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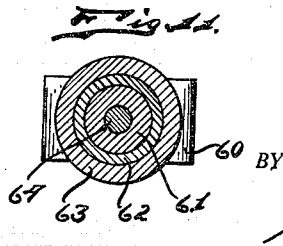
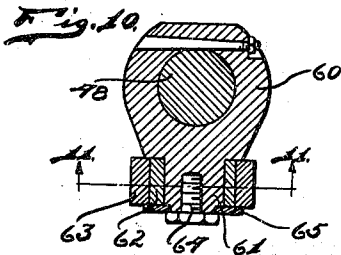
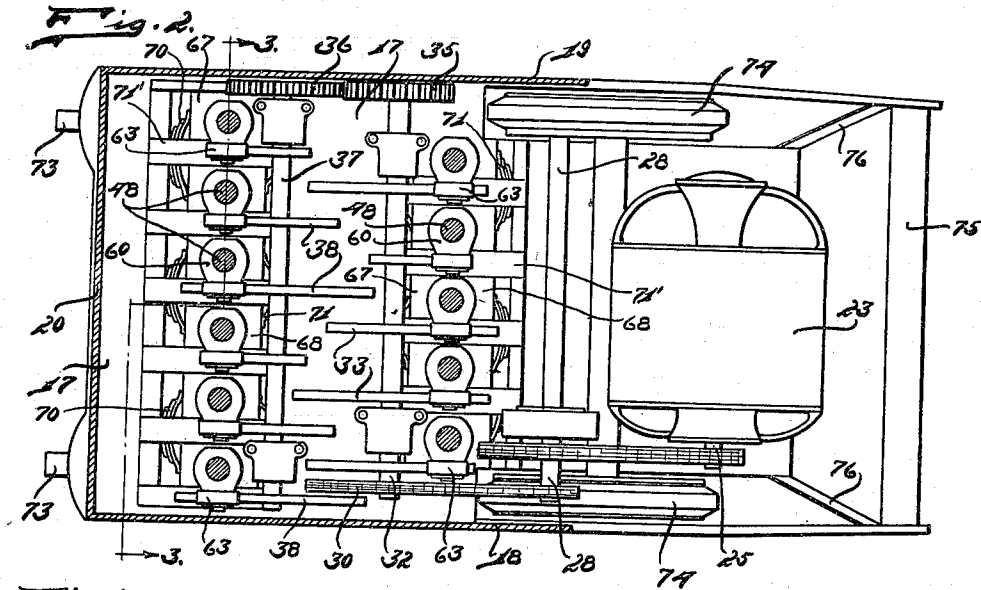
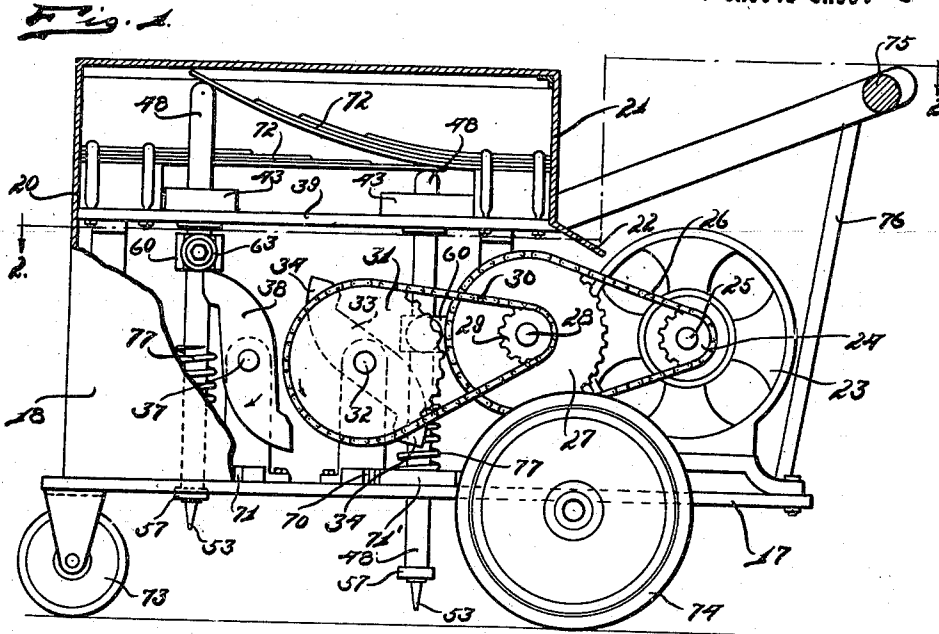
F. E. JOHNSTON ET AL

1,745,100

ROUGHENING MACHINE

Filed Oct. 25, 1928

2 Sheets-Sheet 1



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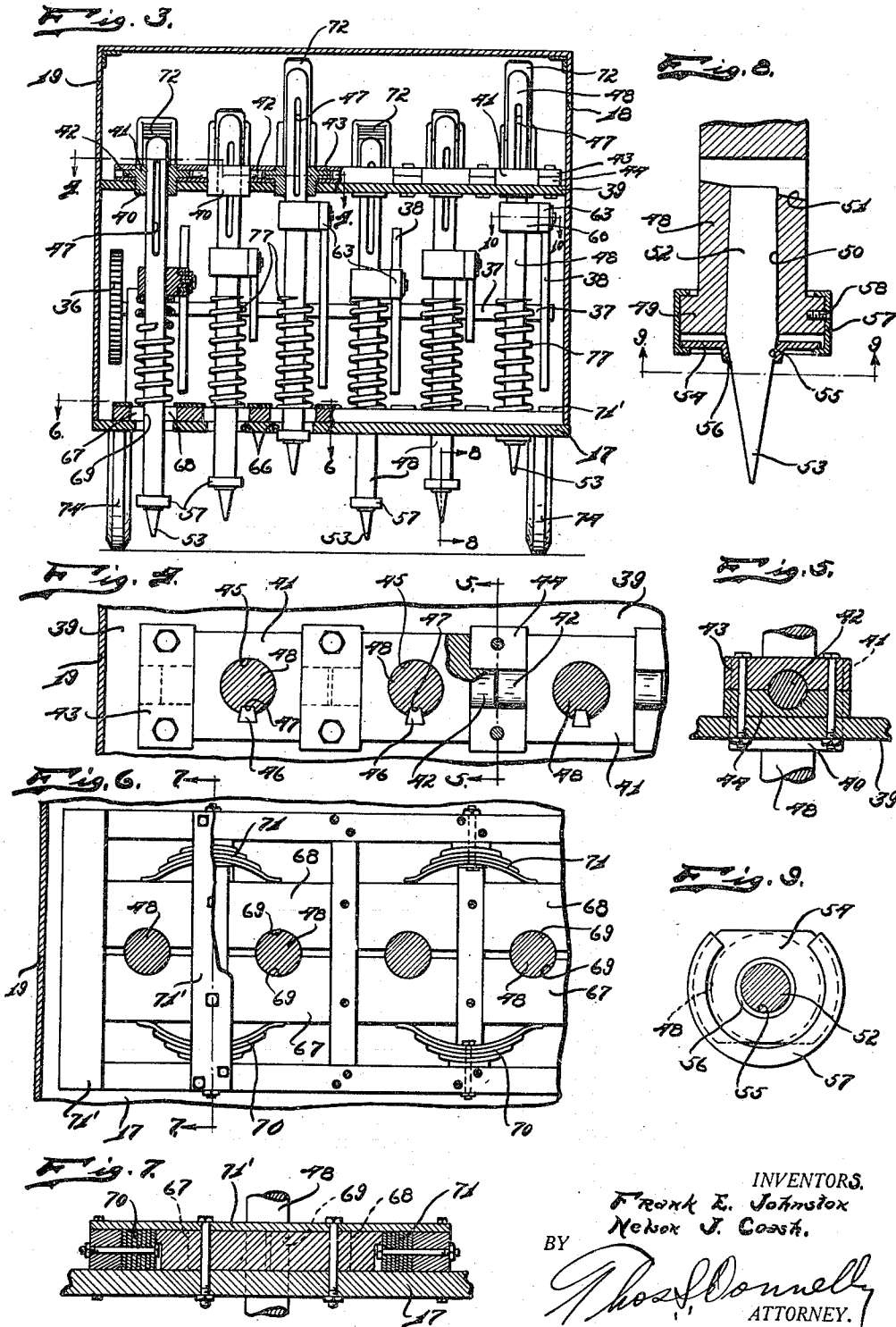
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ROUGHENING MACHINE

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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

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ROUGHENING MACHINE

Application filed October 25, 1928. Serial No. 314,931.

Our invention relates to a new and useful improvement in a roughening machine adapted for use in roughening the surface of concrete structures and the removal of the laitance therefrom, preparatory to applying the cement finish.

It is an object of the present invention to provide a machine of this class which will be simple in structure, economical of manufacture and highly efficient in use.

Another object of the invention is the provision of a machine of this class having a plurality of contact members in spaced relation and operable in unison at the same time.

It is another object of the invention to provide a machine of this class whereby a large area of the concrete surface may be operated upon at the same time by a single operator.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawings, which form a part of this specification, and in which,

Fig. 1 is a side elevational view of the invention with parts broken away and parts shown in section.

Fig. 2 is a view taken on line 2—2 of Fig. 1.

Fig. 3 is a view taken on line 3—3 of Fig. 2.

Fig. 4 is a view taken on line 4—4 of Fig. 3.

Fig. 5 is a view taken on line 5—5 of Fig. 4.

Fig. 6 is a view taken on line 6—6 of Fig. 3.

Fig. 7 is a fragmentary sectional view taken on line 7—7 of Fig. 6.

Fig. 8 is an enlarged fragmentary sectional view taken on line 8—8 of Fig. 3.

Fig. 9 is a view taken on line 9—9 of Fig. 8.

Fig. 10 is an enlarged sectional view taken on line 10—10 of Fig. 3.

Fig. 11 is a view taken on line 11—11 of Fig. 10.

It has been experienced that in the formation of concrete structures and particularly concrete slabs which are positioned in a horizontal plane, that after the concrete structure has been poured, the excessive water arising to the surface, will carry with it the

impurities which are in the structure, forming on the top of the slab a layer of dross or laitance. This layer of laitance is of such a structure as to easily chip and crack and is such that the surfacing layer mixture, which is generally composed of a higher cement content, and which is poured thereon, will not cling thereto. In order to remove this layer of laitance and bring the surface into a condition so that the finishing layer poured thereon may securely cling thereto, we have provided the roughening machine which serves to give to the surface, the desired characteristic, as well as remove the layer of laitance.

In the invention we have provided a structure having a base 17, side walls 18 and 19, a rear wall 20 and a front wall 21, this front wall 21 being shorter than the rear wall 20 and angularly turned as at 22. Mounted on a forward extension of the base 17 is an electric motor 23 having a gear 24 fixedly mounted on its shaft 25. A chain belt 26 passes around the gear 24 and serves to connect it to the gear 27, which is mounted on the shaft 28. Fixedly mounted on the shaft 28 and rotatable therewith upon rotation of said gear 27, is a gear 29, which is connected by means of the chain belt 30 to the gear 31, which is fixedly mounted upon the shaft 32. Fixedly mounted on the shaft 32 are a plurality of cam arms 33 having the ends 34 angularly turned in opposite directions. Fixedly mounted on the shaft 32 is a gear 35, meshing with a gear 36, which is fixedly mounted on the shaft 37. Fixedly mounted on the shaft 37 are a plurality of cam arms 38, similar in structure to the cam arms 33. As shown in Fig. 2 the cam arms on each of the shafts are in staggered relation.

Extending between the side and end walls is a partition or bed 39 having a plurality of openings formed therein, in which engage extensions or necks 40 in blocks 41. Each of these blocks is provided with a pair of trunnions 42 on opposite sides thereof engaging between blocks 43 and 44, which are secured to the bed 39. Provided in each of the blocks 41 is a cylindrical opening 45 into which projects a key 46 extending into the axial groove

47 formed in the periphery of the hammer shank 48. Each of these hammer shanks is provided on its lower end, with a flange 49 and with a tapered socket 50 which communicates with the wedge shaped opening 51. Engaging in the sockets 50, is a tapered shank 52 having the contact point 53 formed thereon. A suitable wedge may be driven into the opening 51 for effecting removal of the contact shank 52 from the socket 50. A disc 54 is provided with an opening 55 which is tapered to fit the taper of the contact point 53, a flange 56 projecting outwardly from one face of the disc 54 around the opening 55. A collar 57 engages one surface of the flange 49 and also the disc 54 and serves to retain the disc 54 in position so as to prevent the contact shank 52 from unduly being removed from the socket 50, a set screw 58 serving to retain the locking member 57 in position.

Fixedly mounted on each of the hammer shanks 48, intermediate the ends thereof, is a collar 60 having a neck 61 projected from one side thereof. Mounted on this neck 61 is a bushing 62 on which is positioned a roller 63; a set screw 64 and a washer 65 securing these parts in position. Each of these hammer shanks is projected through an opening 66 formed in the base 17 and also between spaced blocks 67 and 68, each of which is provided with a semi-cylindrical recess 69. Leaf springs 70 and 71 secured at opposite sides of the housing, serve to press these blocks 67 and 68 into engagement with the hammer shanks 48 and serve as bearings therefor. Bars 71' overlap the edges of the blocks 67 and 68 and serve to retain the same in engagement with the base 17.

In operation, when the cam shafts 32 and 37 are set into rotation, the cam arms will engage the rollers 63 and serve to move the hammer shanks 48 upwardly against the tension of the leaf springs 72, which engage the upper ends thereof, the key 46 riding in the groove 47 during this movement. After the cam arms ride off of the rollers 63, the hammer shank will be violently driven downwardly by the tension of the leaf spring 72, so as to deliver a blow to the cement surface, with which contact the traction wheels 73 and 74, which serve to support the structure. A handle 75 braced by the brace 76 serves as a means for pushing the device over the surface to be treated. Positioned about each of the hammer shanks 48, adjacent the lower end, is a coil spring 77 which serves as a shock absorber, as the hammer shanks 48 are driven downwardly by the tension of the spring 72.

Inasmuch as the device resembles a vehicle being propelled over the surface to be treated, when in motion it is necessary that angular movement of the hammer shanks be provided for. To this end the blocks 41, which serve as bearings, are rockingly mounted on the trunnions 22. Similarly, because

the blocks 68 and 67 are loosely positioned and spring held by the spring 70 in engagement with the hammer shanks 48, angular movement may be permitted within certain degrees sufficient to compensate for the horizontal movement of the hammer shanks, when, upon their vertical movement, they come violently into contact with the surface treated.

With a machine constructed in this manner, a rapid roughening of a surface may be effected with a minimum amount of labor.

While we have illustrated and described the preferred form of our invention, we do not wish to limit ourselves to the precise details of structure shown but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

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

1. A device of the class described comprising: a base; a plurality of contact members extending vertically to said base and tiltable relatively thereto; means for moving said contact members vertically upwardly; and resilient means for moving said contact members vertically downwardly upon disengagement of said raising means.

2. A machine of the class described comprising: a base; a plurality of contact members reciprocally mounted on said base and tiltable relatively thereto within predetermined limits; a plurality of cam members; means for rotating said cam members; means on said contact members for engaging said cam members, the rotation of said cam members while in engagement with said means effecting vertical movement of said contact members; and resilient means for moving said contact members downwardly into engagement with the surface over which propelled upon disengagement of said contact members.

3. A machine of the class described comprising: a base; a plurality of contact members reciprocally mounted on said base and tiltable relatively thereto within predetermined limits; a plurality of cam members; means for rotating said cam members, the rotation of said cam members while in engagement with said means effecting vertical movement of said contact members; resilient means for moving said contact members downwardly into engagement with the surface over which propelled upon disengagement of said contact members; and resilient means for resisting downward movement of said contact members beyond a predetermined distance.

4. A machine of the class described comprising: a supporting body; a plurality of contact members on said supporting member tiltable relatively thereto and vertically mov-

able relatively thereto; means for moving said contact members positively in one direction; resilient means for moving said contact members in the opposite direction upon movement of said first named moving means to inoperative relation to said contact members.

5 5. A machine of the class described comprising: a supporting body; a plurality of contact members on said supporting member
10 tiltable relatively thereto and vertically movable relatively thereto; means for moving said contact members positively in one direction; resilient means for moving said contact members in the opposite direction upon
15 movement of said first named moving means to inoperative relation to said contact members; and yieldable means for resisting movement of said contact members by said resilient means beyond a predetermined distance.
20 In testimony whereof we have signed the foregoing specification.

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