

**AN IMPROVED TUG COUPLING.**

The annexed engraving represents an improved tug coupling recently patented by Mr. P. B. Hirsch, of 374 Blake street, Denver, Col. It is applicable to both light and heavy harness, and is easily coupled or uncoupled without twisting or turning the trace.

The metal boxes, A, are firmly embedded and riveted in the cockeye portion, B, of the coupling, and are slotted and recessed to receive the hooked metal tongue, C, secured to the trace portion, D, of the coupling. The shank of the tongue, C, is firmly riveted in the part, B, and turns downward and inward, forming a strong hook. When the tongue is inserted in one of the boxes, A, and pulled so that the hook enters the recess in the box the adjustment is complete. The flexible leather tongue, E, is then thrust into the wider part of the slot in the box, over the spur, a', to prevent the accidental disengagement of the hook.

The inventor claims important advantages in regard to strength, convenience, and durability, and appearance over the ordinary forms of coupling.

Further information may be obtained by addressing the inventor as above.

**A NEW WATER METER.**

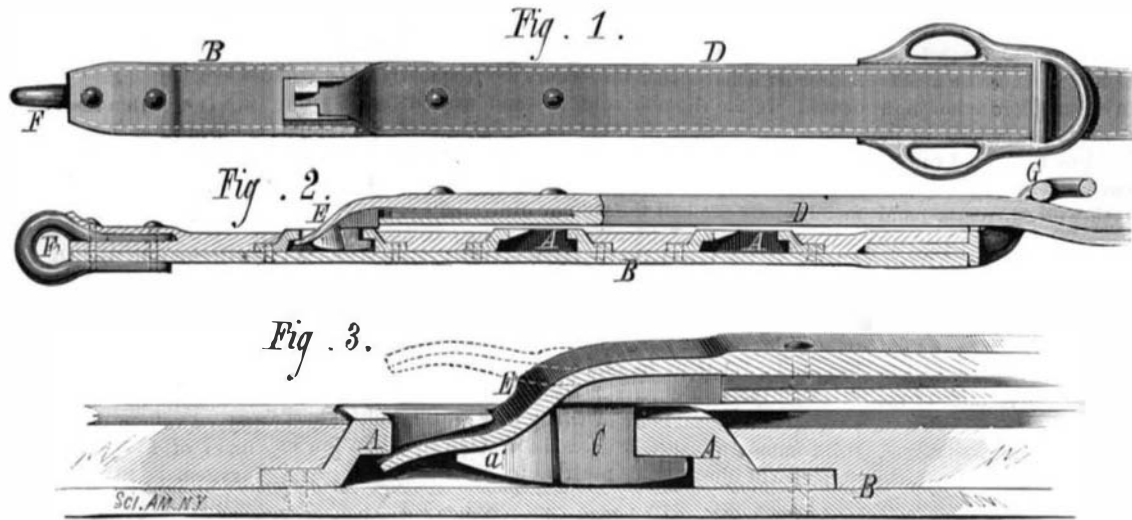
It is a well known fact that three fourths of the water supplied to consumers in all cities is wasted through carelessness, leaky pipes, bad plumbing, and open faucets. The unsuccessful efforts of city authorities have shown that the waste cannot be regulated and the difficulties obviated except by the use of water meters. By their use the supply would be diminished, the water taxes reduced, and each consumer would pay only for what he used—not for what his neighbor wasted. The trouble has been in the past that meters could not be made so cheap that their use could be made general. A meter must be mechanically perfect; a perfect register; certain and positive in its motion; without a dead center and a disposition to stop. A machine of such peculiar and delicate essentials is not easily obtained at a small expense.

Mr. W. B. Mounteney, of the People's Gaslight and Coke Company, of Chicago, Ill., has after four years of thought and work invented a meter which he has named "The Mounteney Diaphragm Meter," and for which he claims all the excellences which such a machine should possess. It is said that the registering dial hand moved as regularly under the lightest as under the fullest pressure, and that a cubic foot of water is as accurately measured when drawn by drops as when drawn through a five eighths pipe with full pressure. The machine is noiseless and frictionless, and simple and durable in its construction, and as it is made of unfinished castings it can be made cheap.

The general form of the apparatus is shown in Fig. 1 which is a side elevation partly in section; the other figures represent details not clearly shown in Fig. 1.

The upper part of the meter chamber receives the water from the supply pipe, and contains the levers that actuate the registering mechanism and the rotary valve, C. The lower portion of the meter is divided into four compartments by a central rigid partition and the two flexible diaphragms, A. The latter are placed between concave metallic diaphragms, a, which are slotted to insure the easy detachment of the rubber diaphragm, and to agitate the water so as to prevent the accumulation of sediment. The rubber diaphragms are connected with the arms of the rock shafts, B, and the latter extend into the upper or receiving chamber through a sim-

ple and very effective stuffing box, and are provided with arms which are connected by links with a crank on the shaft of the valve, C. The registering mechanism at the top of the casing receives its motion from the crank on the valve shaft, and accurately records the oscillations of the diaphragms, and consequently indicates the amount of water consumed. The entrance and ejection of water to all of the compartments is controlled by the rotary valve, C, which is operated by the diaphragms through the medium of the shafts and levers already described. The water under pressure is alternately conducted to and allowed to flow from op-



**HIRSCH'S TUG COUPLING.**

posite sides of the pair of diaphragms, so that both diaphragms are made to traverse alternately backward and forward as the chambers are alternately filled with a measured quantity of water, which will be accurately indicated by the index and dial of the registering apparatus.

It will be noticed that this meter contains no pistons or other parts that are liable to corrode, and stick or get out of repair.

Further information may be obtained from Mr. William B. Mounteney, 39 and 41 So. Halsted street, Chicago, Ill.

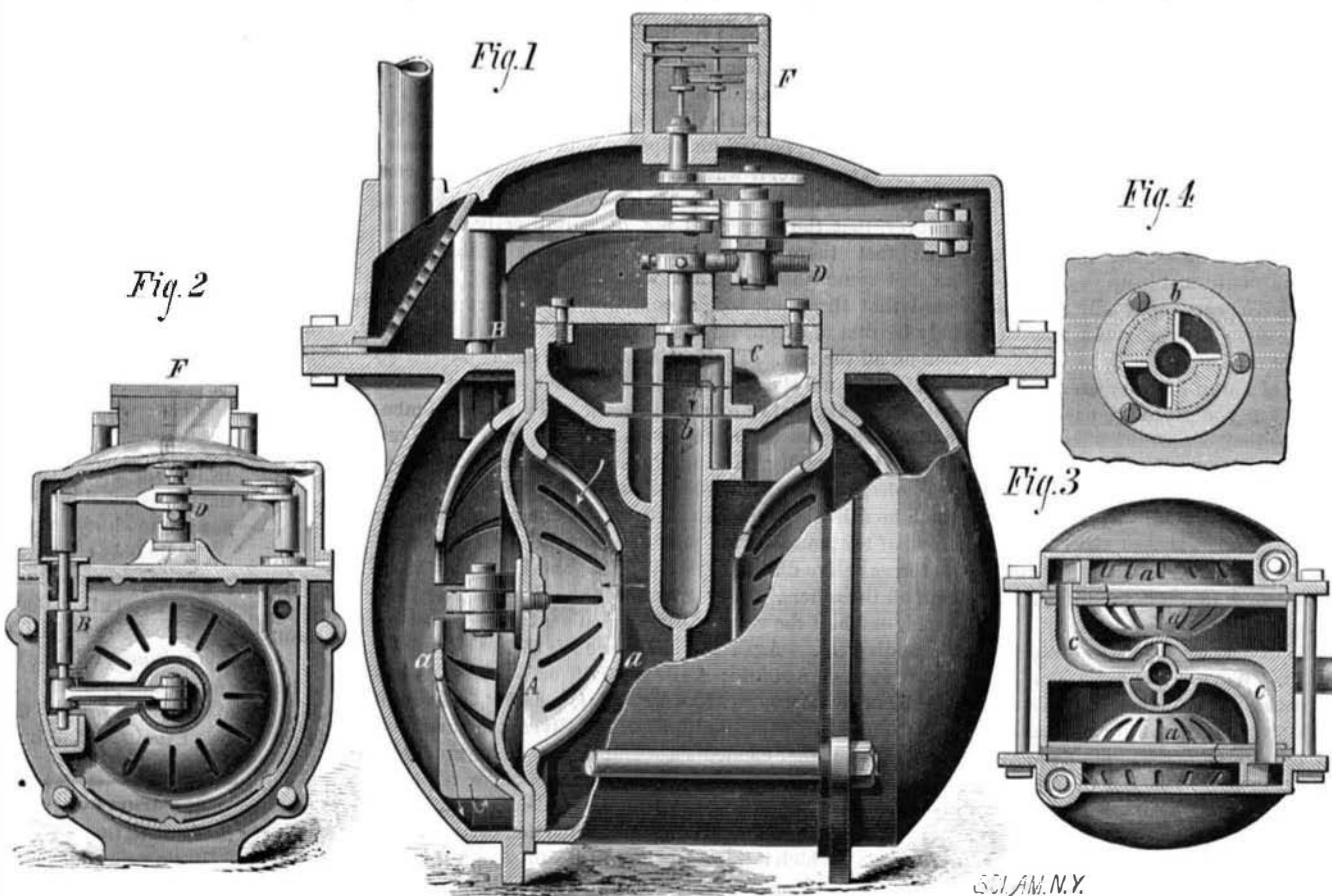
**New French Torpedo Vessel.**

The Compagnie des Forges at Chantiers de la Méditerranée have just supplied to the arsenal at Toulon a torpedo boat, whose length is 110 feet and width only 10 feet, the draught of water not exceeding 28 inches. The speed attained by this vessel at the official trials is stated to have averaged 19 knots

**Threatened Failure of the European Silk Crop.**

The London *Saturday Review* reports that serious fears are entertained of a failure in the European silk crop. The countries which grow silk are Italy, France, and Spain, in Europe; and in Asia, China, Japan, India, Asia Minor, and Syria; to which has lately been added America. The American production, however, is so small that it may be left out of account. Asia Minor and Syria were once producers on a very large scale, but have long ceased to be so, and the Spanish crop has also become insignificant. Even France is rapidly falling off in her cultivation of the silkworm. Practically, therefore, manufacturers now depend for their supply on Italy and the far East. In Europe, we may say roughly, the Italian crop exceeds the French, upon an average, nearly four times, while the French exceeds the Spanish in a still greater proportion. We may further illustrate the important position occupied by Italy in this industry by saying that, while a good Italian crop is expected to yield about 80,000 bales, the average import from China to Europe falls short of that amount by about 15,000 bales. A failure of the Italian crop means, therefore, in effect, a failure of the European supply. Now, it is said that not only in Italy, but in France and Spain also, the intense frosts of the spring have fatally injured the cocoon. The badness of the

weather, moreover, has so checked vegetation that there are not sufficient leaves for the worms, among which there is, in consequence, very great mortality. And, in addition to all this, it is feared that if heat now sets in the damage will become irremediable, as the leaves of the mulberry will be dried up altogether. To a large extent the excitement that prevails is founded upon mere apprehension, and it is possible that matters may not turn out nearly as badly as is feared. Much may happen before harvest. But it is not to be forgotten that the injury done by the severe frost on the night of April 14, 1876, was never repaired. During the two months which followed that disaster reports were in circulation similar to those now current, but they were set down to the designs of speculators. At the end of June, however, they were found to be correct, and a sudden and extraordinary rise of price was the result. Persons interested in the trade remember all this, and are resolved not to be caught a second time. There has, therefore, been a great deal of speculative buying, and in consequence a sharp upward movement of the market during the past fortnight. Yet it does not necessarily follow that the experience of three years ago is about to be repeated. In the trade itself the accepted estimate is that one third of the Italian crop is irreparably damaged. From Lyons the reports are equally unfavorable. If this estimate proves correct, the European supply will fall short by, at the least, 30,000 bales. In other words, the average annual import from China would need to be increased fifty per cent to make up for the loss in Europe. Of course we say this merely by way of illustration. The silks of India and Japan are more like those of Europe than the Chinese, and they would naturally be drawn upon more largely by European manufacturers. All these countries would therefore contribute their quotas; yet, even so, it is not to be expected that they would be able to furnish anything like the full amount. The harvest in the far East is already completed, and is said to be abundant in quantity and excellent in quality. But the cultivation was adjusted to meet an average demand. The European failure was not, and could



**MOUNTENEY'S DIAPHRAGM METER.**

per hour. In the front of the vessel is a chamber furnished with a tube to receive a Whitehead torpedo of the largest dimensions. When it is desired to launch the projectile the front of the vessel is opened by special mechanism, and the torpedo is projected into the water, either by means of a jet of steam or compressed air. As soon as the Whitehead torpedo has left the projecting tube it is propelled automatically by means of the motor contained within it, and pursues its course toward the object of attack at a speed exceeding 20 knots an hour.

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