This hub is cast in five pieces, so formed as to fit together, and present a perfect nave, to receive the spokes and axle.

The patentee describes the whole, but does not specify any particular point which he claims.

Cast iron hubs have been made repeatedly, but it is said that they are too hard for the wood. In mill wheels of cast iron, which move steadily, spokes of wood will continue to fit well, but in carriages, where there are perpetual jolts, the iron has been found to bruise the wood, and cause it soon to work loose. Where water insinuates itself into the mortise, so as to rust the iron, this rust acts upon, and injures the wooden tenon. We have not had sufficient experience of the fact ourselves, but these are the objections urged.

25. Improved construction of *Pipe Boilers for Steam Engines*; Alden Potter, New York, October 11.

The specification is in the following words:

"The pipes are made with an elbow, the two arms forming a right angle. The small end of one pipe, is received into the large end of another, and the two are held firmly together, by a bolt passing lengthwise through one arm of each pipe, the bolt having a nut and screw at one end, and a head on the other end."

"Each pipe is raised at one end, so as to elevate, successively, every layer, or coil of pipe; thus forming a continued line of pipe, of any required length, similar to the worm of a still, but describing a square, or parallelogram."

ALDEN POTTER.

The remainder of the patents for October, will appear in the next number.

SPECIFICATIONS OF AMERICAN PATENTS.

Specification of an apparatus for Saving Heat, in the process of Combustion. Patented by STEEN ANDERSON BILLE, of New York, Nov. 8, 1828.

THE atmospheric air, necessary for combustion, is generally supplied by means of the draft, resulting from the rarefaction of the air in the fire-place, and, therefore, at the expense of the heat, carried off by the smoke, or foul air, escaping through the chimney. From the specific heat of atmospheric air and steam, at equal temperatures, estimated by volume, being nearly as 50 to 31, it follows that the escape of 50 cubic feet of atmospheric air, at a temperature of 212° , will be nearly equal to the escape of 31 cubic feet of steam of the same temperature, which proportion is still more increased in favour of smoke, on account of the steam and carbonic acid gas formed by the combustion; when in addition to this it is considered, that the atmospheric air, by an elevation of temperature from 32° to 212° , only suffers an expansion of about $37\frac{1}{2}$ per cent. giving a pressure upon the square inch (in proportion to the difference in weight

of the column of air so heated and kept together in the chimney, and the atmospheric air, generally,) of less than half an ounce, upon which pressure the natural draft, as it is called, exclusively depends, it becomes obvious at what immense expense this natural draft is procured, and how very small the mechanical power is, upon which the whole operation depends. The undersigned, therefore, proposes to substitute a direct application of mechanical power, for producing the draft required, endeavouring, at the same time, to a certain extent, to prevent the heat of the smoke from escaping. The draft he proposes to effect, by the application of one or more suction bellows, which, at the same time, will enable the operator to give to the current of air required, any direction he may desire. In thus sucking the smoke from the end of a horizontal chimney, which may, as well as the bellows, for convenience sake, be placed under ground, the smoke will escape through the bellows with as much, and even more regularity, than it does in the ordinary way through an upright chimney. If to this arrangement be added a system of tubes, enclosed in the said horizontal chimney, and so disposed as to communicate with the atmospheric air at the same end of the chimney where the smoke escapes, and with the ash-pit at the other end, while the ash-pit has no other inlet, it is evident that the atmospheric air will enter, and the smoke will escape, in opposite directions, which, naturally, will cause an exchange of temperature from the extent of surface exposed to the operation of mutual contact; where the atmospheric air enters in a cold state, the smoke will escape nearly so, and where the smoke rushes from the fire-place in a hot state, the air will enter the ash-pit heated nearly to the same degree. Thus the greatest portion of the heat of the smoke, otherwise spent, may be saved; the operator will be unrestrained in the construction of his fire-place; he will have it in his power to effect a perfect combustion, and to distribute the fire and heat as he may deem expedient. The anthracite coals, which cannot stand the blast of cold air, will be very eligible under a draft of heated air; the upright chimnies, so disfiguring to steam boats in particular, may be dispensed with, and the foul air let out at any convenient place, at a very reduced temperature. In high pressure steam engines, a similar advantage may be taken from the heat of the steam, altogether lost in the ordinary way of letting it out. The power required for working the bellows, will, from what has been stated above, be very inconsiderable. It must be borne in mind, that the bellows are not intended to compress the air, as in a furnace or forge, to produce intensity of heat, but their object, in the present instance, is barely to imitate the common draft; a mere fanning, or moving of one column of air in its own medium, succeeded by another column, without any effort or attempt whatever at compression; hence, no particular strength is required in the bellows, nor any tightness, that might cause friction; a revolving fan in a circular box, like a shallow vat, but of large diameter, will, in the opinion of the undersigned, be the best adapted form for the purpose, sucking the smoke from an opening behind the fan, on the revolving and hollow draft,

and pushing the smoke before it through a similar opening in the shaft, serving as the inlet, and the top part of it as the outlet, of the smoke, separated by a partition in the shaft, while two slides in the box, placed opposite to one another in the same vertical plane, alternately divide the box, for suction and discharge of the smoke in question. These slides are moved by cranks, in such a way that both close in to the revolving shaft when the fan is in a rectangular position to them; after which, the one in the way of the fan recedes gradually, allowing the fan to pass, and this done, it resumes again its former position, by the time the fan arrives at the opposite rectangular position, and so on alternately. The undersigned claims thus, as his invention, by the application of smoke sucking bellows, in effecting the draft necessary for combustion, so to direct the current of air as to cause a great portion of the heat of the smoke to be absorbed by the air in its passage to the fire-place, from the extent of surface exposed to the operation of mutual contact, while the air and smoke are made to move in opposite directions.

STEEN A. BILLE.

Specification of an improvement in the art of preparing the Back-lint, or Fibres of Hemp, for manufacturing purposes. Patented by ABRAHAM K. SMEDES, of Lexington, Kentucky, October 11, 1829.

AFTER separating the back-lint, or fibres, from the wood, or bullen, of the stalk, in an unrotted state, which may be done by hand, but more advantageously by machinery now used for that purpose, the hemp lint, or fibres, or back, to preserve it from tangling, should be loosely twisted, or tied into bundles of a size convenient for handling. It should then be immersed in water, where it should remain until the epidermis, or thin outer membrane shall be destroyed, and until the vesicular or cellular substance which unites the longitudinal fibres, or a part of it, is also destroyed. The back-lint, or fibres, may be immersed in water retained in vats, ponds, cisterns, or other convenient receptacles, or in running streams.

The time required for the preparation or completion of the process, depends, somewhat, on the temperature of the water; a considerable advantage results from heating the water, thereby facilitating the operation. When the water is confined in cisterns, or otherwise, from two to six days will be sufficient for the purpose of destroying the epidermis and part of the cellular substance, which may be ascertained by its becoming loose and slippery to the touch.

The hemp should then be withdrawn, and dried in the common air, or by fire. Let it then be run through the break again, which softens it, and disengages whatever particles of wood or bullen may remain attached to it, and also the cellular substance and epidermis, that may have dried upon it. It may then be applied to the scutcher,