Report on Mr. Henry Rulon's Windmill.

The Committee on Science and the Arts, constituted by the Franklin Institute of the State of Pennsylvania for the promotion of the Mechanic Arts, to whom was referred for examination, the model of a Windmill, invented by Mr. Henry Rulon, of Bridgeton, New Jersey, REPORT:—

That they have carefully examined the model of the proposed mill, which was presented by Mr. Rulon without any explanation of its principles, or supposed advantages over other horizontal wind-mills now in common use.

It consists of a building of an octagonal form, the upper part of which is occupied with the sails, and the frame-work by which they are connected with a vertical shaft, and is enclosed by shutters, hung by cords and pulleys, in the usual way of hanging windows; the lower part of the building, which contains the mill-work, is enclosed by weather boarding, outside of which the shutters are made to slide downwards, which opens the upper portion of the building for the free admission of the wind to the sails. In the centre of the building, a vertical shaft extends from its base to the upper part of the permanent enclosure, at which point eight horizontal arms are firmly connected to the end of the shaft; these arms extend to about one-third the radii of the building, and some distance below them there is another shaft, corresponding in number and dimensions, and parallel therewith, forming together two separate sets. Vertical timbers are framed to the ends of each of these arms, each timber being connected with the corresponding arms of the upper and lower set, and extends upwards to near the height of the base of the roof, where they are connected in pairs with the ends of each one of four horizontal timbers, the latter crossing each other at the centre, parallel with the arms on the shaft; these horizontal timbers are secured to each other at the centre, where a vertical timber is attached, which turns in a box, secured to timbers thrown across the centre of the building for that purpose, thus forming an axis, by which the sails are to communicate motion to the mill, by means of four horizontal timbers, each equal in length to the interior diameter of the building, and each one of which forms arms for one pair of sails; these timbers are supported by each pair of the vertical timbers of the axis, on boxes, which admit of their turning freely, at spaces above each other equal to the width of each scale, thus forming one horizontal axis for each pair of sails, which, by turning freely, adapts itself to any required position of the same.

Each pair of sails are firmly attached to the arms of their peculiar axis, with their planes crossing each other at right angles, and extending nearly their whole width from one side of their respective arms, and in length from the ends of the arms to the upright timbers of the vertical shaft; the weight of these sails, (which are of wood,) when not acted on by the wind, will cause them to take positions, forming angles of 45° with the horizon; but, when receiving the full force of the wind, they will turn so as to expose one sail to its action,

whilst the other, standing in the plane of the horizon, will not feel its influence. The sails are maintained in the latter position by means of a weight, to which is attached two cords, which are also attached to a pulley on the axis of the sails, at such radial points of the pulley as correspond with the sails respectively.

When the sails rest in their natural positions, that is, when not acted upon by the wind, the weight rests on a support below, and its connecting cords hang slack from the pulley, and are of such length, that either becomes tight when the sail having a radial correspondence with their respective attachments to the pulley, takes a horizontal position, the acting sail being then perpendicular. When the force of the wind becomes so strong as to lift the weight, the positions of the sails will be so altered as to reduce the plane exposed to the wind of the *acting* sail, whilst the other is made to oppose its action; hence, with every degree of force in excess, the position of the sails will be altered, whilst the nett propelling force will remain the same, and is exclusively dependent on the magnitude of the weight.

The only important novelty which the committee perceive in the arrangement of this mill, is the application of weights to regulate the position of the sails on *vibrating horizontal* arms, as such weights are in common use to effect a similar object in mills where perpendicular sails, revolving horizontally, are used. A model of a mill was presented to the Franklin Institute, in the year 1827, by M. Biard, of Paris, which he denominated the Anemotope; for a report on which, see the Franklin Journal, vol. iv., page 125, (1827.) The proposed action of this model is almost identical with Mr. Rulon's, wanting, however, the proper arrangement in hanging the *vibrating* axis of the sails, to admit the useful action of regulating weights, as used by Mr. Rulon; consequently, such means of regulation were not contemplated by M. Biard; hence, to Mr. Rulon's plan must be conceded a decided preference to that of M. Biard; but whether it will prove more useful than other modifications of horizontal windmills *now in use*, cannot be ascertained with certainty without practical trial on a large scale, of which the committee deem it very worthy.

By order of the committee.

WILLIAM HAMILTON, *Actuary.*

June 11th, 1835.

AMERICAN PATENTS.

LIST OF AMERICAN PATENTS WHICH ISSUED IN FEBRUARY, 1835.

With Remarks and Exemplifications, by the Editor.

1. For an improvement in the *Machine for Cutting Straw*; patented October 3, 1834; Stephen Ustick, city of Philadelphia, February 5.

We noticed this machine, as originally patented, at p. 313 of the last volume; the claim to improvement consists in "the sliding bottom,