

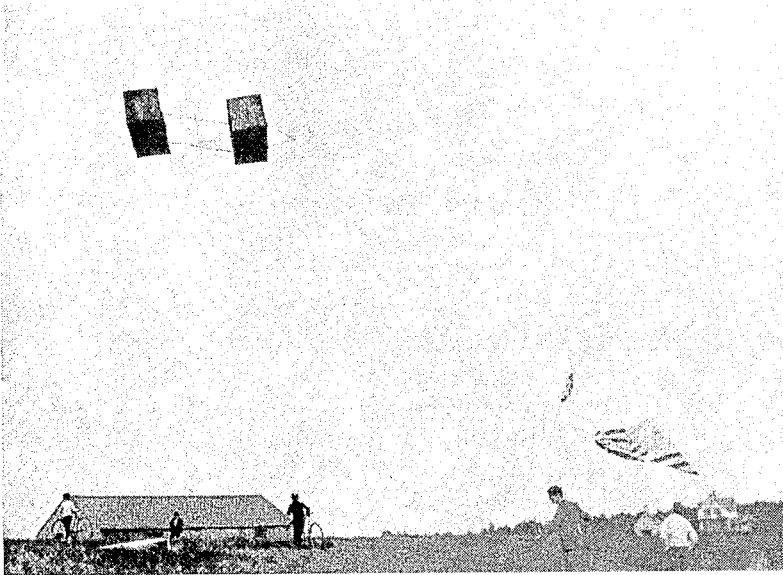
WORK ON THE GREAT DIAMOND.

BY CHARLES H. LAMSON.

HAVING an interest of long standing in aerial navigation and also incidentally in kites, when the 1895 April number of the "American Engineer and Railroad Journal" came to hand, describing Mr. Hargrave's latest box or cellular kites, I determined to make one. This kite, with some modifications of my own invention, has been about the most successful of any I have flown this year. The dimensions of my kite were as follows: Length of each cell, fore and aft, 25 inches, which was the full width of the black cambric cloth used for a covering. A narrow hem strengthened the selvage edge. Breadth of each cell, 6 feet, depth, 2 feet, distance between the cells, 4 feet 4 inches, making the full outside dimensions of the kite 6 feet wide and 8 feet 6 inches in length. Material of frame, straight-grained American spruce. The dimensions of the two strips constituting the backbone were $\frac{7}{8}$ by $\frac{1}{2}$ inch. The cross-braces for the cells were made elliptical in section, sharp edges exposed to the wind. Size of section, $\frac{7}{8}$ by $\frac{3}{8}$ inch. The outer corner pieces were tapered from the centre, one inch, to a quarter inch at the points. These were attached to the braces at the required angle by hinges of thin sheet brass. The other ends of the braces were simply notched to press against the corner of the backbone. This method was quite satisfactory. The two under pairs of braces were made four inches shorter than the ones that braced the upper corners, so as to give the cells a slight dihedral angle when placed in position for flight. This seems to me to be of some advantage in preserving the lateral stability of the kite. The cell frames were so made as to give the under sides of the covering a concave surface of $\frac{5}{8}$ of

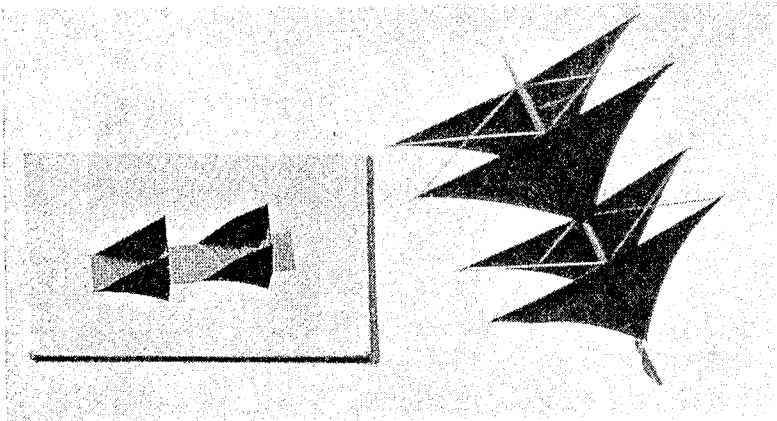
an inch in 25 inches. This kite having so much surface exposed to the wind, 50 square feet, was a very hard puller and uncomfortable to handle in a strong breeze. The writer therefore gave his attention to devising some arrangement whereby undue wind-pressure might be relieved and the kite flown with less danger of breaking away. To effect this purpose the two spars connecting the ends were cut near each cell and jointed so that the angle of the cells, in relation to each other and to the wind, could be changed at will. Two cords were used to limit and adjust this motion. The rear cell was weighted with a half pound of lead and the cells were rigidly fastened with both cells at an angle of about 10 degrees to the backbone. An extension or bowsprit, about 20 inches in length, was added to the lower side of the front cell, and the flying-string was then attached to the extreme point of same. This arrangement proved to be very successful, the pull immediately becoming so light that the cord could be held in the hand even in a high wind. Thus modified, the kite has never shown the slightest tendency to dive or to tip sidewise when flying, or when coming down after it has broken loose, always preserving an even keel and sailing away with a steady, majestic motion like a balloon, and landing softly on the ground without much injury to the kite. A neighbor and friend, Mr. Edward Rogers, becoming interested, was of material assistance in these experiments.

Our kite floating at a good angle with all our available string, we determined at a future trial to see if we could not let out a full mile. For this purpose I ordered from the Pawtucket Braided Line Company 6,000 ft. of No. 2 braided cotton fish-line, which was furnished me without a knot, on a spool. After one or two attempts with insufficient wind, we at last had a perfect day for the test, the wind blowing steadily about 15 miles an hour. The loose edges of the kite shaking badly in the wind, they were stiffened by tacking in 8 thin, light spruce strips which we had provided for the purpose. Then getting our reel into position and bracing the cells in line, everything being in readiness we allowed the kite to go up. It sailed away like a soaring bird, and rose as rapidly as we could let out the



LAMSON'S MODIFIED HARGRAVE KITE.

For working drawings, see Plate XV.



LAMSON'S MULTIPLANE FOLDING KITE.

The larger view shows the Kite being towed by a steamer. The smaller is a side view of the same Kite. Length, 12 feet; Width, 7 feet.

For working drawings, see Plate XVI.