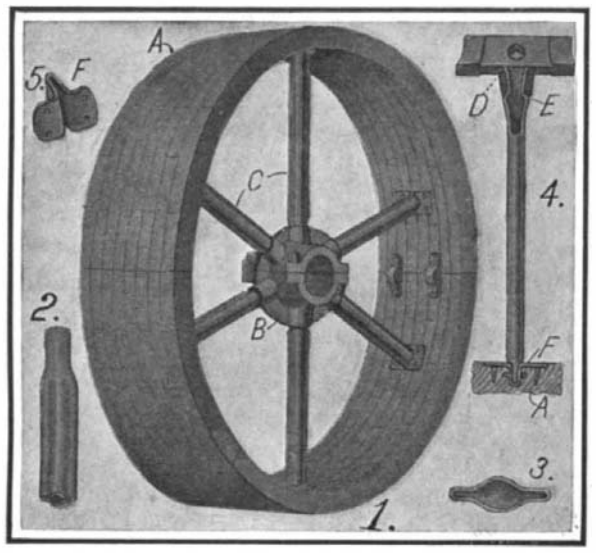
Patent Department

A NEW TYPE OF SPLIT PULLEY.

The pulley illustrated in the accompanying engraving has been designed with a view to combining the advantages of the wooden type with those of the steel



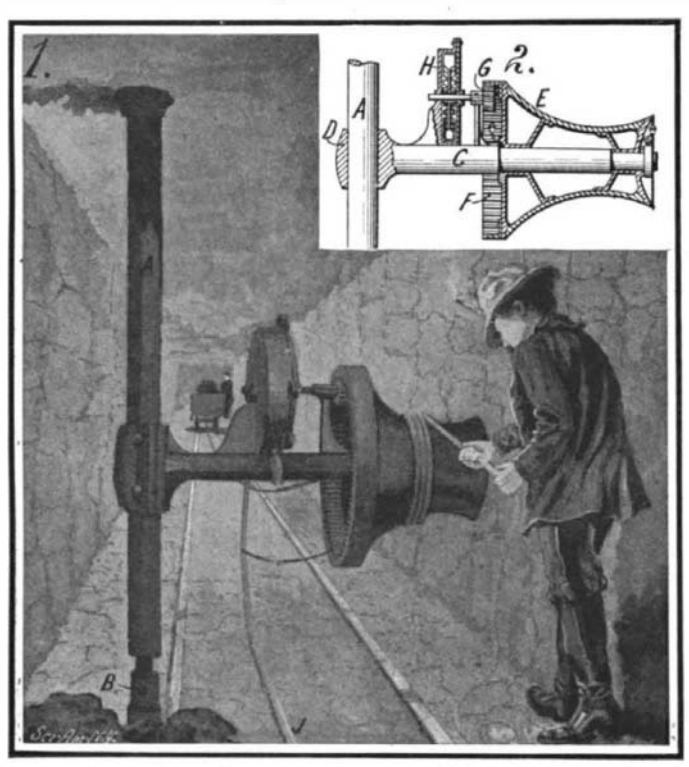
A NEW TYPE OF SPLIT PULLEY.

type of pulley. In the improved construction a wooden rim *A* is used with a metal hub *B* and spokes *C*. The spokes or arms are attached to the hub and rim without rivets or screw-threaded parts. They are made of seamless steel tubing pressed into a ribbed form, as shown in Figs. 2 and 3, so as to increase their rigidity. The hub, which is preferably of malleable iron, is formed with bosses, each of which is provided with a double-tapered orifice. The arms are driven into the orifices in the bosses, and by means of a swage their inner ends are flared out so as to fit the orifice and form a flange, as indicated at *D* in Fig. 4. The spoke is also formed with a flange *E*, which fits against the outer surface of the boss. Thus the arm is held against radial movement in the hub. The opposite end of each arm is flattened to enter a saddle *F* (Fig. 5) which is fitted into the wooden rim of the pulleys. The arm is secured in the saddle by means of a pair of transverse pins, which pass therethrough and enter the wooden rim. It is to be understood that the hub and spokes are first completed, and then the rim is built up and the saddle is fitted into the rim during its construction. The saddles are also made fast to the rim by means of screws. This pulley, it will be observed, combines the strength of the steel pulley at the hub with the lightness and friction surface or grip of a wooden pulley. The construction is very strong, and not liable to break apart in use.

A patent on this improved pulley has been secured by Messrs. R. H. Noble, T. C. Hook, and C. S. Hook of 79 Victoria Street, Toronto, Ontario, Canada.

PORTABLE WINCH.

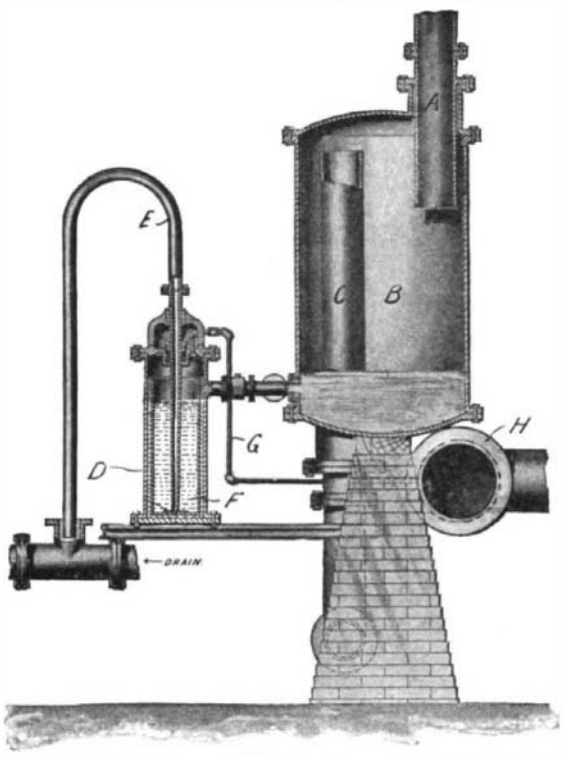
The transfer of heavy material along the low, narrow drifts of a mine may be greatly facilitated by the use of a winch, such as illustrated in the accompanying engraving. This winch is arranged to be attached securely upon the walls of the passage, but in such a manner that it may readily be removed and set up at any other point, as the transfer of material may require. A post, *A*, is provided which is adapted to be used in connection with an adjustable extension piece, *B*, of suitable length to secure the post in upright position between the floor and roof. Extension pieces of different length are furnished to provide for passageways of different height. An arm, *C*, is fastened by means of a clamp, *D*, to the post *A* at any convenient height thereon. A windlass drum *F* is mounted in turn on the arm *C*, being held in place by a collar secured to the end of the arm. The inner end of the drum is provided with an internal gear, *F*, meshing with a pinion *G*. The latter is secured to the shaft of a motor, *H*, which is preferably a turbine propelled by means of air or steam fed through the pipe *J*. Any suitable means may be used for controlling the motor so as to start, stop, or reverse the winch *E*. Owing to its simplicity and portability many useful applications for the winch should be found in a mine. Mr. Charles Wick, of Bingham Canyon, Utah, has just secured a patent on this improved winch.



PORTABLE WINCH FOR USE IN MINES.

AUTOMATIC DRAIN FOR COMPRESSORS.

In certain types of gas compressors it is common practice to inject water either into the compressor or into the discharge pipe therefrom, so as to remove the heat of compression. The accompanying engraving illustrates an apparatus designed to separate the water from the gas automatically, after it has absorbed its quota of heat, and withdraw the water from the separating chamber while maintaining a constant water



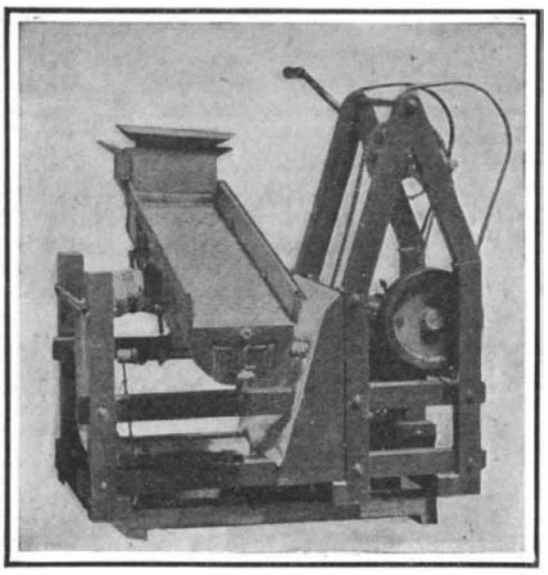
AUTOMATIC DRAIN.

level in the latter, at the same time preventing the loss of any gas withdrawn from the separating chamber in solution in the water. As shown in the illustration, the gas and water, under high pressure, enter, by way of pipe *A*, the separating chamber *B*. The gas passes through pipe *C* to the storage chamber, while the water collects in the bottom of the separating chamber *B*. A pipe connects the chamber *B* with a float chamber *D*, from which a siphon tube *E* leads to the drain. The siphon tube reaches nearly to the bottom of the float chamber *D*, and its lower end is adapted to be opened or closed by means of a float *F* in this chamber. The float *F* is in the form of a cylinder open at the upper end, while within the float at the bottom is a gasket, which is adapted to be pressed against the end of the siphon tube when the float is buoyed up by the water in the float chamber *D*. As the water accumulates in the float chamber *D*, it overflows into the float *F*, and gradually weighs it down until the end of the siphon tube is uncovered. Thereupon the water in the tube is siphoned off until the water level in the float is lowered to such an extent that it will rise again and close the tube. The end of the siphon tube *E* is so far below the level of the water, that there is no possibility of the gas flowing off therethrough, and the water level in the float chamber *D* remains at approximately the level of the upper edge of the float, hence it always covers the inlet pipe connecting the chambers *B* and *D*. This prevents gas from escaping directly from chamber *B* into chamber *D*; but even should any gas escape into chamber *D*, it would be carried off through the pipe *G* to the suction pipe *H* leading to the compressor. Mr. William D. Mount of Saltville, Va., has secured a patent on this drain for compressors.

PANNING WITHOUT WATER.

BY ROLAND ASHFORD PHILLIPS.

No longer need the patient prospector have water in order to pan his gold-bearing sand and gravel; no longer must he turn his back upon the great stretches



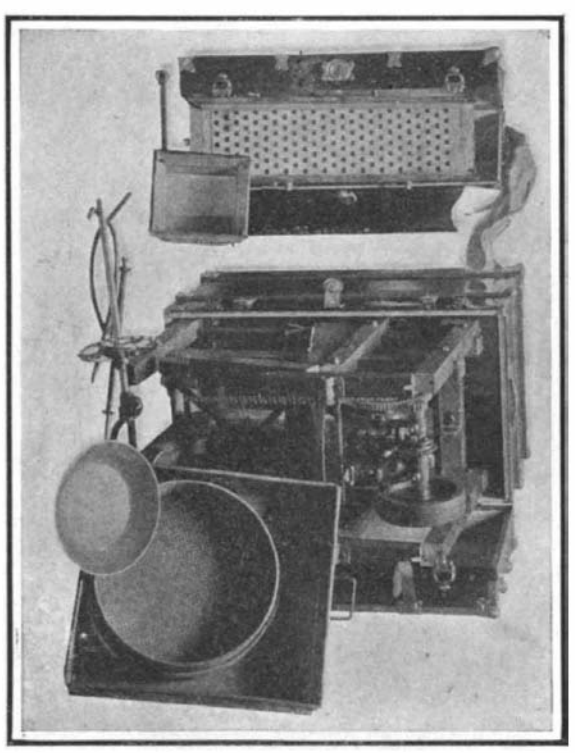
SIDE VIEW OF DRY-GOLD-WASHING MACHINE SET UP READY FOR USE.

of desert because water is not available. For now comes the "dry" machine, using air, which is always available, and which it is claimed will save every bit of "color" that water would save and do the work more expeditiously.

The one crank operates both machine and blower. The sand and gravel are fed in at the hopper on top and allowed to run down the sluice quite in the same manner as in hydraulic sluicing. Here, however, the sluice itself, operated by a simple eccentric, is given a side-shake motion to further separate the particles and to increase the travel of dirt through it.

As may be seen in the illustration, the bottom of this sluiceway contains a series of riffles. These in themselves are unique, and prove to be the vital part of the invention. Instead of projecting above the surface of the sluiceway, as in most sluice boxes, they consist of a series of depressions. Each depressed riffle or pocket is straight across at the upper edge, sloping at the sides, curved at the lower edge, and having the bottom of the pocket so formed sloping in the opposite direction to the inclination of the sluice. The metal forming the bottom of each pocket is continuous at its lower edge with that of the sluice but terminates at the upper end of the pocket at a point vertically below the upper edge of the pocket. The opening thus formed in each pocket is covered with a fine wire screen.

Under the sluiceway is a chamber, air-tight except for the screen-covered openings of the pockets, into which the air is led from the blowing engine. This air, escaping through the upper opening in each pocket, effects an agitation of the gold-bearing material, forcing all the lighter stuff gradually to the top and this, of course, is allowed to run down the



TOP VIEW OF MACHINE, TAKEN APART AND PACKED IN TWO TRUNKS.