

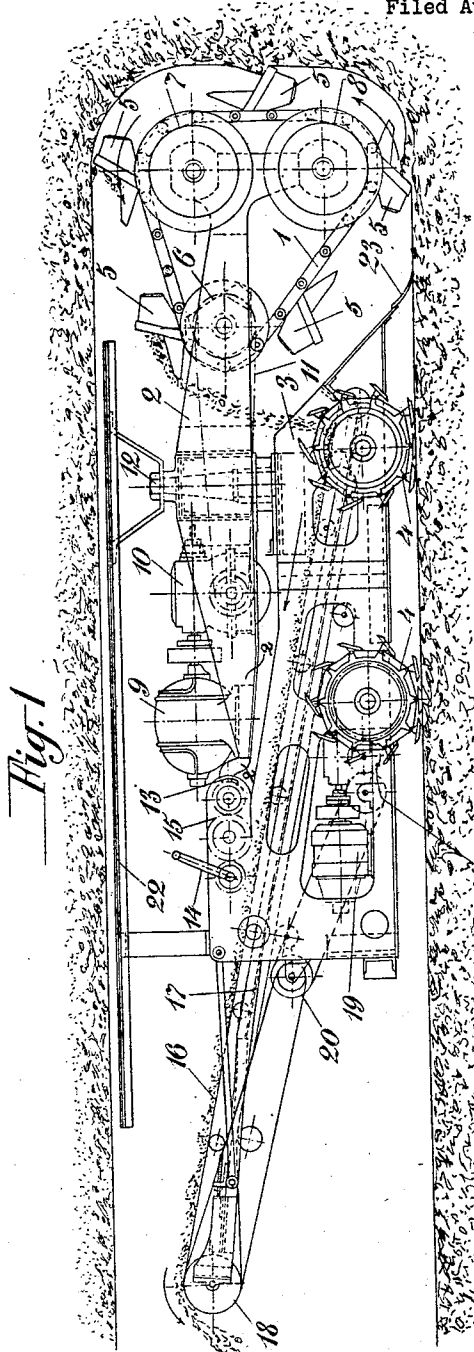
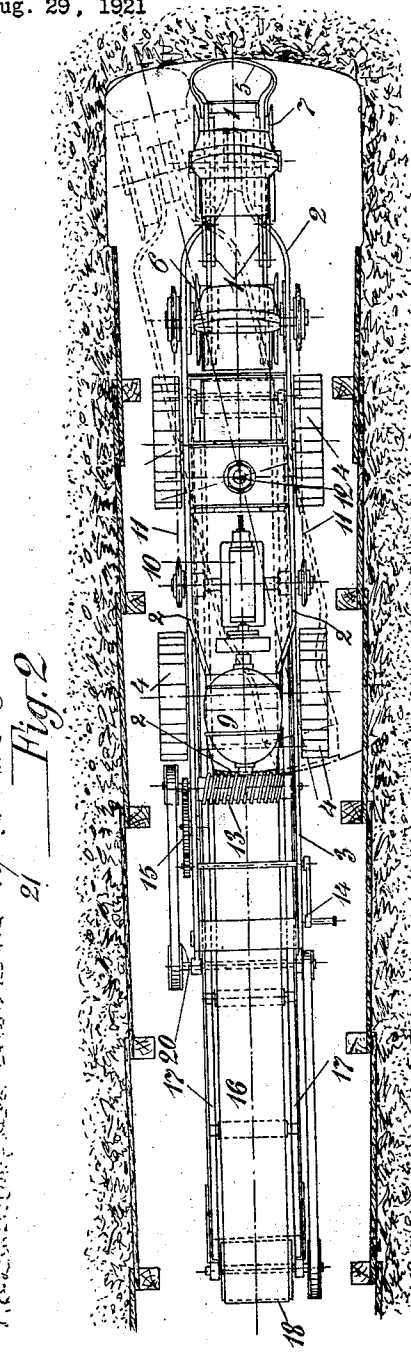
March 10, 1925.

1,529,628

J. LEGRAND

EXCAVATING MACHINE

Filed Aug. 29, 1921



Inventor:
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UNITED STATES PATENT OFFICE.

JULES LEGRAND, OF ST.-MANDE, FRANCE.

EXCAVATING MACHINE.

Application filed August 29, 1921. Serial No. 497,052.

To all whom it may concern:

Be it known that I, JULES LEGRAND, a citizen of the French Republic, residing at St.-Mande, France, have invented certain new and useful Improvements in Excavating Machines (for which I have filed an application for patent in France on the 9th of May, 1915; in Great Britain on the 19th of May, 1916; and in Belgium, on the 3rd of January, 1916), of which the following is a specification.

The present invention has for its object an improved apparatus for mechanically excavating subterranean galleries or trenches, which is also applicable for use in connection with military engineering, railways, mines and the like.

The apparatus may also be employed to pick up broken material, convey the same to the rear of the machine and deposit it in a heap.

The invention is illustrated by the accompanying drawings in which:—

Fig. 1 is an elevation of the apparatus operating in a mine gallery.

Fig. 2 is a plan of Fig. 1 with the hood removed.

Referring to Figs. 1 and 2 the apparatus consists essentially of a chain of buckets 1 mounted in front of a metal framework 2 carried upon a carriage 3 which is supported through the wheels 4 having a number of feet pivoted thereto. Buckets 5 mounted on the double chain 1 pass over the pulleys 6, 7 and 8 and engage the soil with a sharp edge. The chains 1 are driven in the direction of the arrow Fig. 1 from an electric motor 9 through the medium of reducing gear 10, chains 11 and hexagonal pulley 6, or any other suitable driving connections may be employed.

The framework 2 is pivoted so as to be capable of horizontal movement around the axis 12 and is so arranged as to permit the buckets 5 to act through the arc of a circle and thereby over a larger front than if the frame were stationary. Fig. 2 shows in dotted lines the framework 2 in one of its extreme lateral positions corresponding to the breadth of the gallery being excavated. The lateral movement of the framework 2 is effected by means of a worm 13 actuated by a handle 14 and a train of gears 15 or other convenient mechanism. The material excavated by the buckets is deposited during their downward movement upon an endless

conveyor 16 which with its connected parts is mounted between side rails 17 disposed in the interior of the carriage 3. The drum 18 over which the conveyor passes is driven in the direction of the arrow and receive its motion from the electric motor 19 through the medium of pulleys and belts 20, or other suitable driving mechanism may be employed.

The material from the conveyor 16 may be shot into trucks or onto another conveyor independent of the excavating apparatus.

The advancement of the whole apparatus on its wheels is effected by the motor 19 or other convenient mechanism actuating the rear axle through the medium of speed reducing gear and train of wheels 21.

A detachable hood of sheet steel 22 is disposed above the apparatus to protect the operators and the machine from possible falls of debris.

The energy necessary for the movement of the parts of the apparatus is furnished by an electric generator disposed externally of the apparatus.

A metallic shield 23 is placed in front of the carriage 3 to catch any material which may escape from the buckets and to clear the soil in front of the wheels 4 of the apparatus.

Before advancing the apparatus in a gallery wooden supports must be inserted in plane of the material excavated, and disposed in any approved manner.

Further the apparatus may be made to run upon a track of wood or iron made in pieces and placed beneath the wheels as the excavation advances.

The apparatus may also if desired be so constructed that it may be easily taken to pieces to facilitate transport.

I claim:—

1. An apparatus for mechanically excavating subterranean galleries or trenches and the like comprising in combination an automobile frame, a vertical pivot axle upon the front end of said automobile frame, a frame pivotally mounted upon said axle, sprocket pulleys mounted the one above the other at one end of said pivotable frame, a bucket chain guided upon said pulleys so that it forms an excavating head for producing a cavity into which the apparatus can advance, a motor upon the other end of said pivotable frame for driving said sprocket pulleys, an inclined conveying sheet arranged in the longitudinal axis of the auto-

mobile frame extending with its lower end under the top end of said bucket chain in order to receive the material poured out by the buckets, and extending at its other end a
5 conveniently great distance beyond the end of the automobile frame in order to deliver the conveyed material directly into trucks.

2. An apparatus for mechanically excavating subterranean galleries or trenches
10 and the like comprising in combination an automobile frame, a vertical pivot axle upon the front end of said automobile frame, a pivotable balanced frame mounted at its center upon said pivot axle, three sprocket pulleys
15 mounted at the front end of said pivotable frame, a bucket chain guided over said three pulleys so that it forms at the front end of the apparatus an excavating head designed

to excavate the ground for a height which is slightly superior to the height of the apparatus, a motor upon the rear end of said pivotable frame designed to drive the rear-most of said pulleys and a conveying band carried by said automobile frame extending upward from the front end to the rear end
25 and designed to receive upon its low front end the material poured out by the buckets and to deliver the same at the rear into separate trucks.

In testimony whereof I affix my signature
30 in presence of two witnesses.

JULES LEGRAND.

Witnesses:

ANDRE BLOUIN.

HENRI BLOUIN.