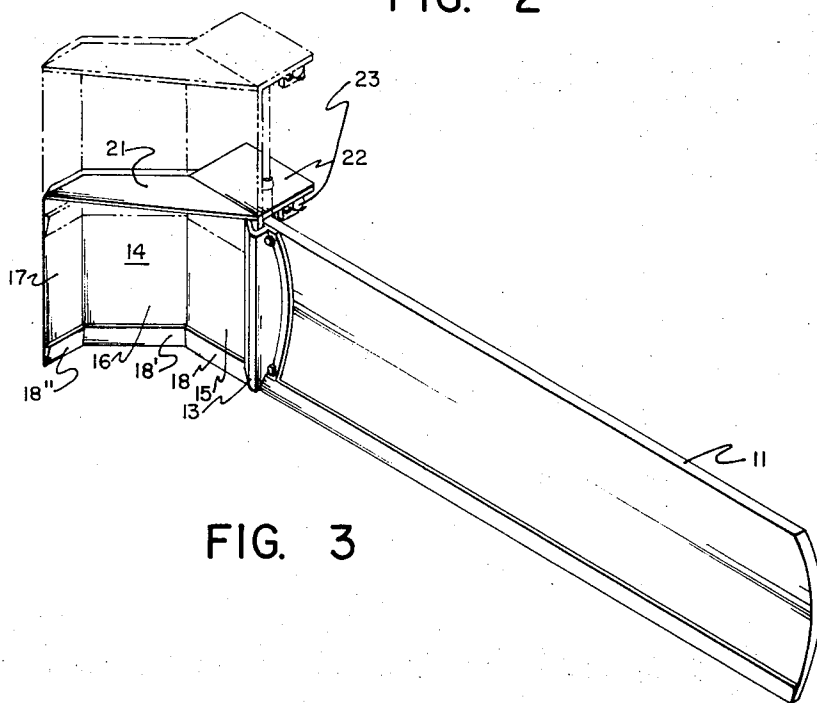


FIG. 3

RAY J. WILLIAMS INVENTOR.
RAYMOND R. MILLER

BY *John W. Foy*

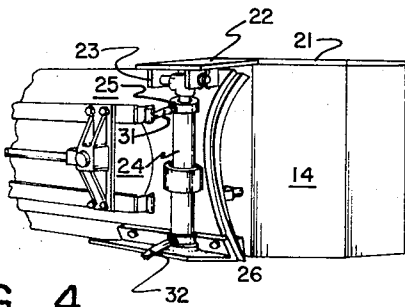


FIG. 4

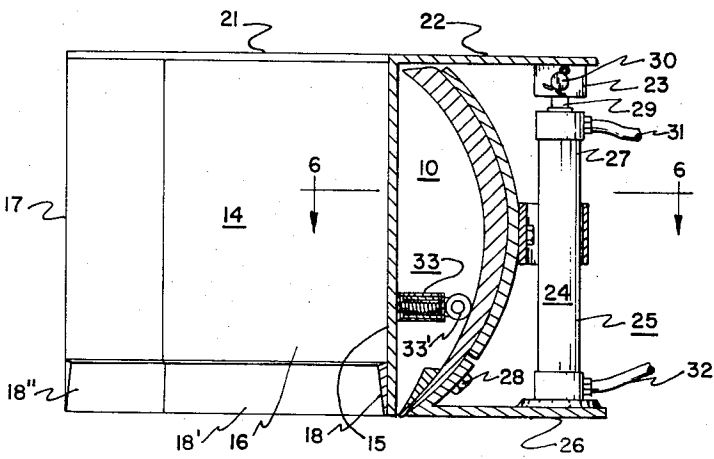


FIG. 5

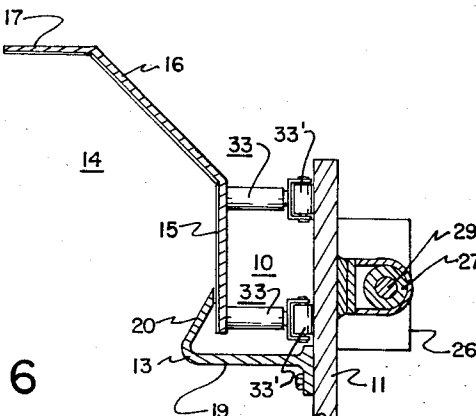


FIG. 6

RAY J. WILLIAMS INVENTOR
RAYMOND R. MILLER

BY *John W. Smith*

MOLD BOARD MATERIALS GATE FOR MOTOR PATROLS

FIELD OF INVENTION

The present invention relates to moldboards for motor patrols and more particularly to a gate apparatus attachment selectively operable to retain a quantity of material at the trailing terminal end of the moldboard of motor patrols.

DESCRIPTION OF THE PRIOR ART

Motor patrols known in the art commonly use and employ a moldboard disposed at an oblique angle of attack to the material surface and the direction of travel of the motor patrol. One result is that materials tend to be moved transversely of the moldboard and off the rearwardmost trailing end of the moldboard, thus forming a material mass or window along the path traveled by the motor patrol. At intersections and crossings, such windrows tend to impede the movement of traffic.

Accordingly, it is an object of the present invention to provide means to retain quantities of material within the moldboard during the operation of the motor patrol.

It is a further object of this invention to provide means to selectively raise and lower the materials retaining means and to thereby retain material on the moldboard at selected points of travel.

These and other objects shall become apparent from the description following, it being understood that modifications may be made without affecting the teachings of the invention here set out.

SUMMARY OF INVENTION

Generally, the invention comprises a substantially hook-like materials gate including a moldboard wall, a collector wall and materials wall disposed distally at one of the terminal ends on the materials engaging side of a moldboard of a commonly known motor patrol, and a materials diverter carried between the moldboard and the moldboard wall of the materials gate. The materials gate may be operable to be selectively raised and lowered relative to the moldboard of the motor patrol in response to fluid or air under pressure supplied from a suitable source by means such as hydraulic or pneumatic cylinders.

A more thorough and comprehensive understanding may be had from the detailed description of the preferred embodiment when read in connection with the drawings forming a part of this specification.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the materials gate of the present invention shown mounted on a moldboard of a commonly known motor patrol which is shown for illustrative purposes.

FIG. 2 is a top plan view of the materials gate assembly showing to advantage a materials diverter, a gate support plate, a gate lifting plate, and forwardly projecting materials and collector walls, the materials gate assembly being shown mounted distally from the terminal end of the moldboard.

FIG. 3 is a right front perspective view drawn to a larger scale showing to advantage the moldboard of the motor patrol and the materials gate assembly, including

the materials diverter, the moldboard, collector and materials walls of the gate, gate support and gate lifter plates, and showing to advantage the materials gate held in its uppermost position by a hydraulic piston, the materials gate and the piston shown in broken lines for illustrative purposes.

FIG. 4 is a left rear perspective view of the materials gate mounting means and the hydraulic cylinder suitably mounted to the moldboard assembly of the motor patrol.

FIG. 5 is a cross sectional side elevational view drawn to a larger scale taken substantially along the line 5—5 of the FIG. 2 showing to advantage the materials gate, the gate carrying means, the mounting plate, the cylinder base plate, and the hydraulic cylinder disposed on the moldboard.

FIG. 6 is a fragmentary cross sectional top plan view taken substantially along the line 6—6 of the FIG. 5 showing the materials diverter, the cylinder mounting base, the materials gate, and two gate carrying means disposed on the moldboard.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings and more particularly to the FIG. 1, the materials gate assembly of the present invention is advantageously shown and generally identified by the numeral 10. The gate 10 is carried by a moldboard 11 of a commonly known motor patrol 12. While the gate 10 has been here elected to be shown and described in the environment of a motor patrol as shown at 12, it is to be understood that the materials gate assembly 10 may be mounted on any of a variety of earth moving equipment employing blades and moldboards.

Referring now to the FIGS. 2 and 3, the gate 10 is shown mounted distally from one of the terminal ends of the moldboard 11. In practice, a moldboard 11 is normally disposed at an oblique angle of attack to the material surface and the direction of travel of the motor patrol 12 so that materials tend to be moved transversely of the moldboard and off the rearwardmost trailing terminal end of the moldboard, thus forming a material mass or window along the path traveled by the patrol 12. Hence it is to advantage to mount the gate 10 of this invention distally from the trailing end of the moldboard 11 to collect materials being moved across the moldboard. That is to say that the gate 10 may be mounted at either or both of the terminal ends of a moldboard 11.

The gate 10 includes a gate portion 14 and an upstanding materials diverter 13 at one of the terminal ends thereof. The diverter 13 is provided with a convex terminal edge generally conforming to and contiguous with the concave work face of the moldboard 11. The gate portion 14 includes a substantially flat, upstanding moldboard wall 15 carried by the moldboard 11. The wall 15 issues into an outwardly projecting upstanding collector wall 16 and a materials retaining wall 17 disposed substantially rectilinearly with respect to the direction of travel of the patrol 12 and at the end opposite the terminal end adjacent the diverter 13. It is to be understood that the gate portion 14 and the diverter 13 may be fixedly mounted to the moldboard 11, such as by bolts. However, in practice it has been found to

advantage to use and employ the materials gate 10 of this invention to collect materials principally at intersections, crossings, and the like, and to operate the motor patrol 12 and moldboard 11 to make windrows at other points along a normal work path. Therefore, the invention here disclosed includes means and assemblies operable to move the gate assembly 10 into and out of the work path of the patrol 12.

The FIG. 2 advantageously shows the materials gate 10 distally mounted at one of the terminal ends of the moldboard 11. The moldboard wall 15, the collector wall 16, and the materials wall 17 of the gate portion 14 are provided with respective ground engaging materials blades 18, 18', and 18'' disposed at the lowermost ground engaging edges of the walls 15, 16, and 17. The walls 15, 16, and 17 of the gate portion 14 form a substantially hook-like enclosure which tends to collect materials moving across the moldboard 11 during the forward travel of the patrol 12. In the embodiment here taught, the gate portion 14 is slidably carried between the upstanding materials diverter 13 and the moldboard 11. The diverter 13, shown to advantage in the FIG. 6, may be provided with bolts or other suitable means mounting the diverter 13 to the moldboard 11. The diverter 13 includes an upstanding deflector portion 19 having a terminal edge contiguous with the moldboard 11 generally conforming to the concave configuration of the moldboard 11 and an adjacent upstanding guide portion 20 on the terminal edge opposite the moldboard conforming portion of the deflector portion 19. The deflector portion 19 and the guide portion 20 form a substantially V-shaped wall as shown to advantage in the FIGS. 3 and 6. Materials moving across the moldboard 11 tend to be diverted by the deflector portion 19 and over the guide portion 20 and thereby tend to direct material beyond the guide slot formed by the terminal edge of the guide portion 20 and the moldboard 11 in which the gate portion 14 is slidably carried.

Referring again to the FIGS. 3, 4, and 5, the gate portion 14 is provided with a gate support plate 21 disposed at the uppermost terminal edges of the walls 15, 16, and 17. A rearwardly projecting lifting plate 22 engageable with the uppermost terminal edge of the moldboard 11 is provided on the wall 15 of the gate portion 14. The lifting plate 22 is provided with depending yoke-like brackets 23 operable to axially mount raising and lowering means 24 hereinafter later described.

Raising and lowering means 24 includes an upstanding piston 25 carried by a substantially L-shaped base 26 fastened by bolts 28 to the rearward side of the moldboard 11 opposite the direction of travel of the patrol 12. The cylinder portion 27 of the piston 25 is suitably fastened to the base 26. The ram portion 29 of the cylinder 25 is axially carried by a pin 30 connecting the ram portion 29 to the yoke-like bracket 23 of the lifting plate 22 on the gate portion 14. The piston 25 is connected to a suitable hydraulic or pneumatic source under pressure by lines 31 and 32 respectively. Preferably hydraulic or pneumatic energy is supplied under pressure to each of the respective lines 31 and 32 so that the ram portion 29 is caused to be raised in response by air or fluid under pressure supplied to one portion of the cylinder 27 through one of the lines and

to be lowered in response to air or fluid under pressure supplied through the opposite line. In practice it has been found to advantage to employ ring-like bracket fastened by bolts to a moldboard re-enforcing brace commonly provided at each of the terminal ends of the moldboard 11 to provide stability of the cylinder 27 during operational movement.

Referring now to the FIG. 5, a forward urging means 33 is disposed on the side opposite the materials engaging side of the moldboard wall 15 of the gate portion 14. It has been found to advantage that the forward urging means 33 be a roller provided with an urging spring 34 operable to direct the roller 33' over the concave configuration of the moldboard 11. As shown in the FIG. 4, the gate portion 14 is provided with two such forward urging means 33 in order that the mass be distributed as much as possible over the moldboard 11 which is under the gate portion 14 area.

Having thus described in detail a preferred apparatus which embodies the concepts and principles of the invention and which accomplishes the various objects, purposes and aims thereof, it is to be appreciated and will be apparent to those skilled in the art that many physical changes could be made in the apparatus without altering the inventive concepts and principles embodied therein. Hence, it is intended that the scope of the invention be limited only to the extent indicated in the appended claims.

We claim:

1. In earth moving apparatus including a moldboard operable at an angle with respect to the direction of travel of said apparatus and having a concave earth engaging surface and earth cutting blades, the combination of a substantially hook-like gate portion having a substantially flat moldboard wall mounted on said earth engaging surface distally from one of the terminal ends of said earth moving apparatus, an upstanding collector wall issuing outwardly at an angle from said moldboard wall, an upstanding materials retaining wall issuing from said collector wall and being disposed substantially rectilinearly with the direction of travel of said earth moving apparatus; an upstanding materials diverter at the terminal end of said gate portion opposite said materials retaining wall being suitably fastened to said moldboard, said materials diverter including an outwardly projecting upstanding wall having a terminal edge conforming to and contiguous with said concave earth engaging surface of said moldboard of said earth moving apparatus; and means mounting said gate portion to said moldboard of said earth moving apparatus.

2. The apparatus of claim 1 in which said diverter includes an upstanding deflector portion issuing rearwardly at an angle from said diverter; said moldboard wall of said gate portion being slidably carried between said diverter portion and said moldboard of said earth moving apparatus.

3. The apparatus of claim 2 including means operable to selectively raise and lower said gate portion relative to said moldboard.

4. The apparatus of claim 3 in which said raising and lowering means comprises a base suitably mounted to said moldboard distally from the ground engaging portion on the side opposite said ground engaging surface of said moldboard, an upstanding piston including a

cylinder and a ram, said cylinder being suitably carried by said base, means axially mounting said ram to said gate portion, said piston being connected to a suitable source under pressure, said gate portion being operable to be selectively raised and lowered in response to movement of said ram.

* * * * *

10

15

20

25

30

35

40

45

50

55

60

65