Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS

VOLUME XII. NEW-YORK, MAY 2, 1857. NUMBER 34.

THE

Scientific American,

PUBLISHED WEEKLY

At 128 Fulton street, N. Y. (Sun Buildings.)

BY MUNN & CO.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns in the United States.

Sampson Low, Son & Co., the American Booksellers 47 Ludgate Hill, London, Eng., are the English Agents to receive subscriptions for the Scientific American.

Single copies of the paper are on sale at the office of publication and at all the periodical stores in this city, Brooklyn, and Jersey City.

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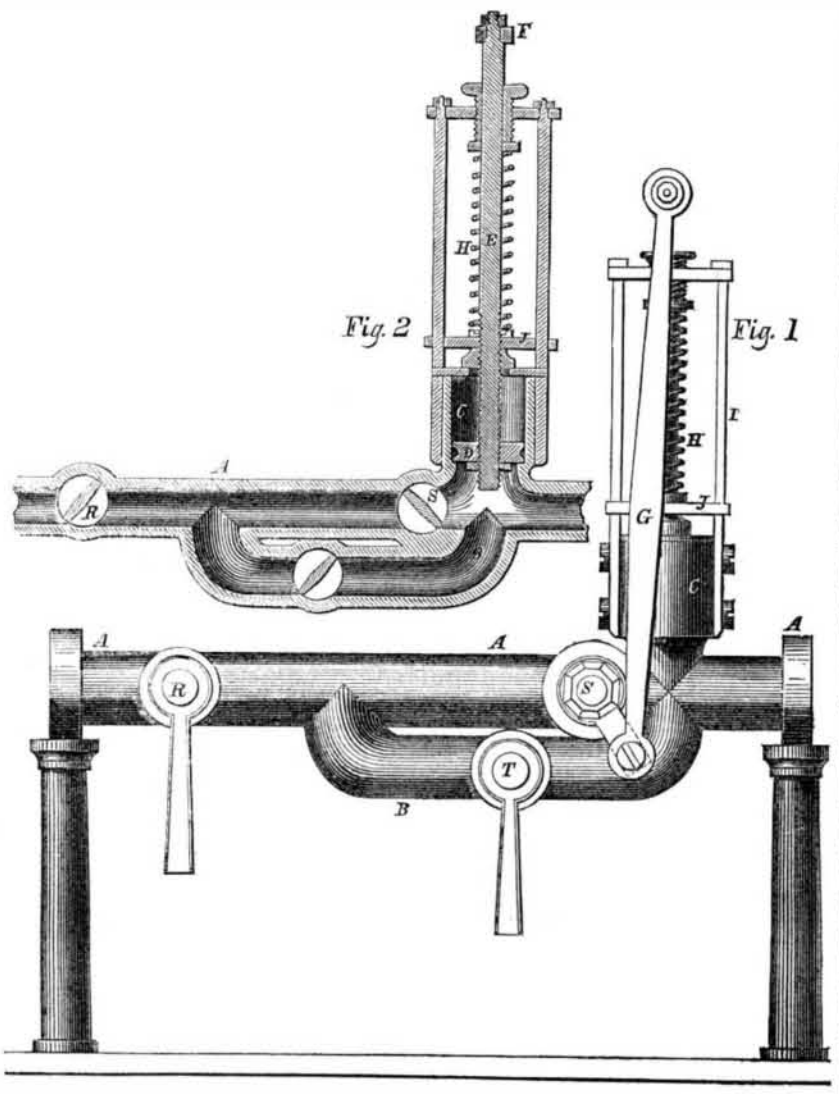
Improved Marine Governor.

It was a comparatively simple matter to conceive the propulsion of vessels by the power of a steam engine. The steam engine having been previously invented and put in practice for turning mill-work, it only remained to attach paddles to a shaft thus impelled and extending across the vessel, and the solution of the problem, the great solution which has done so much for human progress was at once in its crudest form achieved.

But Fulton was a skillful mechanic, and like his countrymen of later days, labored to adapt the heated monster, the breathing, *living* mass of metal, to its new situation on shipboard. Much has been done, and undoubtedly much yet remains to be accomplished before the steam engine, especially in those forms intended to impel vessels on the stormy ocean can, be pronounced absolutely perfect; and one of the greatest and most obvious wants in such situations at the present moment is a good and efficient governor.

The steam engine itself is an importation; but many of the best adaptations of engines and boilers to marine purposes have been the fruit of American brains and of American experience. That the problem of regulation is capable of solution is proved by the success of Silver's governor—a purely American device—now in use on the Collins' steamer *Atlantic*, and we believe, on several other large ships, with the effect of checking the engines with perfect certainty and very rapidly whenever they incline to "race," or to turn too rapidly. When, in a rough sea, the wheels are left nearly or entirely out of water, if only for a second, the engines, if unchecked, generate a very high velocity in the ponderous masses termed "racing," and when, under such circumstances, one wheel only is plunged suddenly under and stopped, the other acts like a fly-wheel, and aided by the still laboring engines at the cranks, is extremely liable to twist off the shaft. With all the care that is taken to control the throttle by hand in bad weather, the failure of a shaft or some other important portion of a marine engine, due to this cause alone, is by no means uncommon. The disabling of the *Atlantic* a few years ago, causing her to be almost given up for lost, is still fresh in the minds of our readers. The more recent failure of the *Tennessee*, causing a serious delay in the communication with the disturbed regions in Central America; the accident to the British steamer *America*, the French steamer *Vigo*, and many others which might be adduced, both American and foreign, can, like that of the *Atlantic*, be traced almost directly to the "racing" of the engines; and any device which proposes to obviate this difficulty without retarding the engines in the least at other times, is deserving of the very highest degree of attention. The device under notice promises this, and, as would appear from theory, with a degree of perfection as admirable as beautiful. It is not, in any case, bulky or noisy, requires little, or almost no attention, to keep it in perfect order, and in no case offers any sensible resistance, except when the speed of the engine exceeds a certain speed, for which the regulator may be set. For example, if, as is common on most of our large ocean steamers, the engines should make from twelve to sixteen revolutions per minute, the regulator properly adjusted is of no effect, until the engine starts forward at a speed equal to twenty or more revolutions in that time, when immediately, and before they can complete a half revolution, the admission of the steam is shut off almost tightly, and the engines, thus strangled, are fain very rapidly to moderate their behavior, and assume again such speed as etiquette requires.

WHEELER'S MARINE GOVERNOR.



This simple governor is the invention of Marshall Wheeler, of Honesdale, Pa., and was patented June 11, 1856. Its action is based on the diminution of pressure which unavoidably takes place in the steam pipe, whenever, by an extra speed of the engine, the steam is drawn from it faster than usual. It is well known that in every possible case the pressure at the extremity of a steam pipe nearest the engine is less than in the boiler, or, of course, the steam would not move through it; but if properly proportioned, the difference in pressure is very slight, not more than one-fourth of a pound per square inch, at full ordinary speeds, and still less when working slowly. But if, by any chance, the engines are allowed to work faster than usual, drinking at each revolution the full volume of steam, as before, the pressure is still more reduced, and the steam rushes through with still greater violence. The motion of the steam has no influence directly in affecting the movement of this mechanism, but the diminution of pressure is in such cases so considerable as to be very sensible.

The invention consists substantially in attaching a small cylinder at the side of the steam pipe, and supporting therein a piston to be acted on by the steam, which piston is so connected to a spring and to the lever of the throttle valve that so long as the pressure is up to a certain standard, or beyond it, the spring will be compressed, and the throttle valve held open, but whenever the engine "races," and lowers the pressure, the tension of the spring shuts the throttle.

In the drawings, fig. 1 is a side elevation, and fig. 2 a section through both the steam pipe, A, and the side cylinder, C. The elevation is represented as supported on stands. The ordinary throttle valve is denoted by R, the additional or automatic throttle valve by S, and a side throttle, which allows the fluid to pass around—extremely important in starting or working very moderately—is denoted by T, in the corresponding pipe, B.

D is the piston referred to, working freely in the cylinder, C. The piston rod, E, is supported and guided by the frame, I, and carries on its top a cross-head, F, from each end of which depend rods, G, which connect it to the extremities of short levers, provided for the purpose on the shaft of the throttle valve, S. The coiled spring, H, tends to hold the piston, D, continually down, which would keep the valve, S, nearly shut, but the pressure of the steam on the under side of D tends, to raise it, and hold the valve, S, wide open. Starting the engine by opening the side valve T, the pressure in the pipe raises the piston, D, and after closing T, holds it continuously open, allowing the steam to pass freely and supply the engine, until, on attempting to "race," or go faster than prescribed, the pressure lowers, and the valve, S, nearly shuts. The engines then incline to drag too slowly until the flow of steam through the small remaining opening at S fills up the pipe again to nearly its original tension, when D again rises, and all moves on as before. To avoid this too slow motion of the engines after each action of the governor, it may be well to leave the side throttle, T, part way open, or provide for a quite liberal flow through S when as fully closed as it may be, either of which would probably have the effect desired. To aid in this matter the cross-piece, J, is made adjustable on the frame I, so as to check and stop the descent of D, and consequently the closing of S, point at any limit preferred.

The invention has not yet been put in use, but seems in the highest degree promising, and one which should be applied by a skillful designer on some of our ocean steamers, and fairly tested.

Any further information desired may be obtained by addressing Mr. W., as above.

One Hundred Tuns of Grass to the Acre.

Three weeks ago, on page 249, a statement was published taken from an English paper, of a farmer on Lord Derby's estate who had raised 100 tuns of *grass* on an acre of land by liquid manuring. We gave the statement in such a manner that any person *might* understand it was not upon our own authority. We have, however, received three or four letters expressing great surprise at it being published in our columns. It was stated, in the article referred to, that the crop raised was "Italian *grass*;" it was not *hay*, but green crop, and probably four or five cuttings were made during the year, as three cuttings of clover are not uncommon in England.

That 100 tuns of grass should be raised on an acre of land appears to be rather a tough or large story to credit; but if 76 tuns of turnips have been raised on an acre, why might not 100 tuns of grass be raised on the same area? In Johnston's Agricultural Chemistry, page 487, it is there stated that this quantity of turnips had been raised on an acre of land. From farms which thriftless cultivators had to leave because they had "worn them out," and from which they could not raise three bushels of wheat to the acre, other farmers have come after them and raised thirty bushels of wheat to the acre. We have known of such cases ourselves having occurred in the State of New York. But tell the former class of farmers of such results, and they look perfectly incredulous.

Lord Derby's farmer may have raised 100 tuns of green crop to the acre, by liquid manuring, as has been stated, and he may not. The quantity appears to us to be too great to credit, but not deny, because it is no more fabulous like than the 76 tuns of turnips mentioned by Prof. Johnston.

The Half Launch Finished.

The *Queen of the Pacific*, noticed last week as stuck when partially in the water, was finally set afloat during the night of Saturday the 11th ult., by jacking up the hull into a more inclined position, and reconstructing the ways. Thus repaired she slid off on the final trial without any assistance from tugs or derricks. The extra cost, in consequence of the mishap, is judged to have been about $4,000.

The Boston papers state that in a field near that city five men have been digging for a week for hidden treasure, being led to believe they could find it there by a divining rod. No treasure has yet been discovered.

M. Garvini lately made an ascent in Paris in the largest balloon ever constructed. It was propelled by a screw, and had a rudder like a ship, but was not very successful.

A submarine cable has been laid across the Mississippi at St. Louis.