

July 1, 1930.

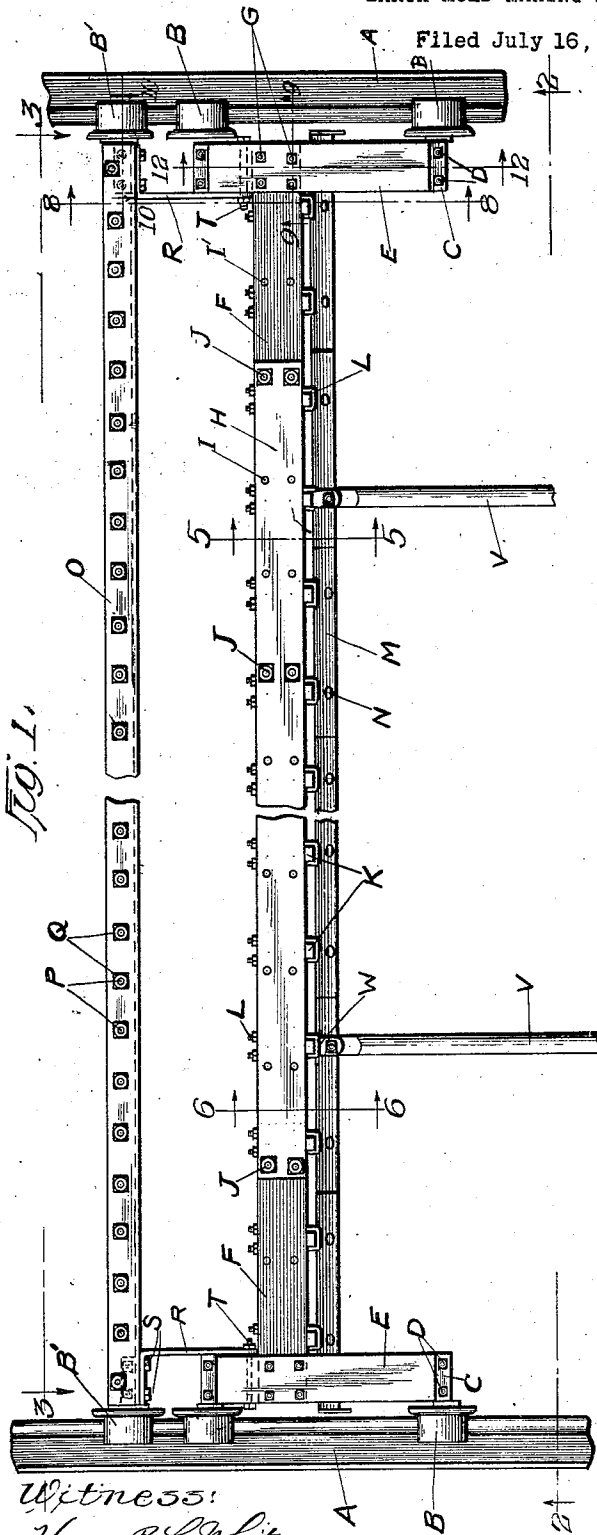
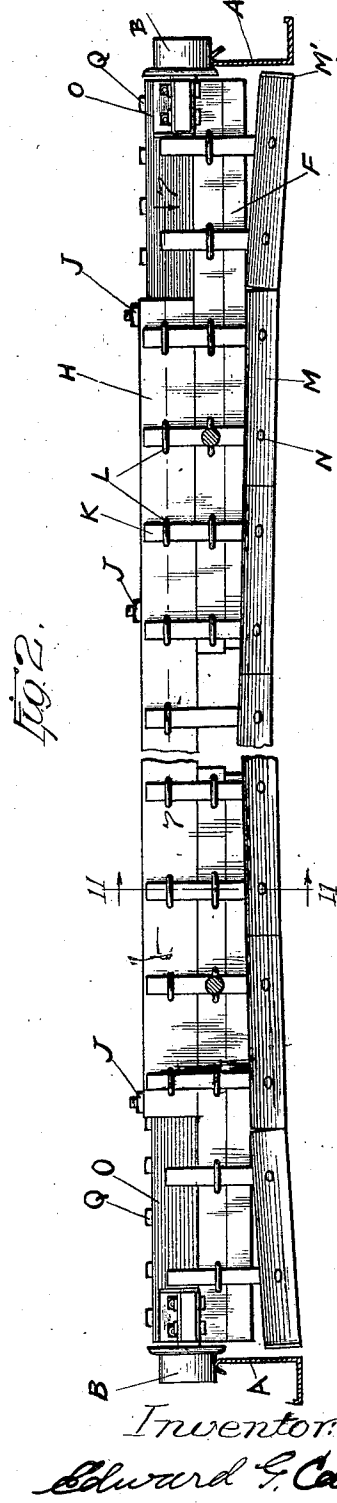
E. G. CARR

1,768,663

EARTH MOLD MAKING MACHINE

Filed July 16, 1928

3 Sheets-Sheet 1



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FIG. 3.

Witness
Harry A. White

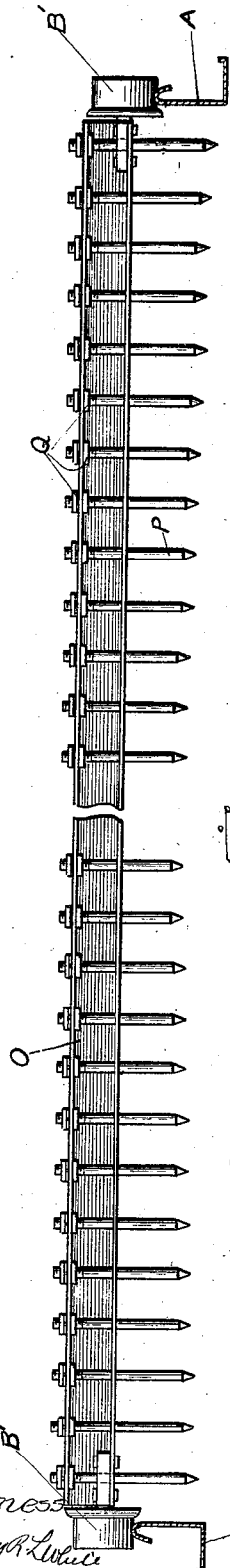


FIG. 8.

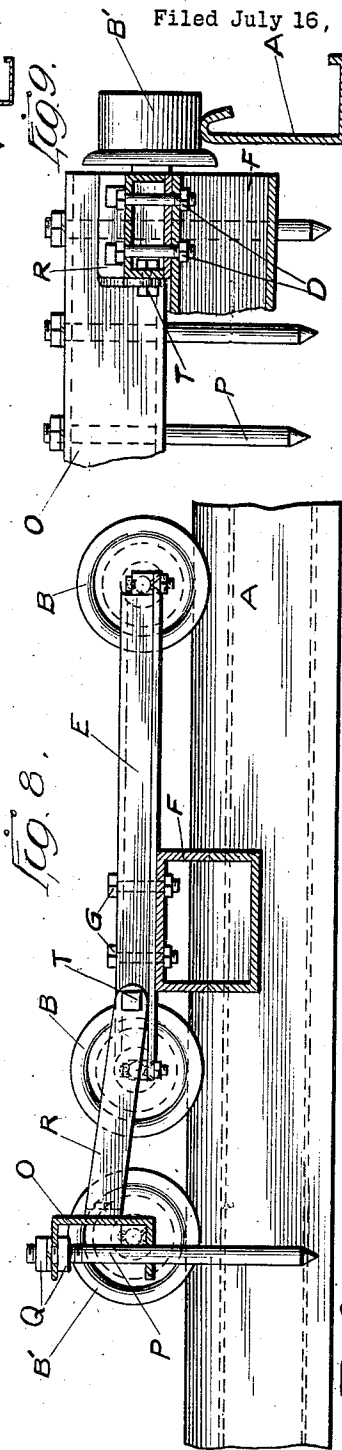


FIG. 11.

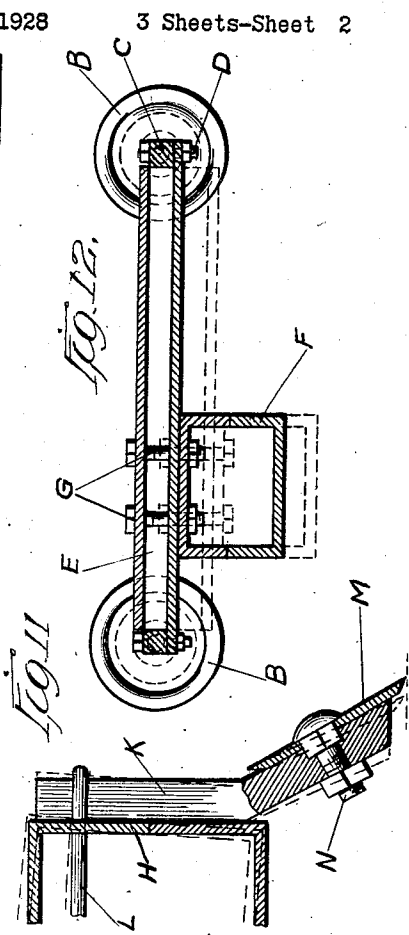
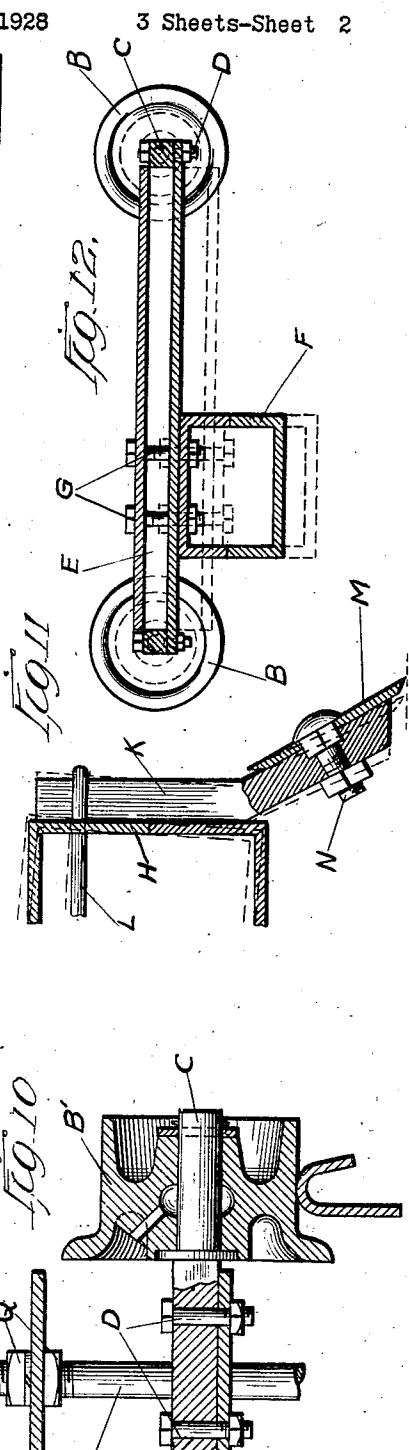


FIG. 10.



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July 1, 1930.

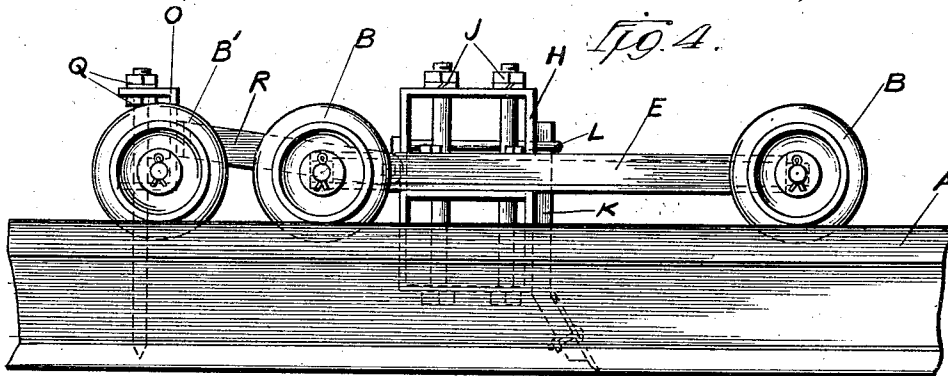
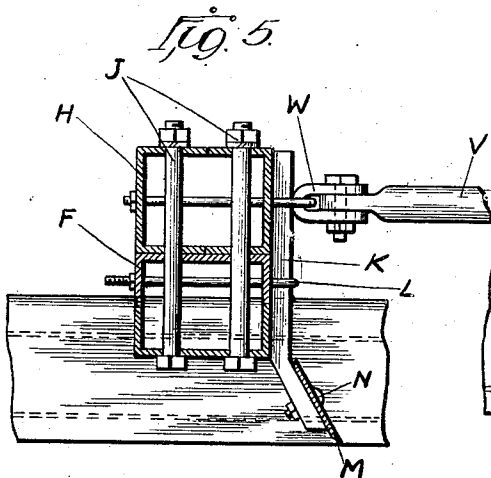
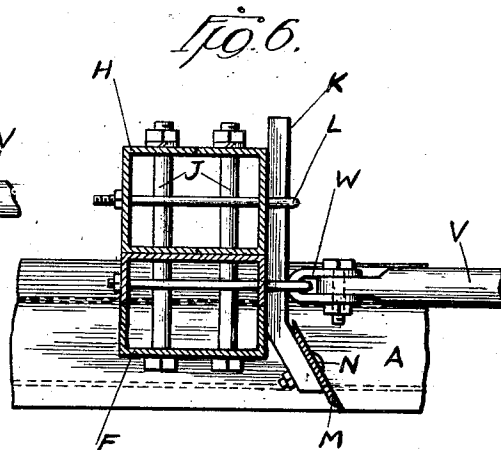
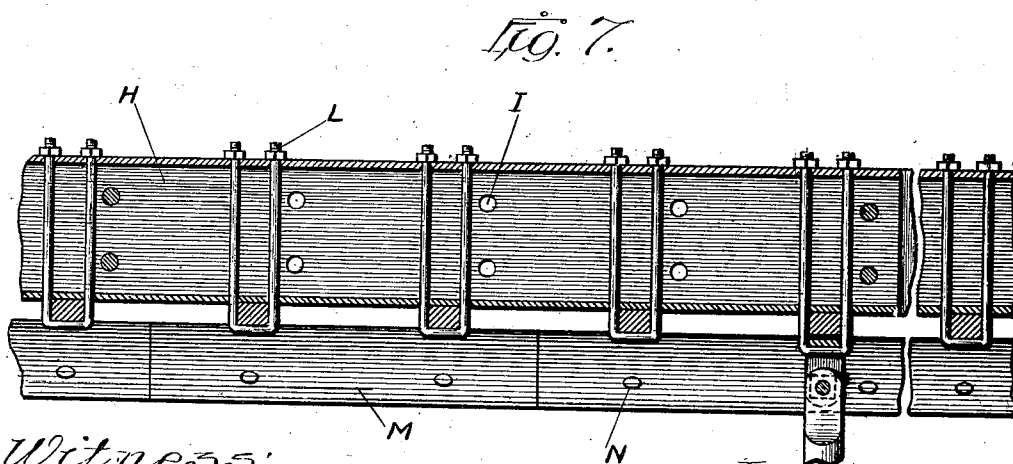
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EARTH MOLD MAKING MACHINE

Filed July 16, 1928

3 Sheets-Sheet 3



Witness:

Harry R. White

Inventor:

Edward G. Carr

UNITED STATES PATENT OFFICE

EDWARD G. CARR, OF CHICAGO, ILLINOIS

EARTH-MOLD-MAKING MACHINE

Application filed July 16, 1928. Serial No. 292,966.

This invention relates to machines for preparing earth molds for concrete slabs and the like.

The machines are of the general type which run on forms or side rails set to predetermined grades and limiting the edge of a concrete road, and are for cutting away the earth between the side rails to a proper depth and contour to form a mold in which to cast the concrete slab for the roadway.

The machine herein illustrated is of a particular type pulled behind paving mixers that are mixing and placing such concrete. Due to the fact that the paving mixer and the trucks that bring materials to the mixer run on the earth sub-grade between the side rails, there is always some displacement of the earth between such rails back of the paving mixer which must be reshaped regardless of how it has been shaped ahead of such mixer.

The limited space in which such reshaping must be done makes the reshaping of such earth very expensive if done by hand. As the concrete is immediately placed, there is also an advantage in having some means for determining the accuracy of the earth mold at this particular instant. For example, the blades on the sub-grading machine might be so worn or shifted, or the machine may have been so raised from the rails by the hardness of the soil that the level of the sub-grade is elevated to an extent that the concrete poured thereover will form a slab not having the proper thickness.

One of the objects of the invention, therefore, is to provide in a sub-grade scraping machine, a marker that will not be affected by slight vertical movements of the scraping blades and which will mark the mold left by the sub-grade scraping machine to show when such machine is not cutting the soil to the proper depth.

Further advantages of the apparatus consists in novel features of construction made particularly advantageous by the limited space in which the machine must operate beneath the distributing bucket and between the concrete mixer and the concrete being placed on the sub-grade.

One embodiment of the invention is disclosed in the accompanying three sheets of drawing, in which

Figure 1 is a plan view of the machine.

Figure 2 is a front elevation thereof on the line 2—2 of Figure 1.

Figure 3 is a back elevation on the line 3—3 of Figure 1.

Figure 4 is a side elevation of the machine.

Figure 5 is a section on the line 5—5 of Figure 1.

Figure 6 is a section on the line 6—6 of Figure 1.

Figure 7 is a section on the line 7—7 of Figure 2.

Figure 8 is a section on the line 8—8 of Figure 1.

Figure 9 is a section on the line 9—9 of Figure 1.

Figure 10 is a section on the line 10—10 of Figure 1.

Figure 11 is a section on the line 11—11 of Figure 2.

Figure 12 is a section on the line 12—12 of Figure 1.

Reference should now be had to said drawings which accompany this specification and form a part thereof, and in which the same reference letters are used to designate the same parts wherever they may appear in each of the several views.

The letter A designates forms or side rails that border the side of a concrete road. These are set with their tops at a predetermined height. Wheels B are adapted to run on the rails A and to support a sub-grade scraping machine, there being on said machine axles C on which said wheels B turn and best shown in Fig. 12.

The axles C are secured by the bolts D to end members E on the scraping machine. The end member E is of sufficient length to form a stable base for the subgrade scraping machine on the rails A and is offset at its ends to give adjustment for height to the machine by bolting it with the other side down on the beam F with the bolts G, as shown in dot in Fig. 12. Further adjustment can be had by placing the end members E above or below the axle C.

A main beam member H is provided with a series of holes I which register with holes I' in said member F, so that the machine may be adjusted to different widths of road. Any adjusted position is maintained by bolting the members F and H together with the bolts J.

Blade holders K are secured to the beam members H and F by U bolts L. Such blade holders K may be adjusted to make any desired depth or contour in the mold. Scraper blades M as shown comprise double edged blade steel and are secured to the blade holders K by bolts N which pass through the center of the blades, so that the blades may be reversed and the opposite edge used.

The blade M is cut in short lengths to permit of variations in the contour or crown formed thereby. The blades, next to the side rails A, have their ends rolled forward as shown at M', to form a retainer for the earth being scraped ahead, such rolled end M' making a rounded surface that does not readily catch upon irregularities in the form A.

Draft members or draw bars V are attached to the frame H by the clevises W through any of the U bolts L. The forward ends of said draft members may be attached to a paving mixer or tractor in such a manner that when the paving mixer or tractor is moved forward over the subgrade between the side forms A, the subgrade scraping machine here described likewise would be moved along on said forms A and in working position.

As it is necessary for machines of this type to work underneath the distributing bucket of paving mixers, the beam H cannot be of any great height. Due to the length necessary to span a concrete road, said beam H will have appreciable vertical deflection if acted upon by a lifting force in the center; such deflection would raise the blades M out of the desired position.

It will be seen that the blade holder K is bent forward adjacent its lower end, best shown in Fig. 11. The corner of this bend in the holder K forms a heel to bear back against the beams F or H, and holds the lower edge of the blades M in the same forward relation to the beam as the holder K is moved up or down through the U bolts L.

As the blades M come in contact with the soil, they will bear upwardly bending or springing the beam up. This would throw the lower edge of the blade M out of the desired position, were it not for the fact that the pull forward, which increases when the earth is encountered, twists the beam as shown in the position in dot in Fig. 11. Due to the forward position of the blade, this twist will throw the blade down in relation to the beam as the beam springs up maintaining the same vertical position of the lower edge of the blade M to the rails A. The

greater amount of twist will occur in the center of the road where there will likewise be the greatest amount of upward bend in the beam. The amount of twist in the beam may be varied by varying the distance above the blade M at which the draw bars V pull, as illustrated in Fig. 5 and 6. Thus it will be seen that the amount of twist in the beam may be varied by moving the draw bars V up or down in relation to the blades M either by raising the beam and sliding the blade holders K down or by placing the clevises W in a higher or lower U bolt L, therefore, the amount of twist may be varied so as to equalize the spring in the beam.

The wheels B' support a beam O, which is illustrated as a wide flanged steel channel provided with holes at regular intervals through its top and bottom flange sections to receive pins P. Said pins P may be set to any desired height as they are threaded in their upper sections and are held in adjusted position by the nuts Q above and below the top flange of the beam O.

The lower end of each of the pins P is pointed and will be set so that it reaches a point just above the desired contour of the mold, so that in case the earth in the mold is high at any place, these points will scratch a mark on the high earth as they are moved forward on the wheels B' along the side rails A.

Arms R are securely fastened to the beam O by bolts S and are pivotally connected to the end member E by pins T in order that vertical movements of the scraper frame will not lift the wheels B' from the side rails A.

What is claimed as new is:

1. In a machine for preparing earth molds for concrete slabs and the like, the combination with a cutting and scraping element, of a marking element having an independent supporting means.

2. In a machine for preparing earth molds for concrete slabs and the like, the combination with a cutting and scraping element, of an independently supported element adapted to mark the earth cut and scraped by said cutting and scraping element when not reduced to the desired predetermined level.

3. The combination in a subgrade scraping machine having a beam, comprising a cutter and end portions whereby to form a single beam device adjustable in length, of a plurality of blade holders vertically adjustable upon said center beam and with their lower ends sloping forwardly, and blades on said holders.

4. In a machine of the class described, a beam, end supporting members movable upon forms, a blade supporting member upon said beam, and blades disposed on said member, said beam being distortable at its center in response to torsional strain, and said blades being angularly arranged on said supporting

member so that as an incident to such torsional strain upon said beam the transverse level of said blades is maintained.

5. In a subgrade scraping machine, a beam, end supporting members adapted to move upon forms, a blade supporting member adjustable vertically upon said beam, and blades disposed on said member, said beam at its center twisting as an incident to torsional strain, and said blades being angularly disposed upon said holders so that as an incident to such twisting of said beam their transverse level is maintained.

6. In a subgrade scraping machine adapted to run on guide rails, a beam supporting cutting blades in advance of its forward face, blades on said beam, means for pulling said beam forward, and means for varying the vertical distance between the blades and the pulling means.

7. In a subgrade scraping machine, a beam spanning the roadway, supporting members for said beam adapted to move upon forms, and blades angularly disposed in front of and vertically adjustable upon said beam while maintaining the same forward cutting edge position thereon.

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