

No. 711,992.

Patented Oct. 28, 1902.

V. W. MASON, JR.
EXCAVATING TOOTH FOR POWER SHOVELS.

(Application filed Apr. 9, 1902.)

(No Model.)

Fig. 1.

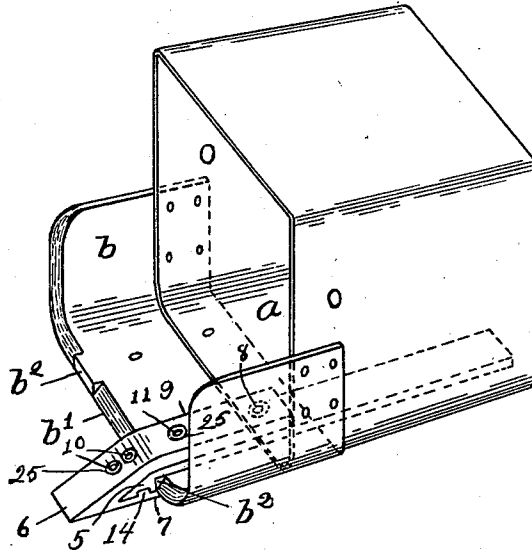


Fig. 2.

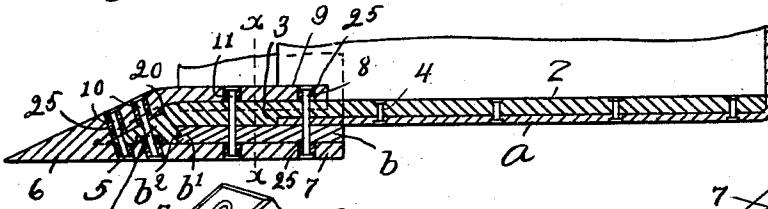


Fig. 3.

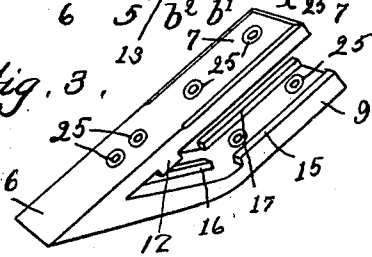


Fig. 4.

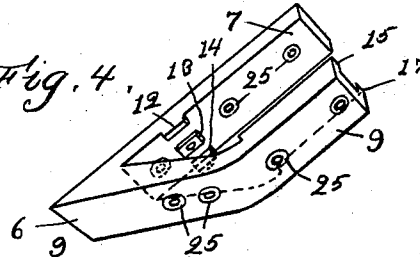


Fig. 5.

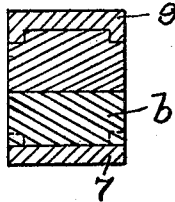
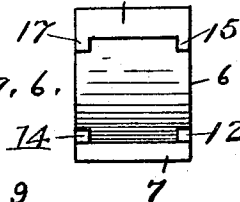


Fig. 6.

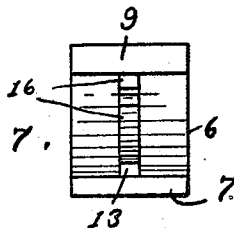


Witnesses:

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J. L. Hutchinson

Fig. 7.



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UNITED STATES PATENT OFFICE.

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EXCAVATING-TOOTH FOR POWER-SHOVELS.

SPECIFICATION forming part of Letters Patent No. 711,992, dated October 28, 1902.

Application filed April 9, 1902. Serial No. 102,009. (No model.)

To all whom it may concern:

Be it known that I, VOLNEY W. MASON, JR., of New York, in the borough of Manhattan and State of New York, have invented an Improvement in Excavating-Teeth for Power-Shovels, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to power-shovels, and particularly to improvements in the construction of the nose-piece of the shovel and in the construction of the teeth.

The improvements in the teeth are intended as improvements upon the teeth shown in Letters Patent No. 684,477, dated October 15, 1901.

The invention has for its object to improve the construction of the nose-piece of the shovel, whereby it is especially adapted to receive the teeth and to assist in resisting the longitudinal thrust thereof, yet at the same time not impair its utility.

The invention also has for its object to improve the construction of the detachable point, whereby it may be made of manganese steel and attached by bolts or rivets, which material, as is well known, is very difficult to drill.

The invention also has for its object to improve the construction of the body or shank of the teeth to further assist in resisting the longitudinal thrust thereon.

The invention also has for its object to improve the construction of the parts, whereby the teeth may be more securely attached to the shovel, and also to improve the construction of the detachable point, whereby it is adapted to better resist longitudinal and lateral thrust.

Figure 1 shows a perspective view of a power-shovel embodying this invention. Fig. 2 is a longitudinal vertical section of one of the teeth and a portion of the shovel. Figs. 3 and 4 are perspective views of the point removed. Fig. 5 is a cross-section of the tooth shown in Fig. 2, taken on the dotted line *x x*; and Figs. 6 and 7 are modified end views, to be referred to, of the point removed.

a represents the bottom of the power-shovel, and *b* the nose-piece which is secured thereto. The nose-piece *b* is formed or bent right-ang-

larly to conform to the shape of the shovel, and along its front edge it is formed with alternately-arranged knife-edged portions *b'* and blunt or flat-faced portions *b''*, the knife-edged portions being located between the several teeth and the blunt or flat-faced portions being located at the points of attachment of the teeth. The knife-edged portions *b'* assist in working the shovel, while the blunt or flat-faced portions serve as abutments for one of the coöperative parts of the teeth.

The tooth comprises a body 2, made as an elongated shank, pierced with a plurality of holes for the reception of bolts or rivets 4 and made long enough to cross the nose-piece *b* and extend along the upper side of the bottom of the shovel for practically its entire depth. The body or shank 2 is formed with a shoulder 3 at a point intermediate its length, which abuts against the front edge of the shovel-bottom *a*. Longitudinal thrust of the body or shank 2 is thus resisted. The forward end of the body or shank 2 is provided with a foot 5, which projects downward at one side of said body or shank a short distance, and its forward end is pointed and the rear end of its projecting portion formed with a shoulder 20, which abuts against the front edge of the nose-piece *b*. Longitudinal thrust of the body or shank 2 is thus further resisted.

6 represents the removable point, which is applied to the forward extremity of the body or shank 2 and embraces the foot 5, and its portion 7 extends rearwardly beneath said foot and also the nose-piece and terminates substantially flush with the rear edge of said nose-piece, and the portion 9 of said point extends rearwardly along the top of the body or shank 2 to a point beyond the front edge of the shovel-bottom.

Bolts or rivets 10 pass through the point and foot of the body or shank 2, and a bolt or rivet 11 passes through the portions 7 and 9 of the point and through the nose-piece and body or shank 2, and a bolt or rivet 8 passes through the portions 7 and 9 of the point and through the shovel-bottom *a* and body or shank 2. These bolts or rivets securely hold the parts assembled, and it will be observed that the body or shank 2 is secured to both the nose-piece and shovel-bottom and that

the point is secured to the body or shank 2, nose-piece, and shovel-bottom, thereby very securely attaching the tooth to the shovel.

As it is the intention to make the detachable point of manganese steel, I incorporate therein when casting it plugs 25, of easily-machinable metal, which may be drilled for the reception of the bolts or rivets. In the patent referred to the inner faces of the portions 7 and 9 of the detachable point are made flat or smooth, and said point is held in position solely by the bolts or rivets. When these points are made of manganese steel and held in place solely by the bolts or rivets, there is a tendency for them to work loose—a result due to the longitudinal and also lateral thrust to which they are subjected when in use—and this difficulty I obviate by providing on said inner faces of said portions 7 and 9 of the point numerous projections which enter correspondingly-shaped recesses formed in the foot and body or shank 2. On the inner face of the portion 7 of the detachable point a plurality of rectangular projections are formed— as, for instance, there may be three such projections, as represented at 12 13 14, (see Fig. 4,) there being one at each side and one in the middle, or said middle projection 13 may be omitted, as shown in Fig. 6, or said side projections 12 14 may be omitted, as shown in Fig. 7—and on the inner face of the portion 9 of the detachable point there are also three projections, as represented at 15 16 17, there being one at each side and one in the middle, (see Fig. 3,) or said middle projection 16 may be omitted, as shown in Fig. 6, or said side projections 15 17 may be omitted, as shown in Fig. 7.

On the bottom of the foot 5 a recess is formed which corresponds in position, shape, and size to the projections 12, 13, and 14, and on the top of the body or shank 2 and foot 5 recesses are formed which correspond in position, shape, and size to the projections 15, 16, and 17, and when the parts are assembled the several projections will enter said recesses.

By making the projections rectangular, as shown, upright abutting portions or walls are formed, which abut against the correspondingly-shaped sides or walls of the recesses and are primarily depended upon to resist the longitudinal and lateral thrust of the detachable point when it is subjected to severe duty, while the bolts or rivets act, secondarily, to hold the point in position.

The number, shape, size, and location of the projections may be varied without departing

from the scope of this invention, and the recesses will be correspondingly made to receive the projections which are employed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A power-shovel having a nose-piece attached thereto having alternately-arranged knife-edged portions, and blunt or flat-faced portions and teeth attached thereto at the blunt or flat-faced portions, substantially as described.

2. A power-shovel having a nose-piece attached thereto formed with a blunt or flat-faced tooth-receiving portion, a detachable tooth comprising a body or shank having a foot at its extremity formed with a shoulder which abuts against a blunt or flat-faced portion of the nose-piece and a detachable point embracing said foot, body or shank and nose-piece, substantially as described.

3. A power-shovel having a nose-piece attached thereto formed with a blunt or flat-faced portion, a detachable tooth comprising a body or shank having a shoulder which abuts against the front edge of the shovel-bottom and also having a foot at its extremity formed with a shoulder which abuts against the blunt or flat-faced portion of the nose-piece and a detachable point embracing said foot, body or shank and nose-piece, substantially as described.

4. A tooth for power-shovels comprising an elongated body provided with a foot and a detachable point connected to said body and embracing said foot and also embracing the nose-piece of the shovel, projections on the inner faces of said detachable point and corresponding recesses in the body and foot which receive said projections, substantially as described.

5. A tooth for power-shovels comprising an elongated body provided with a foot and a detachable point embracing said foot and also embracing the nose-piece of the shovel having plugs of easily machineable metal incorporated therein through which holes are drilled and bolts or rivets passing through said holes which attach the point to the foot, substantially as described.

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

VOLNEY W. MASON, JR.

Witnesses:

B. J. NOYES,

J. L. HUTCHINSON.