Sept. 30, 1952 F. J. WEST ET AL 2,612,264

COKE AND LIKE SCREENING MACHINE

Filed April 19, 1949

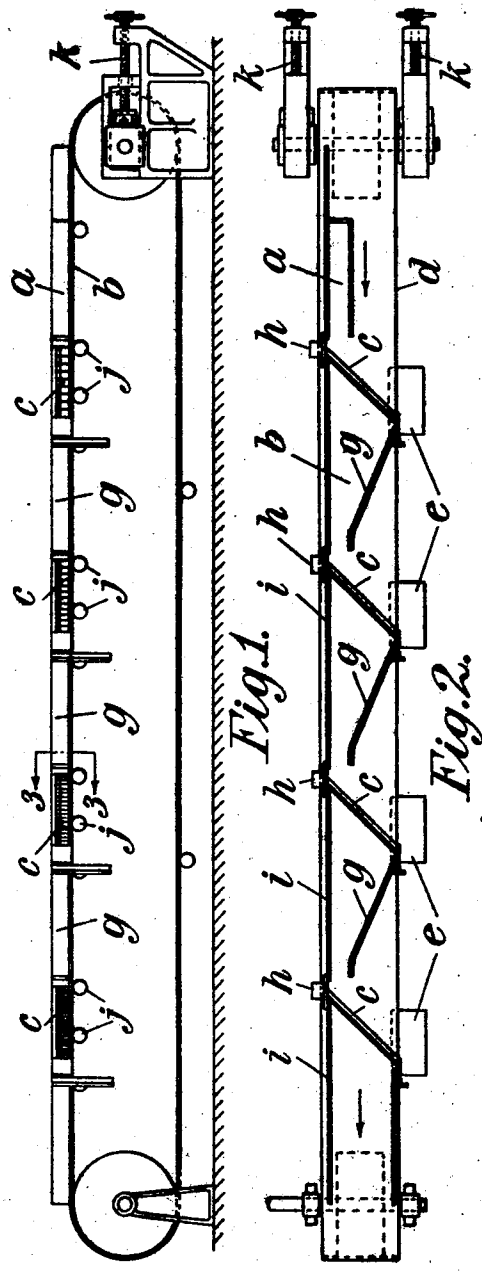


Fig.1.

Fig.2.

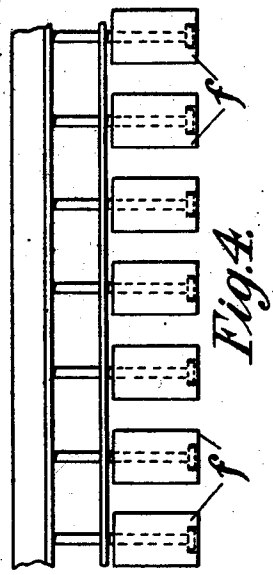


Fig.4.

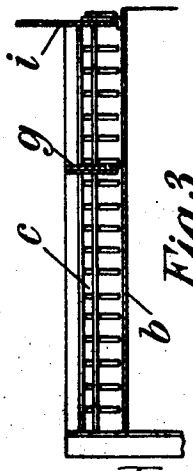


Fig.3.

Inventors
F. J. West
E. West
By Glascock Downing Seebold & Atty's

Patented Sept. 30, 1952 2,612,264

UNITED STATES PATENT OFFICE

2,612,264

COKE AND LIKE SCREENING MACHINE

Frederick Joseph West and Ernest West, Manchester, England, assignors to West's Gas Improvement Company Limited, Manchester, England, a British company

Application April 19, 1949, Serial No. 88,396
In Great Britain April 21, 1948

3 Claims. (Cl. 209—90)

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This invention relates to coke and like screening machines and has for its object to provide an improved construction and arrangement of machine which is efficient in operation and separates the biggest sizes first with the remaining separated in the descending order of size, which reduces breakage of material to a minimum and also power consumption and vibration.

The invention consists in a coke or like screening machine comprising a travelling endless belt across which are arranged at intervals grilles or screens disposed at an angle to the direction of travel of the belt so as to direct the material which will not pass through any particular grille or screen to the side of the belt at which delivery is to take place.

The invention further comprises means between the grilles or screens which cause the material which passes through a grille or screen to travel towards the side of the belt opposite to that at which delivery of the separated material is made so that when such material reaches the next grille or screen it will travel across the face thereof to ensure efficient screening.

The invention further consists in forming each grille or screen of vertical rods, bars or rollers (the bottoms of which come close to the belt surface) spaced to effect the desired separations.

The invention further consists in the provision of means for imparting a vibratory movement to each screen to assist in the screening operation.

The invention further consists in delivering the material on to the belt at one side thereof so that it tends to travel across the first grille or screen to the opposite side of the belt where the first discharge of separated material occurs.

Referring to the accompanying explanatory drawings—

Figure 1 is an elevation, Figure 2 a plan view and Figure 3 a sectional view on the line 3—3 of Figure 1 showing a screening machine constructed in one convenient form in accordance with this invention.

Figure 4 is a detail view of part of one form of grille or screen.

The material to be screened is delivered at *a* to one side of the travelling belt *b*, across which are arranged at intervals the screens or grilles *c* disposed at an angle to the direction of travel of the belt so as to direct the material, which will not pass through any particular screen or grille, to the side *d* of the belt at which the collecting shutes or hoppers *e* are arranged to receive the material from each screen or grille *c* as it is separated from the mass travelling along the belt.

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The bottom of each screen or grille comes close to the belt surface. Each screen or grille may consist of vertical rods or bars as shown in Figure 3 or of rollers *f* freely revolving upon vertical rods or bars as shown in Figure 4. The spacing of the bars, rods or rollers constituting the screens or grilles is such as to separate at each screen or grille the material of a particular size. The largest material is scalped and discharged first and this may constitute the major portion of the material upon the belt. In this way the breakages which occur due to the rolling about of the material as it passes through usual screening machines is avoided and power consumption reduced.

Between the successive screens or grilles are arranged deflectors *g* which cause the material which passes through a grille or screen to travel towards the side of the belt opposite to that at which the shutes or hoppers *e* are situated so that when such material reaches the next grille or screen it will travel across the face thereof to ensure efficient screening.

Each grille or screen may be given a vibratory movement by an electric vibrator *h* attached to the grille or screen.

At the offside, a backplate *i* is provided to prevent material falling off the belt.

The belt *b* is preferably supported by rollers *j* beneath the belt where the grilles or screens are situated and has tensioning means at *k*.

If desired there may be a pilot short and relatively broad belt upon which the bulk to be screened is delivered and upon which the largest size material is separated from the bulk. This may reduce the bulk by say 50%. After this preliminary separation, a narrower belt may be used for the further separations.

If desired the grilles or screens may be so set that they deliver alternately to opposite sides of the belt, which may be useful for distributing the different grades of material.

Our improved machine is simple in construction and not subject to the usual heavy wear and tear. It operates without vibration, which in present constructions of machine causes excessive wear and other troubles.

We claim:

1. A machine for screening coke and kindred materials comprising an endless conveyor movable in a horizontal plane, a plurality of spaced apart substantially vertical grills supported a slight distance above the conveyor with the grills extending transversely of the conveyor at an angle to the direction of travel of the conveyor, the openings of the grills diminishing in size in the direction of travel of the conveyor where-

by each grill will deliver material of a greater particle size than the openings therein off one side of the conveyor while the material of proper particle size passes therethrough toward the next grill, means defining a stop member along the side of the conveyor opposite the side off which the material of greater particle size is delivered and a deflector supported above and having a running clearance with the conveyor intermediate adjacent grills and extending angularly transversely of the conveyor in a direction opposite to that of the said grills and terminating short of the means defining the stop member and the next grill constituting a restricted opening whereby the particles passing through the grill are moved by the deflector through the restricted opening toward the end of the next grill remote from the delivery side of the conveyor so that the particles striking the next grill will travel the entire length of the said grill for proper separation.

2. A machine for screening coke and kindred materials comprising a substantially horizontal endless belt, means for supporting and driving the belt, means to admit material onto the belt at one side thereof in proximity to the beginning of the upper stretch of the belt, a plurality of spaced apart substantially vertical screens supported a slight distance above the upper stretch of the belt with the screens extending transversely of the upper stretch at an angle to the direction of travel of the conveyor, the mesh size of the screens diminishing in the direction of travel of the conveyor whereby each screen will deliver material of greater particle size than the openings therein off one side of the conveyor while the material of proper particle size passes therethrough toward the next screen, a receiver along the delivery side of the conveyor for each screen for the collection of material delivered off the conveyor by the screen, a stop member along the side of the conveyor opposite to the delivery side of the conveyor extending above the upper stretch of the conveyor and a deflector supported above and having a running clearance with the upper stretch of the conveyor intermediate adjacent screens and extending angularly transversely of the upper stretch of the

conveyor in a direction opposite to that of the said screens and terminating short of the stop member and the next screen to constitute a restricted opening whereby the material passing through the screen is moved by the deflector through the restricted opening toward the end of the next screen remote from the delivery side of the conveyor so that the material striking the next screen will travel the entire length of the said screen for proper separation.

3. A machine as defined in and claimed by claim 1 further characterized in that said grills each includes a plurality of spaced vertical bars and a roller carried by the lower end of each bar.

FREDERICK JOSEPH WEST.
ERNEST WEST.

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