(No Model.)

P. SPEICHER.

SCREEN FOR COAL.

No. 533,399. Patented Jan. 29, 1895.

Fig. 1.

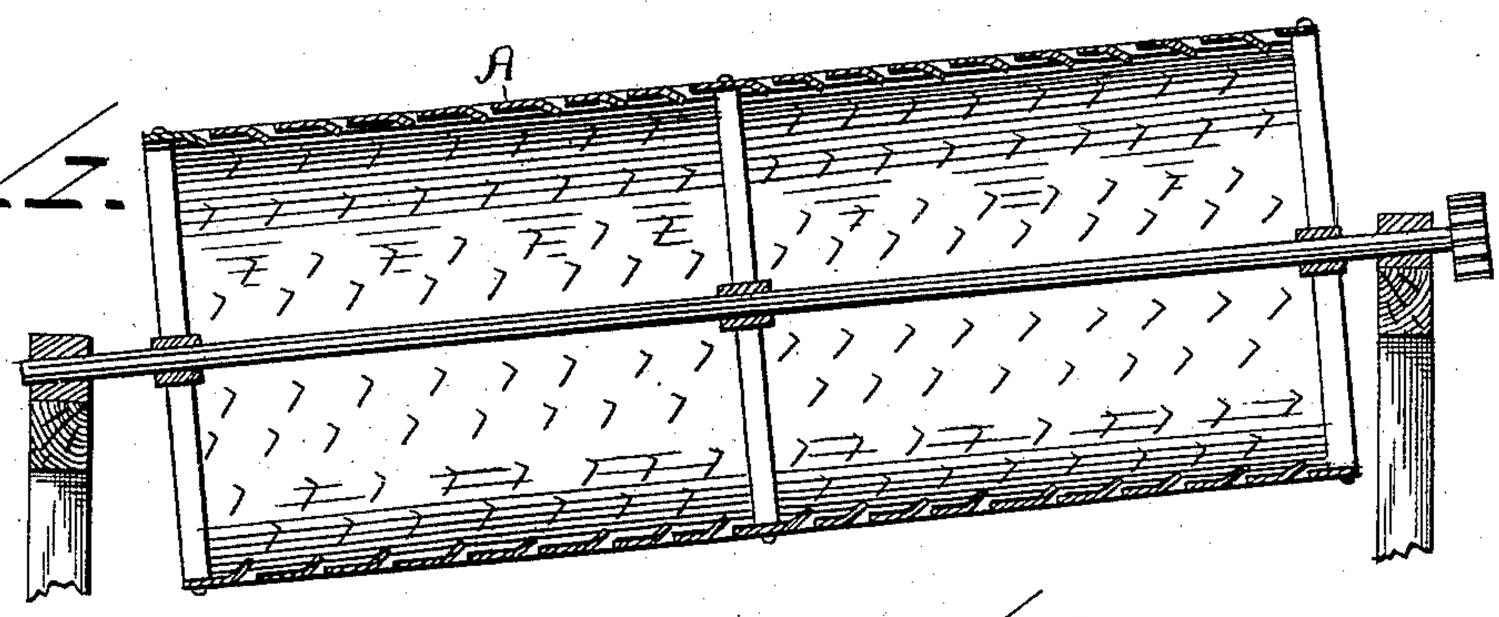


Fig. 2.

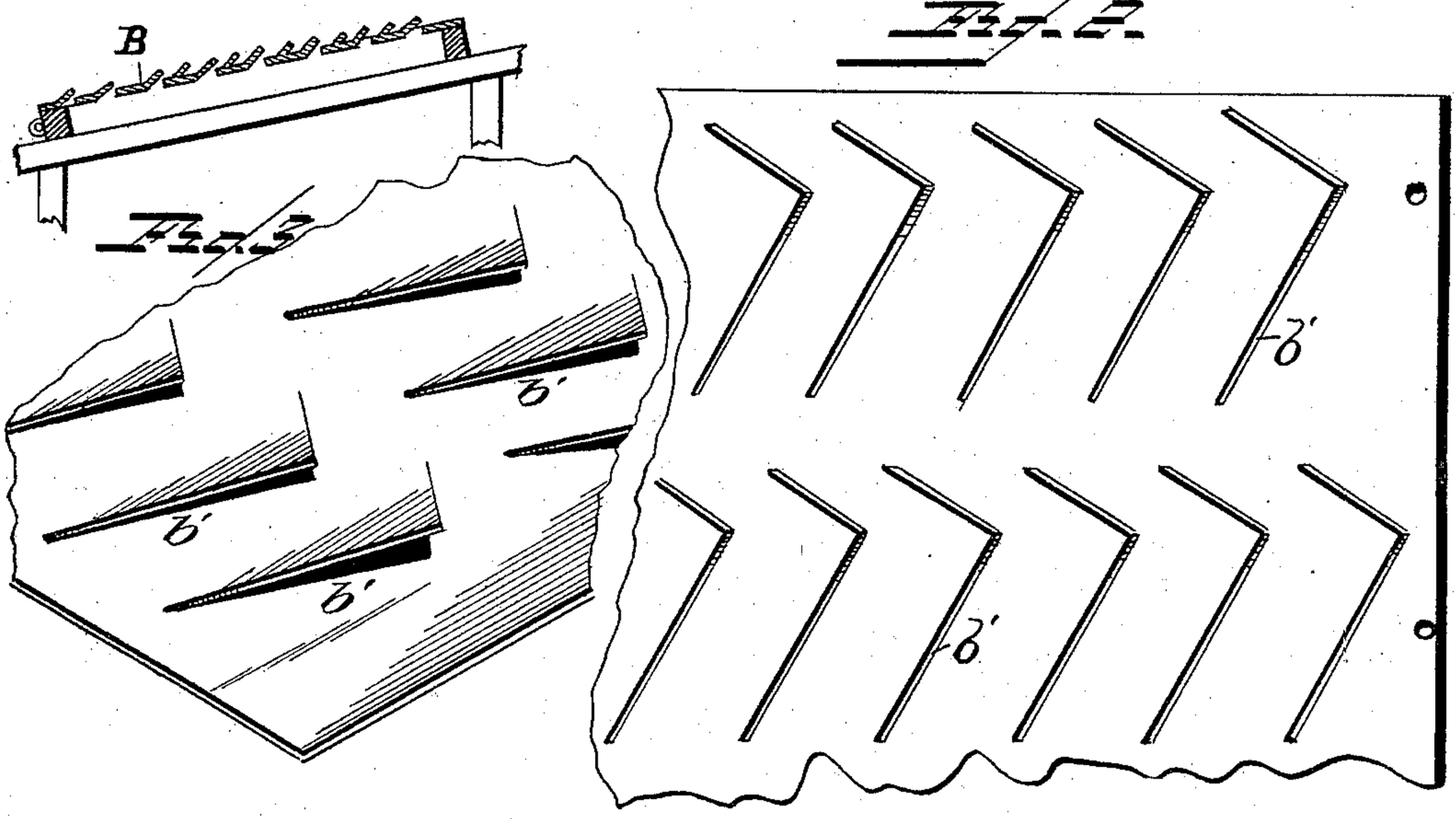


Fig. 3.

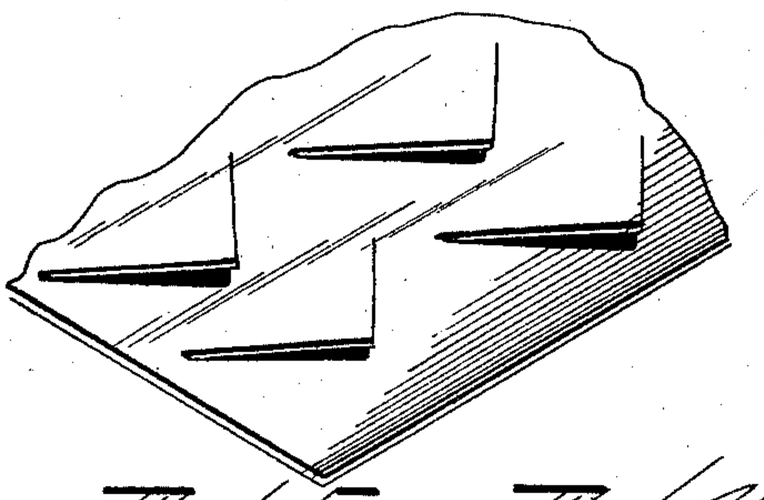
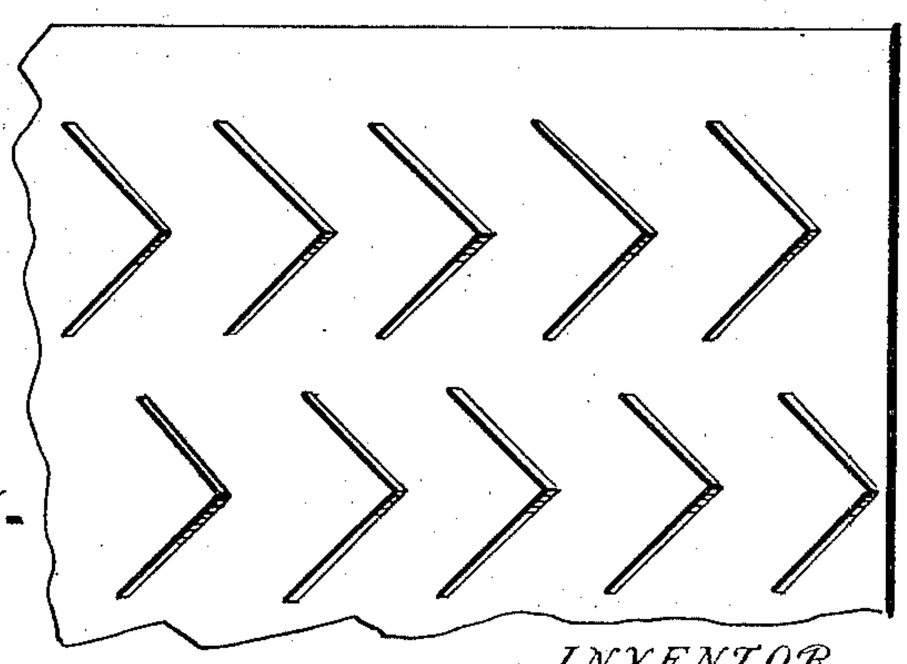


Fig. 5.

Fig. 4.



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SCREEN FOR COAL.

SPECIFICATION forming part of Letters Patent No. 533,399, dated January 29, 1895.

Application filed June 12, 1894. Serial No. 514,320. (No model.)

To all whom it may concern:

Be it known that I, PETER SPEICHER, a citizen of the United States, residing at Jermyn, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Screens for Coal, &c.; 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to screens for coal, sand, gravel, &c., and is designed especially to be used at the coal breakers to prevent the accumulation of culm in the pockets, thereby resulting in a mutual benefit to the operators, dealers and consumers by furnishing coal which is comparatively free from dirt and dust.

In the screens as ordinarily constructed the openings become choked or filled thereby preventing the escape of the fine dust or culm. This is due to the fact that the openings have their edges in the plane of the screen. By my invention the openings have raised portions against which the coal strikes and prevents the lodgment of dirt therein so that the escapes provided for a given area are always open for the passage of the dust and dirt.

The improvement will be more fully described hereinafter and pointed out in the claims.

In the drawings,—Figure 1 is a vertical longitudinal section of a coal screen embodying the invention. Fig. 2 is a plan view of a portion of the rotary screen. Fig. 3 is a detail view of the screen illustrated in Fig. 2 showing more clearly the raised edges of the openings. Fig. 4 is a plan view of a portion of the shaking screen. Fig. 5 is a detail view of Fig. 4.

The organized machine may be of any approved construction and design and embodies a rotary screen A, and a shaking screen B, the latter being located below the rotary screen. These screens will be mounted in the usual manner and operated in any desired way. The invention consists essentially in the construction and formation of the openings in the screens which have an edge raised above the plane of the screen. The openings are approximately V-shaped and are formed by two intersecting slits, that portion between the slits being bent up to form the raised edge. In the shaking screen the slits *b* are of the same length. The rotary screen has its slits of unequal length, the longer slit *b'* forming the advance edge of the opening as it is designed to engage with the coal first in the rotation of the screen. The best results are attained by having the slits disposed at right angles to each other as shown. The openings are arranged in parallel rows, the openings of one row being opposite the spaces between the openings of the contiguous or adjacent rows to insure a thorough cleaning of the coal. The plates are from one-tenth to three-sixteenths of an inch in thickness and may be of steel or rolled iron. The openings and the deflecting of the raised edges are accomplished at one operation by suitable dies or punches. The openings are disposed so that the travel of the coal is in a direction parallel with the rows of openings and the motion of the screen is at right angles to the said rows of openings. By this arrangement the best results are obtained and the coal is thoroughly cleaned and freed from culm and dirt.

It will be observed on reference to Fig. 1 that the openings are disposed in spiral relation about the rotary screen. The raised edges in the rotation of the screen serve to conduct the material through the screen and facilitate the separation of the same. The V-shaped lips point in the same direction and the tongues are raised with respect to the working surface of the screen. By this arrangement of parts a screen is provided which is successful and efficient in operation for the purposes desired.

To fully comprehend the merits of the invention it must be remembered that the screens at the coal breakers are from sixteen to forty feet long, with sections for the different sizes of coal. Such screens have a pitch in their length. The culm is dumped into the screen with the coal and if the openings were made to occur in direct lines straight across or around the revolving screen, the result would be that the culm together with the coal would find its way down and be pushed

into the coal sections before the culm could be sifted out in any considerable quantity. The first section or belt of the screen is designed to remove the culm, the other sections to separate and graduate the coal. If the culm is not removed by the first section then that remaining must find its way into the various other sections and become mixed with the coal. Hence the purpose of the invention is not attained. By having the openings arranged in spiral lines, the culm that escapes the first opening will be forced against one or the other of the succeeding openings and escape. Hence, the culm must of necessity be forced to and through the openings until nothing of it is left beyond what may be said to be inseparable from the coal. The raised lips result in keeping the coal revolving longer and shaken better in each section of the screen, and cause the coal to travel the whole length of each opening, thereby facilitating the separation of the culm. If the lips or edges of the openings were in the same plane and not raised with respect to the working surface of the screen, the coal would slide across the opening instead of traveling the length of the opening as results from the raising of the lips. Moreover, the coal frequently is quite wet when it reaches the breaker, and the culm sticks to it, and, in the ordinary screen, blocks up or chokes the screen openings requiring a stopping of the machinery to clean the screens. By having the lips of the openings raised the jarring of the coal against them knocks off and loosens the culm in the greatest possible quantity, thus securing clean coal, and also preventing the screen openings from being blocked or choked.

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

1. A cylindrical separating screen, having spiral rows of openings formed by approximately V-shaped lips pointing in the same direction with the tongues raised with respect to the working surface of the screen, substantially as specified.

2. A cylindrical separating screen, having spiral rows of openings formed by intersecting slits disposed at right angles forming V-shaped lips pointing in the same direction and raised tongues relative to the working surface of the screen, substantially as described.

3. A cylindrical separating screen, having spiral rows of openings formed by intersecting slits disposed to provide V-shaped lips pointing in the same direction and tongues raised with respect to the working surface of the screen, one of the slits forming each opening being longer than the other and arranged on the same side relative to the rows of openings, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

PETER SPEICHER.

Witnesses:
MICHAEL BOELTNER,
JOHANN SCHEMEL.