No. 879,625. PATENTED FEB. 18, 1908.

W. R. GARRETT & J. H. WALKER.

APPARATUS FOR SCREENING AND GRADING COAL.

APPLICATION FILED OCT. 19, 1907.

2 SHEETS—SHEET 1

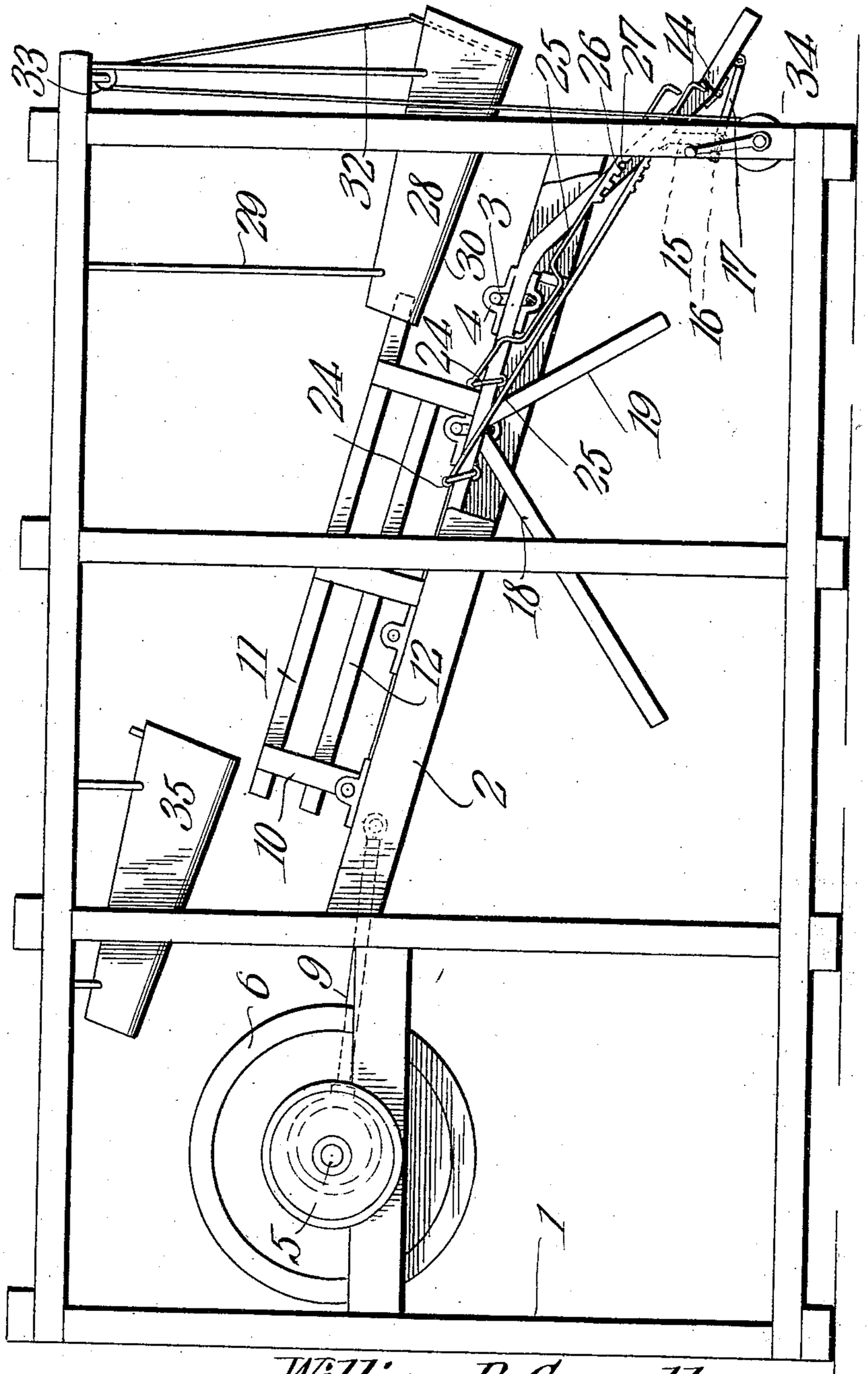

Fig. 1.

Witnesses

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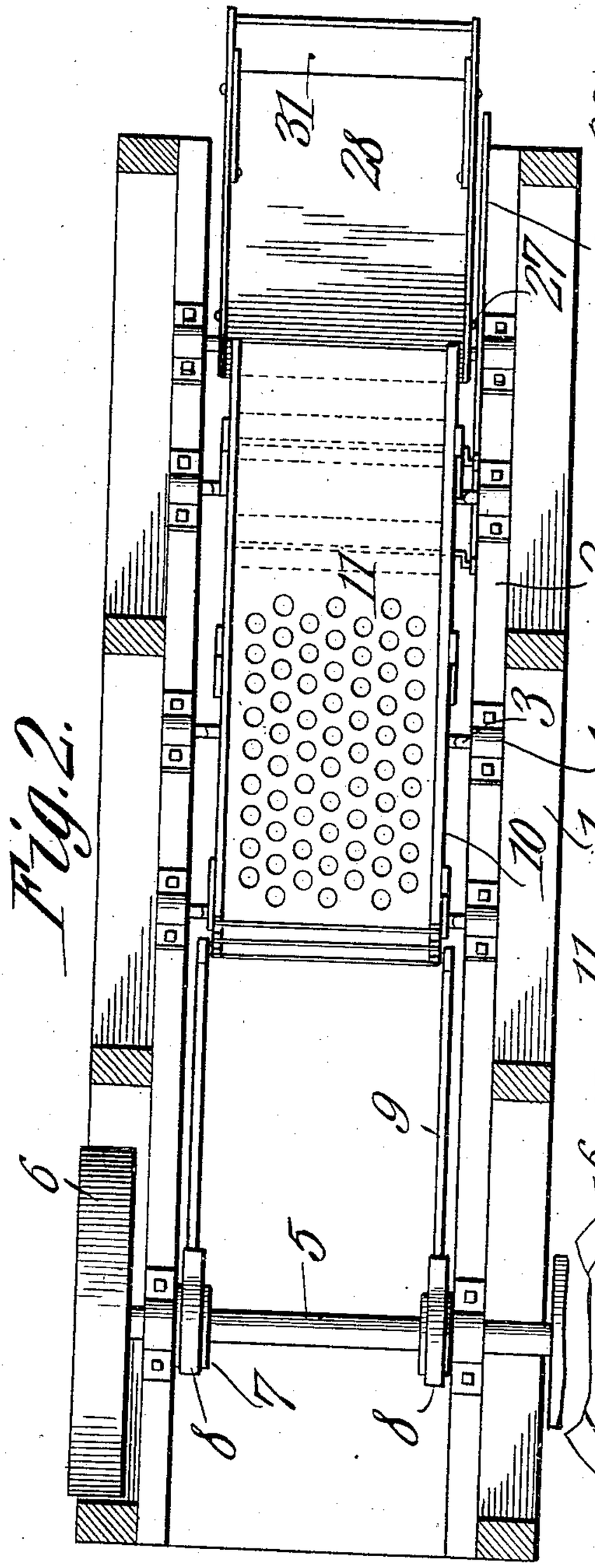

Fig. 2.

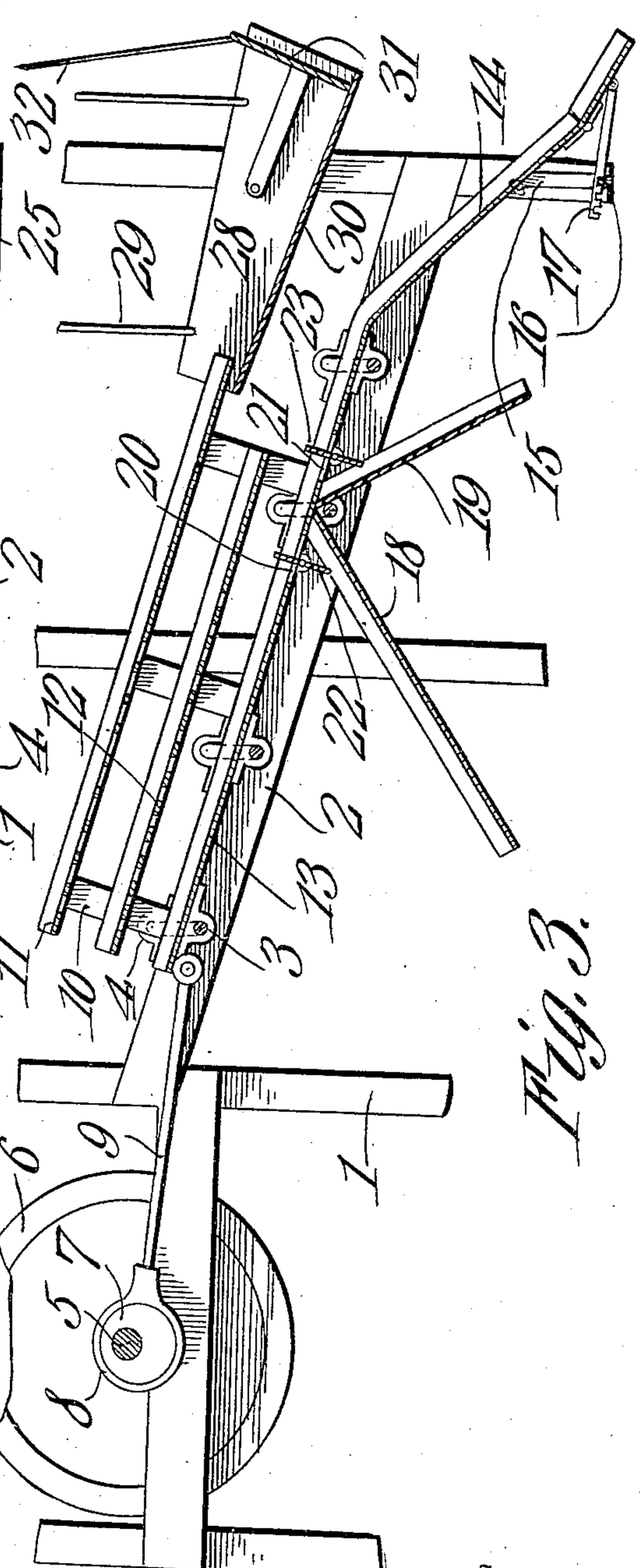

Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM R. GARRETT AND JAMES H. WALKER, OF CENTRAL CITY, KENTUCKY.

APPARATUS FOR SCREENING AND GRADING COAL.

No. 879,625. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed October 19, 1907. Serial No. 398,279.

To all whom it may concern:

Be it known that we, WILLIAM R. GARRETT and JAMES H. WALKER, citizens of the United States, residing at Central City, in the county of Muhlenberg and State of Kentucky, have invented a new and useful Apparatus for Screening and Grading Coal, of which the following is a specification.

This invention has relation to an apparatus for screening and grading coal and similar commodities and it consists in the novel construction and arrangement of its parts as hereinafter shown and described.

The object of the invention is to provide an apparatus of the character indicated especially adapted to separate coal into different grades or sizes and to deliver the same at a desired point at which means are provided which may be conveniently operated so as to cause the coal of a particular grade or size to be delivered at the said point while the other grades or sizes are caught and stored or delivered to other points. The parts of the apparatus are so arranged that coal of mixed sizes is fed to the same at an elevated point and is permitted to pass over a series of reciprocating screens which separates the coal into different sizes and conveys the same to a hopper, a series of chutes or a pivoted apron from which the said coal may be passed into cars or wagons in a separated or graded condition.

In the accompanying drawings:—Figure 1 is a side elevation of the apparatus. Fig. 2 is a top plan view of the same, and Fig. 3 is a longitudinal sectional view of a portion of the apparatus.

The apparatus consists of the frame 1 which is provided at its sides with the inclined beams 2, the bell crank rockers 3 are journaled at their ends in bearings 4 mounted upon the upper edges of the beams 2. The shaft 5 is journaled for rotation at one end of the beam and provided with a belt pulley 6 the eccentrics 7, 7 are mounted upon the shaft 5 and are surrounded by the bands 8. The pitman rods 9 are connected at their ends to the bands 8 and are also pivotally connected with a reciprocating frame 10 which is pivotally mounted upon the bell cranks of the rockers 3. The frame 10 supports the upper perforated plate 11 the perforations of which are of relatively large diameter. The said frame also supports the intermediate perforated plate 12 the perforations of which are smaller than the perforations in the plate 11 and the said frame 10 supports the imperforated plate 13 which is located below the plate 12. The said plates are parallel and are spaced at equal distances apart. The apron 14 is hinged to the lower end of the plate 13 and the brackets 15 depend from the lower end of the plate 13 and are connected together by the cross rods 16. The notched arms 17 are pivotally connected to the apron 14 and the notches of the said arms are adapted to receive the rod 16 whereby the angle of inclination of the apron 14 may be varied. The anticlinal chutes 18 and 19 are attached to the under side of the plate 13 which is provided with the openings 20 and 21 located above said chutes respectively. The valves 22 and 23 are journaled at their ends in the frame 10 and are adapted to close the openings 20 and 21 respectively when moved into the same plane as that of the plate 13. Each of the said valves is provided at the end of the shaft with an arm 24 to which is pivotally connected the upper end of an operating rod 25 each rod is provided upon its under edge with a series of notches 26 which are adapted to receive pins 27 mounted upon the edge of the apron 14. Of the three plates mentioned the lowest plate 13 is the longest while the intermediate plate 12 is the shortest and the upper plate 11 is of a length intermediate of the lengths of the first said plates.

The hopper 28 is suspended from the frame 1 by the hangers 29 and one end of the said hopper lies under the lower end of the plate 11. The hopper 28 is provided with an inclined bottom 30 and its lower end is closed by a pivoted gate 31. The cable 32 is attached to the gate 31 and passes over the pulley 33 mounted upon the frame 1 and descends and is attached to a drum 34 provided at the end of the said frame. The hopper 35 is similar in construction to the hopper 28 and is supported by the frame 1 in a similar manner. The lower portion of the hopper 35 is located directly above the upper end of the plate 11.

The apparatus is operated as follows: The shaft 5 is rotated and through the instrumentality of the eccentrics 7, bands 8 and pitmen 9 the frame 10 and its attached plates are reciprocated with the bell cranks of the rockers 3. As the said frame 10 reciprocates the apron 14 and chutes 18 and 19 move simultaneously with the same. The mixed coal bracket which has previously

been deposited in the hopper 35 and the bracket is permitted to fall upon the plate 11. The larger lumps of coal will pass over the perforations of the said plate 11 and roll into the hopper 28. The smaller lumps of coal will pass through the perforations in the plate 11 and fall upon the plate 12. The smallest lumps of coal and the dust will pass through the perforations in the plate 12 and fall upon the imperforated plate 13. Those lumps of coal which pass through the perforations of the plate 11 and which are too large to pass through the perforations of the plate 12 will roll down the last said plate and if the valve 23 is closed will fall upon the lower end of the plate 13 from which point it passes to and along the apron 14. The said apron 14 may be adjusted to pass the coal thus separated into cars or wagons of different heights in as much as the said apron is hingedly and adjustably attached to the plate 13. If however, the valve 23 is opened the coal that falls from the end of the plate 12 will pass down through the opening 21 in the plate 30 into the chute 19. The coal may pass from the said chute 19 in the cars or wagons or upon a pile as desired. When the valve 23 is closed and the coal from the plate 12 is conducted to the apron 14 as above described the valve 22 is opened and the dust and finest particles of coal will fall through the opening 20 in the plate 13 onto the chute 18. From the said chute the coal may fall into cars or wagons or upon a pile. When the hopper 18 becomes filled with the largest lumps of coal an operator may pull the cable 32 which in turn will raise the gate 31 and the coal may pass from the hopper 28 into a car or wagon. The valves 22 and 23 may be operated at any time by an operator manipulating the rods 25. As the reciprocating plates are snugly cradled upon the bell cranks of the rockers 3 the said screens have a steady movement and operate without undue noise or tendency to side movement.

The hopper 35 will be of such size as to measure the coal as it comes from the mine or in its condition known as run of mine and the hopper 28 may be used as a similar measure for the largest lumps of coal which are separated from the smaller grade and as before indicated when the hopper 28 becomes filled it may be used as a chute to convey the coal to a receptacle. Or if it is desired to measure such coal only as will enter the hopper 28 the hopper 35 may be used in the capacity of a chute for delivering the mixed coal to the separating plates.

Having thus described the invention, what we claim as new and desire to secure by Letters Patent is:—

An apparatus of the character described comprising a frame having inclined side beams, bell crank rockers journaled upon said beams, a frame mounted upon the bell cranks of the rockers, plates mounted upon the last said frame and being arranged one above the other the upper plates being perforated and the lower plate being imperforate, the lower plate being the longest, the intermediate plate the shortest and the upper plate of a length intermediate of the lengths of the other plates, a hopper suspended from the first said frame and having an inclined bottom one end of which is under the upper plate an end gate pivotally mounted upon the hopper and means for swinging said gate.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

W. R. GARRETT.
J. H. WALKER.

Witnesses:
H. S. SANDERS,
JOHN M. VICK.