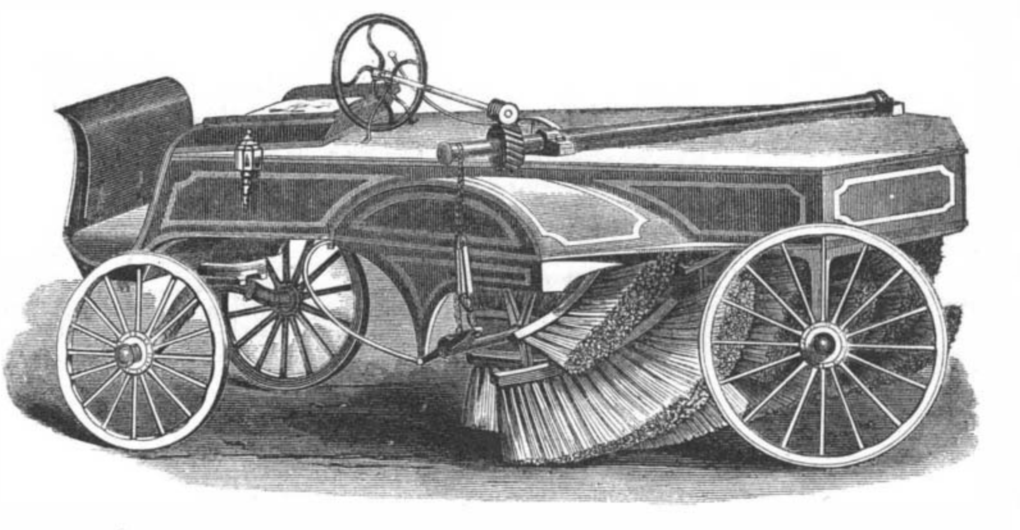
SELF-ADJUSTING STREET-SWEEPING MACHINE.

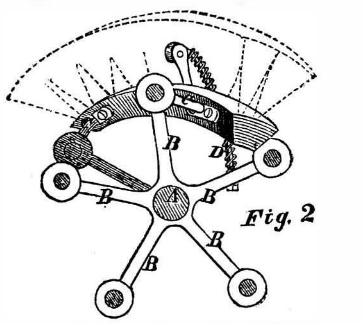
More than one thousand dollars per day are expended in cleaning the streets of New York, and yet the work is so imperfectly done that both citizens and sojourners unite in one constant series of complaints at the filthiness of this city. Broadway, and other streets paved with smooth blocks of granite, are kept clean by means of street-sweeping machines; but these have not been found to work well hitherto on cobble-stone pavements.

The machine represented in the annexed engravings is intended for all kinds of pavement, and is claimed to have been thoroughly tested and to have proved perfectly successful. It sweeps the dirt to the side of the wagon; the design being to deposit it in long windrows, in the gutter, ready to be shoveled into carts. The brush, which is suspended diagonally below the wagon, is constructed in fine threads wound spirally around the axle, each thread being made in sections, and each section being connected with the axle by means of springs. The mode of attaching the several sections of the brush to the axle is shown in Fig. 2. From the axle, A, five spokes, B B B B, radiate, and to the end of each of these spokes is attached by a working joint an elbow, C, to the end of which one end of a section of the brush is secured. A spiral spring, D, presses the brush outward from the center, but allows it to be forced inward whenever it encounters any rigid obstacle. The opposite end of the section is secured in like manner to the succeeding spoke.



EDSON'S SELF-ADJUSTING STREET-SWEEPING MACHINE.

It will be seen that, by this arrrangement, very great elasticity of every portion of the brush is obtained, enabling it to adapt itself to all the inequalities of surface of the streets, however uneven may be the pavement.



By means of bands from the ends of the brush, which are wrapped around the ends of a shaft extending across the carriage (which shaft is connected by a gear and rod with a hand wheel), the hight of the brush in relation to that of the wheels is readily adjusted.

The patent for this invention was obtained April 5, 1859; and persons desiring further information in relation to it may address H. F. Gardner, M.D., No. 46 Essex-street, Boston, Mass.

BRITISH GUN-BOATS—PRIVATE BUILDERS—AMERICAN OAK.

We have sometimes indulged in a healthy rebuke of the reprehensible manner in which affairs are occasionally conducted in our navy-yards; and we have felt no small amount of mortification in the revelation of many discreditable facts of inferior timber being employed in such government vessels as the *Saginaw* and others. Our complaints afforded our respected uncle, John Bull, a very good feast for his usual self-importance; so he gave his portentous Yorkshire head an unusual wag, and down went his heavy foot on the ground, with the chuckle in his ruddy cheeks:—"We knows how to do better than that in England." A black mark has long existed at Lloyd's against American-built oak ships, but the revelations which have recently been made of the rotten condition of the new gun-boats, built of British oak, have startled the whole English community.

Uncle Sam is a clever, good-natured sort of a being, very free with his purse, but he is altogether too smart to be "taken in" as Uncle John was with the gunboats that were built for him during the Crimean war, a very few years ago. No less than 45 of these were recently taken into the docks of Haslar for repairing, when they were found to be in a rotten condition, and the bolting so defective as to call forth public execration. These boats were built by *private* contractors, and these have been denounced with just severity. It is not a little remarkable that the worst war vessels built in England and America have been furnished by private builders. We have, perhaps, been too ready to blame government officials for unfaithfulness in their duties. The *Niagara*—which is our largest frigate, and was built by the late George Steers—is said to be the most defective war vessel in our navy. This may not be true, but such an opinion has been pretty widely circulated.

The condition of the rotten gun-boats in England was brought to light by the *press*—that indefatigable servant of the public; and now is the time when we, with a sense of justice, call upon our English brethren to throw away their prejudices against American oak, and give our vessels that rank at Lloyd's, for goodness and durability, which has heretofore been denied to them. On this subject, Donald McKay (who is now in Europe) says:—"The only apology the English ship-builders make for the rotten state of the gun-boats, is that they used unseasoned oak in their construction. Four years have been sufficient to reduce these boats to a frightful state of rottenness. If we compare with that, the state in which our American steam vessels are after double the length of time (though they are not only built of unseasoned, but of entirely green material—white oak), any unprejudiced person must come to the conclusion that the American white oak is a very superior material for ship-building, notwithstanding the contrary opinion of Lloyd's committee. I cannot help pronouncing my opinion on this occasion, that the American white oak growing along the coast from New Hampshire southward to Virginia and Maryland, is the best material for ship-building in the world; and I say this after having had an opportunity to examine the best stocks of timber in the navy-yards of England and France, cut in all parts of the globe. I confidently express my opinion that ships built with the best seasoned American white oak will, on an average, attain an age of over 30 years, as it has also been proved by experience."

FORM AND POWER OF CHAIN CABLES.—When Thos. Talfourd, the great engineer, proposed the erection of the Menai Suspension Bridge, he performed numerous experiments on the tensile strength of malleable iron, by which he ascertained that the mean force required to produce rupture in a bar of one square inch sectional area was equivalent to a dead weight of $29\frac{1}{2}$ tuns, or 66,080 lbs. avoirdupois, executed in the direction of the fibers; and this has been adopted, conventionally, by the most eminent engineers as a standard for tensile strain ever since, assuming one-half of it (or $14\frac{3}{4}$ tuns) as a measure of the force to which a bar of iron may be constantly subjected if drawn in the direction of its length. Now, in the case of a cable link with straight sides, the direction of the strain may, for all practical purposes, be considered as nearly coincident with the fibers of the metal; and, admitting this, the strain, or rather the force of resistance, will be directly proportional to the number of fibers in the transverse section. Thus: if the sectional area be equal to two square inches, the constant straining force to which the metal may be exposed is $29\frac{1}{2}$ tuns, or 59 tuns to produce fracture; the half of this being what was found to rupture a bar of one square inch of section. Therefore, admitting the strain on the link of a cable to be similar to that on a straight bar, where every fiber is equally strained, a link of seven-eighths of an inch in diameter will show a practical resistance of $\frac{7}{8} \times \frac{7}{8} \times 59.4 \times 0.7854 =$ 8.87 tuns, the weight which a bar of one inch area of section will bear with safety, the metal being of a medium quality. This, in round numbers, may be taken at 9 tuns. With regard to the link of an oval form with a stud in the middle, it cannot be so strong as the one without it, for it is manifest that the stud, besides increasing the weight of the chain very considerably, acts as a transverse lever on the fibers of the metal, which, being compounded with the tensile strain, must, in some measure, operate to increase the effect; for a strain that is partly tensile and partly transverse must be more efficacious in producing rupture than one that is purely tensile.—*Mitchell's Steam-shipping Journal, London.*