

J. H. JOHNSON.
SEWER TRENCH EXCAVATOR.
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977,016.

Patented Nov. 29, 1910.

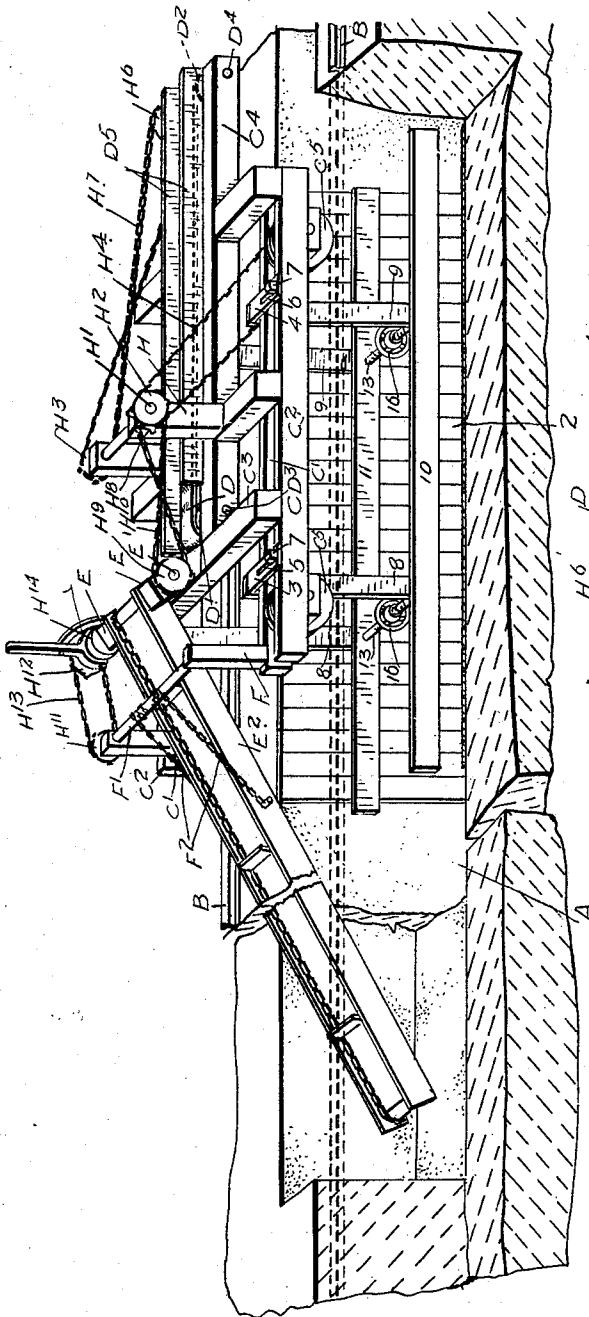


FIG. 1.

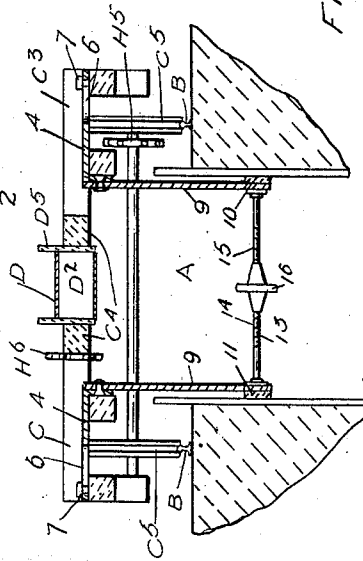


FIG. 2.

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SEWER-TRENCH EXCAVATOR.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN HERBERT JOHNSON, of the town of Barrie, in the county of Simcoe, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Sewer-Trench Excavators, of which the following is the specification.

My invention relates to sewer trench excavators and the object of the invention is to devise a simple form of machine by which the loosened earth located in the front portion of the trench may be elevated and passed to the rear and redeposited in the trench on the top of the sewer pipes which have been previously laid in the bottom of the trench and a further object is to provide means for supporting the side walls of the trench immediately beneath the machine during the time the earth is being moved from the front to the rear thereof and during the laying of the sewer pipes and it consists essentially of a main carriage supported on suitable wheels running on tracks on each side of the trench, an inclined bucket elevator extending from the front of the carriage into the sewer trench, a longitudinal horizontal conveyer extending from the rear of the aforesaid conveyer to the rear of the main carriage, means for raising and lowering the lower end of the inclined conveyer, hangers depending from the carriage into the trench in proximity to each of the walls thereof, means for adjusting the hangers crosswise of the trench, bars extending between two pair of the said hangers and clamping means designed to force the bars against the side boards of the trench, so as to hold them securely in position against the walls thereof as hereinafter more particularly explained.

Figure 1, is a general perspective view of my machine applied to digging a sewer trench, the trench being shown broken and in section. Fig. 2, is a cross sectional view through my machine and trench.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the trench.

B B are the rails located on each side of the trench.

C is the main carriage of my machine comprising side bars C', C² located on each side of the machine and connected together by cross timbers C³.

C⁴ are longitudinal timbers supported in the carriage on each side of the center there-

of and C⁵ are the supporting wheels of the carriage designed to run on the rails B.

D is an endless conveyer supported on rollers D' and D² journaled on suitable cross shafts D³ and D⁴ located in proximity to the ends of the timbers C⁴.

D⁵ are the side boards of the conveyer.

E are standards extending upwardly from the cross timber C³ and through which extends the shaft E'.

E² is an inclined bucket conveyer which is swung at its upper end on the shaft E'. Such inclined conveyer is designed to extend downwardly into the sewer trench as shown in the drawing.

F are supplementary standards extending upwardly from a suitable portion of the carriage C.

F' is a cross shaft journaled in the standards F.

F² are chains wound upon the cross shaft F' and extending downwardly to the conveyer E² to which they are secured.

H are standards secured to the central portion of the carriage.

H' is the main driving shaft journaled in the standards H. The shaft H' is provided with the sprocket wheels H² and H³. The sprocket wheel H² is connected by a sprocket chain H⁴ to the driving sprocket H⁵ (see Fig. 2) mounted upon one of the axles of the carriage supporting wheels C⁵.

H⁶ is a sprocket wheel mounted on a cross shaft D⁴ of the conveyer D.

H⁷ is a cross sprocket chain connecting the sprockets H³ and H⁶.

H⁸ is a sprocket wheel also journaled on the shaft H' and H⁹ is a sprocket wheel mounted on the cross shaft E'.

H¹⁰ is a sprocket chain connecting the sprockets H⁹ and H⁸.

H¹¹ is a sprocket mounted on the cross shaft F' and H¹² is a sprocket mounted on the shaft E'. The sprockets H¹¹ and H¹² being connected together by a sprocket chain H¹³.

H¹⁴ is a suitable clutch whereby the sprocket wheel H¹² is thrown into and out of engagement with the cross shaft E'.

2 are the side boards of the trench.

3 and 4 are cross bars provided with longitudinal slots 5 and 6. The cross bars 3 and 4 are connected to the side bars C² by bolts 7.

8 and 9 are depending hangers pivotally secured at their upper ends to the inner ends

of the cross bars 3 and 4 as clearly shown in Fig. 2 of the drawing.

10 and 11 are longitudinal bars supported by the hangers 8 and 9 to each side of the machine and in proximity to the side wheels of the trench.

13 are divided spindles suitably connected on their outer ends to the bars 10 and 11 and provided at their inner ends with right and left hand threads 14 and 15.

16 is a turn nut threaded on to the threaded portions 14 and 15 of the divided spindle 13.

Having described the principal parts involved in my invention I will briefly describe the operation of the same.

When the side boards 2 are placed in position in the trench the machine is located opposite to them in the position shown in the drawing and the turn nut is operated so as to spread the side bars 10 and 11 apart against the side boards 2 of the trench, thereby clamping them to the walls of the trench. The conveyers are then driven from a suitable source of power through the various sprocket gears. The earth is thrown by suitable means on to the inclined conveyer E² which elevates the earth and throws it onto the conveyer D which conveys it to the rear of the machine depositing it again in the sewer over the sewer pipes, which have been previously laid in the bottom of the sewer. The inclined conveyer is raised and lowered by throwing in the clutch H¹⁴ so as to rotate the cross shaft F' and thereby wind or unwind the chains F².

When sufficient earth has been removed from the front of the sewer and sewer pipes have been laid in the trench between the board 2 and beneath the machine the side bars 10 and 11 are unclamped from the sides of the sewer by unscrewing the nut 16. The inclined conveyer is raised above the top of the sewer trench and the machine moved forwardly into a new position of operation. The side boards 2 of the trench are correspondingly moved and the bars 10 and 11 are reclamped against the walls of the trench. The operation is then repeated.

To adjust the side bars 10 and 11 to any width of trench I have provided the slots 5 and 6 in the bars 3 and 4 so that such bars may be moved longitudinally in accordance with the width of the trench.

By this description it will be seen that I have devised a very simple machine whereby the earth may be removed from the sewer trench in front of the machine as the trench is being dug and conveyed rearwardly, so as to be redeposited in the sewer over the sewer pipes, which have been previously laid therein and in which a simple means has been provided whereby the side boards

of the trench are securely held in place during excavation.

What I claim as my invention is:

1. In a trenching machine the combination with a suitable movable supporting carriage, of clamping means supported by and movable with said carriage and depending therefrom for holding side boards against the side walls of a trench, substantially as described.

2. In a trench excavator, the combination with the carriage supported on wheels running on suitable tracks on each side of the trench, of hangers depending from each side of the carriage in proximity to the walls of the trench, longitudinal bars connecting a pair of hangers located at each side of the trench together, and means for spreading the longitudinal bars apart to clamp them against the walls of the trench, as and for the purpose specified.

3. In a trench excavator, the combination with the carriage supported on wheels running on suitable rails located on each side of the trench, of means for clamping the side boards of the trench to the walls thereof comprising a pair of depending hangers located on each side of the carriage, longitudinal bars connecting the lower ends of the hangers together, a divided spindle extending between the longitudinal bars having right and left hand threaded inner ends, and a turn nut designed to co-act with such threaded ends to spread the longitudinal bars apart, as and for the purpose specified.

4. In a trench excavator, the combination with the carriage supported on wheels running on suitable tracks located on each side of the trench, of means for clamping the side boards of the trench to the walls thereof, longitudinally slotted cross bars secured to the carriage by bolts extending through such slots, depending hangers swung from the inner ends of the slotted bars, longitudinal bars connecting the lower ends of the depending hangers together, and means for spreading the longitudinal bars apart so as to clamp them against the side boards of the trench as and for the purpose specified.

5. In a trench excavator, the combination with the main carriage supported on wheels running on suitable rails on each side of the trench, of depending hangers extending from the carriage, longitudinal bars secured to the lower ends of the depending hangers, means for spreading the bars apart against the side bars of the trench, and means for adjusting the hangers to the width of the trench, as and for the purpose specified.

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Witnesses:

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