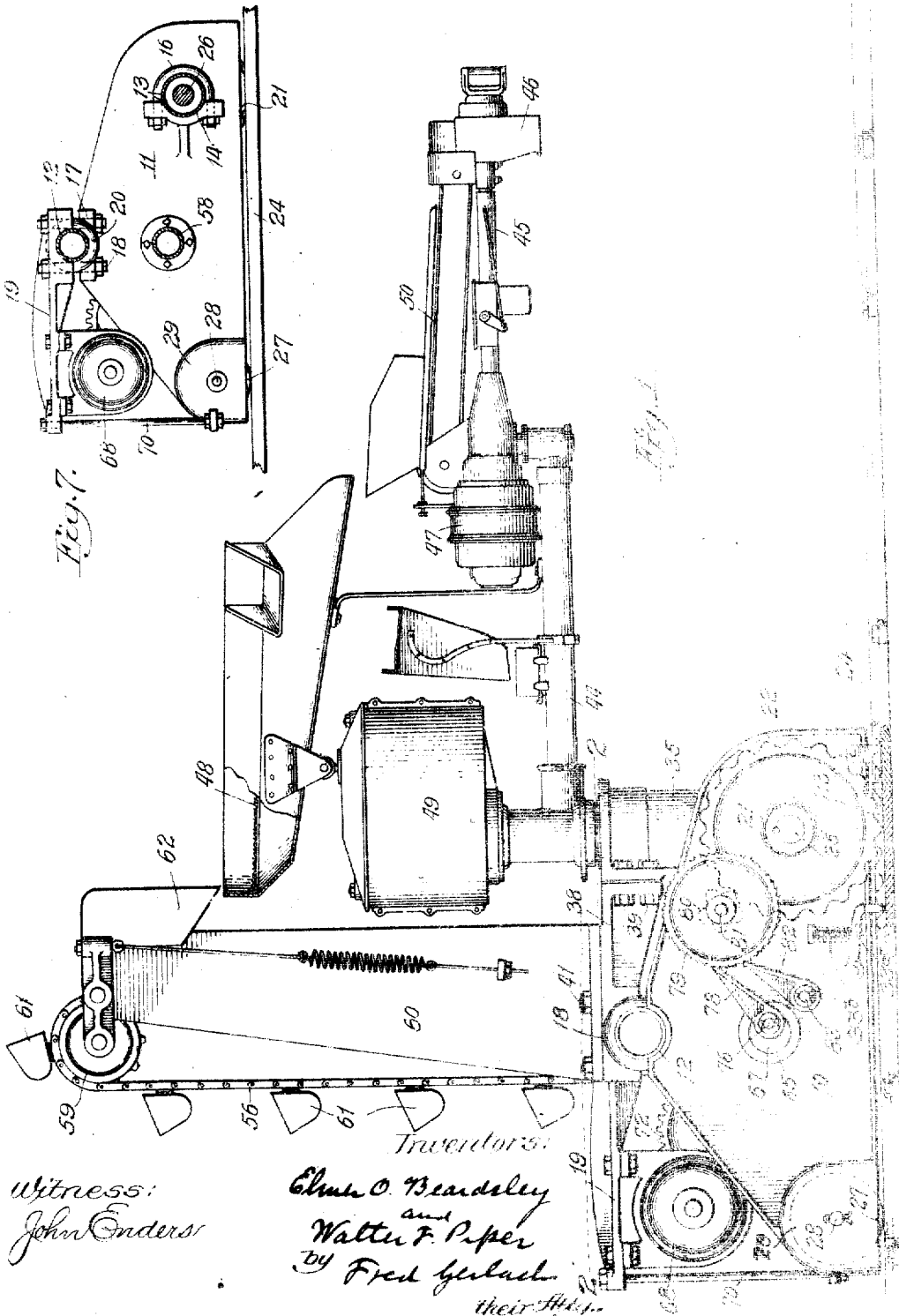


E. O. BEARDSLEY AND W. F. PIPER.
 PORTABLE MOLDING MACHINE.
 APPLICATION FILED APR. 16, 1921.

Patented Mar. 7, 1922.
 2 SHEETS - FIRST

1,408,796.



E. O. BEARDSLEY AND W. F. PIPER.

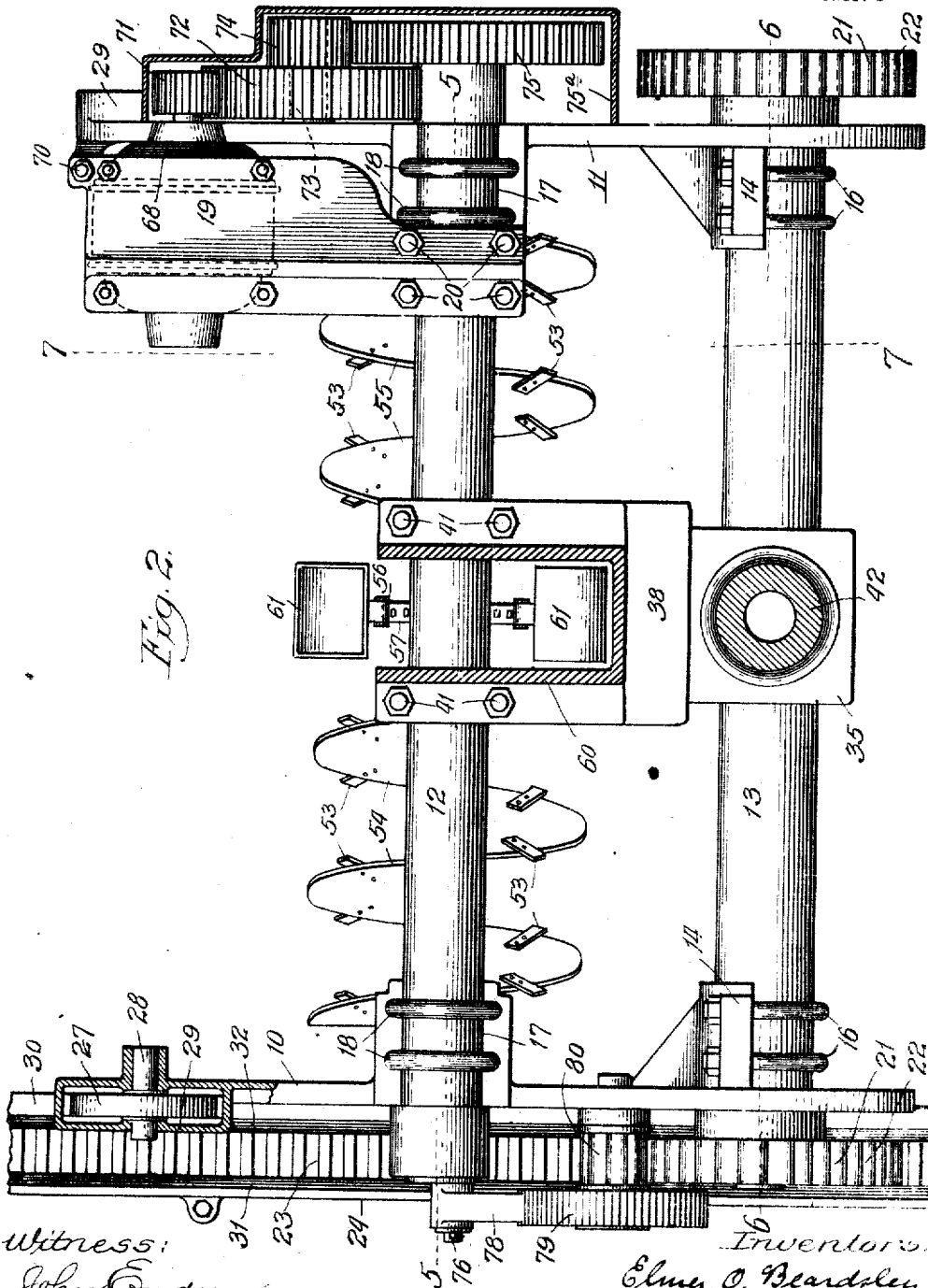
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4 SHEETS--SHEET 2.



Witness:
John Enders

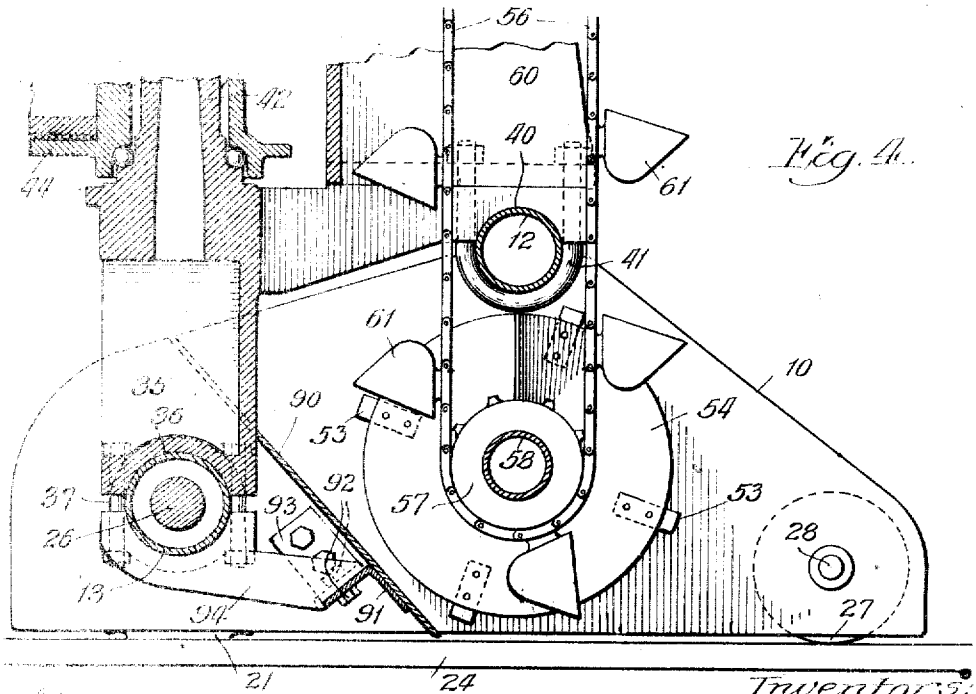
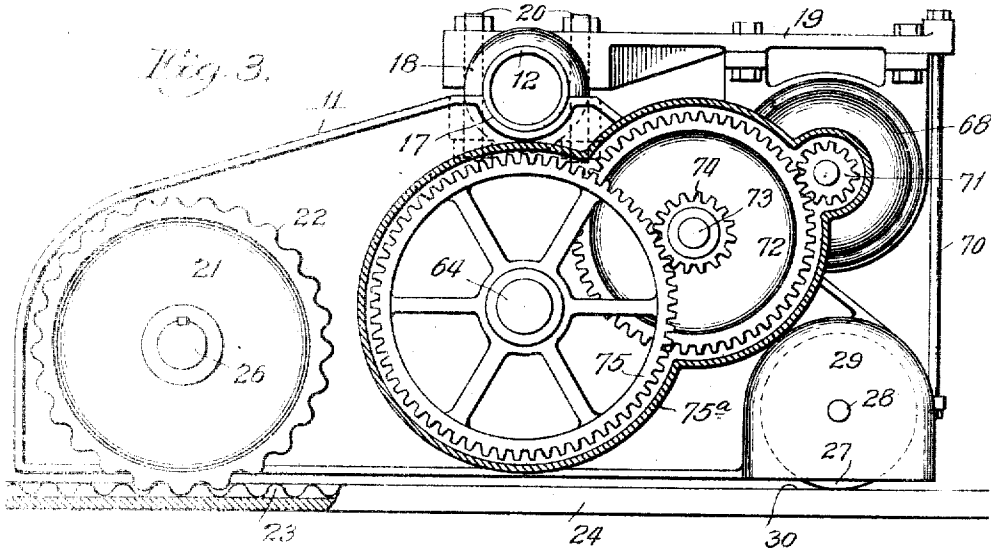
Inventors:
Elmer O. Beardsley
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By Fred J. Lach
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E. O. BEARDSLEY AND W. F. PIPER.
PORTABLE MOLDING MACHINE.
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1,408,798.

Patented Mar. 7, 1922.

4 SHEETS - SHEET 3.



Witness:
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4 SHEETS—SHEET 4.

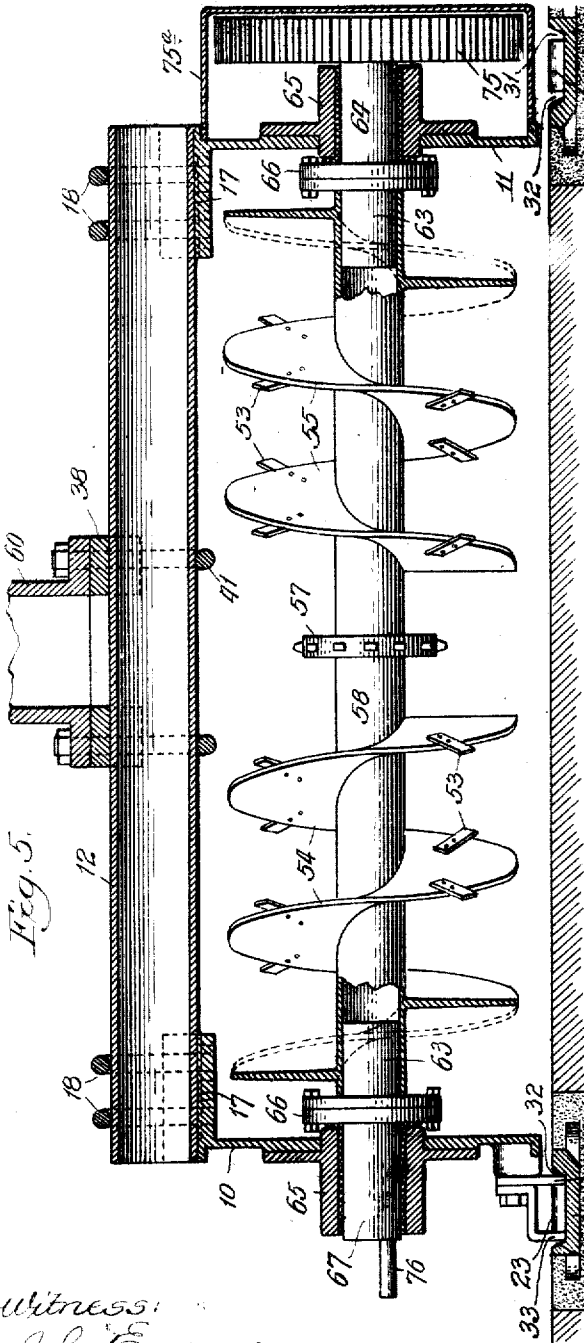


Fig. 5.

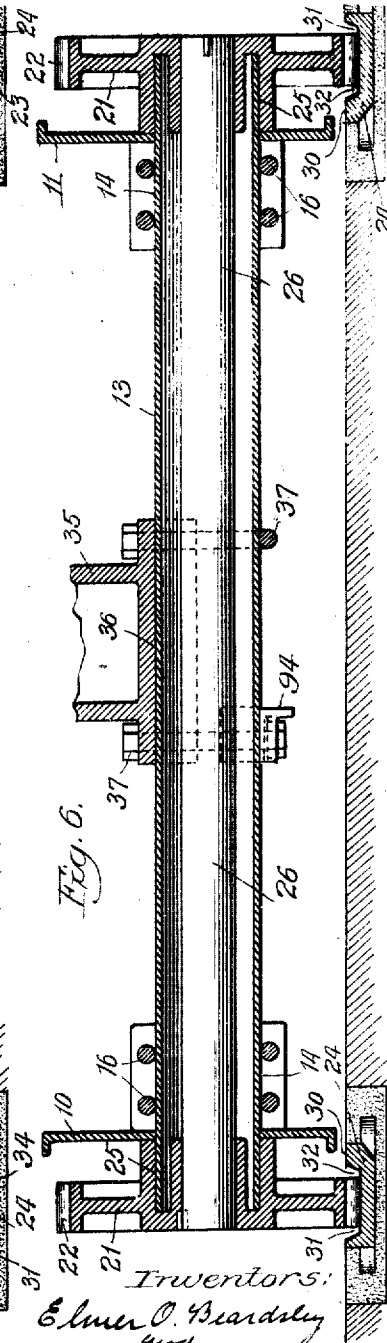


Fig. 6.

Witness:
 John Enders

Inventors:
 Elmer O. Beardsley
 and
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 Fred Gerlach
 their Atty.

UNITED STATES PATENT OFFICE.

ELMER O. BEARDSLEY, OF CHICAGO, AND WALTER F. PIPER, OF OAK PARK, ILLINOIS,
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PORATION OF ILLINOIS.

PORTABLE MOLDING MACHINE.

1,408,796.

Specification of Letters Patent.

Patented Mar. 7, 1922.

Application filed April 16, 1921. Serial No. 461,901.

To all whom it may concern:

Be it known that we, ELMER O. BEARDSLEY and WALTER F. PIPER, both citizens of the United States, and residents of Chicago, in the county of Cook and State of Illinois, and Oak Park, in the county of Cook and State of Illinois, respectively, have invented certain new and useful Improvements in Portable Molding Machines, of which the following is a full, clear, and exact description.

The invention relates to portable molding machines.

The object of the invention is to provide an improved portable structure with a molding machine mounted thereon and which may be propelled over the floor of a molding room. In the operation of machines of the type exemplified in our Patents Nos. 1,335,641 and 1,309,836, it has been found desirable to improve the construction so that they would withstand the severe wear and usage to which they are subjected in foundry practice, and one of the objects of the invention is to provide a structure which will attain this result.

Another object of the invention is to provide improved mechanism for propelling the portable carriage over the foundry floor.

Other objects of the invention will appear from the detailed description thereof.

The invention consists in the several novel features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings: Fig. 1 is a side elevation of a machine embodying the invention. Fig. 2 is a horizontal section on line 2-2 of Fig. 1. Fig. 3 is a side elevation of the truck viewed from the opposite side to that shown in Fig. 1. Fig. 4 is a vertical section. Fig. 5 is a transverse section taken on line 5-5 of Fig. 2. Fig. 6 is a section taken on line 6-6 of Fig. 2. Fig. 7 is a section taken on line 7-7 of Fig. 2.

The invention is exemplified in a structure comprising a truck-frame which is mounted upon wheels adapted to travel on tracks in the molding room floor. This frame comprises sides 10 and 11 which are rigidly cross connected to form a rigid structure by pipes or tubes 12 and 13. Pipe

13 is securely clamped in seats 14 formed on the frame-sides 10 and 11 by U-bolts 16. Pipe 12 is clamped in seats 17 formed in lugs on the frame-sides by U-bolts 18 and a clamping bracket 19 and bolts 20. In practice, these machines are of considerable width and it has been found that a frame made up of sides and pipes, as set forth, is well adapted to withstand the severe stresses to which the structure is subjected in practice. The rear of the truck is carried by a pair of traction-wheels 21 having toothed peripheries 22 to engage correspondingly toothed racks 23 formed on the tracks 24 which are set into the floor of the molding room. These wheels are conjointly driven to propel the truck, by mechanism hereinafter set forth. The hub of each traction-wheel 21 fits over and bears, as at 25, upon one end of the tube 13 and a shaft 26 extends through the tube 13 and is keyed at its ends to the hubs of the traction-wheels 21 so that they will be secured together for conjoint rotation to cause both sides of the machine to advance equally, which is desirable to avoid twisting strains on the truck and the parts mounted thereon. The front of the truck is supported by plain faced wheels 27 which are mounted on stud-shafts 28 secured in housings 29 formed on the frame-sides 10 and 11 respectively. Wheels 27 are disposed inwardly of the toothed traction wheels 21 and roll on a flat tread 30 formed on the track 24 inwardly of the rack 23. Grooves 31 and 32 are formed at the sides of the teeth of rack 23 so that the sand which finds its way into the spaces between the teeth of the rack and the wheels 21 can escape laterally. Cleaners 33 and 34, which are fixed to the frame-sides, extend into the grooves 31 and 32 and clean them out in the rear of the traction-wheels, as the truck travels over the floor. An additional cleaner 33^a is hinged to either side of the frame and is pressed by a spring 33^b to ride over and between the teeth and in the grooves 31 and 32 to clean the racks and grooves in advance of the wheels 22. By supporting the tube 13 in the frame-sides and extending its ends into the hubs of the traction-wheels 21 and extending the cross-shaft 26 through the tube, the tube is made

to serve not only as an effective frame-member, but also as an enclosure for the cross-shaft which positively drives one traction-wheel from the other, so both sides of the truck will travel equidistantly.

A base for supporting the molding machine on the truck comprises a member 35 which is provided with a seat 36 bearing on pipe 13 and clamped thereto by bolts 37 and a member 38 which is bolted at 39 to member 35 and is provided with a seat 40 to receive and engage the pipe 12 and is clamped thereto by U-bolts 41. A standard 60 for supporting the upper end of an elevator, hereinafter described, is also clamped on top of base-member 38 by U-bolts 41. A post 42 is provided on the base-member 35. The molding machine mounted on the truck comprises an arm 44 pivoted on the post 42, a jib 45 pivoted to the outer end of the arm 44, a sand-projector 46 at the outer end of the jib, a motor 47 mounted on the jib and connected to drive the rotor of the sand-projector 46, a vibratory chute conveyor and riddle 48 mounted to swing with the arm 44, mechanism 49 for vibrating the chute to deliver sand onto a feed-belt 50 which is mounted to swing with the arm 45 and is adapted to deliver sand to the projector 46. The latter may be of the construction set forth in Letters Patent No. 1,309,833; so that a more detailed description is not deemed necessary. The construction of the arm, jib, mechanism for operating the chute 48 and mechanism for driving the belt 50 may be of the same construction described and illustrated in our application for Letters Patent filed March 14, 1921, Serial No. 452,068, to which reference may be had for a more detailed illustration and description. This molding machine exemplifies one which is mounted upon a truck and is adapted to be operated to fill flasks beneath the projector.

To keep sand supplied to the molding machine from a pile on the floor ahead of the truck, a cross-conveyor, comprising hollow-shaft 58 and spiral blades 54 and 55 which are provided with blades 53 adapted to disintegrate the sand in the pile, is provided to convey the sand inwardly towards the center of the truck. Flanged plugs 63 are secured in the ends of the hollow shaft 58. A stud shaft 64 is mounted in a bearing 65 on frame-side 11 and is provided with a flange 66 which is bolted to the flange on one of the plugs 63. A stud-shaft 67 held in a bearing 65 on the frame side 12 is provided with a flange 66 which is bolted to the flange on the plug 63 in the other end of the pipe 58. This construction provides for a strong tubular shaft for the spiral conveyor which is made up of an ordinary pipe and short shafts which can be easily machined.

An inclined chute or plate 90 is supported between the frame-sides and in operative relation to the cross-conveyor. An angle iron bar 91 is fixed to the chute 90 and the ends of said bar are secured by bolts 92 to lugs 93 on the frame-sides. Medially, the plate is supported by a bracket 94 which is bolted to the bar 91 and is clamped to the tubular frame-member 13 by bolts 37. An elevator for lifting the sand from the space between the cross-conveyor members for use in the molding machine comprises an endless chain 56 which passes around a sprocket 57 on the hollow shaft 58, to which the spiral conveyor blades 54 and 55 are secured and around an overhead sprocket 59 which is suitably mounted at the upper end of a standard 60 and buckets 61 on said chain which scoop up the sand between the blades 54 and 55 and dump it into a guide 62 which delivers the sand into the chute 48.

The casing of an electric-motor 68 is bolted to the bracket 19. A rod 70 supports the outer portion of said bracket from the frame-side 11. This motor is provided to drive the cross-conveyor and elevator. The mechanism for driving the cross-conveyor comprises a pinion 71 on the shaft of motor 68, a gear-wheel 72 meshing with the pinion 71 and mounted on a stud-shaft 73 supported in the frame-side 11 and secured to drive a pinion 74 which meshes with a gear-wheel 75 which is secured to the outer end of the stud-shaft 64 at one end of the pipe 58. A casing 75^a encloses the gear-train between the motor 68 and stud 64. The sprocket wheel 57, secured on the pipe 58, drives the elevator.

The mechanism for driving the traction-wheels to propel the truck comprises an eccentric pin 76 secured in stud 67, and a pawl 78 pivoted to said pin and engaging a ratchet-wheel 79 which is keyed to a pinion 80 which is mounted on a stud-shaft 81 which is secured in the frame-side 10. Pinion 80 is provided with teeth conforming to the teeth on the traction-wheels 21 and meshes with one of them. A dog 82 is pivoted to the frame-side 10 at 83 and engages the ratchet 79 to prevent retraction thereof. The shaft 26, which extends through pipe 13, is keyed to both of the traction-wheels 21 and causes both sides of the machine to be uniformly advanced.

The invention exemplifies an improved portable molding machine which is constructed so as to effectively withstand the stresses to which the machine is subjected in practice; in which the truck-frame is built up of sides and tubular cross-members; in which the tubular cross-members are utilized to house a shaft for cross-connecting the traction-wheels; in which a pipe carries the spiral conveyor blades and in which the

traction-wheels are driven from the cross-conveyor by pawl and ratchet mechanism and simple gearing.

5 The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

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

1. In a portable molding machine, the combination of a truck-frame built up of sides and tubular cross-members rigidly secured to the sides, a molding machine mounted on the truck, mechanism for conveying sand from the floor for use in the machine, and mechanism for driving said conveying means.

20 2. In a portable molding machine, the combination of a truck-frame built up of sides and tubular cross-members rigidly secured to the sides, a molding machine mounted on the truck, a cross-conveyor, an elevator, and mechanism for driving said conveyor and elevator.

3. In a portable molding machine, the combination of a truck-frame built up of sides and tubular cross-members rigidly secured to the sides, a molding machine clamped to and supported from said tubular members, means for conveying sand from the floor for use in the molding machine and mechanism for driving said conveying means.

4. In a portable molding machine, the combination of a truck-frame composed of sides and cross-members rigidly secured to the sides, a base clamp to said cross-members, a molding machine mounted on the base, mechanism for conveying sand from a pile for use in the molding machine, and mechanism on the truck for driving said conveying mechanism.

5. In a portable molding machine, the combination of a truck-frame composed of sides and cross-members rigidly secured to the sides, a base clamp to said cross members, a molding machine mounted on the base, mechanism for conveying sand from a pile on the floor and elevating it for use in the molding machine, a standard for supporting the upper end of said mechanism secured on said base, and mechanism on the truck for driving said conveying and elevating mechanism.

6. In a portable molding machine, the combination of a frame composed of sides and tubular cross-members rigidly secured to the sides, a base, clamps for securing the base to said tubular members, a molding machine mounted on said base, mechanism for conveying sand from a pile for use in the molding machine, and driving mechanism for said conveying mechanism.

7. In a portable molding machine, the combination of a frame composed of sides and tubular cross-members rigidly secured to the sides, a base, clamps for securing the base to said tubular members, a molding machine mounted on said base, mechanism for conveying and elevating sand from a pile for use in the molding machine, a standard for supporting the upper end of said mechanism, secured on said base, and driving mechanism for said conveying and elevating mechanism.

8. In a portable molding machine, the combination of a truck-frame comprising sides and cross-members rigidly secured to the sides, one of the cross-members being tubular, wheels for the truck, a molding machine mounted on the truck, mechanism for conveying sand from a pile for use in the molding machine, and driving mechanism comprising a cross-shaft extending through the tubular cross-member.

9. In a portable molding machine, the combination of a truck-frame comprising sides and cross-members rigidly secured to the sides, at least one of which is tubular, wheels for the truck, a molding machine mounted on the truck, mechanism for conveying sand from a pile for use in the molding machines, a cross-shaft extending through the tubular cross-member and secured to a pair of said wheels, and driving mechanism for the conveying mechanism.

10. In a portable molding machine, the combination of a truck-frame comprising sides and cross-members rigidly secured to the sides at least one of which is tubular, a pair of wheels for the truck journaled on the ends of said tubular member, a cross-shaft between said wheels and extending through a tubular cross-member, a molding machine mounted on the truck, mechanism for conveying sand from a pile for use in the molding machine, and mechanism for driving said conveying mechanism.

11. In a portable molding machine, the combination of a truck-frame comprising sides and cross-members rigidly secured to the sides at least one of which is tubular, a pair of wheels for the truck journaled on the ends of said tubular member, a cross-shaft between said wheels and extending through a tubular cross-member, mechanism for conveying sand from a pile for use in the molding machine, mechanism for driving one of said wheels, and mechanism for driving the conveying mechanism.

12. In a portable molding machine, the combination of a truck-frame, wheels for supporting the frame at least one of which is provided with a toothed periphery, a molding machine mounted on the frame, mechanism for conveying sand from a pile, for use in the molding machine, a motor mounted on the frame, and gearing operated

by said motor for propelling the truck and comprising a toothed pinion engaging the teeth on the toothed traction-wheel.

13. In a portable molding machine, the combination of a truck-frame, a pair of wheels for supporting the frame provided with toothed peripheries, a molding machine mounted on the frame, mechanism for conveying sand from a pile, for use in the molding machine, a motor mounted on the frame, and gearing operated by said motor for propelling the truck and comprising a toothed pinion engaging the teeth on the toothed traction-wheel and a cross-shaft between said wheels for driving one from the other.

14. In a portable molding machine, the combination of a truck-frame comprising a tubular cross-member, a pair of wheels for supporting the frame provided with toothed peripheries, a molding machine mounted on the frame, mechanism for conveying sand from a pile, for use in the molding machine, a motor mounted on the frame, gearing operated by said motor for propelling the truck and comprising a toothed pinion engaging the teeth on the toothed traction-wheel, and a cross-shaft extending through said tubular member, connected to drive one of the wheels from the other.

15. In a portable molding machine, the combination of a truck-frame, a pair of traction-wheels for the truck provided with toothed peripheries, correspondingly toothed tracks for said wheels in the floor of the molding room, mechanism for driving one of said toothed wheels, a cross-shaft between said wheels whereby one will be driven from the other, a molding machine mounted upon the frame, and mechanism for conveying sand from a pile on the floor, for use in the molding machine.

16. In a portable molding machine, the combination of a truck-frame, a pair of traction-wheels for the truck provided with toothed peripheries, correspondingly toothed tracks for said wheels on the floor of the molding room, pawl and ratchet mechanism for driving one of said toothed wheels, a cross-shaft between said wheels whereby one will be driven from the other, a molding machine mounted upon the frame, and mechanism for conveying sand from a pile on the floor, for use in the molding machine.

17. In a portable molding machine, the combination of a truck-frame comprising a tubular cross-member, a pair of traction-wheels for the truck provided with toothed peripheries, correspondingly toothed tracks for said wheels on the floor of the molding room, mechanism for driving one of said toothed wheels, a cross shaft between said wheels extending through said tubular member and whereby one will be driven from the other, a molding machine mounted upon a frame, and mechanism for conveying sand

from a pile on the floor, for use in the molding machine.

18. In a portable molding-machine, the combination of a truck-frame, wheels for said frame at least one of which is provided with a toothed periphery, a track for said toothed wheel comprising a rack having corresponding teeth and longitudinally grooved portions at the sides of the rack, mechanism for driving the toothed wheel, a molding machine mounted upon the frame, and mechanism for conveying sand from a pile for use in the molding machine.

19. In a portable molding machine, the combination of a truck-frame, wheels for said frame at least one of which is provided with a toothed periphery, a track for said toothed wheel comprising a rack having corresponding teeth, and a longitudinal groove at the side of the rack, a cleaner on the frame extending into said groove, mechanism for driving the toothed wheel, a molding machine mounted upon the frame, and mechanism for conveying sand from a pile for use in the molding machine.

20. In a portable molding machine, the combination of a truck-frame, wheels for said frame at least one of which is provided with a toothed periphery, a track for said toothed wheel comprising a rack having corresponding teeth, and longitudinally grooved portions at the sides of the rack, cleaners for said grooved portions, mechanism for driving the toothed wheel, a molding machine mounted upon the frame, and mechanism for conveying sand from a pile for use in the molding machine.

21. In a portable molding machine, the combination of a truck-frame, a pair of traction-wheels for the truck provided with toothed peripheries, correspondingly toothed tracks for said wheels on the floor of the molding room, mechanism for conjointly driving both of said wheels, a molding machine mounted upon the frame, and mechanism for conveying sand from a pile on the floor, for use in the molding machine.

22. In a portable molding machine, the combination of a truck-frame, a pair of traction-wheels for the truck provided with toothed peripheries, correspondingly toothed tracks for said wheels on the floor of the molding room, pawl and ratchet mechanism for driving one of said wheels, a cross-shaft between said wheels for driving one from the other, a molding machine mounted upon the frame, and mechanism for conveying sand from a pile on the floor for use in the molding machine.

23. In a molding machine, the combination of a truck-frame, a pair of traction-wheels for the truck provided with toothed peripheries, another pair of wheels for the truck, tracks provided with teeth corresponding to the teeth of the traction-wheels,

with plain tread portions for the second pair of wheels and with grooves between said tread and toothed portions, mechanism for driving the traction-wheels, a molding machine mounted upon the frame, and mechanism for conveying sand from a pile, for use in the molding machine.

24. In a molding machine, the combination of a truck-frame, a pair of traction-wheels for the truck provided with toothed peripheries, another pair of wheels for the truck, tracks provided with teeth corresponding to the teeth of the traction-wheels, with plain tread portions for the second pair of wheels and with grooves between said tread and toothed portions, cleaners for said grooves mounted on the frame, mechanism for driving the traction-wheels, a molding machine mounted upon the frame, and mechanism for conveying sand from a pile for use in the molding machine.

25. In a molding machine, the combination of a truck-frame, a pair of traction-wheels for the truck provided with toothed peripheries, another pair of wheels for the truck, tracks provided with teeth corresponding to the teeth of the traction-wheels, with plain tread portions for the second pair of wheels and with grooves between said tread and toothed portions, mechanism for driving the traction-wheels, comprising a cross-shaft whereby both will be conjointly driven, a molding machine mounted upon the frame, and mechanism for conveying

sand from a pile for use in the molding machine.

26. In a portable molding machine, the combination of a wheeled truck-frame, a molding machine mounted on the frame, mechanism for conveying sand from a pile, for use in the molding machine comprising a conveyor consisting of a tube and blades thereon, studs secured to the ends of the tubes, bearings for said studs on the frame, and mechanism for driving the conveyor.

27. In a portable molding machine, the combination of a wheeled truck-frame, a molding machine mounted on the frame, mechanism for conveying sand from a pile, for use in the molding machine, comprising a conveyor consisting of a tube and blades thereon, plugs secured in the ends of the tube, studs secured to the plugs, bearings for said studs on the frame, and mechanism for driving the conveyor.

28. In a portable molding machine, the combination of a wheeled truck frame, a molding machine mounted on the frame, mechanism for conveying sand from a pile for use in the molding machine comprising a conveyor consisting of a tube and blades thereon, studs secured to the ends of the tubes, bearings for said studs on the frame, and mechanism for driving the conveyor comprising a gear-wheel on one of the studs.

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