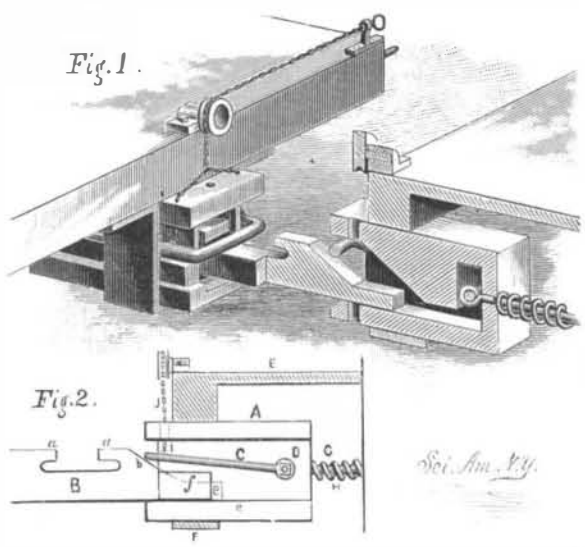
IMPROVED CAR COUPLING.

The drawhead, A, is attached to the platform of the car by irons, F, and drawhead rod, G, which is provided with buffer springs, and passes through the rear end of the drawhead, and is secured centrally to the rod, D. The coupling link, B, is formed with hooks, *a a*, with which the bails, C, engage when the cars are coupled, and it is also formed with inclined portions, *b*, which serve to elevate the outer ends of the bails as the coupling link enters the drawheads, so that the bails will drop over the hooks and effect the coupling. To prevent the coupling link from entering too far when the cars are run together, the drawheads are made with inclined portions (shown in the sectional part of Fig. 1) in the throats, which stop the entrance of the inclined ends of the links.



McARTHUR'S CAR COUPLING.

The extreme ends, *e*, of the link are made flat and reach under the inclined portion of the heads, thus holding the link in a horizontal or nearly horizontal position. The bails are held at a higher level than the floors of the drawheads by the blocks, *f*, formed upon the outside of the heads, so that the ends of the link can pass under them.

Attached directly to the bails are uncoupling chains that pass either to the top and down one side of the car, thereby permitting the bail to be raised either from the top of the car or from the ground, or over a pulley and thence along the platform through an eye, as illustrated in Fig. 1. When it is desired to hold the bail in an elevated position, the ring at the end of the chain is caught over a peg. The operation of the coupling will be easily seen from the foregoing description in connection with the cuts, Fig. 2 being a longitudinal section. The device is automatic in its action, and there is no necessity of going between the cars in coupling or uncoupling. This invention has been patented by Mr. C. McArthur, whose address is P. O. Box 135, Jamestown, Pa.

Straightening Hardened Steel.

It is well known that files are not usually drawn after being hardened, and that the hardening frequently springs them out of line. But notwithstanding that the files are made as hard as they can be by heat and cold water, they are readily straightened after being hardened. This operation is performed at once, as soon as the files have been dipped. The files are taken from a bath of melted lead and chilled while red hot in a tank of running water. This immersion for the instant hardens only the surfaces, while the interior is soft and pliant with heat. At this time the file may be straightened by bending over and under bars. By similar means crooks in steel arbors, reamers, and other long tools may be removed, even after they have been hardened and tempered. A cast steel saw arbor had received an offset or crook in the journal at one end just inside the shoulder. The crook was at the worse end, that next the saw, and although scarcely perceptible to the eye when the arbor was turned on its centers, it was sufficient, when the arbor was in the boxes, to throw the periphery of a two foot saw considerably out. The arbor at the bearing part was very gradually heated, not enough to change color, but to a "black heat." A V-shaped block was placed in a vise bearing against the offset side of the journal, and the vise screwed up. At the third trial the arbor came out perfectly true. A tempered reamer was straightened in the same way, the point at which it was crooked being heated by an alcohol lamp. The heat was sufficient to allow the steel to give, but not enough to start the temper. Steel that has a blue temper only, may be straightened by blows with a pony hammer on a smooth, clean anvil, the face of which should be warmed enough to remove the chill.

A Dead Sea Serpent.

A recent bulletin of the United States Fish Commission gives an interesting correspondence relative to a very peculiar fish—something perhaps between an eel and a shark—that was caught, but not kept, by a Maine fisherman in 1880. It has been frequently referred to as "sea serpent," was 24 feet long and 10 inches in diameter, with tail like an eel and skin like that of a shark, but finer. There were two fins, one on either side, a little back of the head, with a dorsal fin between them. The fish was dead when caught, but had torn the nets badly. Prof. Baird expressed great regret that it was not landed and kept as a remarkable specimen.

STEAM LOG SETTING APPARATUS FOR SAW MILLS.

The engraving shows an apparatus by which the sawyer is enabled to gear the log shifting devices of the carriage, by a shaft operated by steam, located alongside of the carriage, to enable him, by operating a hand lever, to shift the knees of the head blocks forward or backward at will.

The carriage ways or tracks, head blocks, sliding knees, racks, the adjusting shaft, and pinions are of the ordinary or approved construction.

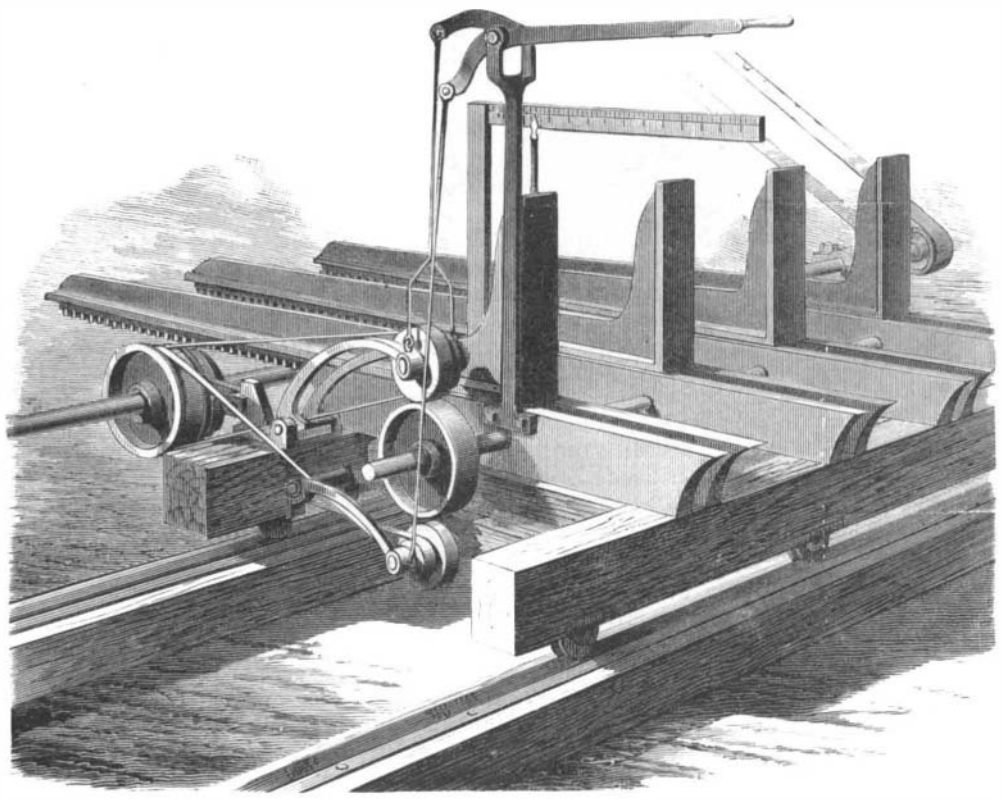
To turn the adjusting shaft and pinions by steam at the will of the sawyer, for setting up to the saw from time to time, and for shifting the knees back when a new log is to be put on, there is arranged a long shaft at the side of the carriage, at the back, supported its length by swing bearings, which are tripped automatically by a trip plate fixed on the carriage to allow the double pulley to slide on shaft, said bearings being weighted, again assume a normal vertical position under the shaft, which prevents the shaft from centrally swagging and wabbling.

On short mills this shaft is revolved continuously by a belt from any suitable driving pulley, while on long mills there is arranged an automatic belt shifting device, which shifts the belt from a loose to a fixed pulley just before the setting device gets back to sawyer, engaging the set works, which again automatically shifts belt on to loose pulley after the log has been set and the carriage started forward again.

On this shaft there is arranged a double pulley which travels along it with the carriage, the pulley having a feather or key running in the groove of the shaft, so that it may revolve with the shaft so as to drive the friction pulleys journaled in the swinging frames above, and below a friction pulley on the log adjusting shaft. The lower pulley is driven by a straight belt, the upper one by a crossed belt for reversing the motion, or *vice versa*.

The pivoted frames carrying the friction wheels are suspended from the hand lever at the top of the first knee rods, so that by shifting the lever in one direction one of the friction wheels will be made to drive the friction wheel on the adjusting shaft in one direction, and by shifting in the other direction the other wheel will drive it the other way; while in the middle position both wheels will be disconnected and the wheel on the log adjusting shaft will be inoperative and locked. A scale is so located with reference to a pointer on the first knee as to gauge the movements of the knees. The accuracy of the setting is accomplished by using a Reppard or some other suitable press roller, which is set to any size desired by the sawyer; and by pressing on the hand lever the log is brought up to the roller, thus putting the setting in the hands of the sawyer. With an apparatus of this kind the setting of the logs is simplified and at the same time it can be accurately and quickly accomplished, and the services of a setter dispensed with. This invention is covered by two patents by Mr. Walter P. Scofield, of Hawthorn, Fla.

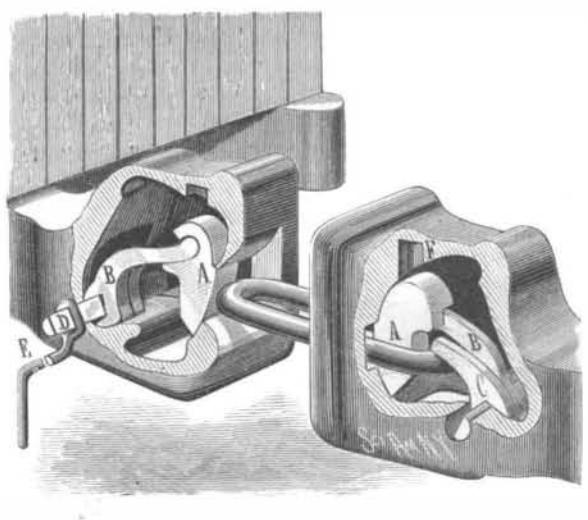
For further particulars, address Messrs. Scofield & Bailey, at the same place.



SCOFIELD'S STEAM LOG SETTING APPARATUS FOR SAW MILLS.

IMPROVED CAR COUPLING.

A large space is formed within the drawhead to receive the pin, A, and allow it to move up and down in coupling and uncoupling the cars. The forward and upper sides of the space are curved in the arc of a circle, and the forward side of the pin is correspondingly curved. Upon the forward side of the pin is formed a shoulder which rests against the draw head at the upper side of its throat, when the pin is down, in order to prevent the pin from rising when in use. An arm, B, is inserted in a socket in the upper rear part of the pin. The rear part of the arm is curved downward, and has a semicircular hole formed through it to receive the shaft, D, which passes through a round hole in the draw head. The hole in the arm, B, is made larger than the shaft so that the latter can have a slight rotary movement within



STAMP'S CAR COUPLING.

the hole. The hole in the drawhead is made larger than the shaft, so that the entire draught strain will come upon the forward part of the drawhead. To the end of the shaft, D, is attached a crank, E, the shaft of which is made of such a length that the arm will be about in line with the side of the car, in order that it may be operated from the side of the track.

Beside the arm, B, is placed the arm, C, which has a semicircular hole in its rear end to receive the shaft, D. This arm is curved forward, and is made of such a length that its forward end will rest upon the inner end of the link. With this construction, by a slight movement of the crank the outer end of the link can be raised more or less, the enlarged hole in the arm, B, allowing this to be done without moving the pin, A. When the cars are run together the entering link strikes the pin and pushes it back far enough to free the shoulder from the drawhead, and then forces the pin upward and passes its lower end, when the pin drops through the link. In the lower side of the drawhead is an opening large enough to permit the passage of the pin and its arm, thus facilitating repairs. In the upper part of the drawhead is a cylindrical recess, F, extending nearly to the top. In case the parts should break, and no duplicates be on hand, the metal above the recess can be broken away and coupling made with an ordinary pin.

This invention has been patented by Mr. William Stamp, of Susquehanna Depot, Pa.

Alcohol in a Bushel of Grain.

Grains of the different kinds produce alcohol in about the following proportions: Corn affords 40 pounds of spirits of the specific gravity of 0·9427, containing 45 per cent of absolute alcohol for each 100 pounds of grain; wheat, 40 to 45 pounds of spirits; barley, 40; oats, 36; rye, 36 to 42; buckwheat, 40. Now, 40 pounds of such spirits equal 3½ (3·5) gallons of government-proof spirits. Taking corn at 56 pounds per bush., rye at 56 pounds, wheat at 60, barley at 48, oats at 32, and buckwheat at 52, these grains should afford the following quantities of proof spirits per bushel: Corn and rye, each, 1·96 gallons, or almost 2 gallons; wheat, 2·1 gallons; barley, 1·68 gallons; oats, 1·12 gallons; and buckwheat, 1·82.

Crystalline Oxygen and Liquid Nitrogen.

From a very brief report of a communication made by M. Debray to the Academie des Sciences we gather that some new facts relating to the liquefaction of nitrogen have been brought forward. Oxygen had been liquefied by being submitted to great pressure, and when this pressure was suddenly withdrawn the lowering of temperature was so great that crystals of oxygen appeared in the liquid mass, and the nitrogen in contact with the oxygen assumed the liquid state.