No. 854,702. PATENTED MAY 21, 1907

M. L. PROCTOR.

MACHINE FOR HANDLING DIRT AND SAVING GOLD.

APPLICATION FILED FEB. 27, 1905.

3 SHEETS—SHEET 1.

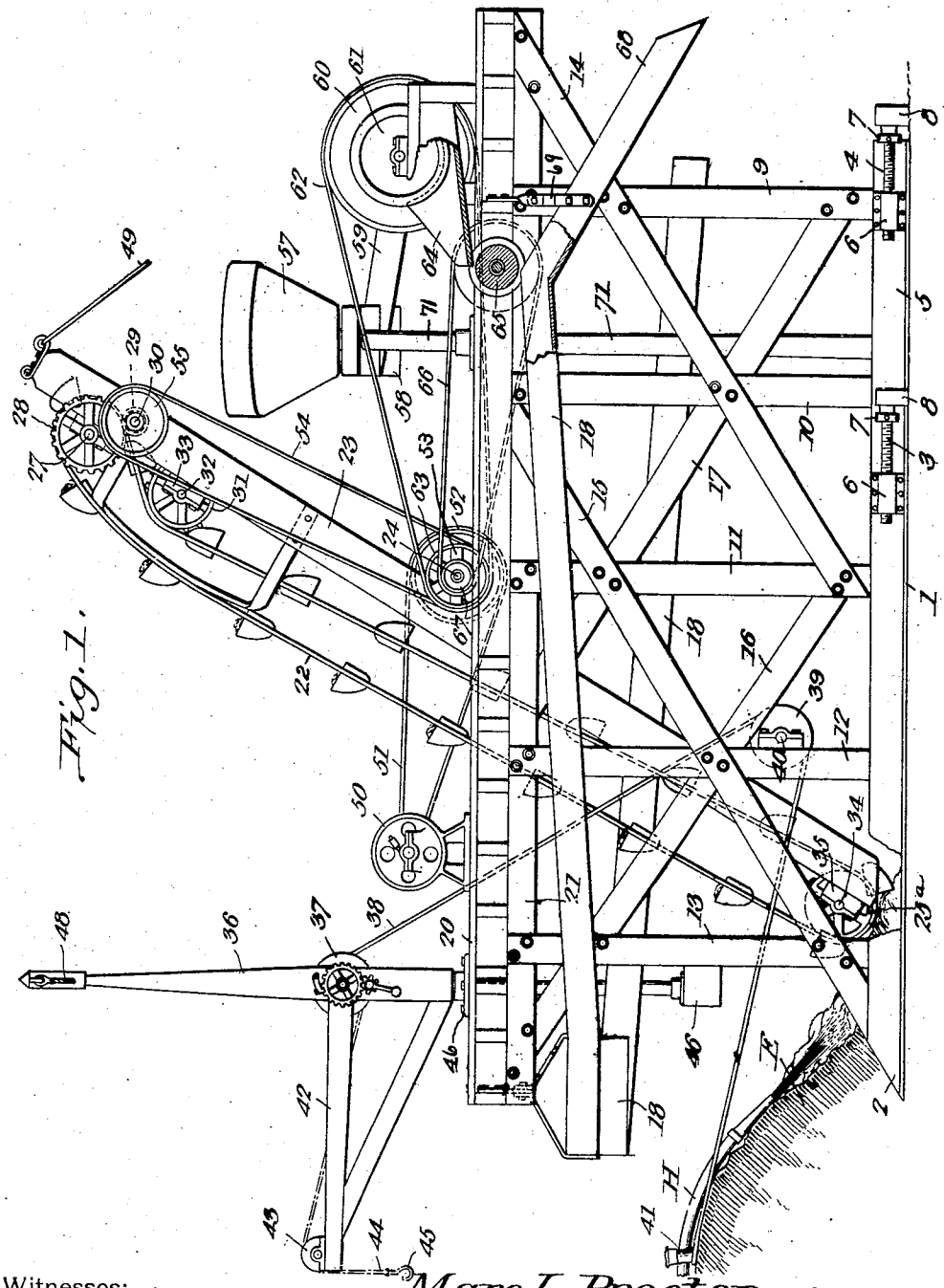

Fig. 1.

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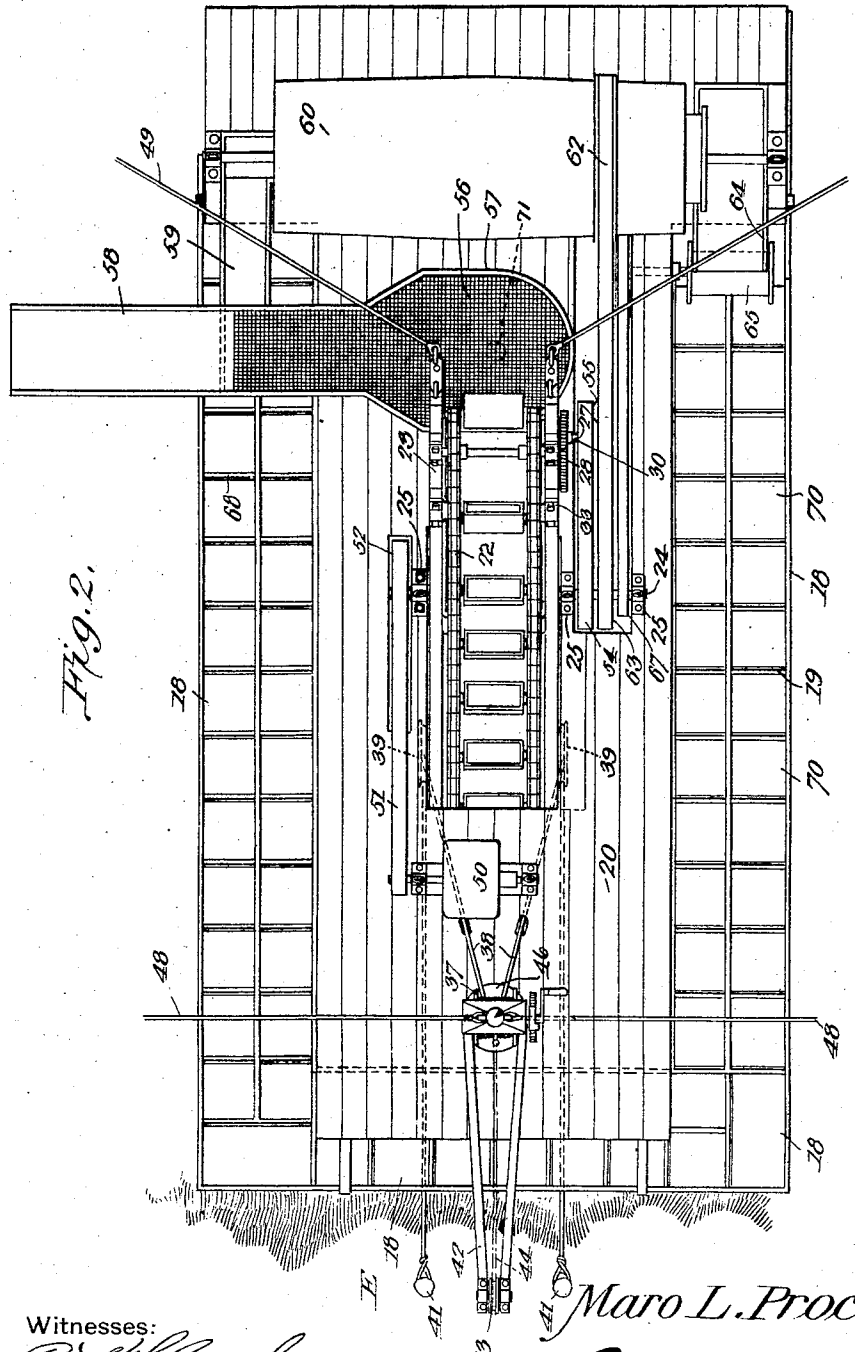
3 SHEETS—SHEET 2.

Fig. 2.



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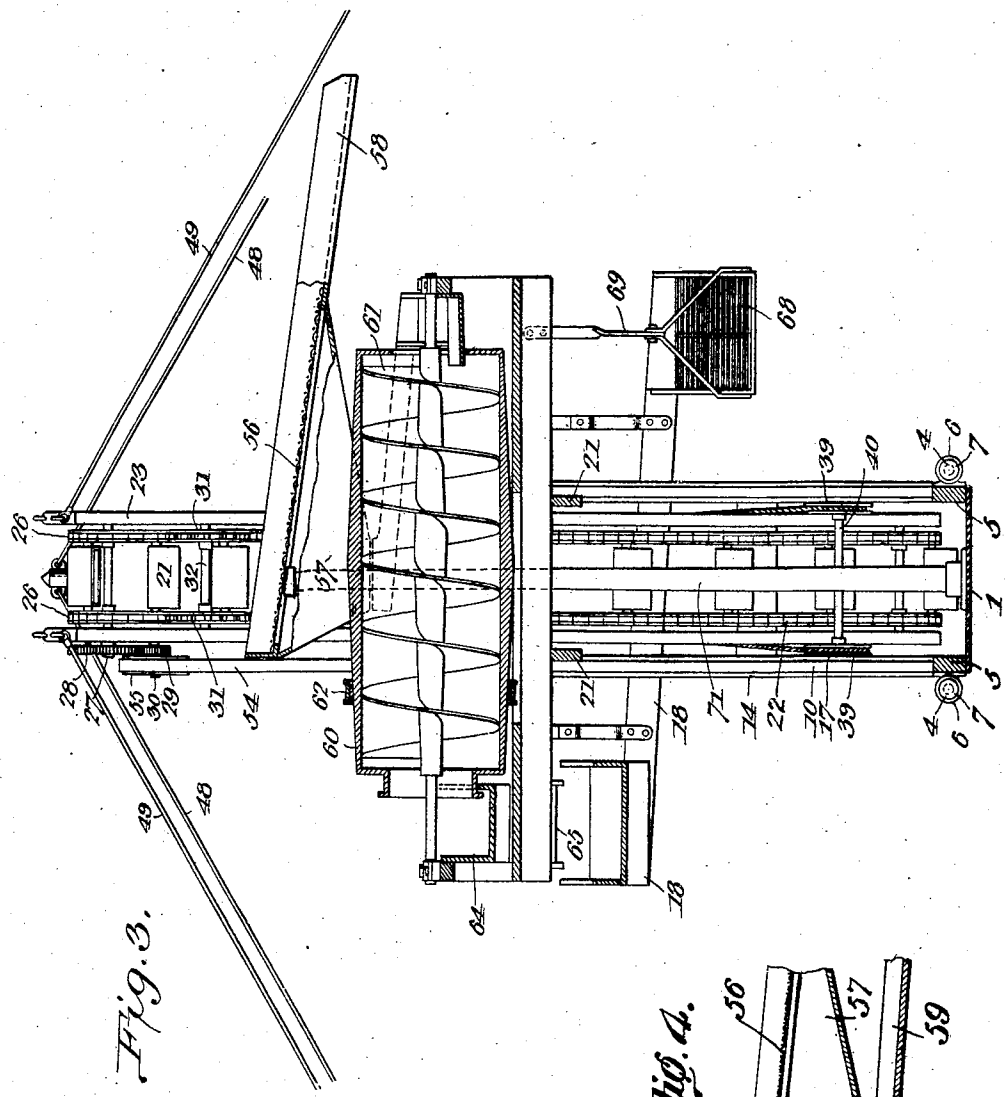

Fig. 3.

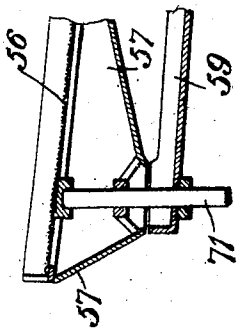

Fig. 4.

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UNITED STATES PATENT OFFICE.

MARO LINCOLN PROCTOR, OF ELKHART, INDIANA, ASSIGNOR TO CZARRA & PROCTOR, OF ELKHART, INDIANA, A COPARTNERSHIP.

MACHINE FOR HANDLING DIRT AND SAVING GOLD.

No. 854,702. Specification of Letters Patent. Patented May 21, 1907.

Application filed February 27, 1905. Serial No. 247,553.

To all whom it may concern:

Be it known that I, MARO LINCOLN PROCTOR, a citizen of the United States, residing at Elkhart, in the county of Elkhart and State of Indiana, have invented a new and useful Machine for Handling Dirt and Saving Gold, of which the following is a specification.

This invention relates, generally to excavating machines, and more particularly one adapted for effecting the saving of auriferous earth.

The object of the invention is to provide a machine which will rapidly, continuously and in a positive manner elevate gold-bearing earth, separate therefrom the coarser materials, conserve the noble metals and separate therefrom any magnetic ore that may be present.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of an earth excavator as will be hereinafter fully described and claimed.

In the accompanying drawings forming a part of this specification, and in which like characters of reference indicate corresponding parts, Figure 1 is a view in elevation, partly in section, of a machine constructed in accordance with the present invention. Fig. 2 is a top plan view. Fig. 3 is a view in transverse section taken on the line 3—3 of Fig. 1. Fig. 4 is a detail sectional view showing the connection between the hopper and its support.

The supporting frame embodies a base 1 that constitutes a shoe, and which is made of metal and has a sharpened end 2 designed to be forced into the embankment E by means of pairs of jack screws 3 and 4. These screws are combined with the sills 5 by castings 6, and are provided with socketed heads 7 to be engaged by a pull-bar to effect their turning, the pushing ends of the screws bearing against dead men 8 sunk in the ground adjacent the structure. The sill beams support the superstructure which comprises a plurality of pairs of vertical beams 9, 10, 11, 12 and 13, and pairs of obliquely-disposed cross beams 14, 15, 16 and 17, all of the beams being appropriately connected to form a rigid structure. Supported by the super-structure is a three sided trough 18 which extends along the two sides of the machine and the front, and is provided with suitable riffles for catching and retaining the noble metals, as usual. As will be seen by reference to Fig. 1, the trough occupies three planes, that section located on the left hand side of the machine, viewed from the rear, being the highest, the end section being the next highest and the section on the right hand side of the machine, viewed from the rear, being the lowest.

A suitable flooring 20 is provided, which is supported by pairs of longitudinal beams 21, and through this flooring extends an endless bucket conveyer 22 of the usual or any preferred construction, and supported upon a rocking frame comprising side beams 23 which are journaled upon a spindle 24 supported in suitable boxes 25 carried by the flooring. The conveyer passes around idlers 25^a located at the lower end of the conveyer frame and around sheaves 26 (Fig. 3) at the upper end thereof, the latter sheaves being supported upon a shaft 27 carrying at one end a gear wheel 28 which meshes with a pinion 29 carried by a shaft 30 and driven from a suitable source of power, presently to be described. In order to retain the conveyer chains under the requisite tension and also to cause the buckets properly to dump, there is a pair of idlers 31 provided, around which the leads of the chains work, the idlers being carried by a shaft 32 mounted in bearings 33 on the beams 23. The idlers 25^a are carried by a shaft 34 mounted in suitable boxes 35 on the lower ends of the beams 23.

At the forward end of the machine there is arranged a crane 36 carrying a windlass 37 around which passes two cables 38 that pass around sheaves 39 carried by a shaft 40 journaled on the uprights 12, the free ends of the rope being secured to dead men 41 adjacent the forward end of the machine. The crane arm 42 carries a sheave 43 around which passes a rope 44 carrying a hook 45, the function of the rope being to lift any material that is too heavy for the conveyer to transport. The crane is stepped in a suitable bearing 46 supported by the flooring 20 and is capable of being swung through an arc of a circle sufficient to discharge any material out of the path of the conveyer.

The crane has secured to it two guy ropes 48, and the conveyer frame has two similar guy ropes 49, and these two sets of ropes are

secured adjacent to the machine and operate to hold the parts against vibrations or movements.

The conveyer and other mechanism presently to be described may be driven from any suitable source of power, an electric motor 50 being shown in this instance which drives a belt 51 that passes around a pulley 52 on the spindle 24, and on this spindle is mounted a pulley 53 which drives a belt 54 that engages a pulley 55 on the shaft 30, and this latter drives the pinion 29 that meshes with the gear 28 from which latter the conveyer is operated.

Arranged in the line of discharge of the conveyer is a screen 56, which, as shown in Fig. 2, embodies a hopper 57 and a flume 58, the screen being extended only part way of the length of the flume. Upon this screen is discharged the mixed earth and water which is fed to the conveyer by means of a hose H that operates to soften the earth and permit the buckets of the conveyer readily to lift it. The coarser materials, such as rocks, pebbles and the like, are caught by the screen 56 and discharged down the flume 58 while the finer particles pass through the screen and into a trough 59 which discharges into a revolving scouring cylinder 60 having arranged in it a screw conveyer 61, which is fixed to the inner walls of the cylinder, the latter being driven by a belt 62 which encircles it, and engages a pulley 63 on the shaft 24. The wall of the cylinder 60 is of greater thickness at the center than at the ends and the thickness of the wall of the cylinder gradually diminishes toward its ends as does also that portion of the shaft extending through the center of the cylinder. As a result of this construction the strength of the cylinder and shaft is increased gradually toward the centers thereof and from the bearings. This is a very desirable feature because the great weight carried by the shaft and the cylinder will tend to buckle them unless some provision is made to strengthen the parts. As the cylinder revolves the materials are fed through it and escape from the opposite end to the point of entry into a trough 64 and thence over a magnet 65 which is driven by a belt 66 that engages a pulley 67 on the shaft 24. This magnet, in the usual manner, separates from the gangue or earth all magnetic iron or other magnetic material present which discharges down a sharply inclined trough 68 supported by a hanger 69 from the super-structure. The materials thus treated passes on to the flume 18 down which it travels, and the gold bearing particles are retained by the riffles and amalgam plates 70 therein. The treatment to which the gangue is subjected in the revolving cylinder or rumbler causes the particles to roll or fall against each other, whereby they are thoroughly cleansed and placed in the best possible condition to be attracted by the amalgam plates.

The screen 56 is mounted for swiveled movement upon a standard 71, so that the tailings may be thrown to one side of the machine and thereby obviate the stopping or clogging of the tail race. The materials continue to travel through the sections of the flume 18, and that which passes over the discharge end thereof will be worthless, all metals of value having been retained in the various compartments of the flume before they reach the discharge.

It will be seen from the foregoing description that by the manner of arranging the parts of the apparatus as herein described the material can be constantly removed at the base of the machine until bed rock is reached, whereupon by operating jack screws, the shoe can be forced into the earth and the operation repeated indefinitely, the object being to work down to and along the bed rock where the greater proportion of rich earth is to be found.

Having thus described the invention, what is claimed is:—

In a machine of the character described the combination with a supporting frame; of a cylinder rotatably mounted upon the frame, a screw conveyer within the cylinder, a standard, a trough extending from the standard and opening into one end of the cylinder, a hopper opening into and reversibly mounted above one end of the trough, a flume supported by and extending at an angle from the upper portion of the hopper, a screen constituting the bottom of that portion of the flume above the hopper, said flume adapted to partly rotate, a magnetic separator, means for directing material from the cylinder on to said separator, a riffle sluice adapted to receive the material not attracted by the magnetic separator, and an elevator for discharging material on to the screen above the hopper.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARO LINCOLN PROCTOR.

Witnesses:

JESSE RUSH,

CASHIUS A. BROWN.