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 IMPLEMENT FOR MOLDING CONCRETE.
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917,142.

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Fig. 1.

Fig. 2. Fig. 3. Fig. 4. Fig. 5.

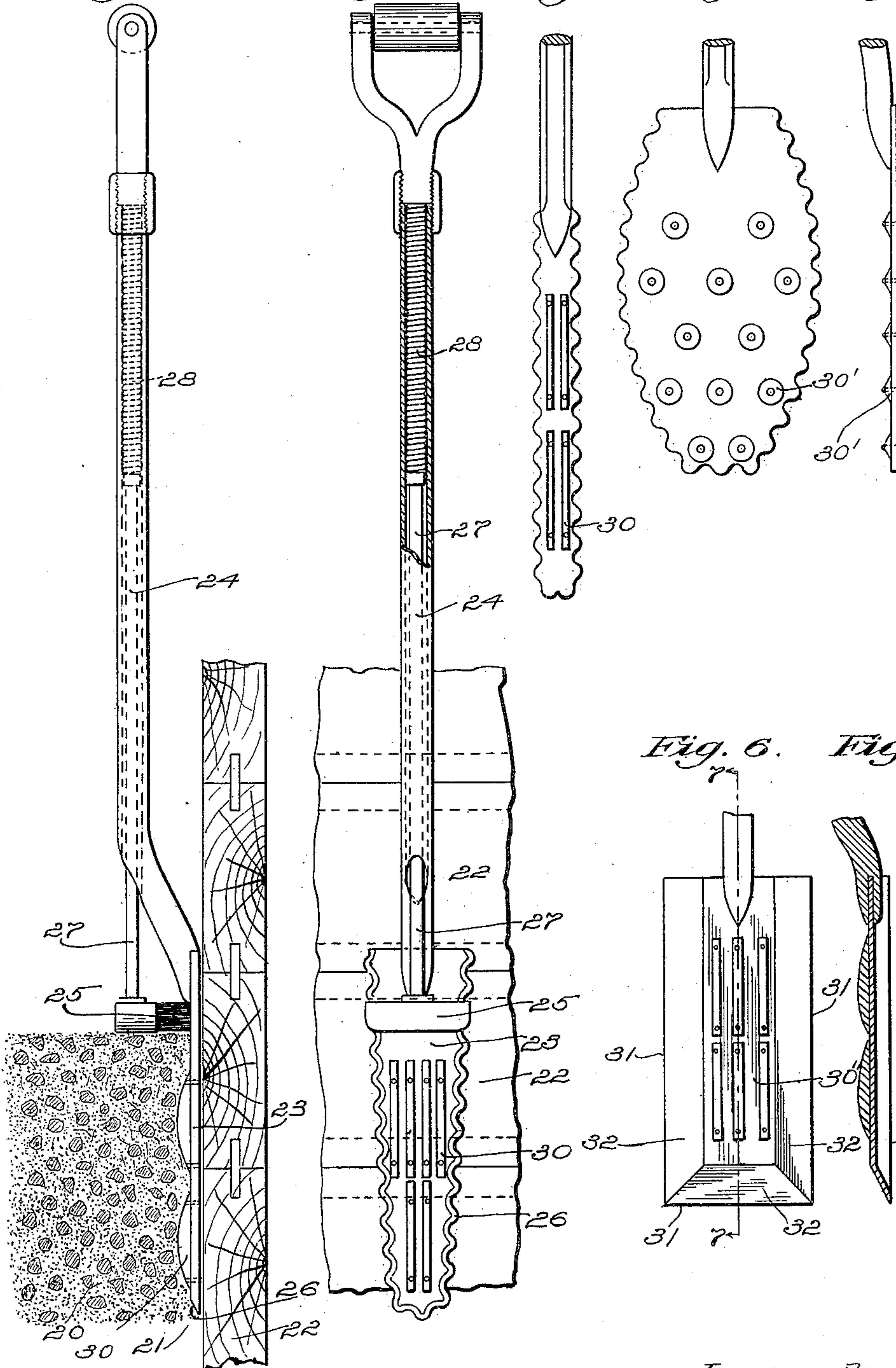


Fig. 6. Fig. 7.

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IMPLEMENT FOR MOLDING CONCRETE.

No. 917,142.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed March 9, 1908. Serial No. 419,887.

To all whom it may concern:

Be it known that I, JOSEPH F. ROSS, of Ipswich, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Implements for Molding Concrete, of which the following is a specification.

This invention relates to improvements in apparatus for molding concrete. More particularly it is intended for use when an abutment or other structure is being built of concrete in which broken stone or screened gravel is to be employed in the main body of the structure but which is to have a smooth facing such as is formed by a more liquid mixture composed of sand mixed with the cement without stone. In such work it has heretofore been customary to deposit the concrete mixture containing stone within the form and afterward to insert a common shovel or spade between the face of the form and the mixture thus deposited and to press it back from the form, at the same time supplying a liquid grouting which being more liquid runs into the space thus made and solidifies in contact with the face of the form, thus leaving a smooth, finished surface for the work without stones projecting to the surface. The manipulation of a spade in this manner is rather laborious, as a considerable mass of stone has to be displaced at each position and the results are uneven and the process slow.

The object of the invention herein described is to produce apparatus in which this work may be done more easily, with less expenditure of strength, more rapidly, more accurately and completely; and at a reduced labor cost.

The apparatus comprises a blade having a peculiar surface which forces the stones back from the form by mere insertion of the blade, or by moving the blade laterally in contact with the face-form; and it also may comprise means for automatically clearing from the spade such part of the concrete mixture as may adhere to it when the blade is removed from the mass.

The invention herein described is represented as it may be embodied in apparatus to be worked wholly by hand and to be held in the hand; but it also may be embodied in mechanism not held in the hand, standing on its own base and operated either by

power or hand and automatically propelling itself over the place where its work is to be performed. One form of such apparatus is described and claimed in my application for patent of the United States No. 419,886.

In the accompanying drawings, which represent the hand apparatus: Figure 1 is a side elevation partly in section showing an embodiment of the invention embedded in concrete; Fig. 2 is a front elevation of the same, without the concrete; Fig. 3 is a front elevation of another form of blade; Fig. 4 is a front elevation of another form of blade; Fig. 5 is a side or edge elevation of the form shown in Fig. 4; and Fig. 6 is a front elevation of still another form of blade and Fig. 7 is a side elevation of the same sectioned on the line 7—7 of Fig. 6.

Referring to the drawings, a mass of concrete is represented in process of construction, having a portion 20 which forms the main body of the mass in which broken stone is used, a portion 21 which forms the face of the mass, consisting of grouting inserted between the main body and the face-form which is composed of planks 22 set on edge in the customary manner.

The invention is embodied in a tool having a flat blade 23, from which cam surfaces 30 project, and having a handle 24 by which the blade may be thrust between the concrete and the face-form of the mold, as shown in Fig. 1. On the handle is mounted a brush or clearing device 25. The blade is preferably rather narrow as compared with its length and as shown in Fig. 2 may be somewhat pointed and preferably has a wavy edge line. The form of cam projections represented in Fig. 2 is seen in side elevation in Fig. 1. A convenient size for ordinary use is to make these pieces about one-half inch in height and four inches in length and place them about one-half inch apart. When these are mounted with a blade of ordinary thickness and the blade is inserted downward along the face form, the lower faces of these projections act like cams to force away from the face-form all solid substances in the mixture which are too large to enter the spaces between these projections or which are not exactly opposite one of the spaces. By covering the face of the blade with these projections, such stones as have been pushed away are, with

the aid of the semi-plastic condition of the mass, kept from returning to their original places; and upon the withdrawal of the instrument the more liquid grouting immediately fills its place and thus the stones are left permanently removed a short distance from the face-form. The thickness of the grouting thus formed may be made as called for by specifications, by providing a tool having a suitable height of projections. By making the edge of the blade beveled on its face side, as shown in Figs. 1 and 2 at 26, the mixture is prevented from getting behind the blade; and at the same time the blade is automatically guided and maintained close to the face-form. The projecting pieces may be of other shapes; and a different variety is shown in Figs. 4 and 5 where they are buttons riveted on the face of the blade. The blade also is of different form and is suited not only for insertion from above, but for moving sidewise after being inserted. It is contemplated that with such an instrument as is shown in Figs. 1 and 2, the workman after inserting the tool will remove it wholly or partly and will insert it in the next adjoining position; but the form shown in Figs. 4 and 5 is better adapted to be moved into the adjacent position without complete removal. The serrated edge of the blade facilitates its movement in the mass because a solid substance upon striking such an edge is almost certain to strike one of the inclined portions of the edge and to be slightly deflected thereby; and in the course of being deflected it is almost certain, owing to its irregular shape and the restraining effect of other solid bodies in the mass, that it will be moved slightly away from the face-form, if it chances to lie close against it, allowing the leading edge of the beveled surface 26 to enter between it and the face-form and thus allowing the cam action to take effect and force it farther away to the extent of the instrument's action.

In the drawings the thickness of the blade 23 is somewhat exaggerated. The handle 24 may be made of steel tubing and is offset somewhat from the blade as shown in Fig. 1.

The brush or clearing device 25 may conveniently be mounted on a rod 27 which runs inside the tubing and engages a weak spring 28 therein which normally presses downward upon it. When the blade is inserted in the concrete mass the brush head encountering the top of the mass is pushed upward thereby, with respect to the handle of the instrument, compressing the spring 28. When the blade is drawn out from the mass the spring 28 and the weight of the brush and rod will act together in forcing the brush downward with respect to the handle and blade, rubbing over the surface of the blade and clearing therefrom any

concrete adhering to it. At the top of the handle is a detachable hand hold, upon removing which the spring 28 may be inserted within the handle 24.

A form of the instrument suitable for work close into a corner is shown in Fig. 3.

In Figs. 4 and 5 is shown a form in which conical projections or buttons 30' are employed. The base of each of these buttons is an area bounded by a circle or curved line, from which the surface rises with a gradual slope to the top of the button, the projection as a whole presenting a cam surface in whatever direction the blade may be moved edgewise when in use, being in this respect distinguished from the abrupt-sided long and narrow strips of Figs. 1, 2 and 3. The long slope of the cam projections 30 enables the instrument to be inserted easily requiring little power to push the stones away from the face-form; and it is less likely to disturb them while being withdrawn. It will be observed that these strips are arranged in the direction of motion of the blade when in use; and as this instrument is for use in an up-and-down direction the strips are arranged up and down. In my companion application for patent above referred to a blade is shown which is intended for travel in a curved path, and the projections are arranged in lines approximately corresponding to the curved path. The form shown in Figs. 4 and 5 is adapted for movement sidewise as well as vertically while inserted in the mass and to this end the projections thereon are conical, and in whatever direction it is moved stones pressing against it encounter cam surfaces upon its face.

Another form is shown in Figs. 6 and 7, in which no small surface strips are employed but the blade itself is formed into a cam by stamping it into the shape shown in Fig. 7. The edges 31 of the blade lie all in the same plane but the center 30'' projects forward from this plane leaving surfaces 32 which slope from the center to the edges in all directions and operate with the same cam action described above. This form also is adapted for movement sidewise as well as vertically. In the other forms the cam surface consists of separate elevations rising from the main surface of the blade. The frequency of spaces between the projections permits the flow of grouting without the instrument causing suction in its removal.

Other variations may be made from the precise apparatus here shown and described without departing from the scope of the patent.

I claim:—

1. An implement, comprising a blade having a back side adapted to slide upon the face of a mold and having on its face

side a plurality of projecting cams adapted to force material away from the mold face, when the back of the blade slides thereon, thereby modifying the structure of the adjacent concrete.

2. An implement comprising a blade one side of which is adapted to slide close to the face of a mold, the side of the blade remote from the mold face provided with a plurality of cam surfaces projecting away from the said mold face, adapted to force material away therefrom when the implement slides thereon, thereby modifying the structure of the adjacent concrete.

3. An implement for molding concrete, comprising a blade with an edge adapted to slide close to the face of a mold, and on its side remote from the mold face a plurality of projections having sloping sides.

4. An implement for molding concrete, comprising a blade with an edge adapted to slide close to the face of a mold, and on its side remote from the mold face a plurality

of projections having sides which slope in all directions.

5. An implement for molding concrete, comprising a blade with an edge adapted to slide close to the face of a mold, and on its side remote from the mold face having a surface which projects gradually as it retreats from the edge, the edges of the blade being serrated.

6. An implement for molding concrete, comprising a blade with an edge adapted to slide close to the face of a mold, and on its side remote from the mold face a plurality of projections having sloping sides, in combination with a clearing device mounted elastically at the upper end of the blade and adapted to slip over the blade.

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

JOSEPH F. ROSS.

Witnesses:

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