Dec. 18, 1934. E. S. CLARK ET AL 1,985,220

MACHINE FOR MAKING CURBS AND GUTTERS

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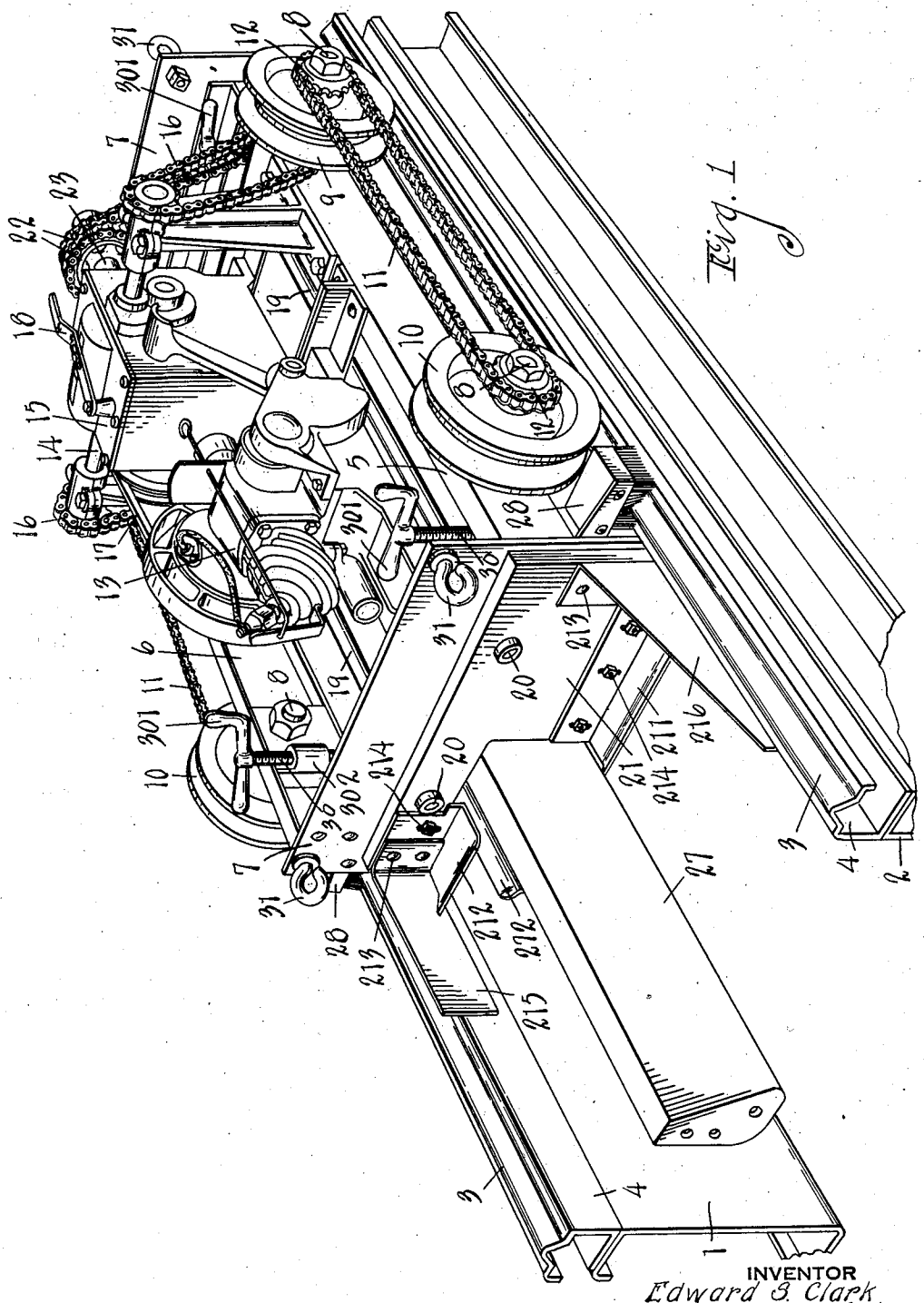

Fig. 1

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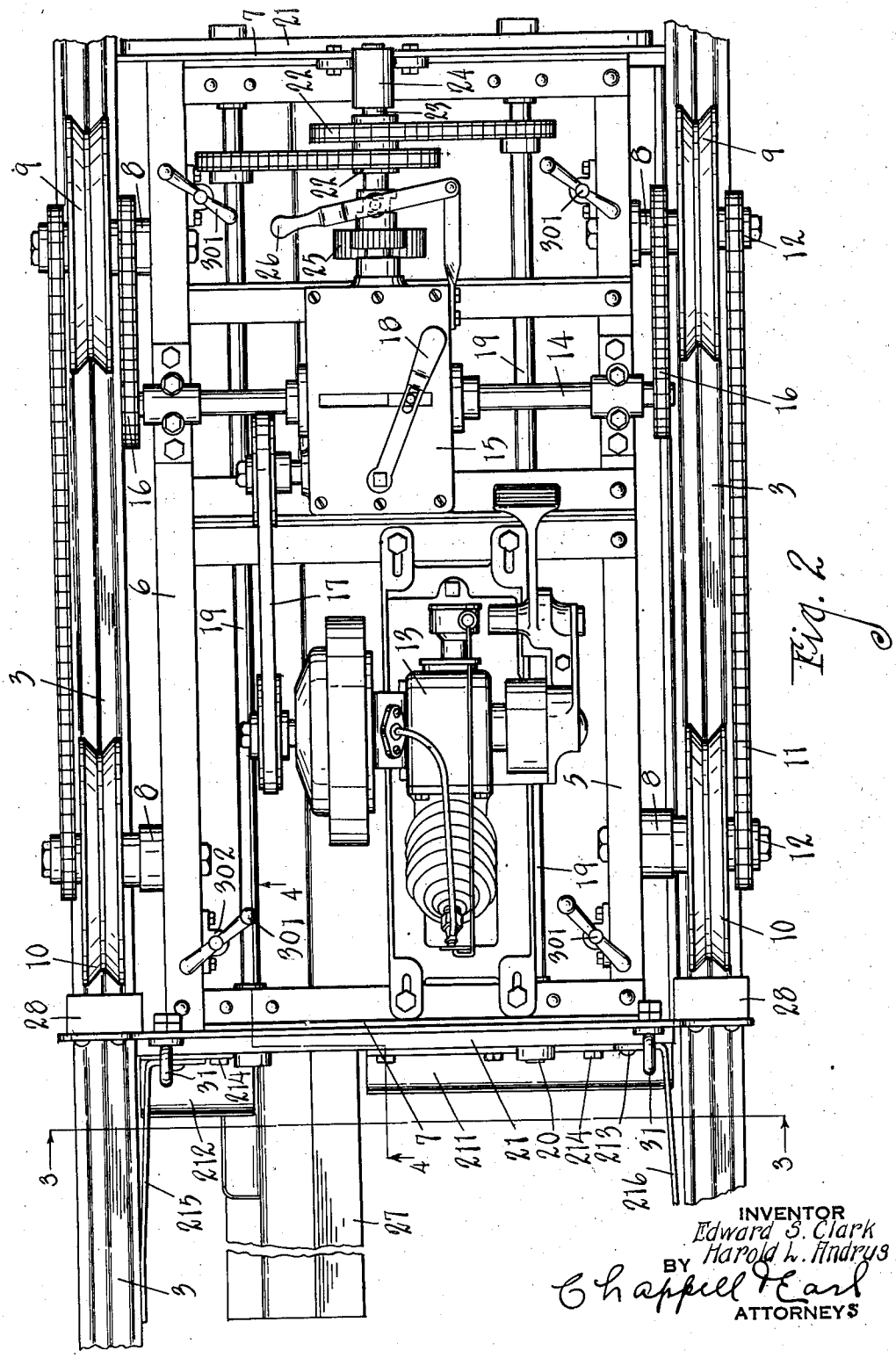

Fig. 2

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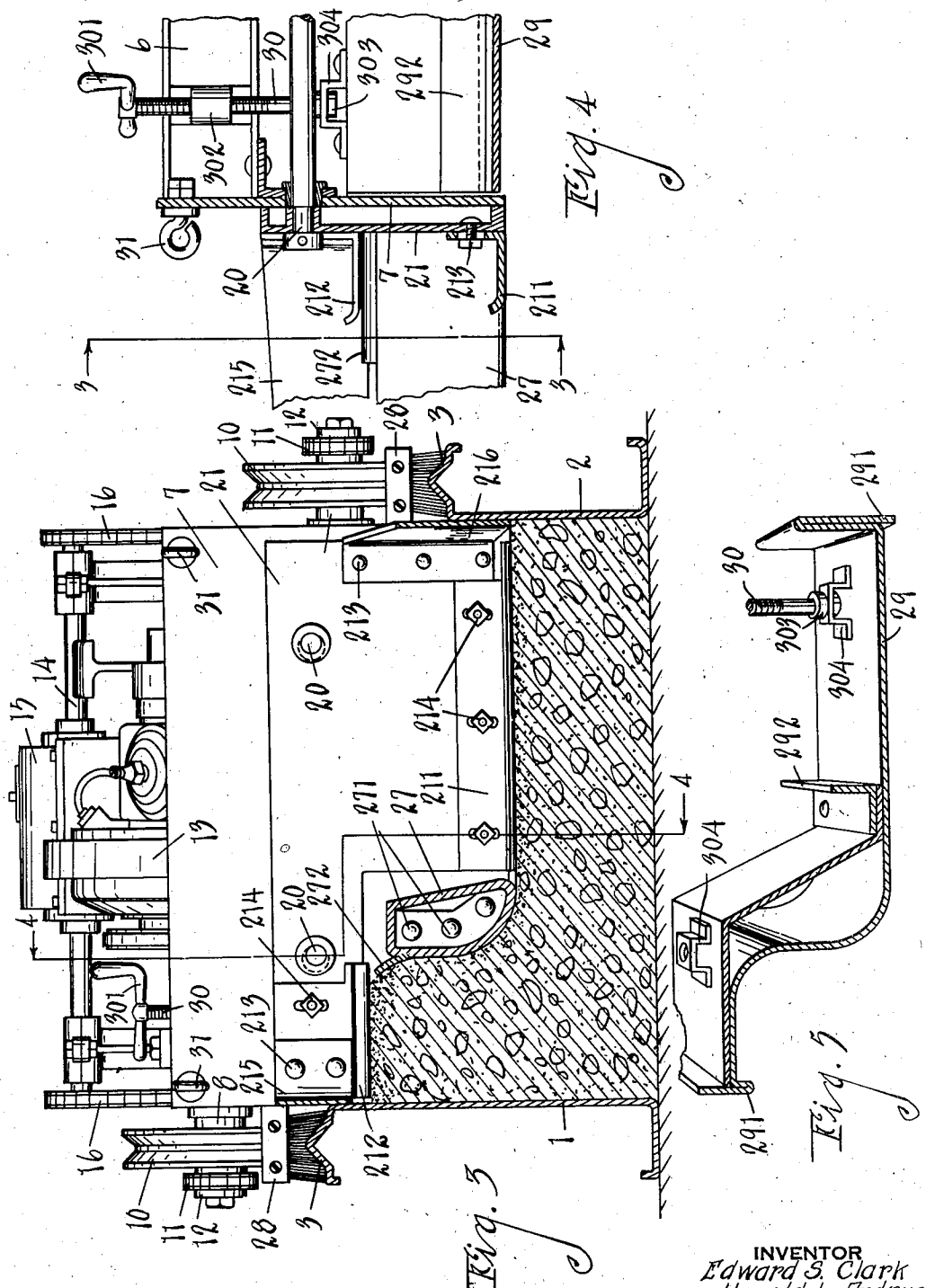

Fig. 4

Fig. 5

Fig. 5

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MACHINE FOR MAKING CURBS AND GUTTERS

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Application September 14, 1931, Serial No. 562,630

10 Claims. (Cl. 94—39)

This invention relates to an improved machine for making curbs and gutters.

The objects of the invention are:

First, to provide such a machine which is effective and rapid in operation.

Second, to provide in such a machine improved curb forming means.

Third, to provide in such a machine an improved strike-off means.

Fourth, to provide in such a machine means of preparing the surface of the curbs and gutters and finishing the same.

Fifth, to provide a machine which improves the density and surface of the body of concrete formed.

Further objects and objects pertaining to details and economies of construction and operation will appear from the description to follow. A preferred embodiment of our invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view of our improved machine as it appears supported on gutter and curb forms with integral tracks formed at the top.

Fig. 2 is a detail plan view of our machine on the tracks or ways, the tracks or ways and the gutter and curb forms and the curb former rail being in broken section.

Fig. 3 is a detail cross sectional view on a line corresponding to line 3—3 of Figs. 2 and 4.

Fig. 4 is a detail sectional view on the irregular line 4—4 of Figs. 2 and 3 showing details of one of the eccentric oscillators and of the adjusting support for the main smoothing trowel.

Fig. 5 is an enlarged detail view in perspective of the end of the trowel, showing the means of support, the end being shown in cross section.

The parts will be identified by their numerals of reference.

1 is the curb side form and 2 the gutter side form with A-shaped trackways 3 formed integrally on their upper edges. Special tracks 4, detachably secured to the forms 1 and 2, see Fig. 1, might be used. The main frame of the machine is made up of side rails 5 and 6 which are connected by cross end plates 7 conformed on their lower edges to the shape of a curb and gutter, and secured thereto by suitable means as by electric welding or rivets.

Stub axles 8 are secured to each end of each frame piece at each side. On these are the V-groove carrier wheels 9, 9, 10, 10. The wheels 9 and 10 at each side are connected by sprocket chain 11 on suitable sprocket wheels 12 on each wheel. The wheels are driven from a gasoline engine 13 which is connected to drive a jack shaft 14 through reversible, reduction transmission gear 15 of any usual or desired form by means of driving connection 17. The shaft 14 is connected by sprocket chains 16 to drive the wheels 9, 9 which are provided with sprocket wheels and chains on their inner sides. 18 is a shift lever provided to throw the propelling means into and out of gear.

Parallel shafts 19, 19 are journaled in the ends 7 and terminate in reduced eccentrics 20, see Fig. 4, which have a throw of three-sixteenths of an inch. Striker plates 21 are suspended by these eccentrics and play up and down upon and are guided by the end plates 7. Parallel shafts 19 are driven from sprocket wheels 22, 22 carried on driven shaft 23 that is carried in journal box 24 on one frame end. The clutch 25 with the usual shift lever 26 is provided to throw the striker plate operating means into and out of gear.

It will thus be seen that when the structure is connected and operated the striker plate is vibrated, preferably at the rate of about two hundred vibrations per minute. On the striker plate 21 are forwardly projecting adjustable shoes 211, 212 having upturned forward ends. These are held by bolts 213 and 214 extending forwardly through plate 21 through slots in said shoes. Secured to the striker plate at each end are guard plates 215 and 216 one on the gutter side and the other on the curb side. These are flexible and project forwardly and advance along the fresh concrete as it is delivered to be formed into the curb and gutter along the forms.

27 is a face rail adapted to form the face of the curb. It is secured by bolts 271 to the front plate 7 and extends forwardly in practice to a distance of about two feet and forms a recess on the curb side to receive the concrete that is to form the curb which projects above the gutter. The rail is adapted to be secured to either end of the machine.

A finishing blade 272 extends from the rear part of this rail underneath the end of the striker shoe 212. Usual track brushes 28 are provided to keep the track clear in front of these carrier wheels.

Within the body of the frame of the machine and suspended therefrom is the smoothing or finishing trowel 29 having downturned projecting edges 291 to separate the finished gutter from the forms. This is braced longitudinally by the rail 292. This trowel is suspended by screw bolts 30 near each corner provided with handles 301 and screw threaded through lugs 302 on the sides of

the frame. Grooved collars 303 are at the lower end and are engaged by brackets 304 carried near each corner of the said trowel. This enables the trowel to be accurately adjusted and in practice it is found that the front end should be slightly above the level of the concrete of the gutter and curb that is being formed and that the rear end should exert pressure. The same can be very nicely adjusted while it is in operation to secure the desired effect. Eyes 31 are provided at the outer corners of each end plate for the insertion of a bar to enable the workmen to handle the machine and assist in pushing it forward or withdrawing it when required.

We have described the various parts of our machine, and will now indicate their operation. Forms 1 and 2 being in place, provided with either the integral or detachable track, our improved machine is placed on the track and the engine is started. It is timed to drive the machine about four feet per minute. Concrete is dumped between the forms to the required amount and a supply, a little more than is needed, is kept constantly in front of the machine. Concrete is filled in back of the rail 27 as it advances, the same being worked down by proper manipulation of the shovel to give it the proper consistency. The machine then advances, the right amount of concrete being delivered in front of the same to secure the desired result. The striker plate, constantly vibrating, causes the entire machine to vibrate. This serves as a tamper to tamp the concrete, and also, by the friction and blows, brings the finer aggregate and cement to the surface along with moisture, making the same wet to a pasty condition and is substantially finished by the passage of the trowel over the same. The division plates are moved and the necessary brushing is done by hand as soon as the machine has passed.

The machine in ordinary use advances at the rate of about four feet a minute. By the use of the machine it will be noted that one side form for a gutter and one side form for the curb are all that is necessary. The rail 27 serves the purpose of the additional form and saves the expense of putting the same in place. Also it insures, as the machine advances, that an absolutely even gutter and curb are produced so far as the forms are straight and at the right elevation. This it has not been possible to accomplish by hand as there are sags which hold water whenever it rains.

By changing the forming rail to the opposite end of the machine its direction can be reversed by simply reversing the transmission, as both ends of the machine are made the same. This enables the machine to work up and down hill on either side of the street in either direction.

Further, by the use of this machine and on account of the vigorous tamping action, it is possible to use a drier mix than it is possible to use when making a gutter and curb by hand, and as a consequence the water content can be reduced and a stronger body produced.

The vibration of the tamper and of the machine agitates the entire body of concrete that is being formed and has the effect of bringing the finer aggregate, cement and water to the surface, which insures an effective smooth exterior to the entire body, similar to troweling, within the forms and a consolidation of the entire mass.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a machine of the class described, the combination of suitable tracks or ways, a carriage having supporting driven grooved wheels to advance the same, an adjustable trowel member suspended beneath the said carriage and adjustable at each corner, a curb face rail disposed longitudinally in front of said carriage, a guard carried by said rail extending beneath the tamper shoe, parallel shafts having eccentrics at their ends, striker plates supported by said eccentrics having forwardly projecting tamper shoe parts at the bottom and having flexible forwardly projecting guard plates at each side, and a motor for driving the said parts having gear connections to actuate the said striker plate and drive said carrier wheels independently.

2. In a machine of the class described, the combination of suitable tracks or ways, a carriage having supporting driven wheels to advance the same, an adjustable trowel member suspended beneath the said carriage, a curb face rail disposed longitudinally in front of said carriage, a guard carried by said rail extending beneath the tamper shoe, parallel shafts having eccentrics at their ends, striker plates supported by said eccentrics having forwardly projecting tamper shoe parts at the bottom and having flexible forwardly projecting guard plates at each side, and a motor for driving the said parts having gear connections to actuate the said striker plates and drive said carrier wheels.

3. In a machine of the class described, the combination of suitable tracks or ways, a carriage having supporting driven wheels to advance the same, an adjustable trowel member suspended beneath the said carriage, a curb face rail disposed longitudinally in front of said carriage, parallel shafts having eccentrics at their ends, striker plates supported by said eccentrics having forwardly projecting tamper shoe parts at the bottom and having flexible forwardly projecting guard plates at each side, and a motor for driving the said parts having gear connections to actuate the said striker plate and drive said carrier wheels.

4. In a machine of the class described, the combination of suitable tracks or ways, a carriage having supporting driven wheels to advance the same, an adjustable trowel member suspended beneath the said carriage, parallel shafts having eccentrics at their ends, striker plates supported by said eccentricts having forwardly projecting tamper shoe parts at the bottom and having flexible forwardly projecting guard plates at each side, and a motor for driving the said parts having gear connections to actuate the said striker plate and drive said carrier wheels.

5. In a machine for making concrete curbs and gutters, the combination of a carriage having suitable carrying and driving wheels to advance the same, an adjustable trowel member suspended beneath the carriage to finish the upper surface of the curb and gutter, a striker plate conformed to said curb and gutter carried at the forward end, eccentrics for supporting and vibrating the same, adjustable forwardly projecting tamper shoes carried by said striker plate, forwardly projecting flexible guard plates carried by each end of the said striker plate, a motor to drive the eccentrics to oscillate the striker plate rapidly, and a curb face rail carried by the said carriage disposed longitudinally in front of the machine to form the face of the curb.

6. In a machine for making concrete curbs and gutters, the combination of a carriage having suitable carrying and driving wheels to advance

the same, an adjustable trowel member suspended beneath the carriage to finish the upper surface of the curb and gutter, a striker plate conformed to said curb and gutter carried at the forward end, eccentrics for supporting and vibrating the same, forwardly projecting tamper shoes carried by said striker plate, forwardly projecting flexible guard plates carried by each end of the said striker plate, a motor to drive the eccentrics to oscillate the striker plate rapidly, and a curb face rail carried by the said carriage disposed longitudinally in front of the machine to form the face of the curb.

7. In a machine for making concrete curbs and gutters, the combination of a carriage having suitable carrying and driving wheels to advance the same, an adjustable trowel member suspended beneath the carriage to finish the upper surface of the curb and gutter, a striker plate conformed to said curb and gutter carried at the forward end, eccentrics for supporting and vibrating the same, forwardly projecting tamper shoes carried by said striker, plate, a motor to drive the eccentrics to oscillate the striker plate rapidly, and a curb face rail carried by the said carriage disposed longitudinally in front of the machine to form the face of the curb.

8. In a machine for making concrete curbs and gutters, the combination of a carriage having suitable carrying and driving wheels to advance the same, an adjustable trowel member suspended beneath the carriage to finish the upper surface of the curb and gutter, a striker plate conformed to said curb and gutter carried at the forward end, eccentrics for supporting and vibrating the same, forwardly projecting flexible guard plates carried by each end of the said striker plate, a motor to drive the eccentrics to oscillate the striker plate rapidly, and a curb face rail carried by the said carriage disposed longitudinally in front of the machine to form the face of the curb.

9. In a machine for making concrete curbs and gutters, the combination of a carriage having suitable carrying and driving wheels to advance the same, an adjustable trowel member suspended beneath the carriage to finish the upper surface of the curb and gutter, a striker plate conformed to said curb and gutter carried at the forward end, eccentrics for supporting and vibrating the same, a motor to drive the eccentrics to oscillate the striker plate rapidly, and a curb face rail carried by the said carriage disposed longitudinally in front of the machine to form the face of the curb.

10. In a machine for making concrete curbs and gutters, the combination of a carriage having suitable carrying and driving wheels to advance the same, a trowel member suspended beneath the carriage to finish the upper surface of the curb and gutter, a striker plate conformed to said curb and gutter carried at the forward end, eccentrics for supporting and vibrating the same, a motor to drive the eccentrics to oscillate the striker plate rapidly, and a curb face rail carried by the said carriage disposed longitudinally in front of the machine to form the face of the curb.

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