April 8, 1930. A. D. VICKERMAN 1,753,630

SCREENING MACHINE

Filed March 3, 1928 2 Sheets-Sheet 1

Fig. 1.

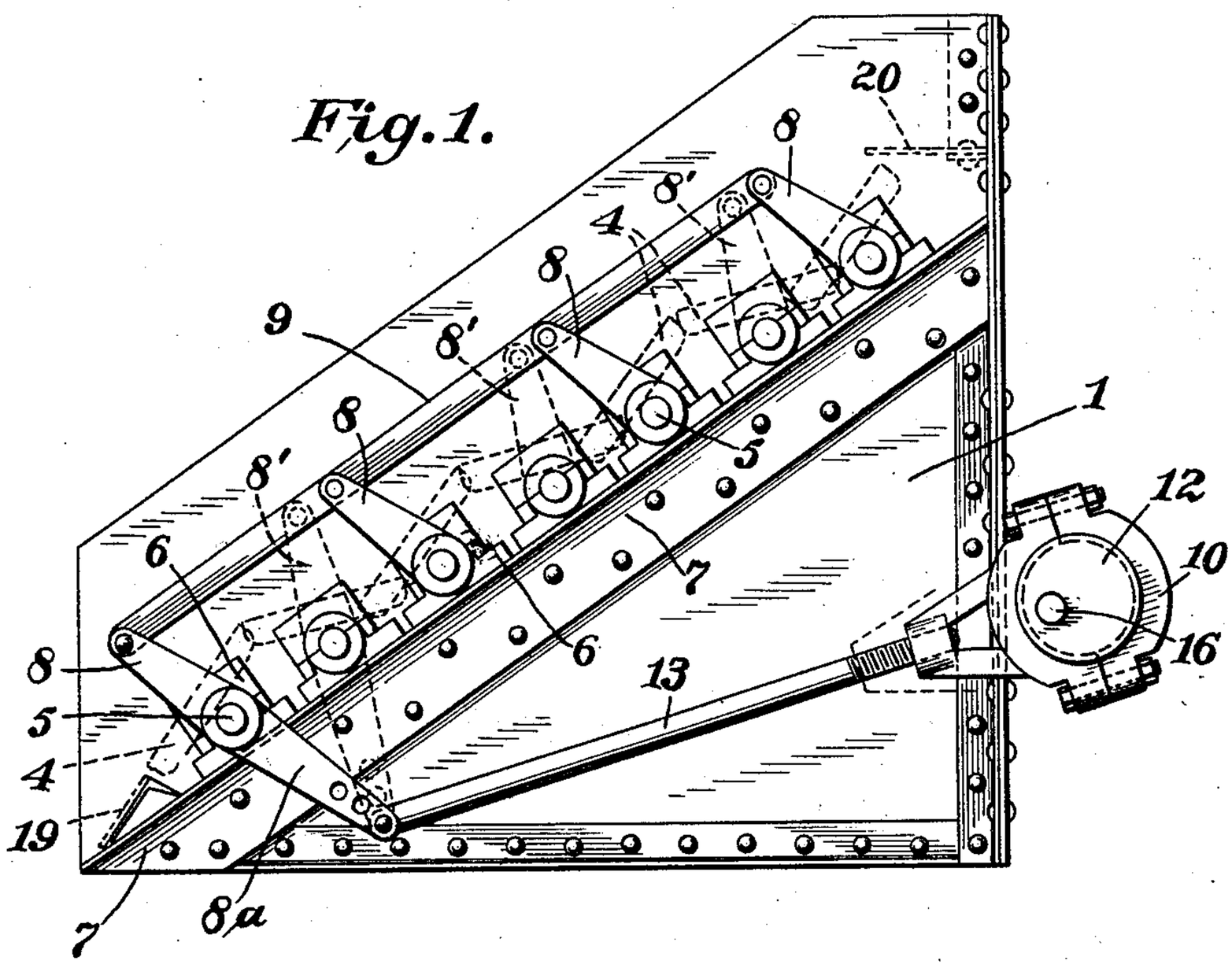
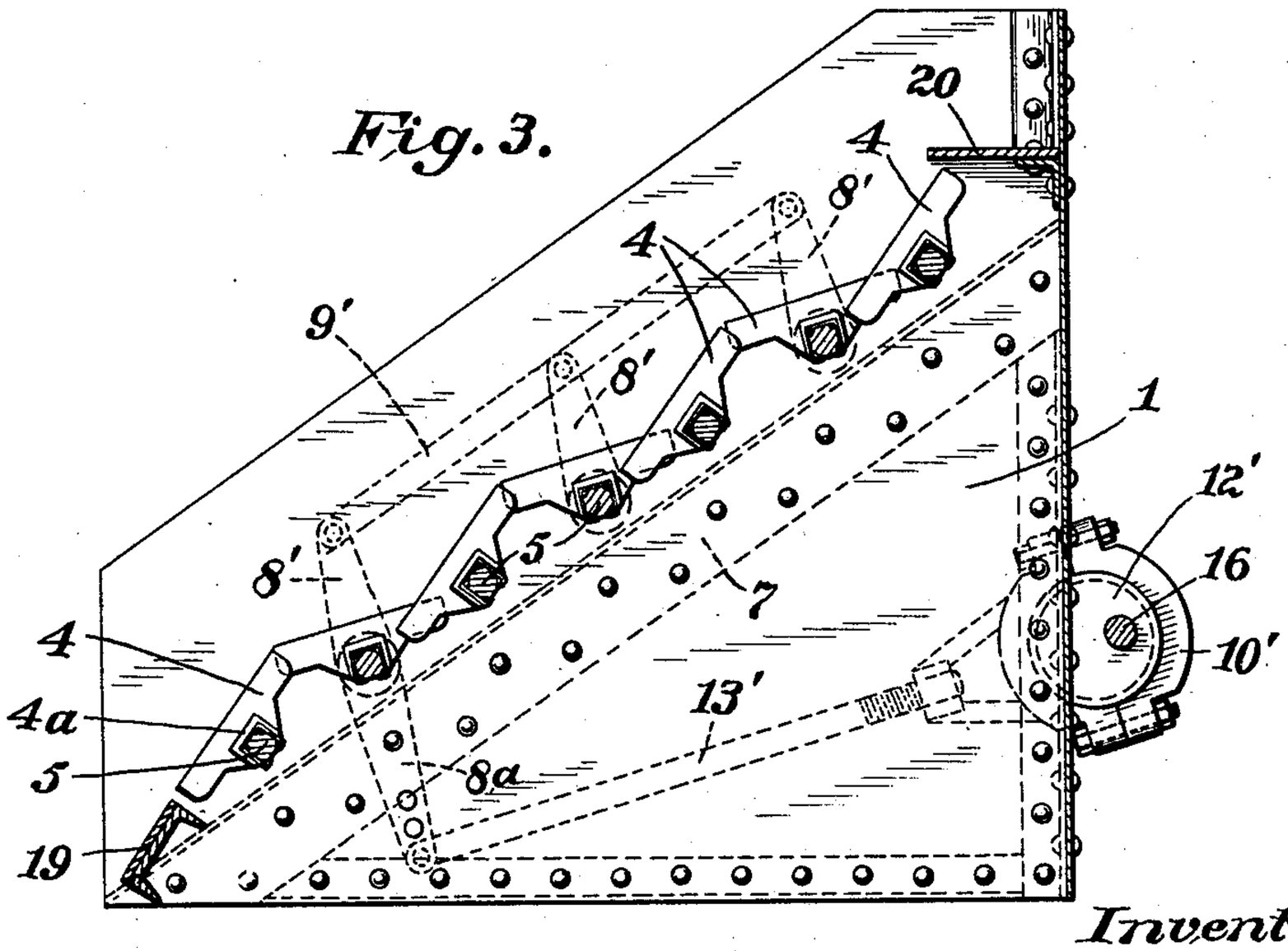


Fig. 3.



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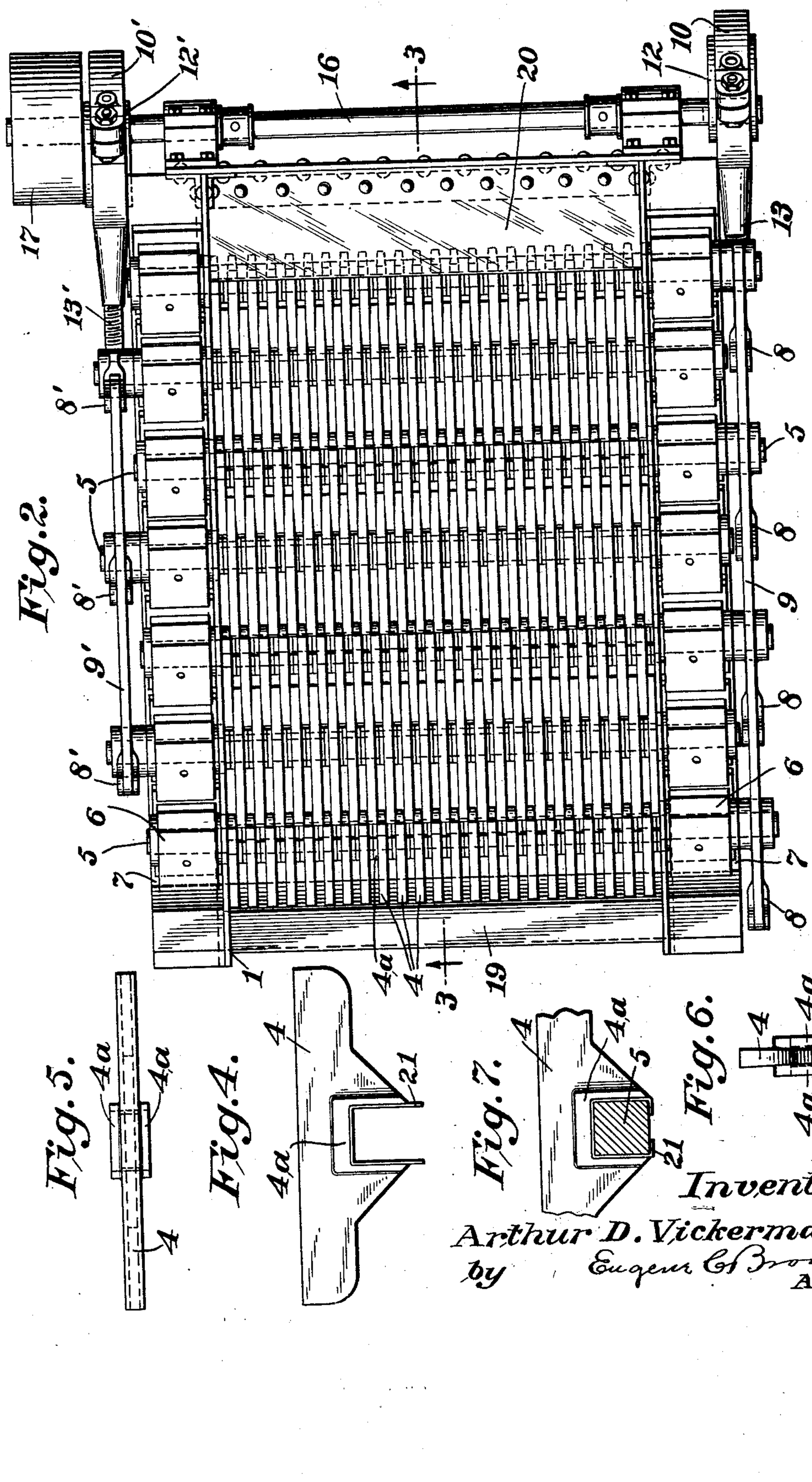


Fig. 2.

Fig. 5.

Fig. 4.

Fig. 7.

Fig. 6.

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UNITED STATES PATENT OFFICE

ARTHUR D. VICKERMAN, OF PUEBLO, COLORADO

SCREENING MACHINE

Application filed March 3, 1928. Serial No. 258,965.

My invention relates to machines for screening materials such as coal minerals, etc., and more particularly to the type commonly known as grizzly screens.

One of the objects of this invention is to provide a machine which will produce a cleaner separation of the fine material from the coarser sizes and yet without the breakage of the oversize pieces which has usually been caused by prior screens of this type. Another object is to provide a grizzly bar which will not bind or clog and which may be readily removed or detached from the screen when it is necessary to replace a bar and obviating the necessity of frequent cleaning.

In the following detailed description I shall refer to the accompanying drawings wherein:—

Figure 1 is a side elevation of a screening machine embodying my invention; Figure 2 is a top plan view of the same; Figure 3 is a longitudinal sectional view taken on the line 3—3 of Figure 2; Figures 4, 5 and 6 are respectively a side elevation, top plan and end view of one of the grizzly screen bars; Figure 7 is a fragmentary side view of the bar shown in Figure 4, and illustrating the manner of securing it to one of the rocking shafts.

The side plates 1 of the steel housing or supporting framework for the screen are provided with angle iron supports 7 riveted thereto, which carry the end bearings 6 for the rock-shafts 5, to which the grizzly rocker bars 4 are fastened.

These rocker bars are preferably made of hardened iron or steel and are thicker in cross-section at the top and slope or taper toward the bottom in order to facilitate the passage of the fine material between the bars without clogging. The central portion of the bar 4^a is thicker and is extended downwardly and provided with a recess shaped to fit over the rock-shafts, which are shown as square, but may be any desired or convenient shape. Tightly fitting within the recess is a strap member 21, the ends being bent inwardly over the bottom of the rock-shaft when in place to securely hold the bar while permitting ready removal when required.

The bars 4 on alternate shafts are staggered, as shown in Figure 2, so that the ends of the bars on one shaft intermesh with the bars on the adjacent shafts. The bars are symmetrical, projecting equal distances upon either side of the supporting shafts, so that the overlap of adjacent sets of bars is the same throughout the screen. The alternate shafts at one end are keyed or otherwise attached to drive rocker-arms 8. The other shafts are secured at their opposite ends in like manner to rocker-arms 8′, the rocker-arms on each side being connected by links 9 and 9′.

The rocker-arms on the two shafts nearest the lower end of the screen are provided with downward extensions 8^a to which connecting rods 13 and 13′ are pivotally connected. Divided eccentric straps 10, 10′ secured to the ends of rods 13, 13′ are bolted about eccentrics 12 and 12′ carried by the main drive shaft 16 which is driven by any suitable source of power indicated by pulley 17.

The eccentrics are displaced 180°, so that the alternate sets of rocker-bars 4 oscillate in opposite directions, which results in an undulatory motion of the screen bed. Suitable holes in the lower ends of the rocker-arms 8, 8^a permit an adjustment of the connecting rods therewith to cause a corresponding increase or decrease in the motion of the rocker bars. The severity of the screening action can also be regulated by regulating the speed of the driving motor.

In operation, the material to be screened is delivered or deposited upon the upper end of the machine where it falls on the plate 20 and piles up to some extent so that the flow of material will impinge upon a bed of the material, thus decreasing the tendency toward breakage of the material. After passing over the plate 20, the material continues downward over the screen bed. The undulatory motion produced by the oppositely oscillating bars causes the finer material to settle and sift through the bed of material and then pass through the bars, while the larger sizes of material continue downwardly, the alternate rise and fall of the successive por-

tions of the screen bed effecting a progressive conveying or feeding of the material toward the discharge end until it passes over the bottom plate 19. The wedge-shape or tapering section of the bars tends to prevent clogging, while the wiping action of the intermeshing bars effectually keeps them clear and free.

I claim:—

1. A grizzly type screening machine comprising a frame, two sets of rock shafts carried by the frame and disposed in a downwardly inclined plane, said shafts being alternately arranged, a series of rocker bars detachably secured to said shafts centrally of their length to form a screen bed, the bars on adjacent shafts being staggered and intermeshing and being approximately the width of the space between adjacent bars so that the bars on one shaft serve to wipe between the bars on adjacent shafts, rocker-arms secured to the outer ends of the shafts and projecting upwardly therefrom, the arms on alternate shafts being connected by links, the rocker-arms on the two shafts nearest the lower end being provided with downward extensions, connecting rods secured to the outer ends of said extensions, and means for simultaneously oscillating said connecting rods in opposite directions to thereby produce an undulatory motion along the screen bed.

2. A grizzly type screening machine comprising a frame, two sets of rock shafts carried by the frame and disposed in a downwardly inclined plane, said shafts being alternately arranged, a series of rocker bars detachably secured to said shafts centrally of their length to form a screen bed, the bars on adjacent shafts being staggered and intermeshing, and being approximately the width of the space between adjacent bars so that the bars on one shaft serve to wipe between the bars on adjacent shafts, rocker-arms secured to the outer ends of the shafts and projecting upwardly therefrom, the arms on alternate shafts being connected by links, the rocker-arms on the two shafts nearest the lower end being provided with downward extensions, connecting rods secured to the outer ends of said extensions, means for simultaneously oscillating said connecting rods in opposite directions to thereby produce an undulatory motion along the screen bed, and a projecting member overhanging the upper end of the screen bed to partially obstruct the free flow of material and maintain an initial bed of material.

3. A grizzly type screening machine comprising a frame, two sets of rock shafts carried by the frame and disposed in a downwardly inclined plane, said shafts being alternately arranged, a series of rocker bars detachably secured to said shafts centrally of their length to form a screen bed, the bars on adjacent shafts being staggered and intermeshing and being approximately the width of the space between adjacent bars so that the bars on one shaft serve to wipe between the bars on adjacent shafts, and reciprocable means operatively connected to said rock shafts to impart an oscillatory movement thereto.

In testimony whereof I affix my signature.

ARTHUR D. VICKERMAN.