

October 4, 2017

PATENT VALUATION REPORT

PREPARED FOR: GEORGE PLATT
Patent(s) Valuated: 9,720,401 B2



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October 4, 2017

A handwritten signature in blue ink, appearing to be "M. Stue", written over a horizontal line.

Certified Patent Valuation Analyst



Introduction

The present invention “Method and System for Consumer Home Projects Ordering and Fabrication” under issued US Patent 9,720,401 covers a method and structure that offers to the general public access to true CAD/CAM envisioned as being integrated into select existing retail locations as value adding profit centers. The system deliverable being the capability to order from a library of customizable objects or to selectively design an original wood based product or project, and from that design perform tasks necessary for chosen completion levels. Machine readable instructions are generated for the tandem machining system employing a subtractive process to produce any variety of shapes or sizes from in stock or special-order merchandise. Accompanying these instructions, a means to attach store unit cost pricing for materials and additional labor options. Revenue generation will be derived from its use through leasing and licensing arrangements as well as library participation as defined in this report.

Market Growth and Industry Status

The patent analyzed in this valuation report pertains to the US lumber, construction, furniture, and home improvement and renovation industries. The substantial amounts of money flowing through these industries in the United States each year is assessed below and the relevance of the patent is assured given the necessity of the products and services this industry provides. The present patent covers an end-to-end innovative system with the potential to drastically improve retail processes and provide customers with value added benefits permeating through these industries and more. The sections below analyze the volume, trends, and growth in each of these potential industries to illustrate the market and revenue potential of the present patent.

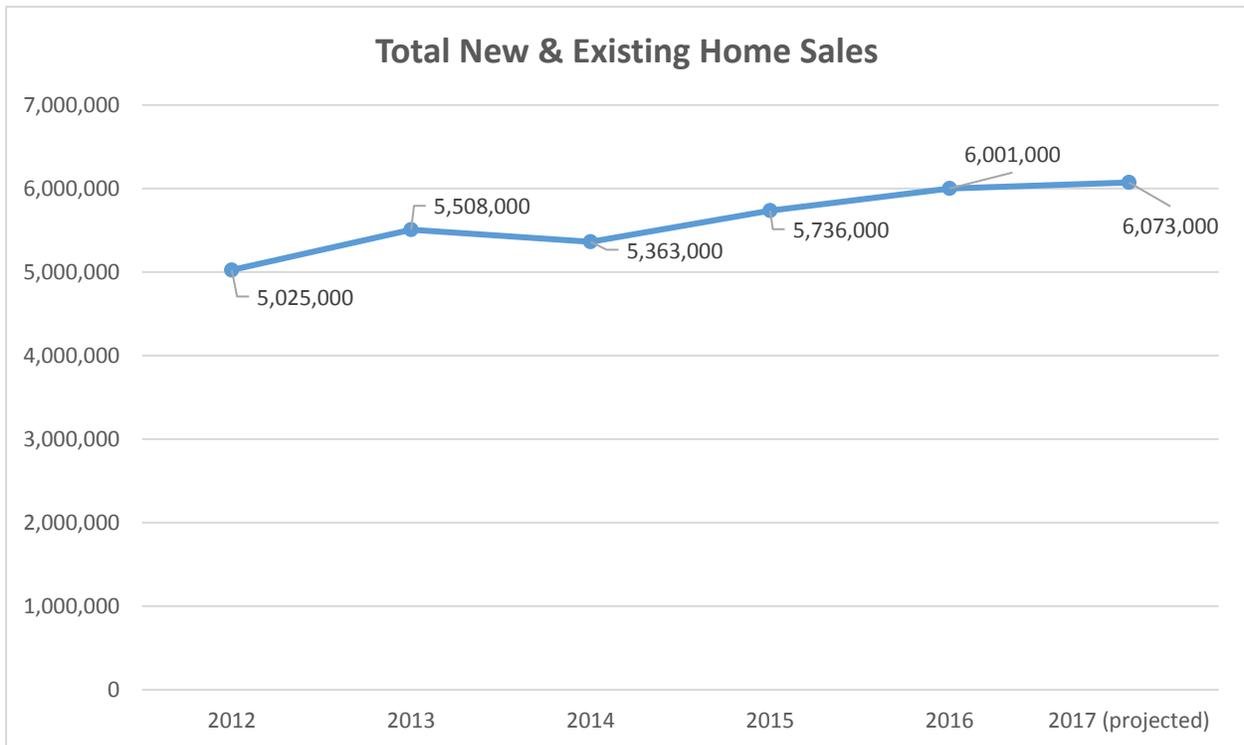
Wood Manufacturing Industry

The wood manufacturing industry in the US covers a wide variety of product lines. Due to growth in consumer spending and the housing sector including remodeling, new, and existing homes, the wood manufacturing industry has seen similar growth as well.

According to the US Bureau of Labor and Statistics, as of 2017 there are approximately 14,736 private industry wood product manufacturing establishments generating an approximate \$7 billion of revenue per annum with an average 2.4% industry growth. Though the industry has seen strong growth in demand and recovery from the economic downturn, there is simultaneously an increase in competition from substitute materials such as plastic and metal. Moving forward, the industry is expected to continue to grow at similarly steady rates as housing and renovation expenditures increase.

Housing Market

Naturally, the housing market will have a direct trickling effect on the markets mentioned. In July of 2017, there were approximately 1.9 million existing homes for sale – a relatively low number which shows that the market is continuing to recover. Nonetheless, the overarching trend since 2012 has been a continual increase with over 6 million total new and existing home sales in 2016.

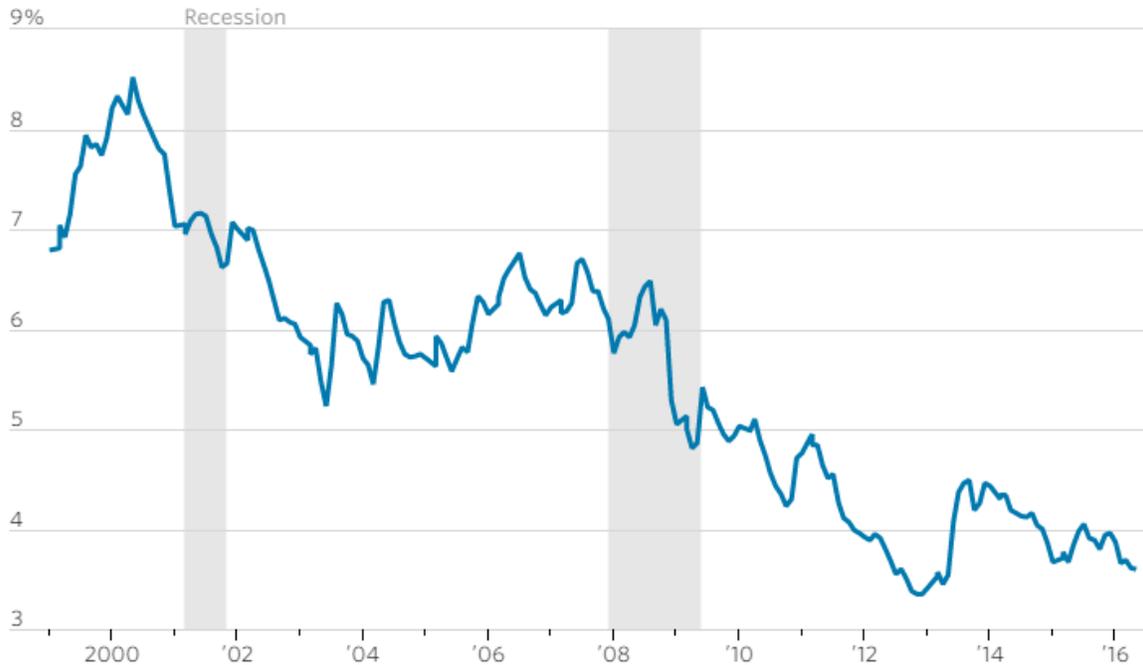


Source: National Association of Home Builders, U.S. Bureau of the Census, National Association of Realtors.

As the housing market continues to recover, the correlated markets relevant to the present invention grow in tandem. In July 2016, new single-family home sales in the US surged 31.3% YOY, seeing double-digit rate for a fourth consecutive month. Despite a slight slowdown in recent times, moving forward, experts predict that housing prices and demand will continue to push higher while mortgage rates remain low.

Lower for Longer

Interest rate on a conventional 30-year fixed rate mortgage, monthly

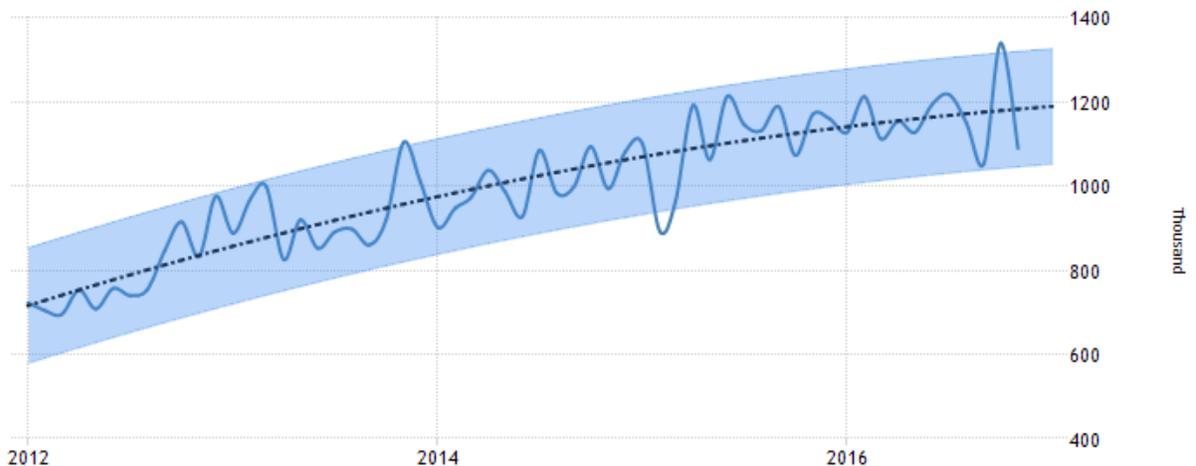


Rates don't include points
 Source: Freddie Mac

THE WALL STREET JOURNAL

US mortgage rates continue to stay low, encouraging maximum mortgage and home purchasing activity – fostering recovery and growth in the housing markets.

US HOUSING STARTS

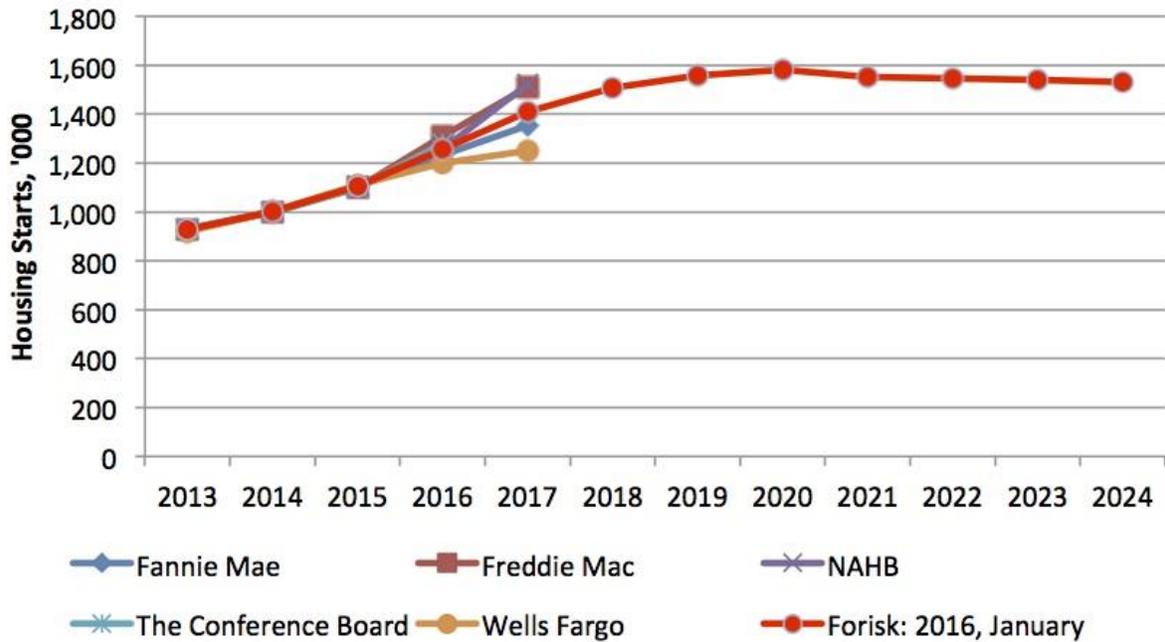


SOURCE: WWW.TRADINGECONOMICS.COM | U.S. CENSUS BUREAU

New home construction in particular is recovering and is expected to at worst, continue steadily with this trend in the coming years. In 2016, nearly 1.7 million units were added nationwide – a

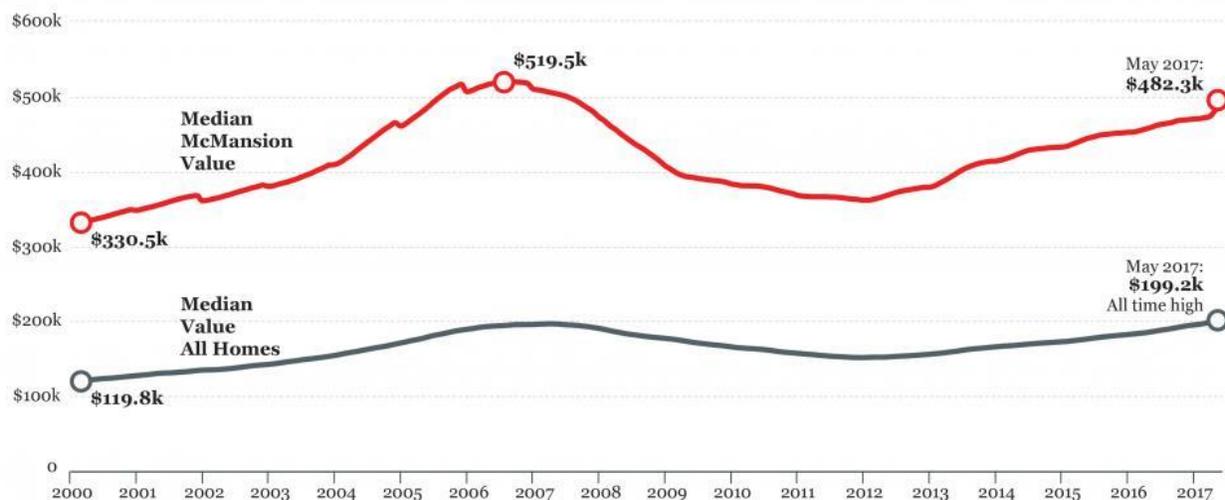
5.6% increase from the previous year and the 7th straight year of gains. Although this shows strong recovery in the markets, it is still a relatively low volume compared to historical data.

Forisk Research Quarterly (FRQ) Q1 2016 US Housing Starts Outlook, Base Case



McMansions On The Rise (Again)

The value of American homes over 3,000 sq ft vs all housing from 2000 to 2017



Newsweek Media Group graphic Daniele Palumbo / @danict89
 Source: Zillow



Demand and prices for “McMansions,” large luxury homes, in particular are increasing.

This market of luxury single family homes represents an ideal customer segment for the present invention, as these homeowners will have more space to fill, more reason to need custom made and ordered wood furniture, and more dedication and commitment to spending money to beautify their home. The present invention also will appeal to this market of upper class homeowners the most, allowing them to precisely customize their wood products and create their perfect home. On the construction side, this trend also means more demand for lumber in project areas as larger sized homes are being built.

One of the most important conclusions as the 2017 housing market draws to a close is the shortage of affordable housing in the country. According to the National Association of Realtors, there are not enough homes being built in relation to the population growth. As builders realize this gap in supply and demand and begin to ramp up new home starts, the resulting effect on the lumber and furniture industries will see similar projected growth rates.

Home Improvement & Renovation

Homeowners in the US spent over \$320 billion on renovations in 2016, which rivals similar peak numbers from 2006 for remodeling spending when adjusted for inflation.

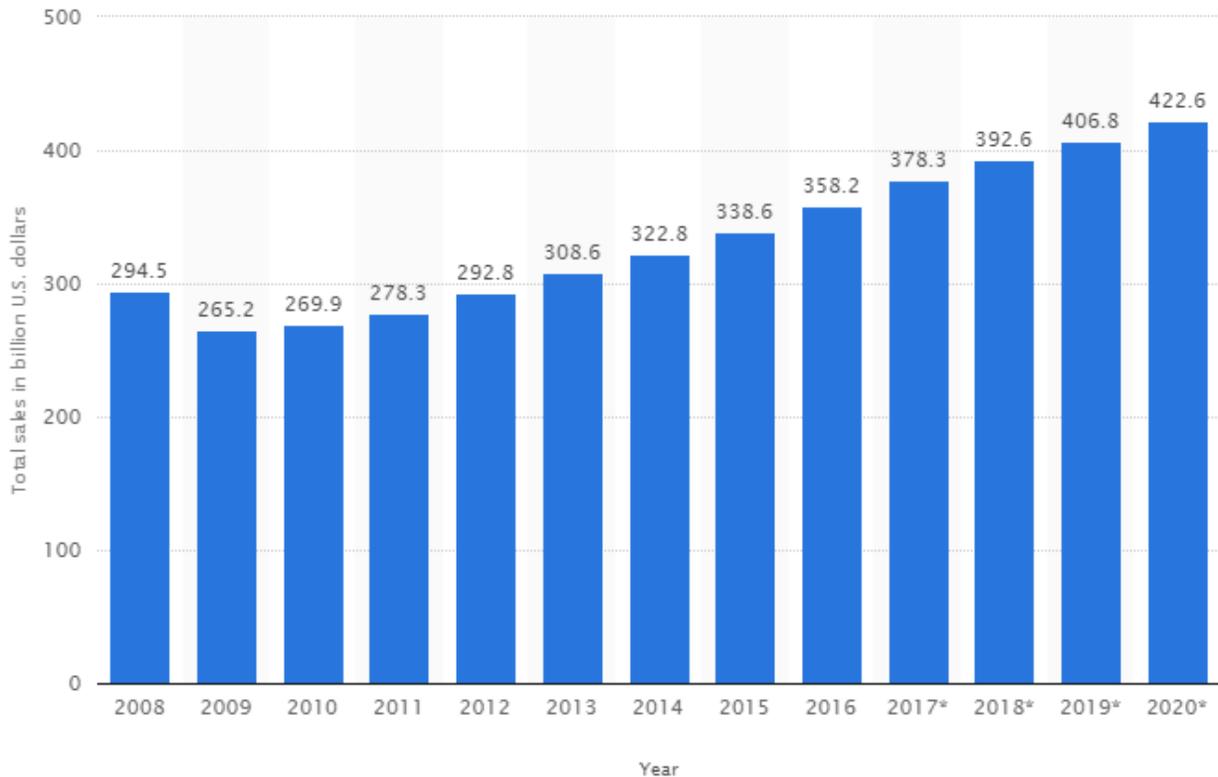
Leading Indicator of Remodeling Activity – Second Quarter 2016



Notes: The former LIRA modeled homeowner improvement activity only, while the re-benchmarked LIRA models home improvement and repair activity. Historical estimates are produced using the LIRA model until American Housing Survey data become available. Source: Joint Center for Housing Studies of Harvard University.

According to the Leading Indicator of Remodeling Activity (LIRA), Home renovations are on the rise and are projected to continue steadily at an average 8% compared to the historical average of 4.9%. In quarter 2 alone of 2017, homeowner improvements and repairs totaled over \$320 billion.

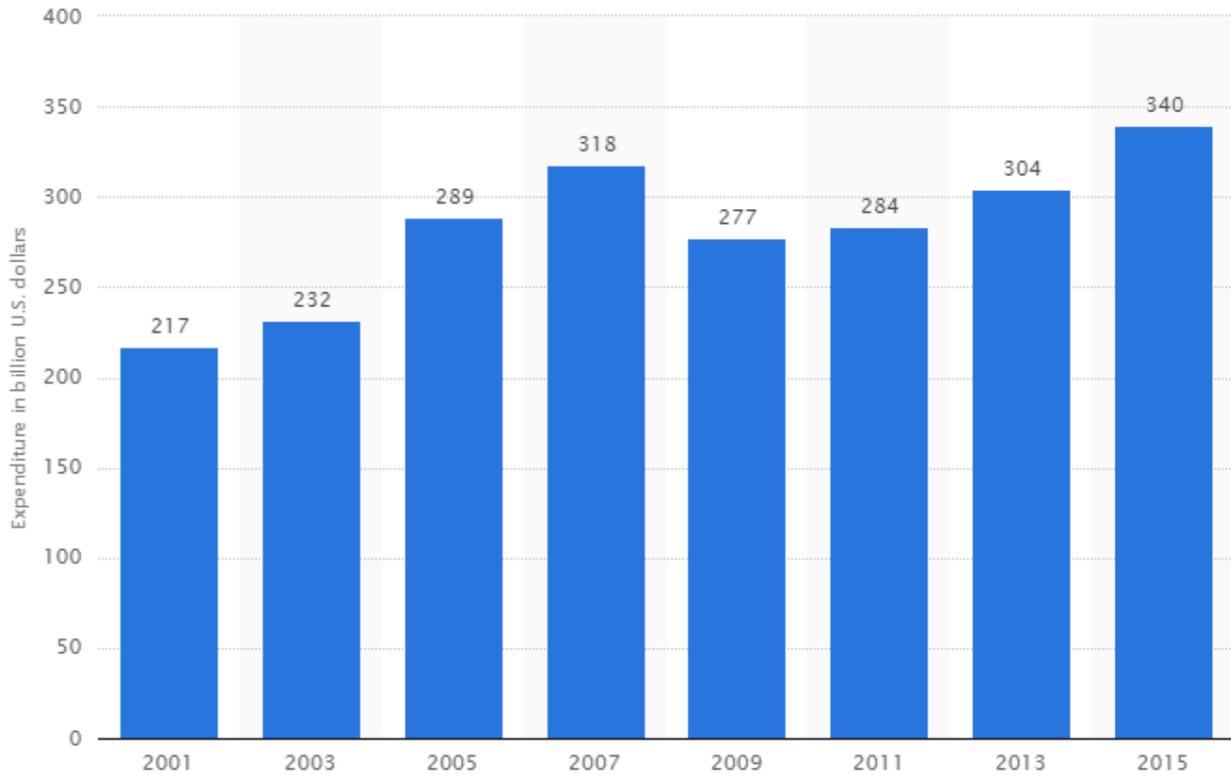
**Total sales of home improvement retailers in the United States from 2008 to 2020
 (in billion U.S. dollars)**



© Statista 2017

Home improvement retailers will be a primary target licensee, outlet, and proprietor of the present invention’s nodes. Total sales of home improvement retailers reached nearly \$360 billion in 2016 and is projected to keep growing steadily in the coming years, to hit \$422.6 billion in 2020.

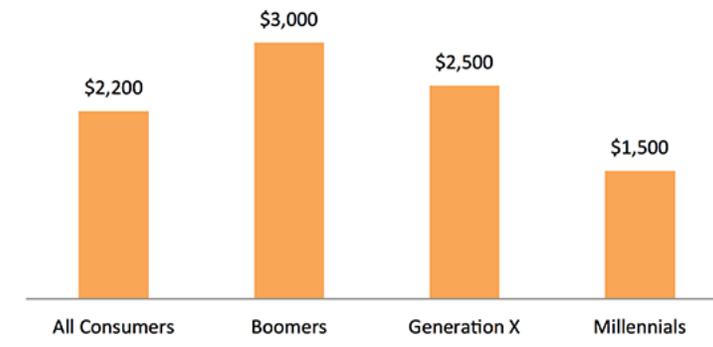
U.S. improvement and repair expenditure from 2001 to 2015
 (in billion U.S. dollars)



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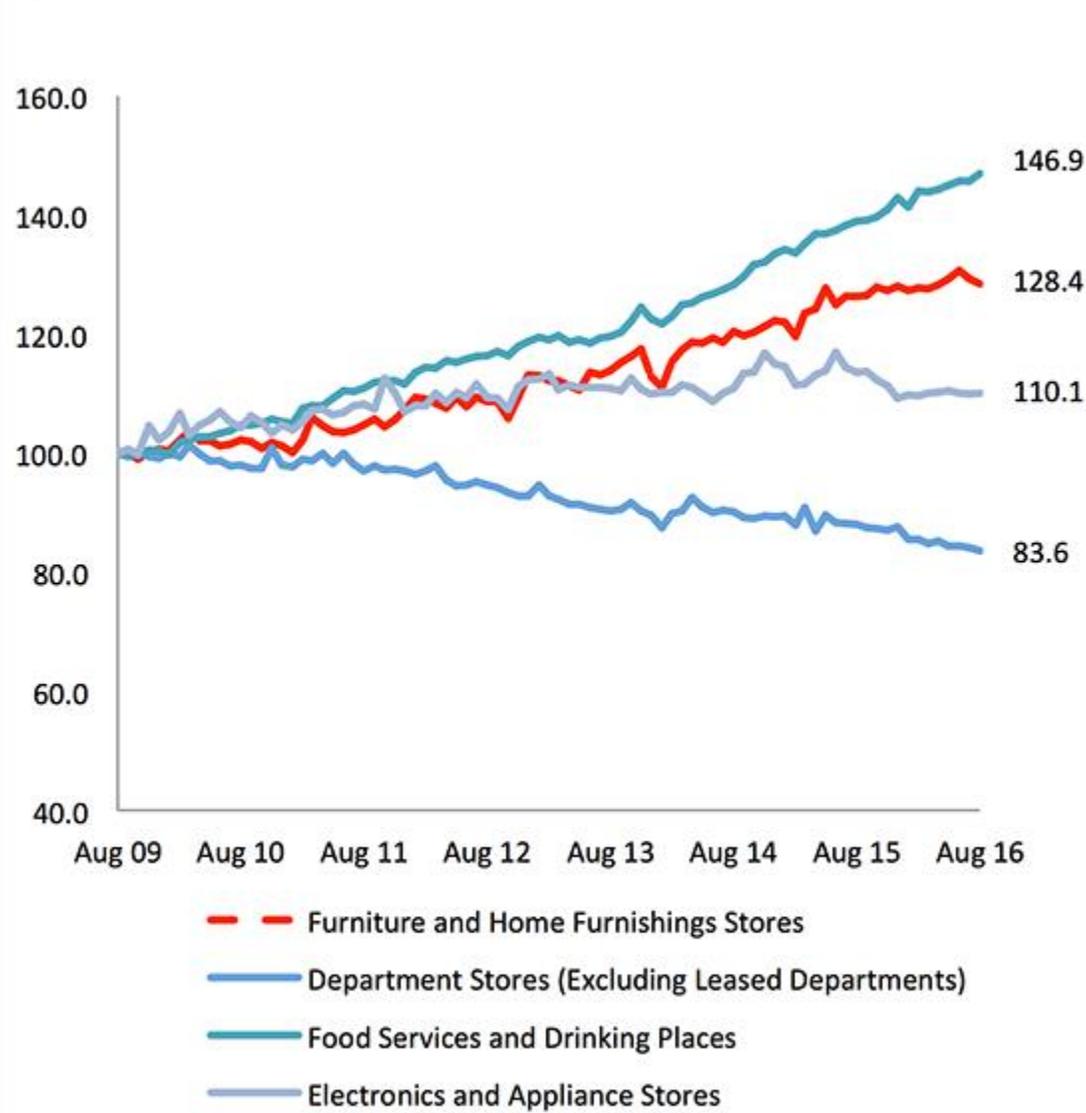
Furniture Industry

Figure 5. US: Consumers' Expected 2016 Living Room Redecoration Expenditures (USD), by Age Group



Source: Furniture Today/Fung Global Retail & Technology

Figure 1. US: Furniture Store Sales vs. Other Retail Sectors Index



August 2009 = 100; seasonally adjusted

Source: US Census Bureau/Fung Global Retail & Technology

The table above shows the trends of the furniture and home furnishings stores industry compared to other retail sectors, illustrating the upward growth exceeding that of electronics and appliances stores and department stores and generating approximately \$128.4 billion of revenue in 2016.



Patent Analysis

1. Weight Adjustment

a. Status

- Active provisional application
- Valuation weight adjustment index: **1**

b. Patent Term:

- 18 years
- Valuation weight adjustment index: **1.5**

c. Claims Scope:

- medium
- Valuation weight adjustment index: **1**

d. Reasons for Allowance:

- broad
- Valuation weight adjustment index: **1**

e. Terminal Disclaimer

- None
- Valuation weight adjustment index: **1**

f. Invention Alternatives

- none
- Valuation weight adjustment index: **1**

g. Claim Embodiments

- Two embodiments (system and method)
- Valuation weight adjustment index: **1.2**

h. Forward Citation

- None
- Valuation weight adjustment index: **1**

2. Analysis

The current invention disclosed a system and a method using the computer aided design functions for fabricating components for wood-based projects. For the system claims, the allowed limitations include not only system components but also the intended use of the components. The patent Examiner failed to invoke the 35 USC 112(f) in order to incorporate the system disclosures as described in the specifications for considerations of the allowability, therefore the functional languages in the claims served no patentability weight. In this regard, it is a benefit to the patentee in obtaining the patent during the prosecutions. However, the system components and the functional languages claimed in the claims must be put into considerations for valuation analysis. This consideration will negatively impact the value of the subject patent because those specific functions offered by the system components further define and limit the scope of the subject patent.

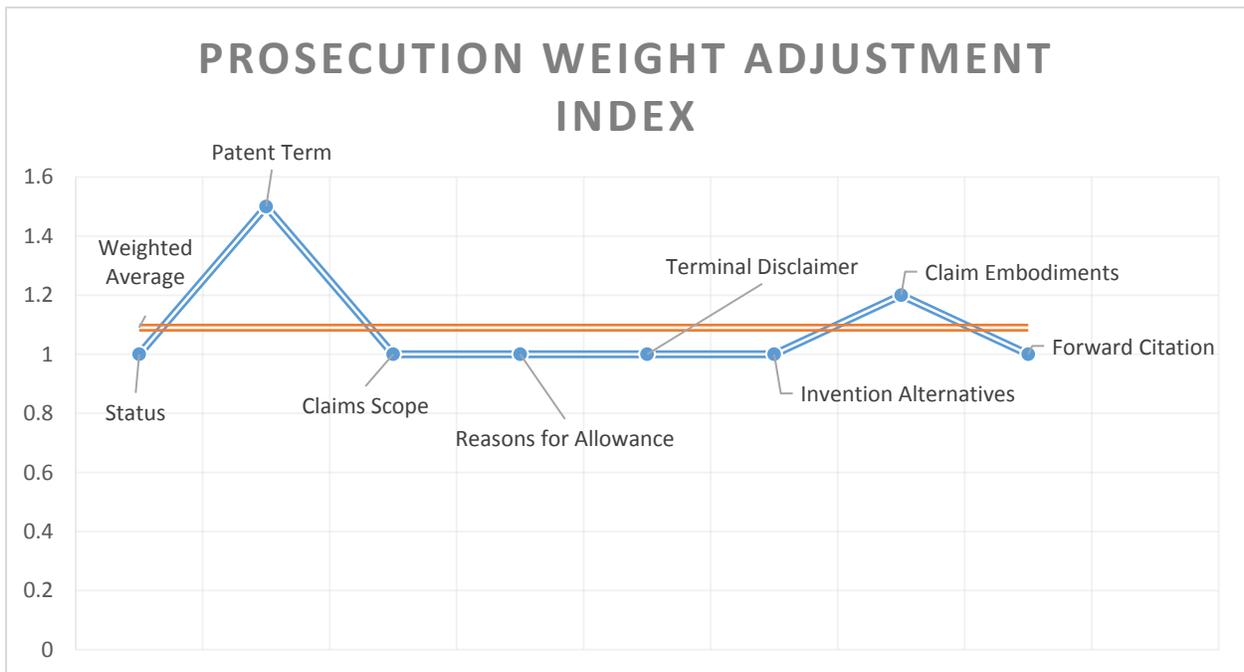
The prosecution history shows no 35 USC 102 rejections were made. It supports the conclusion of the search performed by the undersigned Valuation Analyst that there is no alternative of the current invention. Although there were USC 103 rejections made, however it indicates there is no one single system can perform the same as the current invention.

The prosecution shows no double patenting rejections and so there was no terminal disclaimer filed. On the contrary, the patent term is extended for 720 days to compensate the delay by the United States Patent & Trademark office.

In view of the legal analysis, weight factors for adjusting the value of the current patent have been assigned to different valuation factors as described previously. The adjustment to the valuation by these different weight factors from the legal analysis point of view follows.

Overall Weight Adjustment Index (see Appendix I)

$$[(1 + 1.5 + 1 + 1 + 1 + 1 + 1.2 + 1) / 8] = 1.09$$



3. Benefits

This invention is a unique and original ordering and fabrication process for wood and lumber products. The ease of use through any internet connected computer or mobile device expands the availability, lowers the costs, and increases the time-to-manufacturer partner stock, original, or custom wood products for the building industry, industry installer, or consumer clients. Namely, the benefits of the invention include the following:

- Increased options, better quality, and lower costs for existing wood product manufacturers.
- Unique order and delivery vehicle for consumers and professional installers and builders
- New profit center (better use of existing inventory) for existing home improvement centers
- User supplied designs with a built-in profit motive to participate
- First of its kind automated cutting precision of wood products for home, business, and industry
- Measurable and quantifiable results for consumers, business partners, clients, and investors

This system holds the potential to disrupt the industry in societally positive ways for all parties involved. Customers will have greater control and customization options over their purchasable wood products. Retailers will enjoy improved efficiency through reduced waste, more customer data to help increase conversion and sales, a multitude of new revenue opportunities, and the ability to provide better products, better product selections, and a more inclusive ordering experience for the customer. In implementing this system, an entire marketplace is also created wherein the library of designs can be openly contributed to by anyone, opening up possibilities for any individual to be a professional designer. And in doing so, this creates revenue potentials for the designers as well as for the patent holders in the form of commissions, revenue sharing, or license agreements.

Further, worth noting is the fact that there are no direct competitors existent in the marketplace today. The patented solution, methodology, and business model of this product introduces a completely new and unrivaled system. Current alternatives in the industry involve basic metal and wood cutting and only in some limited applications, assembly. However, none offer the entire cutting, milling, drilling, planning, and labeling in one easy solution and certainly not on the same level of quality, nor assembly drawings, nor the ability to parse orders for priority or inventory availability as well.



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4. Market Opportunity

In summary, the present application has numerous possibilities of revenue and profit generation, primarily subtly hidden within the sales of accessories, related services, and other products and services which will derive from the primary product being sold along with leasing fees, training expenses, revenue sharing agreements, and much more. As an example, use of the system will create opportunities to upsell delivery and installation services at additional fees, generating much higher profit margins for the retailers compared to the low margin sales of physical lumber products due to the material costs. Further, as the invention successfully commoditizes skill, a marketplace and library will develop to allow virtually any person to become a designer or home improvement contractor. An open marketplace for custom made designs to be licensed will further crowdsource the most efficient designs and generate more revenue opportunities.

Based on the various presented market potential and growth trends, it is assumed that the invention will penetrate 20 stores in year 1 at a conservative \$200 license fee per hour and 8 hours per day. Excluding node set up and equipment costs, operating expenses are projected to total 30% of revenues for a year 1 net profit of over \$1.4 million. Node set up is projected to be approximately \$300,000 each. After year 1, market penetration is expected to allow the business to grow at an average 35% each year in line with predicted consumer patterns and industry growth reaching total annual profits of over \$237 million and over 3000 nodes and stores by year 18. Using the total combined revenue and profit projections over these 18 years of remaining patent life, the net present value (NPV) of this patent is \$769.6 million using a discount rate of 10%, a useful patent life of 18 years remaining, and after applying the patent analysis weight adjustment.

Patent Valuation

Considering the analyses above, the value of the current patent is estimated at **\$769.6 million**

Final Patent Valuation: \$769.6 million

Appendix I – Weight Factors

Various legal factors from the patent prosecutions have been analyzed and considered as described above. Each factor is assigned with a valuation weight index for adjusting the final value. The factors, significance, and its weight index are listed as follow.

Prosecution Factor	Weight Index	Significance
Patent Term (remaining)	<ul style="list-style-type: none"> • > 12 years: 1.5 • > 8 years: 1 • > 4 years: 0.5 • 1 – 3 year: 0 	The more remaining term the more value of the patent. The closer to the end of the patent term, the less value will be because other parties may wait for the term to be expired for producing the same.
Claim Scope	<ul style="list-style-type: none"> • broad: 1.5 - (< 50 limitations) • medium: 1 - (50 – 100 limitations) • Narrow: 0.5 - (> 100 limitations) 	The number of limitations represents the scope of the claim of a patent. The lesser limitations of a patent the broader of the scope of a patent which covers more by the patent.
Claim Embodiments	<ul style="list-style-type: none"> • Three (3) embodiments: 1.5 • Two (2) embodiments: 1.2 • One (1) embodiments: 1 	Different embodiments may be included in a design patent.
Invention Alternative by end result	<ul style="list-style-type: none"> • None: 1 • Same result with different features: 0.5 	Different inventions may produce the same result by implementing different mechanism or processes. From a user’s point of view, the end result may be the only requirement and do not care about the mechanism or processes unless the mechanism or process becomes a requirement.
Forward Citation	<ul style="list-style-type: none"> • None: 1 	A “forward citation” means the subject patent is cited by the patent examiner as a reference during prosecutions of another patent



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	<ul style="list-style-type: none">• Yes: 1.25	application. It represents the significance of the subject patent in the industry.
Terminal Disclaimer	<ul style="list-style-type: none">• Yes: subject to the remaining patent term• No: 1	When the Terminal Disclaimer is filed on the record, the subject patent is essentially same as the copending patent or patent application and its patent term ends at the same time with the copending patent. Therefore, when a Terminal Disclaimer is filed the subject patent itself has no additional value and is subject to the value of the copending patent.

Appendix II – Limitation Tree

* System Claim

- an integrated system
 - fabricating components for a customer's selected wood-based project
 - at least one computer
 - ◆ providing an interface with a consumer to input inquiries and design choices directed to a project having at least one component to be machined in a tandem machine system in which a wood-based project component can be fabricated, regardless whether the component is based on dimensional stock or on sheet material stock, said customer interacting with either a database showing previously-designed projects for implementation using said tandem machine or a CAD (Computer Aided Design) module to develop a new project or a modification of a project in said database
 - a tandem machine system
 - ◆ a first machine
 - ▲ executing machining requirements for wood-based sheet stock
 - ▲ a support frame
 - ▲ a plurality of backing plates
 - supported by said support frame
 - supported to be slightly backward leaning
 - ▲ a plurality of rollers
 - along a base of said first machine
 - upon which a sheet of material can slide substantially along a longitudinal axis of said first machine
 - ▲ a plurality of clamping rollers
 - along a top of said first machine

- clamping said sheet of material firmly to said plurality of rollers along the base
- ▲ at least two rotating yoke assemblies
 - can be selectively rotated into a position to hold said sheet of material against said backing plates
 - servo-controlled manipulator rollers for selectively moving said sheet material along said plurality of rollers in either a forward direction or a reverse direction
- ▲ an upper horizontal guide rail
 - mounted on said support frame substantially along said longitudinal axis
- ▲ a lower horizontal guide rail
 - mounted on said support frame substantially along said longitudinal axis
- ▲ at least two vertical guide rails
 - interconnected together and movably attached between said upper and lower horizontal guide rails
 - selectively movable as a unit along said longitudinal axis, along said upper and lower horizontal guide rails, using servo-controlled actuators
- ▲ a moveable tooling platform
 - movably attached to said at least two vertical guide rails
 - selectively movable in a direction perpendicular to said longitudinal axis, along said at least two vertical guide rails, using servo-controlled actuators
- ▲ selectively controlled via the set of instructions for cutting, shaping, and forming of wooden components for said tandem machine system to fabricate the customer's final selection, thereby providing an end-to-end integrated system that is completely integrated to selectively permit the customer to consider different options for an intended project and to have all wood-based components of the intended project fabricated and ready to be picked up at a specific location

- ◆ a second machine
 - ▲ executing machining requirements for dimensional wood stock
 - ▲ selectively controlled via the set of instructions for cutting, shaping, and forming of wooden components for said tandem machine system to fabricate the customer's final selection, thereby providing an end-to-end integrated system that is completely integrated to selectively permit the customer to consider different options for an intended project and to have all wood-based components of the intended project fabricated and ready to be picked up at a specific location
- ◆ selectively providing a set of instructions via the CAD module upon a final selection by the customer of an existing previously-designed project, a new project, or a modification of an existing project in said database