

No. 733,422.

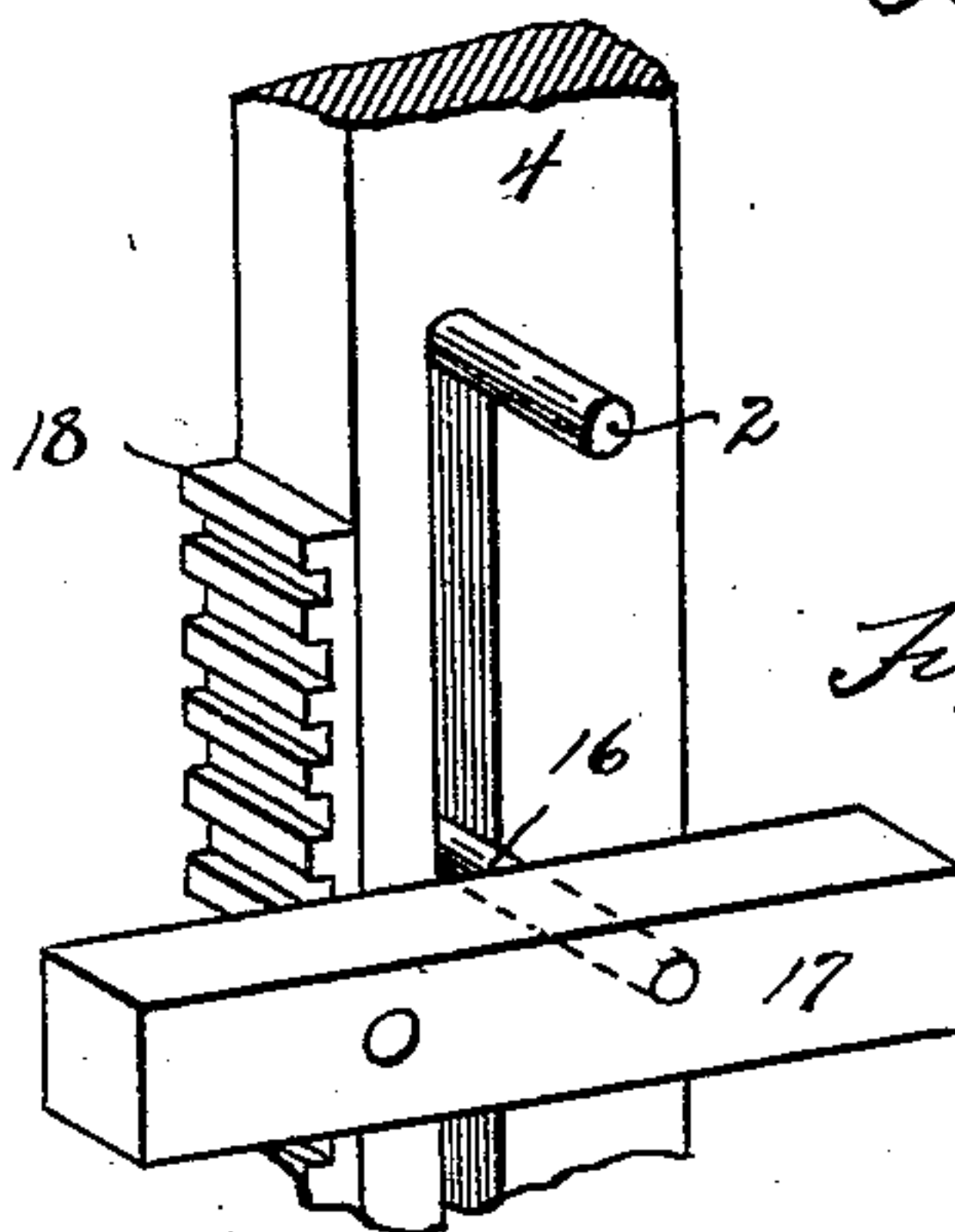
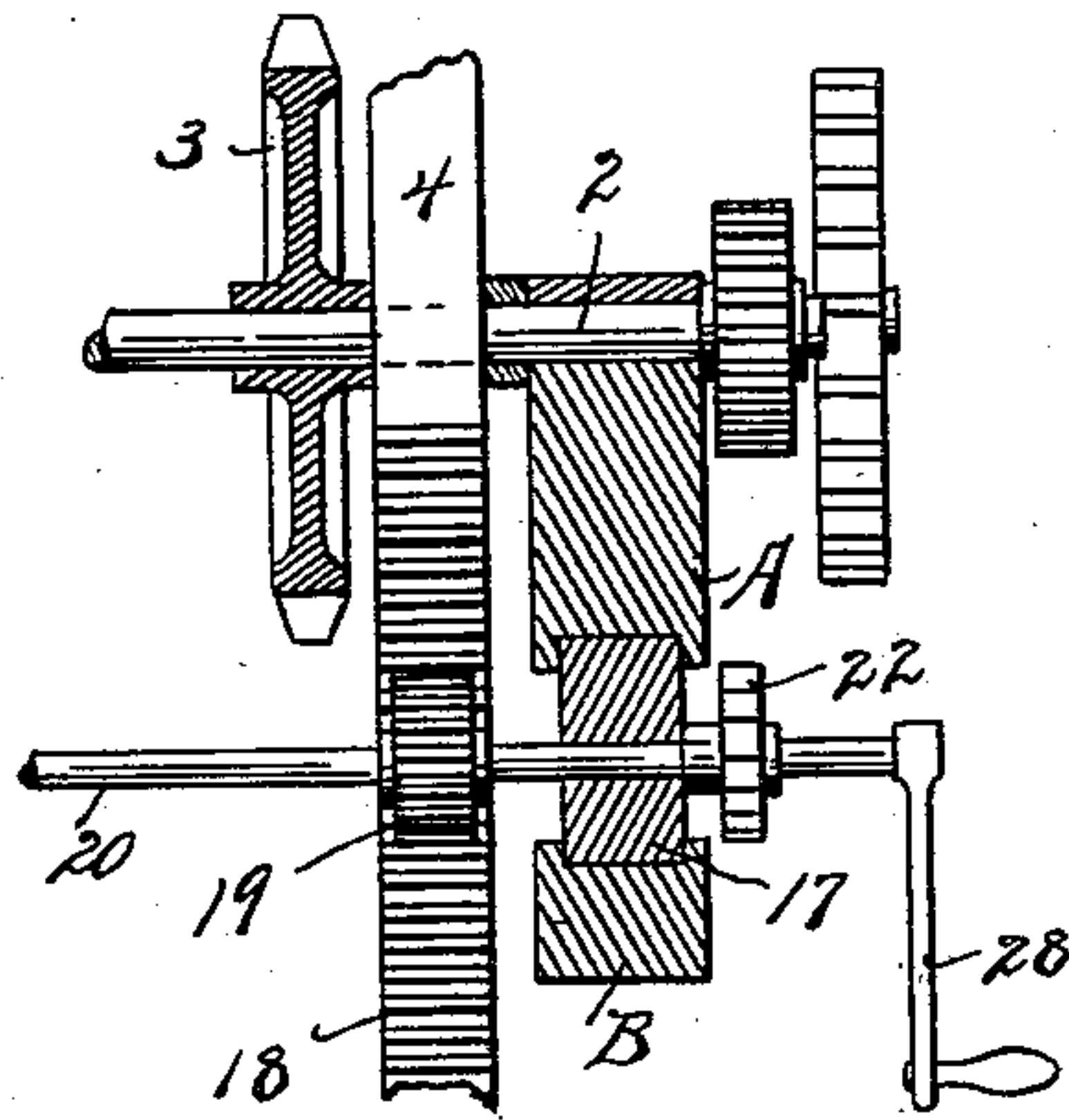
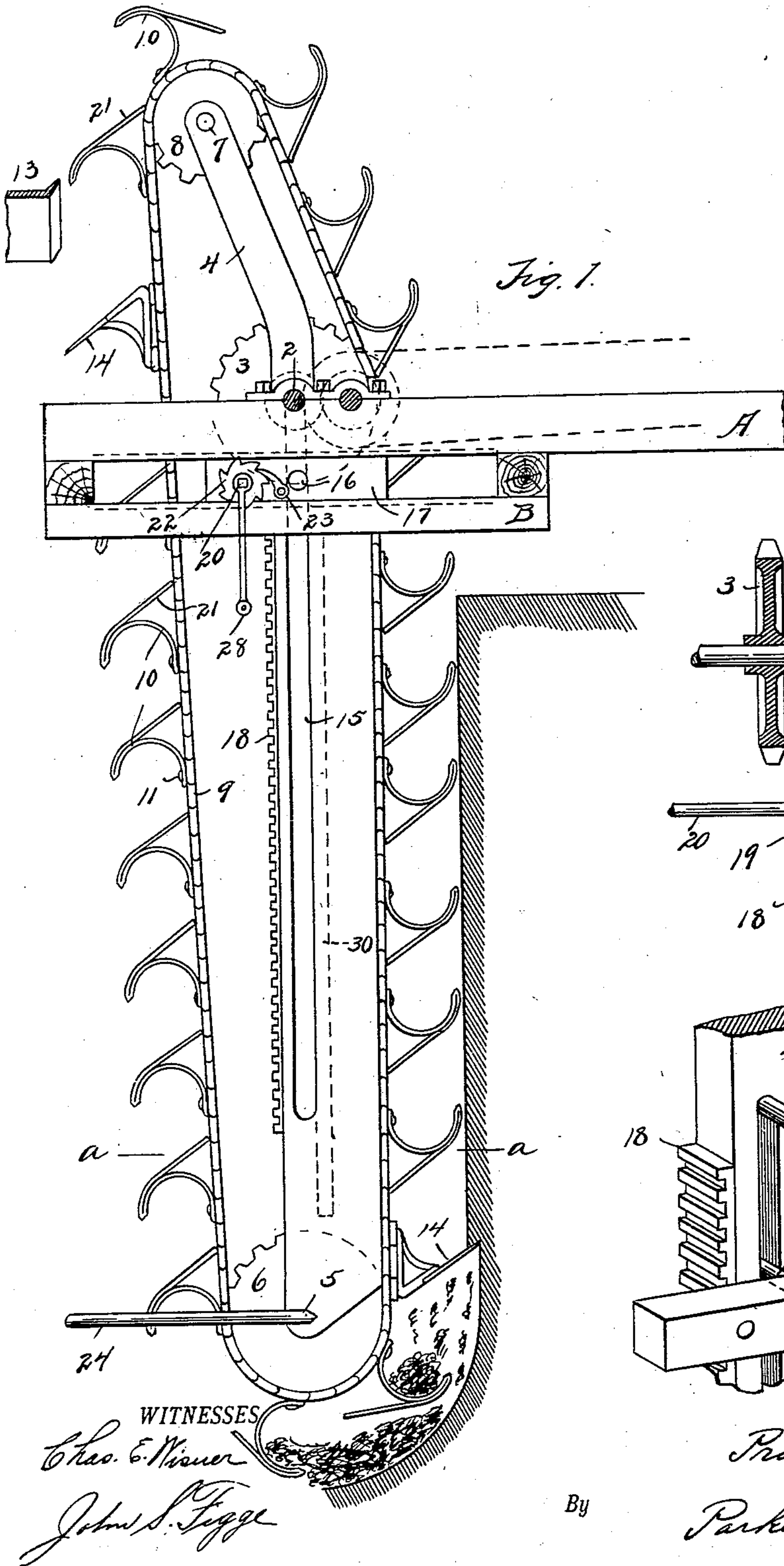
PATENTED JULY 14, 1903.

P. J. RAYMOND.  
EXCAVATOR.

APPLICATION FILED MAR. 12, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

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2 SHEETS—SHEET 2.

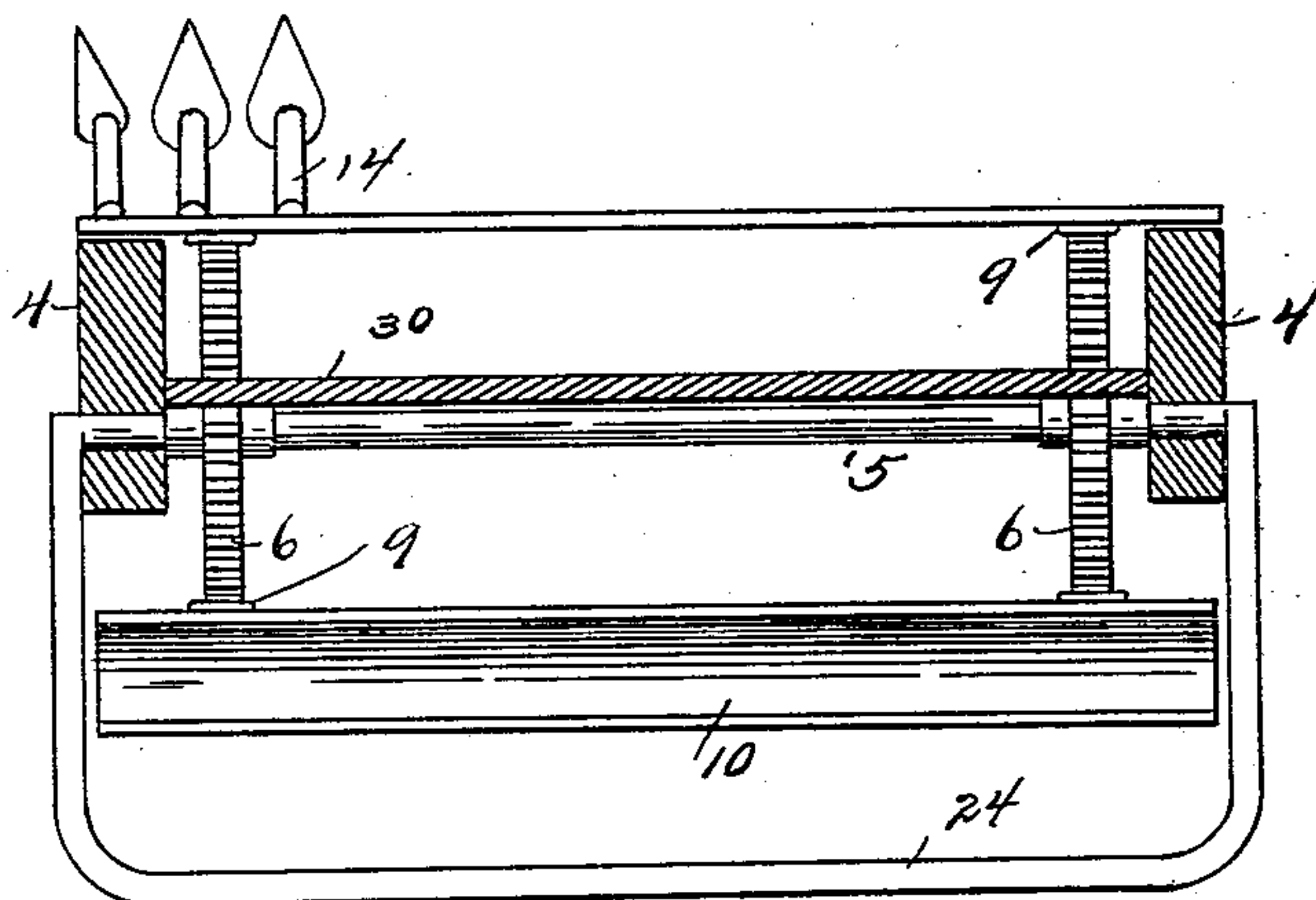


Fig. 4.

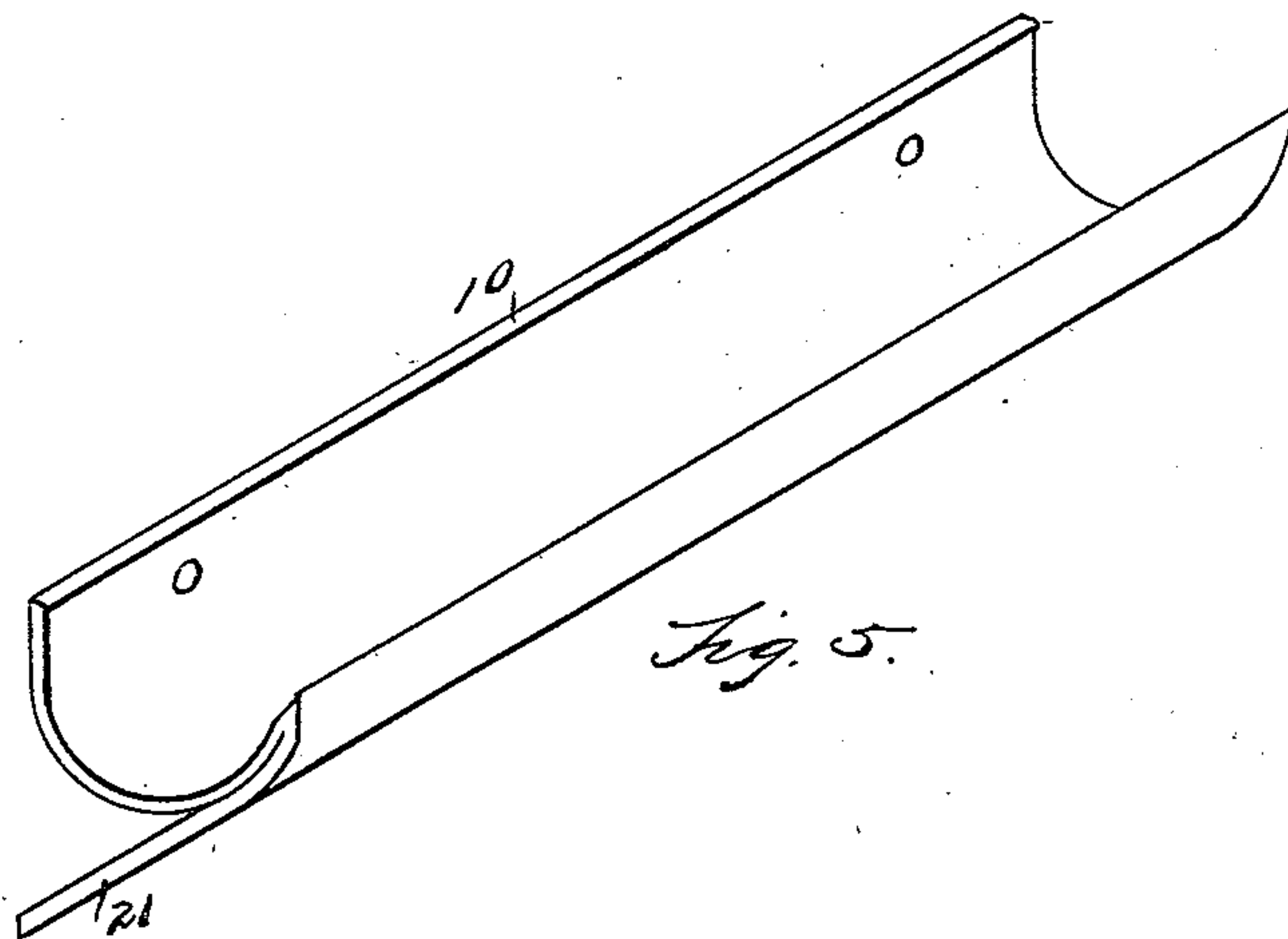


Fig. 5.

WITNESSES

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# UNITED STATES PATENT OFFICE.

PROSPER J. RAYMOND, OF DETROIT, MICHIGAN.

## EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 733,422, dated July 14, 1903.

Application filed March 12, 1902. Serial No. 97,897. (No model.)

*To all whom it may concern:*

Be it known that I, PROSPER J. RAYMOND, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Excavators; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to excavators, and has for its object an improved excavating-machine intended to be drawn forward in the ditch from which the soil is excavated and to loosen and lift the dirt as it advances and provided with various adjustments to regulate the depth of cut and the obliquity at which digging parts of the machine set.

In the drawings, Figure 1 is a side elevation of the excavating part of the machine. The carrier on which the machine is supported is not shown in this drawing. Fig. 2 is a detail of the device used to regulate the depth of cut. Fig. 3 is a perspective detail of a part of the device regulating the depth of cut. Fig. 4 is a cross-section at the line *a a* of Fig. 1. Fig. 5 is a perspective of the elevator-bucket employed.

A indicates the main framework, on which the entire machine is supported. On the frame A is journaled a shaft 2, which carries a pair of sprocket-wheels, one of which is seen at 3. On the shaft 2 is a swinging and hanging frame-bar 4, at the bottom end of which is supported a journal 5, that carries sprocket-wheel 6. The upper end of the frame-bar 4 supports a journal 7, that carries sprocket-wheels 8. Sprocket-wheels 8 and 6 are idler-wheels, or mere carrying-wheels for the upper and lower ends of an elevating sprocket-chain 9, that is driven by the sprocket-wheel 3 on the shaft 2 from any convenient source of power. The sprocket-chains are in a pair, and they support buckets 10, which are secured by pins or rivets 11 to suitable links of the sprocket-chains, and each bucket has the material of which it is composed bent back from the outer edge and extending obliquely inward toward the chain. The bent-back portion 21 forms a brace to aid in supporting the

bucket, and it also forms a guide or slide to direct material dropping from the overturned bucket (as shown at the top of Fig. 1) into a carrier 13, which removes the material. The sprocket-chain also carries at intervals rows of digging-knives 14, the points of which project beyond the normal line of travel of the buckets and are arranged to cut into and loosen the soil, causing it to fall into the buckets 10.

The frame-bar 4, which hangs on the shaft 2, is provided with a long slot 15, that engages over a guide-pin 16 in a block 17. The block 17 is movable along the frame-bar A. To enable it to have such movement, the frame-bar A supports a parallel bar B, spaced from it, and the block 17 is fitted between the bars A and B and arranged to slide along the bar A.

On the vertical frame-bar 4 is a rack 18, that engages a pinion 19. The pinion is on a shaft 20, journaled in the sliding block 17. The end of the shaft 20 is provided with a hand-winch 28 and with a ratchet-wheel 22, with which engages a pawl 23. By turning the winch 21 and the shaft 20 the pinion 19 is actuated and the depth of the hanger-bar 4 and the sprocket-chain and the buckets supported by it regulated at will within the limits of the machine.

The obliquity of the hanger 4 and of the excavating apparatus is regulated by a hand-guide 24, made in the form of a bail, extending from one end of the journal 5 to the other end thereof, and this bail is employed by the workman to shift forward or backward the lower end of the hanger, shifting the block 17 and regulating the amount of the forward cut in accordance with the requirements of the soil or of the difficulties of the work. It also enables the workman to quickly withdraw the cutting part of the apparatus should it meet an obstruction liable to injure the machine—as, for example, should a boulder be encountered the workman can immediately withdraw or cease to advance the machine and prevent any injury resulting to it.

The entire excavating-machine is supported on and projects from the rear part of an ordinary traction-engine, and it has not been thought necessary to show the support, as it forms no part of the invention.

30 indicates an apron-board which prevents

dirt from dropping from the elevator into the bottom of the machine behind the sprocket-wheel 6.

What I claim is—

5 1. In an excavator of the kind employing sprocket wheels and chains, a bucket secured to the chain at its advance portion and provided with a rearwardly-extending brace adapted to contact the chain, when the bucket  
10 is upon the straight portion of the chain.

2. In an excavator, the combination of a framework, a slotted hanger, a journal on the framework passing through said slot, a horizontally-movable block carrying a pinion, a  
15 rack on said hanger to engage said pinion, a pin passing through the slot and the block, whereby the hanger may be given a vertically-

reciprocating movement and the block a horizontally-reciprocating movement, substantially as described. 20

3. In an excavator of the kind employing sprocket wheels and chains, a bucket formed of sheet metal bent to form its outer edges, the metal extending in one direction from said bend to form the receptacle of the bucket 25 and extending in the other direction to form a brace.

In testimony whereof I sign this specification in the presence of two witnesses.

PROSPER J. RAYMOND.

Witnesses:

MAY E. KOTT,

CHARLES F. BURTON.