J. N. Sawtell.

Spinning Mach. Flyer.

No. 24,406. Patented Jun. 14, 1859.

Fig. 2.

Fig. 6.

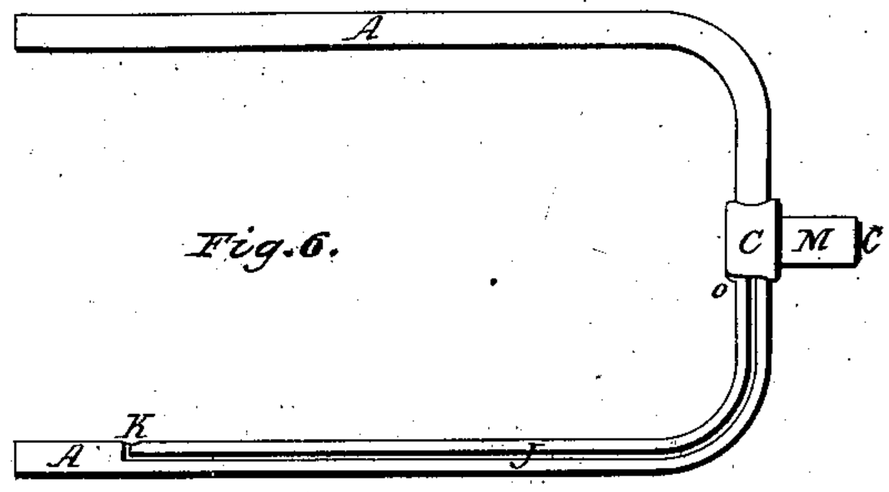


Fig. 1.

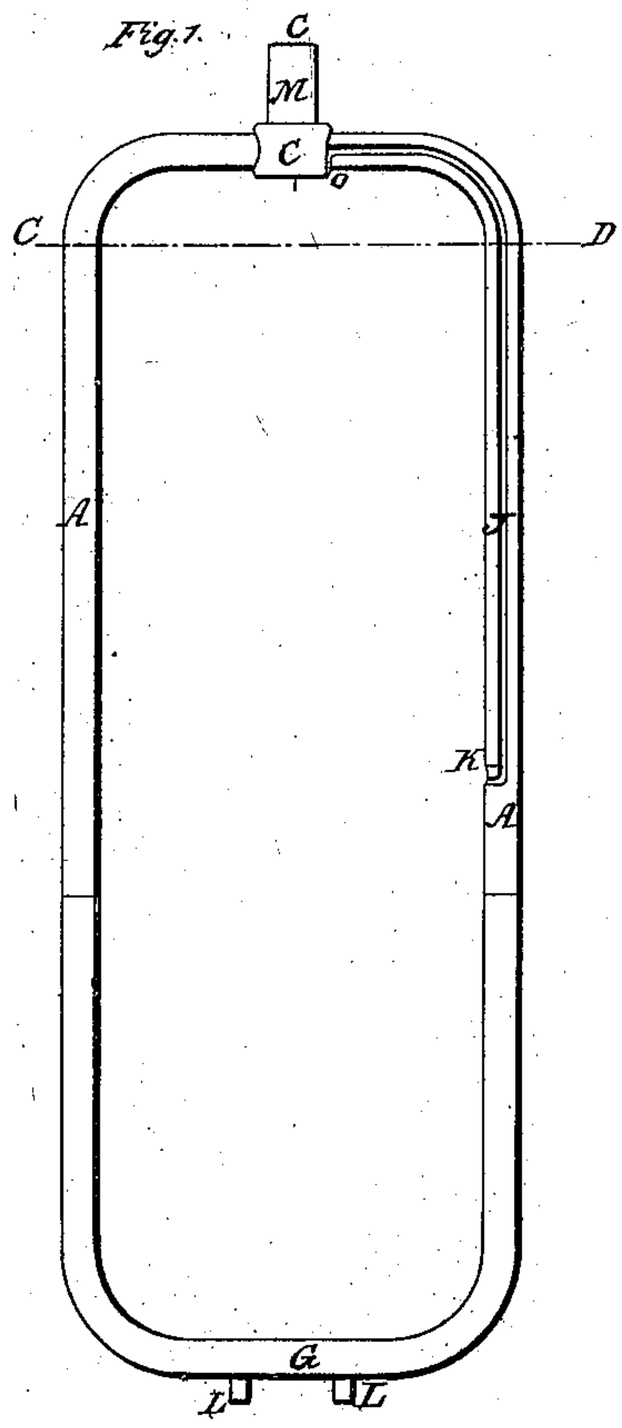


Fig. 4.

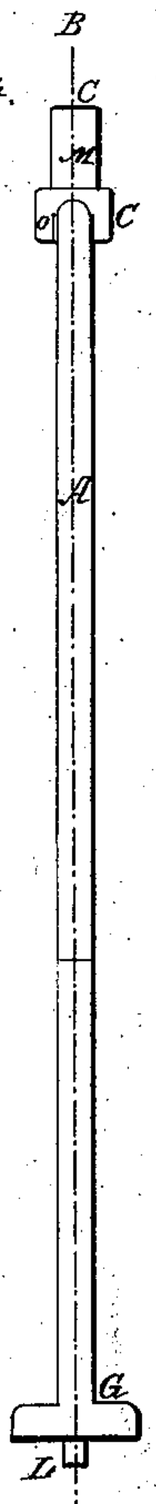


Fig. 5.

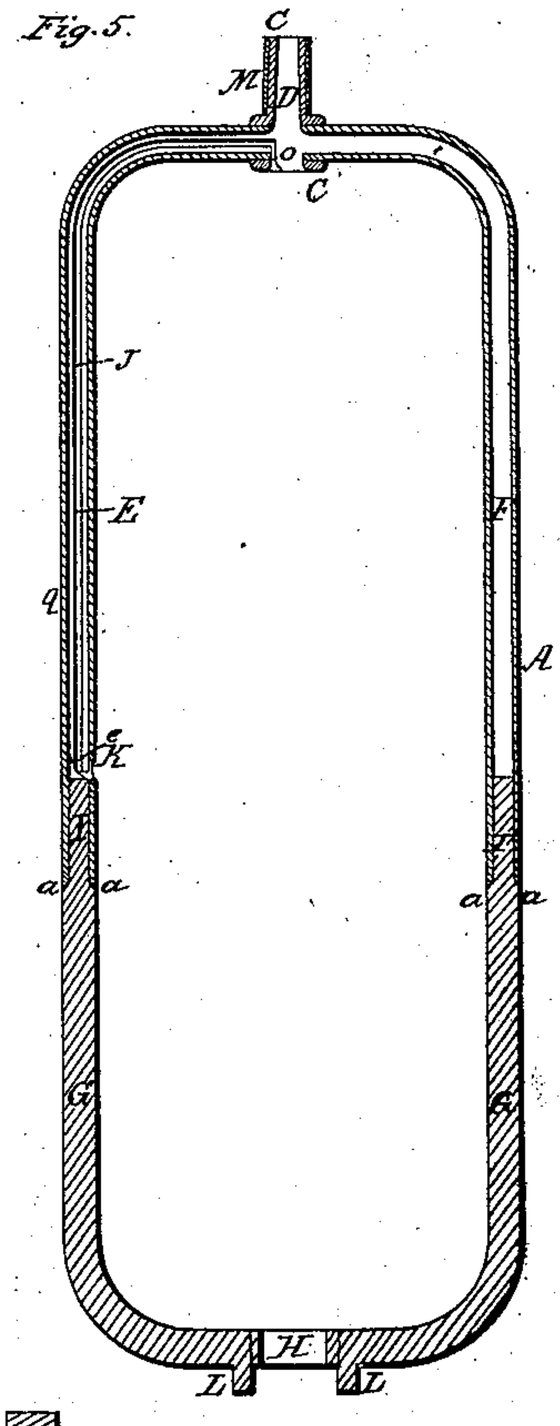


Fig. 3.

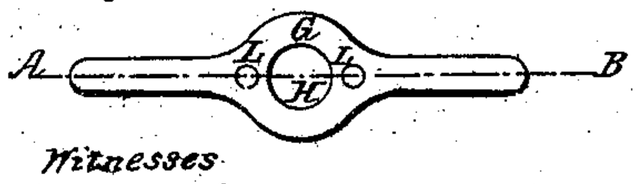
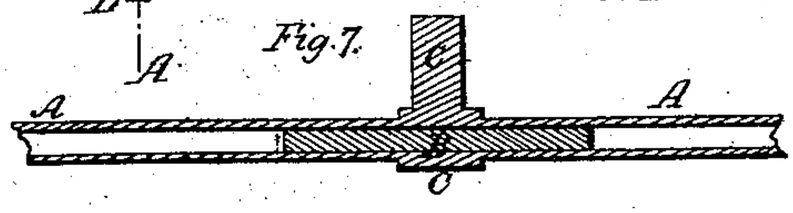


Fig. 7.



Witnesses
David E. Grimes
John Frye

Inventor.
John N. Sawtell

UNITED STATES PATENT OFFICE.

JOHN N. SAWTELL, OF CHICOPEE, MASSACHUSETTS.

SPEEDER AND STRETCHER FLIER.

Specification of Letters Patent No. 24,406, dated June 14, 1859.

To all whom it may concern:

Be it known that I, JOHN N. SAWTELL, of Chicopee, in the county of Hampden and Commonwealth of Massachusetts, have invented a new and useful Improvement in Speeder and Stretcher Fliers; and I hereby declare that the following specification, in connection with the accompanying drawings and references thereon, constitute a lucid, clear, and exact description of the construction and use of the same.

In referring to the said drawings, Figure 1, denotes an elevation of my fliers; Fig. 2, a section of the same on line C, D, of Fig. 1, showing the parts upward or beyond; Fig. 3, an inverted plan or bottom view; Fig. 4, an edge view or elevation; Fig. 5, a section on line A, B, Figs. 2, 3, and 4; Fig. 6 denotes the upper or hollow portion of my flier, detached from the lower or solid portion; Fig. 7, a section of the arms, with molten metal just poured upon, and united to them, to form the nozzle.

Statement of what is old.—Three methods have heretofore been practiced in making fliers for the same purpose as my own, above named, viz:

The first consists of arms forged of wrought iron, and united to the nozzle by brazing; and at opposite ends or bottom by a cross bar riveted thereto, the upper inner portion of the arms being channeled to receive copper tubes which are soldered therein, and are continually getting loose, besides they act as roving conductors only for a part of the distance which it travels in passing through the flier, and these tubes are necessarily so positioned in relation to the hole in the nozzle that it is difficult to place the roving therein without breaking it, and the iron portion will rust, and the copper portion will collect verdigris, which is very objectionable to the free passage of the roving, and the roving as aforesaid is very liable to break in attempting to place it in the tube after mending up, by reason of the nozzle and tube being detached from each other.

Second. Another of the old methods is to cast the fliers of iron and then make them malleable by the usual process—*i. e.* to extract the carbon therefrom. The arms are cast hollow, and consequently constitute an entire iron passage for the roving, which is very objectionable by reason of not being so good a conductor of the roving as brass or other alloy of soft metal, also from their liability to rust, and in case these fliers are bent or broken, in their use, a result of frequent occurrence, it is impossible to repair them, and consequently they become a total loss, from slight accident, liable to happen when the flier is new, or at any time. Besides it is impossible to give the required finish to the inside of the arms of these fliers, or to give them any finish without great expense.

Third. Another method is to make the entire flier arms of steel tubes, which is very expensive as they must be made when the steel is heated, and rendering it exceedingly difficult to balance them. Besides the whole passage for the roving is of steel, and from that reason equally objectionable as iron for conducting the roving, and the interior of the tubes are not susceptible of receiving the necessary finish. And if misshaped by accident or otherwise repair is impossible, besides dirt will accumulate in the hollow arm, below and at the point where the roving passes out, and breaks it by contact in its movement, and also throws the flier out of balance, and this metal (steel) is also liable to rust and thus form an additional impediment to the free passage of the roving.

Description of my invention or what is new.—In order to enable persons skilled in the arts to which my invention appertains, viz, brass founders, tinsmiths, and machinists, to construct and carry out the same I will describe it as follows: A suitable pattern is first prepared of the required shape of the nozzle and the arms extending in a straight line therefrom to form a mold in sand for casting the nozzle on to the arms, as seen in section at Fig. 7. This pattern is first molded in sand, in the usual manner, and removed therefrom. I then take a brass tube, seen at A in the drawings, particularly at Fig. 7, in section, and previously drawn of the required size, temper, hardness, and smoothness inside, and cut it of sufficient length to form the upper portion of my flier and the tube for roving to pass through, and also to balance my flier and form the joint or sleeve by which it is united to the lower or solid portion of my flier as seen after being bent and united, at Fig. 5, in section. I then form a dry sand core about 2 inches long and of the same diameter as the interior of tube A, and then introduce the same into either end of the tube A, and position it therein as seen at B, Fig. 7. I

then or previously make a solution of one pint, beer measure, of the ordinary muriatic acid of commerce, and about two ounces avoirdupois weight of Dutch or purified borax calcined, and then add as much zinc as this acid will dissolve or hold in solution, then dip or coat all that portion of the tube A around which the metal for the nozzle is to be poured, and then place the same into the mold as seen at Fig. 7. The object of this solution is to aid the molten metal which forms the nozzle C, in its docimastic operation when poured into the mold, and around the tubes A, to fuse the same and consequently unite therewith in the most secure manner, in fact to become one or solid therewith, which is the actual result when cast, the core B, preventing the tube A, from becoming misshapen when melted by the metal for the nozzle. The casting is then removed from the mold and the core removed, and then that part which is destined to be the nozzle is chucked and nicely reamed the requisite size and taper as seen at D, Fig. 5 for receiving the roving. The tube A, or that part of it destined to receive and conduct the roving is reamed and polished, when straight as seen at Fig. 7, and at E Fig. 5, when bent, and the other part F, Fig. 5, reduced before being bent, and a little thinner to balance the other arm by reason of its being slotted. Both parts of tube A, are then bent or shaped as seen at Figs. 1, 5, and 6, by means of a former or otherwise.

The lower portion of my flier G, is forged of wrought iron, a hole seen at H, Figs. 3 and 5, is then chucked therein, which is to fit on to the driving gear. The arms of this lower part are finished in a lathe or otherwise and of the same diameter as the tubular parts A, excepting about one inch of each end seen at I, Fig. 5, which is reduced to the size of the hole in the tubular parts so as to fit therein. The shoulder left in reducing the ends of the lower portion should be made curving as seen at *a*, Fig. 5, in order to impart the greatest possible strength to these arms, and the holes in the tubes A, being of course reamed to fit, or nicely conjoin thereto. This bottom part is now bent or shaped on a former, so that its ends may be inserted into the ends of the upper portion A. I then form a slot, seen at J, in only one of the tubes or arms A, for introducing the roving into the tube and this slot should extend from the slot O, in hole D, in the nozzle, into which the roving passes, to the hole K, in the arm A, out of which the roving passes to the bobbin (not shown).

If my flier when put together and after being slotted, be found to be out of balance, the tube not channeled is easily reduced by reaming, until the flier is exactly balanced, which is a perfect and convenient mode to effect this desirable and necessary result. Then the two portions of my flier are united by soldering or "sweating," means well known to every tinman.

The nozzle C, extends below the hole E of the arm A, and a slot is cut, seen at O, in the nozzle to connect the slot J, with hole D, in order that the roving may be easily and conveniently placed within the tubular arm without breaking it.

I form the end I, of arm G, near hole K, curving as seen at *e*, Fig. 5, and of solder or soft metal, to impart an easy passage for the roving, also to prevent accumulation of dirt within the hollow arm, and below the exit hole K, for the roving, which would obstruct its passage and throw the flier out of balance.

The hole H, is formed to receive a corresponding projection formed on driving gear (not shown) and the pins L, which are a part of the flier, fit to holes formed in the same gear, the purpose of which is that the gear may turn the flier effectually.

An arbor of steel is properly centered and turned in an engine lathe, so as to fit snug into holes H, and D, after which it is set revolving with flier thereon, and the nozzle finished by means well known to every machinist, after which a hardened ferrule of steel or iron, previously prepared, and seen at M, Figs. 1, 5 and 6, is driven and riveted thereon, which then constitutes my finished flier, and it will be seen that my flier is so constructed, and of the proper material, as to neither rust nor collect verdigris therein, and thereby obstruct the passage of the roving, as in the old flier, and also obviating the obstruction given to the free passage of the roving which is a well known inherent quality of an iron or steel conductor. These defects are well known to exist in the old fliers and are effectually obviated and remedied in mine from its peculiar construction.

Advantages.—The advantages to be derived by my within and before described flier are as follows, viz: First. It is easily and cheaply constructed. Second. It is durable, strong, and light, and requiring but little power to drive it. Third. It is susceptible of being easily repaired. Fourth. A continuous tube of brass or equivalent alloy is had for conducting the roving. Fifth. In preventing accumulation of dirt within it, by its peculiar construction particularly at K and *e*, Fig. 5, and preventing an impediment thereby of dirt to the passage of the roving as in the old flier. Sixth. From its peculiar construction the placing of the roving within the tube is materially facilitated and ruptures prevented. Seventh. The tubes can be easily and perfectly reamed and polished, when straight,

or before being bent, and this interior smoothness is not diminished by bending the tubes.

Having thus described my invention I will state my claim as follows:

What I claim as my invention and desire to secure by Letters Patent is—

The new article of manufacture herein described, for a flier for spinning frames, when constructed essentially in the manner and for the purposes set forth.

JOHN N. SAWTELL.

Witnesses:
DAVID E. GRIMES,
JOHN FRYE.