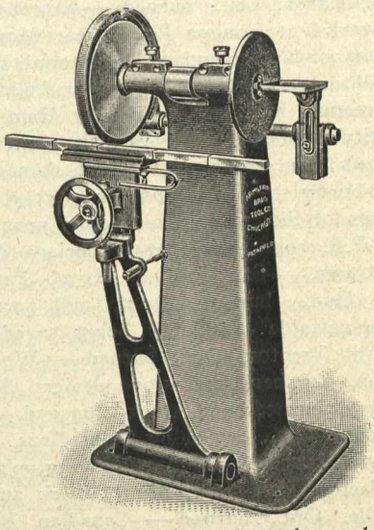
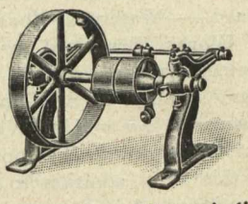
ing not only in a serious loss of steel, but also in vastly increased grinding with attendant waste of time and emery wheels. After experimenting with various methods of doing this work we have developed the machine illustrated, which in a slightly different form, has been in use in our works for about two years, giving perfect satisfaction, and with practically no expense for maintenance. The cutting is



done by a disc of special grade tool steel, revolving at high speed. Any attempt to cut soft steel, or ordinary cast steel with a disc results in a rough dragging cut, with flaring lips which bind the disc to such an extent as to reduce its speed to a point where it is ineffective, if it does not actually bend or break the disc. Owing to the peculiar nature of self-hardening steel however, it is not affected in this manner by the cutting disc, which makes in it even when forced hard, a clean, clear cut incision. The periphery of the disc is coated with self-hardening steel particles, and these particles do the actual cutting. Having had numerous enquiries from machine shops in every part of the world regarding our method of cutting off self-hardening steel, we have decided to place the machine on the market. We believe its convenience and economy will make it a paying investment for any machine shop, especially those which are using our tool holders. It will be observed that the machine is of combination form, the steel cutting disc being mounted on one end of the spindle, while the other end of the spindle carries a 12-inch grinding disc. The speed at which the machine is intended to run is such as to give the very best results for both operations. The construction of the machine is first-class in every respect. The spindle is of tool steel ground true. Bearings are cast iron and are dust-proof, with convenient and positive adjustment for wear and to take up a lost motion. The swinging table is provided with a length gauge, and is conveniently adjustable for steel of different sizes or depth of cut. The cutting disc is provided with a neat guard which can easily be swung back out of

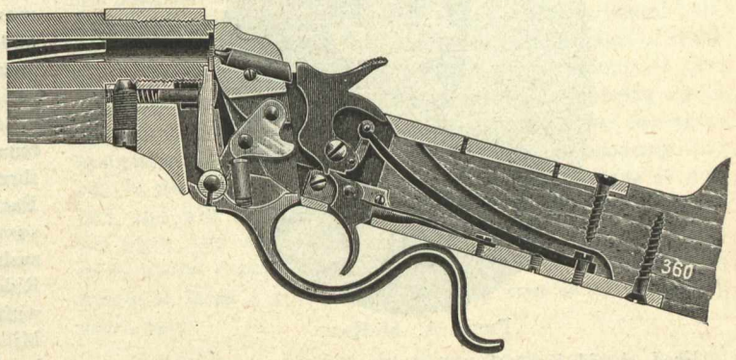


the way when changing disc. The grinding disc is made of boiler plate, and is provided with an adjustable table, so located that the operator will not interfere with cutting off long bars of steel. Each machine is equipped with counter shaft, one cutting disc, one grinding disc, one breaking block, one press for emery discs, one dozen emery cloth discs, assorted; one pound lubricating grease and one can special cement for attaching emery cloth to grinding disc.

It has been discovered in Germany that aluminum is valuable for sharpening cutlery. The metal apparently has the structure of a fine stone, and gives an edge keener than any whetstone.

NEW BREECH BLOCK ACTION.

The accompanying cut shows an improvement in fire arms made by the J. Stevens Arms & Tool Co., of Chicopee Falls, Mass. They have been working for some two years on a new drop-forged, sliding breech-block action to supplant the old style action that has been used on their Ideal rifles for many years, and have perfected what they believe to be the best, simplest and most durable action yet brought out, and is so passed on by their H. M. Pope, the well-known



rifle expert. Its strength permits using the modern heavy charges, and its ease of manipulation is a conspicuous feature. The popular lever action is retained, but greatly improved, with sliding breech-block. The dropping of the lever leaves a free inspection of the barrel from the breach, permitting loading quickly: Bringing back the lever raises and carries forward the strong breech-block with a rocking motion, which prevents any possibility of buckling the shell, thus properly seating the cartridge in the chamber, and finally, securely locking the action ready to be discharged.

RAILWAYS FOR INDUSTRIAL PLANTS.

We illustrate a section of light steel rails, which is especially adapted for use where it has to be cemented into the floor, as in boiler-rooms, etc., where it must not extend above the floor.

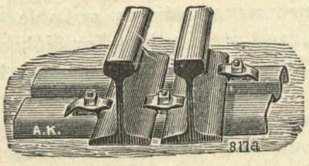


Fig. 1.

In some cases, however, the use of double rail track, as shown in Fig. 2, is desirable in stone or cement floors, where the passage of ordinary road vehicles, barrows, etc., cannot be obstructed, as for instance in factories, factory yards, wharves, etc. This system has been extensively adopted in breweries, factories, paper mills, and in fact in large plants

Fig. 2.

of all kinds. Instead of single rails, as in cases of regular light railways, two ordinary tee rails are placed close together on each end of the track, mounted on steel ties, as shown above. The track is sunk in the floor or ground so that the tops of the rails are flush with the ground level, and the space between the two sets of rails is levelled up with concrete, wooden blocks, bricks etc. The wheels run on the outer rails, the wheel flanges travelling in the slots between the outer and inner rails. For all industrial purposes, as well as for providing factories, warehouses, yards, boiler rooms, mills, etc., with complete track layouts, these tracks are furnished in sections of the required length with the necessary curves bent as required, switches, turntables, etc.,