

Who invented the portable mixer anyway?



The patent that preceded this early model as the first true concrete truck was approved in 1920.

When you're a child, there is always something very special about your birthday. On my 10th, 11th, 12th, 13th, and 14th birthdays my parents made the extra-special effort to schedule concrete delivery for a project at our house.

I don't think it was necessarily planned that way, but I grew up in a northern climate, and my birthday is in August. While other 10-year-olds were learning about fishing and hunting, I was learning to handle a float and a trowel. Best of all, I got to see those massive transit-mix trucks in action up close and personal. Boys love trucks! But who invented the concrete truck?

Inventors don't normally conceive sophisticated machinery as we know it today; its design evolves throughout the years. That is certainly true for the concrete truck, whose development has in fact been a gradual metamorphosis.

During several hours of microfilm

study at the Federal Depository Library, I found what I believe to be the first portable concrete mixer patented in America. Titled "Mortar Mixer," it was patented on February 9, 1904 by Richard Bodlaender of Breslau, Ger-

many (Fig.1). The front axle and wagon wheels were replaced by a large drum with paddles inside, and as the vehicle was to be drawn along, ostensibly by horses, the mixing drum rolling along the ground would create the mixing action. While I am sure this invention made life easier for the concrete producer, it probably also was responsible for the invention of spinal surgery and chiropractic treatment.

From horse-powered to horsepower

While it could be called a portable mixer, this patent really did not fit the criteria of the first concrete *truck*, since a "truck" has its own power source.

Another portable mixer, invented by

Figure 1. This 1904 patent combined the mixer and the front wheel on a horse-drawn trailer.

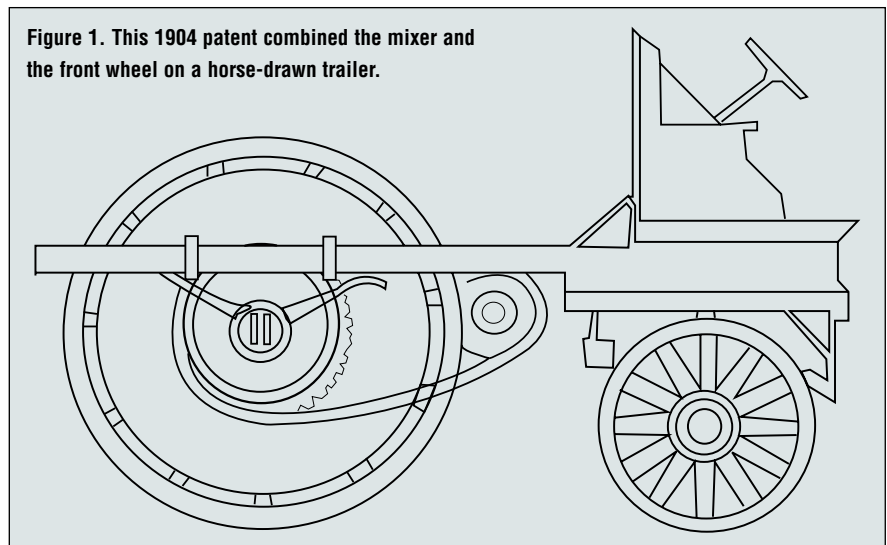


Figure 2. The first “true” concrete truck patent, invented by Ackert Bickel of Kansas City, Mo., in 1920.

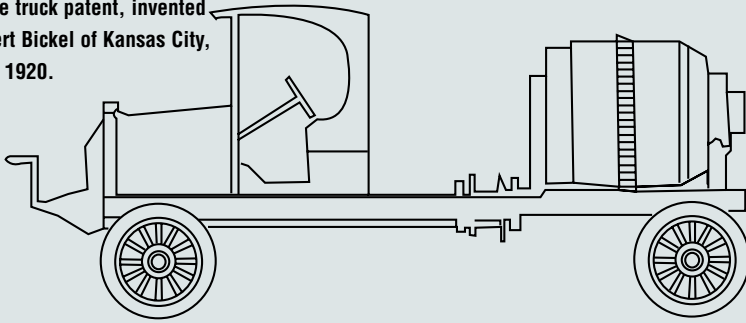
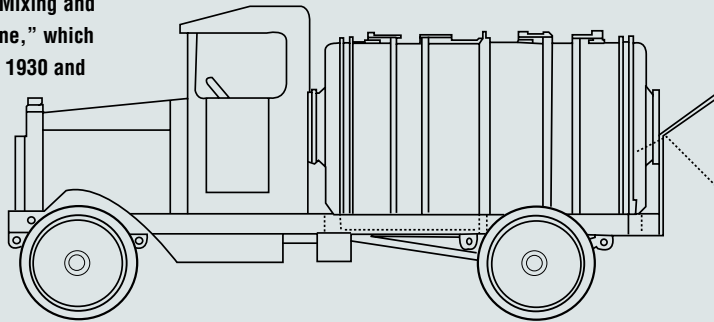


Figure 3. Milwaukeean Charles Ball’s “Mixing and Agitating Machine,” which was patented in 1930 and manufactured by a Milwaukee company.



Alvah Handzel of Wilkes-Barre, Pa., was patented on January 12, 1909. It employed a hexagonal drum, but not one that rolled along the ground. A coal-fired steam boiler attached to a piston pump powered the mixer, which had a gear-train to drive the chain drive.

The addition of a power unit was such a quantum leap over horses that for the next decade, little of note was really accomplished. The only reference I found during this period was a March 24, 1914 patent by Ernest Wege of LaCrosse, Wis. Interestingly, it was the first of the patents to have an assignee, Sterling Machinery Co. The power unit was smaller, it incorporated a flywheel, and used a direct gear drive in lieu of a chain drive, but aside from that, it strongly resembles its 1909 predecessor.

If it *looks* like a truck and *acts* like a

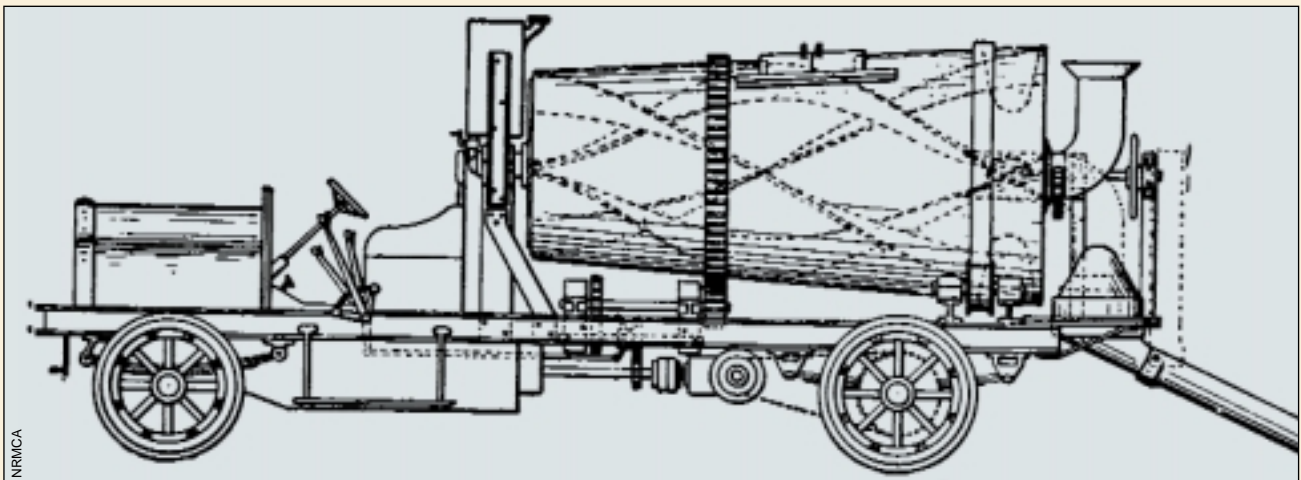
Who should really get the credit?

Records of U.S. patents indicate that Ackert Bickel of Kansas City, Mo., invented the first true concrete truck. But the government records may not tell the whole story, according to *Pictorial History of the Ready Mixed Industry*, a book published by the National Ready Mixed Concrete Association:

“As far back as 1916, Stephen Stepanian of Columbus, Ohio, designed a self-discharging motorized transit mixer. His patent application was finally denied in 1919 [because Stepanian was not a U.S. citizen]. The drawing that accompanied his patent application is reproduced in this

book, and it is interesting indeed to note how sound were his basic concepts of what such a vehicle should look like. If you modernize the truck itself, and make a few changes in the drum, you would have one of today’s ready mixed concrete trucks.

“Although Mr. Stepanian was denied the patent, he did receive universal recognition for his contributions to the industry. At the 1954 Chicago NRMCA Convention, several thousand people honored Mr. Stepanian as he was made an honorary life member of the National Ready Mixed Concrete Association Board of Directors.”



Stephen Stepanian’s “self discharging motorized transit mixer,” for which a patent application was refused in 1916.

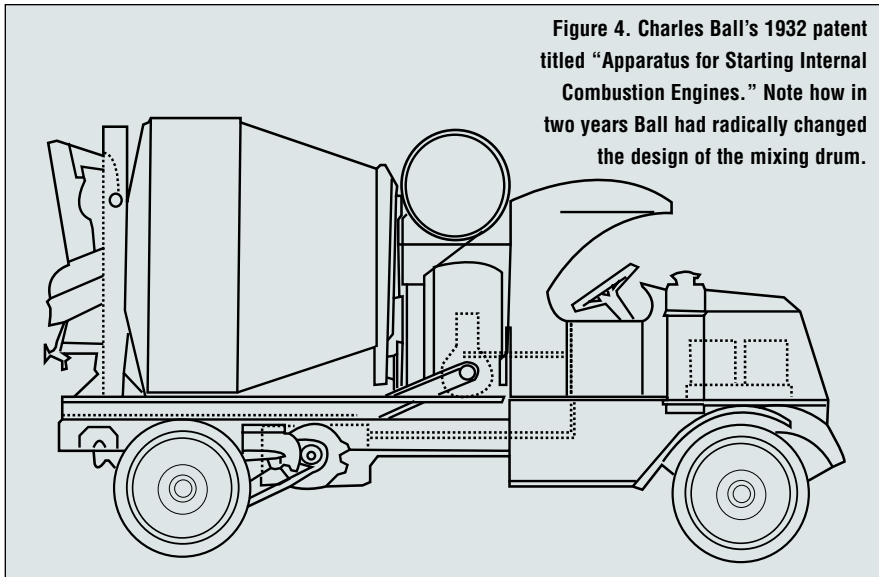


Figure 4. Charles Ball's 1932 patent titled "Apparatus for Starting Internal Combustion Engines." Note how in two years Ball had radically changed the design of the mixing drum.

truck, it must be a truck. Finally, to my great adulation (which was not openly welcomed in the library), I found the first *true concrete truck*! I was, however, a little disappointed they didn't call it a concrete truck. In fact this patent is titled "Apparatus for Concrete Work." No matter. Records indicate the first concrete truck (Fig. 2) was invented by Ackert Bickel of Kansas City, Mo., and was patented under U.S. Patent No. 1,363,304 in 1920. It had no sign of horses, no steam boiler, a real steering wheel, and an internal combustion engine, albeit with a hand-crank starter sticking out the front of the vehicle.

The most notable thing about the circa-1920 concrete truck is an enormous amount of dead space on the truck bed. This is what I mean by a gradual metamorphosis. Notice the spoke wheel, and even how the frame strongly resembles that of a wagon. Apparently the wasted space on the truck bed never crossed anybody's mind. This was probably because people were simply happy to make a living and reduce their workload. They didn't feel the need to get the absolute greatest use or greatest profit from one thing or one trip. It was better than before, and so it was enough.

Bickel's truck remained the state of the art for a decade until inventor Charles Ball of Milwaukee received U.S. Patent No. 1,766,584 on June 24, 1930 for his next-generation concrete truck (Fig. 3). Titled "Mixing and Agitating Machine," it was assigned to Chain Belt Co., also of Milwaukee.

Obviously Ball's truck has a substantially larger load capacity and may have been the origin of the saying "the whole nine yards," coined in the concrete industry. (I was always disappointed as a kid when one of those puny 7-yard trucks showed up. Didn't they know it was my birthday?)

During the next 2 years, Ball radically changed the designs for the mixing drum and incorporated them into his patents (Fig. 4). For the next 40 to 50 years, the general appearance of the concrete truck didn't change much.

Origin of transit mixers

In the 1930s, the demand for concrete trucks was exploding due to increasing highway construction. In 1927, just at the beginning of where we start to find a rash of new concrete

truck patents, the Lincoln Highway, the first coast-to-coast highway, was completed between New York and San Francisco. One of the more interesting ideas preceding the tilt-drum mixer was Roscoe Lee's "Transit Concrete Mixer" (Fig. 5) patented on Christmas Day in 1934. (I guess the patent folks were more dedicated in those days!)

Lee's invention was an attachment that fit on the back of a standard truck frame and carried a drum mixer that was set in place with a small crane. It was less expensive than a dedicated transit truck, and once the contract was complete, the truck could be refitted with a flatbed, box, or dump to carry other materials. And the driver could get to the jobsite on a paved road.

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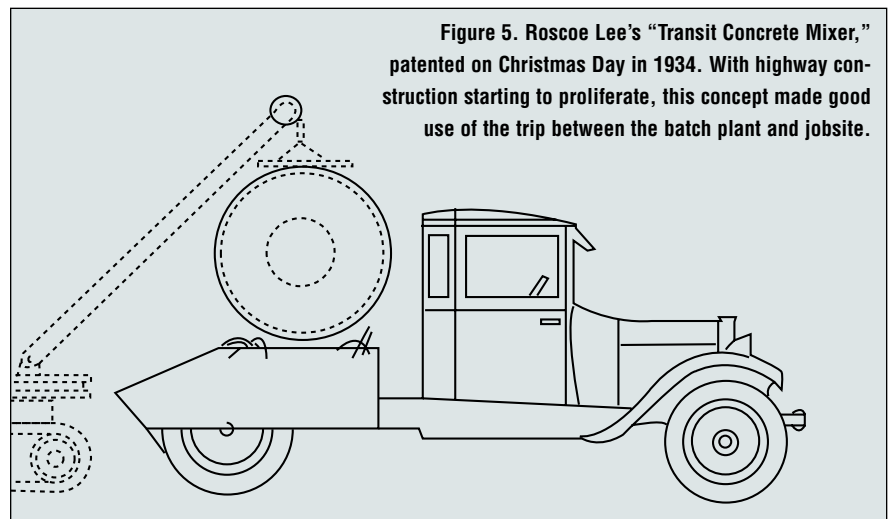


Figure 5. Roscoe Lee's "Transit Concrete Mixer," patented on Christmas Day in 1934. With highway construction starting to proliferate, this concept made good use of the trip between the batch plant and jobsite.