

JACKSON'S PATENT OSCILLATING WAGON.

We not long since hazarded the opinion that there was great room for improvement in all sorts of draft vehicles, and the prediction that ere long such improvements would be at least attempted.

We now present to our readers an improvement which appears to us of value, and is equally applicable, in principle at least, to any kind of draft vehicle. Its application to horse cars, provided no insuperable practical difficulty should be met with in the attempt, would greatly lighten the severe labor of starting the cars, and thus relieve the much over-taxed horses.

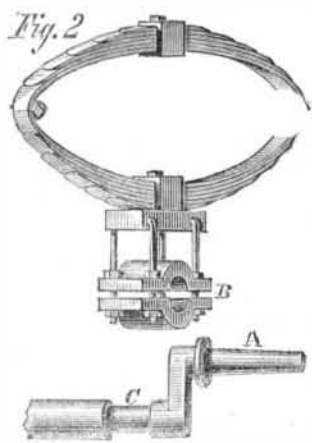
The object of the improvement is to permit a certain amount of motion in the body of the wagon and its load,



backward and forward, relatively to the points of the road on which the wheels rest, so as to give greater ease to the horses in drawing and to those riding in it; while, at the same time, it obviates the rigidity of the parts of a wagon constructed in the old style, and thus takes away much of the shock and consequent liability to breakage.

These objects are accomplished by simply giving a crank angle to each end of the axles, and, instead of uniting the springs and boxes to the axles by rigid connections, resting the upper parts on turned journals fitted with boxes, as shown in detail in Fig. 2. The general appearance of a carriage with this improvement attached is shown in Fig. 1.

In Fig. 2, the precise method by which this attachment is made is distinctly shown where the springs are placed at right angles to the axle; but it is necessary to state that the position of the springs may be changed without in any way affecting the principle of the improvement. A is the ordinary journal upon which the wheel runs. B the box attached to the lower part of the spring in the manner shown in the engraving or in any other manner specially applicable to the particular vehicle upon which it is desired to put the improvement; and C the journal working in B.



At first glance it will be evident that the swinging motion thus secured in the axles, and the consequent oscillation of the body and load, will greatly relieve the structure from the shocks consequent upon the impact of the wheels against obstacles. How it would act to assist the horses in drawing the vehicle may not be so obvious. We will endeavor to make this plain.

The normal position of the cranks of the axles when the vehicle is at rest, is at the lowest point of the arc of oscillation. The draft is applied not to the axle but to the upper spring bar—or where springs are not used—to the parts supported by the box, B, Fig. 2; therefore the moment the horses start, the load is swung forward so that the journals, C, stand forward of the centers of the wheels; the distance to which they will move depending upon the amount of resistance which the wheel has to overcome. Now suppose the wheels to be so "blocked" that a team would be totally unable to start a wagon of ordinary construction, of the same weight and carrying the same load as the wagon under consideration. The team on this wagon is able to move the body and load while the wheels are standing perfectly still. The momentum of this load and the body is added to the strength of the horses when the real tug comes, and the obstacle is at once surmounted.

We are not only sure this is correct in theory, but we have

proved it by experiment on the small model from which the accompanying engravings have been executed, by means of a cord and pulley, and observation of the weight necessary to overcome an obstruction, with the axles wired so that they could not oscillate, and also with them free. In the latter case, a given weight will draw the wagon over an obstruction placed a little in front of the wheels, which is wholly unequal to the task when the axles are held rigidly. If the principle is proved sound for large obstructions it must also be true for smaller ones, and therefore we think the inventor justly claims a lighter draft for this wagon than can be obtained with a fixed axle.

Collateral advantages are, diminished noise and the softening of all the motions of the vehicle. For farmers' wagons, trucks, traveling wagons, and specially for all vehicles without springs, we deem this improvement an important advance on the old mode of construction, while to those which employ springs, it will add comfort and durability.

This improvement was patented through the Scientific American Agency, April 6, 1869, by Samuel Jackson, 149 High street, Newark, N. J., at which place he may be addressed for further particulars, and where the improvement may be inspected.

Steam Agriculture.

The following from the letter of a correspondent to an English agricultural paper, is worthy of more than a passing thought. The public does not yet begin to comprehend the part which steam is now performing in the industries of the world. Much less the magnitude of its future.

"It is a fact," writes this correspondent, "that I am now harvesting my fourteenth crop under steam culture."

"It is a fact that Nos. 1 and 4 heavy lands are bean-growing on seed beds costing only 7s. 3d. an acre; that they are strong in straw, well corned, free from fly or blight, and ripening well, unlike many a crop now growing upon shallow, horse-worked land, that may be seen to be weak in straw, full of fly, and dying a premature death."

"It is a fact that my Nos. 2 and 3 heavy lands are wheat-growing on seed beds costing only 6s. 9d. an acre; that they are strong in straw, full of corn, and ripen well; together they are the best I ever had on this land in my life."

"It is a fact that these four fields will give me an average of full 40 bushels per acre, and it is a fact that under horse culture (having a dead fallow every fourth year) they did not average over 20 bushels per acre, one year with another."

"The next fact to be looked to is, what do our best farmers on such soils get now-a-days under horse culture? Mr. Whitworth, of Willen, a mile from here, is a good farmer under horse culture. He occupies three farms—one where he lives, one at Woughton, only a mile from here, and one at Mursley, about six miles from here. To prove that he is a good farmer, let me tell you that he has made money by farming. Two years ago he bought with his earnings his Woughton farm for over £11,000; therefore I need not say any more on that point. On his Woughton farm he has six fields of plowed land exactly in character with my heavy land, on the same hill, and within a mile of it. This year three of his fields are wheat, one beans, one vetches, fed on and fallowed for next year, and the other clover, fed on, and is now being fallowed for next year. The worth of this feed for sheep, after paying all the expenses for seeding and shepherding, is but a mere trifle; I estimate it at 5s. per acre. Now, then, for the produce on the three fields of wheat and one of beans; it is not over 35 bushels per acre, or from an acre of each added together only 140 bushels. When divided by six, to spread the 140 bushels over the six fields, we find the average to be only 23½ bushels per acre; to which must be added 1s. 6d. as a share of the value after payment of expenses, for sheep-keep on the two fields of vetches and clover. I do not ask Mr. Whitworth's permission to make this statement, but I state it openly and fearlessly on behalf of steam culture against the best horse culture. Let him or any other man pull me back in the correctness of it if he can. I know that it is true, and I mean that the world shall know it. Had I taken bad farming for my comparison, the average would have been less than 23½ bushels, with 1s. 6d. for sheep-keep to be added per acre, against my 40 bushels per acre."

"I ask you to publish these few facts to help me to open the eyes of the landlords and farmers of England as to the use and value of steam power to culture, and in addition to what I have stated above, I will state here that my light land crops are excellent, without troubling you with particulars."

"I might have stated another fact, that this heavy land of mine always needed four good horses to plow it from 5 to 6 inches deep, which cost fully 14s. per acre; whereas by steam power I can now make an average seed bed for 7s. an acre year after year, and keep my land clean for corn crops every year."

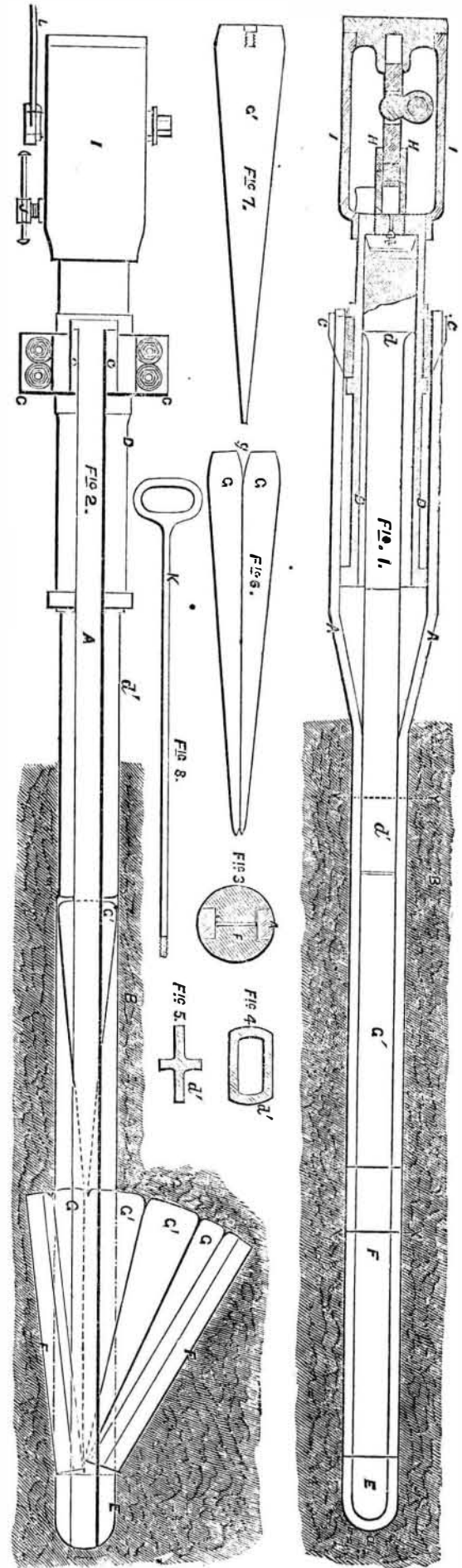
Newest Coloring Matters.

A lecture has been given by Mr. W. H. Perkin, at the Royal Institution, "On the Newest Coloring Matters." Among the many interesting facts then put forward was the discovery of a beautiful blue color, by a German chemist, on treating rosaling with sulphuric acid. Unfortunately, it was not a "fast color." A dyer made many trials therewith, in the hope of turning it to account, but all in vain. He happened to mention his difficulty to a photographer, who, knowing that hyposulphite of sodium would fix a photograph, recommended

the dyer to try that. The trial was made; when mixed with the hyposulphite, the blue became a beautiful green, and, better still, a "fast color." This was the origin of that brilliant dye commonly known as "Night green," because of its remaining unmistakably green in appearance when seen by artificial light. Let it be remembered that nearly all the new colors are extracted in some way from coal tar, that the first was discovered not more than thirteen years ago, and that the annual value now manufactured is £1,250,000, and it will be seen that in the industry created by these new products there is an admirable example of the results of scientific investigation. The best of it is that the field is inexhaustible; for many years to come it will yield a rich harvest of discoveries.

PREVENTION OF COLLIERY EXPLOSIONS.

Many of the most calamitous explosions in collieries have been clearly traced to the ignition of the fire-damp through the firing of shots; and in a still larger number of cases there



has been much presumptive evidence of the same cause having existed, although absolute proof was wanting.

The Mining Journal of London, from which we extract the substance of the present article, refers, as a corroboration of this statement, to the Edmunds Main Colliery explosion, which, it will be recollected, resulted in the loss of 60 lives, and which actually occurred through the blasting operations; and at the Oaks colliery, only a few miles from it, where some 324 were killed, and in regard to which little doubt is entertained by practical men that it was to the firing of the