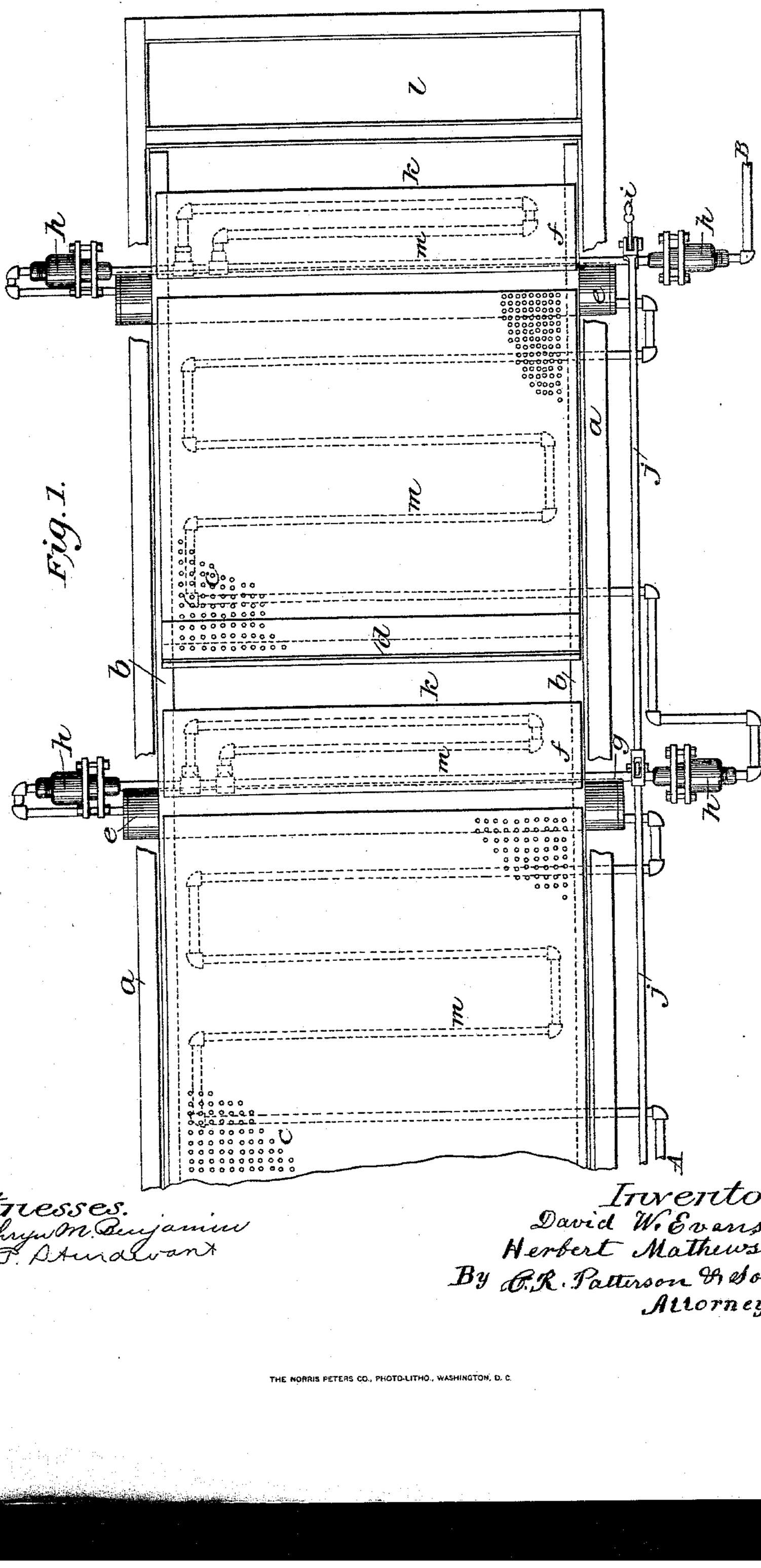
(No Model.) 3 Sheets—Sheet 1.

D. W. EVANS & H. MATHEWSON.

MACHINE FOR SEPARATING COAL FROM SLATE.

No. 597,404. Patented Jan. 18, 1898.



Witnesses.
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(No Model.) 3 Sheets—Sheet 2.

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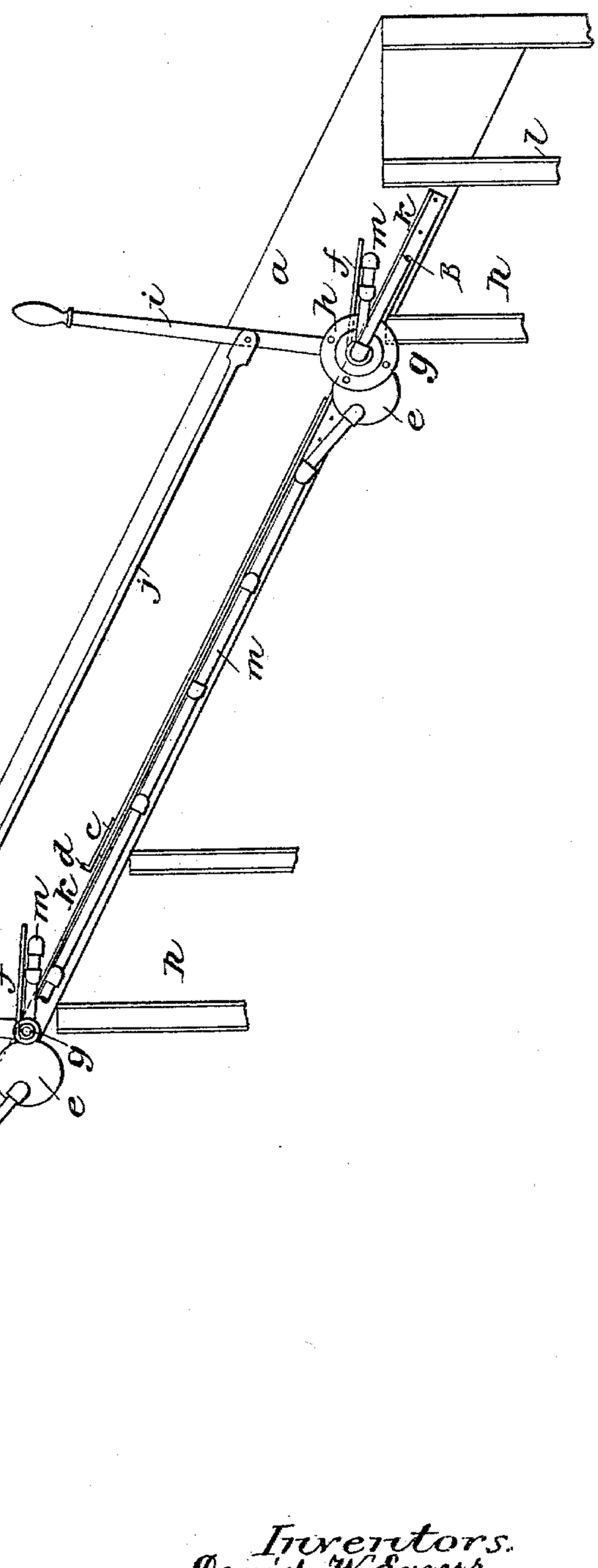

Fig. 2.

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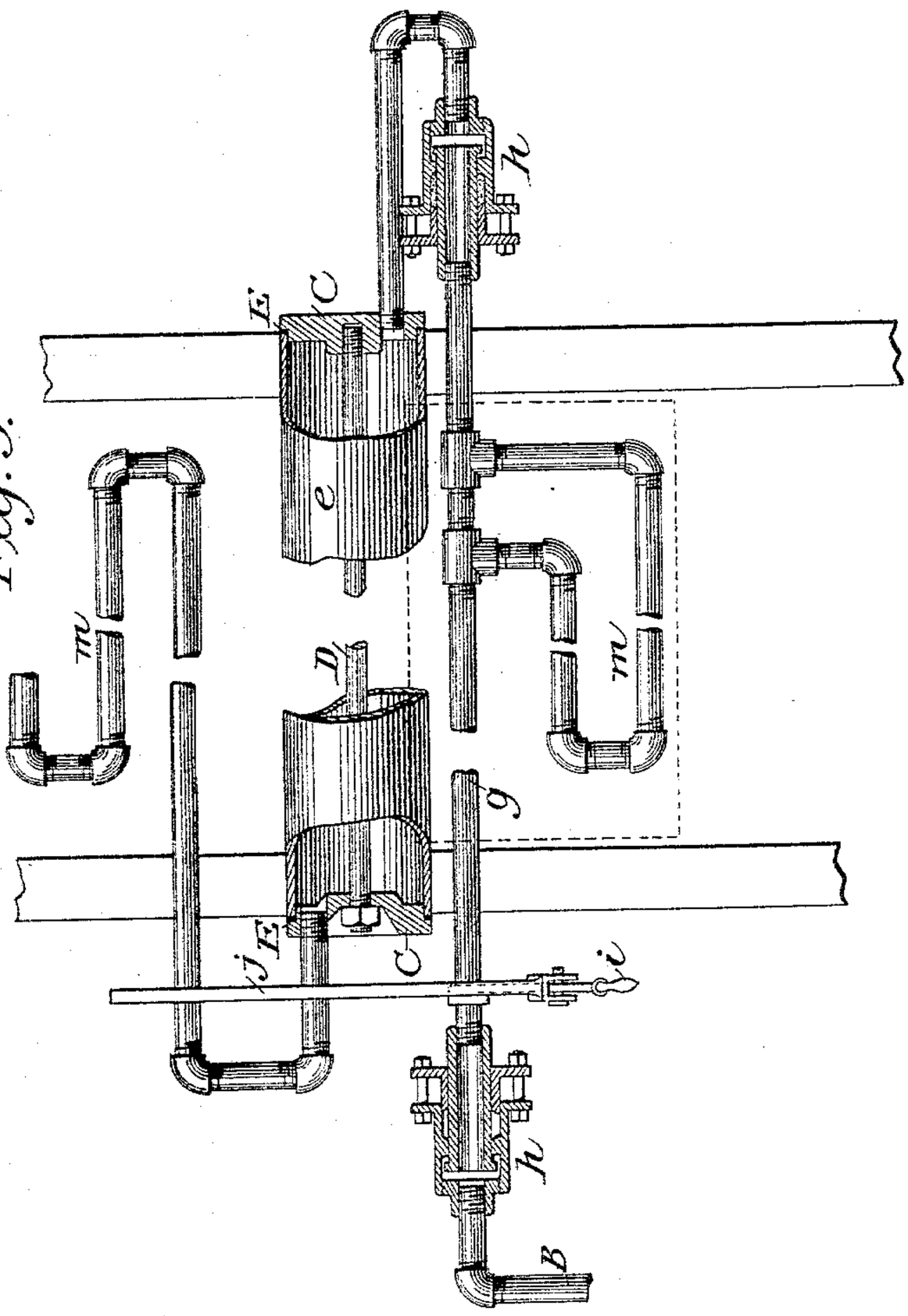
Fig. 3.



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UNITED STATES PATENT OFFICE.

DAVID W. EVANS, OF PITTSTON, AND HERBERT MATHEWSON, OF WEST PITTSTON, PENNSYLVANIA.

MACHINE FOR SEPARATING COAL FROM SLATE.

SPECIFICATION forming part of Letters Patent No. 597,404, dated January 18, 1898.

Application filed October 28, 1896. Serial No. 610,253. (No model.)

To all whom it may concern:

Be it known that we, DAVID W. EVANS, residing at Pittston, and HERBERT MATHEWSON, residing at West Pittston, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Separating Coal from Slate; and we 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to machines for separating slate from coal. The object is to overcome the obstacle encountered in the process from having the slides wet, the fact of the coal being lighter and of a more slippery or glassy nature than the slate and the slate being usually in flat pieces and more inclined to friction on the iron when it is dry making the coal run faster on the slides and consequently go farther before falling, thus enabling it to be separated by a space properly adjusted through which the slate falls, but the wet slides change the speed of the slate and makes it go as fast as the coal. Therefore the heat is introduced to regulate this difficulty.

A great many devices have been used to retard coal and slate on different separators—flagstone of different kinds, cements of many kinds, and many other compositions. Some of these work all right with dry coal and in dry weather, but wet coal and damp weather cause all coal to deposit a kind of greasy soot or slimy composition, which makes the slate fly over the gaps, making them entirely useless. Steam heat or heat of any kind overcomes all such trouble to perfection. It prevents the formation of the slimy composition and causes friction on the plates which retards the material to be separated, bringing it under the full control of the separator, and by the application of heat the coal is also dried. The movable hot deflector changes the inclination and enlarges the slot, at the same time giving immediate results, thus making it easy for the person attending it to keep the adjustment to agree with the material.

Figure 1 is a plan of the slate-picker broken at the upper end. Fig. 2 is a side elevation with one of the plank sides removed to show the details of the adjusting mechanism. Fig. 3 is a detail showing arrangement of cylinders and piping.

Like letters refer to like parts in the different views.

The slate-picker consists of the plank sides *a a*, to which are attached the angle-irons *b b*, and resting on and secured to these angle-irons are the perforated plates *c c* of proper mesh. The upper end of each perforated plate has a slidable section lapped thereover for adjustment of the slate-openings *k k*, and said section has a flange *d*, turned up to allow the pieces of coal to balance forward instead of falling back.

There may be as many plates and openings as is desired to make up the length wanted. Under the lower of each perforated plate are placed cylinders or rollers *e e*. The deflectors *f f* are secured to the pipes *g g*, which act as a hinge made tight by means of the stuffing-boxes *h h*. These deflectors *f f* are operated by the rods *j j* and levers *i i*, giving them a greater or less degree of inclination, the greater degree of inclination retarding the speed of the slate, thereby causing it to drop into the gaps *k k* and thence into the chutes *n n*, while the coal passes over the gaps *k k* and falls into the chute *l*. The raising of the deflectors *f f* also gives the coal a better chance to pass over the gaps *k k*.

Steam is admitted into the piping at A, passing through the first return-bend *m*, under the first perforated plate, thence into the cylinder *e*, thence into the pipe *g* and the second return-bend *m*, under the next perforated plate, thence to the next cylinder, &c., and finally out at B. The cylinder *e* consists of the shell, as shown, to which are fitted the heads C C, held in place by the rod D.

E E are lead rings or packing to make steam-joints.

The pipes are tapped with the heads C C, as shown.

Having thus fully described our invention, what we claim as new, and wish to secure by Letters Patent, is—

1. The combination in a coal-separator of the perforated plates for slides *c*, *c*, and adjustable deflectors *f*, *f*, with steam-pipes fastened to the under side to heat and dry the same, substantially as shown and described.

2. The combination in a coal-separator of the stationary plate *c*, with adjustable flanged extension *d*, at the top, adjustable deflector *f*, at the bottom, with steam-pipes fastened to the under side of the same, substantially as shown and described.

3. The combination of the stationary plates *c*, *c*, under which steam-pipes are hung and adjustable deflectors and steam-pipes at the lower end with levers *i*, *i*, connected with rod *j*, for adjusting the same, substantially as shown and described.

4. The combination of an inclined plane over which the coal and slate slide, under which are hung steam-pipes, with a hollow cylinder connected with steam-pipes for heating the cylinder and plates, substantially as shown and described.

5. In a machine for separating the refuse from coal, the combination of a series of planes *c*, *c*, with rollers with a suitable device for heating the same, to create friction and retard the motion of the slate, all substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

DAVID W. EVANS.
HERBERT MATHEWSON.

Witnesses:
S. P. FENN,
P. A. GIBBONS.