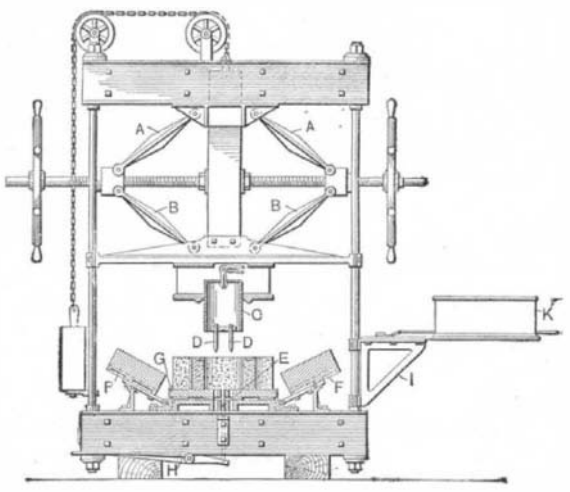
Patent Department

CONCRETE BLOCKS MADE BY POWER.

A power concrete-block machine has recently been invented by a Western architect, Mr. Wallace L. Dow, and introduced by the Perfection Block Machine Company, of Minneapolis, Minn., which does what has never before been accomplished in the manufacture of concrete blocks. Heretofore in making blocks under pressure, it was impossible to drive out the compressed



SECTIONAL VIEW OF THE PRESS.

air, with the result that the blocks were defective. This objection is entirely and simply overcome by Mr. Dow in his machine, so that compressed blocks can now be made as dense within as they are without, free from all voids. The machine in question measures the material accurately, forces it down into a mold under such heavy pressure that all voids are completely filled, and produces blocks which are absolutely uniform in density, strength, and durability. Still more remarkable, it produces from sixty to one hundred blocks an hour with five to eight unskilled laborers at one-half the cost of the usual method. Each block is subjected to a pressure of over one hundred tons. Hence this power machine requires about ten per cent more material than is ordinarily needed, therefore producing a more compact block.

Of the saving in time effected by such a machine, it may be said that 6,000 blocks can be made in ten days. At least sixty days would be required to make the same number by hand on a single machine. In the same time, the power machine would save about $200 in labor. Moreover, the cost of making the largest block is no greater than the cost of making the smallest.

A test conducted at the University of Minnesota by Prof. William H. Kavanagh showed that a plain block made on Mr. Dow's machine cracked at 163,660 pounds and was crushed at 167,200 pounds pressure. Two bevel-face blocks were also tested but gave no signs of cracking or failure, although the testing machine registered its maximum pressure of 200,000 pounds. A rock-face block was cracked and crushed at 97,760 pounds. This last block was imperfect, and would have withstood probably an even more formidable test had it not been broken in shipment to the laboratory.

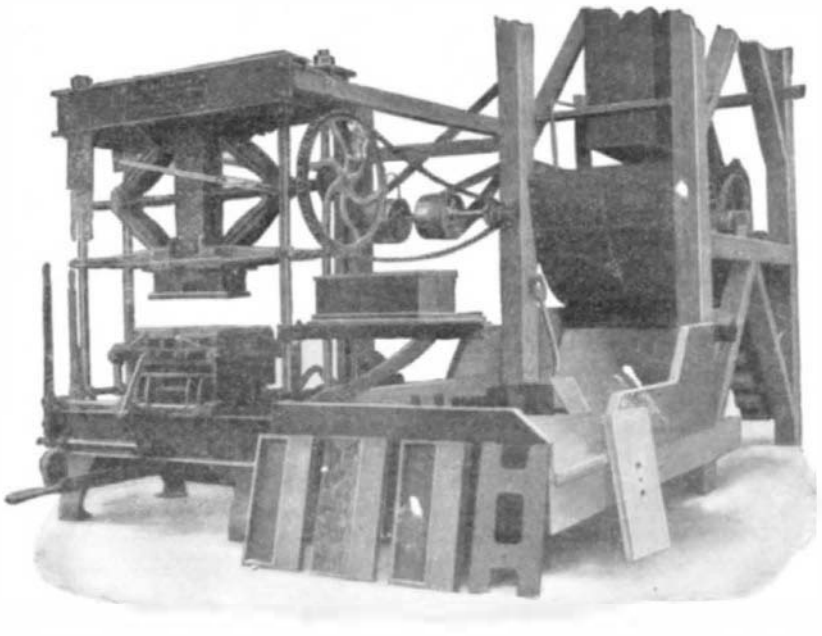
Broadly considered, the press comprises a bed and a reciprocating head, supported and guided by strain-rods. Toggles *A* and *B* threaded on a power shaft serve to raise and lower the head. The striking features of the press, however, are to be found in the arrangement of the mold.

The mold is provided with laterally-swinging sides and downwardly-swinging ends *F*, the sides and ends being so grooved and tongued that when they are thrown inwardly and closed, ready to form a block, they are firmly locked together so as to withstand the enormous pressures to which they are subjected when the head descends. The mold bottom *G* is formed by a plank which rests on the mold bed. It extends out over the sides and ends of the mold, which are carried by their hinges high enough to close in above and not around the wooden mold bottom. The mold bottom is designed to serve as a platen for lifting out and carrying the molded block while it is being dried, and a sufficient number of planks are provided to keep the machine in service. The mold ends *F* carry the core pieces which form half-cavities, and which can be removed to make solid end blocks in the ends of the blocks. The central entire cavity is produced by a core *C*, upwardly removable from the mold, which core is provided with tenons *D* passing through apertures in the mold bottom and serving to hold the core rigidly in its proper position during the formation of a block. A thrust-bar *E* operated by a foot lever *H* loosens the core from the block after compression.

Compression is effected by a follower operated by the toggles and screw mechanism previously mentioned. After the attendant of the machine has thrust up the core of the machine by the pedal-lever, the core is automatically latched to the follower, and withdrawn upwardly from the block with the rising follower. The attendant then swings the ends and sides of the mold away from the block, and two laborers carry it away on the plank which constitutes the mold bottom. By the time they have returned, the machine attendant has placed a new plank in position, unhooked the core from the follower, placed it in position, and closed the sides and ends of the mold, ready for a new charge of sand and cement. Power is cut off automatically at the up-and-down movement, so that the blocks are all of uniform thickness. The height of the block can be adjusted by raising or lowering the top beam of the press.

The charge is carefully measured, in order to produce blocks of uniform density. A measuring or filling box *K* is provided, which is carried by a swinging arm *I* mounted on one of the posts of the machine. This filling box is provided with a sliding bottom, and is designed to be located near the sand and cement mixer, so that it can be conveniently filled. The box is adjustable in height to obtain the right amount of material for different-sized blocks. In charging the mold, the filled box is swung into proper position and the bottom pulled out, the sand and cement falling into the mold around the central core. In order to increase the efficiency of the press, it may be operated in connection with a mixing machine by which the sand, cement, and water are mingled in the proper proportions. The mixing machine and the press are driven by the same 8-horse-power engine.

To the various kinds of blocks that can be made on this machine there is practically no limit. Corner blocks are made for each width in plain, pointed, paneled, tooled, and rock faces. Fractional blocks are made by mounting knives on the mold sides. These knives cut to a depth of 1½ inches, leaving a solid web, so that the blocks can be kept in one piece for curing. When the block (or rather the fractional block) is ready to be laid in the wall, a slight blow will break the web. Knives fastened to the end cores cut the blocks lengthwise in the same manner, and produce fractional blocks which can be used as facing blocks on the end of a first tier or as fillers between joists and between spaces for making walls over twelve inches in thickness. The blocks made are rabbeted on the inside corners to leave a ¾-inch space, which is to be filled with mortar so as to form an absolutely tight end joint, a feat which cannot be performed with the usual type of blocks. The machine is provided with adjustable bay-window molds with angles varying from 30 to 60 degrees; the bay-window blocks can be made in all faces on either inside or outside angles.



CONCRETE-BLOCK POWER MACHINE CONNECTED WITH A BATCH MIXER.

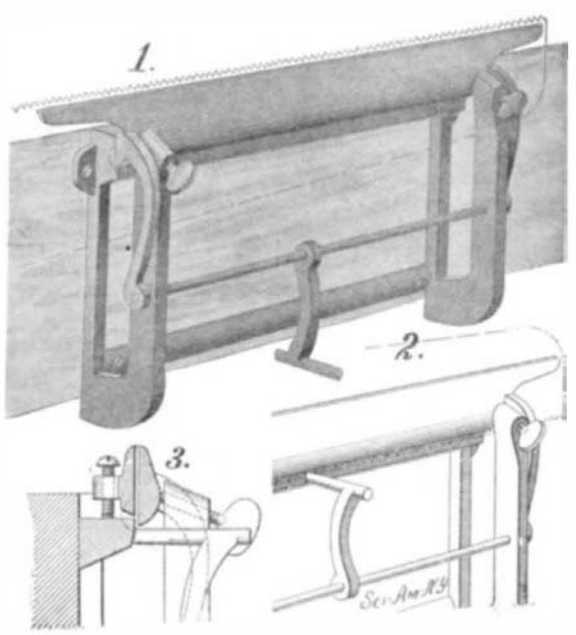
RAILWAY SIGNALING DEVICE.

The frequency of railroad accidents occurring in the very face of warning lights or flags emphasizes the inadequacy of mere visual signals for so important an office as the safeguarding of human life. Many inventors realizing this deficiency of the ordinary signaling system, have devised various auxiliary signals designed to assist in attracting the engineer's attention. One of the simplest of these is illustrated in the accompanying engraving, and it consists in means for automatically sounding a gong in the car or the engine cab, which will warn the motorman or engineer of danger in case he has disregarded the primary signal. Our illustrations show the system as applied to an electric car line, though it will be evident that it could be used equally as well on a steam railway line. The usual semaphores are employed for the primary signals, but contrary to the common practice the semaphore arm extends over the track in such position as to trip a lever carried by the car. As illustrated in the small detail view, when the semaphore arm *A* strikes the lever *B* it acts to sound the gong *C* within the car, thus notifying the motorman that he has passed a danger signal. This gong signal, it will be understood, is not meant to take the place of the primary signal, but serves merely as a precautionary device to prevent total disregard of the signals. In many respects an aural signal is better than a visual one, because it attracts attention even when the motorman's or engineer's attention is momentarily distracted, while tending to the mechanism. One of the principal advantages of this system is its extreme simplicity, and the fact that it may be readily installed by reversing the position of the regular semaphore arms. A patent on this signal has recently been procured by Mr. Michael McGowan, of Togus, Me.

RAILWAY SIGNAL DEVICE.

AN IMPROVED SAW-SET.

Pictured in the accompanying engraving is an improved saw-set invented by Mr. Harry W. West, of 5 Penwell Street, Victoria, B. C., Canada. This device is so arranged as to give any desired set to the teeth, and it also comprises a vise in which the blades may be securely held while the teeth are being sharpened. The saw-set consists primarily of a frame, which may be secured to a work bench. A heavy cross bar at the upper end of the frame serves as an anvil, against which the teeth may be set. For this purpose the face of the bar is beveled, as best shown in the section view, Fig. 3. Above the anvil are a pair of jaws adapted to clamp the saw blade. The inner jaw is pivoted at opposite ends in the frame, and may be adjusted to any desired angle from the vertical by means of a set-screw. The other jaw is also adjustable, being pivoted in the side members of the frame and similarly can be set at any desired angle by means of an ad-



AN IMPROVED SAW-SET.