

No. 741,450.

PATENTED OCT. 13, 1903.

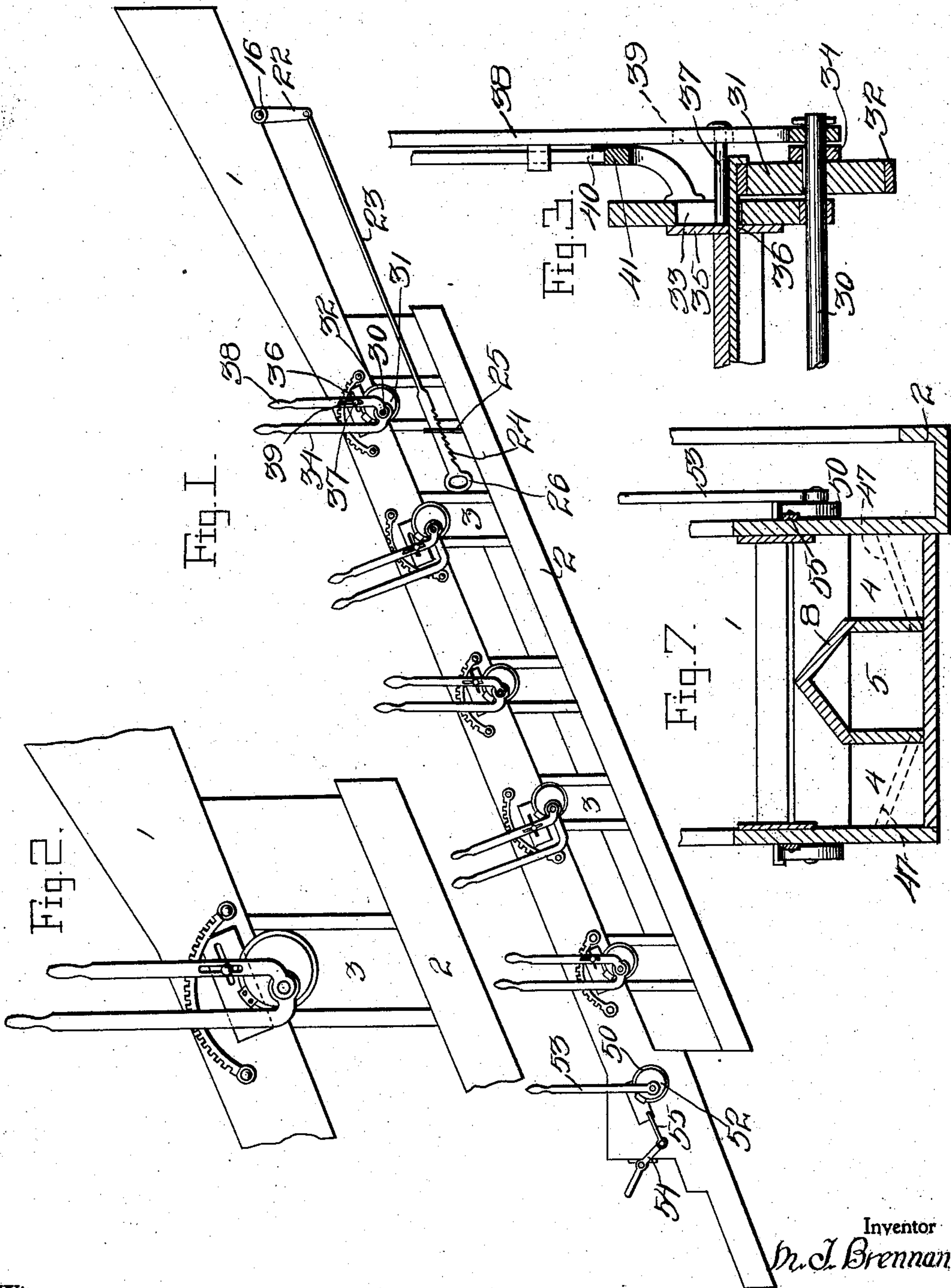
M. J. BRENNAN.

COAL CHUTE.

APPLICATION FILED JUNE 18, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

C. H. Reichenbach.

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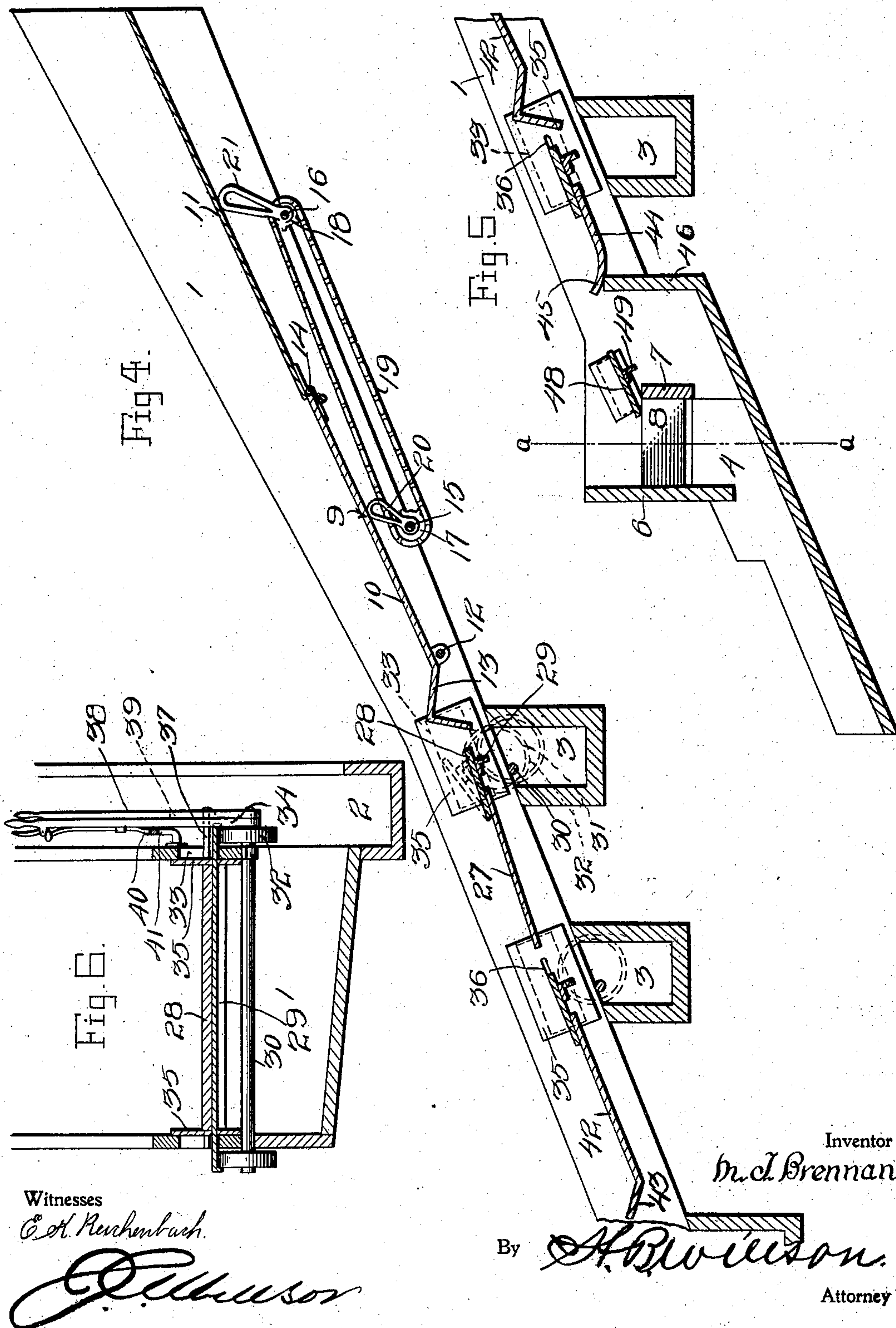
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UNITED STATES PATENT OFFICE.

MARTIN J. BRENNAN, OF FORTYFORT, PENNSYLVANIA.

COAL-CHUTE.

SPECIFICATION forming part of Letters Patent No. 741,450, dated October 13, 1903.

Application filed June 18, 1903. Serial No. 162,127. (No model.)

To all whom it may concern:

Be it known that I, MARTIN J. BRENNAN, a citizen of the United States, residing at Fortyfort, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Coal-Chutes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improved coal-chute adapted for separating slate, bone, and other impurities from coal while the same is descending the chute; and it consists in the construction and combination of devices hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a coal-chute embodying my improvements. Fig. 2 is a detail elevation of the same on a larger scale. Fig. 3 is a transverse detail sectional view of the same. Fig. 4 is a vertical longitudinal sectional view of the upper portion of the coal-chute. Fig. 5 is a similar view of the lower portion thereof. Fig. 6 is a vertical transverse sectional view of my improved coal-chute. Fig. 7 is a similar view of the same, taken on the plane indicated by the line *a a* of Fig. 5.

In the embodiment of my invention I provide the inclined coal-chute 1 with a chute 2 on one side thereof and with a plurality of transversely-disposed pockets 3 for the reception of slate, bone, and other impurities, which transversely-disposed pockets are also chutes, the bottoms of which are inclined toward the chute 2, said pockets or chutes 3 discharging into the chute 2. The said pockets 3 are disposed at suitable distances apart.

The lower portion of the chute 1 is divided into a plurality of parallel passages 4 5, three of such passages being here shown, the passage 5 being between the passages 4. Across the upper portion of the said passages 4 5 extend the wall 6 and the wall 7, the latter being disposed at a suitable distance from the inner side of the wall 6 and at a point somewhat below the upper side of the said wall. Oppositely-disposed inclined slides 8 are above the upper portion of the passage 5 to cover the upper portion of the said passage and to deliver material which falls upon them into the upper portions of the passages 4.

The bottom of the chute is formed by a plurality of inclined plates which are preferably made of iron or other suitable metal. Certain of these plates are rigid and others are pivotally mounted and provided with means whereby they may be adjusted to any desired inclination.

The plate 9 at the upper end of the chute to which the coal is fed comprises the lower section 10 and the upper section 11. The lower section 10 is pivoted near its lower end, as at 12, and is provided with a deflecting obstruction 13, which is of inverted-V shape in cross-section, the lower side of the said deflecting obstruction being disposed above the upper pocket 3. The lower end of the section 11, which slightly overlaps the upper end of the section 10, is connected thereto by hinges 14 or other suitable means.

A pair of shafts 15 16 are disposed transversely of the chute 1, are journaled in suitable bearings, and are provided, respectively, with a sprocket-wheel 17 and a sprocket-wheel 18, said sprocket-wheels being connected by an endless sprocket-chain 19. The shaft 15 is provided with adjusting-arms 20, which bear under the plate-section 10 and support the upper section thereof, and the arms 21 bear under and support the plate-section 11. The shaft 16 has an arm 22 at one end, to which is attached an adjusting-rod 23, said rod being provided with a rack 24, adapted to be engaged by a keeper 25. Said adjusting-rod is further provided with a handle 26, by which it may be readily operated. It will be understood that by this means the shafts 15 16 may be readily turned to dispose their respective arms 20 21 at such an angle as will impart to the plate-sections 10 11 any desired inclination. The bottom plate 27, next below the plate 9, is rigid. The same extends from above the lower side wall of the uppermost pocket 3 to above the upper side wall of the pocket next adjacent to the before-mentioned pocket. It will be understood from the foregoing that the plate 9 is adapted to discharge material into the uppermost pocket and that the plate 27 is adapted to discharge material into the next pocket.

A cut-off plate 28 is disposed above the upper side of the uppermost pocket 3, and the lower side of the said cut-off plate bears slid-

ably on the upper portion of the plate 27. The said cut-off plate is here shown as provided with a cross-bar 29 on its under side, the said cross-bar being in the present instance an angle-iron. A shaft 30, which is journaled in suitable bearings, is disposed transversely with reference to the chute 1 and extends across the upper portion of the uppermost pocket 3, near the lower side wall thereof. This shaft is provided at its ends with eccentrics 31, on which are eccentric-straps 32. The ends of the cross-bar 29 project through openings 33 in the side walls of the chute 1 and bear on and are attached to the eccentric-straps. A shaft 34 is rigidly attached either to the shaft 30 or to one of the eccentrics, as the case may be, and hence is adapted to turn said shaft and the said eccentrics. It will be understood that by thus turning the eccentrics the upper portion of the cut-off plate 28 may be raised or lowered, so that the said cut-off plate may be disposed at any desired inclination. Plates 35, which are at the ends of the cut-off plate 28, form closures for the openings 33 in the side walls of the chute 1, and one of them is provided with a longitudinal slot 36. Said plates 35 are supported by the cross-bar 29 and the bottom plate 27. The cut-off plate 28 is provided at its ends with studs 37, which operate in the slots 36 of the closure-plates 35. An adjusting-lever 38, which is here shown as pivoted on the shaft 30, is provided with a vertical slot 39, which is engaged by one of the studs 37. Hence the cut-off plate 28 is connected to said lever 38, and by appropriately turning the latter the cut-off plate may be adjusted longitudinally to narrow or widen the passage in the bottom of the chute formed between the deflecting obstruction 13 of the plate 9 and the plate 27 above the uppermost pocket 3 to any desired extent. The levers 34 38 are in practice provided with the usual gravity locking-dogs 40, and on one side of the chute 1 is a segment-rack 41, which coacts with the said gravity locking-dogs to secure the levers 34 38, and hence the cut-off plate 28, at any desired adjustment. One of these cut-off plates will be disposed above each of the pockets 3, and the same is provided with the hereinbefore-described means whereby it may be adjusted. The plate 42 next below the bottom plate 27 is provided at its lower side with a deflecting obstruction 43, which is similar to the deflecting obstruction 13 of the plate 9.

In practice each alternate bottom plate of the chute is preferably provided with one of these deflecting obstructions at its lower side. The lowermost bottom plate 44 of the chute is provided with a deflecting obstruction 45, which is above the transversely-disposed wall 46, which forms the upper ends of the passages 4. Oppositely-inclined downwardly-converging bottoms 47 discharge into the upper end of the passage 5. A cut-off plate 48 is disposed with its lower portion above the

wall 7 and is adapted to be adjusted to contract or widen the space between it and the deflecting obstruction 45 of the lowermost chute bottom plate 44. This cut-off plate 48 is here shown as provided with a cross-bar 49, the ends of which are attached to eccentric-straps 50 on eccentrics 52, having an adjusting-lever 53, whereby the upper portion of the cut-off plate 48 may be raised or lowered, as may be required. To move said adjusting-plate toward or from the deflecting obstruction 45, I provide an adjusting-lever 54, which is connected to said plate by a rod 55.

In the operation of my invention the slate, which is heavier than the coal, fed to the chute gravitates through the mass of coal during the descent of the chute to the bottom plates of the chute, and by frictional contact with the said bottom plates and owing to the nature of the slate the speed of its descent is retarded, so that the slate when it reaches the deflecting obstructions does not bound therefrom, but passes over them and drops into the pockets 3, which serve to discharge the slate immediately into the slate-discharge chute 2 at one side of the chute 1. The coal, owing to its concoidal fracture and the comparatively rounded character of its lumps, rolls, and its rolling friction is much less than the sliding friction of the comparatively flat bone and slate lumps, so that the coal travels much faster than the bone and slate and bounds from the deflecting obstructions over pockets without falling into them and continues to descend the chute 1 until it reaches the lower portion thereof. Such of the coal as is conglomerated with rock and forms the "bone" is heavier than the pure coal and passes from the lowermost chute bottom plate 44 into the passage 5, which serves to separately discharge it. The pure coal bounds from the lowermost deflecting obstruction 45 onto the inclined cut-off plate 48 and passes therefrom into the passages 4.

The adjustable chute bottom plates and cut-off plates over the pockets may be adjusted by the means hereinbefore described as may be required to render the chute effective in separating the impurities from the coal under varying conditions, as when the coal is wet or dry.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A chute having a bottom plate comprising an upper and a lower section pivotally connected together, the lower section having

its lower portion pivotally mounted on a fixed pivot, and adjustable supports for the upper portion of the lower section and for the upper section, to vary the inclination thereof at will.

2. A chute having a bottom plate comprising an upper and a lower section, the latter having a relatively fixed pivotal support for its lower portion, and said sections being pivotally connected together, and angularly-adjustable supports for the upper portion of the lower section and for the upper section, to vary the inclination thereof at will.

3. A chute having a bottom plate comprising an upper and a lower section, the latter having a relatively fixed pivotal support, and said sections being pivotally connected together, angularly-adjustable supports for the upper portion of the lower section and for the upper section, and means to simultaneously operate said angularly-adjustable supports to vary the inclination of said sections at will.

4. A chute having a rigid bottom section, an angularly-adjustable bottom section, disposed at a higher elevation in the chute, spaced from the rigid section and having a deflecting obstruction at its lower portion, and a cut-off plate over the space between the said sections, adjustable to vary the effective width of said space and also adjustable angularly.

5. A chute having bottom sections spaced apart, a cut-off plate carried by and having an extension of one of the bottom sections and movable to vary the effective width of the space between the sections, means to so adjust the cut-off plate and means to also adjust the cut-off plate angularly with reference to the bottom section which carries it.

6. A chute having bottom sections spaced apart, a cut-off plate to vary the effective width of the space between them, a shaft having eccentrics to support and angularly adjust the cut-off plate, means to turn the eccentrics, and a lever, connected to the cut-off plate to adjust it over the space between the bottom sections.

7. A chute having bottom sections spaced apart, a cut-off plate to vary the effective width of the space between them, a shaft having eccentrics to support and angularly adjust the cut-off plate, means to turn the eccentrics, and a lever slidably connected to the cut-off plate and pivoted on the said shaft, to adjust the cut-off plate over the space between the bottom sections.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MARTIN J. BRENNAN.

Witnesses:

W. W. BRYDEN,
H. C. ALLEN.