

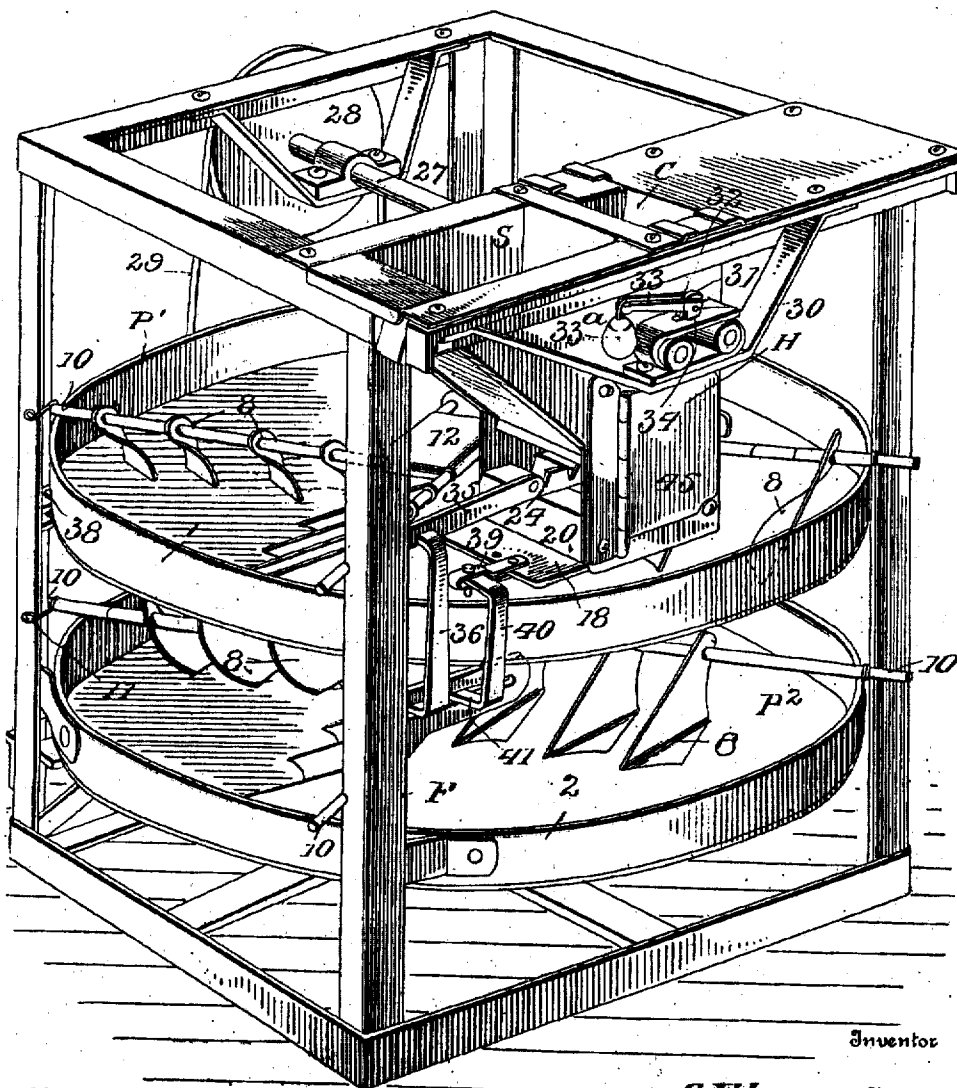
C. F. LANCASTER.
CONCRETE MIXING MACHINE.
APPLICATION FILED FEB. 11, 1909.

953,961.

Patented Apr. 5, 1910.

5 SHEETS—SHEET 1.

Fig. 1.



Inventor

C. F. Lancaster

Witnesses

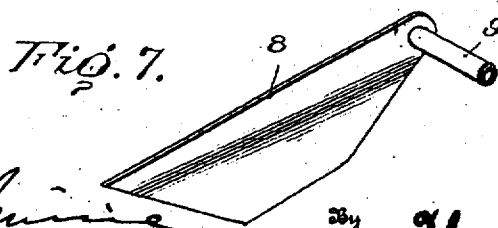
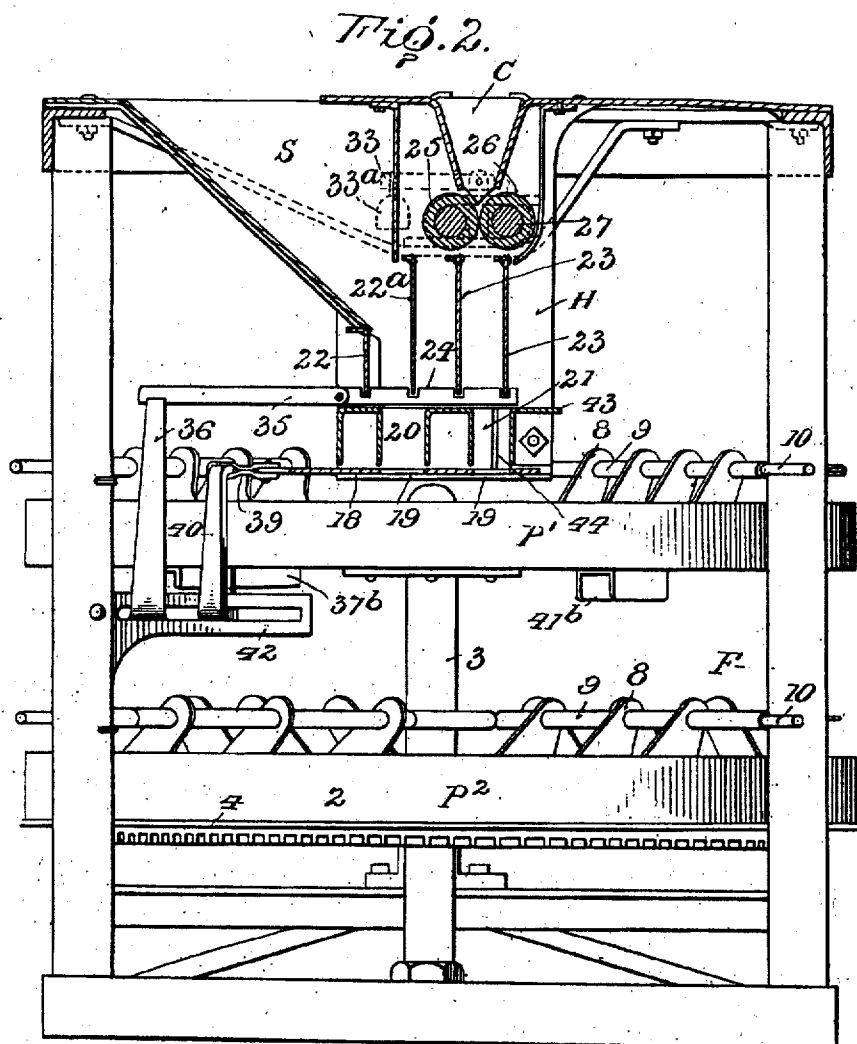
J. H. Miller
W. J. H. H. H. H. H.

364

W. H. H. H. H. Attorneys.

953,961.

6 SHEETS—SHEET 2.



Inventor

C. F. Lancaster

Witnesses

In June

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John Macy,

Attorney:

C. F. LANCASTER.
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6 SHEETS—SHEET 3.

Fig. 3.

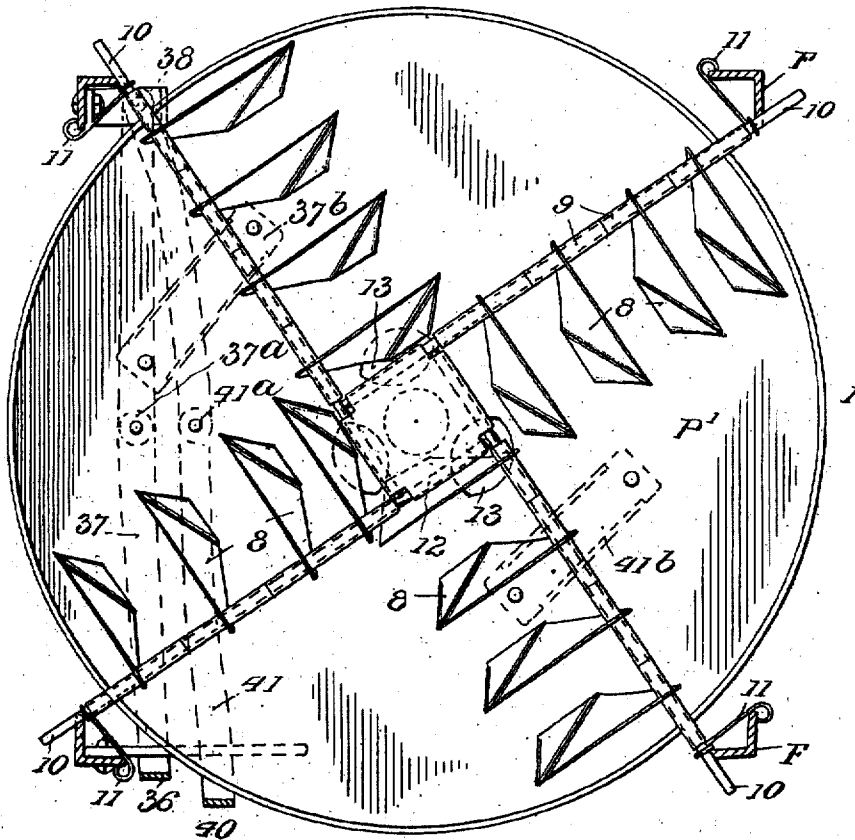
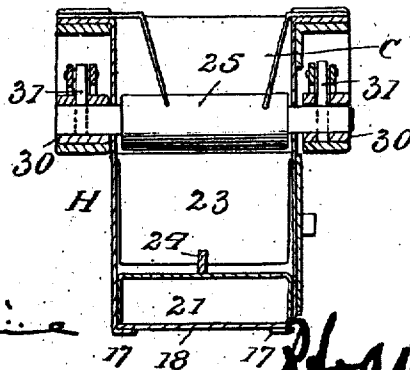


Fig. 6.



Inventor

C. F. Lancaster

Witnesses

W. H. Woodman
W. H. Woodman

W. H. Woodman, Attorney

Patented Apr. 5, 1910.
5 SHEETS—SHEET 4.

The drawing consists of two parts: a top view (plan) and a side view (elevation).

Top View (Plan): This view shows a circular dial with a central pivot point. The dial is divided into several segments, some of which are labeled with numbers (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 8

Wm. H. Macy, Attorney

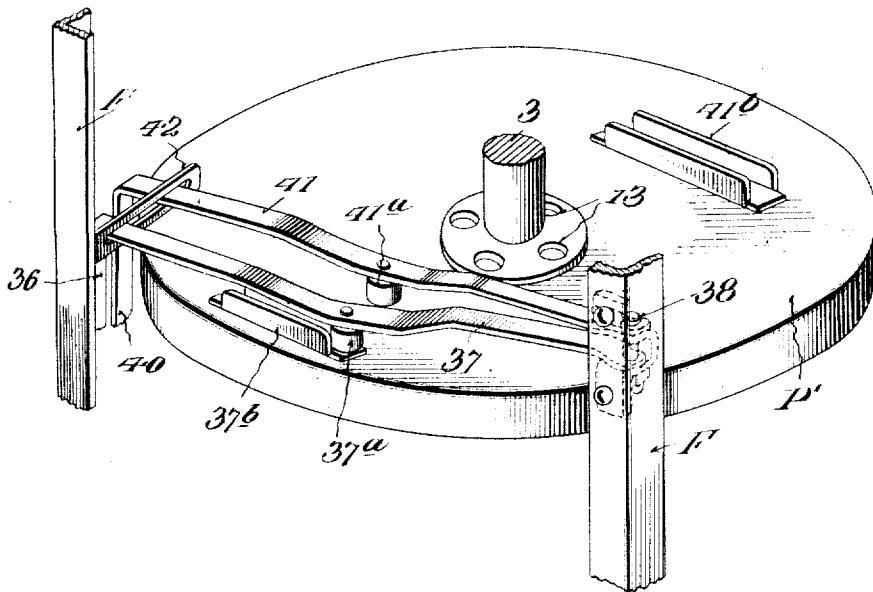
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5 SHEETS—SHEET 5.

Fig. 8.



Inventor

C. F. Lancaster

Witnesses

W. A. Woodman

J. M. Hallin

By

H. A. Macay, Attorneys.

UNITED STATES PATENT OFFICE

CHARLES F. LANCASTER, OF PETOSKEY, MICHIGAN.

CONCRETE-MIXING MACHINE.

953,961.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed February 11, 1909. Serial No. 477,312.

To all whom it may concern:

Be it known that I, CHARLES F. LANCASTER, citizen of the United States, residing at Petoskey, in the county of Emmet and State of Michigan, have invented certain new and useful Improvements in Concrete-Mixing Machines, of which the following is a specification.

This invention comprehends certain new and useful improvements in concrete mixing machines of the continuous type, and the invention has for one of its objects improved mixing devices which are effective in commingling the ingredients, such as sand and cement after they have been fed thereto. And a further object of the invention is an improved feeding mechanism arranged to deliver to the mixing devices the ingredients in uniform proportions so as to always insure a proper mixture.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:—

Figure 1 is a perspective view of a concrete mixing machine embodying the principles of my invention. Fig. 2 is an elevation thereof, parts being shown in section. Fig. 3 is a horizontal section, the section being taken on a plane just above the upper mixing pan. Fig. 4 is a similar view, being taken on a plane just above the lower mixing pan. Fig. 5 is a vertical longitudinal section of the lower portion of the machine. Fig. 6 is a transverse sectional view through the hopper mechanism, and Fig. 7 is a detail perspective view of one of the mixing blades. Fig. 8 is a fragmentary perspective view showing the under side of the upper mixing pan, the cams mounted thereon and the levers for actuating the mixing devices.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings, F designates the machine framework which may be of any desired size, construction or design. Within this framework are mounted, one above the other, a plurality of rotatable pans,

two being illustrated in the present instance, designated P¹ and P², respectively. The upper pan P¹ is formed with an integral upstanding rim 1, and the lower pan P² is provided with a stationary rim 2 secured by any desired means to the standards or posts of the framework F. The pans are secured to a vertically disposed shaft 3 which is mounted in any desired way at the center of the framework. The bottom of the lower pan P² has a crown wheel or toothed ring 4 secured to it, the teeth of said ring meshing with a spur pinion 5 mounted upon a drive-shaft 6. The shaft 6 may be driven in any desired way from any suitable source of power and preferably carries a grooved pulley 7.

Mixing blades 8 are mounted to operate in the respective pans P¹ and P², the said blades being arranged in a plurality of substantially radially extending series, as shown, all the blades slanting in a direction against the direction of the rotation of the pans. The blades for the upper pan are twisted laterally toward the center of the pan, and the plane of the blade is therefore laterally inclined to the support 10. The lower edges of the blades are inclined rearwardly so as to contact with the bottom of the pan and act as plows to churn and direct the material inwardly toward the center of the pan. The blades for the lower pan are twisted oppositely to the blades for the upper pan, but are otherwise arranged in the same manner so as to act as plows extending in the direction opposite to that of the direction of movement of the lower table or pan. This is clearly illustrated in Figs. 3 and 4, one of the blades alone being shown in Fig. 7.

These blades 8 may be formed with laterally extending sleeves 9 by which they are mounted to freely swing upon supporting rods 10. These rods may be secured in any desired way, as by hangers 11 connected to them at their outer ends and to the posts or standards of the framework and may be supported at their inner ends by center plates 12, the center plate for the lower set of rods being formed with an opening to accommodate the shaft 3. The upper pan P¹ is formed near its center with one or more openings 13 through which the material being mixed may drop off to the lower pan. One or more of the blades for the lower pan, as that designated 8^a may be wider than the rest and formed with an angular upwardly

extending inner edge constituting a deflecting guard blade 14 arranged close to the shaft for the purpose of scraping such material as may lie close to the axis of the lower pan, and forcing this material upward on the pan so as to be engaged by the other blades. This guard blade prevents material from piling up around the central axis.

The rim 2 which constitutes the rim of the lower pan P² is provided with a discharge gate 15 pivotally connected thereto and arranged to be swung inwardly so as to cut off a portion of the material on the rotating pan bottom from the remainder so that the thoroughly mixed materials may be discharged in a continuous stream into suitable receptacles or molds. The discharge gate 15 may be provided with any desired construction of latch 16 to hold it in open and closed position.

The feeding devices comprise a hopper casing H, the side walls of which are formed with inturned lower edges 17 constituting guide rails for a cut-off 13 which is mounted to slide across the bottom of the hopper casing and which in the present instance is in the form of a plate, as shown, the said cut-off being formed with openings 19 designed to register with the open bottoms or measuring boxes 20 and 21, said boxes being spaced from each other as shown. A series of depending plates 22 and 22^a, 23 and 23^a are pivotally swung from their upper edges between the side walls of the hopper casing H, said plates being held in proper spaced relation to each other at their lower ends by means of a notched spacer-bar 24, which is secured to the plates at the lower edges thereof.

S designates the sand hopper and C the cement hopper. A driven roller 25 is mounted in the cement hopper and is arranged to coact with a driving roller 26 to thoroughly pulverize the cement before it is passed to the feeding and leveling plates 22, 23 and 23^a. The driving roller 26 is mounted upon a shaft 27 journaled in hangers suspended from the top bars of the framework F, a pulley 28 or the like being secured to one end of the shaft 27 and connected by a belt 29 to the pulley 7. Preferably, the shafts of the rollers 25 and 26 are mounted in sectional bearings 30, the lower sections of the respective bearings being respectively formed with upwardly extending posts 31 which protrude through slots 32 formed in the upper section, angle levers 33 being fulcrumed on said posts and carrying weights 33^a, as shown, one arm of the levers working in notches 34 formed in the upper sections of the bearings so as to press one roller toward the other.

A link-rod 35 is connected to the spacer-bar 24, and said link-rod is also connected to the upwardly and inwardly curving arm

36 of an actuating lever 37 fulcrumed on any suitable support in the framework as indicated at 38. A link 39 connects the cut-off 18 to an upwardly and inwardly extending arm 40 of another lever 41, also fulcrumed at one end as indicated at 38 to ears attached to one of the vertical supports F. The two levers, just mentioned, preferably work in a slotted guide-bar 42 which projects inwardly underneath the upper pan P¹ from one of the posts of the framework F. The levers are respectively provided with rollers 37^a and 41^a, said rollers being designed to be successively engaged by cams 37^b and 41^b secured to the lower face of the upper pan P¹.

The manner in which the levers 37 and 41 are operated by the rotation of the pan B' is clearly shown in Fig. 8. The cams 37^b and 41^b are formed each by a short section of channel iron having opposed straight walls. These walls being straight and not concentric to the central shaft 3, it is obvious that the first action upon the roller 37^a or 41^a entering the cam, will be to move the roller and the lever attached thereto, inward until the roller has reached the middle of the cam. A further movement of the pan B' in the same direction will now act to move the roller outward. It will be seen that the ends of either of the straight cams is farther away from the center of the rotation of the pan B' than the middle of the cam.

One wall of the measuring box 21 for the cement is preferably formed by an angular plate 43 which is designed to be slipped down into either of a pair of slots 44 formed in the side walls of the hopper casing, so as to vary the proportions of the ingredients according as the plate is moved outwardly or inwardly. If desired the outer side wall of the hopper casing H may be provided with an outwardly opening door 45 held closed in any desired way, and which when opened permits access to be had to the interior of the hopper casing for any purpose.

In the practical operation of my improved concrete mixer, the sand and cement are dumped into the respective hoppers S and C and the drive shaft 6 is started. As the pans P¹, P² are rotated, the cement is pulverized and passed downwardly between the said plates 23, 23^a, while the sand fills the space between the plates 22, 22^a. During the rotation of the upper pan P¹, the cam 37^b will engage the roller of the lever 37 and will move said lever inwardly and outwardly, the inward movement of the lever swinging the feed plates in a direction to bring their lower edges in alinement with the upper open tops of the measuring boxes 20 and 21, so as to deposit the materials therein and the movement of the plates in the opposite direction as effected by the outward travel of the lever 37 will cause the lower edges of the plates to smooth off the

materials at the top of the measuring boxes and bring the lower edges of the feeding plates in registry with the solid horizontal walls that extend to one side of the respective measuring boxes, thereby cutting off the flow of material into the boxes. In this back and forth swinging movement of the feeding plates, it is obvious that the materials will be prevented from "arching" or clogging, owing to the differences of the position which the plates assume in this movement. After this movement just described, has been imparted to the feeding plates and they have been brought back to the relatively closed position, the cut-off 18, which up to this time has been in a position to close the open bottoms of the measuring boxes, will be caused to move in a direction to bring its openings 19 in registry with the open bottoms of the measuring boxes to discharge the mixed ingredients on to the bottom of the upper pan P^1 , whereupon the cut-off will be slid backwardly to the closed position preparatory to the introduction of another charge into the measuring boxes by the swinging of the plates before described. It is obvious that the movements of the cut-off plate result from the engagement of the cam 41^b with the roller of the lever 41.

When the ingredients are thus deposited upon the upper pan P^1 , the rotation of the pan will, in connection with the series of mixing plates cause the materials to be effectively mixed and gradually passed to the center of the pan, the materials thus falling onto the lower pan and being again commingled until they are passed outwardly through the open discharge gate 15, it being understood that these movements are repeated, so that the operation of mixing is practically a continuous one.

Having thus described the invention, what is claimed as new is:—

1. In a concrete mixing machine, the combination of a rotatable pan, a framework in which said pan is mounted, means for rotating the pan, and mixing blades in a plurality of substantially radially extending series mounted on said framework, each of said blades being independently pivoted for free vertical movement, said blades being laterally twisted and extending downward at an inclination to the bottom of the pan in a direction reverse to the direction of movement of the pan.

2. In a concrete mixing machine, the combination of an upper and lower pan each rotatably mounted, means for rotating said pans, a plurality of blades pivotally supported on the framework above the upper pan and depending into the same, said blades being twisted laterally in the direction of the center of the pan and inclined downward in a direction reverse to the movement of the pan, a plurality of blades

supported on the framework and depending into the lower pan, said blades being twisted laterally toward the circumference of the pan and inclined downwardly in a direction reverse to the direction of movement of the pan, the upper pan being provided with a central opening and the lower pan being provided with a circumferential gate.

3. In a concrete mixing machine, the combination of a supporting framework, upper and lower pans mounted to rotate in said framework, means for rotating said pans and a plurality of mixing blades mounted in the respective pans, the blades of the upper pan being twisted transversely and arranged to deflect the materials toward the center of the pan and the blades for the lower pan being twisted oppositely to the blades of the upper pan and arranged to deflect the material outwardly toward the outer edge of the lower pan, the upper pan being formed at its center with an opening through which the material may fall onto the lower pan and the lower pan having a fixed rim independent of the pan, and said rim having a discharge gate extending inward across the upper margin of the pan and adapted to direct material therethrough.

4. In a concrete mixing machine, the combination with a framework, of a pan mounted to rotate therein, means for rotating said pan, a series of rods secured in the framework above the pan and extending inwardly thereover, a centrally located rectangular plate in which the inner extremities of said rods are supported, laterally projecting sleeves loosely surrounding said rods and contacting with each other, and mixing blades formed with said sleeves and extending downward thereover with their lower ends upon the bottom of the pan, said blades being laterally twisted.

5. In a concrete mixing machine, the combination with a supporting framework, of upper and lower pans mounted to rotate in the framework, means for rotating the pans, and a plurality of independently pivoted mixing blades mounted in the respective pans in radial series, the blades of the upper pan being twisted transversely toward the center of the pan and arranged to deflect the materials inward, and the blades for the lower pan being twisted oppositely to the blades of the upper pan and arranged to deflect the materials outward toward the outer edge of the lower pan, the upper pan being formed at its center with an opening through which the material may be dropped on to the lower pan, a fixed rim surrounding the circumference of the lower pan, and an inwardly projecting deflecting plate pivotally mounted on said rim and adapted to extend inward across the outer margin of the lower plate.

6. In a concrete mixing machine, the com-

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 5 bination of a hopper casing, measuring boxes secured therein, means for filling said boxes, the boxes being formed with open bottoms, a cut-off designed to open said boxes and mounted to slide in the casing
 10 and means for reciprocating said cut-off, said means including an oscillating lever, a rotatable mixing pan, and a cam carried by said pan and designed to engage said lever.

15 7. In a mixing machine, the combination with a hopper and boxes into which the material from the hopper is to be directed, of spaced guide plates pivoted at their upper ends immediately beneath the hopper and
 20 having their lower ends contiguous to the upper ends of said boxes, and means for reciprocating said guide plates so as to alternately guide the material into the boxes and cut it off therefrom, the lower ends of the
 25 plates acting to strike said material across the top of the boxes.

30 8. In a concrete mixing machine, the combination of a hopper casing, measuring boxes mounted therein and formed with
 35 open tops, a plurality of swinging plates mounted in the casing above said boxes, the lower edges of the plates being adapted to swing over the top of said boxes, the plates forming the communication between the re-
 40 ceiving portions of the hoppers and the measuring boxes, hoppers from which said plates lead, a spacer-bar connecting said plates together in spaced relation and for the simultaneous movement thereof, an oscillating lever operatively connected to said
 45 spacer-bar and means for oscillating said lever.

50 9. In a concrete mixing machine, the combination of a hopper casing, measuring
 55 boxes mounted therein and formed with open tops, a plurality of swinging plates mounted in the casing above said boxes, the lower edges of the plates being adapted to swing over the top of said boxes, said plates
 60 forming the communication between the receiving portions of the hoppers and the measuring boxes, hoppers from which said plates lead, a spacer-bar connecting said plates together in spaced relation and for the simultaneous movement thereof, an oscillating lever operatively connected to said spacer-bar and means for oscillating said lever, said means consisting of a rota-
 65 table mixing pan mounted beneath the mixing boxes and a cam carried by said pan and engaging said lever.

10. In a concrete mixing machine, the combination of a hopper casing, hoppers leading thereto, measuring boxes mounted
 70 in said casing and formed with open tops and bottoms, said plates forming the communication between the receiving portions of the hoppers and the measuring boxes, said plates being mounted to swing in said
 75 casing, means for swinging said plates into

registry with and into one side of the open top of the measuring boxes, said means including an oscillating lever connected to said plates, a support for said lever, a cut-off plate mounted to open and close the
 80 bottoms of the measuring boxes, an oscillating lever operatively connected to said cut-off plate, a mixing pan mounted underneath the boxes and adapted to receive the materials therefrom and cams carried by
 85 said pan and arranged to successively engage the respective levers to oscillate the same.

11. In a concrete mixing machine, the combination with a supporting framework, of an upper rotatable pan having a rim fixed thereto, a lower rotatable pan having a rim independent thereof and attached to the supporting framework, a mechanism for rotating both of said pans, mixing blades supported above each of said pans and engaging with the material therein to force the material of the upper pan to the center thereof and the material on the lower pan to the outer edge thereof, said upper pan being provided with
 90 openings for the passage of the material to the lower pan, and the rim of the lower pan being provided with a discharge opening, a gate pivotally attached to the rim and closing the discharge opening in the lower pan, said gate being adapted to be moved across the margin of the lower pan, and a hopper arranged above the upper pan and having a sand compartment and a cement compartment.

12. In a concrete mixing machine, a hopper having separate sand and cement compartments, stationary measuring compartments located beneath the hopper and adapted to receive sand and cement from said hopper, reciprocating means for alternately cutting off the supply of sand and cement to the measuring compartments and alternately opening the bottom of said compartments, rotatable mixing means located beneath the measuring compartments, and means whereby the rotation of the mixing means will act to operate said reciprocating means to alternately open and close said measuring compartments.

13. The combination with a supporting framework, of a hopper supported thereon having sand and cement compartments, measuring boxes, one for the sand and one for the cement, located beneath their respective compartments, means located above the measuring boxes for intermittently directing the sand and cement into the measuring boxes, said means moving across the top of the measuring boxes and directing the material therefrom, a gate operating intermittently to close and open the lower end of the measuring boxes when filled, mixing means located beneath the gate and receiving the contents of the measuring boxes, and
 135

means for continuously operating the mixing means, oscillating the directing means for the sand and cement, and reciprocating said gate.

- 5 14. In a concrete mixing machine, the combination with a supporting framework, of a hopper having a sand and cement compartment arranged adjacent to each other and mounted on the framework and measuring compartments located above but spaced from the lower end of said hopper, said measuring compartments being supported from each other, oscillating guide plates hinged at their upper ends beneath said hopper and extending between the hopper and the measuring compartments, means for oscillating said plates to bring their lower ends into or out of alinement with the openings of the measuring compartments, an intermittently actuated cut-off closing the lower ends of the measuring compartments, means for moving the cut-off in one direction to open said compartments when the oscillating guide plates are moved to cut off the upper ends of said compartments from the hopper, and mixing mechanism supported on the framework beneath the measuring compartments.

15. In a concrete mixing machine, the combination with a framework, of a hopper divided into a sand and a concrete compartment, pivoted plates extending downward from the lower edges of the same and the cement compartments, measuring compartments, with the sides of which said plates are adapted to register, means for oscillating said plates so as to bring them out of registry with the sides of the measuring compartments, a cut-off intermittently actuated and adapted to close the lower ends of the measuring compartments, and a mixing table arranged beneath the measuring compartments.

16. In a concrete mixing machine, the combination with a framework, of a hopper supported on the upper portion of the

framework and having sand and cement compartments, plates pivoted to the bottom edges of the sides of said compartments, an oscillating bar connected to the lower edges of said plates, sand and concrete measuring compartments arranged beneath said plates with the upper edges of which said plates are adapted to contact, a slotted cut-off plate mounted to slide across the lower edges of the measuring compartments, a rotatable mixing pan supported beneath the measuring compartments, levers pivoted to the framework and connected one to the cut-off and the other to the oscillating bar for said plates, and cams arranged on the lower face of the table and engaging the levers to oscillate the same.

17. In a concrete mixing machine, the combination with a framework, of a hopper supported on the upper portion of the framework and having sand and cement compartments, crushing rollers mounted immediately beneath the cement compartments, means for yieldingly forcing said rollers toward each other, guide plates pivotally mounted immediately beneath the hopper to form channels from the sand compartments and from the cement compartments, measuring compartments arranged beneath the said plates with which the lower ends of said plates are adapted to contact, means for oscillating said guide plates into and out of alinement with the measuring compartments, an oscillating cut-off alternately operating with respect to said guide plates and mounted beneath the measuring compartments, and a rotatable mixing pan supported beneath the cut-off into which the material from the measuring compartments drops.

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

CHARLES F. LANCASTER. [L. s.]

Witnesses:

ROBERT D. TRIPP,
GEO. SCHNEIDER.