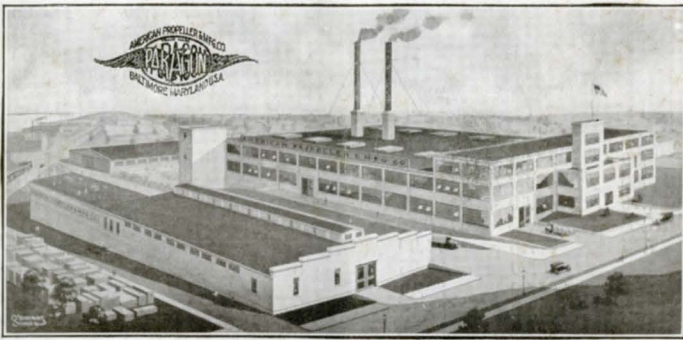


PARAGON




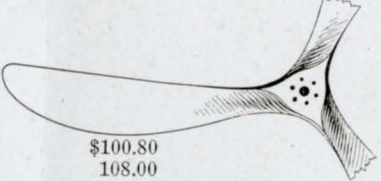
PROPELLERS

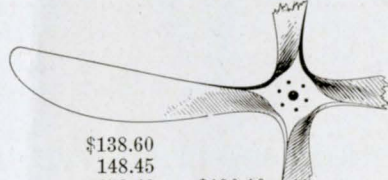
PRICE LIST EFFECTIVE JANUARY 1st., 1919.

SPECIAL DISCOUNTS ON QUANTITIES

STANDARD LIST OF PRICES---Straight Blade Designs
NUMBER OF LAMINATIONS

Diameter		TWO-BLADED						Diameter					
		3	4	5	6	7	8						
4 ft.	\$14.40	\$21.60							4 ft.				
4½ "	16.20	24.30							4½ "				
5 "	18.00	27.00							5 "				
5½ "	19.80	29.70							5½ "				
6 "	21.60	32.40							\$43.20	6 "			
6½ "	23.40	35.10							46.80	6½ "			
7 "		37.80							50.40	\$63.00	7 "		
7½ "		40.50							54.00	67.50	7½ "		
8 "		43.20							57.60	72.00	\$86.40	8 "	
8½ "		45.90							61.20	76.50	91.80	8½ "	
9 "									64.80	81.00	97.20	\$113.40	9 "
9½ "									68.40	85.50	102.60	119.70	9½ "
10 "			72.00	90.00	108.00	126.00	10 "						
10½ "				94.50	113.40	132.30	10½ "						
11 "				99.00	118.80	138.60	11 "						
11½ "				103.50	124.20	144.90	11½ "						
12 "				108.00	129.60	151.20	12 "						

Diameter		THREE-BLADED						Diameter					
		3	4	5	6	7	8						
4 ft.	\$23.05	\$34.55							4 ft.				
4½ "	\$25.90	38.90							4½ "				
5 "	28.80	43.20							5 "				
5½ "	31.70	47.50							5½ "				
6 "	34.55	51.85							\$69.10	6 "			
6½ "	37.45	56.15							74.90	6½ "			
7 "		60.50							80.65	\$100.80	7 "		
7½ "		64.80							86.40	108.00	7½ "		
8 "		69.10							92.15	115.20	\$138.25	8 "	
8½ "		73.45							97.90	122.40	146.90	8½ "	
9 "									103.70	129.60	155.50	\$181.45	9 "
9½ "									109.45	136.80	164.15	191.50	9½ "
10 "			115.20	144.00	172.80	201.60	10 "						
10½ "				151.20	181.45	211.70	10½ "						
11 "				158.40	190.10	221.80	11 "						
11½ "				165.60	198.70	231.85	11½ "						
12 "				172.80	207.35	241.90	12 "						

Diameter		FOUR-BLADED						Diameter					
		3	4	5	6	7	8						
4 ft.	\$31.70	\$47.50							4 ft.				
4½ "	35.65	53.40							4½ "				
5 "	39.60	59.40							5 "				
5½ "	43.60	65.30							5½ "				
6 "	47.50	71.30							\$95.05	6 "			
6½ "	51.50	77.15							103.00	6½ "			
7 "		83.15							110.90	\$138.60	7 "		
7½ "		89.05							118.80	148.45	7½ "		
8 "		95.05							126.70	158.40	\$190.10	8 "	
8½ "		100.90							134.65	168.25	201.95	8½ "	
9 "									142.60	178.20	213.85	\$249.50	9 "
9½ "									150.50	188.05	225.70	263.30	9½ "
10 "			158.40	198.00	237.60	277.20	10 "						
10½ "				207.85	249.50	291.00	10½ "						
11 "				217.80	261.35	304.90	11 "						
11½ "				227.65	273.25	318.70	11½ "						
12 "				237.60	285.10	332.65	12 "						

The prices for propellers in quarter sizes are intermediate the prices of the sizes given. Odd sizes will be priced according to the next larger quarter size.

These STANDARD PARAGON PROPELLERS are unrivaled in excellence by any propellers in the world, except our VARIABLE PITCH designs, originated by us in 1912 and described on page 4.



THE STANDARD PROPELLERS listed on the opposite page are of the finest workmanship and materials. They are furnished in any plain design having substantially straight blades.

THE MATERIAL furnished in our Standard Paragon Propellers is American Quartered Oak, Walnut, Birch, Cherry and Mahogany. The Oak is by far the strongest, most useful and most durable material. It has a high resistance to splitting, which valuable property admits of using thinner and more efficient blade sections without sacrifice of strength; the Oak also has a special affinity for glue, making stronger joints. Next after Oak—Walnut, Birch and Cherry are the most useful materials.

It is only in violent accidents that the wood breaks otherwise than by splitting. The comparative value of the different woods as regards their resistance to splitting is shown by the following table based on numerous tests:

	Quartered White Oak (34 tests)	American Black Walnut (34 tests)	Figured Mahogany (34 tests)	Plain Unfig'd Mahogany (12 tests)
Relative Strength.....	100	60	58	33
Relative Weight.....	100	87	81	60
Relative Strength per Unit of Weight.....	100	69	72	55

THE NUMBER OF BLADES should be determined by the diameter which can be used and the revolutions per minute. For small diameters at comparatively low speed three or more blades should be used. Where the speed of revolution is very high, only two blades should be used unless the diameter is small, in which

case three or more blades should be used. We can furnish special propellers in any number of blades up to six absolutely without loss of strength in the hub and with provision for any size of bore in the hub. The three-bladed hubs are trebly laminated, and they greatly exceed the two-bladed in point of strength. The five and six-bladed propellers have a multiple hub construction similar to the three-bladed, and embody the same features of strength.

THE MAXIMUM EFFICENCY is obtained where (other things being equal) the propeller has adequate diameter for the size and resistance of the machine and where the rotative speed of the propeller is such that its pitch can be from 75 to 100 per cent. of its diameter. The adequate diameter in a propeller to overcome a given amount of resistance depends upon the number of blades. The smaller the diameter in relation to power, the greater should be the number of blades. The greater the diameter, the slower should be the rotative speed. Machines of high speed in proportion to power should have propellers of high pitch in relation to diameter.

METAL SHEATHING or metal parts of any kind are not included under the list prices. Where sheathed blades are required we use copper, brass or monel metal perfectly formed to the shape of the blade and secured by through rivets in the most approved manner. All rivet heads are soldered on both sides. The price for metal sheathing is from \$5.00 to \$15.00 per blade, according to size and material. Nickel steel hub fittings, bolts, etc., are furnished at special prices on application.

STANDARD STRAIGHT BLADED DESIGNS

SPECIAL CONSTRUCTION



The special propellers are made of finest Quartered Oak, with edge grain Silver Spruce interior portions. They have the durability of Oak combined with the lightness of Spruce. They are unrivaled for their grace and beauty of style, richness of appearance and satisfaction in service. These are furnished at an advance of only 10 per cent. over Standard List prices.

TORSION PITCH DESIGNS

AUTOMATIC ADJUSTMENT OF PITCH

MADE IN QUARTERED WHITE OAK ONLY



This style of propeller possesses the valuable feature of automatically changing its pitch in accordance with the changes in resistance encountered by the machine under all conditions of flight. All propellers are known to bend, more or less, under the pressure of the air. In most cases this bending is accompanied either by a slight increase of pitch or by no material change in pitch. These TORSION PITCH PROPELLERS are so designed that any bending of the blade causes a corresponding *decrease* in the amount of pitch, particularly near the end portions. The curved shape of the blade so distributes the pressure that there is a torsional effect which reduces the pitch in response to pressure.

The thrust or pressure on a propeller while it is driving a machine is always equal and opposite to the resistance of the machine. This means that there must be great variations in thrust according as the machine is *starting* or *climbing*, or flying level, or is flying loaded or without load. These variations in thrust so affect the pitch of the torsional propeller that the pitch is least when the speed is least and the resistance greatest; also the pitch is greatest when the resistance is least. The consequence is that the propeller takes a low pitch when the speed slackens, thus enabling the engine to turn at higher speed and create great thrust. This occurs when the machine is starting or climbing, or encounters any increase of resistance. In like manner, when the machine levels out for horizontal speed the diminished resistance causes an increase of pitch and this gives the machine high velocity, with but little if any increase of engine speed. Thus, the same propeller covers a wide range of adaptability for all conditions of starting, climbing or high velocity of flight.

Not only do these propellers adjust themselves to widely differing conditions, but they develop a higher efficiency at all times, due to their instant response and adaptation to variations in the air and to all irregularities in the control of the machine.

The TORSION PITCH PROPELLERS are made of Quartered White Oak, with full strength and thickness of blades. Full strength of the material is preserved by steaming and bending the laminations to the curved form of the blade before they are assembled and glued, the grain of the wood thus following the curve of the blade.

The prices of this style of Paragon Propellers in Quartered White Oak throughout may be obtained by referring to our Standard List and adding 10 per cent.

ABOUT OURSELVES

The business of the American Propeller and Manufacturing Company was established in Washington, D. C., in 1910. In 1912 we removed to Baltimore, Maryland, where we have continued ever since.

For six years we occupied leased premises. In 1917-18 we erected the mammoth concrete and steel propeller factory shown on the cover of this leaflet. These premises occupy nearly three acres of railroad and water-front property. The total floor space is 84,000 feet. We have large storage space for lumber, dry kilns, and every modern facility for rapid production.

Our organization includes well-trained engineers whose technical knowledge has been supplemented by wide experience in both private and governmental work.

We have a complete equipment of general wood-working machinery, and a further large equipment of machinery built especially for the manufacture of propellers.

We have a large and fully equipped machine department, enabling us to manufacture metal parts of any size and in any quantities. Our equipment includes automatic machines and grinding equipment, insuring uniform accuracy in our product. We build special machinery, working models, etc. Precision work a specialty

ABOUT ROTATION

RIGHT HAND *VERSUS* LEFT HAND

WHEN considering the rotation of a propeller *never face backwards*. Always view the propeller from the *rear* of the machine or engine facing forward in the direction of travel. When so viewed, if the propeller turns clockwise (*up* on the left and *down* on the right side) then the propeller is a *Right Hand Screw*. If it turns anti-clockwise when so viewed, it is a *Left Hand Screw*. There are *no exceptions* to this rule. Always *look forward* at the propeller.

Never fail to advise us whether your propellers are to be *Right Hand or Left Hand*

American
Propeller and Manufacturing
Company



BALTIMORE, MARYLAND.
U. S. A.