

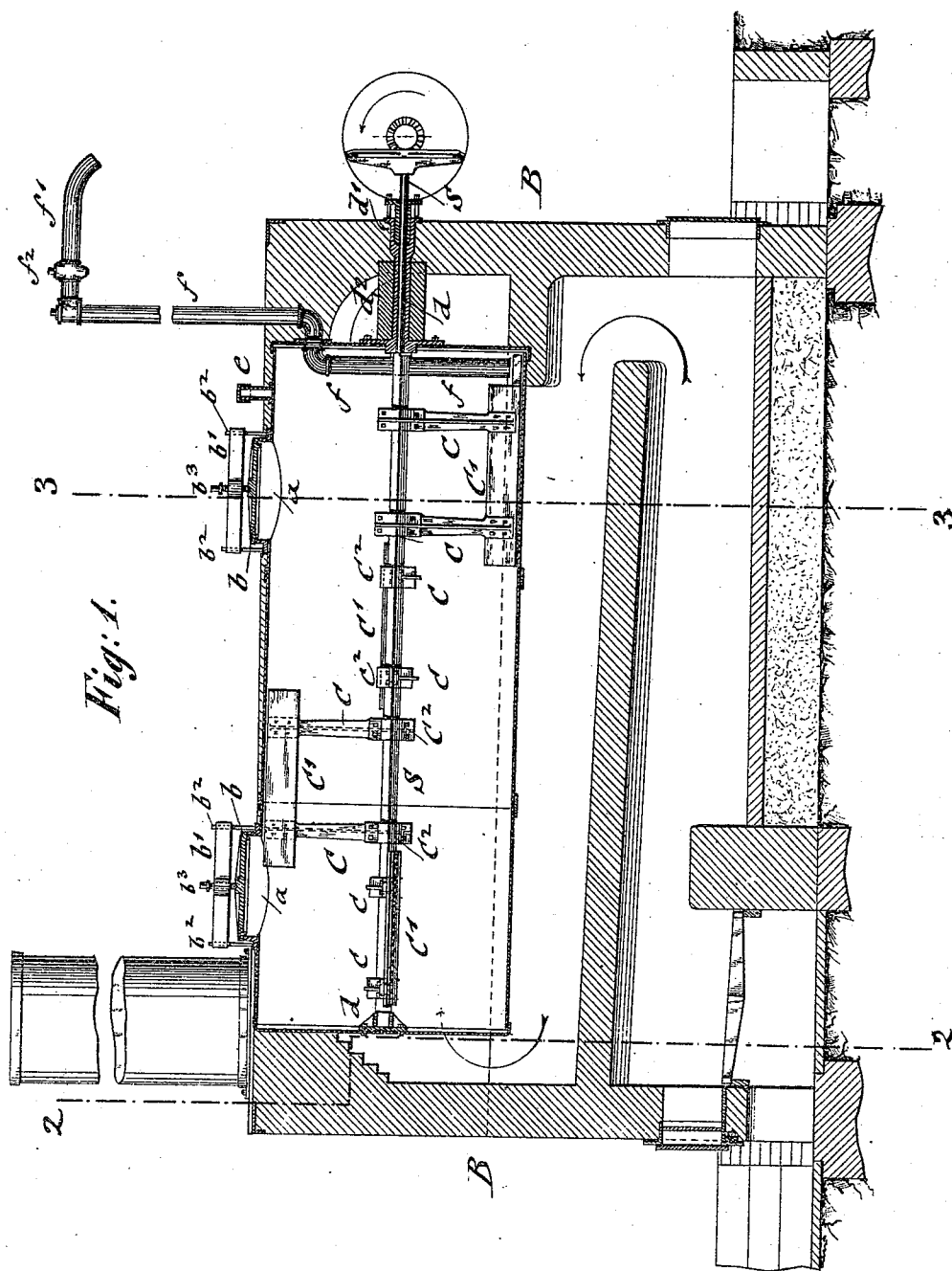
(No Model.)

2 Sheets—Sheet 1.

J. SCHUBERT.
APPARATUS FOR MIXING ASPHALT CEMENT.

No. 501,215.

Patented July 11, 1893.



WITNESSES:

Charles Schroeder.
William Duham

INVENTOR

Julius Schubert
BY *Joseph Raegner*
ATTORNEYS.

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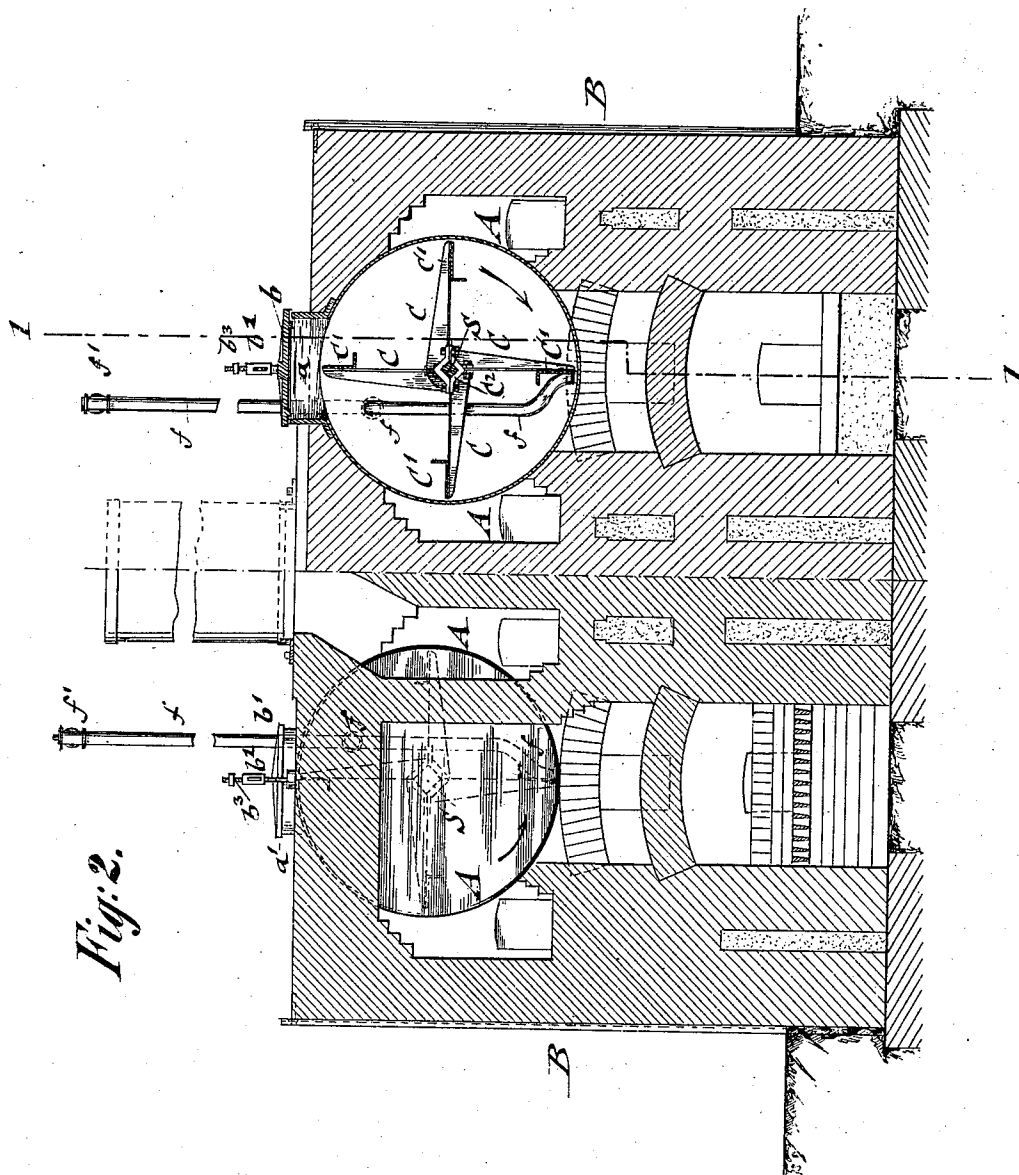


Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE

JULIUS SCHUBERT, OF BROOKLYN, NEW YORK.

APPARATUS FOR MIXING ASPHALT CEMENT.

SPECIFICATION forming part of Letters Patent No. 501,215, dated July 11, 1893.

Application filed July 14, 1892. Serial No. 439,988. (No model.)

To all whom it may concern:

Be it known that I, JULIUS SCHUBERT, a citizen of the United States, and a resident of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Apparatus for Mixing Asphalt Cement, of which the following is a specification.

In the making of asphalt roads it is customary to mix the asphalt-cement in hot state with a quantity of sand and carry the prepared mixture in carefully covered carts to the place where the mass is to be laid on the ground. As all refined asphalt contains still a certain quantity of mineral matter and clay, which it is necessary to retain in a uniformly divided state in the asphalt-cement in order to preserve the homogeneity of the mass, it is necessary that in heating the asphalt to the temperature required for use, great care should be taken that the mineral and clay constituents of the same should not settle at the bottom of the mixing vessel, as otherwise the natural result would be that the body of asphalt-cement at the upper part of the heating-vessel would be impregnated with a smaller quantity of mineral matters and clay than the body of asphalt-cement at the lower part of the mixer. Another point is that the oil which is added to the refined asphalt, in order to make it plastic, should be thoroughly incorporated with the asphalt.

The object of this invention is to furnish a heater and mixer for asphalt-cement by which the foregoing conditions are fully complied with and by which a uniform asphalt-cement can be obtained: and the invention consists of an apparatus for mixing and keeping the asphalt-cement mixed while subjected to heat, which comprises a cylindrical mixing-vessel, a rotary shaft supported in suitable bearings of said vessel and provided with radial arms that are connected in pairs by means of angular paddles or agitators, said shaft being made of square cross-section, so that the supporting-arms of the agitators which are provided with angular hubs can be readily attached thereto by suitable angle-pieces and easily replaced when worn out.

The invention consists, secondly, of the combination, of a cylindrical vessel in which the asphalt and oil are mixed by suitable agi-

tators, of a pipe for supplying air under pressure, and a discharge-pipe that extends from a point near the bottom of the mixing-vessel and through the wall of the same to such a height that the contents of the mixing-vessel can be readily transferred by the pressure of the compressed air to the measuring device by which the asphalt-cement is conveyed to the place where it is mixed ready for use.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section on line 1 1, Fig. 2 of my improved apparatus for heating and mixing asphalt-cement. Fig. 2 is a vertical transverse-section of the same, showing two mixers arranged side by side, one mixer being in section on the line 2 2 and the other on the line 3 3, Fig. 1.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a cylindrical mixing-vessel, which is preferably made of boiler-iron of suitable strength and which is supported by the walls B of a furnace, in which the flues are arranged in such a manner that the heat passes first around the bottom and then along both sides of the mixing-vessel to the smokestack. The mixing-vessel A is supported in a slightly inclined position, so that the body of asphalt-cement that is mixed in the same is gradually moved by the stirrers from the higher to the lower part of the vessel A. The mixing vessel A is arranged at its upper part with manholes *aa* which are closed after the charge is supplied to the vessel A by means of manhole covers *b b* which are firmly held in position in the usual manner by cross-bars *b'* that are applied to fixed rods *b²* by set-screws *b³* that pass through eyes of the cross-bars. It is preferable to arrange two mixing-vessels A side by side, each being provided with an independent furnace, the flues of which communicate with a common smoke stack. Each mixing-vessel A is provided with suitable center-bearings *d* which are attached to the heads of the same and which support the round ends of a central shaft S, which is made of square cross-section at the inside of the vessel. The shaft S is extended through one head of the mixing-vessel A and wall of the furnace to the outside of the latter and connected by a suitable gear-wheel or other transmission with a

power-shaft, so that rotary motion is transmitted to the shaft. The bearing in which the outwardly-extending end of the shaft S is supported is provided with a suitable stuffing-box d' , so as to prevent the escape of any portion of the mixture from the mixer, said bearing being surrounded by a jacket or sleeve d^2 of asbestos, as far as the same passes through the end-flue of the furnace, so that the end-bearing of the shaft is effectively protected against the influence of the fire-gases. To the square interior portion of the shaft S are applied a number of radial stirrer-arms C which are arranged in pairs, one pair being arranged at right angles to the next adjoining pair. Each pair of arms C is connected at their outer ends by an agitator or paddle C' having a flange on its inner edge, which serves to lift the asphalt-cement in the mixing-vessel to a considerable height before the same is dropped off from the angular portion of the agitator or paddle, whereby the more effective mixing-action of the mass is obtained. The radial arms C are strengthened by means of ribs and are attached to the square portion of the shaft S by their angular inner ends in connection with a detachable angular piece C^2 which is bolted to the angular inner end of each arm C and which forms with the inner end of the arm a hub by which the arm is firmly attached to the shaft and by which the same can be readily removed whenever it is required to replace a worn out paddle or a broken arm, as they are subjected to considerable wear by the hot mass which is kept in agitation in the mixing-vessel A. When the body of asphalt and oil which is to be mixed in the vessel A has been subjected for the required period of time to the influence of the heat of the furnace and to the mixing action of the agitators, the mass is gradually transferred to the asphalt cement measures by which the same is conveyed to the place where the street mixture is to be prepared. This is accomplished without opening the manholes by means of compressed air, which is admitted through a pipe e at the top of the mixing-vessel A, said pipe being connected by a suitable hose or pipe with an air-compressor or other air-forcing device. A stand-pipe f extends down through the head of the mixing-vessel to a point near the bottom at the lower end of the same and to a sufficient height above the mixer where it is connected to a

horizontal arm f' having a stop-cock f^2 , so that the properly mixed charge of asphalt-cement in the mixer is conveyed directly by the air-pressure into the measuring devices. The upper horizontal arm f' of the discharge-pipe f is connected by a swivel-joint with the vertical portion of the same, so that the arm can be swung out of the way after use. The stop-cock of the horizontal arm f^2 is opened when the contents of the mixing-vessel are to be discharged. It is necessary to keep the body of asphalt-cement in the mixing-vessel in motion during the discharge of the same by the action of the compressed air in the same, as thereby the mixing of the mass is kept up and the same transferred in a thoroughly mixed and homogeneous condition to the measuring-devices. By arranging the mixing-vessels in pairs, they can be alternately charged and discharged, so that a regular supply of thoroughly heated and mixed asphalt-cement is obtained.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for mixing refined asphalt and oil, the combination of a mixing vessel, a horizontal rotary shaft therein, radial arms attached to the shaft, and a horizontal agitating blade on said arms provided with a flange on its inner edge, substantially as set forth.

2. In an apparatus for mixing refined asphalt and oil, the combination of a mixing vessel, a rotary shaft supported in bearings of the heads of the same, radial arms attached to said shaft, agitating blades or paddles attached to the ends of said arms, said blades or paddles having flanges on their inner edges, a pipe for supplying compressed air to the interior of the vessel, and a discharge pipe that extends from a point near the bottom of the mixing vessel through the wall of the same to a sufficient height above the vessel, said discharge pipe being provided with a stop-cock, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JULIUS SCHUBERT.

Witnesses:

PAUL GOEPEL,
CHARLES SCHROEDER.