

AMERICAN ENGINEERS' ASSOCIATION.

[Reported for the Scientific American.]

On Wednesday evening, Dec. 12th, the regular weekly meeting of this association was held at its room, No. 24 Cooper Institute, this city—Thos. B. Stillman, Esq., presiding; Benj. Garvey, Secretary.

MISCELLANEOUS BUSINESS.

Roosevelt's Anti-Frictional Journal.—This anti-frictional journal, or box, was submitted to the society for its opinion thereon. The peculiarity of its arrangement is, that around a central shaft a cluster of small wheels revolve, each independent of the other, and the inventor claims that by this method there exists no sliding or rubbing point of friction.

West's Improved Pump.—Mr. Garvey introduced this pump to the notice of the association. The inventor claims it is one of the most simple and powerful in use. It is extensively used on railroads, and as a house and cistern pump; also for deep wells and decks of vessels. The inventor claims that in this pump are combined the double-acting, anti-freezing, lifting and forcing principles. The above articles were referred to the Committee on Science and New Inventions.

The late report of this committee upon the practicability of Shrimpton's High Pressure Condenser, and as published by this journal, was accepted as the sense of the society, without discussion.

The same committee presented the subjoined report upon "Runkel's Oscillating Piston Engine":—

Your committee have carefully examined a neat working model of this engine, and have heard and considered the explanations of the inventor; and after taking up his claims, one by one, they have come to the following conclusions:

1. That the engine is very simple in construction, consequently, not liable to be expensive in first cost, or for repairs. An engine from 8 to 10-horse power can be constructed, by estimate, for \$340, patterns included.

2. That this engine is compact and therefore requires but little space, and is peculiarly well adapted for screw propellers, locomotives, &c., where economy of room is important.

3. That the weight of the moving parts is much less than is required in ordinary steam engines; so that this engine is well suited for high velocities, the momenta of the moving parts being comparatively so small.

4. That the claim in relation to the "reciprocal motion of the rockshaft," &c., &c., in our opinion, does not embody any peculiarity, the same being predicable of any engine.

5. That the claim, relative to the application of "modern improvements, such as cut-offs," &c., though correct, is not peculiar to this engine.

6. That there is a peculiar adaptability of this engine to steam pumps, fan blowers, and in general to all kinds of machinery where a great velocity is required. Its principal advantage, however, seems to consist in its fitness for locomotives, steamships, screw propellers, &c.

In addition to the points above enumerated, the committee have examined the "balance of forces on the oscillating shaft," and find it correctly described by the inventor, and that there is no extra friction upon the shaft, the resistance being transferred by the steam to the abutments, and thence to the floor or support upon which the engine rests.

With regard to comparative friction, or comparative cost of fuel, your committee cannot, as engineers, give any opinion, as they have not had an opportunity of experimenting with a full-sized engine; they, however, do not think that this engine will compare unfavorably in these particulars with well constructed engines of the ordinary kind.

By request, Mr. Louis Koch, with the aid of a drawing upon the blackboard, described this engine and the manner of its operation to the several members present. He had seen a large one driven at the rate of 250 revolutions per minute, and a small working model that could be driven with one's breath.

The above report, being acceptable in every particular to the association, it elicited no discussion, but was unanimously adopted by them.

Messrs. Warren & Banks' "Low Water Detector" was here introduced.

DISCUSSION.

Mr. Koch—The inventors and proprietors of this instrument being present, I should like to hear any reasons why the society should not accept the report of the committee upon their detector, to the effect that it is not reliable.

Mr. Warren—It seems the committee have tested an instrument of our manufacture, now in operation in this city, and they report that no reliance can be placed upon it. I have a fact or two in relation to the detector seen by them, which I trust will not remain unnoticed. It had been tampered with by the engineer in charge on several occasions, and at times when expressly forbidden to do so. I contend that the principle upon which it is made is a good one, and it remains untouched by this case. We have for two years been fully satisfied that the peculiarity of its construction, and the principle involved, are such that

it can be depended upon. If the instrument seen by the committee had been left alone and not been meddled with, as was the case on several occasions, it would not have failed. I do not think that the reliability and usefulness of the detector should be thus condemned when the only evidence in the case is the isolated one just referred to. All I have ever put on boilers have worked with perfect success, and instances are known where the water fell but the 1-16th of an inch below the water line when the alarm was given. I hope the society will be pleased to receive further evidence in the case; we think that we can offer such proof as will materially change the present aspect of it.

Mr. Banks—I have very recently seen the gentleman who is proprietor of the manufactory where the detector in question was seen, and he states as his opinion, that it was placed too high, and that by dropping it a little it would work well.

Mr. Garvey—The fault, as understood by me, is the rare construction of the gage, that the principle upon which it operates is too nice, and that upon trial it would not work as stated. The existence of an error in its construction was very apparent, as when the water was let down below the alarm point the whistle did not blow until the valve was touched by the point of a knife blade; and, as the committee found upon inspection and experiment that the instrument would not work, they were justified in condemning it.

Mr. Koch—The committee tested the instrument fully. We tried it two different times, and it failed to work in both cases; the fault, as judged by them, was in its construction. A short brass tube, by expansion, operates upon a steel spring, which, in turn, works a valve, when the alarm is given. It is true the brass tube expanded, as claimed for it, but the steel spring failed to perform its duty, and the valve did not work. This is not the only instance the members of the committee are cognizant of. The one at the Cooper Institute did not work at all satisfactorily; with plenty of water in the boiler, the steam issued with great force, but the whistle did not blow.

Mr. Warren—The instrument is so constructed that it will blow at any point desirable, and it will also give an alarm when there is too much water in the boiler; this we claim as a very essential point. In relation to the non-working of the steel spring upon the gage, at the Cooper Institute, I would remark, that at the commencement of our manufacture we were so unfortunate as to have a large lot of springs burned when being made, which took the life from them. One of this lot was put upon the instrument in question, before the fact was discovered by us. Since then, every detector before it leaves our shop is fully tested by us, and two years' experience has proved to me the principle upon which they work is a correct one.

Mr. Koch—With all justice I can call these low water detectors life preservers, for such they are in one respect. They are intended, by warning us of danger, to save life and property. I repeat what I have said before, that if one fails to do its duty, because of its construction or principle, we cannot depend upon any of them. I am prepared to admit we might visit ten different places where they are in operation in this city, and find that they work perfectly well, yet if we should extend our visit still further and inspect the eleventh, and find it wholly unfit for the purpose intended could we recommend the instrument? Might not this very one be the cause of the sacrifice of valuable lives and property?

Mr. Simpson—The question should be looked upon by the society in this manner, viz:—Were the committee examining an instrument in good order, or were they testing one which had been tampered with by the engineer in charge, as intimated by Messrs. Warren & Banks. An engineer may, at times, wish to shirk his duty, and then will alter or regulate an instrument as he pleases. If this was tampered with, and its valve screwed up upon sundry occasions, in direct violation of orders, can the blame be attached to the construction of the gage, or to its principle, when it fails to act? Was this failure attributable to a mechanical fault, or that of the engineer in charge of it? I consider this question an important one.

Mr. Banks—Many parties have spoken to me in relation to the report of our detector, as published in the SCIENTIFIC AMERICAN, and they were, one and all, perfectly astounded at its purport. We have some

500 in operation, and this is the first that has been known to fail. Many persons, both in this city and in Boston, known to us, place implicit confidence in it; among them are the Manhattan Gas Works, New York city, and the Boston Manufacturing Company of that city. We will cheerfully give the committee a list, that they may further inspect and examine our gage, as we sincerely think they have not seen it as it is.

Mr. Garvey—The remarks of Mr. Simpson are of the highest importance; the committee are not reporting upon an instrument that is imperfect. Any tool will give way under severe usage; one may take a hammer and so batter an instrument that it will be perfectly useless, or they may in other ways disarrange it to such an extent that it will be comparatively useless. It is no more than simple justice to the inventors of this gage, to examine and test those they consider in good order; then if their principle is correct let it be so understood.

At this period the committee, through its chairman, asked to be discharged from the further consideration of this particular case, which was granted. It was then resolved to appoint a select committee whose duty it will be to experiment still further in relation to the reliability of this detector. That committee, as appointed by the chair, is composed of Messrs. Garvey, Holden, and others; the committee to consider the low water detector of Messrs. Ashcroft & Co., as named at the last meeting is Messrs. Merriam, Cameron, and Garvey.

A letter was received from Mr. Ashcroft, who is now in Boston, in relation to his instrument, which was referred to the committee, as named above.

The society then adjourned.

Spontaneous Decomposition of Chloride of Lime.

The following account of a curious chemical explosion is given by Dr. Hoffman in the Quarterly Journal of the Chemical Society:—One morning, I think it was in the summer of 1858, when entering my laboratory, which I had left in perfect order on the previous evening, I was surprised to find the room in the greatest confusion. Broken bottles and fragments of apparatus lay about, several window-panes were smashed, and all the tables and shelves were covered with a dense layer of white dust. The latter was soon found to be chloride of lime, and furnished without difficulty the explanation of this strange appearance.

At the conclusion of the Great Exhibition of 1851, M. Kuhlmann, of Lille, had made me a present of a splendid collection of chemical preparations which he had contributed. The beautiful large bottles were for a long time kept as a collection; gradually, however, their contents proved too great a temptation, and in the course of time all the substances had been consumed. Only one large bottle, of about 10 litres capacity, and filled with chloride of lime, had resisted all attacks; the stopper had struck so fast that nobody could get it out; and after many unsuccessful efforts—no one venturing to indulge in strong measures with the handsome vessel—the bottle had at last found a place on one of the highest shelves of the laboratory, where for years it had remained lost in dust and oblivion, until it had forced itself back on our recollection by so energetic an appeal. The explosion had been so violent that the neck of the bottle was projected into the area, where it was found with the stopper still firmly cemented into it.

I have not been able to learn whether similar cases of the spontaneous decomposition of chloride of lime have been already observed.

SEMI-STEEL LOCOMOTIVE TIRES.—We have lately examined a piece of, semi-steel employed for locomotive tires, manufactured at the Albany Iron Works, of Corning, Winslow & Co., Troy, N. Y., and its grain indicates great tenacity. We understand that this material has been submitted to a great number of tests to ascertain its tensile strength, and the result has been conclusive as to its being from one-third to one-half stronger than high qualities of Low Moor iron. Some semi-steel tires of engine wheels have been in use for six months and have given entire satisfaction. This metal must come into very general use as a substitute for wrought iron as applied to a great number of purposes. We would direct the attention of railroad companies and engine builders to the advertisement of Messrs. Corning, Winslow & Co., on another page.