

The Evolution Of Better Ideas



By Tom Lincir, President and Founder,
Ivanko Barbell Company

Coming up with better ideas is an effective competitive strategy. But the term “competition” can misguide your efforts. It conjures up images of combat, of clawing and scratching to gain an advantage over your opponents in the marketplace. If you undertake innovation to simply gain a competitive weapon, you will be tempted to do just enough to gain a point of “difference”, or a better “advertising claim”, or a way to “look better” to the industry — something short on innovation, long on hype.

A better way to approach innovation is to define “competition” as “striving to serve the marketplace better”. That is, focus on what the marketplace wants, not on what your rivals are doing. This will make you a more formidable innovator, and a more formidable competitor.

Serving the marketplace better is both a humble and a rewarding calling — humble, because you must subordinate your ego to the wishes and judgments of the marketplace; rewarding, because if you succeed, you will reap rewards in much greater measure than you would if you were focused on using innovation as competitive weaponry against your competition.

Coming up with better ideas, therefore, is more than simply an activity, it's an attitude— an attitude of never being satisfied with the way things are; an attitude of always striving to serve the marketplace better, no matter what everyone else is doing.



Where Better Ideas Come From

Nearly all new ideas are built upon past innovations that have preceded

them. Long long ago, a mathematician invented binary mathematics, which was the basis for the abacus calculator, which

was later made electronic through the use of vacuum tubes, which were replaced by transistors, then

incorporated into miniature integrated circuits we call computer chips. Each new advance is built upon the foundation of earlier advances. If you make a better mousetrap, it doesn't mean you invented the mousetrap. If you try to take credit for someone else's idea, the marketplace will eventually discover the truth, and your reputation will suffer. It is simply good practice to give credit where credit is due, to acknowledge and respect the contributions of those before you who have made your better idea possible.

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When Ivanko introduced its E-Z Lift grip plate, we drew from a rich history of grip plate designs. Seeing that some grip plates featured two grip holes and others featured multiple grip holes, we opted for a multiple grip design because of what we saw as easier, safer handling properties. With only two holes, the user may have to twist the 45 pound plate on the floor from a squatting position to bring the holes into alignment. This can torque the spine and joints, and cause injury. With multiple holes, the user can access the plate from virtually any position, without having to reposition the plate or his or her body. The bottom line is that multiple holes means safer handling.

But we didn't stop there. We also spent a great deal of design time rounding the edges and smoothing the surfaces to protect users and equipment. The E-Z Lift plate is one example of starting with good ideas from the past, and coming up with something that serves the marketplace better.



Roberts Plate - 1967 (L), Pullem Plate - 1978 (C), Ivanko Iron Round Hole Plate - 1999 (R) – Our EZ Lift plate opted for the multiple grip approach for greater convenience and safety.

“Different” Is Not Necessarily “Better”

The marketing graveyard is strewn with ideas that were simply “different” but not better. Sometimes things are the way they are for very good reasons that have stood the test of time.

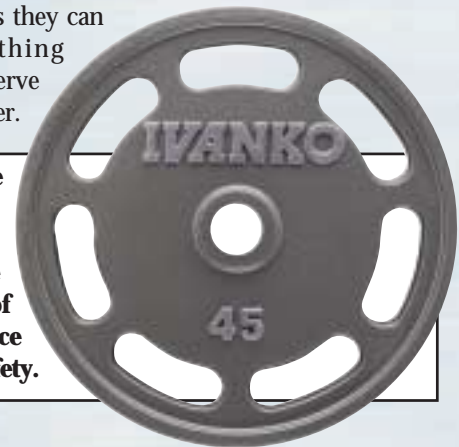
A good example of this principle is the round weight plate. Over the years, several manufacturers have introduced weight plates with flat surfaces. However, the preponderance of weight plates in the marketplace are still round, undoubtedly for good reasons. One major reason is that flat-sided plates are unsafe

for certain barbell exercises, particularly two of the most popular and beneficial ones — the deadlift and the power clean. In each exercise, the repetition ends by returning the bar to the floor. With flat-sided plates, the plate can land on the point between the flat surfaces, causing the plate to lurch to the flat position. This twists one or both ends of the bar out of alignment, which can torque the spine and joints at the end of the repetition. And since flat-sided plates cannot be rolled back into position, the user must interrupt the exercise to heft the bar back into place for the next repetition, further risking injury. None of this happens with round plates.

“All of which explains why plates were round in the first place, and why their roundness has stood the test of time. Sometimes things are as good as they can be, and something different does not serve the marketplace better”.

A common practice of those who introduce something different “just to be different” is to spin the difference into an advertising claim. Those behind flat-sided plates have attempted to say that these plates are superior because they do not roll. But barbells or weight plates rolling around the floor out of control is fictitious. Have you ever seen this happen? The reality is that flat-sided plates are inconvenient and unsafe for reasons mentioned above. All of which explains why plates were round in the first place, and why their roundness has stood the test of time. Sometimes things are as good as they can be, and something different does not serve the marketplace better.

The weight plate is round for very good reasons that have stood the test of time: convenience and safety.



Innovate Beyond What “Sounds Good”

As mentioned, companies are sometimes tempted to stop innovating or trying to serve the marketplace better when they have achieved an impressive advertising claim. One product category where this is especially true is in Olympic bars. Some manufacturers throw around impressive sounding measures of a bar's strength that are either irrelevant or misleading. Ratings expressed as “1000 pound test” or “2000 pound test” may sound impressive because the numbers are big. In reality, “pound test” is not a recognized or relevant measure of Olympic bar quality. If a manufacturer cites such a measure, it is out of either ignorance, or cunning.

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The measures that do count are "tensile strength" and "yield strength". The tensile strength rating is the pounds per square inch (PSI) of force required to pull the bar apart. The yield strength is the amount of force it takes to bend the bar past the point where it will not return to its original position.

With respect to tensile strength, bars below Olympic caliber or "training bars" in the U.S. are commonly made from Stress Proof® steel with a minimum tensile strength rating of about 115,000 PSI, or Fatigue Proof® steel with a minimum tensile strength rating of 140,000 PSI. An Olympic grade bar requires at least 150,000 PSI from a steel such as ETD 150®.

For over 20 years, Ivanko Barbell Company has been on a quest to develop the ultimate Olympic bar — the strongest and straightest bar possible that could be machined economically. The company started with conventional 150,000 PSI tensile strength bar stock (ETD 150®), but found that the yield strength was insufficient to prevent permanent bending. The company then experimented with increasing levels of tensile strength. At 160,000 PSI, the bars still exhibited permanent bends. The same was true at 170,000 PSI and 180,000 PSI. It was only when tensile strength exceeded 200,000 PSI that the permanent bends were eliminated.

Increasing the tensile strength, however, gives rise to a problem — the steel becomes progressively harder, which makes it exponentially more difficult and expensive to machine and work the final product. Different steels with internal microstructures exhibited the same problems. A bar with a tensile strength of 200,000 PSI or more is therefore significantly more expensive than a 150,000 PSI tensile strength bar.

We could avoid this difficulty and expense by offering an ETD 150 bar, touting its "150,000 PSI", and letting none be the wiser. But we wanted to give the marketplace a better Olympic bar.

Olympic bar straightness is also an important factor; one that people seldom consider because they assume all bars are absolutely straight. This couldn't be further from the truth. The conventional bars and even "competition" bars that we have checked straight from the mills are between 60 thousandths of an inch (.060" or 1/16") to 100 thousandths of an inch (.100" or 7/64") curvature over the 7 foot length of the finished Olympic bar. These measurements are under the mills' standard tolerance of 1/8" (.125" or 1/8") maximum curvature in 10 foot lengths of the bar stock, but this is not considered straight enough for Olympic lifting. So at Ivanko, we straighten the bars after they come from the mill, to tolerances of less than 15 thousandths of an inch (.015" or 1/64") over the length of the bar. To our knowledge, we are the only company who goes to this trouble to give the marketplace a much straighter Olympic bar.

Other important factors are weight and dimension accuracy. In order to be approved for international competition, an Olympic bar should weigh 20 kilograms or 44.08 pounds. The bar diameter should be 28 millimeters, and the length 2.2 meters. Sleeves should generally follow the spec of 49.5 to 50 millimeters diameter. Ivanko Olympic bars are thoroughly measured and tested by the International Powerlifting Technical Committee, and they have been approved for worldwide international competition.

In addition to proper strength measures, the importance of safety in any bar cannot be overstated. If a bar bends, it can be replaced. If a bar snaps severe injury can result. A poor quality Olympic bar can become a lethal weapon. That is why the manufacturing and quality assurance testing of bars should be treated seriously.

To protect against the possibility of snapping, bars should be ultrasonic tested to eliminate those with internal defects, and they should be eddy current or magnetic particle tested to detect external cracks that may be a starting point for a bar to snap. This testing is an additional safeguard, but many companies do not perform these tests. They should begin doing so.

Protective coatings are also an important safety factor. Although many manufacturers chrome plate their bars for aesthetic purposes, the chrome plating process can result in hydrogen embrittlement, which can cause the bar to snap at some unknown point in the future. Chrome also eventually chips, peels, and degrades over time. At Ivanko, we use only black oxide coating on our commercial Olympic bars, or stainless steel that requires no coating. Black oxide is applied in heat conditions under 400° F, which will not alter the chemistry of the bar, or weaken its tensile strength. If done properly, black oxide is a beautiful and long-lasting coating that requires only a little periodic maintenance. Stainless steel is the most expensive solution, but it never chips, peels, or rusts, and it requires no maintenance.

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Ivanko's pursuit of the ultimate Olympic bar is on-going, and its current best effort is a stainless steel bar with 218,000 PSI tensile strength, and sufficient yield strength to prevent permanent bending.

In today's market, there are a lot of Olympic bars that trumpet impressive stats — "150,000 PSI", "2000 pound test", "hard chrome plated" — but as is often true, if you

want to serve the marketplace better, you have to innovate beyond what sounds good.



Ivanko's Stainless Steel Olympic Bar. 218,000 PSI tensile strength, ultrasonic tested for internal cracks, magnetic particle tested for external cracks, and never peels, chips, or rusts.

Stress Proof®, Fatigue Proof® and ETD 150® are registered trademarks of LaSalle Steel Company, Hammond, Indiana, U.S.A.

Innovate To Solve Real Problems

Rather than tweaking something to make it different and then promoting the difference for a competitive advantage, greater rewards lie in determining what the marketplace needs, and finding better ways to serve them. A good example of this approach is in the evolution of better barbell collars.

Since at least the early 1900's, barbell collars were a steel or cast iron ring with a square head bolt threaded through the circumference of the ring to lock the ring to the bar and prevent the plates from falling off. This was a secure locking mechanism, but it required a wrench for tightening, and the bolt tip damaged the bar.

Some time between the mid 1920's and mid 1930's, David P. Willoughby invented the "wrenchless" collar through the use of a 90° lever bolt that could be tightened by hand. This was an improvement over the square head bolt collar, but the lever bolt still dented the bar. Additionally, it required the use of a longer collar so that the Lever Bolt would clear the plates when it turned. So the design eliminated the wrench, but it used up extra space on the bar.

Around 1977 Bob Clarke had the idea of tilting the lever bolt at an angle. This concept allowed the use of a narrower collar because the bolt could clear the plates because of the angle. However, the bolt still dented the bar.

In 1981 Ivanko invented the Copper Tipped Sliding Handle "T" Bolt collar. This allowed the use of a narrow collar and the copper tip prevented damage to the bar. This simple concept also strengthened the gripping power of the collar.

Then in 1985, Ivanko set out to develop the ultimate barbell collar. Five engineers and several machinists in three countries

were given the following parameters:

- A) The collar must lock 5 to 10 times stronger than the lever bolt method.
- B) The collar must not mark the bar or, in the case of a tubular bar, crush the tubing.
- C) The collar must use up a minimum of space of the bar.
- D) The collar must be attractive, or at least not ugly.
- E) The collar must be sufficiently new to be patentable.
- F) The collar must be inexpensive to produce.

Ivanko received a lot of interesting ideas, but none met all the parameters. Then, nine months into the process, a machinist from Taiwan came up with a design that met all the parameters — the ultimate collar. Now known as the Ivanko "Compression Ring" collar, it was the result of determining real problems and seeking innovative ways to solve them.

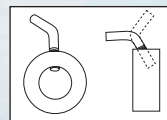
The Compression Ring Collar is a narrow collar with a sliding T-bolt handle. Instead of the bottom of the bolt denting the bar, there is a 3/4" wide flat steel spring recessed into a groove around the inner diameter of the collar. When the bolt is tightened, it causes the surface area of the steel spring to wrap itself around the outer circumference of the bar, thereby increasing the holding power of the collar by a factor of 10 over conventional bolt methods.



Squarehead bolt - 1800's(CD #1)



Lever bolt - 1920's



Angled lever bolt - 1977



T Bolt - 1981



Ivanko Compression Ring - 1985

The evolution of better ideas in a barbell collar.

Learn From Other's Past Mistakes

Every so often a new competitor comes along attempting to recycle an idea that has already been proven deficient in the marketplace. Earlier we gave the example of flat-sided weight plates.

Another example is the idea of welding dumbbell heads onto bars. Every company that has introduced welded dumbbells in the past has learned the same lesson: a percentage of the heads eventually break off. Invariably the break occurs at the same place — at the end of the weld. The problem starts with a tiny crack that is invisible to the naked eye, especially if the dumbbell is covered with rubber or urethane. This hairline fracture eventually gives way, causing the head to snap off without warning. If one of your members is injured by a falling dumbbell head, the legal consequences are obvious.

Universal Gym Equipment experienced these consequences in the mid 1980's with their welded, urethane-encapsulated dumbbells. They eventually withdrew the product from the marketplace because of mounting product liability problems.

Nevertheless, every now and then a newcomer comes along with the brilliant idea to weld dumbbell heads onto the bars. This is often accompanied by advertising claims to the effect

that the product will never break or loosen, and never require maintenance. However, it is sometimes interesting to read their warranties. If the warranty says something to the effect, "Void if you drop it", then they know they have a problem. Which means they offer these products to the marketplace knowing that the product is a ticking time bomb. This is a way to generate a competitive advertising claim, but it is no way to serve the marketplace better.

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If welds are not the answer for fixed weight dumbbells, what is? Fixed dumbbells loosen not because of their basic design, but because of inferior component parts or incorrect assembly procedures. There are over a dozen key factors involved in the design and manufacture of perfect fixed weight dumbbells, several of which are Ivanko trade "secrets". If any of these factors are overlooked, the dumbbell will not stay together. On the other hand, if a fixed dumbbell starts to loosen, you can take it off the floor before it becomes a liability risk. You

Ivanko Barbell Company has acquired Jackson Barbell Company for an undisclosed amount. Jackson International Barbell Company, founded in 1932 by Andrew W. Jackson of Springfield, New Jersey, was noted for making the finest and strongest Olympic bars, precision calibrated plates, and collars in the industry. Jackson was one of the first legitimate inventors of the so-called "grip plate." The company, which closed down in 1975, owned patterns, blueprints, and trade secrets, as well as some unusual forgotten technologies. Ivanko discovered the company assets in an archive, while researching its legal defense against what Ivanko considers to have been a frivolous patent infringement lawsuit.



An angle view of the world's finest Barbell - The Jackson International Olympic Official Revolving Sleeve Contest Barbell. The No. 1-A.

will not have this same advance warning with welded dumbbells.



Welds eventually break, whereas Ivanko's factory assembled fixed weight dumbbells have stood the test of time.

Ask The Marketplace

A significantly better approach than simply trying to be different is to find out what the marketplace is missing in current products or services, and then to come up with a solution that addresses those needs or problems.

One such need Ivanko perceived was that iron dumbbells were destroying the benches and surrounding machines by chipping the powder coating and cutting the upholstery as users dropped them against those surfaces. To address this problem, we introduced rubber coated dumbbells in 1983. An unexpected additional benefit was that the rubber coatings reduced the noise in the gym by about 30%



Ivanko's First Rubber Coated Dumbbell . Introduced in 1983, Ivanko's rubber coated dumbbell was gentler on equipment and furnishings, and enhanced the appearance.



Ivanko's Current Rubber Coated Dumbbell 1986. Ivanko's current rubber coated dumbbell's design is protected by the U.S. Patent and Trademark Office Reg. No. 2,389,609.

Recognize Your Idea's Limitations

Every innovation has its flaws, and you should be prepared to acknowledge them. Your selling proposition should always be that the benefits of your new idea outweigh these limitations. You should never try to cover them up, or re-spin them as benefits. The market will eventually find out the truth, and you will lose credibility. Acknowledging your limitations also gives you the necessary inspiration to do better in the future.

An example of this principle is urethane coated weight plates. The first company to introduce urethane coated plates was Superior Barbell Company in the early 1980's. Unfortunately for them, they encountered a lot of problems with the urethane splitting, and they have since gone out of business.

Ivanko experimented with urethane coatings in the early eighties and chose at that time not to pursue it. Many of the shortcomings we observed then are still present; (1) urethane is too expensive; (2) it is too slippery, with a tendency to slip out of your hands, hence a safety hazard; (3) its surface is harder than rubber, and can actually chip powder coated surfaces; (4) it is more noisy than rubber (although less noisy than iron); (5) it is susceptible to compression dents or flat spots if left on the floor too long. These flat spots will eventually work out, but sometimes it takes several hours.

"However, just as we recognized the limitations in rubber coatings and took strides to give the marketplace something better, we are working on introducing in the near future urethane products that are better than what the market has seen so far".

However, we also have observed a number of advantages

over rubber coatings; (1) urethane enables dramatically vivid colors; (2) it can be engraved and inlaid with color markings for name and weight identification; (3) it is a very clean material and with only a slight odor, unless the surface is machined flat before engraving.

So, we believe urethane has much unrealized promise, but on balance we favor our rubber coated products over the urethane coatings that have been introduced thus far, with one caveat. The rubber must be Ivanko's own proprietary formula. Our process, which is a carefully guarded trade secret, significantly extends the longevity of rubber coated product while reducing the odor to a level comparable to urethane.

Without divulging too much about how we have solved the odor problem, we can tell you that most of the rubber-coated products coming out of China are made from natural virgin rubber which has been sulfur cured. This sulfur content accounts for some of the odor problem. In addition the Chinese have been known to dump used crankcase oil into their rubber formula as an inexpensive way to get rid of their toxic waste. This is the reason some rubber products smell from ten feet away at a trade show.

It took us a long time but with our formula you can expect an extremely long lasting product. We have dumbbells that have been in gyms for twenty years or more, and they're still holding up fine. You can also expect a safe, user friendly product, one that will not slip out of users' hands, one that will not cut upholstery or chip powder coating, and one that requires little or no cleaning. And of course you can also save a bundle of money compared to urethane.

However, just as we recognized the limitations in rubber coatings and took strides to give the marketplace something better, we are working on introducing in the near future urethane products that are better than what the market has seen so far.

Make Better Ideas A Team Sport

"What a person thinks on his own, without being stimulated by the thoughts and experiences of other people, is even in the best case rather paltry and monotonous."

— Albert Einstein

Albert Einstein, the greatest idea person of all time said you can't create in a vacuum. Ideas are a team process. Some of your team members are innovators from the past who have provided the foundation that you can build upon. Others are the club owners, buyers, trainers, and managers who can tell you about needs that are unfulfilled, or problems that are not solved. Still others are the users who discover the flaws that become the basis for your next attempt to serve the marketplace better. At Ivanko, we don't pay much attention to what our competition is doing, only to what the marketplace needs. And we do our best to come up with better ideas.

This article is the first in a continuing series. Your comments or questions are welcome. Write Tom Lincir at Ivanko Barbell Company, P.O. Box 1470, San Pedro, CA 90733.



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