Sept. 4, 1928. 1,683,382

E. G. CARR

CONCRETE ROAD MACHINE

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Fig. 1.

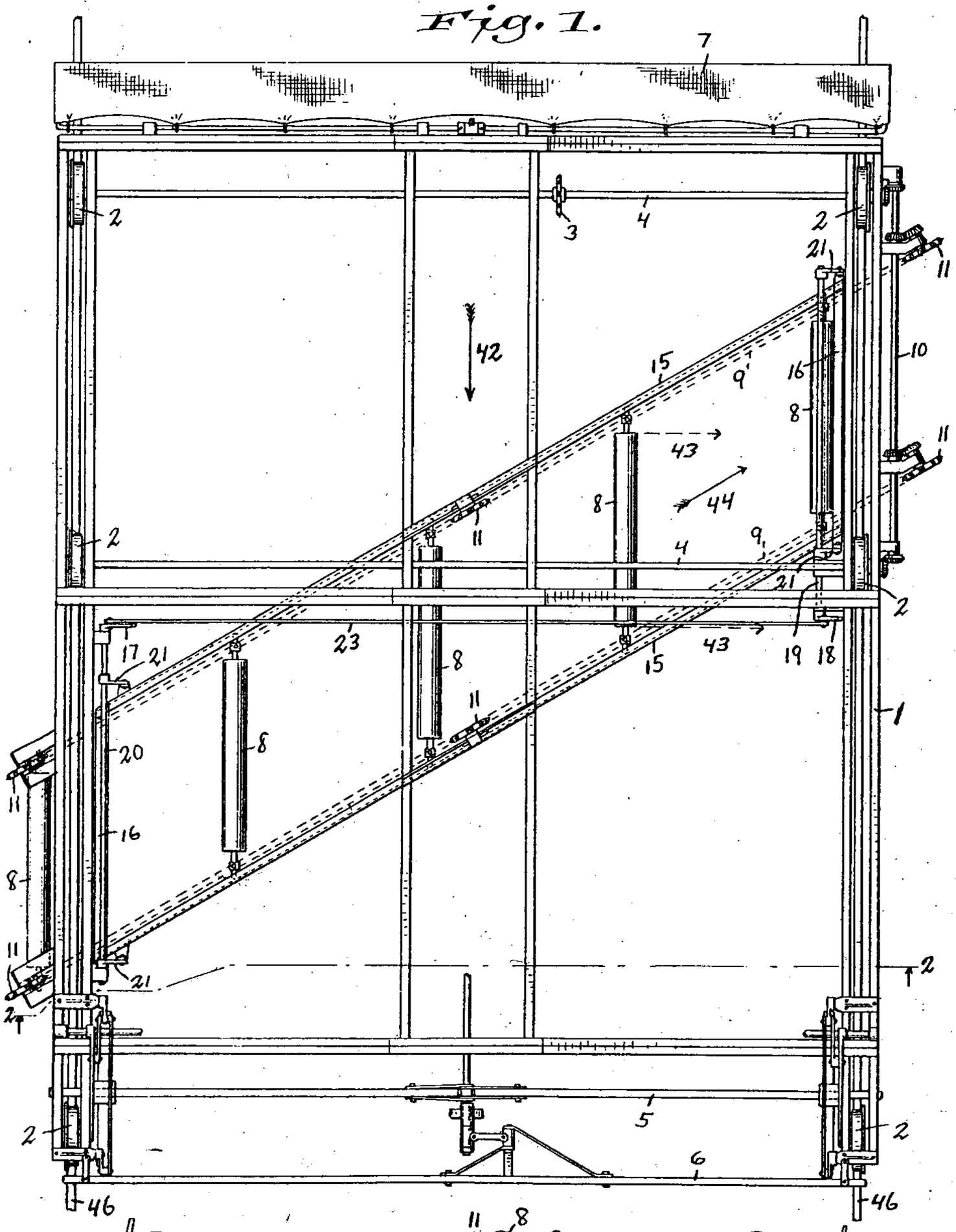

Fig. 2.

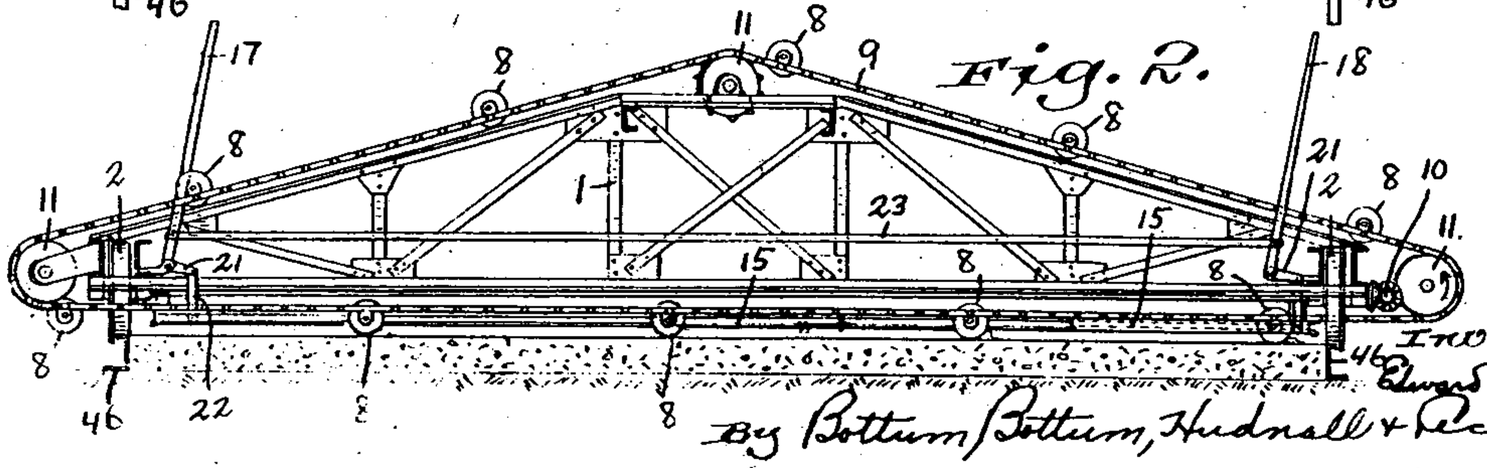

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Fig. 3.

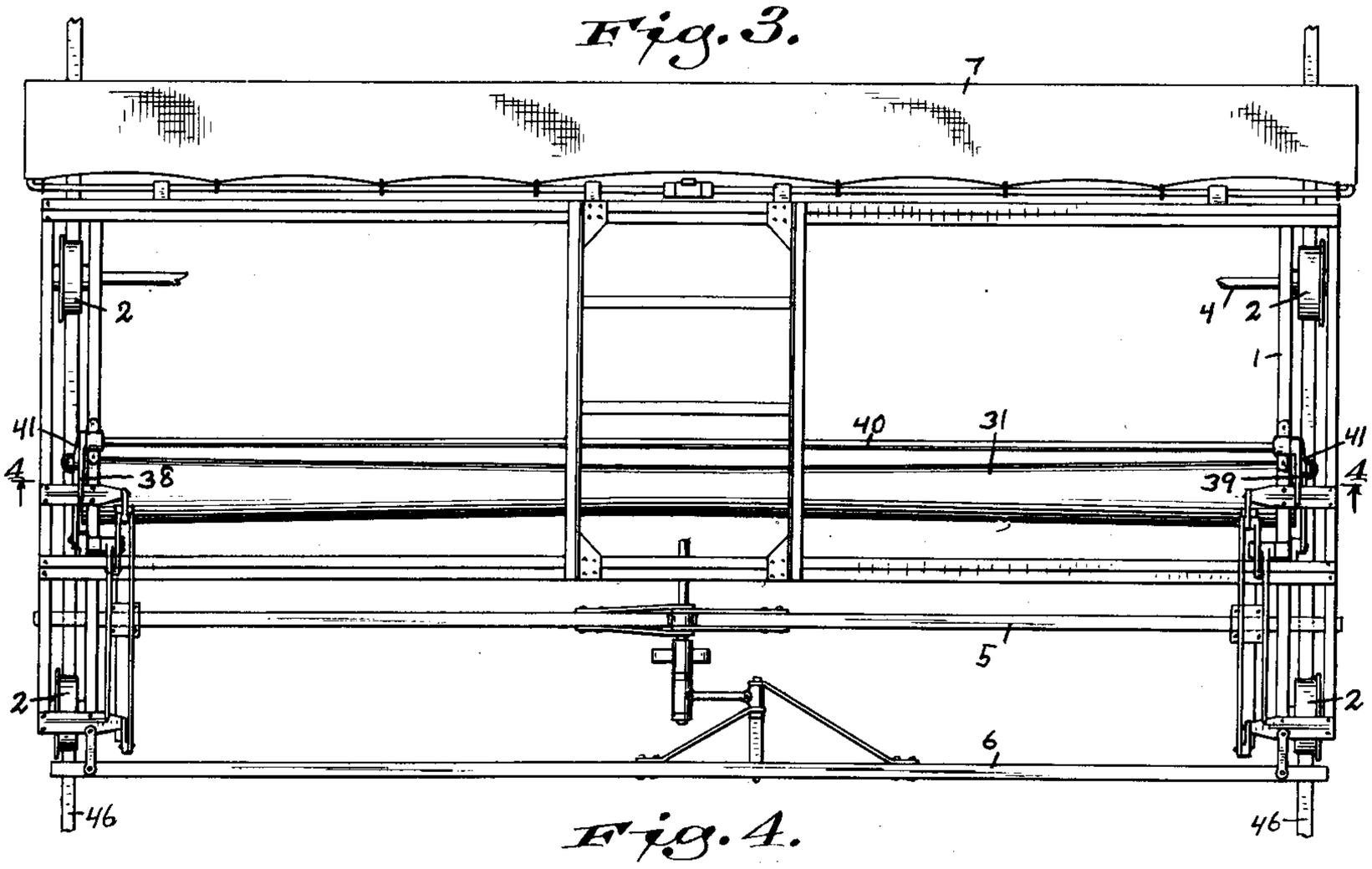


Fig. 4.

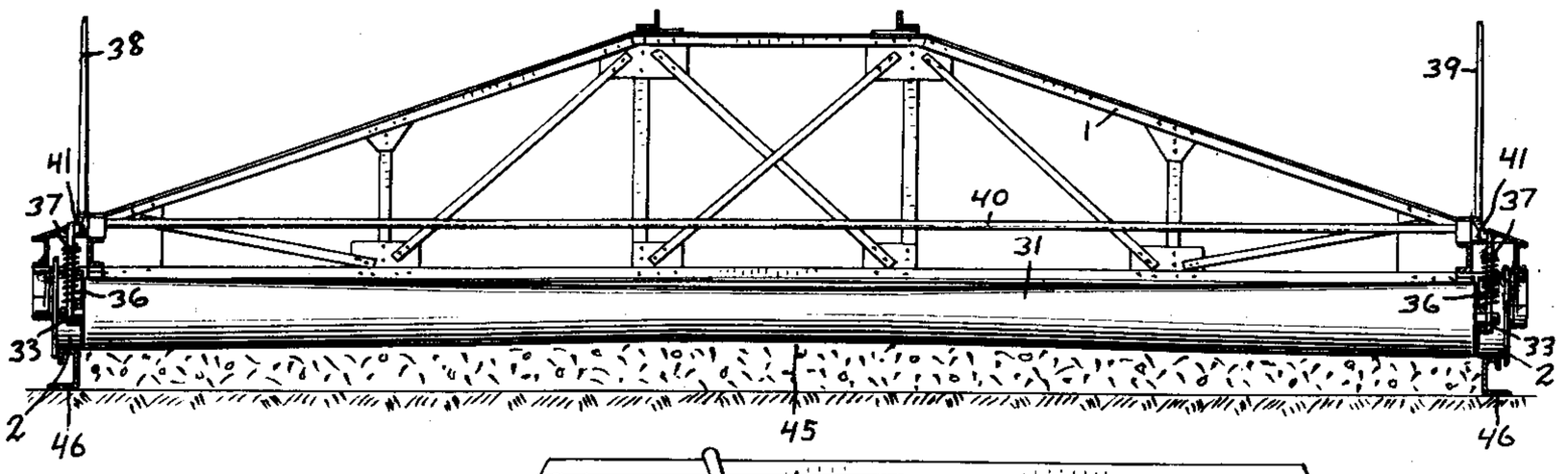
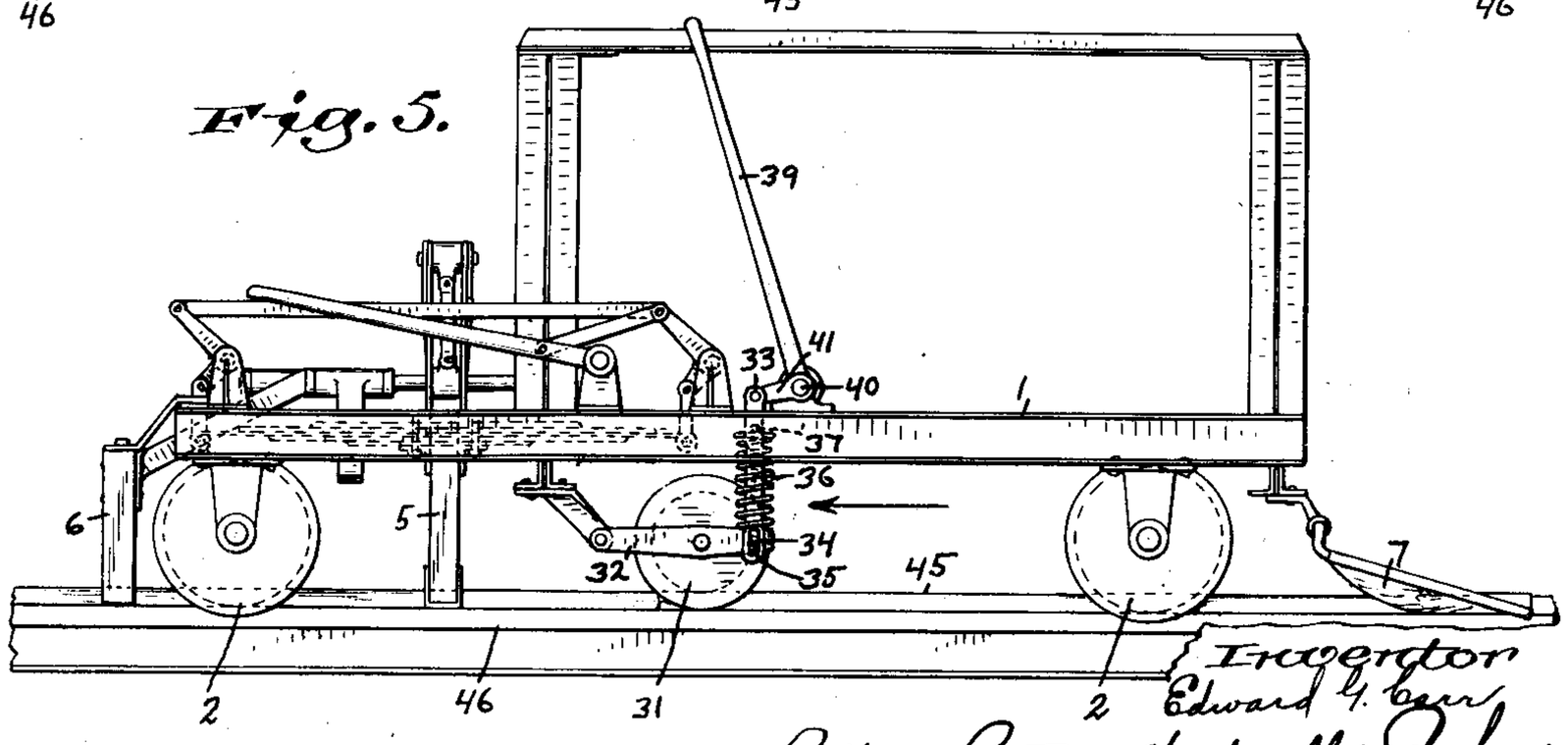


Fig. 5.



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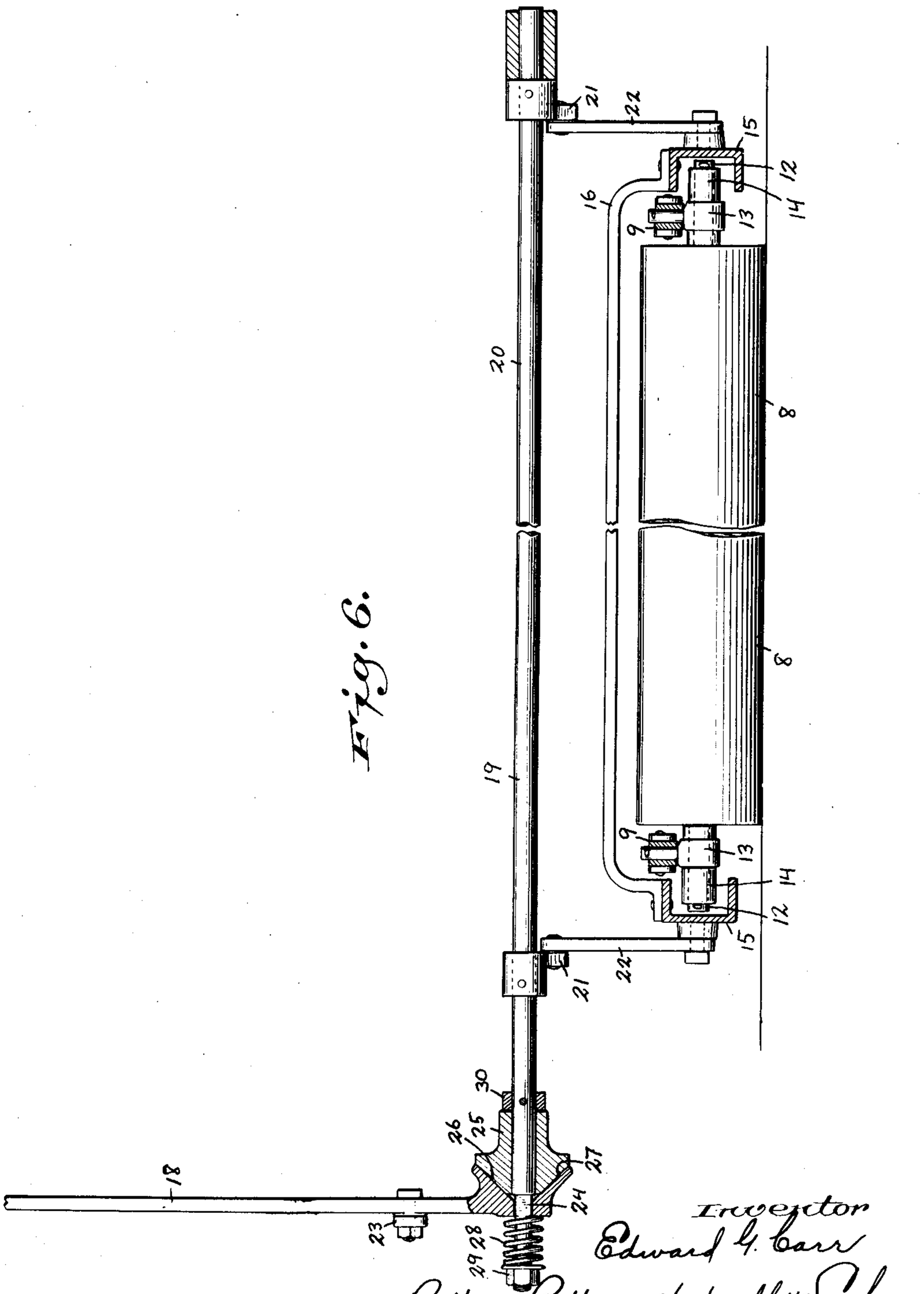

Fig. 6.

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UNITED STATES PATENT OFFICE.

EDWARD G. CARR, OF SHOREWOOD, WISCONSIN, ASSIGNOR TO THE LAKEWOOD ENGINEERING COMPANY, OF LAKEWOOD, OHIO, A CORPORATION OF OHIO.

CONCRETE-ROAD MACHINE.

Application filed November 20, 1919. Serial No. 339,306.

This invention relates to concrete road machines and the object of the invention is to improve the construction and operation of concrete road machines in the manner to be hereinafter described and claimed.

Referring to the drawings which accompany this specification and form a part hereof, which drawings illustrate an embodiment of this invention, and on which drawings the same reference characters are used to designate the same parts wherever they may appear in each of the several views, Fig. 1 is a plan view of the machine, all parts being omitted for the sake of simplicity of illustration which are not necessary to a complete description of this invention; Fig. 2 is a cross-section of the machine shown by Fig. 1, the section being taken on the line 2—2 on Fig. 1, looking in the direction indicated by the arrows; Fig. 3 is a plan view of the machine illustrating a different arrangement of some of the parts; Fig. 4 is a cross-section of the machine shown by Fig. 3, the section being taken on the line 4—4 on Fig. 3, looking in the direction indicated by the arrows; Fig. 5 is a side elevation of the machine shown by Figs. 3 and 4; and Fig. 6 is an elevation, on an enlarged scale, of parts of the machine shown by Figs. 1 and 2.

Referring to the drawings, the reference numeral 1 designates a frame which is supported by wheels 2. The frame 1 can be moved forward or back by a motor or engine, not shown, connected with a sprocket wheel 3 on a wheel axle 4. The motor or engine can also oscillate the tamper bar 5 vertically, the spreader 6 laterally and the float or finisher 7 laterally in the manner fully described in my pending application Serial Number 295,948, filed May 9, 1919.

The present invention relates more particularly to means for removing excess water from the surface of the concrete and smoothing the surface of the concrete mechanically, preferably prior to the final finishing action of the float or finisher 7, and without destroying the crown of a crowned road or other surface. For this purpose I provide a squeegee to remove surplus water and which will also act upon the soft concrete mortar to smooth it and, by carrying a small wave of concrete mortar before it from a high place or high places will fill a low place or places. I have illustrated the squeegee as a roller as such a form lends itself very conveniently to the purposes and operations which I accomplish. The amount of excess water and the consistency of the cement mortar will depend upon the "dryness" of the concrete, that is to say, upon the proportion of water used in mixing the concrete. A "dry" concrete will show comparatively little excess water and the concrete mortar will be "stiff." In laying a concrete road, for example, with a crown, the under surface of the tamper bar 5 will be shaped to correspond with the desired crown and this crown must be retained.

In the construction illustrated by Figs. 1 and 2 of the drawings, I employ a plurality of rollers or squeegees 8 attached to an endless chain or equivalent device 9 driven from a wheel axle 4 by a shaft 10 and gearing as clearly shown by Fig. 1 of the drawings. For convenience of construction, the endless chain 9 is composed of two separated parts at opposite ends of the rollers 8 and these parts pass over sprocket wheels 11. The squeegees or rollers 8 extend longitudinally of the direction of movement of the machine but the endless chain or chains 9 extend diagonally across the machine as clearly shown by Fig. 1 of the drawings. The machine has a definite traveling movement and the arrangement of the squeegees or rollers 8 is such that their movement is longitudinally of the road and trasnverse of the road, the ultimate effect of the resultant of the two motions being that the rollers roll from one side of the road to the other, rolling up over the crown and down the same as if they were moved directly across the road without longitudinal movement thereon. In this manner the rollers follow the shape or contour of the road without altering or changing the shape or contour of the road. The rollers are provided with journals 12 which are secured to the chains 9 by links 13 and the journals are also provided with antifriction rollers 14 which, on the lower run of the chain or chains, run in the channels of channel bars 15 which form part of a movable frame 16 which can be raised or lowered by operating either a handle 17 or a handle 18 which are located at opposite sides of the machine for the convenience of

the operator. Operating either handle rocks a shaft 19 and a shaft 20. Cranks 21 and links 22 connect the shafts 19 and 20 with the channel bars 15 of the frame 16. A link 23 connects the handles 17 and 18 so that the operation of one handle operates the other. One of the handles is connected with its shaft, as illustrated by Fig. 6 of the drawings, by being provided with a square hole which receives a squared part 24 of the shaft. The shaft bearing 25 has a conical part 26 which matches a reversely shaped conical part 27 on the handle and these conical parts are held in yieldable, frictional contact by a spring 28, the tension of which can be suitably adjusted by a nut 29. A collar 30, secured to the shaft, prevents endwise movement of the shaft by the spring 28.

The frame 16 and the channel bars 15 provide for lifting the squeegees or rollers 8 from the surface of the road, the endless chain or chains 9 being slack enough to permit of such lifting. They also provide for forcing the squeegees or rollers 8 against the road surface and the channel bars 15 should be curved to correspond with the crown of the road. By having the channels of the channel bars 15 of greater width than the diameters of the antifriction rollers 14, as clearly shown by Fig. 6 of the drawings, the rollers can run freely over the road without additional pressure.

In operating upon concrete which contains excessive water, I prefer to run the squeegees or rollers across the road to immediately dispose of the excess water, but where "dry" concrete is being operated upon and the water volume is small, a squeegee or roller extending transversely of the road can be employed as there will not be enough water collected in front of it to injure the road. I have illustrated such a construction in Figs. 3, 4 and 5 of the drawings where the reference numeral 31 designates a squeegee or roller arranged transversely of the machine and road and shaped to correspond with the crown of a road. The roller is journaled in links 32 which are pivotally supported from the frame of the machine so that they can swing up or down. These links are connected with other links 33 by lost motion connections shown as pins 34 on links 32 and slots 35 in links 33. Springs 36 bear against links 32 and stops 37 on links 33 to hold the pins 34 normally down to the lower ends of the slots 35 but will permit an upward movement of the roller 31 to pass an obstruction. The roller 31 can be lifted or forced down by handles 38 and 39 which can rock a shaft 40 which carries cranks 41 to which the links 33 are pivoted. One of these handles is connected with the shaft 40 by being provided with a squared hole which receives a squared part on the shaft and the construction for a yielding, frictional engagement is the same as illustrated by Fig. 6 and previously described.

The construction and operation of the machine will be readily understood from the foregoing description. When the machine illustrated by Figs. 1, 2 and 6 is moving in the direction indicated by the arrow 42 on Fig. 1, the squeegees or rollers 8 will move across the road or concrete transversely as indicated by the arrows 43, although their movement with respect to the frame of the machine will be diagonal as indicated by the arrow 44. A reversal of movement of the machine will reverse the direction of movement of the rollers 8.

The road shown by Figs. 4 and 5 is shown with a crown 45 while the road shown by Fig. 2 is not crowned, the purpose of the difference in the illustrations being to show the universal adaptability of this invention to any contour of surface.

By manipulating the handle 17 or the handle 18 the rollers 8 can be permitted to roll over the road freely, or under pressure, or they can be lifted from contact with the road, and the channel bars 15 and frame 16 are yieldingly held in any position of adjustment by the coacting, frictional conical parts 26 and 27 which will yield to prevent breakage or excessive strain if an obstacle be encountered which will tend to spring one or both channel bars 15 upward. With the construction illustrated by Figs. 1, 2 and 6, if the rollers 8, or one of them, should force the channel bars 15 and frame 16 up and rotate shafts 19 and 20 and move handles 17 and 18, one or the other of the handles would have to be manipulated to restore the parts to their original positions but the springs 36 in the construction illustrated by Figs. 3, 4 and 5 will restore the roller 31 to its original position after yielding to permit the roller to pass an obseruction.

The concrete is placed on the sub-grade between forms 46 and the machine proceeds along the forms, the spreader 6 spreading and evening the concrete, the tamper 5 consolidating the concrete mass, filling the interstices between the rocks with concrete mortar and bringing the excess water and concrete mortar to the surface, the squeegee, or squeegees, then squeegee off the excess water and smooth the top of the concrete, after which the float or finisher 7 gives a final finish to the top surface of the concrete.

What I claim is:

1. The combination in a concrete road machine of a frame, a squeegee arranged longitudinally of the frame, and means for moving the squeegee diagonally with respect to the frame so that the effective movement of the squeegee will be transversely of the road.

2. The combination in a concrete road

machine of a plurality of squeegees which extend longitudinally of the machine, means for moving the squeegees diagonally with respect to the direction of movement of the machine, and means to co-ordinate the movement of the squeegees laterally of the machine with the movement of the machine.

3. The combination in a concrete road machine of a frame, a squeegee, handles at opposite sides of the machine for lifting and lowering the squeegee, and friction means for holding the squeegee in yieldable, set position.

4. The combination in a concrete road machine of a laterally oscillatable spreader, a vertically oscillatable tamper, a squeegee, and a laterally oscillatable float or finisher.

5. The combination in a concrete road machine of a laterally oscillatable spreader, a vertically oscillatable tamper, a laterally oscillatable float or finisher, and a squeegee located between the float and the tamper and constructed to follow the transverse contour of the road.

6. In a concrete road machine, the combination with a frame, of a spreader to level concrete, a tamper to compact the concrete which has been leveled, a squeegee to remove water which has been brought to the surface of the concrete by the action of the tamper, and a flexible float or finisher for a final surfacing of the concrete.

In witness whereof I hereto affix my signature.

EDWARD G. CARR.