

No. 663,895.

Patented Dec. 18, 1900.

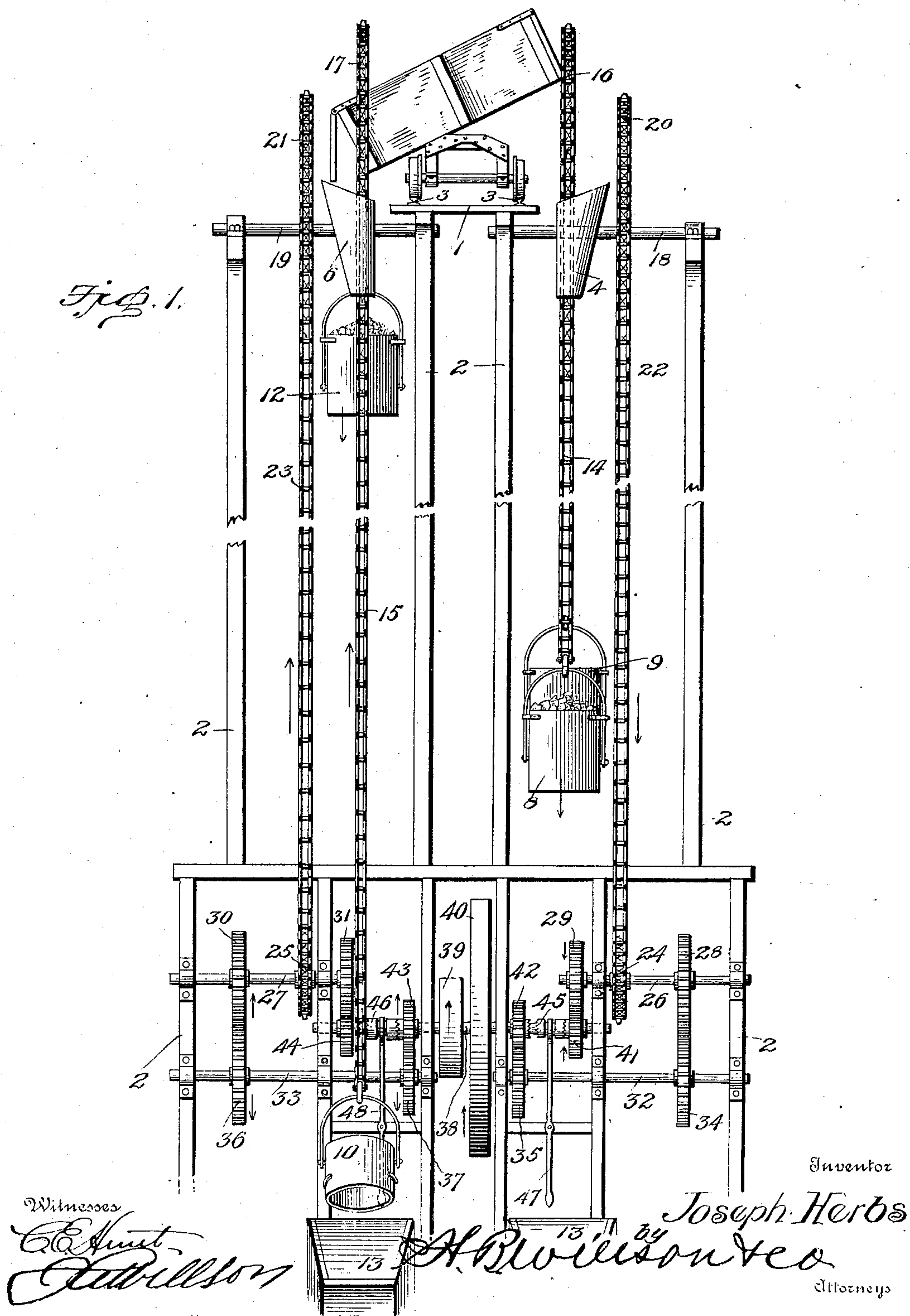
J. HERBS.

POWER TRANSMITTING MACHINERY.

(Application filed Apr. 26, 1900.)

(No Model.)

2 Sheets—Sheet 1



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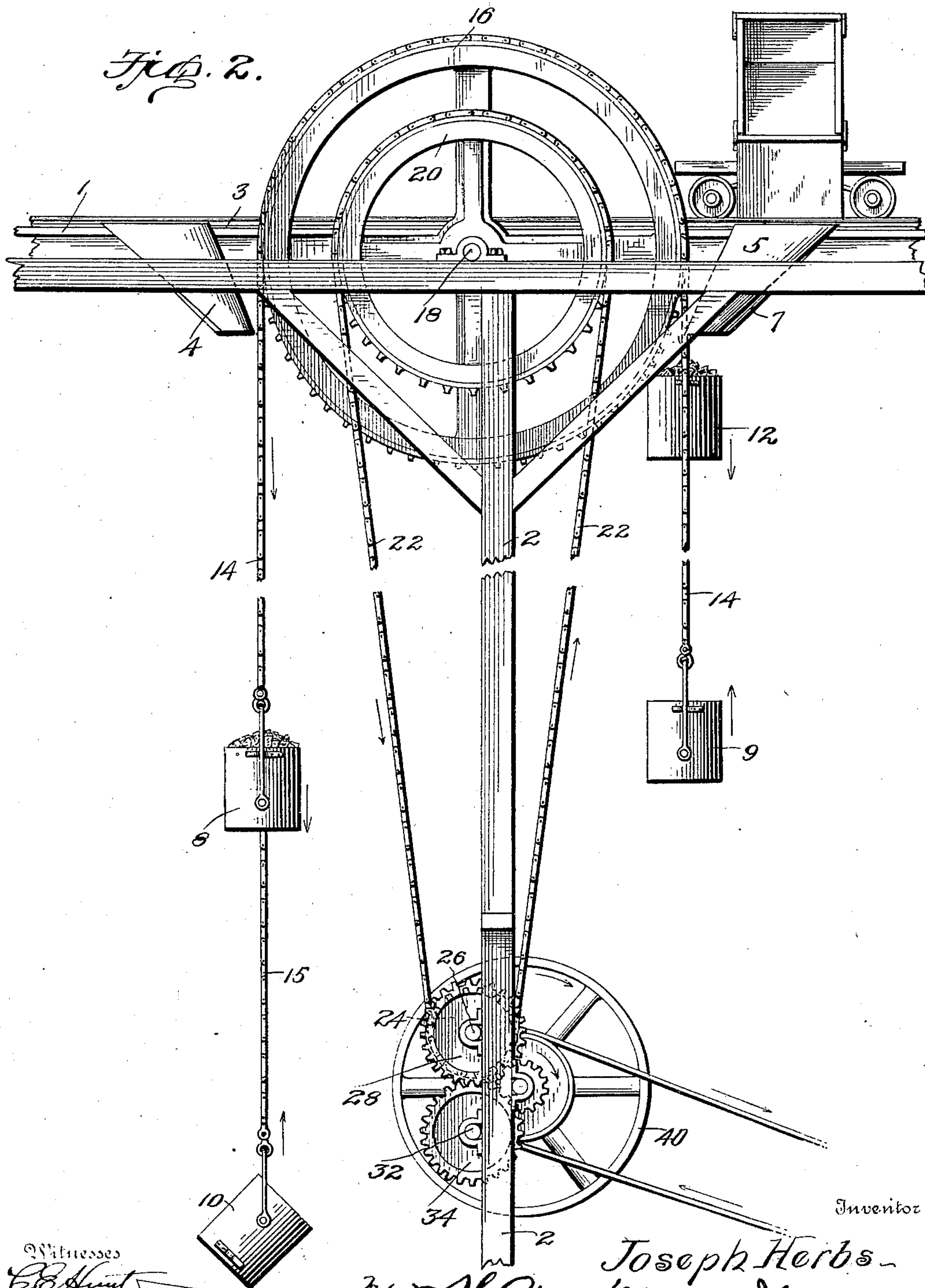
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2 Sheets—Sheet 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JOSEPH HERBS, OF FALL BROOK, CALIFORNIA.

POWER-TRANSMITTING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 663,895, dated December 18, 1900.

Application filed April 26, 1900. Serial No. 14,496. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HERBS, a citizen of the United States, residing at Fall Brook, in the county of San Diego and State of California, have invented certain new and useful Improvements in Power-Transmitting Machinery; 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.

The invention relates to power-transmitting machinery.

The object of the invention is to provide mechanism for lowering ore from mines located on mountain sides to crushers or stamping-mills located at a distance of, say, between fifty and two hundred feet lower than the mine and to make use of the power that is generated by the lowering of the ore to operate the crushers or stamping-mills.

The invention is particularly applicable in localities where there is no water-supply at hand or in localities where there is a scarcity of wood, the absence of either of which tends to make the cost of crushing ores so great that operating such mines would be unprofitable. Again, there are localities rich in ores where it would be impossible to transport a boiler and other large machinery. My mechanism, however, being easily taken apart and set up, can be readily carried on the backs of pack-animals, and in that manner carried to otherwise inaccessible places.

The invention consists in certain features of construction and combination of parts, which will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a front elevation of my device in operation. Fig. 2 is a side elevation of the same.

In the drawings the same reference characters indicate the same parts of the invention.

1 denotes a platform supported by a frame or trestle-work 2 and located at the entrance of a mine in a mountain side. The framework extends downwardly to a distance of, say, from fifty to two hundred feet and rests upon a ledge.

3 denotes tracks laid upon the platform 1 and extending back into the mine for the dump-cars to bring ore from the interior of the mine to the chutes 4 and 5 and 6 and 7,

into which the ore is dumped. The chutes conduct the ore to the buckets 8 and 9 and 10 and 12, which deliver it into chutes 13, leading to the crusher or mill. The buckets 8 and 9 and 10 and 12 are supported in pairs by sprocket-chains 14 and 15, running over large sprocket-wheels 16 and 17, respectively mounted on short individual shafts 18 and 19, journaled in suitable bearings in the upper portion of the framework 2.

20 and 21 denote two sprocket-wheels of less diameter than the wheels 16 and 17. These wheels are also mounted on the shafts 18 and 19, respectively, to rotate therewith and carry endless sprocket-chains 22 and 23, extending to small sprocket-pinions 24 and 25, mounted on short shafts 26 and 27, journaled in bearings on the lower portion of said supporting-framework 2.

28 and 29 denote two spur gear-wheels mounted upon the shaft 26 on either side of the sprocket-pinion 24, driven by the chain 22.

30 and 31 denote two spur gear-wheels mounted in like manner on the shaft 27, journaled in bearings on the opposite side of the framework 2. This shaft and gears are driven by the chain 23.

32 and 33 denote two shafts journaled to rotate in bearings located on the framework directly beneath the shafts 26 and 27. The shaft 32 carries the spur gear-wheels 34 and 35, the gear 34 being in mesh with the gear 28 and being driven by said gear. Likewise the shaft 33 carries the spur gear-wheels 36 and 37, the gear 36 being in mesh with the gear 30 and driven by said gear.

38 denotes a shaft journaled in suitable bearings and located as shown and having fixed thereon intermediate its ends a drive-pulley 39 and a fly-wheel 40. This shaft 38 has also mounted thereon loose gear-wheels 41, 42, 43, and 44, which are caused to rotate with said shaft at the proper time by means of the clutches 45 and 46, which have a sliding connection with the said shaft, but which rotate therewith and are shifted by means of the forked shifting levers 47 and 48 to alternately engage their respective loose gear-wheels, which are each provided with clutch members, as shown, to throw the same into and out of operation, so that in the alternate lowering of the buckets of ore the drive-pulley may be continually driven in the same di-

rection, the inertia of the heavy fly-wheel serving to steady the movements of said pulley during the operation of shifting of the clutches, motion being imparted to the said drive-shaft 38 through the trains of gearing before mentioned alternately by means of the shifting clutches, the operation of which will be now more fully described.

Referring first to the right side of the machine, the bucket 8 having been filled and on its downward movement will cause the wheel 16 and the shaft 18 to rotate from right to left, driving the wheel 20 in the same direction and causing the sprocket-chain 22 to move in the direction of the arrows to drive the sprocket-pinion 24 on the shaft 26, and thereby drive the spur-gears 28 and 29 in the direction of the arrow indicated thereon. The gear 29 being in mesh with the spur-pinion 41 will cause the same to turn in an opposite direction, as indicated by the arrow placed thereon, said spur-pinion 41 through the clutch 45 causing the shaft 38 to rotate, thereby driving the belt-wheel mounted thereon and causing the same to rotate in the direction of the arrow to drive the belt operating the crusher mechanism. Upon the descent of the bucket 9 after having been filled the shaft 18, wheels 16 and 20, and other mechanism just described will be caused to rotate in an opposite direction. The clutch 45, however, has in the meantime been thrown into contact with the spur-pinion 42 and away from the pinion 41, leaving said pinion 41 to turn idly upon the shaft 38. In order that the belt-pulley 39 may be kept continually running in the same direction, the gear-wheels 34 and 35, mounted upon the counter-shaft 32, are interposed between the gear 28 and the pinion 42 to impart motion to said pinion, and thence through the clutch 45 and shaft 38 to the belt-pulley 39 to rotate said pulley in the same direction it was traveling in the first instance, the inertia of the fly-wheel serving to keep up a steady movement during the shifting of the clutch mechanism.

The operation of the left side of the device being exactly the same as that just described, the description of one, it is thought, will be sufficient for the other, it being understood, however, that the mechanism of each side is complete in itself and distinct from the other, the two mechanisms being preferred for obvious reasons, principally that power may be continually exerted to rotate the drive-pulley by always having one full bucket on the downward movement.

If for any reason the crusher cannot use the ore as fast as brought down, waste rock, containing no ore, is sent down in the buckets and dumped to one side of the chutes leading to the mill until more ore is needed.

Any suitable means (not shown) may be employed by the clutch-operator to notify the car-operator at the proper moment to dump ore into the empty buckets.

The speed of the operating machinery may be controlled and regulated by any suitable brake mechanism.

It will of course be understood that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a weight-motor, the combination with the belt-pulley; of means for driving the same, said means consisting of the alternately-weighted buckets attached to the ends of sprocket-chains running over large sprocket-wheels mounted upon shafts journaled at a higher level than said belt-pulley, smaller sprocket-wheels mounted upon and driven by the said shaft, endless chains or belts connecting said sprocket-wheels with the sprocket-pinions located at approximately the level of the belt-pulley and driving the same through the medium of the interposed trains of gearing, substantially as and for the purpose set forth.

2. In a weight-motor, the combination with the belt-pulley mounted upon a shaft journaled in bearings in a framework situated at a lower level than the power employed in operating said pulley, means for transmitting said power to said pulley, the said means consisting of the endless sprocket-chains driven by said power and driving sprocket-pinions mounted on shafts journaled in bearings in the aforesaid framework, said shafts having spur-gears mounted thereon, loose gear-wheels mounted upon the aforesaid belt-pulley shaft, one of which being in mesh with one of the aforesaid spur gear-wheels and the other in mesh with a spur-gear mounted upon a counter-shaft also journaled in said framework and having mounted thereon another gear-wheel which is in mesh with the other of the aforesaid spur-gears mounted upon the sprocket-pinion shaft, the clutch slidably but not rotatably mounted upon said belt-pulley shaft to alternately throw the aforesaid loose gear-wheels into and out of operation, thereby imparting a continual motion to said belt-pulley in the same direction from the alternate application of the prime motive power by means of the interposed gearing, and a balance-wheel mounted upon said belt-pulley shaft to impart a steady uninterrupted motion thereto during the shifting of the said clutch, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH HERBS.

Witnesses:

MONTGOMERY M. MOULTON,
KARL WEBER.