

No. 801,240.

PATENTED OCT. 10, 1905.

G. R. HIVELY.
MACHINE FOR FILLING TRENCHES.

APPLICATION FILED FEB. 17, 1905.

2 SHEETS—SHEET 1.

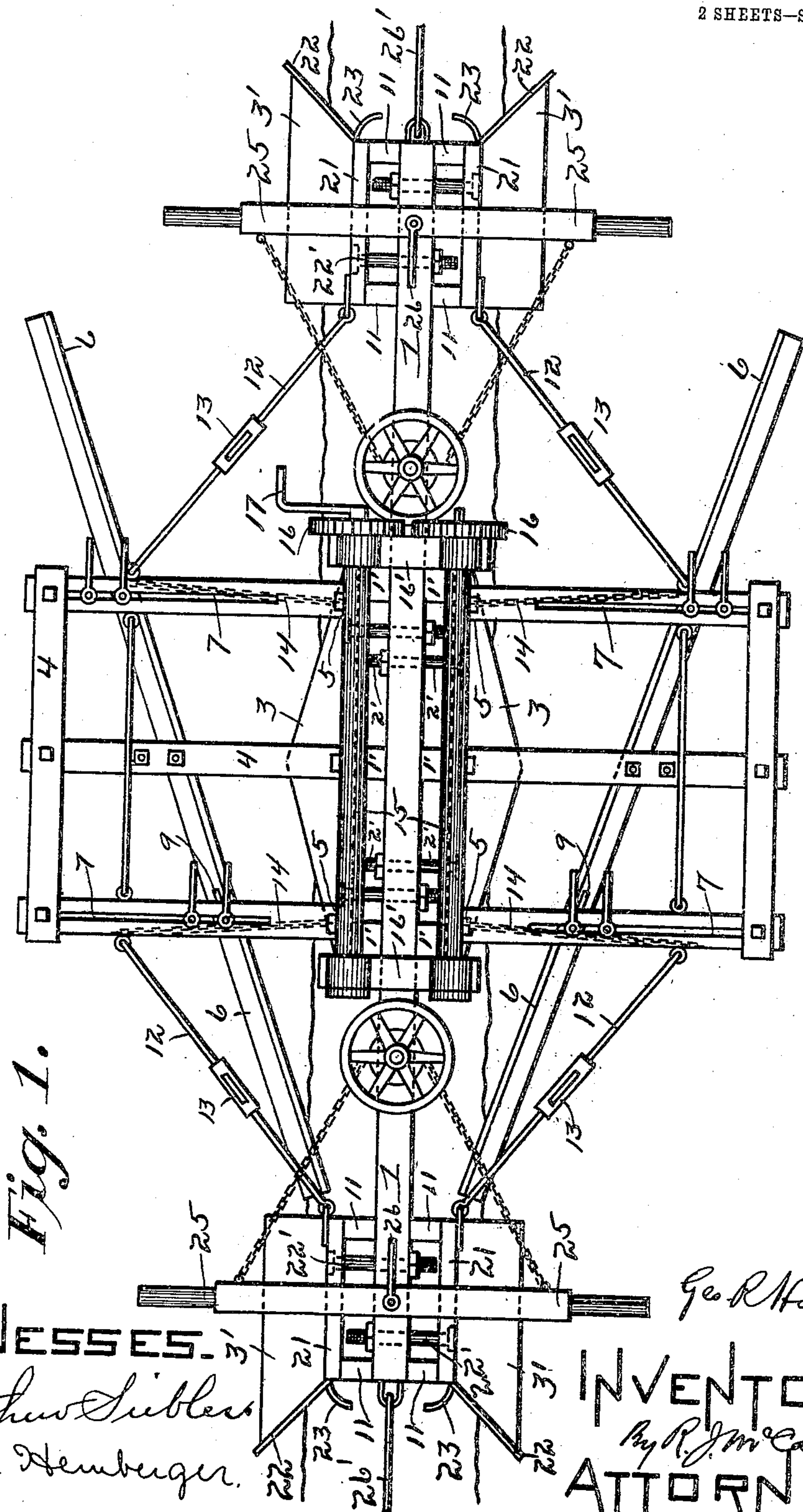


Fig. 1.

WITNESSES.

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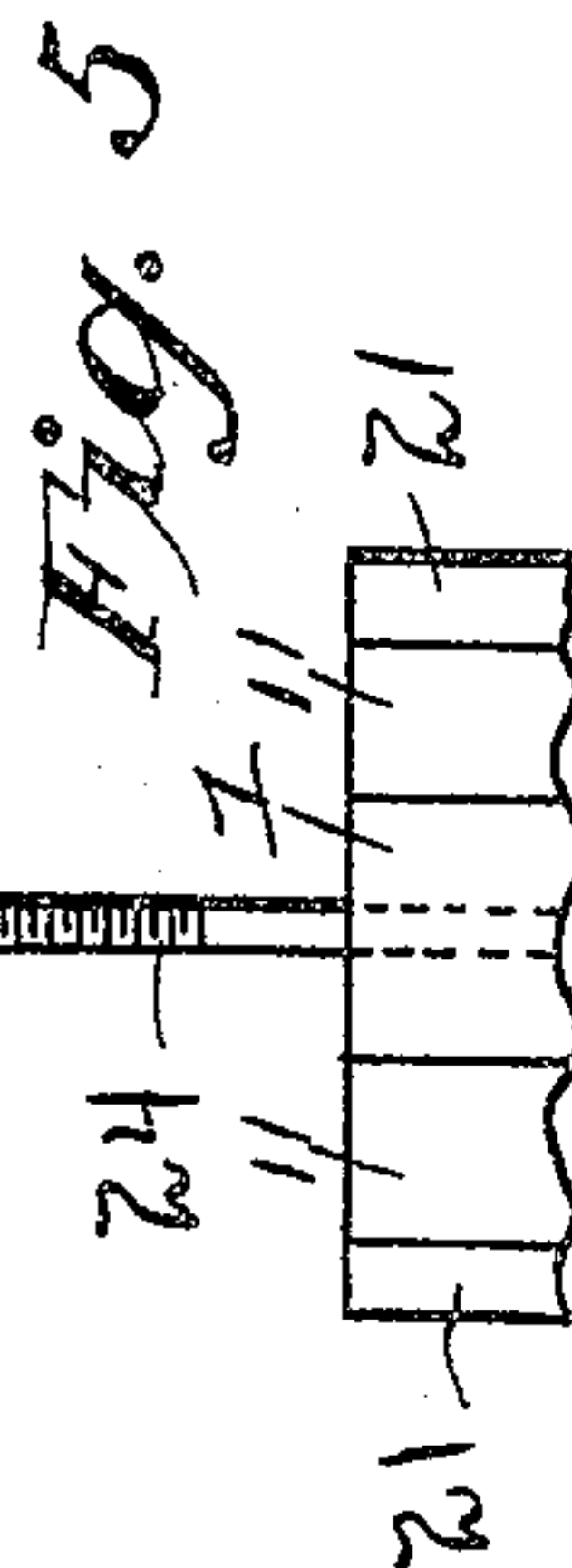
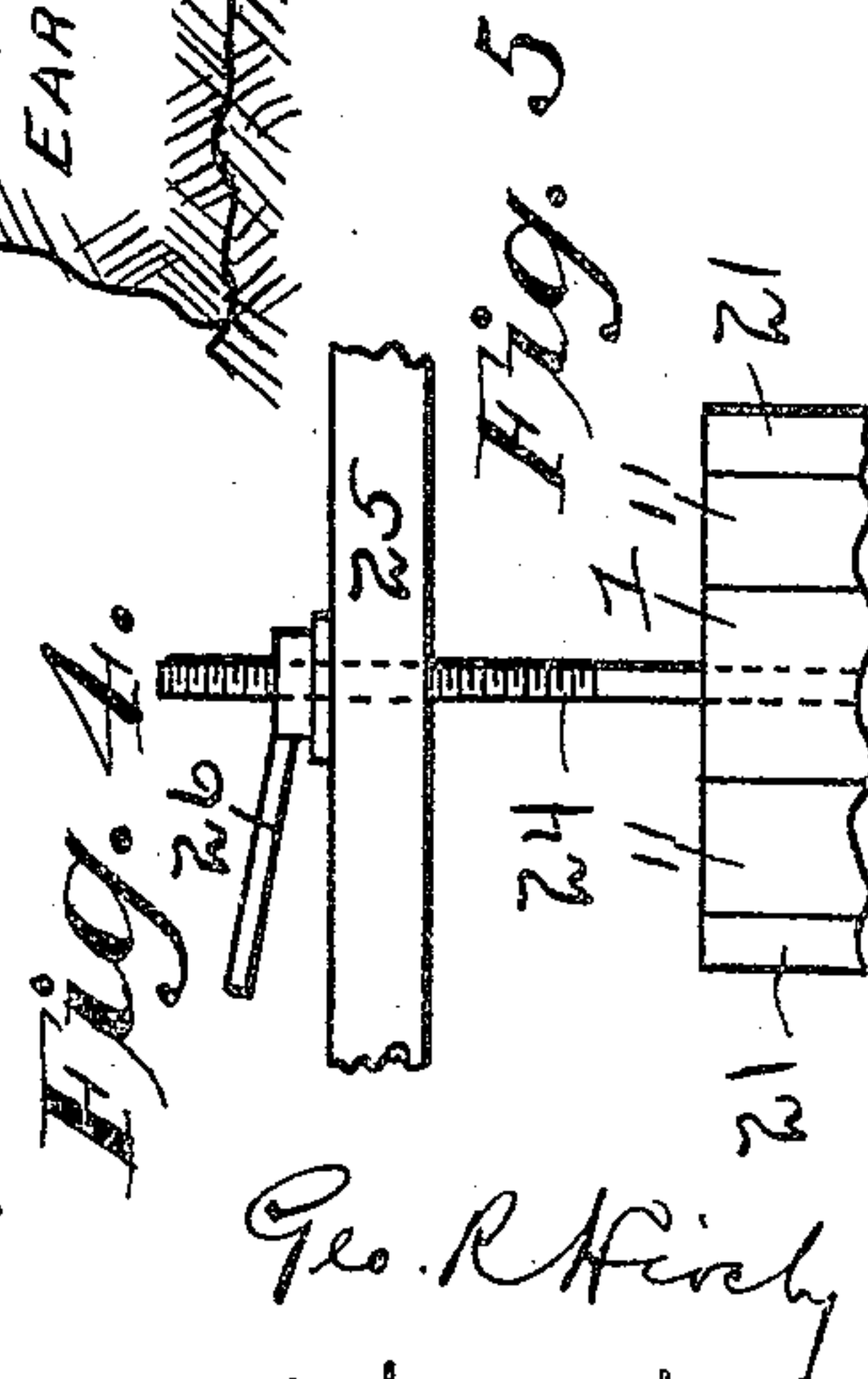
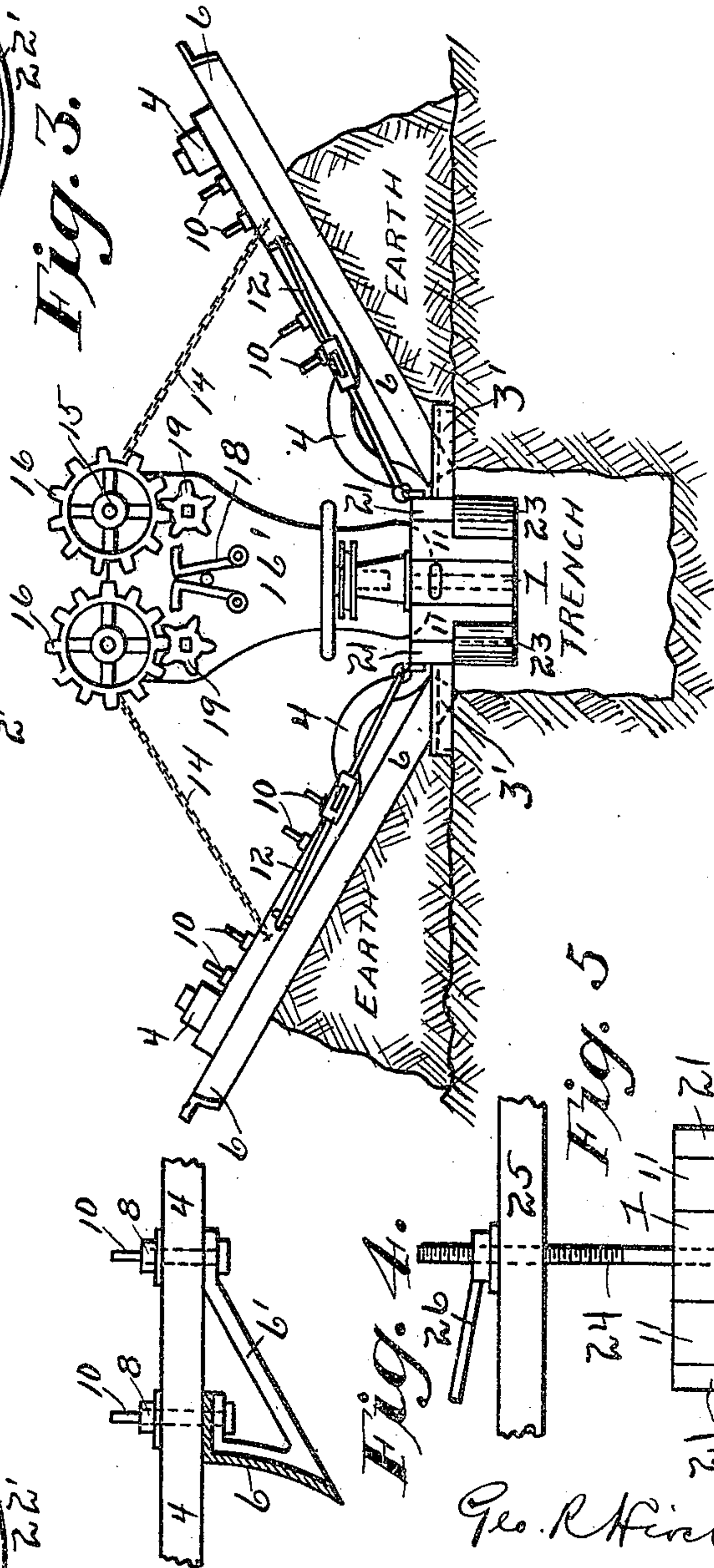
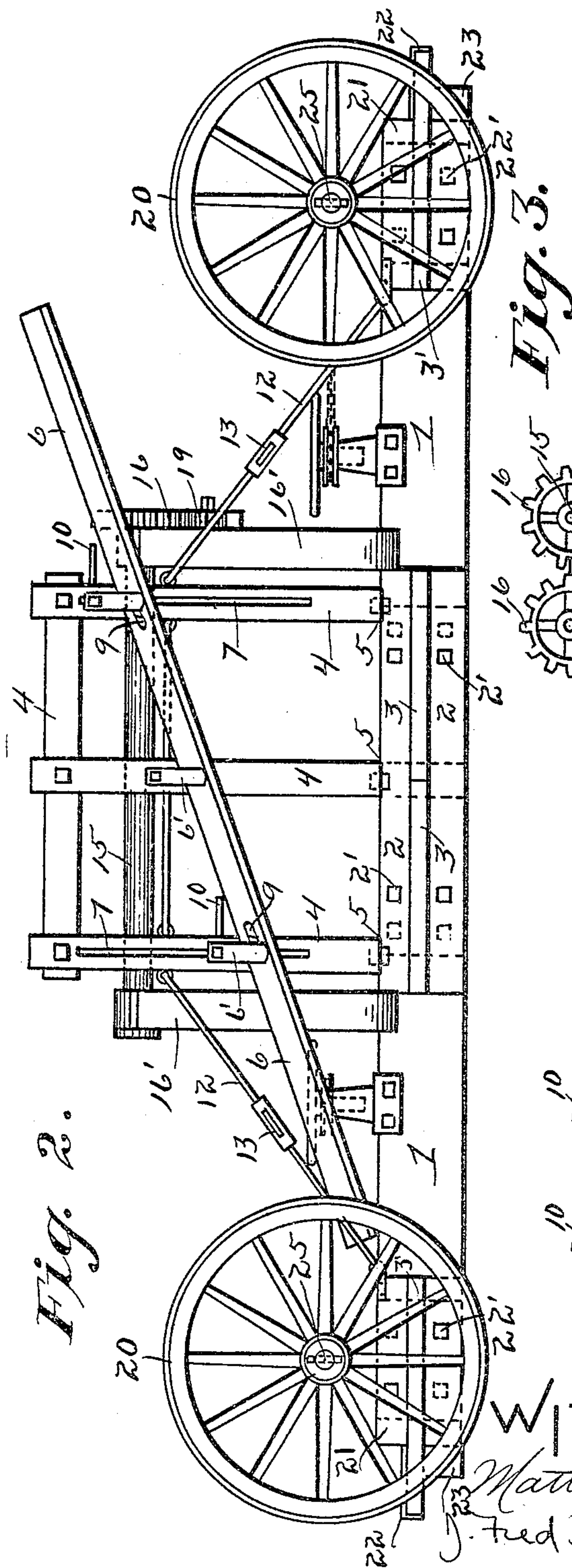
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GEORGE R. HIVELY, OF DAYTON, OHIO.

MACHINE FOR FILLING TRENCHES.

No. 801,240.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed February 17, 1905. Serial No. 246,001.

To all whom it may concern:

Be it known that I, GEORGE R. HIVELY, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Machines for Filling Trenches; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention comprises a machine for back-filling sewer-trenches or trenches where dirt or gravel is thrown out on either side of the trench, to be again referred to.

The object of the invention is to provide a machine for back-filling trenches which has a capacity for doing the work in a much shorter time than it can be done by hand and shovel.

Preceding a detail description of my invention reference is made to the accompanying drawings, of which—

Figure 1 is a top plan view of my improved trench-filling machine ready to operate. Fig. 2 is a side elevation showing the side scraper-frames elevated and the machine mounted upon traction-wheels ready to be transported from one location to another. Fig. 3 is an end elevation showing the trench-filler in an operative position within a trench. Fig. 4 is a detail end view showing an end of one of the side scrapers 6 with one of its supporting-brackets in position. Fig. 5 is a detail view of the king-bolt and axle connections of the machine with the carrying-wheels.

In a detail description of the invention similar reference characters indicate corresponding parts.

The main body of the machine consists of a long beam 1, which extends throughout the length of the machine and lies in the trench in a central position. On each side of said beam and next to the banks are side pieces 2, which extend down parallel with the middle portion of said beam 1 and also lie within the trench. Projecting laterally from each of these side pieces 2 are supporting-pieces 3, each of which terminates at its center in an outward point in order that the edges lie parallel with the forward portions of the scrapers. These parts 3 rest upon the banks of the trench on each side and support the machine at its middle portion upon each bank of the

trench, so as to prevent the machine from falling into the trench.

4 designates the various parts of two side scraper-frames, which are hinged at 5 to the side pieces 2. (See Fig. 3.) These scraper-frames are of substantial construction and are adapted to support two main scrapers 6, which are firmly attached in position to the lower sides of said frames. These scrapers are detachable and are reversible in their positions upon the frames 4 in order that they may be placed in reversed positions in the travel of the machine back and forth in the operation of filling a trench. In Fig. 4 brackets 6' are shown, which add to the support of these scrapers, there being one of these brackets attached to each of the arms of said frames. The two outer beams of the frames 4 are provided with longitudinal slots 7, through which bolts 8 pass after also passing through longitudinal slots 9 in the scrapers 6. This way of mounting said scrapers permits not only a reversing of their positions, but allows for inner and outer adjustments from and toward the trench. The said scrapers are tightened in their positions by means of hand-nuts 10.

The scraper-frames 4 are connected with the supporting-heads 11 of the machine by means of adjustable tie-rods 12, which fit in eyes and connect and brace said frames in a desirable manner. Adjustment of said tie-rods may be had by means of turnbuckles 13. The frames, together with the scrapers, may be elevated out of an operative position, as shown in Fig. 2, by means of chains 14, two of which are connected to each frame near its outer end, and the inner ends of said chains are connected to and are windable upon windlass-shafts 15, which are mounted above the middle portion of the machine by being mounted upon upright standards 16', that rise from the main or central beam 1. The said windlass-shafts are turnable by means of a crank-handle 17 to raise or lower either side. When the said frames are elevated, as in Fig. 2, the windlass-shafts 15 are held in position by two pivotal dogs 18, which may be thrown into positions between one or the other of the pinion 19 and spur-wheels 16.

In order to transport or convey the machine from one locality to another, means are provided for the attachment of wheels 20, as shown in Fig. 2; but it will be understood that when the machine is in operative position within the trench, as shown in Figs. 1 and 3, these

wheels are detached and the machine slides on the edges of the trench. In order to make the machine adaptable for different widths of trenches, it may be widened or narrowed, as the case may be, by inserting different widths of blocks 1', which may be placed between the side pieces 2 2 and the central beam 1, the bolts 2' being loosened in order to detach the parts to make the changes indicated. As before stated, the scrapers 6 are reversible. Therefore the necessity of turning the machine is obviated, and, further, the scrapers, with their supporting-frames, may be raised or lowered to the desired extent in order to catch the top of the dirt ridges and level the same down on going through the trenches for the first time and can then be lowered as the machine is carried back and forth through the trench. The machine cannot be pulled out of the trench, owing to its extending about twelve to fourteen inches into said trench, and is sufficiently heavy to be maintained in position by its weight. On each end of the central beam 1 there is mounted a head before referred to and which is of substantially the width of the central portion of the machine and consisting of parallel beams or pieces 21, which are united to intervening distance-blocks 11. The said heads so constructed are attached to the ends of the central beam 1 by a suitable number of bolts 22'. Projecting out from the beams 21 are supports 3', which lie outwardly over the edges of the trench and support the machine at each end within the trench similar to the central supporting-beams 3 3. The extreme outer ends of these supports 3' are provided with scrapers 22, which clean the banks and move the dirt inwardly toward the trench from a point at the extreme end of the machine. The object of this end or pilot scraper is to sufficiently scrape off the dirt or ridges of dirt on each side of the trench and near the edges to prepare the way for the sliding of the machine with as little obstruction as possible. The main or central scrapers 6, it will be seen, extend out rearwardly a suitable distance to take in a considerable amount of earth as the machine is passing through the trench. In order to protect the banks of the trench and reduce the obstruction at the pilot end of the machine as much as possible, the front ends of the parallel beams 21 are provided with curved shields 23, which lie within the trench and prevent the ends of the beams 21 from becoming embedded or digging into the banks, the object being to reduce the resistance or obstruction as much as possible to the pilot end of the machine as it is being moved through the trench.

The movement of the machine is necessarily slow; but it has a capacity for filling back from seven hundred to twelve hundred cubic yards of earth in approximately ten hours. When moving through the trench, the side bearings which support it on the curb of the trench on each side slide over the solid

ground two or more feet on either side of the trench and prevent the machine from dropping into the trench at any point—in other words, maintains the machine always in a proper position within the trench. It may be further stated that in cases where the earth on either side of the trench is unusually rough small truck wheels or slides may be placed in position on the axles 25 to facilitate the movement of the machine by reaching out farther on the banks in cases where the banks are badly broken. The traction-wheels 20 are readily attached and detached from the machine by means of king-bolts 24, which project upwardly through the central beam 1 and through an opening in the wheel-axle 25, where it receives a hand-nut 26, and the machine may be raised out of the trench or lowered therein by turning said king-bolts. As the machine is shown in Fig. 3 it is moving along the trench, the scrapers 6 being in an operative position on the ridges of earth on either side of the trench.

Movement is imparted to the machine to propel it through the trench by means of chains, cables, or ropes 26', which are attached to each end of the machine and extend a suitable distance where one or the other of said ropes, according to the movement of the machine, is taken up by a capstan or windlass, which is rotated by one or two horses, as the case may be, or by any other suitable power.

In Fig. 1 the machine is in a position to move to the right along the trench. At the termination of its movement in that direction the scrapers 6 are reversed in their positions and the machine is then caused to retrace its movement in the opposite direction, which is repeated until the earth is filled back into the trench.

Having described my invention, I claim—

1. In a back-filling machine for trenches, a frame adapted to be projected into a trench and supported upon the banks or curbs of said trench, hinged frames on both sides of the machine, and scrapers mounted upon said frames and adapted to throw the earth into the trench on one or both sides.

2. In a machine for back-filling trenches, a frame adapted to lie within the mouth of the trench, means on the sides of the middle portion of said frame for supporting it on the banks or curbs of the trench, hinged frames projecting from the middle portion of said machine, suitable tie-rod connections between said hinged frames and the ends of the machine, and dirt-scrapers adjustably attached to said hinged frames, substantially as set forth.

3. In a machine for back-filling trenches, a frame adapted to lie within a trench, means upon each side of the central portion and the end portions of said frame for supporting it in the mouth of the trench, hinged side frames which rest upon the ridges of earth on each side of the trench, scrapers attached to said

frames for throwing the earth into the trench, means for changing the positions of said scrapers, and means for elevating the scrapers and frames, substantially as set forth.

5 4. In a machine for back-filling trenches, a frame consisting of a longitudinal central beam with parallel central side beams by means of which the width of the portion of the machine lying within the trench may be
10 varied, means upon said frame for supporting it in the mouth of the trench, side scrapers, frames upon which said side scrapers are supported, said frames being hinged to the sides of the main frame, a head upon each end of
15 the longitudinal beam with means for varying the width of said heads according to the width of the trench, means for supporting said heads within the trench, and scrapers on said heads for initially preparing for the slid-
20 ing movement of the machine.

5. In a machine for back-filling trenches, a frame adapted to project within the mouth of a trench, said frame consisting of heads and a central portion with means thereon for supporting said machine in the mouth of the
25 trench, means for changing the width of said heads and central portion according to the width of the trench, side frames hinged to the central portion of the machine, scrapers mounted upon said side frames, scrapers
30 mounted upon the heads of the machine, and means upon said heads for protecting the sides of the trench during the movement of the machine in either direction.

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

GEORGE R. HIVELY.

Witnesses:

R. J. McCARTY,
C. M. THEOBALD.