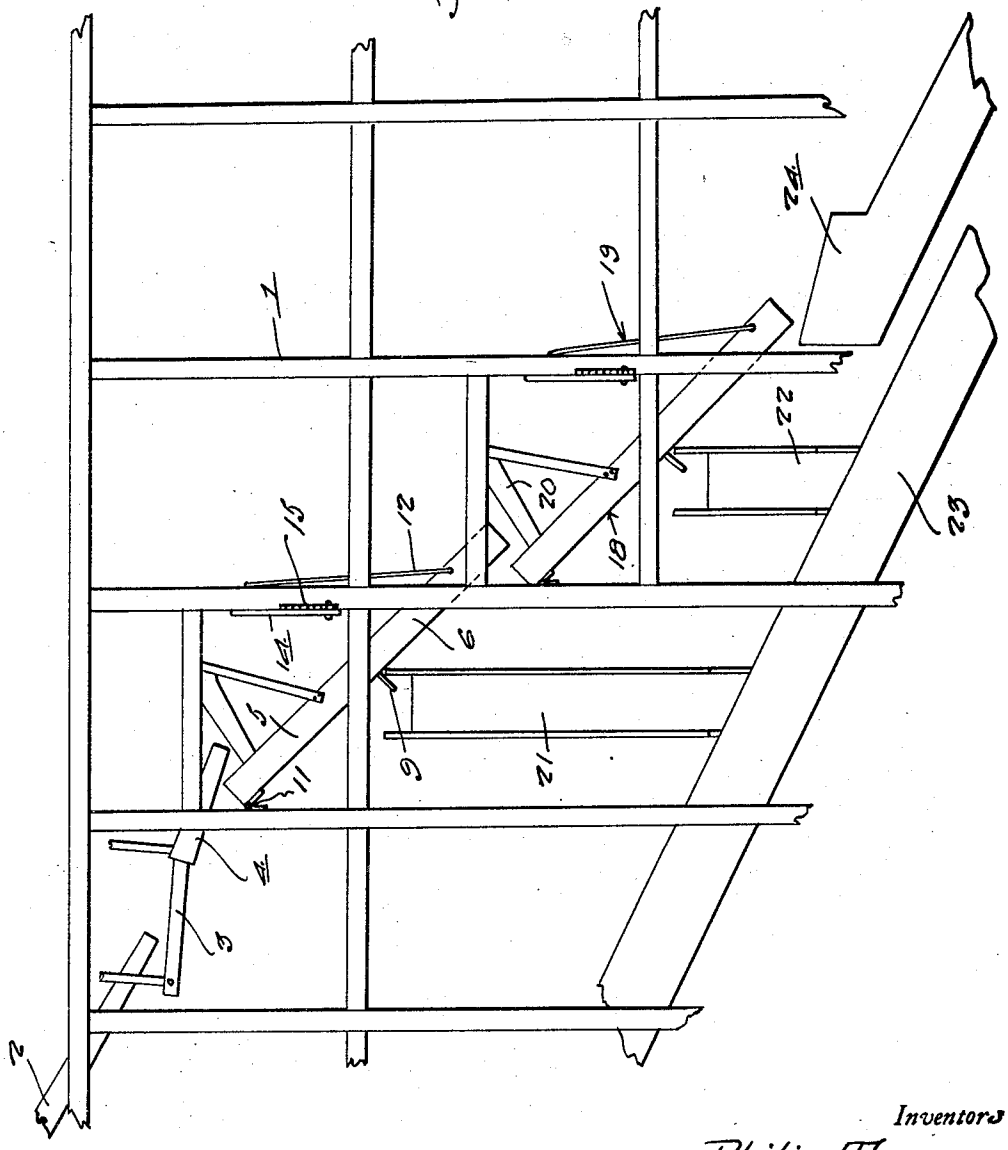
Dec. 30, 1930. P. TARONE ET AL 1,787,096

COAL SEPARATOR

Filed Aug. 15, 1928 2 Sheets-Sheet 1

Fig. 1.



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Filed Aug. 15, 1928 2 Sheets-Sheet 2

Fig. 2.

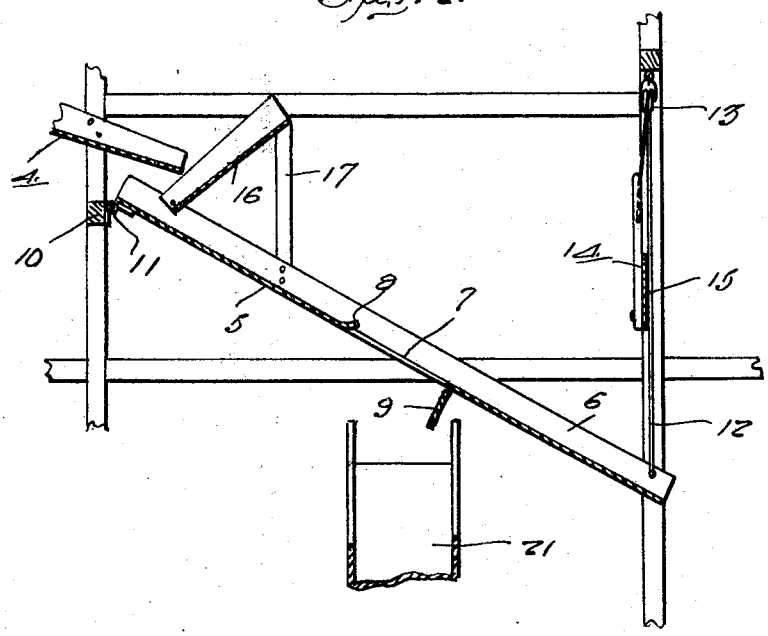
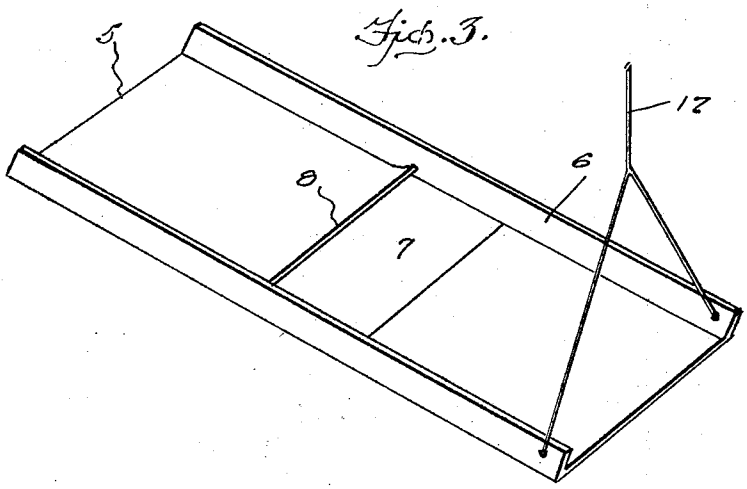


Fig. 3.



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UNITED STATES PATENT OFFICE

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COAL SEPARATOR

Application filed August 15, 1928. Serial No. 299,668.

The present invention relates to improvements in coal separators and has reference more particularly to certain improvements over the separator disclosed in our copending application bearing Serial No. 276,139 filed May 8, 1928.

One of the important objects of the present invention is to provide a separator for separating slate, dirt, cone and the like from coal.

One of the important objects of the present invention is to provide a coal separator which includes upper and lower inclined chutes, each of which is hingedly secured at its upper end to the supporting structure, means being associated with the lower end of each chute for vertically adjusting the same, each chute being formed with an opening to allow the impurities to be separated from the broken coal, a retarding or checking unit being associated with each chute and the upper end portion thereof.

A further object thereof is to provide a coal separator of the above mentioned character which is simple in construction, inexpensive, strong and durable and further well adapted to the purposes for which it is designed.

Other objects and advantages will become apparent during the course of the following description.

In the accompanying drawing, forming a part of this specification, and in which like numerals indicate like parts throughout the same:

Figure 1 is a side elevation of the coal separator embodying our invention,

Figure 2 is a fragmentary view showing the upper chute in section and its association with the supporting structure, and

Figure 3 is a detail perspective view of one of the inclined chutes, the retarding or checking unit being removed therefrom.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of our invention, numeral 1 designates generally a supporting structure that consists of a frame work.

An inclined chute 2 is positioned in the upper portion of the supporting structure 1 for delivering the broken coal and slate and other impurities found therein as the same falls from the breaker or screen and this chute delivers the coal to be separated on to an underlying unit 3 and also has an inclined chute 4 associated therewith for delivering the coal with its impurities to the uppermost inclined chute 5 forming a part of our present invention.

This upper chute 5 is formed along its longitudinal side edges with the upstanding side flanges 6 while the intermediate portion of the chute 5 is formed with a transverse enlarged opening 7.

The upper longitudinal edge of the opening 7 is slightly curved upwardly as at 8 while the other longitudinal edge portion of the opening 7 is directed downwardly to provide a deflecting lip 9 the purpose of which will be hereinafter more fully described.

The upper chute 5 is hingedly connected at its upper edge to a suitable cross bar 10 as at 11 that is arranged directly below the chute 4 as clearly suggested in Figure 2 of the drawings and for the purpose of raising and lowering the lower end portion of the upper chute 5, there is provided a flexible cable 12, the lower end of which is forked and connected to the forward or lower end portions of the upstanding sides 6 as shown in Figure 3.

The other end of the cable is trained over a suitable pulley 13 supported in the supporting structure 1 and is connected to a pivoted lever 14 also mounted on the supporting structure and a suitable pull and ratchet mechanism such as shown generally at 15 may be associated with the lever 14 and the supporting structure for maintaining the hinged upper chute 5 at any angularly inclined position.

An angularly disposed retarding or checking unit in the form of a plate 16 is fixedly attached to the upper end portion of the chute 5 for disposition forwardly of the chute 4 and suitable supporting links 17 are provided for this plate like retarder 16 as clearly shown in Figures 1 and 2.

A lower inclined chute 18 which is identical in construction with the upper inclined

chute 5 is hingedly secured at its upper end in the supporting structure 1 for disposition directly below the lower end of the upper chute 5 and the same means is associated with the lower end of the lower chute 18 for raising and lowering the same as is provided for association with the lower end of the upper chute 5 and this elevating means is denoted generally by the reference character 19.

A retarding or checking unit 20 which is also of the same construction as the retarding or check unit 16 is associated with the lower inclined chute 18 for disposition at the upper hinged end of the lower chute 18.

Transversely extending inclined boxes or troughs 21 and 22 are disposed for disposition beneath the transverse opening formed in the upper and lower inclined chutes respectively and the lower ends of these transverse troughs extend into the longitudinally extending trough 23 to carry off the slate, dirt and other impurities discharged from the inclined chutes 5 and 18.

The coal is carried off through the provision of the chute 24 that has communication in its upper end with the lower end of the lower inclined chute 18.

In operation, the coal together with its impurities is delivered to the uppermost chute 5 and the same will by gravity pass downwardly in said chute, the lumps of coal jumping the space 7 and continuing downwardly on the chute 5 while the dirt, slate and other impurities will pass through the opening 7, and there will be deflected into the trough by means of a lip 9.

The coal upon leaving the upper chute 5 will strike the retarding unit 20 and will be caused to flow up in its travel downwardly in the lower chute 18 and the same action will take place in the lower chute so that any impurities that may accidentally pass along with the coal from the upper chute 5 to the lower chute 18 will be removed through the opening in the lower chute 18 and discharged into the transverse trough 22.

Finally the coal free of its impurities will enter the chute 24 and will be carried off to any suitable point.

It will thus be seen from the foregoing description, that we have provided a coal separator that includes certain improvements over the separator disclosed in our copending application and by raising and lowering the hinged inclined chute, the speed at which the coal travels downwardly through the separator may be regulated.

While we have shown the preferred embodiment of our invention, it is to be understood that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claim.

Having thus described our invention, what we claim as new is:

In a coal separator, a supporting structure, a plurality of inclined chutes hingedly connected at their upper ends to the supporting structure, means at the lower ends of the chute for vertically adjusting the same, the upper ends of the inclined chute underlying the lower ends of the uppermost chute, a retarding chute extending laterally and upwardly from the upper portion of each of the aforementioned chutes for deflecting the material for the next uppermost chute against the chute to which the retarding unit is attached, said retarding chutes being oppositely inclined from the supporting chutes and rigidly secured thereon and further having their lower ends communicating with the supporting chutes in spaced relation thereto, each of the hingedly mounted chutes being formed in its bottom with an opening through which the impurities of the coal pass, the upper longitudinal edge of the opening being slightly curved upwardly, a downwardly extending deflecting lip formed on the opposite longitudinal edge of each opening, and an inclined trough for disposition beneath each of the openings.

In testimony whereof we affix our signatures.

JOHN ROWLAND.
PHILIP TARONE.