

No. 693,709.

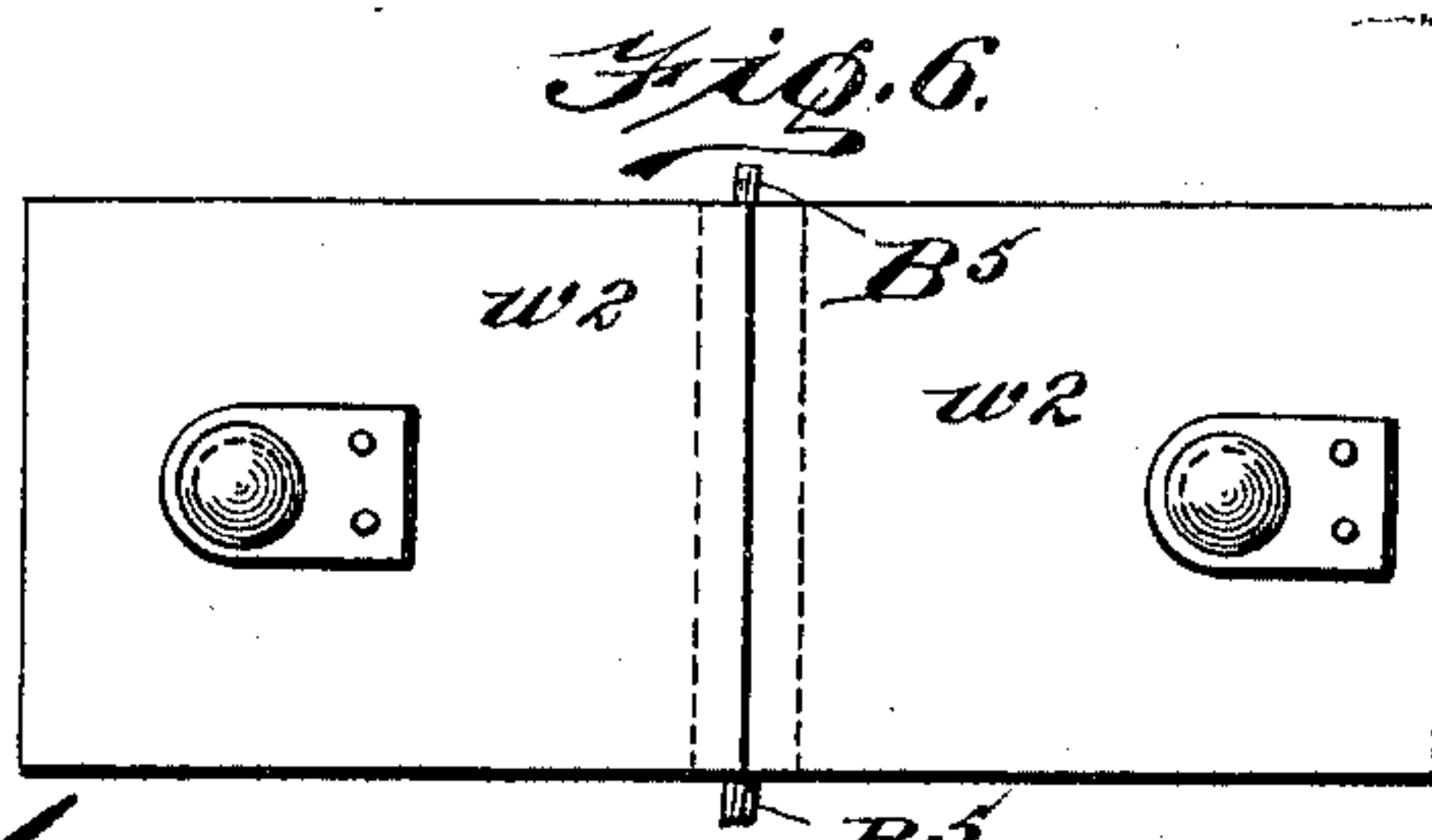
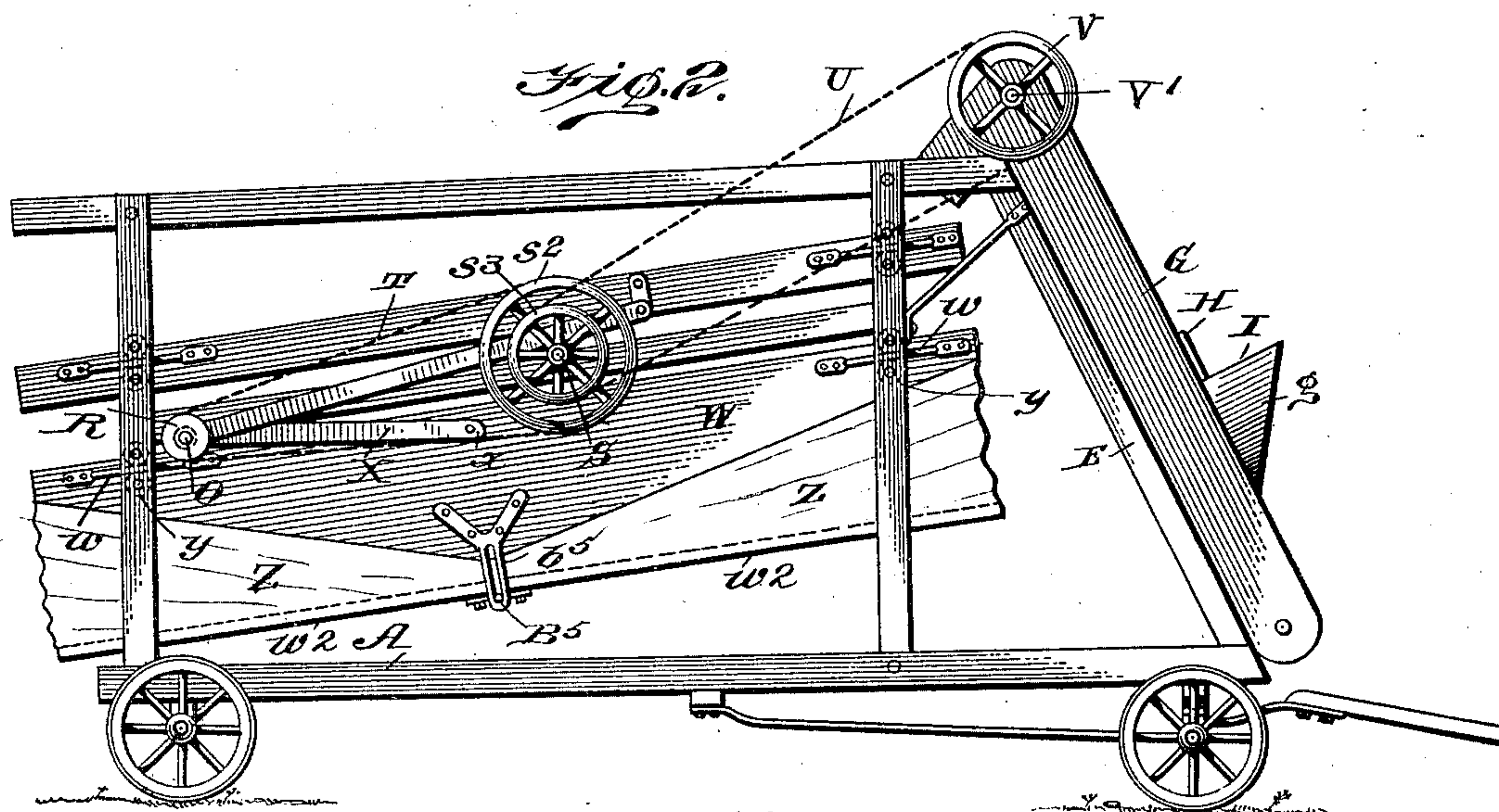
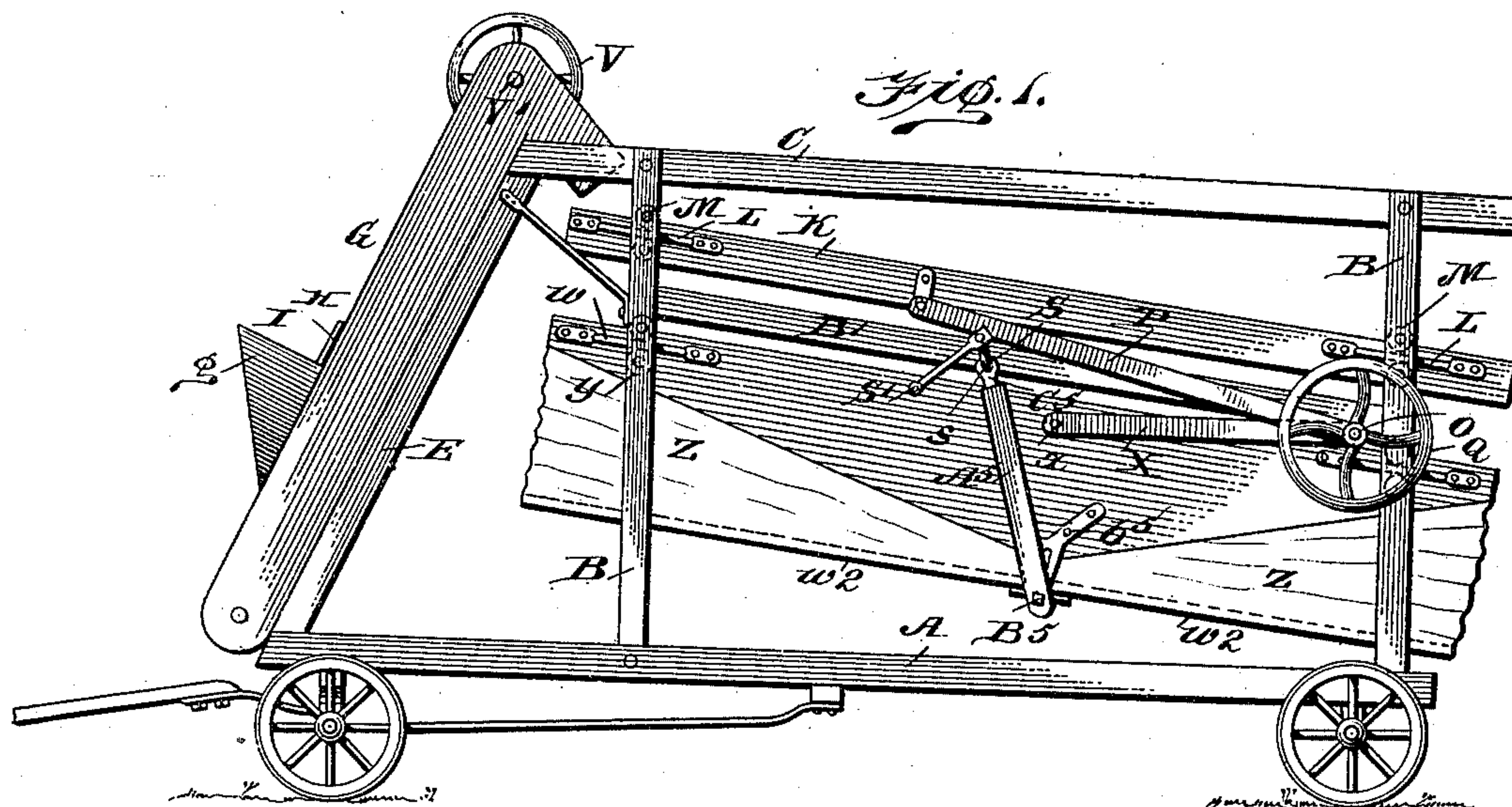
Patented Feb. 18, 1902.

J. C. HOEFER.
ORE SEPARATING MACHINE.

(Application filed Apr. 24, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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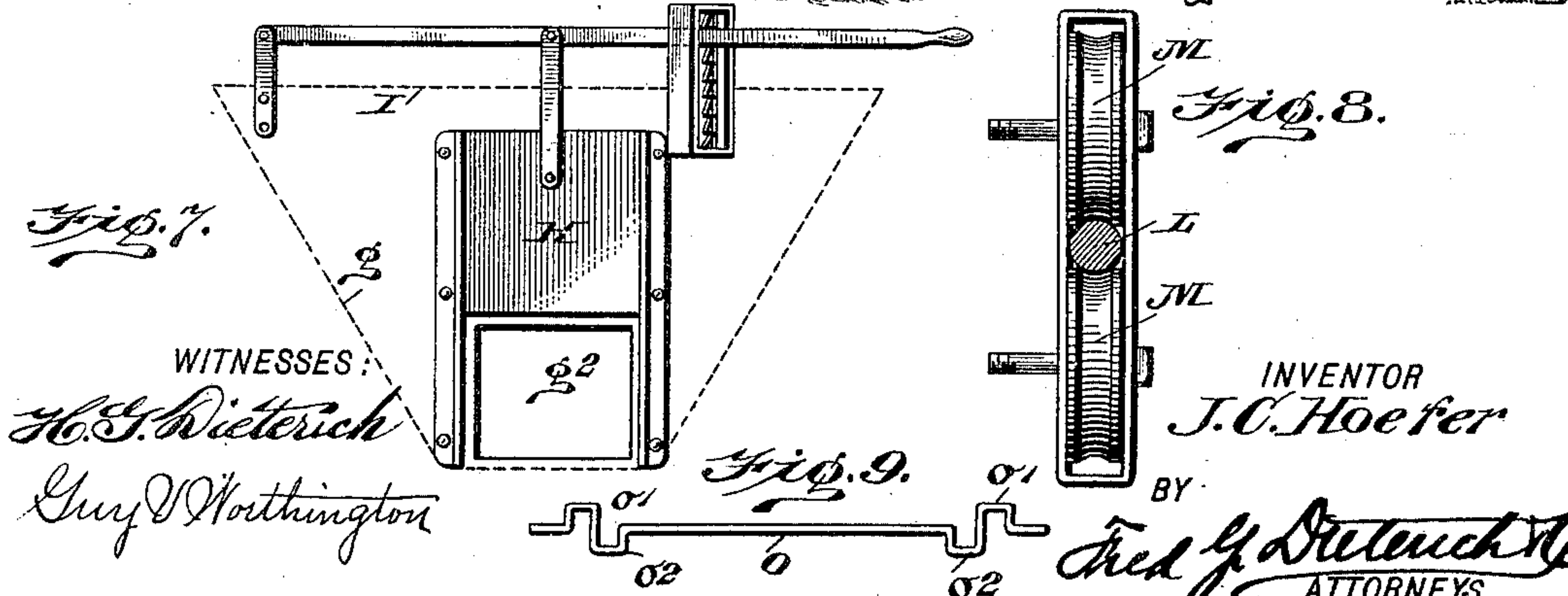
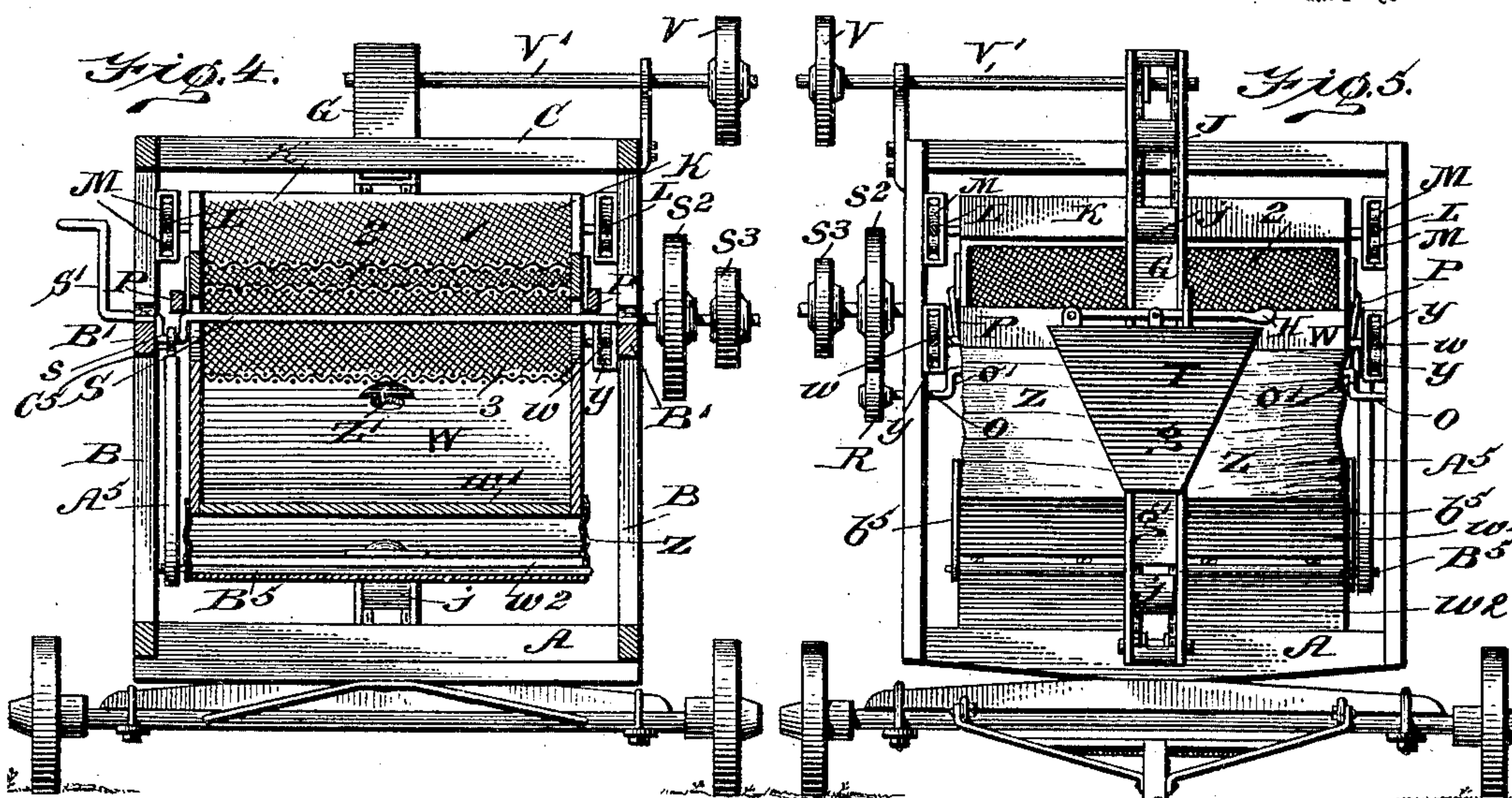
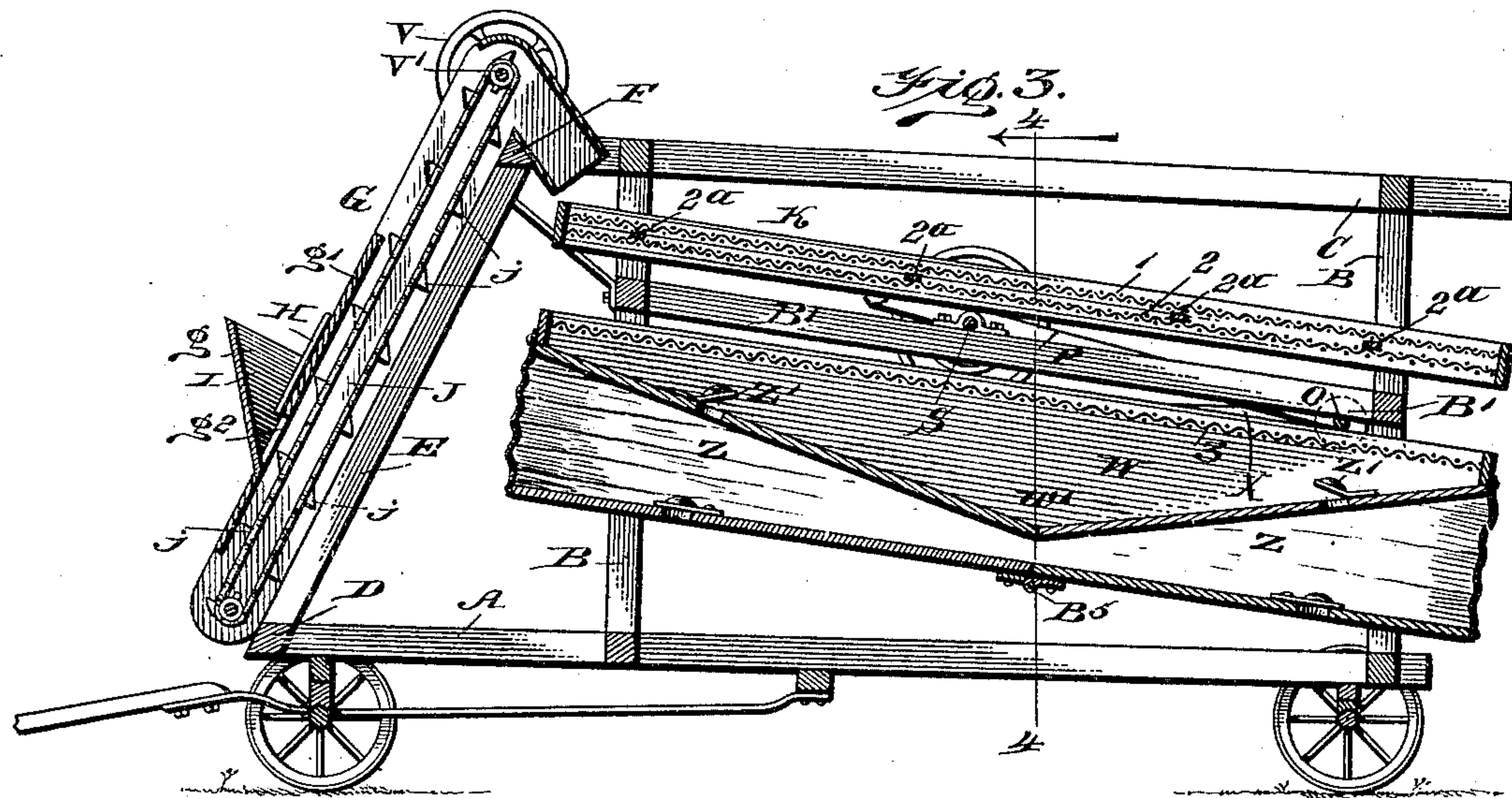
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UNITED STATES PATENT OFFICE.

JOHN C. HOEFER, OF PORTLAND, OREGON.

ORE-SEPARATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 693,709, dated February 18, 1902.

Application filed April 24, 1901. Serial No. 57,317. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. HOEFER, of Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Ore-Separating Machines, of which the following is a specification.

This invention relates to improvements in that class of ore-separating machines known as "dry-process" machines; and it seeks to provide a machine of this character of a simple and economical construction in which the gold can be quickly, conveniently, and positively separated from auriferous sand with a minimum amount of loss.

My invention comprehends generally a novel arrangement of rocker separating-screens, an elevating means for feeding the ore thereon, and an air-compressor coöperatively arranged with the screens and the rocking mechanism, whereby to effect a desired wind force for blowing off the light particles as the gold or other precious metals are screened therefrom.

The invention in its more subordinate features embodies certain novel combinations and peculiar arrangement of parts, all of which will hereinafter be fully described, and particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my invention. Fig. 2 is a similar view taken from the side opposite Fig. 1. Fig. 3 is a vertical longitudinal section thereof. Fig. 4 is a transverse section on the line 4 4 of Fig. 3 looking in the direction of the arrow. Fig. 5 is front view of the elevator end of my machine. Fig. 6 is a plan or diagram of the top of the bellows-casings. Fig. 7 is a detail view of the feed-regulating devices for the elevator. Fig. 8 is a view of one of the roller-bearing mechanisms hereinafter referred to. Fig. 9 is a detail view of the crank-shaft O, hereinafter referred to.

My invention in its preferred construction includes in its complete make-up a running-gear or carriage A to provide for conveniently moving the same from place to place as conditions may make desirable.

B B designate standards projected up from carriage-frame A, connected at the top by cross-bars C, as best shown in Figs. 1 and 2.

At the front end of the base or cross member D of the screen-supporting frame are secured two upwardly-extending rearwardly-inclined side bars E, the upper ends of which are made fast to the top bar F, mounted on the upper side members of the main frame, and upon the side bars E is mounted the elevator G, consisting of a hopper I, connected to the platform g' , having a feedway g^2 , over which operates the adjustable gate H, (see Figs. 3 and 7,) having suitable handle mechanism for conveniently setting it to increase or decrease the size of the feedway, and said feedway forms the outlet for the receiving-hopper I.

J designates the endless conveyer, having buckets j , that receive the auriferous material deposited in the hopper and convey it up and discharge it into the uppermost one of the screens, as best shown in Fig. 3.

K designates a screen-holding frame, which is supported on the standards for longitudinal movement, and for such purpose at each side and each end the frame has iron bail-like members L, held on and adapted to slide between a pair of roller-bearings M. (Illustrated in detail in Fig. 8.)

1 and 2 designate two screens disposed one above the other and carried by the frame K, the screen 2 being of a finer mesh than the screen 1 and arranged to receive the separated ore that passes from screen 1, and to facilitate separation the screen 2 is provided with transverse cleats or riffle-bars 2^a , as shown.

At the rear or discharge end is a crank-shaft O, that extends transversely under the screens 1 and 2 and journaled in bearings on the longitudinal frame-bars B'. The shaft O has two cranks o' o^2 at each end, and to the cranks o' are joined the pitman-bars P, the forward ends of which are pivotally joined to the frame K at each side thereof.

Q denotes a fly-wheel on one end of shaft O, and R a band-pulley on the other end thereof.

S denotes a second crank-shaft mounted on the bars B' B' about midway of the machine. This shaft has but a single crank s near one end thereof, the reason for which will presently appear, and at the crank end said shaft has a crank-handle S' for imparting motion to the machine, its other end having a band-wheel s^2 , that is geared with the band-wheel

R by the belt T, a second but smaller band-pulley s^3 being also on the shaft S, over which the belt U passes, that connects with the band-wheel V on the elevator-shaft V'.

5 So far as described it will be readily understood that power being applied to the shaft S the same will be transmitted to the double crank-shaft and the members P caused to reciprocate, and in consequence a longitudinal
10 reciprocating motion is imparted to the screen-holding frame K, and at the same time motion is imparted to the elevator to cause it to discharge the auriferous material onto the top screen 1, the amount of the lift of the
15 elevator being governed by the gate that controls the discharge from the hopper, it being obvious that the heavier or precious ore passes through the screen 1 onto screen 2, while the tailings pass out at the end of screen 1 into
20 a suitable discharge or receiving vessel.

Now comes an essential and novel feature of my invention. By referring more particularly to Figs. 3 and 4 it will be noticed that
25 a second longitudinally-movable frame W is provided and disposed under frame K, which has guide-bails w w at its ends held to slide on the roller-bearings y . Upon the upper end of this frame is mounted a fine-meshed screen 3, adapted to receive the fine sand and
30 gold separations from screen 2 and to impart longitudinal motion to the frame W. Pitman-rods X are pivotally joined thereto, as at x , and joined to the cranks o^2 o^2 . The frame W is made trough-like, with its front
35 and rear ends inclined downward toward the center w' of the bottom sections of the frame W, and forms the upper part of a pair of bellows Z Z. Each section w^2 has a discharge provided with an upwardly-opening valve Z' Z'.
40 On one side of the frame W operates a swinging guide A^5 , and said guide is fulcrumed at a^5 on a cross hinge-bar B^5 , slidably mounted in the Y-brackets b^5 , secured to the sides of hopper-frame W, and the said bar B^5 extends under and in engagement with the bottom boards
45 W^2 , which are hinged on the bar B^5 to swing independently of each other. The guide A^5 has an eyerod C^5 , that joins with the crank s on the shaft S. By connecting the rod C^5
50 and guide A^5 in the manner stated I am enabled during the reciprocal movement of the frame W and during each complete revolution of the crank-shaft S to move the guide A^5 forward and backward and at the same
55 time raise and lower the cross-rod B^5 , to which the hinge member of the two bellows-sections joins, the ends of said rods or bars B^5 being free to reciprocally slide in the slotted brackets b^5 , such operation serving to compress the
60 bottom members of the bellows once during each complete rotation of said shaft S.

From the foregoing, taken in connection with the accompanying drawings, it is thought the complete operation and advantages of my
65 invention will be readily understood by those skilled in the art to which it appertains.

In the practical application of the same the auriferous material is dumped into the hopper and carried by the elevator and dumped into the first or top screen 1. During the
70 operation of feeding the ore onto the screen 1 the frame K, together with the screens 1 and 2, is reciprocated and subjected to a constant shaking operation, the smaller ore particles during such operation passing down
75 onto the screen 2, while the larger portions or tailings pass off the open or discharge end of the screen. While the screens 1 and 2 are moved in unison, the fine screen 3 is moved longitudinally, but independently of screens
80 1 and 2, and the particles of finesand and gold as they are dropped onto the screen 3 are further separated by screen 3, and the precious metal or fine gold passes down into the casing or frame W, while the sand and other
85 non-essential parts pass out at the end of screen 3.

To cause an efficient separation of the fine or light dust and dirt from the heavy gold portions, a wind-blast is constantly discharged
90 up through the several screens, and by reason of the manner in which the wind-producing devices are coöperatively arranged with the screen-holder frames a constant blast in short quick puffs is blown up through the
95 ore during the process of separation.

The entire apparatus or mechanism is of a few parts that can be readily assembled by ordinary mechanical labor, moved about, and readily dismantled when desired. 100

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

1. An ore-separator, comprising in combination with a supporting-frame and a screen-frame shakably mounted on said supporting-frame; of a second screen-holding frame shakably mounted on the supporting-frame, independently of the first screen-frame, said second frame having its bottom inclined downward from the opposite ends, a bellows-section
105 W^2 under each inclined bottom portion, having valved blast discharges through said bottom, said sections W^2 W^2 having a hinged connection, and means for imparting a simultaneous shaking motion to the screen-frames, and compressing the two bellows-sections, for the purposes described. 110 115

2. The combination with the main frame, and the screen-carrying frame W, having inwardly-discharging valved openings in the bottom; of the hinged bellows-sections Z, including the two hinged members w^2 w^2 , the drive-shaft, having a crank, and a swinging and extensible link connecting the hinged
120 part of the sections Z with the crank on the drive-shaft, all being arranged substantially as shown and for the purposes described. 125

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Witnesses:

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