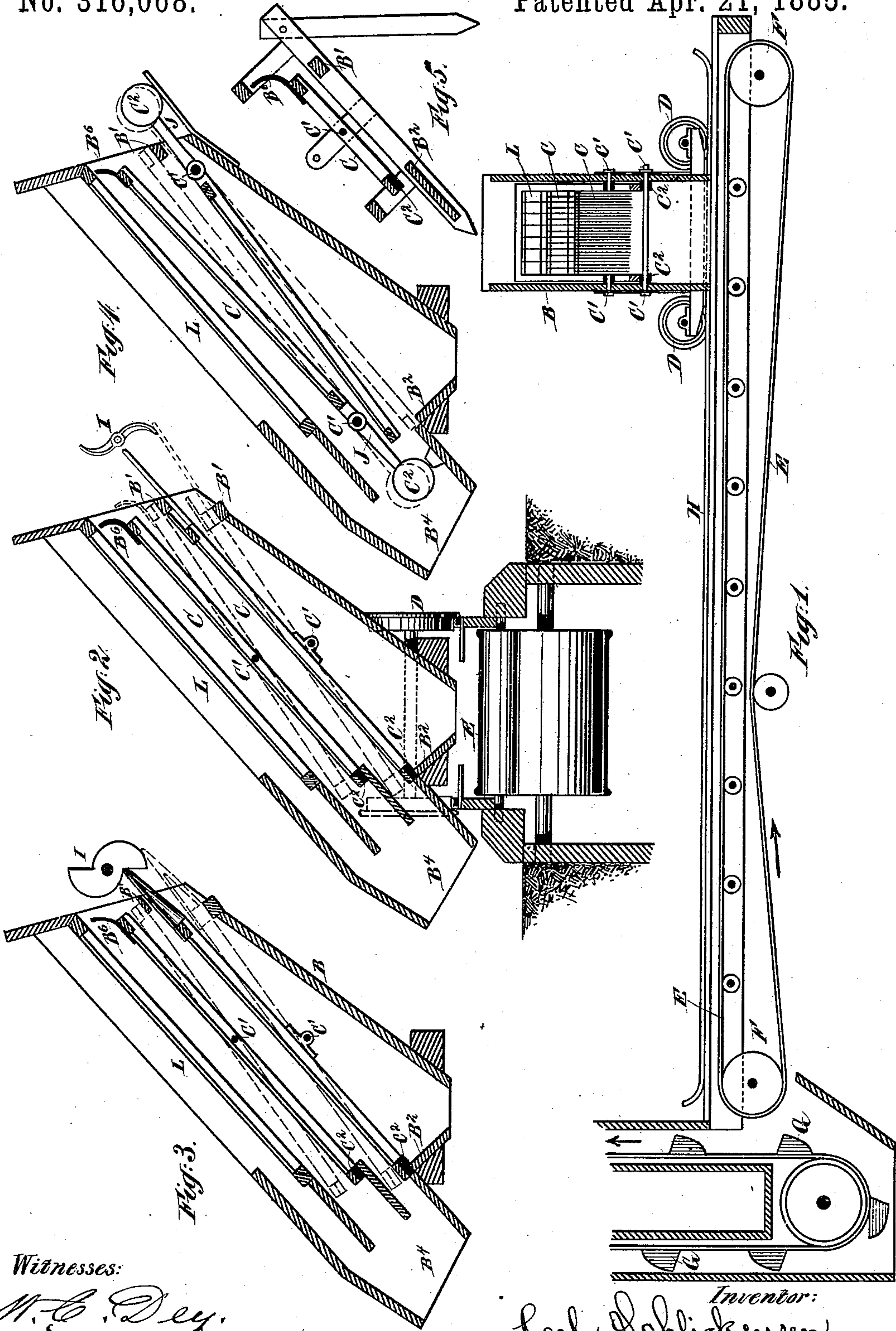


(No Model.)

C. SCHLICKEYSEN.  
SCREENING APPARATUS.

No. 316,068.

Patented Apr. 21, 1885.



Witnesses:

*W. C. Dey.*  
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Inventor:

*Carl Schlickeysen*  
*by his attorney*  
*Thomas S. Peterson.*



# UNITED STATES PATENT OFFICE.

CARL SCHLICKEYSEN, OF BERLIN, GERMANY.

## SCREENING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 316,068, dated April 21, 1885.

Application filed April 23, 1884. (No model.) Patented in Germany September 27, 1883, No. 28,876; in France November 30, 1883, No. 158,886; in England January 7, 1884, No. 904, and in Belgium April 1, 1884, No. 64,697.

*To all whom it may concern:*

Be it known that I, CARL SCHLICKEYSEN, of Berlin, Prussia, Germany, have invented certain new and useful Improvements in Screening Apparatus, of which the following is a full, clear, and exact description.

According to this invention an inclined screen or sieve for separating or sorting granular or pulverulent materials is supported upon an axis or fulcrum in such a manner that when the material to be screened is delivered at intervals thereon the end of the screen is caused first to descend a certain distance until it comes in contact with a stop, so that the shock imparted to the screen by such impact will assist in causing the small particles of the material to pass through the meshes thereof, and will also facilitate the passing of the larger particles along the upper surface of the screen; and, secondly, the same end of the screen is made to rise again after the shock of the downward blow, and in again striking against a second stop it is caused by such second shock to still further facilitate the passage of the material through and from off it.

The invention is capable of being carried into effect in various ways; thus, according to one arrangement, the screen is mounted on an axis or on pivots at or near its middle, the lower part being made to somewhat overbalance the upper part, so that the latter is kept up against a stop above it, or the former is kept against a stop below it; or the axis or fulcrum of the screen may be at or near one end thereof, and the other end be kept in a raised position against a stop by a weighted arm extended beyond the axis, or by a spring. In either case, on throwing the material to be screened upon the upper end of the screen, this is brought down forcibly against a stop, and the force of the impetus being thus neutralized the screen is caused by the preponderating weight at the other end to rise and strike forcibly against the upper stop.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section. Fig. 2 is a section at right angles to Fig. 1 on a larger

scale. Figs. 3, 4, 5 show portions of modifications. They are sections corresponding to Fig. 2.

Referring to Figs. 1 and 2, the screen C is mounted on an axis, C', carried in bearings on each side of the frame or carriage B, the screen being free to oscillate on such axis, but having its motion limited by the stops B' and B<sup>2</sup>. The upper end is held suspended in a raised position by weights C<sup>2</sup>. If now a quantity of sand, coals, or other material is thrown onto this suspended screen-surface, the impetus will cause it to descend suddenly with a blow against the upper stop, B', whereby a large part of the fine material thrown on will be caused to pass through. The movement of the coarse material along the upper surface of the screen soon after moves the lower end of the screen down with a blow against the lower stop, B<sup>2</sup>, thereby producing such a concussion of the screen as to cause the remaining portion of fine material to pass through the meshes, while the coarse particles pass down the upper surface and are delivered into a proper receptacle through a passage, B<sup>4</sup>.

In order to effectually distribute wet material as it passes onto the screen C, and thus prevent its meshes from becoming clogged, and also to prevent it from injury by large stones or lumps of material, a coarse screen or grating, L, with stout bars, is arranged above the screen C, onto which the material is thrown in the first instance. By thus affording the screen C an automatic oscillating action the application of special power for imparting a continuous motion thereto is avoided, the impetus of the falling mass affording the requisite power. In any screen the concussions produce a motion which is directly contrary to the momentary movement of the material being screened, and thus the screening operation is much more facilitated than is the case where regular periodical movements independent of the motion of the material are imparted to the screen.

It will be readily understood that the axis on which the screen oscillates need not necessarily be as shown; it can be placed in any other position, above, below, or in the plane of the screen at or near its middle, the one



half of the screen being overweighted so as to be kept against a stop, while the material is thrown upon the other half. It is also not necessary that the axis should be near the middle; it may be arranged more or less near to or even at or beyond one end thereof.

The balance-weight  $C^2$ , for keeping the screen in the raised position, must then be carried by an arm or lever, J, projecting a sufficient distance beyond the axis, as shown, for instance, at Fig. 4, where the axis of the upper screen is situated, at the lower end thereof, while that of the lower fine screen is situated at the upper end. The screens may also be arranged to strike against stops situated above them in order to produce the required concussions.

The upper end of the screen may be advantageously widened somewhat. It is provided with a sheet-metal extension,  $B^6$ , so that the concussive effect may be increased by the material being thrown by a shovel or otherwise upon such surface before sliding onto the screening-surface.

As shown in Figs. 2 and 3, the lowermost screen, C, is worked by means of a cam, I, turned by any suitable means, (not represented,) which is made to depress the upper end and then leave it free, allowing it to be raised with a jerk against the stop  $B'$  by the superior gravity of the lower end and its load.

In order to obviate the difficulty now existing in having to bring large masses of sand and other materials to the place where the screening apparatus is situated, the framing of the screen is mounted on wheels D, as shown in Figs. 1 and 2, and below the chute of the screen, between the wheels, is arranged an endless traveling apron, E, stretched over two rollers, F, so that the screened material in falling from the chute onto the apron is carried thereby to the chain-buckets G. The traveling apron, together with the rails H for the carriage, are arranged to extend any required distance along the face of the heaps of mate-

rial to be screened, so that the screening apparatus can be moved to any desired part of the latter, the carriage being arranged either to run upon wheels, as shown, or to slide upon the rails.

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

1. In combination with a movable frame, B D, having a chute for the screened material and a chute for the refuse and material to be again subjected to treatment, an oscillating screen having its axis above the center, and stops, as  $B' B^2$ , all arranged as described, whereby the force of each charge will throw the screen forcibly against the stops  $B'$ , and the gravitating material will operate the screen reversely against the stop  $B^2$ , as set forth.

2. In combination with the movable frame B, having chutes, as shown, the pivoted screen C, having counter-weights  $C^2$ , the grating L, and stops  $B' B^2$ , as set forth.

3. The combination, with the supporting-frame, of the finer and coarser screens C, having their axis and counter-weights arranged reversely, and the stops  $B' B^2$ , as herein specified.

4. The combination, with the screen C, pivoted at  $C'$ , of the lever J, carrying weight  $C^2$ , the apron  $B^6$ , and the stops  $B' B^2$ , as set forth.

5. The combination, with the movable frame B D and screening apparatus, as described, of the carrying-apron E, receiving therefrom and elevating or carrying buckets G, as and for the purposes set forth.

In testimony whereof I have hereunto set my hand, at Berlin, this 28th day of December, 1883, in the presence of two subscribing witnesses.

CARL SCHLICKEYSEN.

Witnesses:

CARL GRONERT,  
PAUL RÜHUL.