



Cena Kraft

*Music from /
the sky!*



Bass Drum Shell Construction

Ludwig **AERO KRAFT** Drums

THE Ludwig method of Aero-Kraft laminated shell construction is the most modern and improved form of building bass drums. Extreme strength of shell and ability to hold a perfect round are necessary to secure the best drum tone. Bass drum shells fashioned and built in accordance with the recognized correct principles used in the manufacture of aeroplanes are stronger and lighter. They will stand up longer under hard usage, maintain perfect round and are immune to climatic changes.

According to U. S. Government Air Service Engineers in aeroplane construction the advantages of laminated or plywood construction over solid woods in report No. 84, N. A. for Aeronautics, Washington, D. C., is set forth:

In the first place, "strength with a minimum weight is required," and further, "It is not always possible to proportion a solid plank so as to develop the necessary strength in every direction and at the same time utilize the full strength in all directions. In such cases it is the purpose of plywood to meet this deficiency by cross-banding which results in a redistribution of the materials.

Stronger than Steel

PANELS OF WOOD STRIPS GLUED TOGETHER ARE STRONGER THAN STEEL

Panels of plywood, thin layers of wood cut by machine and glued together so that the grain of one layer is at angles to that of the two adjacent layers, are stronger than those made of steel. Experiments have proved that the method of construction has been particularly valuable in building aeroplanes. Before it was known, wing ribs of wood weighed 7.95 ounces and were capable of holding a weight of only nineteen pounds. Those made of plywood are now able to hold a weight of 274 pounds and weigh only 5.12 ounces.

Read the reproduction of an article in the March issue (1924) of Popular Mechanics, page 488. These tests prove the advantage of the Ludwig method of shell construction.

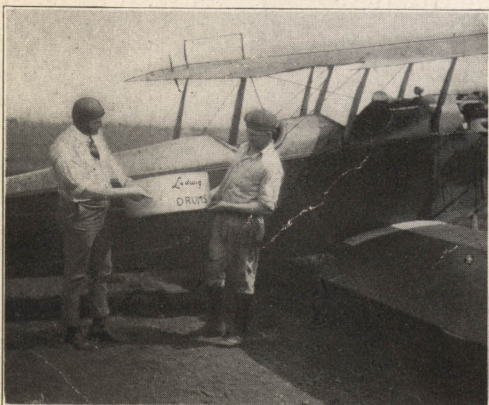


Photo by Int. News Service

Drops Ludwig **AERO KRAFT** Shell from Aeroplane Distance of Two Miles

In an official test witnessed by Chicago newspaper representatives and International News Service photographer on June 5th, 1923, a Ludwig Drum Shell was dropped several times totalling a distance of 10,000 feet without showing signs of breaking or warping. The photo shows Mr. A. E. Davidson and pilot Jas. Curran of Ashburn Field, Chicago, Ill., examining shell after the test.

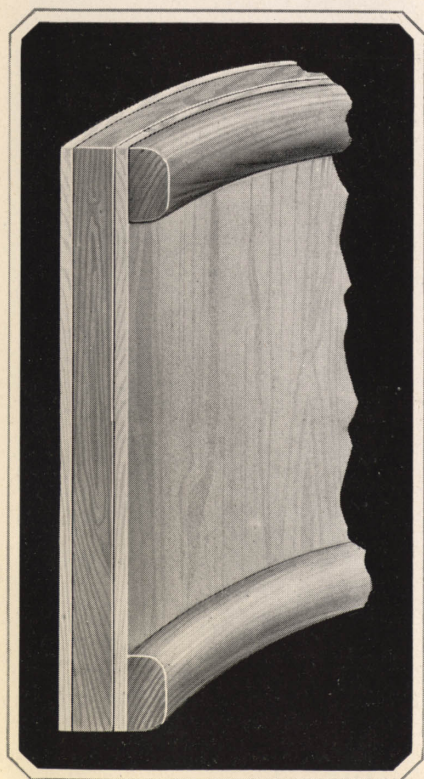
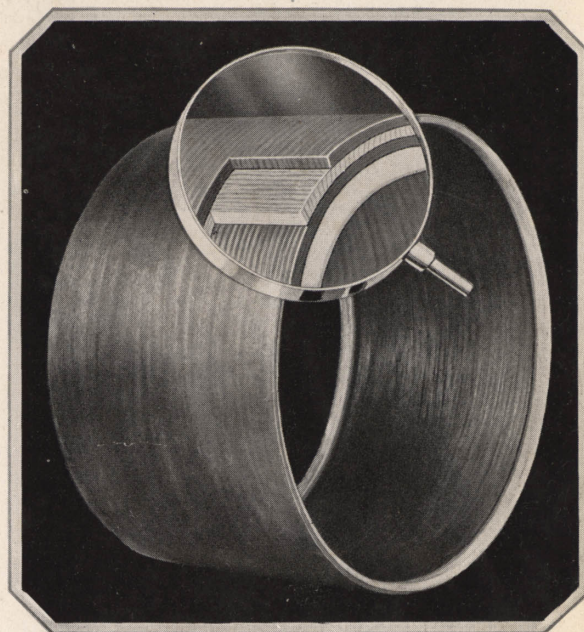
"Music from the Sky"

Great Strength Features of Ludwig Design

MANY hundreds of tests and extensive research by airplane designers and engineers were necessary to select the proper form and method of wood construction that would stand up under the severe usage of flight. It is readily apparent that great strength at a minimum weight are two of the necessary requirements. Bulk and excess weight are deterrent.

On the opposite page we show an authentic article that is authority for the statement, "That laminated wood is actually stronger than steel." In tests made it was found that the wing ribs of a plane formerly made of solid wood weigh approximately one-half pound and were capable of supporting a weight of only nineteen pounds. Under the new form of laminated construction (similar to Ludwig AERO-KRAFT) they were able to hold a total weight of two hundred seventy-four pounds, and the ribs made under this method weigh but a little more

than five ounces which proves that the new form of construction would actually bear a strain of fourteen times greater than under the old method.



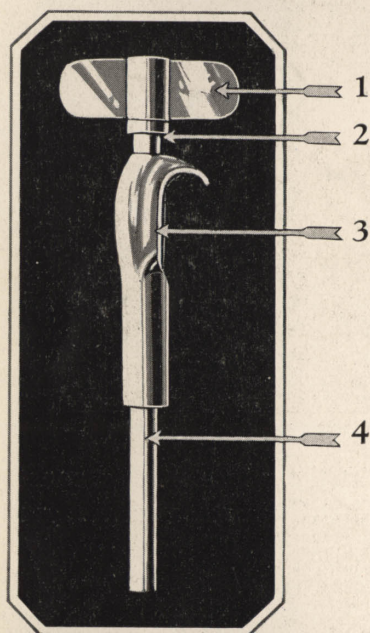
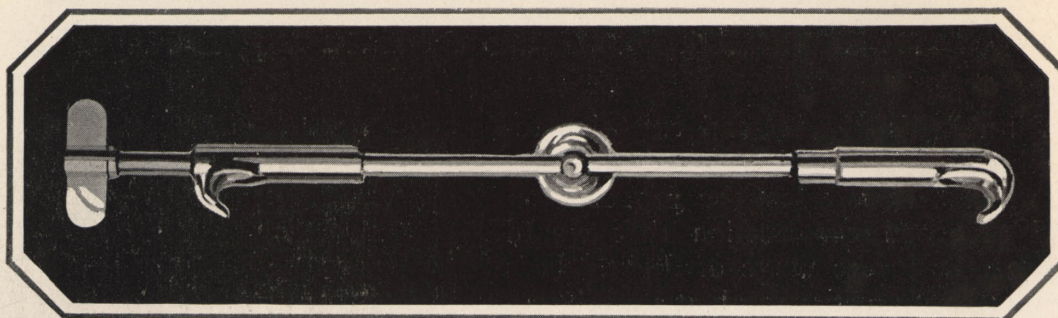
The Ludwig Bass Drum Shell

The two illustrations shown on this page of the Ludwig Bass Drum Shell indicate the arrangement of the cross-banded layers of wood. This type of shell is extremely rigid and firm, acts as a surety against warp and lessens the tendency for the shell to get out of round. The Ludwig AERO-KRAFT Shell is light yet extremely strong. It combines every essential factor of light weight, for easy transport, the ability to hold and support the head solidly, freedom from irregularities, and obstructions of inside bands found on the usual veneer type.

The transmission of sound is not interfered with on the inside of the Shell and therefore aids in the production of a full resonant and mellow tone.

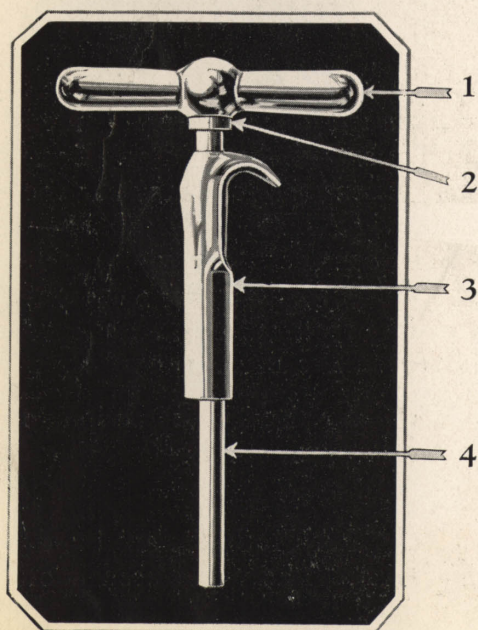
The exterior of all Ludwig AERO-CRAFT Shells are hand-rubbed and polished to a piano finish. The wood used is of selected grade, clear and even-grained.

Ludwig Drum Rods



Special Features

1. Solid brass wing nut on standard models (large and easily grasped solid brass handle on Tympani Rod models) securely fastened to steel rod.
2. End thrust collar integral with steel rod. This removes the strain of tensioning directly from wing nut and prevents them from becoming loosened.
3. Brass hook generously proportioned. Fits snugly to counter hoop and holds rigidly.
4. A solid steel rod. This is the ideal combination of steel screwed into brass hook with minimum wear of threads. Tensions free and easily without binding or stripping.



Tensioning a Bass Drum

The tension rods act in the double capacity of support and line up of rods when the center support or double stud type of rod is used. The studs hold the rods in line and keep them straight.

Ludwig tensioning rods are made to precision uniformity, heavily plated and designed to withstand the strain of head without pulling of screws. They are exceedingly strong, durable and screw easily.

Ludwig Drum Heads

Selecting the Skins

NOT every skin is suitable for drum heads. "The best can never be too good"—first, the skins must be fresh; properly cured with clean salt at the packing plant and free from cuts and blood stains.

We are ideally located—close to the largest packing and slaughter houses in the World—where fresh and select skins are available the year round. The large packers have the machinery and equipment for "pulling" skins which eliminates the possibility of cuts and tears in the raw skin.

Ludwig & Ludwig operate the largest drum and banjo head tannery in the world. We buy in large quantities and pay a premium price for the raw skins which naturally gives us the privilege of selection and grading that is denied the infrequent and smaller buyers.

Combined with our resources for selecting and handling the raw material we also have the mechanical equipment and facilities for processing efficiently and economically. None but skilled workmen are employed who are experts in producing heads of the very highest quality.

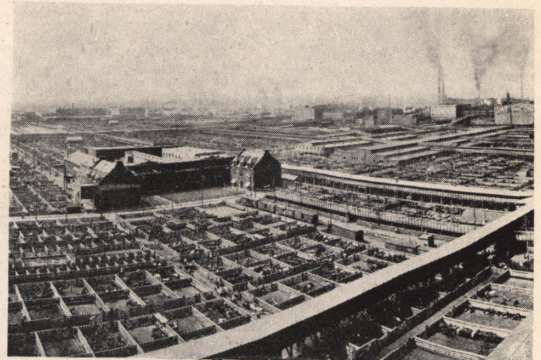
Gauging a Head to Within Five-Ten Thousandths of an Inch (.0005")

Accuracy to the equivalent of one-half thousandth of one inch. Ludwig heads are gauged and inspected for evenness on a special dial gauge that records the most minute variation in thickness.

We do not depend upon "feel" for evenness but have constructed our own test gauge for the purpose of determining thickness and uniformity. No other head tannery in existence is so equipped.

Our newest brand "Wm. F. Ludwig" SELECTED—Whitecalf are clear white, very even in thickness and possess unequalled tone quality. They are smooth in finish and extremely durable. If you have not seen this new drum or banjo head send for a free sample.

Chicago Union Stockyards



"Beam" House Work



Soaking and Liming Vats



Gauge Inspection and Hand Shaving

Ludwig & Ludwig
1611-21 No. Lincoln Street, Chicago

Ebonized Shell—Sepa



*Ebonized Shell—with either "Inspiration" (genuine gold) or "De Luxe" finish on rods.
Metal strip on hoops on special order only.*

“Inspiration” and “De Luxe”

Ludwig Separate Tension Bass Drum White Enamel Shell



Construction

THE White Enamel shell model in separate tension is ideal for special settings on stage or where musical acts are in prominent display.

Equipped with either “Inspiration” (GENUINE GOLD PLATED RODS) or “De Luxe” which is an imitation that closely resembles gold. These finishes on the metal parts offer a striking contrast to the shell and in view of the prominence of the drum outfit in the ensemble lend an air of distinction and refined beauty to the entire musical organization.

The drum is separate tension permitting each head to be tuned independently. The heads are clear and snowy white, selected for evenness and tonal quality.

“Inspiration” Model

(Genuine Gold Plated-Fittings)
White Enamel Shell

No.	Size	Price
E100A	12x24"	\$68.00
E101A	14x24"	70.00
E102A	12x26"	73.50
E103A	14x26"	75.00
E104A	12x28"	80.00
E105A	14x28"	81.00
E106A	12x30"	82.50
E107A	14x30"	83.50
E108A	16x30"	84.50
E109A	18x30"	85.00
E110A	12x32"	85.00
E111A	14x32"	86.00
E112A	16x32"	87.00
E113A	18x32"	88.50
E114A	12x34"	90.00
E115A	14x34"	91.50
E116A	16x34"	93.00
E117A	18x34"	95.00

“De Luxe” Model

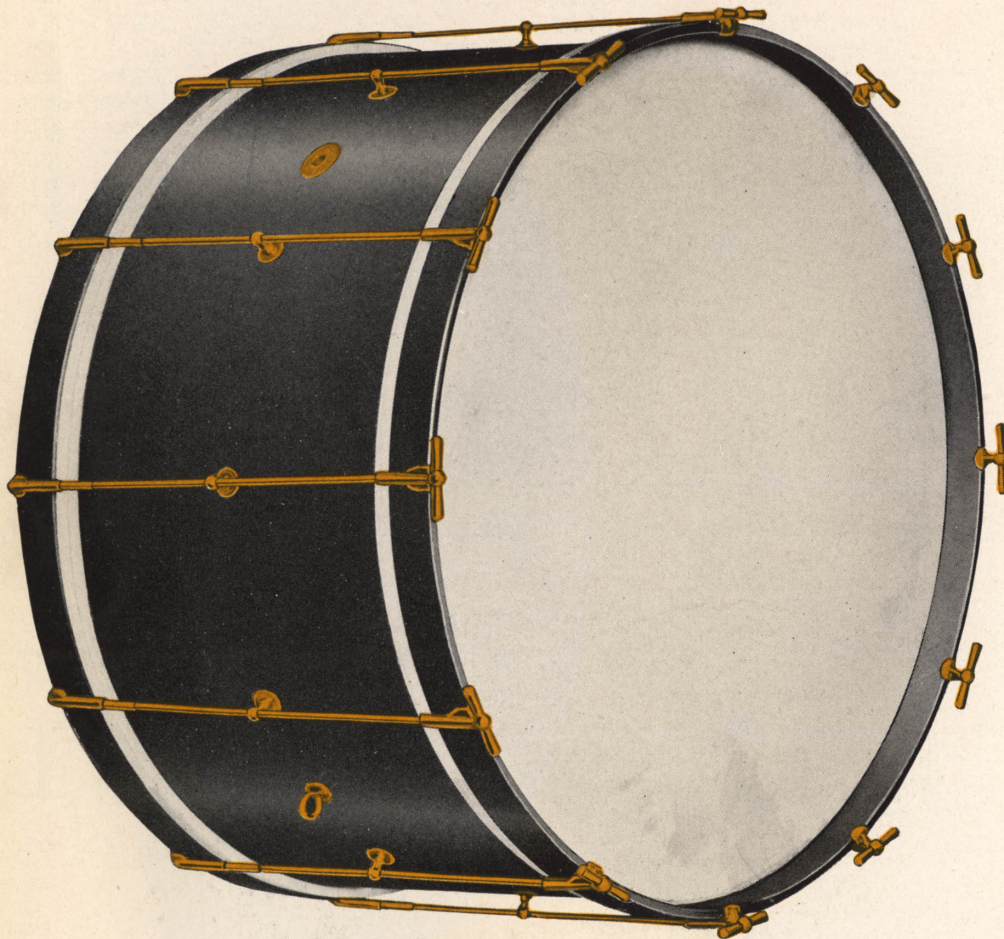
(Resembles Gold Finish)
White Enamel Shell

No.	Size	Price
100D	12x24"	\$48.00
101D	14x24"	50.00
102D	12x26"	53.50
103D	14x26"	55.00
104D	12x28"	60.00
105D	14x28"	60.00
106D	12x30"	62.50
107D	14x30"	63.50
108D	16x30"	64.50
109D	18x30"	65.00
110D	12x32"	65.00
111D	14x32"	66.00
112D	16x32"	67.00
113D	18x32"	68.50
114D	12x34"	70.00
115D	14x34"	71.50
116D	16x34"	73.00
117D	18x34"	75.00

ARTISTS' SPECIAL

Ludwig Artists' Special Bass Drum
Tympani Rod—Ebonized or White Enamel Shell

Ludwig Tympani



AERO KRAFT

Shell Construction

THIS model is highly popular for stage display work and feature orchestras.

The "De Luxe" finish is a special plating on the rods that closely resembles gold, costing much less and eliminates the extra cost for Luxury Tax that applies to genuine gold-plated instruments.

"Inspiration finish is GENUINE Gold on the rods and studs. Add 5% to total cost for Luxury Tax when ordering this model.

Both "De Luxe" and "Inspiration" model Bass Drums are obtainable in either white enamel shell or black ebonized finish.

Prices and Sizes

Genuine Gold Plated Fittings, "Inspiration" Model
with either Ebonized or White Enamel Shell. Specify type of shell.

No.	Size	Price	No.	Size	Price
197A	12x24"	\$58.40	206A	14x30"	\$66.80
198A	14x24"	58.80	207A	16x30"	67.80
199A	12x26"	60.80	208A	12x32"	69.20
200A	14x26"	62.00	209A	14x32"	70.00
201A	16x26"	62.80	210A	16x32"	71.40
202A	12x28"	63.80	211A	12x34"	72.80
203A	14x28"	64.20	212A	14x34"	74.00
204A	16x28"	65.00	213A	16x34"	75.40
205A	12x30"	66.40			

Special Ludwig De Luxe Finish

Either Ebonized or White Enamel Shell. Specify type of shell.

No.	Size	Price	No.	Size	Price
197C	12x24"	\$38.40	206C	14x30"	\$46.80
198C	14x24"	38.80	207C	16x30"	47.80
199C	12x26"	40.80	208C	12x32"	49.20
200C	14x26"	42.00	209C	14x32"	50.00
201C	16x26"	42.80	210C	16x32"	51.40
202C	12x28"	43.80	211C	12x34"	52.80
203C	14x28"	44.20	212C	14x34"	54.00
204C	16x28"	45.00	213C	16x34"	55.40
205C	12x30"	46.40			

AL BASS DRUMS



Mini Rod Models

Ludwig Artists' Special Bass Drum Tympani Rod—Mahogany Shell



Shell Construction

THE demand for this type of bass drum is rapidly increasing. The tympani handles permit fast and easy tensioning, being so designed as to fit the natural grasp of hand.

The tension rods are heavily nickel plated, shell is the special Ludwig Aero - Kraft type of construction. Heads are best grade Ludwig whitecalf.

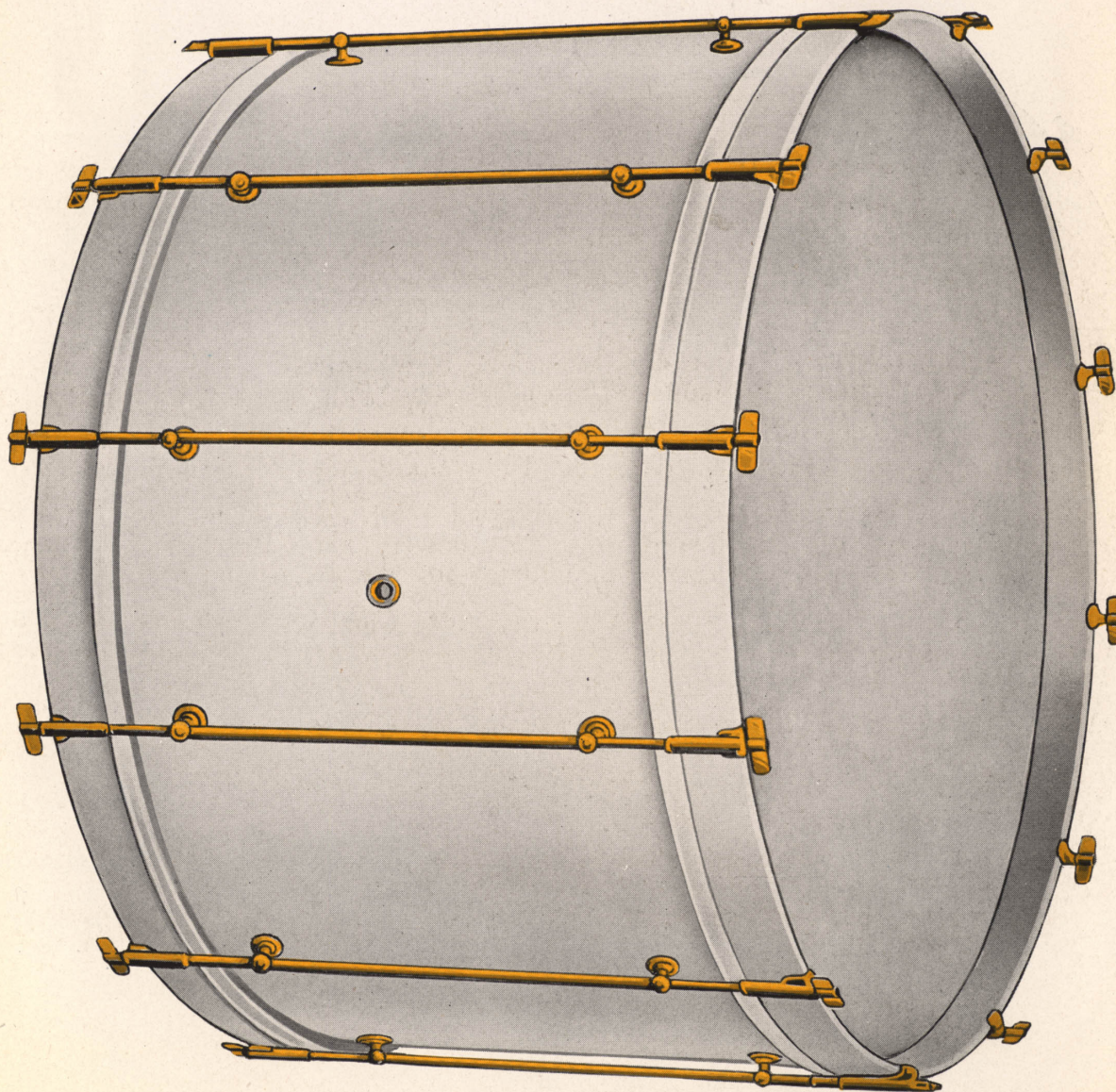
Shell is hand-rubbed mahogany to a piano finish. (Maple only upon special order.) Hoops are natural finish hard maple.



Prices and Sizes

No.	Size	Rods	Price	No.	Size	Rods	Price
197	12x24"	10	\$28.40	206	14x30"	12	\$36.80
198	14x24"	10	28.80	207	16x30"	12	37.80
199	12x26"	10	30.80	208	12x32"	12	39.20
200	14x26"	10	32.00	209	14x32"	12	40.00
201	16x26"	10	32.80	210	16x32"	12	41.40
202	12x28"	12	33.80	211	12x34"	14	42.80
203	14x28"	12	34.20	212	14x34"	14	44.00
204	16x28"	12	35.00	213	16x34"	14	45.40
205	12x30"	12	36.40				

Separate Tension Bass Drums



White Enamel Shell—"Inspiration" or "De Luxe" Finish

Regularly furnished with black hoops
White hoops only, special order

arate Tension Model



Ludwig Separate Tension Bass Drum Black Ebonized Shell



Construction

THE black ebonized shell is the most popular type in the fancy finish styles. Black harmonizes with every form of stage and display setting.

This model is made similar to the one pictured above and is equipped with "Inspiration" (GENUINE GOLD) on rods and studs or else in the popular "De Luxe" finish on the metal fittings. The "De Luxe" finish is less expensive, has the appearance of gold and wears well.

The "Inspiration" model with genuine gold plated metal parts bears a Luxury Tax of 5% additional to listed price.

The Drums are separate tension. This permits individual tuning of the heads to secure that full vibrant tone so highly desired by the drummer. The heads are our selected best grade white calf.

"Inspiration" Model

(Genuine Gold Plated Fittings)
Black Ebonized Shell

No.	Size	Price
100A	12x24"	\$68.00
101A	14x24"	70.00
102A	12x26"	73.50
103A	14x26"	75.00
104A	12x28"	80.00
105A	14x28"	81.00
106A	12x30"	82.50
107A	14x30"	83.50
108A	16x30"	84.50
109A	18x30"	85.00
110A	12x32"	85.00
111A	14x32"	86.00
112A	16x32"	87.00
113A	18x32"	88.50
114A	12x34"	90.00
115A	14x34"	91.50
116A	16x34"	93.00
117A	18x34"	95.00

"De Luxe" Model

(Resembles Gold Finish)
Black Ebonized Shell

No.	Size	Price
C100D	12x24"	\$48.00
C101D	14x24"	50.00
C102D	12x26"	53.50
C103D	14x26"	55.00
C104D	12x28"	60.00
C105D	14x28"	60.00
C106D	12x30"	62.50
C107D	14x30"	63.50
C108D	16x30"	64.50
C109D	18x30"	65.00
C110D	12x32"	65.00
C111D	14x32"	66.00
C112D	16x32"	67.00
C113D	18x32"	68.50
C114D	12x34"	70.00
C115D	14x34"	71.50
C116D	16x34"	73.00
C117D	18x34"	75.00

Ludwig Standard Separate Tension

Professional Separate Tension Mahogany Shell Bass Drum



The Professional Standard



A WORTHY companion to the best in any drummer's outfit. They permit the tension of each head separately to bring out the desired tone and volume.

Equipped with the best grade calf heads, carefully selected and matched.

The shell is especially strong and made in the Ludwig AERO-KRAFT shell construction type. This lessens the tendency to warp out of round and insures maximum strength at minimum weight.

This model is made regularly with genuine Mahogany shell (Maple only upon special order), hand-rubbed to a piano finish. Counter hoops are in the natural hard maple finish. Rods and studs are heavily nickeled.

Prices and Sizes

No.	Size	Price	No.	Size	Price
100	12x24"	\$38.00	109	18x30"	\$55.00
101	14x24"	40.00	110	12x32"	55.00
102	12x26"	43.50	111	14x32"	56.00
103	14x26"	45.00	112	16x32"	57.00
104	12x28"	50.00	113	18x32"	58.50
105	14x28"	51.00	114	12x34"	60.00
106	12x30"	52.50	115	14x34"	61.50
107	14x30"	53.50	116	16x34"	63.00
108	16x30"	54.50	117	18x34"	65.00

Ludwig Center Support

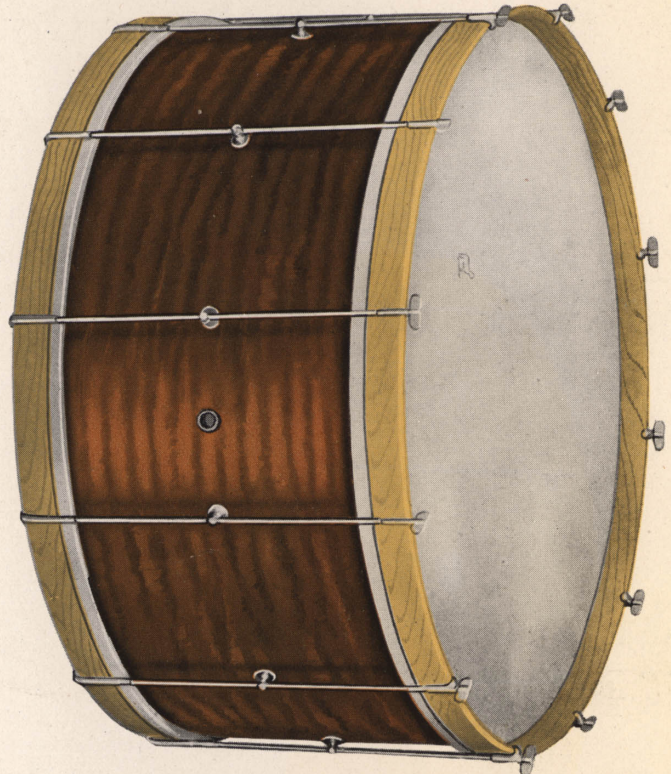
Professional Standard Mahogany Shell Center Support Bass Drum



Construction

THE center support drum is the most popular model in the standard styles. It is ideal for general all-round work, possessing volume, is easy to carry and transport.

The center support holds the shell rigidly and lines up the rods for easy tensioning. This model is strong, yet light enough for parade corps work and is highly practical for the professional drummer in nearly every kind of general work.



A Popular Drum

The Ludwig "Professional" center support bass drum is regularly made with genuine Mahogany shell. Finely finished and hand-rubbed shell. Counter hoops are hard maple in the natural wood finish.

Rods and studs are nicked and polished. This model can also be furnished with rope tension and roller cord hooks at the same price as listed for the rod type.

Regularly furnished in Mahogany shell (Maple only upon special order).

Prices and Sizes

No.	Size	Price	No.	Size	Price
760	—12x24"	\$26.60	771	—18x30"	\$37.00
761	—14x24"	27.50	772	—12x32"	37.00
762	—12x26"	28.80	773	—14x32"	37.80
763	—14x26"	30.00	774	—16x32"	39.20
764	—16x26"	31.00	775	—18x32"	40.60
765	—12x28"	32.00	776	—12x34"	40.60
766	—14x28"	32.40	777	—14x34"	41.80
767	—16x28"	33.40	778	—16x34"	43.20
768	—12x30"	34.60	779	—18x34"	44.60
769	—14x30"	35.00	780	—14x36"	45.00
770	—16x30"	36.00	781	—16x36"	46.40

Above drum with rope tension at same price as sizes listed

"Tango" and Double Stud Models

Ludwig "Tango" Bass Drum



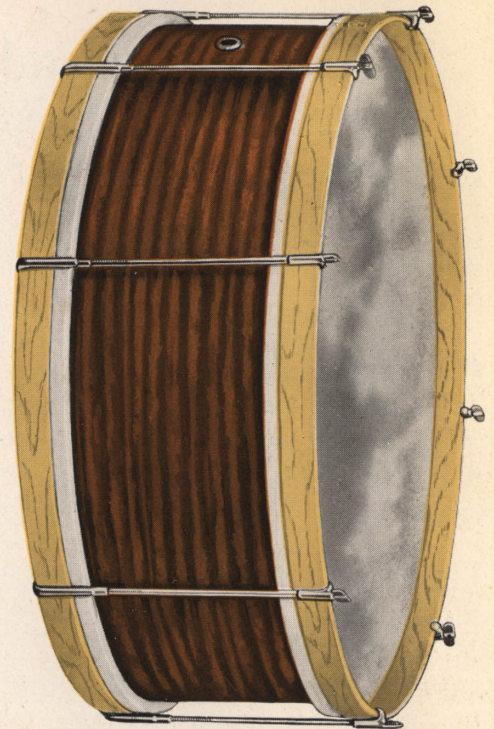
Construction

A HIGH grade and practical model for the small orchestra. Especially suited for transport and ease of carrying by jobbing drummers, the "Home" orchestra and small combinations.

The shell is unusually strong yet light in weight. The thumb-rods are sturdy, making tensioning easy and certain. This model is regularly furnished with genuine Mahogany shell, hand-rubbed and polished to a Piano finish. Maple Shell supplied only when specified.

Prices and Sizes

No.	Size	Price	No.	Size	Price
159	6x24"	\$19.00	162	12x24"	\$24.00
160	8x24"	20.00	163	10x26"	25.00
161	10x24"	22.00	164	12x26"	26.50



Ludwig Double Stud Bass Drum



Construction

DOUBLE studs on each rod increase their strength, reinforce the shell and line up rods for secure and easy tensioning. For shell widths of 14" and over this proves an ideal tensioning device.

The shell is hand rubbed and polished, made in Mahogany shell as regular models unless Maple is specified. Equipped with finest quality heads. Ludwig special laminated shell construction is another feature that makes this a solidly built and especially strong shell.

Prices and Sizes

No.	Size	Price	No.	Size	Price
783	14x24"	\$28.80	791	14x32"	\$40.00
784	14x26"	32.00	792	16x32"	41.40
785	16x26"	32.80	793	18x32"	42.80
786	14x28"	34.20	794	14x34"	44.00
787	16x28"	35.00	795	16x34"	45.40
788	14x30"	36.80	796	18x34"	46.80
789	16x30"	37.80	797	14x36"	47.20
790	18x30"	38.80	798	16x36"	48.60

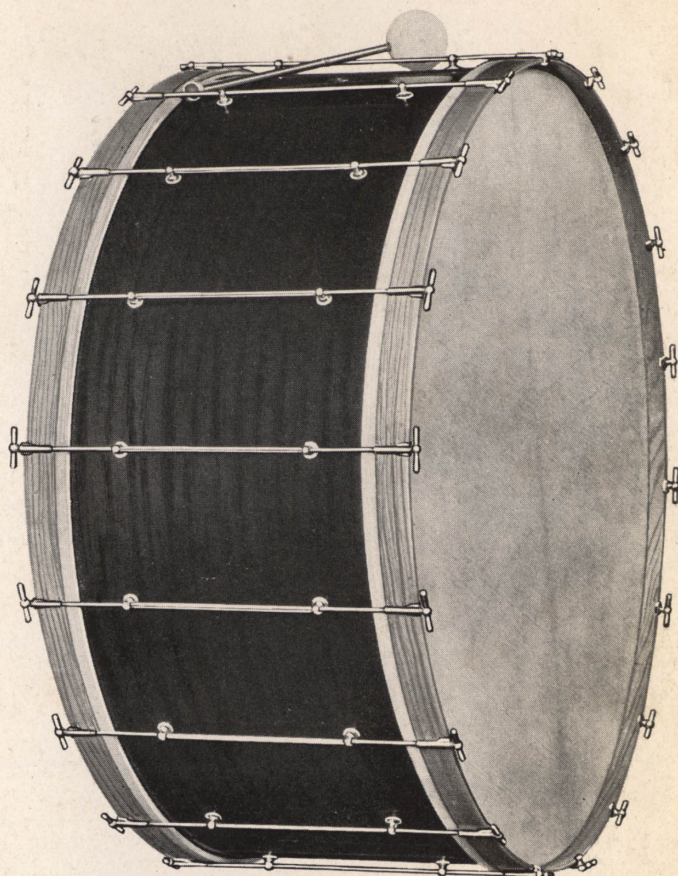


Ludwig "Thunder" Bass Drums

Monster Bass Drums

LUDWIG "Mönster" Bass Drums are the big feature of Band Parades, used by University Bands, Fraternal organizations, American Legion Posts, Drum Corps, Carnival and Circus Bands and in Political Mass Meetings.

These models are made in practical sizes that can be used on a drum carriage or float and are within the dimension limits for transport by rail in the regular express cars. Shells are genuine Mahogany, hand rubbed. Inside of shell is re-inforced with special bands to hold shell rigidly and support the studs of the tensioning rods. Another feature is the Ludwig Tympani Handle screws of the rods, a vast improvement over the small flat thumb-screws ordinarily used. The Ludwig "Monster" Bass Drums are SEPARATE TENSION permitting individual adjustment of each head independent of the other.



Prices, Sizes and Models

JUMBO—16x36" (shell size).....	\$ 75.00	HERCULES—22x42" (shell size)	\$100.00
SANDOW—18x36" (shell size).....	77.50	GOLIATH—20x44" (shell size).....	120.00
MASTADON—18x38" (shell size).....	90.00	SHENANDOAH—22x44" (shell size).....	125.00
JUPITER—20x38" (shell size).....	92.50	TITAN—20x48" (shell size).....	130.00
VULCAN—18x40" (shell size).....	92.50	COLOSSUS—22x48" (shell size).....	135.00
THUNDERER—20x40" (shell size).....	95.00	GIGANTIC—22x60" (shell size).....	200.00
CYCLOPS—20x42" (shell size).....	97.50	LEVIATHAN—22x72" (shell size).....	250.00

Each Drum is equipped with a suitable bass drum beater to conform with the dimensions of drum at no extra charge.



Drum Carriages and Special Equipment

Ludwig Drum Carriages are made with wire spoke, ball-bearing, pneumatic rubber tired wheels. The two wheel carriage is used for drums up to and including the 60-inch diameter size. Wheels are detachable and carriage can be packed in small space.

For the 72-inch drums we recommend the four wheel carriage with turn table front wheels. Front wheels have solid rubber tires. Rear wheels are pneumatic.

Sold Only with Bass Drums

No. 99† —Two wheel carriage with leather straps, tire pump and wrench, complete	\$ 60.00
No. 99½†—Four wheel carriage, complete with leather straps, tire pump and wrench.....	100.00

Special lettering on drums, lighting equipment, etc. Prices furnished upon application.

Ludwig

TRADE MARK

Ten To N - 3 300	
Holder - <u>1.25</u>	4 25
triangle - 1.30	<u>1 30</u>
Block - 2.50	5 55
Peddle - 8.40	
Waldall - 25.00	
Book - 1.50	