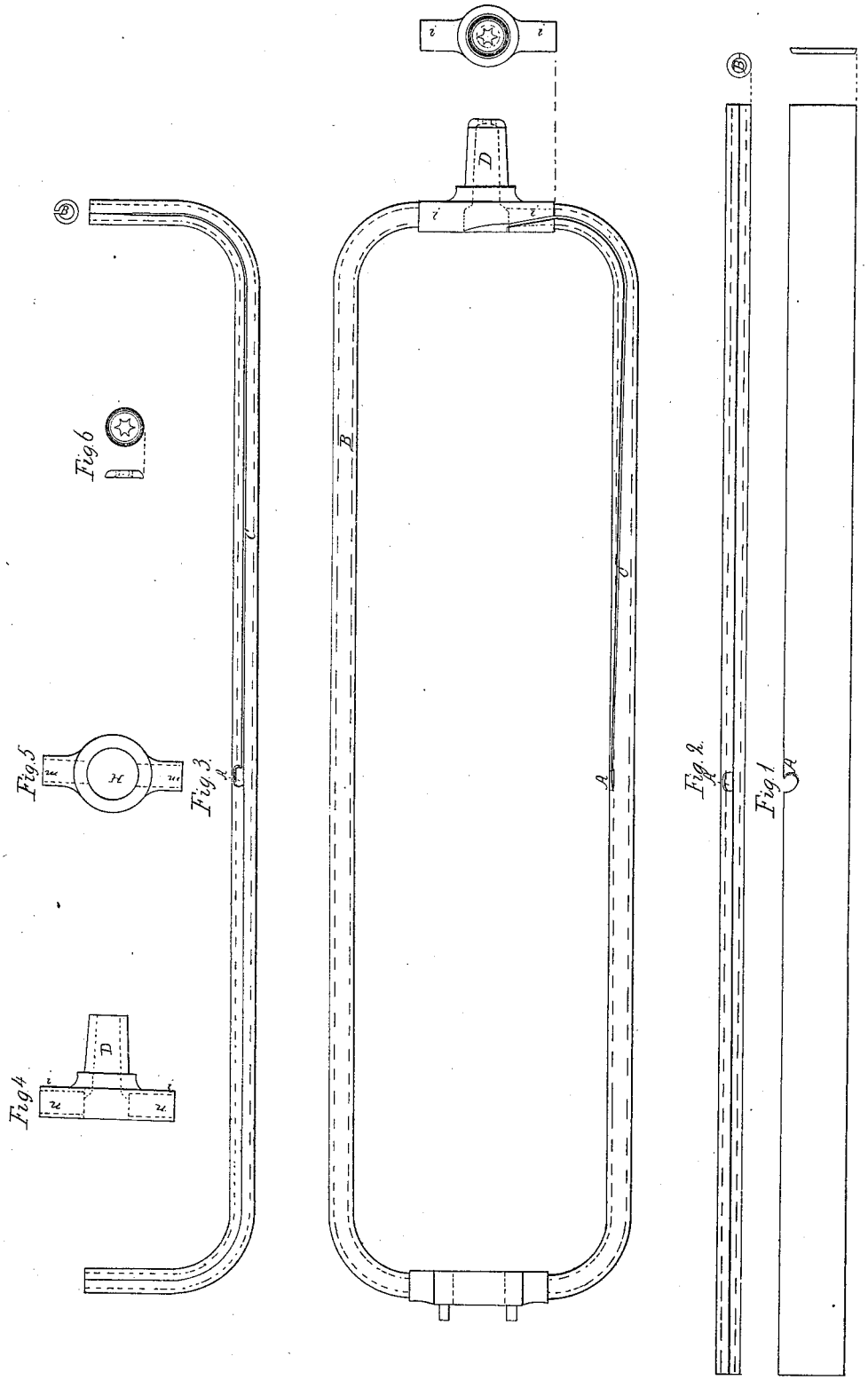
I. I. Abbot.

Flyer.

No. 6,461. Patented May 22, 1849.



UNITED STATES PATENT OFFICE.

THEODORE T. ABBOT, OF MANCHESTER, NEW HAMPSHIRE.

SPEEDER-FLIER.

Specification of Letters Patent No. 6,461, dated May 22, 1849.

To all whom it may concern:

Be it known that I, the undersigned, THEODORE T. ABBOT, of Manchester, in the county of Hillsborough, in the State of New Hampshire, have invented a new and useful Improvement in the Mode of Constructing Tubular Arm-Fliers for Cotton-Speeders and such other Machines as Require to have Fliers of this Kind, of which the following is a full and exact description.

The fliers of this class heretofore made upon which mine is an improvement have been substantially of two kinds. The first is called the copper tube flier which is made by bending a wrought iron rod about $\frac{3}{8}$ of an inch square into the proper shape and welding the ends together. The bottom is enlarged or widened so as to admit of a hole through it to receive the spindle-tube. The top is also widened to receive the nose which is brazed or welded into it. A tube usually made of copper is soldered to the inside of the upper end of the arms through which the roving passes down to the bobbin. The second kind is called the malleable cast iron flier, it being cast in one entire piece of the requisite shape, from metal known by that name. A groove is made in the upper end of the arms, which serves the same purpose as the copper tube does in the one already described. These tubes or grooves extend only about half the length of the arm and are only made for the purpose of conducting the thread to its proper place on the bobbin.

To both of these fliers there are material objections: 1st, they are too expensive; 2nd, the arms are heavy and expand or spread apart when put in rapid motion. The consequence of which, is often very disastrous, but when no particular accident takes place the tubes usually work loose and the arms are broken "by being so frequently bent or sprung" long before the flier is worn out. The machine too, must be run at a much slower speed than would otherwise be necessary. Again, the arms being thick and massive they condense the moisture of the atmosphere especially in damp weather, the inner surface of the groves become slightly oxydized, the roving adheres to them which causes the ends to break down.

Another objection to these fliers is they do not throw the twist evenly up to the drawing rolls. To obviate these defects in the speeder flier, I have invented a new process or method of constructing them, which is substantially as follows:

1st. I take a piece of sheet steel Fig. 1, about $\frac{1}{16}$ of an inch thick and $1\frac{1}{8}$ of an inch wide and of proper length according to the size of the flier, on one side of this plate I make a small hole A, which, when the flier is finished forms an opening for the roving to pass out of the arm to the bobbin. It is next rolled up into the form of a tube Fig. 2. The ends are then bent so as to resemble in shape the arms of the common flier Fig. 3 the seam is then opened from the hole A, to within $\frac{1}{2}$ an inch of the top end where it enters the nose piece about $\frac{1}{16}$ of an inch wide forming the slot C, into the groove B, for the convenience of putting up the ends. The seam may be opened by driving a piece of thin steel through it, or by any other convenient method. The hole A, the groove B, and the slot C, are not my improvements, but are common to all fliers of this description.

2d. I make a nose piece, Fig. 4 of cast steel about 1 inch in diameter and $1\frac{3}{4}$ inches long with projections on its opposite sides *i*, *i* at the lower end $\frac{1}{2}$ inch long and $\frac{5}{8}$ inch in diameter. The hole *d* lengthwise the nose is of the usual form only a little larger. The holes *n*, *n*, are made through the projections *i*, *i*, to receive the arms. The nose above the projections is turned in the usual form.

3d. The bottom piece Fig. 5 is made of iron $\frac{1}{2}$ inch thick $1\frac{3}{4}$ inches broad and $2\frac{1}{4}$ long including the projections, with projections on its opposite sides similar to those on the nose piece. The projections are drilled *m*, *m* in the same manner as those on the nose piece, to receive the lower end of the arms. The hole H, is to receive the spindle in the usual way. The arms are then driven firmly into the holes *n*, *n*, and *m*, *m*, and secured by brazing. A notch is cut through the projections *i*, *i* into the groove B, corresponding with and making a part of the slot C. This notch is made wide on the inside and narrowed on the out side to the width of the slot. This is done to prevent the roving from flying out of the groove when the frame is put in motion.

4th. I solder on the top of the nose a small cap Fig. 6, made of brass or other metal about $\frac{1}{8}$ inch thick having first enlarged the hole as much as the thickness of

the nose will admit. Through the center of this cap I make an opening in the form of a hexagon $\frac{3}{16}$ of an inch wide taking care that the corners do not extend out to the whole diameter of the hole in the nose. The object of this cap is to prevent the thread from bearing against the sides of the hole in the nose, and to give it the hardest strain at that point, so as to hold the twist and throw it up to the drawing rolls.

What I claim as my invention and for which I wish to obtain Letters Patent is—

The making of the flier of hollow tubular arms constructed as herein described of equal thickness throughout combined with the top and bottom piece substantially in the manner and for the purposes set forth; whereby the condensation of moisture is almost entirely obviated which is so injurious in practice with the ordinary flier; the tube through which the roving passes is enlarged to the greatest possible diameter, the parts are greatly increased in stiffness and lightness and are found to be more durable and require less power to drive them, and by this mode of construction I am enabled to use a material, to wit, steel, that has never before been deemed practicable.

In testimony whereof, I, the said THEODORE T. ABBOT, hereto subscribe my name in the presence of the witnesses whose names are hereto subscribed, on the ninth day of November, A. D. 1848.

T. T. ABBOT.

Signed in presence of—
J. N. JOHNSON,
DAVID CROSS.