from the middle shaft, has its owu special arrangement, that it can be worked independent; it has its own crank and pulleys, that the propeller can be worked by, and can be made to turn one way or the other. The same arrangement is with the rear shaft and propeller. When fore and rear shafts are disconnected from the middle shaft, then this shaft, or main shaft, only works the two side wings. This is all worked, then, by its own middle pulleys and cranks. The disconnecting apparatus is a very simple arrangement. The outer ends of the middle shaft and the two inner ends of the fore and rear shafts come very close together. A strong box of brass or iron encircles these four ends. This box is well fitted on the shafts, but so that it can be moved or pushed to and fro. Pushed at the forward end from the middle shaft to the fore shaft, it disconnects these two shafts; pushed aft from the rear shaft to the middle shaft, it disconnects these two also. Both pushed back again and fastened by running pins through the holes in the boxes, as well as in the shafts, they are connected there again.

My steerable air-ship has also two side wings, which are not only a means of propulsion, but also a raising-power. From the ship at both sides, through openings, ribs or arms project, from eight to twelve feet long, or any other size, according to the size of the ship and balloon, forming at the outside of the ship a semicircle, with the round part upward and hollow part downward. According to the size of the ship, more or less ribs or arms are needed, each of which arms has its own independent pivot or axle inside the ship, on which it works or swings. Outside these arms are braced together, forming a full frame-work, and are, above and below, covered with canvas, by means of which they form a solid wing. The cuts or openings in the sides of the boat must be large enough to allow the arms to move up and down, as is necessary for the stroke of the wings. Inside the ship these arms run down toward the middle or main shaft in a pointed angle, but only one out of four runs down as far as the cranks of the main shaft. This one has a race or guide at the lower end, long and wide enough to admit the crank of the middle shaft to move to and fro in it with ease. The crank turning around, making its revolution with the shaft, causes these working-arms to move up and down, the inside short or not-working arms being fastened with a strong brace to all the working-arms, so as to make them all work together. This inside up-and-down motion causes the outside extension of the ribs or arms to make the same motion, and, forming outside a solid wing, flap up and down like the wings of a large bird. These wings are of a curved form, being hollow and round at the top, so as to afford very little resistance in moving upward, but catch the air on the downward stroke and become a lifting-power. The two side wings being at the front from two to four feet lower than the extreme rear part of the wings, they become by their flapping motion also a motive power, pressing on the air rearwardly, so as to push the steerable air-ship forward with great force. These side combination-wings can be shaped differently, but I prefer the shape mentioned; and would mention yet that the arms can be made out of any light material strong enough to do the work, and can be made also to shorten to the rear, so that if the first arm was about twelve feet long the extreme rear one would be about eight feet long. This would compress the air rearward underneath the wings, and would render them more effective.

Now, by this combined mechanism my steerable air-ship will do the same that a steamer does on the water, and having a double-acting steering apparatus, and making, by its triple-moving mechanism, a great speed, the whole is compelled to obey the steering apparatus.

Having thus described my invention, what I claim as new is—

1. The combination of the girdle 49, rings 47 and 48, and the ship constructed of woven wire, covered by canvas, and attached by ropes to the balloon through the said connections, substantially as described.

2. The combination, with the ship, of the end caps 50 64, and the supporting-rods 5 46, held in place by stay-ropes, as and for the purpose described.

3. The combination, with the main shaft 15, provided with cranks and couplings 14 34, of the propellers 1 44, and the side wings having ribs 28, and the extension 61 connecting with the cranks of the main shaft, as and for the purpose set forth.

The above specification of my invention signed by me this 21st day of June, 1875.

F. W. SCHROEDER.

Witnesses:

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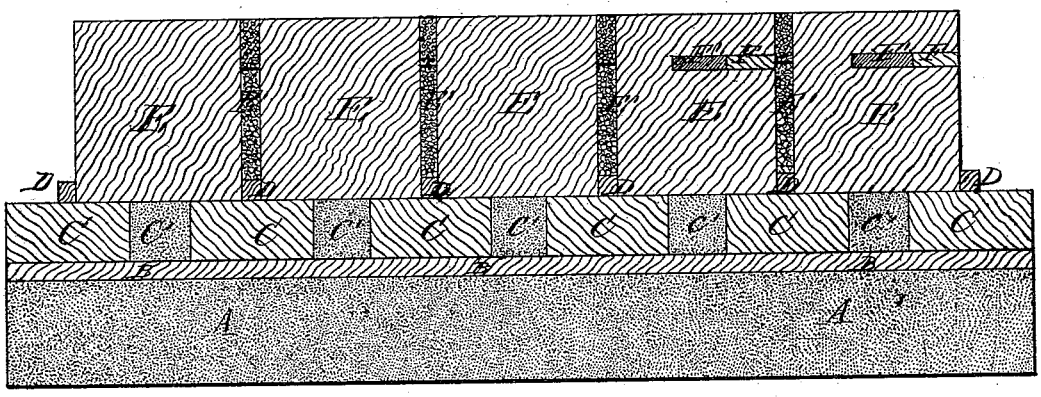
Wood-Pavement.

No. 165,882. Patented July 20, 1875.



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