IMPROVED SHEET IRON ROOFING.

Our engravings illustrate a good form of sheet iron roofing, which was patented by Mr. W. S. Belt, of Cincinnati, Ohio, Aug. 8, 1871.

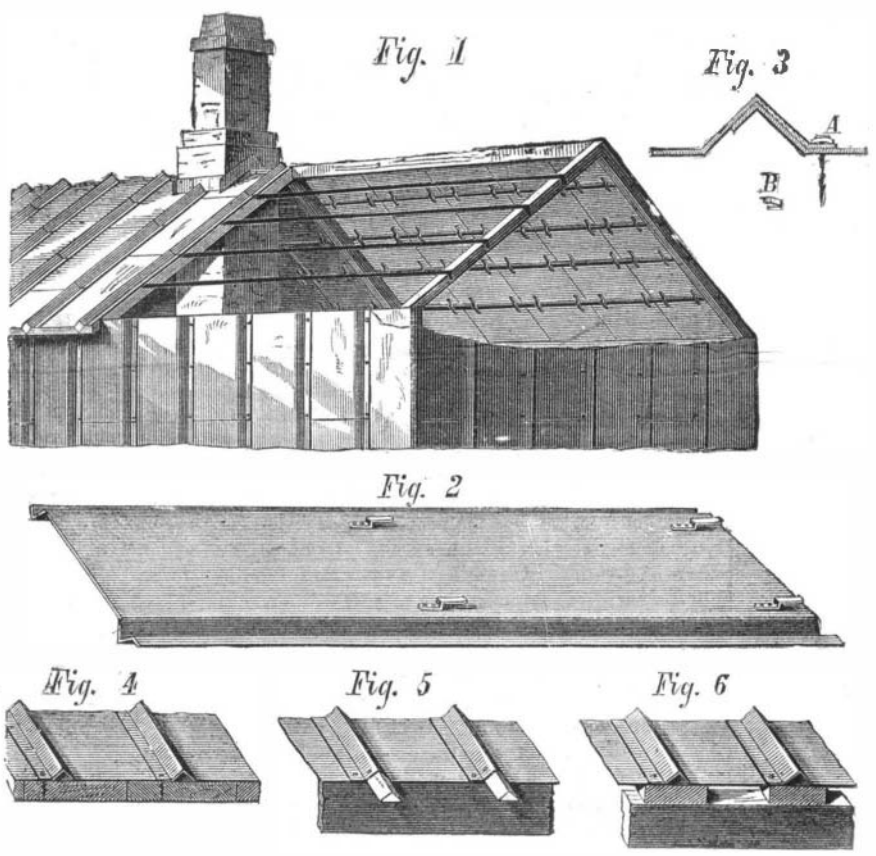
Fig. 1 represents the roofing partly applied to the roof and sides of a building. In Fig. 2 is shown the under side of one of the iron sheets of which it is composed. It will be observed that the sheet is triangularly crimped at its sides in such a way as to allow the crimped portion of one sheet to overlie the crimp of another, (in the manner shown in Fig. 3), and that the lower side is provided with fastenings which are riveted to the plate. The overlying crimp has a perforated flange, through which two adjacent sheets may be nailed to the sheathing or rafters of the roof, as shown at A, Fig. 3. It can readily be seen that, in thus employing the roofing, each sheet is fastened by both of its sides to the supports. The nail used is barbed, and as the fibers of the wood, into which it is driven, soon resume the position from which they are displaced, a very firm hold is taken by it. A lead washer, as at B, is placed between the nail and the plate, and by its use any unevenness of surface is accommodated and an air and water-tight joint formed on driving the head of the nail home into the lead. The sheets are eight feet long and two feet wide between centers of crimps, and, as manufactured, are coated on both sides with paint.

Fig. 4 represents the application of the sheets to a sheathed roof, in which case rough boards of an even thickness are all that is necessary for the sheathing. Fig. 5 shows the mode of applying the roofing to purlins where no sheathing is employed. In this case the purlins may be placed any distance less than eight feet apart, and triangular strips of wood are nailed to, and at right angles with, them, two feet apart between centers, so as to fit under the crimps and support the sheets. Or boards three inches wide may be nailed to the purlins, and the sheets applied to them in a similar manner to that shown in Fig. 6, which represents the mode of attaching the roofing when rafters without sheathing are to be covered. In the latter case, strips of boards are let in, on a level with the upper surface of the rafters, for the ends and centers of the sheets to rest upon. The triangular strip may be placed under the crimp in any case if desired. The ends of the sheets are joined by overlapping them, or by bending them so as to form a lock joint, which, as they are well annealed, can readily be done. The sheets are also easily made to conform to the angles of roofs of either ordinary or peculiar form, so as to make perfectly tight joints and fully preserve the effective character of the roofing. It is applied with such facility, aided by the inventor's directions, as to require no skilled workmen to put it on.

Mr. Belt has also devised a combination iron frame to support his roofing, by the use of which cost is lessened and its fireproof qualities hightened. Its construction will be understood from Fig. 1, where the rafters are seen to sustain bands stretched between them. These bands are made of strap iron and are placed 46½ inches apart. To these bands the fastenings on the under side of the sheets before alluded to, seen in Fig, 2, are hooked, and the roofing thereby secured in position as seen in that portion of Fig. 1 which shows the under side of the roof. By using iron for the rafters, a fireproof roof is made.

Many advantages are claimed by the inventor for this mode of roofing. He says that the crimp gives so much stiffness to the sheet, it is enabled to sustain itself and also considerable weight in the center, when supported only by its ends. There is, consequently, no liability to "bag."

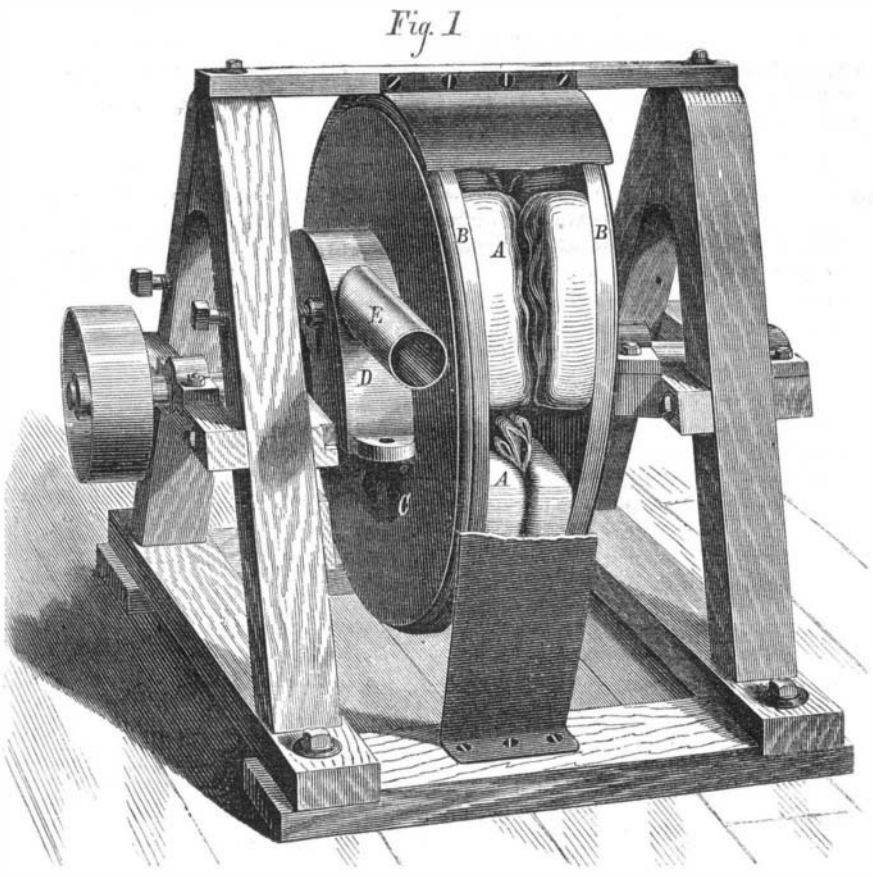
Its fastenings are so secure as to prevent any wind affecting it, and, at the same time, if damaged, it can easily be taken out and replaced. The entire roof can be taken off one building and put on another, without damage and at trifling expense, for which reason it is considered admirably adapted for temporary buildings. In all these respects, it is superior to the plain sheet metal roofing, and it is claimed to excel the corrugated; while the same weight of metal in the crimped form covers twenty per cent more surface than if corrugated. In roofing warehouses and small buildings on this plan, from two thirds to three quarters of the wood usually employed could be dispensed with.



BELT'S SHEET IRON ROOFING.

ROTARY PRESSURE BLOWER.

Further information can be obtained by addressing the inventor at 56 and 58 East Third street, Cincinnati, Ohio.



ROTARY PRESSURE BLOWER.

The great expense attending the use of the piston blower, in connection with blast furnaces, forges, etc., and the cumbrous nature of the apparatus itself, have led to the employment in its stead of various forms of fan blowers, notwithstanding that the latter have to be run at a high rate of speed, and consume a great deal of power without producing a proportionately powerful blast. This absence of effect arises from the fan not being positive in its action, the pressure of its blast resulting only from the momentum of the air. The production, therefore, of an effective positive pressure blower, which would compare favorably in convenience and expense with the fan, has long been aimed at by inventive skill, and there is no doubt that such an apparatus would be a valuable addition to the resources of the mechanic in many branches of industry. We this week illustrate a blower which is designed to meet this want, and which we think possesses points of merit.

The machine is represented, in Fig. 1, with a portion of a protective shield broken away to show the parts. It consists of a series of bellows, A, which are placed between and attached to the two disks, B. These disks are mounted on a jointed shaft, as shown in the horizontal section (Fig. 2), the halves of which are set at an obtuse angle in such a manner that the disks are caused to revolve in vertical planes which incline to each other. By the revolution of the disks in this position the opposite sides of the bellows are made alternately to approach and recede from each other, and the bellows are thus brought into action by direct rotary motion. In Fig. 2 are shown the points of greatest expansion and contraction consequent on this motion. The disk next the driving pulley is provided with an aperture, C, for each pair of bellows in the series (shown in detail in Fig. 3), through which the air passes into and from the bellows. D is an air chamber, which is open on the side next the disk, and covers that half of the circle of apertures from which the air is being expelled. The wind is conveyed from the air chamber to the place intended by means of the pipe, E. The apertures connected with those bellows which are expanding are always below the air chamber and open to the atmosphere. A joint, which is sufficiently tight for all practical purposes without causing much friction, is made between the air chamber and the disk by facing them to correspond, and holding the former against the latter by means of the set screws seen in Figs. 1 and 2. In order to prevent danger of bursting the machine, should the eduction pipe get accidentally closed up, india rubber or steel springs are placed between the air chamber and the set screws, so as to allow the air to escape should the pressure within become too great. From the construction described, it will be seen that (in the absence of the springs mentioned) all the air which enters the bellows is discharged through the eduction pipe, and by the positive nature of the action, the amount of pressure developed is only limited by the strength of the material and the power applied. The bellows are made of the best material, and are attached to the disks, which in practice are of cast iron, by means of screws, so that they may be readily removed for renewal.

The economy attached to the use of this blower will, the inventor says, well warrant the renewal of the hide or leather as often as may be necessary. In rare cases, where a large volume of air under heavy pressure is needed, it is better to run two smaller blowers, instead of one large one. They might be run on one shaft, with the driving pulley between them. The blower is, in practice, all cast iron with the exception of the leather and the shaft, which latter is made of wrought iron. The inventor says that it can be constructed for as little as one of the best kind of fan machines, and much more cheaply than blowers made on the rotary pump principle, while it is greatly superior to either. It is intended to be run at a low speed, say from two to three hundred revolutions per minute or less, according to size. The blower may be made to exhaust, either by reversing the motion, or by placing an air vessel, with an induction pipe attached, over the lower apertures.

The advantages which this apparatus is claimed to possess are cheapness of construction, saving in power, and increased pressure, volume, and steadiness of blast. When used with a blast furnace, the tweers are always kept free, which result is not obtained by a fan. It is noiseless in action and is applicable to all purposes to which a blower can be put. It is well adapted for blowing air through, or exhausting it from, pneumatic dispatch tubes, etc. For further information, address Mr. J. Pusey, 228 South 3d street, Philadelphia, Pa., who is the sole proprietor of the patent, and who is desirous of disposing of rights in whole or in part.