US 20030083956A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2003/0083956 A1

Freeny, JR. (43) Pub. Date: May 1, 2003

(54) AUTOMATED SYNCHRONOUS PRODUCT PRICING AND ADVERTISING SYSTEM

(76) Inventor: Charles C. Freeny JR., Dallas, TX (US)

Correspondence Address:
DUNLAP, CODDING & ROGERS P.C.
PO BOX 16370
OKLAHOMA CITY, OK 73114 (US)

(21) Appl. No.: 10/314,628

(22) Filed: Dec. 6, 2002

Related U.S. Application Data

(63) Continuation of application No. 09/487,422, filed on Jan. 20, 2000, now Pat. No. 6,513,016, which is a continuation of application No. 09/110,624, filed on Jul. 6, 1998, now Pat. No. 6,076,071.

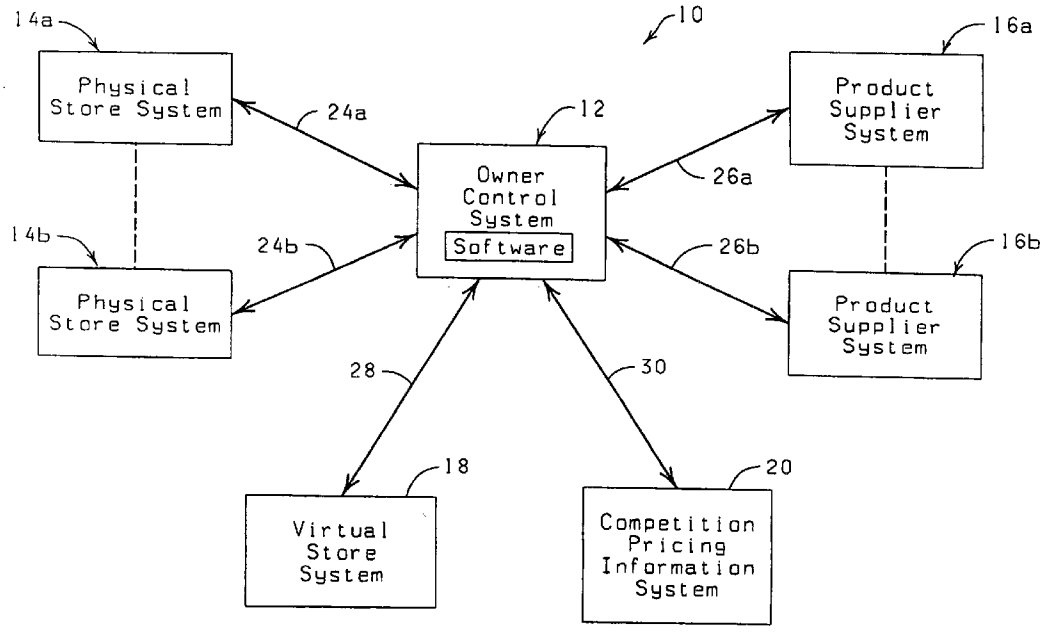
Publication Classification

(51) Int. Cl.[7] G06F 17/60

(52) U.S. Cl. 705/26

(57) ABSTRACT

An automated product pricing system including a physical store system, a virtual store system, and a control system. The physical and virtual store systems are capable of transmitting sales data indicative of the number of sales of identified respective products. The control system is adapted to receive the sales data from the physical store system and the virtual store system. In response thereto, the control system generates price change data including a changed price of an identified product based on the sales data received from at least one of the physical and virtual store systems. The price change data is then transmitted by the control system to at least one of the physical and virtual store systems to thereby change the price of the identified product.



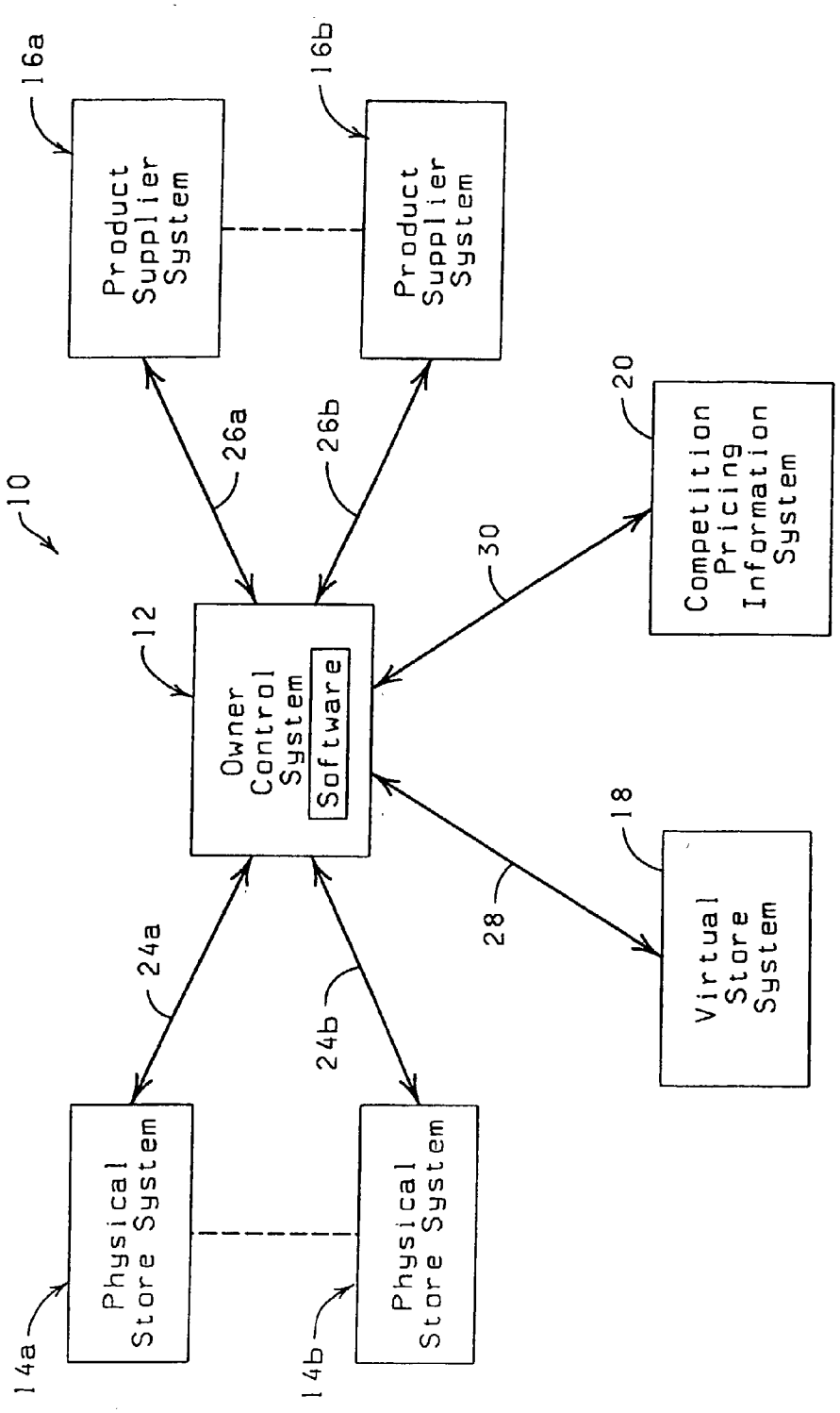

16a
16b
Product Supplier System
Product Supplier System
10
26a
26b
20
Competition Pricing Information System
30
12
Owner Control System
Software
18
28
Virtual Store System
24a
24b
Physical Store System
Physical Store System
14a
14b

FIG. 1

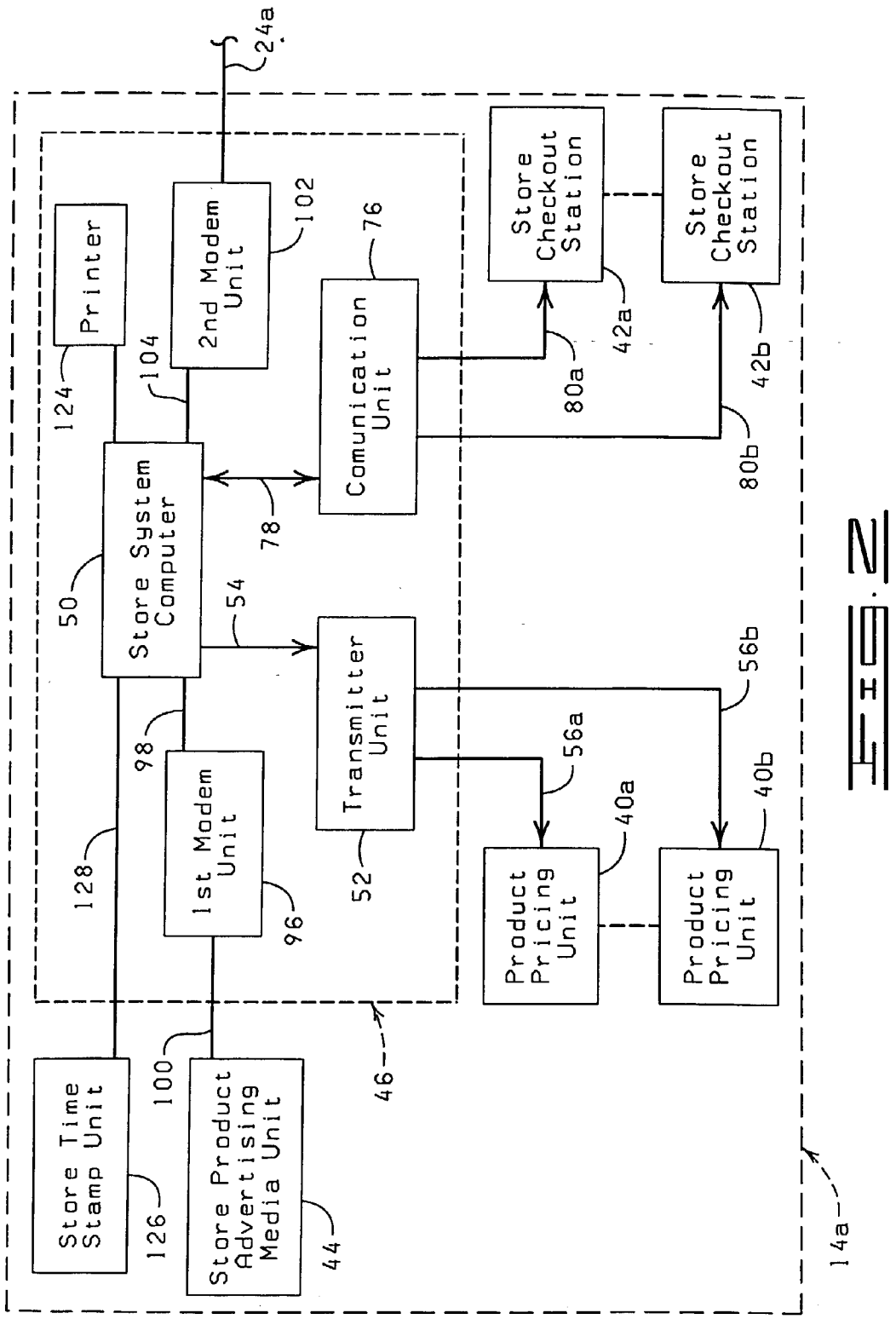
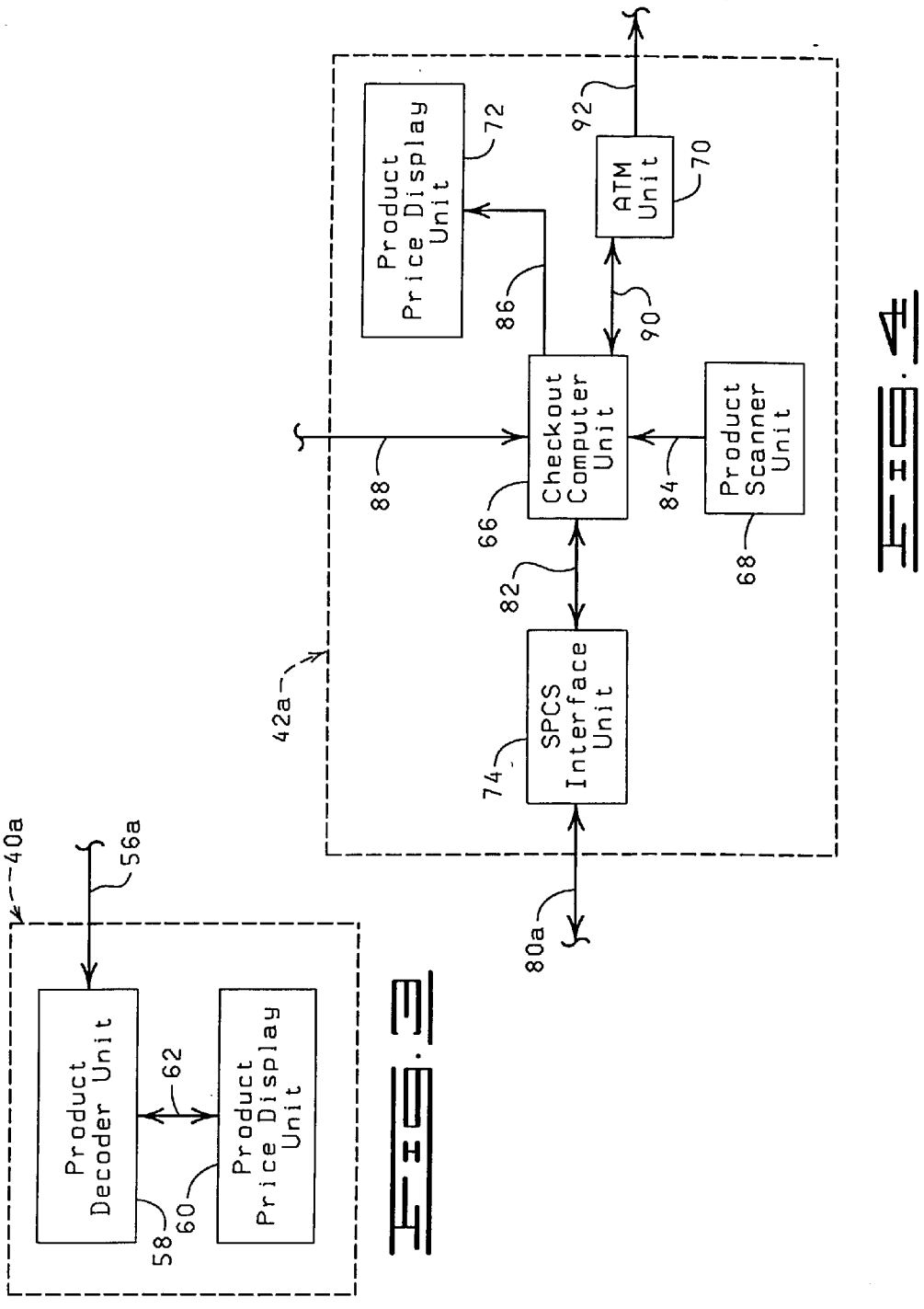

24a
Printer
2nd Modem Unit
102
Store Checkout Station
Store Checkout Station
76
Comunication Unit
104
124
42a
42b
80a
80b
Store System Computer
50
78
54
Transmitter Unit
56b
56a
98
1st Modem Unit
96
52
40a
40b
Product Pricing Unit
Product Pricing Unit
128
100
46
Store Time Stamp Unit
126
Store Product Advertising Media Unit
44
14a

FIG. 2


Product Price Display Unit
72
92
ATM Unit
70
86
90
Checkout Computer Unit
66
88
84
Product Scanner Unit
68
82
SPCS Interface Unit
74
42a
80a
40a
56a
Product Decoder Unit
62
Product Price Display Unit
58
60

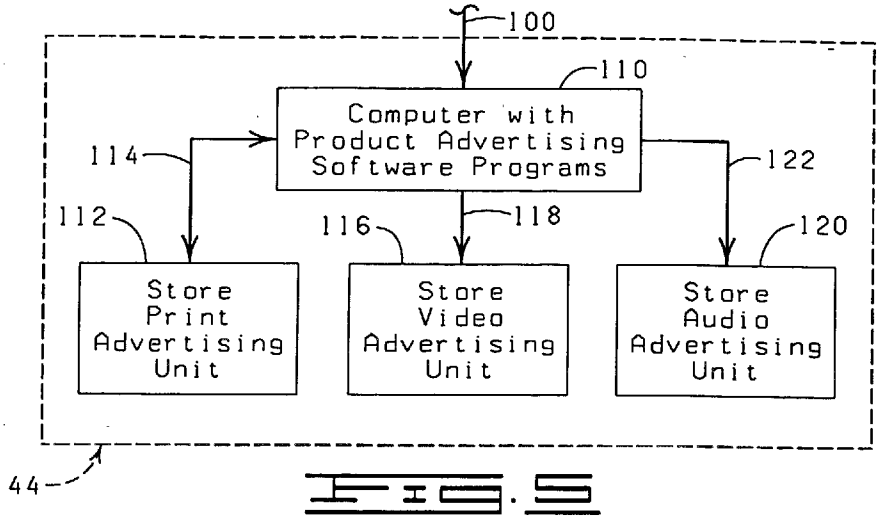


FIG. 5

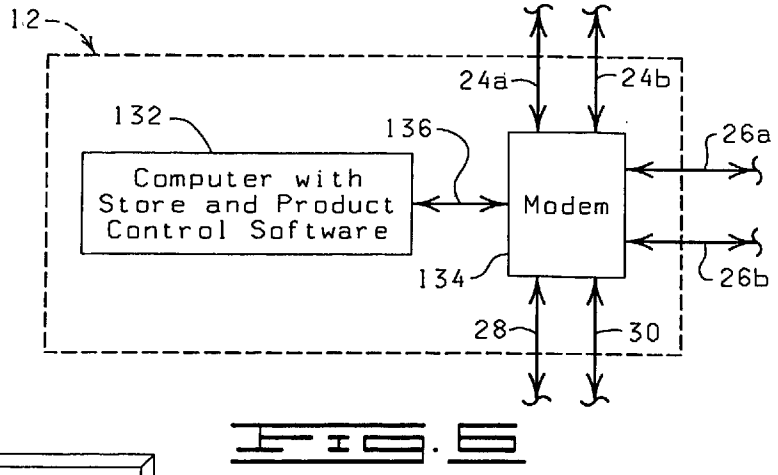


FIG. 6

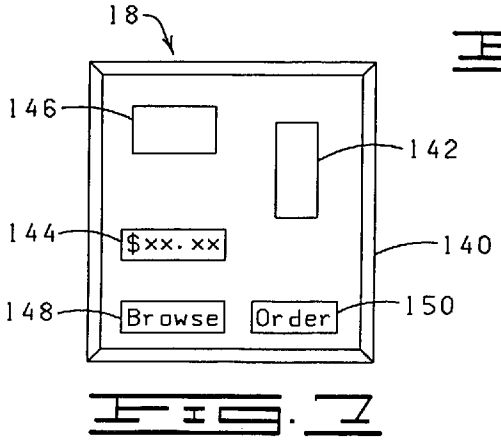


FIG. 7

AUTOMATED SYNCHRONOUS PRODUCT PRICING AND ADVERTISING SYSTEM

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation of U.S. Ser. No. 09/487,422, filed on Jan. 20, 2000; which is a continuation of U.S. Ser. No. 09/110,624, filed on Jul. 6, 1998. The entire contents of Ser. Nos. 09/487,422 and 09/110,624 are hereby incorporated herein by reference for all purposes.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not applicable.

BACKGROUND OF THE INVENTION

[0003] A number of methods are currently in use for the pricing and advertising of products. For example, manual placard displays are provided at locations where the product is shelved at the store to permit consumers to determine the price of the product. The placard displays must be manually changed each time that the prices in the checkout computers are changed so that there is no discrepancy between the prices contained in the checkout computer and the prices shown on the manual placard displays. However, due to accumulated errors, there can be a fairly large discrepancy between the prices contained in the checkout computer and the prices shown on the manual placard displays. This discrepancy is of increasing concern to governmental regulators.

[0004] Electronic pricing systems are also in existence. In the existing electronic pricing systems, each product carries a bar code. An electronic price display which displays the price of the product at a location where the product is shelved at the stores is provided. The store also has a checkout computer and scanner. In such existing electronic pricing systems, an individual with a hand held unit changes the product price at the display located where the product is shelved. The changed prices are entered into the hand held unit and the person positions the hand held unit near the electronic display and presses a button so that the information is transferred to the electronic display to display the new price.

[0005] There are also a number of systems available which interconnect local store computers to the checkout stations, as well as interconnecting local store computers to the owner computers. Companies, such as Intactix of Dallas, Tex., are suppliers of such software and the hardware is well-known to those skilled in the art. Methods also exist for connecting a local store computer to an owner computer. However, most of the current product pricing display change methods are manual as previously discussed. These methods are time consuming, and require costly generation and replacement of the pricing placards at the product stations.

[0006] A number of electronic display technologies are available today, such as liquid crystal displays, light emitting diode displays, flat panel video displays, audio convertors, etc. which may be utilized as product displays at the product station. For example, companies such as PRICER AB of Sweden and others are installing active product price units which can be controlled from the local store computer.

[0007] Since the internet explosion in 1995-96, a number of virtual store chains, such as Tom Thumb and Kroger have created virtual stores on the internet for home shopping and deliveries. Price synchronization for the virtual stores pose different problems from the physical stores.

[0008] With regard to advertising, a number of methods are currently in use for placing coupons in the hands of consumers. Three of such methods are:

[0009] 1. Coupons are placed in the advertising section of periodicals or mailed directly to the consumer's house for later use in stores.

[0010] 2. Books of coupons and coupon dispensing units are made available inside stores for later use during checkout.

[0011] 3. Coupons are generated at the checkout station at the conclusion of the checkout process for later use by the consumer.

[0012] Once the consumer has presented a coupon to a checkout clerk, the coupons are either entered manually or scanned by automated scanners for checkout. The coupons must then be saved by the checkout clerk for later redemption at redemption centers so that the retail establishment can recover its cost from the product manufacturers which the store has, in effect, advanced to the consumer. The coupons must then be sorted by product and tabulated as to overall cost for various management reasons. The current process for utilizing coupons typically proceeds as follows. The consumer hands a coupon to the checkout clerk. The product code on the coupon is scanned and the amount of the discount is looked up in the store computer. If the coupon and the discount amount have been both entered into the store computer, this amount is deducted from the normal product retail price. However, if the coupon has not been entered into the store computer, the discount amount must be manually entered.

[0013] Then, the coupon is set aside and saved for later sorting by another clerk. The amounts and product codes are accumulated and the coupons are later sent to a redemption center where they are again manually checked before a check or credit is issued to the retail store.

[0014] The current coupon handling methods are very time consuming.

[0015] With the present invention, the pricing of products is accomplished more efficiently than existing systems, and the manual handling of coupons at checkout locations is eliminated.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0016] **FIG. 1** is a schematic, diagrammatic view of an automated synchronous product pricing and advertising system constructed in accordance with the present invention.

[0017] **FIG. 2** is a schematic, diagrammatic view of a physical store system constructed in accordance with the present invention.

[0018] **FIG. 3** is a schematic, diagrammatic view of a product pricing unit utilized in the physical store system depicted in **FIG. 2**.

[0019] **FIG. 4** is a schematic, diagrammatic view of a product checkout station utilized in the physical store system depicted in **FIG. 2**.

[0020] **FIG. 5** is a schematic, diagrammatic view of a store product advertising media unit constructed in accordance with the present invention.

[0021] **FIG. 6** is a schematic, diagrammatic view of an owner control system constructed in accordance with the present invention.

[0022] **FIG. 7** is an elevational view of a display screen of a virtual store system constructed in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0023] Referring now to the drawings, and more particularly to **FIG. 1**, shown therein is an automated synchronous product pricing and advertising system **10** constructed in accordance with the present invention. Broadly, the automated synchronous product pricing and advertising system **10** includes an owner control system **12**, a plurality of physical store systems **14**, a plurality of product supplier systems **16**, at least one virtual store system **18** and a competition pricing information system **20**. Only two of the physical store systems **14**, and product supplier systems **16** are shown in **FIG. 1** for purposes of clarity. The respective physical store systems are designated in **FIG. 1** by the general reference numerals **14***a* and **14***b*. The respective product supplier systems are designated in **FIG. 1** by the general reference numerals **16***a* and **16***b*.

[0024] The owner control system **12** is adapted to communicate with the physical store systems **14***a* and **14***b* via respective signal paths **24***a* and **24***b*. The owner control system **12** also communicates with the product supplier systems **16***a* and **16***b* via respective signal paths **26***a* and **26***b*, the virtual store system **18** via a signal path **28** and the competition pricing information system **20** via a signal path **30**.

[0025] It is envisioned that the physical store systems **14** be located in establishments having product locations, such as shelves, boxes, slots, areas, or the like for storage and/or sale of products. For example, the establishments in which the physical store systems **14** are located can be retail supermarkets, drug stores, home building supply stores, inventory stocking areas or assembly sites at manufacturing or distribution facilities.

[0026] It is envisioned that the product supplier systems **16** be located at establishments which serve to supply products to the stores where the physical store systems **14** are located or to a warehouse for distribution after an order is received by the virtual store system **18**.

[0027] The competition pricing information system **20** can include a program for obtaining information from an internet search engine, such as YAHOO or EXCITE which look for the prices at which predetermined competitors are selling the same or similar products.

[0028] Signal paths **24**, **26**, **28** and **30** can be airway and/or cable communication links or any other suitable communication link.

[0029] The owner control system **12** is constructed to receive sales and inventory data from the physical store systems **14**, and the virtual store system **18**. The owner control system **12** is also constructed to receive pricing and advertising data from the product supplier systems **16** via the signal paths **26***a* and **26***b*, and competition price data from the competition pricing information system **20** via the signal path **30**. As will be described in more detail hereinbelow, the owner control system **12** utilizes the sales and inventory data provided by the physical store systems **14**, and the virtual store system **18**, the pricing and advertising data provided by the product supplier systems **16**, and the competition price data provided by the competition pricing information system **20** to automatically change product prices at the physical store systems **14** and the virtual store system **18**, to automatically provide in-store advertising data within the physical store systems **14** and/or the virtual store system **18**, and to automatically order products from the product suppliers associated with the product supplier systems **16**.

[0030] Referring now to **FIG. 2**, shown therein in more detail is the physical store system **14***a*. Because the physical store systems **14***a* and **14***b* are substantially identical in construction and function, only the physical store system **14***a* will be described in detail herein.

[0031] The physical store system **14***a*, in general, is constructed to display a product location price indicating the unit price of a product on at least one of a plurality of product pricing units **40**, to request from a shopper a product checkout price for the purchase of the product by at least one of a plurality of store checkout stations **42**, to selectively print coupons, transmit video and/or audio advertising messages including the product checkout price on a store product advertising media unit **44**, and to dynamically change the displayed product location prices, the requested product checkout prices, the coupons and the advertising messages in real time based on predetermined criteria thereby substantially eliminating consumer confusion and yielding the maximum economic benefit for the physical store by a store product control system **46**.

[0032] The individual products (not shown) in the store are stamped with a machine readable code, such as the UPC (universal product code) bar code. Each of the product pricing units **40** are located proximate to one of the individual products and has a unique electronic address identifying the particular product. The unique electronic address can be the universal product code.

[0033] The store product control system **46** includes a store system computer **50**. The store system computer **50** has stored thereon the unique electronic addresses for the respective product pricing units **40**. A product location price associated with each of the unique electronic addresses is stored in the store system computer **50**. The product location price is indicative of the unit price of a single product.

[0034] The store system computer **50** is constructed to transmit the unique electronic addresses and the product location prices associated therewith ("electronic address and product location price data") to a transmitter unit **52** via a signal path **54**. In response to receiving the electronic address and product location price data from the store system computer **50**, the transmitter unit **52** transmits such electronic address and product location price data to the respective product pricing units **40***a* and **40***b* via signal paths

56*a* and **56***b*. The signal paths **56***a* and **56***b* can be hard wiring (copper wiring, fiber optics, coaxial cable, or the like), RF wireless (microwave, low frequency, satellite, or the like) and/or optical (laser, infrared, or the like).

[**0035**] Referring now to **FIG. 2**, in combination with **FIG. 3**, the electronic address and product location price data is received by a product decoder unit **58** included in each of the product pricing units **40**. It should be understood that each of the product pricing units **40***a* and **40***b* are substantially identical in construction and function, and that only the product pricing unit **40***a* is shown in **FIG. 3** for purposes of clarity. The product decoder unit **58** can be a 2.4 GHz spread spectrum RF receiver unit. The product decoder unit **58** has an electronic address stored therein. Upon receipt of the electronic address and product location price data from the store product control system **46**, the product decoder unit **58** compares the received electronic address with that stored in the product decoder unit **58**. When a match is found, the product location price data associated with the electronic address is sent to a product price display unit **60** via a signal path **62**.

[**0036**] Upon receipt of the product location price data from the product decoder unit **58**, the product price display unit **60** transmits and/or displays the product location price indicative of the unit price of a product disposed adjacent the particular product pricing unit **40** in a format perceivable by a shopper when the shopper is selecting the product for purchase. The product price display unit **60** can be a liquid crystal display, or a LED display, for example. The product location price transmitted or displayed by the product price display unit **60** remains until a new product location price for the particular product located adjacent the product pricing unit **40** is received by the product decoder unit **58**. In practice, it is contemplated that to overcome inadvertent mistakes, all the electronic address and product location price data will be transmitted periodically from the store product control system **46** to the product pricing units **40** even though there may have not been any price changes.

[**0037**] In addition, it should be noted that the store product control system **46** has the ability to transmit, and the product pricing units **40** have the ability to receive a special code which changes both the electronic address for the particular product pricing units **40** and/or a price associated with the new electronic address. In this manner, the particular product pricing units **40** become universal.

[**0038**] The store checkout stations **42***a* and **42***b* are substantially identical in construction and function. For purposes of clarity, only the store checkout station **42***a* will be described in detail herein.

[**0039**] Referring now to **FIG. 2** in combination with **FIG. 4**, the store checkout station **42***a* is shown in more detail. The store checkout station **42***a* includes a checkout computer unit **66**. The checkout computer unit **66** has stored therein a product price table which includes a unique code for each of the products available for sale in the store, and a product checkout price associated with the unique code. The unique code for each of the products available for sale in the store can be the UPC (universal product code) code. The product checkout price stored in the checkout computer unit **66** and associated with a single unique code is the price requested from a shopper for the purchase of the product.

[**0040**] The store checkout station **42***a* is also provided with a product scanner unit **68**, an ATM unit **70**, a product price display unit **72** and an SPCS interface unit **74**. In use, the store system computer **50** outputs product checkout price data to a communication unit **76** via a signal path **78**. The communication unit **76** outputs the received product checkout pricing data to the store checkout stations **42***a* and **42***b* via signal paths **80***a* and **80***b*.

[**0041**] As best shown in **FIG. 4**, the SPCS interface unit **74** receives the transmitted product checkout price data from the communication unit **76**. In response thereto, the SPCS interface unit **74** transmits the received product checkout price data to the checkout computer unit **66** via a signal path **82**. In response to receiving the product checkout price data, the checkout computer unit **66** is constructed to build or update the product price table stored in the checkout computer unit **66**.

[**0042**] In use, the shopper selects at least one product for purchase and perceives the product location price displayed by the product price display unit **60** of the product pricing unit **40***a*, for example. The shopper transports the products to the store checkout station **42***a*, for example. The UPC code on the product is scanned by the product scanner unit **68** and is thereby input into the checkout computer unit **66** via a signal path **84**. The checkout computer unit **66** looks up the product checkout price stored in the product price table by the UPC or unique code identifying the particular product. The checkout computer unit **66** then outputs the product checkout price for the particular product to the product price display unit **72** via a signal path **86** so that the product checkout price for the particular product is perceivable by the shopper. The product checkout price stored in the product price table does not exceed the respective product location price perceivable by the shopper when the shopper was selecting the product for purchase, as will be explained in more detail hereinafter. In any event, once the product which the shopper is purchasing is scanned via the product scanner unit **68**, the product checkout price is requested from the shopper for payment. The shopper can pay for the product in any suitable manner, such as by entering their credit card number into the checkout computer unit **66** via an input **88**. The shopper's credit card number is then transmitted to a credit card source company for automated payment credit verification via the ATM unit **70** and signal paths **90** and **92**.

[**0043**] The UPC or unique code identifying each product purchased is batched in the checkout computer unit **66** until the shopper's transaction is complete. At that time, the UPC or unique code data is transmitted to the store system computer **50** via the signal paths **78**, **80***a*, and **82** so that the store system computer **50** can keep track of the store's inventory.

Store Product Advertising Media Unit **44**

[**0044**] The store system computer **50** selectively outputs product advertising data including the unique codes identifying selected products within the store, and a product advertising price indicating an advertised price of the product associated with the unique code to a first modem unit **96** via a signal path **98**. The first modem unit **96** receives the product advertising data, and in response thereto the first modem unit **96** outputs such product advertising data to the store product advertising media unit **44** via a signal path **100**.

[**0045**] It should be noted that the product advertising data can either be generated by the store system computer **50**,

and/or can be received by the store system computer **50** from the owner control system **12** via the signal path **24***a*, a second modem unit **102**, and a signal path **104**. The store system computer **50** and/or the owner control system **12** are programmed so that upon the detection of an increased supply or decreased demand for a product or products, the product advertising data is automatically generated and transmitted to the store product advertising media unit **44** to increased the demand for a selected product or products.

[**0046**] Referring now to **FIG. 2** in combination with **FIG. 5**, the store product advertising media unit **44** is shown in more detail. The product advertising data transmitted from the first modem unit **96** is received by an advertising computer **110**. The advertising computer **110** is loaded with software to cause the advertising computer **110** to selectively communicate with a store print advertising unit **112** via a signal path **114**, a store video advertising unit **116** via a signal path **118**, and a store audio advertising unit **120** via a signal path **122** to selectively make coupons available for printing, to transmit video messages and audio messages identifying products and product advertising prices indicative of the price to be charged for such products. Only one store print advertising unit **112**, store video advertising unit **116** and store audio advertising unit **120** are shown in **FIG. 5** for purposes of clarity. It should be understood that the store product advertising media unit **44** can include a plurality of store print advertising units **112**, store video advertising units **116** and store audio advertising units **120**. The store print advertising units **112**, store video advertising units **116** and store audio advertising units **120** can be located proximate to respective individual products to provide the product advertising data (through coupons, video and/or audio messages) independently for each individual product, or can be located in a centralized location or locations within the store to provide product advertising data for more than one product at each store print advertising unit **112**, store video advertising unit **116** and store audio advertising unit **120**.

[**0047**] The store print advertising unit **112** may include an associated video screen and keypad (not shown) to permit shoppers to browse and select coupons to print. Upon demand, the store print advertising unit **112** prints a set of coupons (or at least one coupon) with each coupon identifying a predetermined price reduction for an identified product or service and also includes other information such as store location, appropriate graphics, colors, and/or a product bar code for checkout and expiration date. The coupons generated by the store print advertising unit **112** are given by the shopper to a checkout clerk associated with one of the store checkout stations **42** when the shopper is ready to pay prior to leaving the store. The coupons are scanned by the product scanner unit **68** at the store checkout stations **42** to provide coupon data. The store checkout stations **42** transmit the coupon data received from the coupon, such as the identified product to the store system computer **50** via the signal paths **78** and **80**. The store system computer **50** looks up the discount associated with the product bar code and transmits this discount to the particular one of the store checkout stations **42** from which the coupon was scanned for inclusion on the shopper's printed receipt.

[**0048**] If the coupon presented to the checkout clerk was not printed by the store print advertising unit **112**, and product bar code identifying the coupon is not in storage, the store system computer **50** sends a message to the store checkout station **42** where the particular coupon was scanned and the clerk at the particular store checkout station **42** then manually enters the product number and discount. The store system computer **50** also checks to make sure that the product identified on the coupon has been scanned via the product scanner unit **68** before authorizing the checkout computer unit **66** at the store checkout stations **42** to deduct the discount amount from the requested product checkout price.

[**0049**] The coupon data, including the product code information, received from the store checkout stations **42** from the scanning of coupons is stored in the store system computer **50**. Periodically, the store system computer **50** accumulates all of the coupon data which has been entered into the store system computer **50** and then sorts such coupon data by manufacturer, tabulates the discount amount by manufacturer and then sends all of the sorted and totalled coupon data to a printer **124** to generate a physical copy of the coupons and the sorted and accumulated total, if required by a redemption center. Because the coupon data is sorted, accumulated and printed, the physical coupons which were scanned by the product scanner unit **68** of the store checkout stations **42** can be discarded at the respective store checkout stations **42**.

Store System Computer **50**

[**0050**] As mentioned previously, the store system computer **50** receives unique code data identifying purchased products from the store checkout stations **42** via the signal paths **78** and **80**. In response thereto, the store system computer **50** can change the prices in the store based on predetermined price change algorithms. The predetermined price change algorithms utilized to change the store prices can be either manager selectable or selectable via the owner control system **12**.

[**0051**] One of the price change algorithms which the store system computer **50** has stored thereon is a program to detect the rate of purchase for each product and compare such rate with a predetermined limit. If the rate of purchase of the product exceeds the predetermined limit, the price of the product is increased automatically by a predetermined amount. If the rate of purchase of the product is below the predetermined limit, the price of the product is decreased automatically by a predetermined amount to stimulate demand.

[**0052**] Another price change algorithm which is stored on the store system computer **50** is a program to detect the amount of product remaining in inventory, or on the shelf. If the amount of product left on the shelf falls below a predetermined limit, then the store system computer **50** outputs a special signal such as a flashing screen or a printout on a special printer to notify the managers that the number of products on the shelf needs to be increased. Alternatively, or in addition, the store system computer **50** can automatically increase by a predetermined amount the price of the product based on the reduced supply of product on the shelf or in inventory.

[**0053**] The store system computer **50** can also have other predetermined price change algorithms thereon such as price change algorithms to automatically change prices to match

competitor pricing specials, to reflect purchasing specials and/or to achieve end of the month sales projections.

[0054] When a product price change is made or received by the store system computer **50**, it is important that the price change be implemented in a manner such that the product checkout price requested from the shopper for the purchase of the product at one of the store checkout stations **42** not exceed the product location price displayed by the product pricing unit **40** located proximate to the product so as to reduce consumer irritation with price discrepancies. As will be described hereinafter, the store system computer **50** is programmed to selectively change the product checkout price and product location price in three modes.

[0055] In the first mode, as shown in **FIG. 2** the physical store systems **14** include a store time-stamp unit **126**. Each of the physical store systems **14** can be provided with a single store time-stamp unit **126** provided near the entrance of the store, for example, and/or a plurality of store time-stamp units **126** provided adjacent respective product pricing units **40**. The store time-stamp unit **126** communicates with the store system computer **50** via a signal path **128**.

[0056] Each of the shoppers can be provided with some type of time-stampable media capable of communicating with the store time-stamp unit **126**, such as a smart card, or a barcoded ticket. The store time-stamp unit **126** records, on the time-stampable media, a time stamp data indicative of the time at which the shopper was located adjacent the store time-stamp unit **126** to give an indication of the time at which the shopper perceived the product location price when the shopper was selecting the product for purchase.

[0057] When the store time-stamp unit **126** is provided adjacent the entrance of the store, each of the shoppers provides their time-stampable media to the store time-stamp unit **126** to record the time at which the shopper entered the store. When a plurality of store time-stamp units **126** are provided adjacent to the respective product pricing units **40**, the shopper provides their time-stampable media to the store time-stamp unit **126** to record the approximate time at which the shopper selected the product for purchase.

[0058] For example, one embodiment of the present invention operates as follows. The store system computer **50** outputs a first product location price indicative of the unit price of a product to the product pricing units **40** via the signal paths **54** and **56**. The product pricing units **40** receive the first product location price and display the first product location price on the product price display unit **60** such that the first product location price is perceivable by a first shopper when the first shopper is selecting the product for purchase. The store system computer **50**, utilizing at least one of the price change algorithms, automatically changes the first product location price to a second product location price following the first shopper selecting the product for purchase and possibly while the first shopper is still in the store shopping. The second product location price is then transmitted to the product pricing units **40** via the signal paths **54** and **56** to be displayed on the product price display unit **60**. The second product location price is different than the first product location price and is perceivable by a second shopper when the second shopper is selecting the product for purchase. The first shopper then proceeds to one of the store checkout stations **42** to pay for the product which the first shopper has selected. The first shopper provides the time-stamp media to the checkout clerk who enters the time information stored on the time-stamp media into the checkout computer unit **66**. The UPC code on the product is scanned by the product scanner unit **68** and is thereby input into the checkout computer unit **66**. The checkout computer unit **66** then transmits the product identification data (UPC code) and the time-stamp data to the store system computer **50** via the signal paths **78** and **80**. The store system computer **50** receives the time-stamp data and the product identification data and determines whether the price of the product reflected in the product identification data was changed after the time reflected in the time-stamp data. If the product location price has been changed after the time identified in the time-stamp data, the store system computer **50** transmits a signal to the checkout computer unit **66** via the signal paths **78** and **80** to request from the first shopper a first product checkout price not exceeding the first product location price perceivable by the shopper when the shopper was selecting the product for purchase.

[0059] That is, if the price of the product was increased after the first shopper entered the store or selected the product for purchase (depending on whether the store time-stamp unit **126** was located at the store's entrance or adjacent to one of the product pricing units **40**) and had his time-stamp media time-stamped by the store time-stamp unit **126**, the first product checkout price will reflect the price of the product before the product location price was increased. However, if the price of the product has been decreased after the first shopper had his time-stamp media time stamped by the store time-stamp unit **126**, the first product checkout price will be the decreased price.

[0060] In the same manner, the physical store system **14** requests from the second shopper a second product checkout price for the purchase of the product, with the second product checkout price not exceeding the second product location price perceivable by the second shopper when the second shopper was selecting the product for purchase.

[0061] In the second and third modes of operation, the store time-stamp unit **126** is not utilized to assure that the product checkout price of a product does not exceed the product location price of the product after a change in the price of the product has been made.

[0062] In the second mode of operation, the product checkout price requested from the shopper at one of the store checkout stations **42** for the purchase of a product is changed by the store system computer **50** a predetermined time later than the product location price displayed by the product pricing unit **40** located proximate to the product is changed by the store system computer **50**. By changing the product checkout price a predetermined time, such as one hour, later than the product location price, this substantially increases the probability that shoppers will not be charged a price at one of the store checkout stations **42** which is greater than the product location price displayed by the respective product pricing unit **40** when the shopper selected the product for purchase.

[0063] In a third mode of the present invention, the product location price and the product checkout price are changed simultaneously by the store system computer **50** when the price of the product is decreased, and the product checkout price is changed a predetermined time later than the product location price by the store system computer **50** when the price of the product is increased.

[0064] When a product checkout price of a product is decreased, the decreased price can be transmitted to the store product advertising media unit **44** (as discussed above) to notify shoppers of the price reduction via audio or video. Thus, the store system computer **50** automatically changes both the product checkout price and the product advertised price simultaneously.

Owner Control System **12**

[0065] Referring now to **FIG. 1** in combination with **FIG. 6**, the owner control system **12** is shown in more detail. The owner control system **12** includes an owner control system computer **132** and a modem **134**. The owner control system computer **132** communicates with the modem **134** via a signal path **136**. The owner control system computer **132** can be a Packard Bell Platinum 2010, for example. The owner control system computer **132** can connect automatically to each of the physical store systems **14** via the signal paths **24***a* and **24***b*, the product supplier systems **16***a* and **16***b* via the signal paths **26***a* and **26***b*, the competition pricing information system **20** via the signal path **30**, and the virtual store system **18** via the signal path **28**.

[0066] It should be noted that the logic executed by the owner control system computer **132** can be incorporated into the store system computer **50** if desired, and/or if the owner only has one physical store. If the logic executed by the owner control system computer **132** is incorporated into the store system computer **50**, the owner control system computer **132** can be eliminated.

[0067] The owner control system computer **132** includes a plurality of predetermined price change algorithms to send price change codes, including changed prices, and/or price change criteria or instructions, to the physical store systems **14** or the virtual store system **18** based on the competition price data received from the competition pricing information system **20**, the pricing and advertising information received from the product supplier systems **16***a* and **16***b*, the sales and inventory data received from the physical store systems **14** and/or the virtual store system **18**, and combinations thereof.

[0068] In other words, the owner control system computer **132** is adapted to transmit the price change codes to the physical store systems **14***a* and **14***b* and/or the virtual store system **18** to: (1) change the prices at the physical store systems **14***a* and **14***b*, and/or the virtual store system **18**; and/or (2) select one or more of the price change algorithms stored on the physical store systems **14***a* and **14***b* and/or the virtual store system **18** to be used thereby in changing the product location and product checkout prices. Different price change codes can be transmitted independently to each of the physical store systems **14**, and/or the virtual store system **18** so that the price changes at the physical store systems **14** and/or the virtual store system **18** can be individualized to meet the local supply and/or demand, for example.

[0069] For example, the pricing and advertising data received from the product supplier system **16***a* by the owner control system **12** may indicate that a particular product is in short supply. Such pricing and advertising data is then analyzed by at least one of the algorithms stored in the owner control system **12** and a determination may be made to raise the price of the particular product. The owner control system **12** then outputs a price change code to the physical store systems **14** and/or virtual store system **18** to raise the price of the particular product.

[0070] As another example, the competition price data received from the competition pricing information system **20** by the owner control system **12** may indicate that a competitor's price on a first product is lower than the price of the first product in the physical store systems **14** and/or the virtual store system **18**. Such competition price data is then analyzed by at least one of the algorithms stored in the owner control system **12** and a determination may be made to lower the price of the particular product. The owner control system **12** then outputs a price change code to the physical store systems **14** and/or the virtual store system **18** to lower the price of the particular product. The price change code lowering the price of the particular product can also include instructions to cause the store system computer **50**, for example, to output product advertising data to the store product advertising media unit **44** to provide advertising messages, such as coupons, video messages and/or audio messages to accompany the lowering of the price of the product and to thereby notify shoppers of the lowering of the price of the product.

[0071] The owner control system **12** receives sales and inventory data from the physical store systems **14** and/or the virtual store system **18**. The sales and inventory data is indicative of product purchases, rate of product purchases and the remaining inventory at the physical store systems **14** and/or the virtual store system **18**. Based on the sales and inventory data, the owner control system **12** is programmed to automatically output order data to order products from the product suppliers associated with the product supplier systems **16**. The order data can be individualized for each of the physical store systems **14** and/or the virtual store system **18** so that the ordered products are shipped from the suppliers to the correct locations.

Virtual Store System **18**

[0072] Referring now to **FIG. 7**, shown therein is a display screen **140** illustrating the virtual store system **18** as perceived by a shopper. It should be noted that the virtual store system **18** and the physical store systems **14** operate identically except as set forth hereinafter. The display screen **140** of the virtual store system **18** is perceivable by the shopper as the shopper is browsing the internet, for example. Displayed on the display screen **140** is at least one product **142**, and a product pricing unit **144** displaying the product location price of the particular product **142**. Also displayed on the display screen **140** is a store product advertising media unit **146** which operates identically as the store product advertising media unit **44**, hereinbefore described with reference to **FIG. 2**. Various buttons, such as a browse button **148** and an order button **150** are also included on the display screen **140**.

[0073] In use, the shopper logs on to the virtual store system **18** and the virtual store system **18** stores a time-stamp indicative of the time that the shopper logged on. The shopper then selects the browse button **148** to browse between different products **142**. As the shopper browses through the different screens of products **142**, the product location price is displayed on the product pricing unit **144**, and any advertising specials related to the particular displayed product **142** or other products are transmitted via

video and/or audio transmissions by the store product advertising media unit **146** to be perceived by the shopper. As the shopper is browsing through the different screens of products **142**, the virtual store system **18** can store a time-stamp indicative of when the shopper first perceived the screen for each individual product **142** which was browsed.

[**0074**] The virtual store system **18** utilizes either the time-stamp recorded when the shopper logs on, or the time-stamp recorded when the shopper views the screens of the individual products **142** to set a product order price based on the time-stamp in the same manner as the product checkout price is determined by the physical store systems **14**, as hereinbefore described with reference to **FIG. 2**. Once the shopper decides to order one of the products **142**, the shopper presses the order button **150** and the product location price displayed on the product pricing unit **144** is locked in as the product order price.

[**0075**] Thus, it can be seen that the automated synchronous product pricing and advertising system **10** operates to more efficiently control the prices, and inventory of one or more physical, and or virtual store locations. Government regulations that prices on shelves (product location prices) do not exceed product checkout/order prices are satisfied, and consumer irritation with such price discrepancies is vastly reduced. Labor costs and error costs of manual placard generation and replacement at the product locations are eliminated. Automated management of text, audio and video at the product stations to achieve improvement in media marketing can be implemented and store wide advertising can become a practical matter. In addition, dynamic advertising is possible (e.g. two for one sale or price discount until 5:00 p.m.). The store specials can be accompanied with audio, video and printed materials such as coupons via the store product advertising media unit **44**. In addition, dynamic pricing is possible. As discussed before some of the real time economically viable possibilities are:

[**0076**] 1. Price increases or decreases depending on station inventory and on predetermined rate of purchase criteria;

[**0077**] 2. Price changes to match competitors pricing specials; and

[**0078**] 3. Price decreases to reflect purchasing specials, and headquarter specials to achieve end of the month sales projections.

[**0079**] The store product advertising media unit **44**, and the automatic changing of prices via the owner control system **12**, and/or the store system computer **50** can be implemented at a lower cost as compared to the manual generation of placard displays. The problems associated with time consuming checkout of coupons, and the redeeming of coupons is greatly simplified by the printing, sorting and accumulating of such coupons by the store system computer **50**.

[**0080**] Changes may be made in the construction and the operation of the various components, elements and assemblies described herein and changes may be made in the steps or the sequence of steps of the methods described herein, without departing from the spirit and scope of the invention as defined in the following claims.

What is claimed is:

1. An automated product pricing system, comprising:

a plurality of store systems, each of the store systems comprising:

a product pricing unit constructed to display a product location price indicating the unit price of a first product;

means for requesting from a shopper a product checkout/order price for the purchase of the first product;

a store system computer constructed to communicate with the product pricing unit and the means for requesting so as to automatically change the product location price and the product checkout/order price;

a competition pricing information system outputting competition pricing data indicative of the price at which at least one predetermined competitor requests from a shopper for the purchase of the first product;

a control system computer adapted to receive the competition pricing data from the competition pricing information system and to automatically determine, with at least one price change algorithm, and output a price change code to the store system computer.

2. A method for the automated pricing of a product, comprising the steps of:

displaying a first product location price indicative of the unit price of a product such that the first product location price is perceivable by a first shopper when the first shopper is selecting the product for purchase;

electronically changing the first product location price to a second product location price following the first shopper selecting the product for purchase, the second product location price being different than the first product location price, the second product location price being perceivable by a second shopper when the second shopper is selecting the product for purchase; and

requesting from the first shopper a first product checkout/order price for the purchase of the product and from the second shopper a second product checkout/order price for the purchase of the product, the first and second product checkout/order prices not exceeding the respective first and second product location prices perceivable by the first and second shoppers when the first and second shoppers were selecting the product for purchase.

3. A method as defined in claim 2, further comprising the step of changing the first product checkout/order price to the second product checkout/order price a predetermined time later than when the first product location price is changed to the second product location price.

4. A method as defined in claim 3, further comprising the step of:

selectively outputting at least one advertising message in a format perceivable by the second shopper, the advertising message identifying the product and including a product advertised price which is identical to the second product checkout/order price.

5. A method as defined in claim 4, wherein the step of electronically changing the first product location price to a second product location price includes the step of storing the

first product checkout/order price and also includes the step of changing the first product checkout/order price to the second product checkout/order price, and wherein the step of selectively outputting at least one advertising message is further defined as outputting the advertising message about simultaneously with the changing of the first product checkout/order price to the second product checkout/order price when the second product checkout/order price is less than the first product checkout/order price.

6. A method as defined in claim 2, wherein the step of electronically changing the first product location price to a second product location price includes the steps of:

receiving data selected from the group consisting of competition price data, pricing and advertising information, sales and inventory data, and combinations thereof; and

changing the first product location price to the second product location price based on the received data.

7. A method as defined in claim 2, further comprising the step of:

recording a time stamp data indicative of the time at which the first and second product location prices were likely perceivable by the first and second respective shoppers to determine the first product checkout/order price requested from the first shopper and the second product checkout/order price requested from the second shopper.

8. A method as defined in claim 7, wherein the step of recording a time stamp data is further defined as recording the time at which the first and second shoppers entered the store.

9. A method for the automated pricing of a product, comprising the steps of:

providing a plurality of store systems, each of the store systems comprising:

a store product advertising media unit constructed to selectively output at least one advertising message in a format perceivable by a shopper, the advertising message identifying a product and including at least one of a price and a price discount for the purchase of the product; and

providing a control system computer adapted to selectively communicate advertising price change codes indicative of different advertised prices for the same product to the store product advertising media unit of respective store systems whereby the advertising message at the store systems for the product are capable of being individualized at each store system.

10. A method as defined in claim 9, wherein the method further comprises the steps of:

selecting coupons from the store product advertising media unit from a plurality of predetermined coupons;

printing the selected coupons.

11. A method as defined in claim 9, further comprising the steps of:

providing a store checkout station adapted to receive coupon data from physical coupons and to transmit the coupon data;

providing a store system computer adapted to receive the coupon data and to print coupons from the coupon data whereby the physical coupons at the store checkout station can be discarded.

12. A method as defined in claim 10, further comprising the step of:

transmitting audio advertising messages via the store product advertising media unit.

13. A method as defined in claim 10, further comprising the step of:

transmitting video advertising messages via the store product advertising media unit.

14. A method for the automated pricing of a product, comprising the steps of:

providing a plurality of store systems, each of the store systems comprising:

a product pricing unit constructed to display a product location price indicating the unit price of a first product;

means for requesting from a shopper a product checkout/order price for the purchase of the first product;

a store system computer constructed to communicate with the product pricing unit and the means for requesting so as to automatically change the product location price and the product checkout/order price;

providing a competition pricing information system adapted to output competition pricing data indicative of the price at which at least one predetermined competitor requests from a shopper for the purchase of the first product;

providing a control system computer adapted to receive the competition pricing data from the competition pricing information system and to automatically output a price change code to the store system computer.

* * * * *