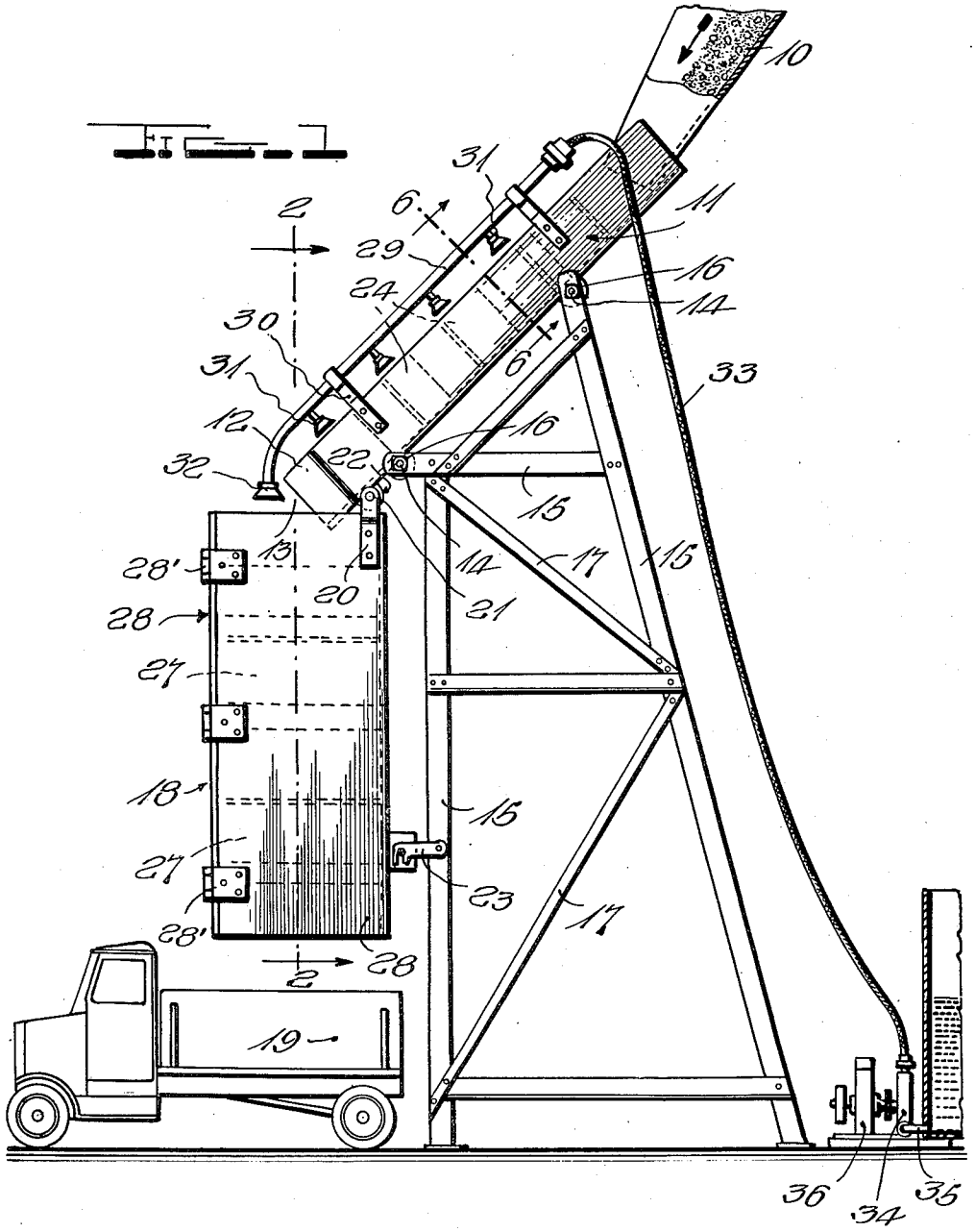
May 13, 1947. J. GIORDANO 2,420,368

APPARATUS FOR COATING AGGREGATES

Filed June 20, 1944 2 Sheets-Sheet 1



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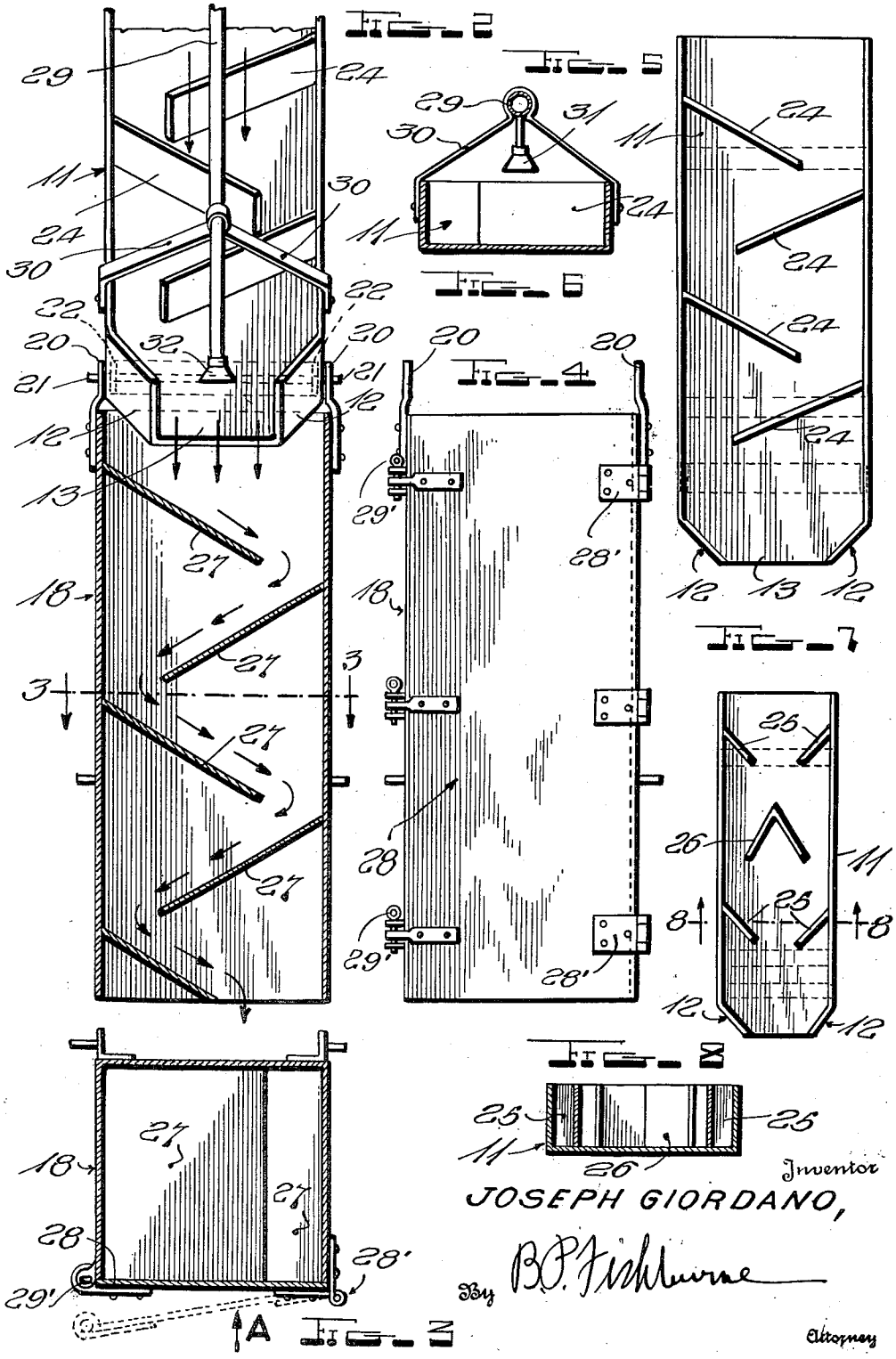
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APPARATUS FOR COATING AGGREGATES

Filed June 20, 1944 2 Sheets-Sheet 2



Patented May 13, 1947

2,420,368

UNITED STATES PATENT OFFICE

2,420,368

APPARATUS FOR COATING AGGREGATES

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Application June 20, 1944, Serial No. 541,157

1 Claim. (Cl. 91—44)

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My invention relates to road building apparatus for coating aggregates with a liquid bituminous binder.

An important object of the invention is to provide apparatus of the above mentioned character, which is portable and adapted to be set up either at a rock pile off side of a road or at a quarry or stone or gravel bank, to receive the aggregates from the same and properly coat the same with a binder.

A further object of the invention is to provide apparatus of the above mentioned character, which may be transported in a knock down condition and rapidly assembled for use.

A further object of the invention is to provide apparatus of the above mentioned character which is extremely simple in construction and which will effect a thorough mixing of the aggregates and binder.

Other objects and advantages of the invention will be apparent during the course of the following description:

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a side elevation of apparatus embodying my invention,

Figure 2 is a vertical section taken on line 2—2 of Figure 1.

Figure 3 is a horizontal section taken on line 3—3 of Figure 2,

Figure 4 is a front elevation of the lower vertical chute viewed from the positon A in Figure 3,

Figure 5 is a plan view of the upper inclined chute,

Figure 6 is a transverse section taken on line 6—6 of Figure 1,

Figure 7 is a plan view of a modified form of chute, and,

Figure 8 is a transverse section taken on line 8—8 of Figure 7.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 designates an inclined chute for supplying the aggregates, stone or gravel, from a hopper at a quarry or stone or gravel bank. The aggregates may be supplied to my apparatus by a conveyor, and the chute 10 omitted, when the coating apparatus is arranged at a stone or gravel stock pile, along the highway.

My coating apparatus comprises an upper chute or trough 11, which is vertically inclined

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and has its upper end receiving the discharge end of the chute 10. The chute or trough 11 is U-shaped in cross section and has its top open, and is provided with a forwardly tapered end 12, forming a reduced outlet 13, for the discharge of the coated aggregates.

Any suitable means may be employed to support the chute or trough 11 at the desired elevation, and for this purpose, transverse rods 14 are rigidly secured to the bottom of the chute or trough 11 and passed through openings formed in the upper ends of uprights or beams 15 and through openings in the ends of horizontal beams 15, and secured thereto by nuts 16. The uprights or beams 15 may be connected by diagonal braces 17. The uprights or beams and associated elements constitute a tower, and this tower may be readily knocked down, and separated from the chute or trough 11.

Arranged near and beneath the tapered outlet end 12 of the chute or trough 11 is a substantially vertical chute 18, supported at such an elevation that a truck 19 or the like may be driven beneath the lower discharge end of the same to receive the coated aggregates therefrom. At its upper end the chute 18 has apertured knuckles 20 to receive a removable pin 21, adapted to be passed through apertured knuckles 22 carried by the lower end of the chute or trough 11. The chute 18 is therefore detachably connected with the upper inclined chute or trough 11 and is suspended from the same and is held in a vertical position by latches or straps 23, which may have detachable connection therewith and are carried by certain of the uprights 15, as shown.

The chute 11 is provided with baffles or blades 24, which are transversely inclined and staggered. Each set of baffles 24 extend from one side of the chute or trough and terminate short of the other side of the same and these baffles provide a tortuous passage for the travel of the aggregates.

In Figure 7, the chute or trough 11 is provided with a different arrangement of baffles. In this figure there are pairs of baffles 25 and the baffles in each pair are spaced and converge downwardly. There is an intermeditae pair of baffles 26, which is arranged at the longitudinal center of the chute and is spaced from the sides of the chute or trough 11 and these baffles converge upwardly. These several baffles cause the traveling aggregates to converge and separate and again converge, while traveling longitudinally through the trough or chute 11.

The aggregates finally pass through the ta-

pered end 12 and are discharged into the central portion of the chute 18, at its top.

This vertical chute 18 has inclined baffles 27. Each set of baffles 27 extends from one side of the vertical chute and is spaced from the opposite side of the vertical chute. The baffles are staggered and provide a tortuous passage for the aggregates. The baffles extend throughout the entire transverse dimensions of the vertical chute, from its front to its back. The baffles 27 are inclined in planes at a right angle to the plane in which the chute or trough 11 is inclined. This causes the aggregates to travel generally longitudinally at a right angle to the general longitudinal movement of the aggregates in the chute or trough 11. The two sides and back of the vertical chute 18 are permanently closed, while its front is closed or covered by a door 28, hinged at 28', and held closed by any suitable means, such as by pins 29'. This door may be opened to permit of access to the chute 18 or baffles for cleaning, repairing or the like.

Particular attention is called to the fact that the chute 18 is vertical while the chute 11 is inclined and that the cross sectional area of the chute 18 is more than twice as great as that of the chute or trough 11. Since the chute 18 receives the aggregates from the chute 11, and since the chute 18 is vertical and is much larger in cross sectional area, the aggregates separate or spread when traveling over the baffles in the chute 18 and move more rapidly therein and are subjected to a greater agitation.

Means are provided to apply the binder, which may be of bituminous material, to the aggregates. This bituminous material may be rendered suitably liquid by heating or by the use of a volatile solvent. Arranged above the chute or trough 11 and extending longitudinally thereof at its center, is a pipe 29, supported by arms 30, which may be mounted upon the chute or trough 11. This pipe has depending spray nozzles 31, arranged in a longitudinal group at the longitudinal center of the trough or chute and disposed to spray the bituminous liquid upon the aggregates as they gravitate through the chute or trough 11 and are agitated therein. At its lower end, the pipe 31 has a spray nozzle 32, which sprays the bituminous material into the upper end of the chute 18.

The liquid bituminous material is fed to the pipe 29 through a pipe 33, connected with the outlet side of a pump 34, receiving the bituminous material through a pipe 35 having communication with the source of supply of such material. The pump 34 is driven by a motor 36, which may be a gasoline motor or an electric motor.

When the several parts of the apparatus are assembled and used as shown in Figure 1, the chute or trough 11 is vertically inclined at an angle of about 45° to 60° from the horizontal and its upper end receives the aggregates, broken stone or gravel, from the chute 10, which in turn receives the same from the hopper at a stone or gravel bank or the stone or gravel may be elevated by a conveyor, which gathers the stone or gravel up from a stock pile along the highway where the construction is being made, and this conveyor may discharge the stone directly into the chute or trough 11. The supply of the aggregates to the chute or trough 11 is suitably regulated and may be continuous or intermittent.

The aggregates are introduced into the upper end of the chute or trough 11 and gravitate downwardly therein and are agitated during this travel by the baffles 24. While traveling through the chute or trough 11 these aggregates are sprayed with the liquid bituminous material discharged from the spray nozzles 31 and become thoroughly coated with the liquid bituminous material, and this coating is aided by the thorough agitating or turning of the aggregates by the baffles. The aggregates thus coated are now discharged from the lower end of the chute or trough 11 into the upper end of the vertical chute 18. All sides of this chute 18 are closed while its top and bottom are open. The spray nozzle 32 also sprays the liquid bituminous material into the upper end of the vertical chute 18 and upon the mineral aggregates while they are being discharged downwardly into the upper end of the chute 18 or while they are traveling upon the upper baffle or baffles 27. By virtue of the vertical arrangement of the chute 18, the downward travel of the coated aggregates, due to gravity, is much faster in the chute 18 than in the chute or trough 11 and the mixing or agitation is much greater in the vertical chute 18. This aids in completing the thorough coating of the aggregates with the liquid bituminous material which is somewhat stiffer in the vertical chute 18, since it has had sufficient time to somewhat cool or volatilize. By the time the aggregates discharge from the lower open end of the chute 18 they are thoroughly mixed and coated with the bituminous material. The coated aggregates may be collected in a truck or the like, which may be arranged beneath the lower discharge end of the vertical chute. These aggregates may then be conveyed to the road and applied thereto, as desired.

It is to be understood that the form of my invention herein shown and described is to be taken as a preferred example of the same and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claim.

Having thus described my invention what I claim is:

In road building apparatus for coating mineral aggregates, a tower, a vertically inclined chute having substantially parallel sides, means to detachably mount the inclined chute upon the upper portion of the tower, inclined baffles arranged within the inclined chute and disposed transversely with relation to the sides and extending from the sides, the free ends of the baffles being arranged in staggered relation for forming a tortuous passage which receives the mass of mineral aggregates traveling by gravity through the inclined chute for mixing such mass, a pipe arranged above and extending longitudinally of the inclined chute, means to mount the pipe upon the inclined chute, spray nozzles carried by the pipe for spraying a liquid bituminous binder upon the mineral aggregates within the inclined chute, means to supply the liquid bituminous binder to the pipe under pressure, a substantially vertical chute arranged beneath the lower end of the inclined chute, means detachably connecting the upper end of the vertical chute with the lower end of the inclined chute, means for detachably connecting the substantially vertical chute with the tower near the lower end of the substantially vertical chute, said substantially vertical chute having sides which are substantially parallel with the sides of the inclined chute and a back and front door, the front door being adapted to be open for affording access to the interior of the

substantially vertical chute, inclined baffles within the substantially vertical chute and extending downwardly from the sides of the substantially vertical chute, the last named inclined baffles having their inner free ends arranged in staggered relation for forming a tortuous passage for receiving the mass of mineral aggregates traveling by gravity through the substantially vertical chute to mix such mass, and a spray device connected with the pipe and arranged over the upper end of the substantially vertical chute for spraying the liquid bituminous binder upon the mineral aggregates passing through the substantially vertical chute.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,126,418	Dodge	Jan. 26, 1915
1,474,893	Crocker	Nov. 20, 1923
366,820	Donner	July 19, 1887
1,512,654	Troy	Oct. 21, 1924
2,197,792	Erickson	Apr. 23, 1940
2,097,914	Cooper et al.	Nov. 2, 1937