

No. 677,844.

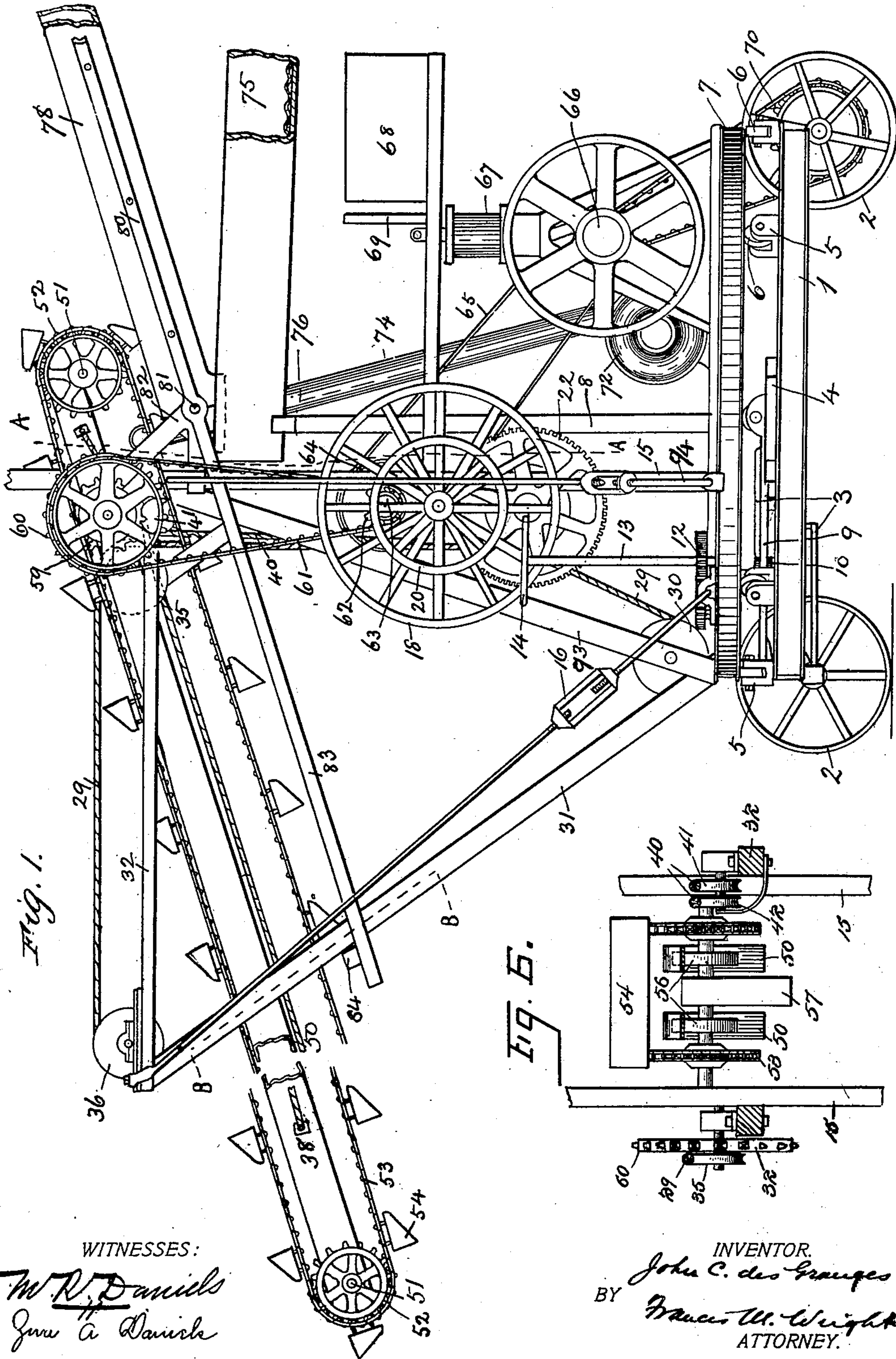
Patented July 2, 1901.

J. C. DES GRANGES.
EXCAVATING AND GOLD SAVING APPARATUS.

(Application filed July 2, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

W. R. Daniels
John A. Daniels

INVENTOR.

John C. des Granges
BY *Francis M. Wright*
ATTORNEY.

No. 677,844.

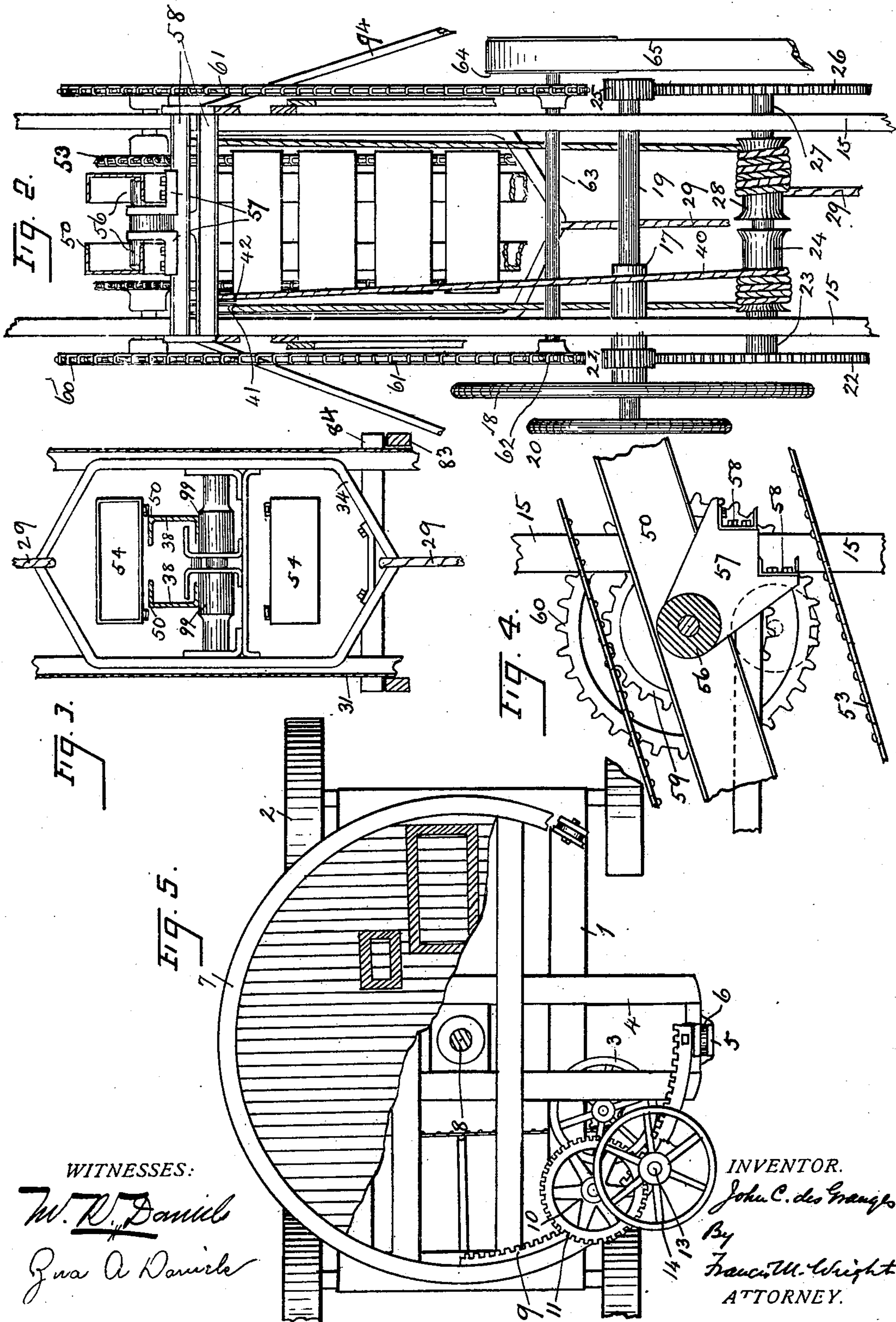
Patented July 2, 1901.

J. C. DES GRANGES.
EXCAVATING AND GOLD SAVING APPARATUS.

(Application filed July 2, 1900.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

W. R. Daniels
J. A. Daniels

INVENTOR.

John C. des Granges
By
Francis M. Wright
ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN C. DES GRANGES, OF SAN FRANCISCO, CALIFORNIA.

EXCAVATING AND GOLD-SAVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 677,844, dated July 2, 1901.

Application filed July 2, 1900. Serial No. 22,372. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. DES GRANGES, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Excavating and Gold-Saving Apparatus, of which the following is a specification.

My invention relates to improvements in excavating and gold-saving devices, the object of my invention being to provide an apparatus of this character comprising buckets supported and traveling on a ladder or beam and so constructed and arranged that the lower end of said ladder supporting the buckets can be caused to follow closely a bed-rock, either plane and horizontal or undulating and irregular, the buckets depositing the excavated material in a substantially continuous stream and at such a height as to give sufficient fall in a sluice on flat ground, so as to deposit the tailings without handling the latter.

My invention therefore resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of the apparatus. Fig. 2 is a vertical transverse section thereof on the line A A of Fig. 1. Fig. 3 is a similar view on the line B B of Fig. 1. Fig. 4 is a broken vertical longitudinal section to show the supports for the roller-bearings; and Fig. 5 is a horizontal section showing the turn-table mechanism, certain parts being broken away. Fig. 6 is a transverse section of the beam carrying the buckets, taken in front of the sheaves and pulley mechanism for positioning the excavator, looking upward or rearwardly.

Referring to the drawings, 1 represents a truck mounted on wheels 2, the front axle of the truck being rotated by means of the steering device 3. Upon said truck 1 and upon a cross-piece 4, extending across the truck, are mounted standards 5, carrying rollers 6. Said standards are arranged at intervals along the circumference of a circle, and the rollers roll in a direction tangential to said circle. Upon said rollers roll a turn-table or platform 7, held in position upon said truck 1 by means

of a king-bolt 8. Said turn-table is rotated upon said rollers by means of a circular rack 9 on the truck engaged by a pinion 10, mounted on the platform, rotated by means of a gear-wheel 11, meshing with a pinion 12 on a vertical shaft 13, upon the upper end of which is a hand-wheel 14. The whole of the excavating apparatus is supported on said turn-table, and thus by operating said hand-wheel 14 the excavating apparatus may be rotated to any extent and pointed in any direction upon the truck 1. Upon said platform 7 are erected two vertical posts 15, supported by struts 93 and ties 94, and in bearings extending from said posts are revolubly mounted the hollow shaft 17, carrying the hand-wheel 18, and the shaft 19 within the hollow shaft 17, carrying the hand-wheel 20. Upon the hollow shaft 17 is secured a pinion 21, meshing with a gear-wheel 22 upon a hollow shaft 23, carrying a drum 24. Upon the shaft 19, at its rear end, is secured a pinion 25, meshing with a gear-wheel 26 upon a shaft 27, rotating within the hollow shaft 23, said shaft 27 carrying the drum 28. Around the drum 28 is wound a cable or rope 29, extending around the director-pulley 30, secured at the lower end of the strut 93, and thence upward along a yard 31. Said yard is braced by means of beams 32 and ties 16. The rope 29 passes around the pulley 30 and extends upward between the yards 31 and is secured to the lower end of the frame 34, (see Fig. 3,) which carries the support for the bucket-carrying beam 38. In like manner the other end of the rope 29, wound around the drum 24, extends upward and around a pulley 35, thence to a pulley 36, mounted at the top of the yard 31, and thence downward, being secured to the upper end of the frame 34. It will thus be seen that by rotating the drum 24 in one direction the rope at one end is drawn in, while the rope at the other end is let out, and thus the support for the beam 38 is lowered and the front end of said beam is correspondingly lowered. By rotating the drum in the opposite direction the front end of the bucket-beam will be raised. The frame 34 is of a general oblong form, with extended or pointed ends, to which the ends of the rope 29 are attached. Upon said frame are revolubly mounted the rollers 99, which support the beam 38. The

frame 34 is made sufficiently long to permit of the free passage of the buckets 54 there-through.

By rotating the hand-wheel 20 the drum 24 is rotated, and this drum then winds in or out a rope 40, wound around said drum 24, one end of which rope passes upward over a pulley 41 and then to the upper end of the bucket-carrying beam and is secured thereto, and the other end of said rope being carried over a pulley 42, rotating at the side of the pulley 41, thence in a downwardly direction along said bucket-carrier, and secured thereto at a point near the lower end thereof. The effect of rotating the drum 24 by revolving the hand-wheel 20 will be to draw in the rope attached to one end of the bucket-carrier and let out the rope attached to the other end, and thereby move the bucket-carrying drum longitudinally past the pulley 41 42.

The bucket-carrying beam comprises two channel-irons 50, secured together at their ends by the shafts 51, which carry the sprocket-wheels 52, upon which rotate the sprocket-chains 53, carrying the buckets 54. Said channel-irons are arranged with their channeled or concaved faces toward each other, as shown in Fig. 2, and said channeled faces roll upon rollers 56. The rollers 56 are mounted upon brackets 57, supported upon cross-beams 58, secured to the front and rear sides of the posts 15, as shown in Fig. 4. Said rollers 56 are on axes in alinement with the shafts of the sprocket-wheels 52, which impart motion to the buckets, and thus the position of said buckets and the mechanism for operating the same is not affected by a change in the direction of the bucket-carrying beam. The sprocket-wheels 59, which move the buckets through the medium of the sprocket-chains 53, derive their motion from sprocket-wheels 60, driven by chains 61 from sprocket-wheels 62 upon a shaft 63, said shaft 63 being driven through a pulley 64 and belt 65 from the shaft 66 of a gasolene-engine 67. 68 is a gasolene-tank for supplying such engine, and 69 is the exhaust-pipe. Said engine is also used to propel the apparatus by means of the sprocket-chain 70. Power is also derived from said engine to operate the pump 72, which draws water from any suitable source of supply and discharges the same through the conduit 74 into the top of the sluice-box 75. Said sluice-box 75 is supported by means of a cross-piece 76 upon the king-bolt 8, and thus said sluice-box remains stationary, notwithstanding any rotary movement of the excavating apparatus and the turn-table upon the truck.

The buckets 54 discharge into a chute 78, which chute conducts the excavated material into the top of the sluice-box, and said chute is extended a suitable distance to the rear of the apparatus, so as to receive said material from said buckets, however far to the rear the bucket-carrying beam has been moved longitudinally upon the rollers 56. Said chute

is supported by stays 80, pivoted at 81 upon brackets 82, and said stays are extended in a forwardly direction, as shown at 83, so as to pass under a projection 84, extending laterally from the frame 34. By means of this construction whenever the bucket-carrying beam is tilted upon the rollers 56 in an upward direction, then the chute 78 will descend by gravity, its descent being limited by the engagement of the projections 84 of the frame with the extensions 83 of the stays, and, contrariwise, when the frame 34 descends and the upper end of the bucket-carrying beam above the rollers 56 is tilted upward the chute 78 will likewise be tilted upward, the extensions 83 of the stays moving downward with the frame 34, and said chute thus always remains parallel with said bucket-carrying beam. By this construction it is provided that the bucket-carrying beam can be raised or lowered angularly, and also withdrawn or projected longitudinally, as desired, so that by combining these two motions its operative end may be moved in any path desired. Moreover, the two hand-wheels 14 and 18, which control these motions, are so located as to be readily operable at the same time and by the same operation, either with uniform angular velocity or with different velocities, as may be required to produce the desired movement in the operative end of the bucket-carrying beam.

While I have shown the invention in use upon a truck, I do not desire the same to be limited thereto, as it may also be used on a scow or boat, with or without a turn-table.

I claim—

1. In an excavating and gold-saving device, the combination of a truck, a turn-table revolvably mounted thereon, a sluice-box stationarily supported upon the truck, an excavator mounted upon the turn-table, said excavator comprising traveling buckets and a support therefor, and a chute also mounted on the turn-table, the buckets at the upper end of the excavator discharging into said chute and said chute discharging into said sluice-box, said support and chute vibrating parallel with each other about horizontal axes, substantially as described.

2. In an excavating and gold-saving device, the combination of a suitable base, a turn-table revolvably mounted thereon, a sluice-box stationarily supported upon the base, an excavator mounted upon the turn-table, said excavator comprising traveling buckets and a support therefor, and a chute also mounted on the turn-table, the buckets at the upper end of the excavator discharging into said chute and said chute discharging into said sluice-box, said support and chute vibrating parallel with each other about horizontal axes, substantially as described.

3. In an excavating and gold-saving device, the combination of a truck, a turn-table revolvably mounted thereon, an excavating device on said turn-table comprising traveling buck-

ets and an inclined beam supporting said buckets, means for moving the beam in the direction of its length, a chute extending parallel with the beam below the upper portion thereof and a sluice-box into which said chute discharges, substantially as described.

4. In an excavating and gold-saving device, the combination of a suitable base, an excavating device comprising traveling buckets and an inclined beam supporting said buckets, means for moving the beam in the direction of its length, a chute extending parallel with the beam below the upper portion thereof and a sluice-box into which said chute discharges, substantially as described.

5. In an excavating and gold-saving device, the combination of a suitable base, a standard thereon, a roller on the upper end of said standard, a beam pivotally mounted on said rollers and freely rollable thereon, wheels carried at the opposite ends of said beam independently of said roller, a chain around said wheels, excavating-buckets carried by said chain, means for operating said chain, means for tilting the beam on the roller, and means for moving the beam longitudinally on the roller, substantially as described.

6. In an excavating and gold-saving device, the combination of a suitable base, a standard thereon, a pivot on the upper end of the standard, a beam vibrating on said pivot, said beam being also freely reciprocable on said pivot, wheels carried at the opposite ends of said beam at a fixed distance from each other, a chain around said wheels, excavating-buckets carried by said chain, means for operating said chain, means for tilting the beam on its pivot, and means for moving the beam longitudinally on its pivot, substantially as described.

7. In an excavating and gold-saving device, the combination of a suitable base, a standard thereon, a pivot on the upper end of the standard, a beam vibrating on said pivot, said beam being also freely reciprocable on said pivot, wheels carried at the opposite ends of said beam in its vibratory and reciprocatory movement on said pivots, a chain around said wheels, excavating-buckets carried by said chain, means for operating said chain, means for tilting the beam on its pivot, and means for moving the beam longitudinally on its pivot, substantially as described.

8. In an excavating and gold-saving device, the combination of a suitable base, a standard thereon, a pivot on the upper end of the standard, a beam vibrating on said pivot, said beam being also freely reciprocable on said pivot, idle wheels carried by said beam at its opposite ends at a fixed distance from each other in its vibratory and reciprocatory movement on said pivot, a chain around said wheels, a working wheel mounted coaxially with the pivot and operating the chain, excavating-buckets carried by said chain, means for rotating said working wheel, means for tilting the beam on its pivot, and means for moving

the beam longitudinally on its pivot, substantially as described.

9. In an excavating and gold-saving device, the combination of a truck, a standard supported thereby, an excavator comprising traveling buckets and a support for the same, the latter being vertically vibratable and longitudinally reciprocable with reference to the standard, coaxial shafts, two hand-wheels pivotally mounted on the standard having drums rotated by said shafts and cables around said drums operatively connected with the support, one to longitudinally reciprocate and the other to vertically vibrate the same, and a sluice-box for receiving the material excavated, substantially as described.

10. In an excavating and gold-saving device, the combination of a suitable base, a standard supported thereby, an excavator comprising traveling buckets and a support for the same, the latter being vertically vibratable and longitudinally reciprocable with reference to the standard, coaxial shafts, two hand-wheels pivotally mounted on the standard having drums rotated by said shafts and cables around said drums operatively connected with the support, one to longitudinally reciprocate and the other to vertically vibrate the same, and a sluice-box for receiving the material excavated, substantially as described.

11. In an excavating device, the combination of a truck, a standard supported thereby, an excavator comprising traveling buckets and a support for the same, the latter being vertically vibratable and longitudinally reciprocable with reference to the standard, coaxial shafts, two hand-wheels pivotally mounted on the standard having drums rotated by said shafts and a cable around said drums operatively connected with the support, one to longitudinally reciprocate and the other to vertically vibrate the same, substantially as described.

12. In an excavating device, the combination of a suitable base, a standard supported thereby, an excavator comprising traveling buckets and a support for the same, the latter being vertically vibratable and longitudinally reciprocable with reference to the standard, coaxial shafts, two hand-wheels pivotally mounted on the standard having drums rotated by said shafts and a cable around said drums operatively connected with the support, one to longitudinally reciprocate and the other to vertically vibrate the same, substantially as described.

13. In an excavating and gold-saving device, the combination of a truck, a standard supported thereby, an excavator comprising traveling buckets and a support for the same, the latter being vertically vibratable and longitudinally reciprocable with reference to the standard, coaxial shafts, an operative connection therefrom to the support, one to vibrate the support vertically and the other to reciprocate it longitudinally, and a sluice-box

receiving the material excavated, substantially as described.

14. In an excavating and gold-saving device, the combination of a suitable base, a standard supported thereby, an excavator comprising traveling buckets and a support for the same, the latter being vertically vibratable and longitudinally reciprocatable with reference to the standard, coaxial shafts, and operative connections therefrom to the support, one to vibrate the support vertically and the other to reciprocate it longitudinally, and a sluice-box receiving the material excavated, substantially as described.
15. In an excavating device, the combination of a truck, a standard supported thereby, an excavator comprising traveling buckets and a support for the same, the latter being vertically vibratable and longitudinally reciprocatable with reference to the standard, coaxial shafts, and operative connections therefrom to the support, one to vibrate the

support vertically and the other to reciprocate it longitudinally, substantially as described.

16. In an excavating device, the combination of a suitable base, a standard supported thereby, an excavator comprising traveling buckets and a support for the same, the latter being vertically vibratable and longitudinally reciprocatable with reference to the standard, coaxial shafts, and operative connections therefrom to the support, one to vibrate the support vertically and the other to reciprocate it longitudinally, substantially as described.

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

JOHN C. DES GRANGES.

Witnesses:

GEORGE PATTISON,
JOHN C. SPENCER.