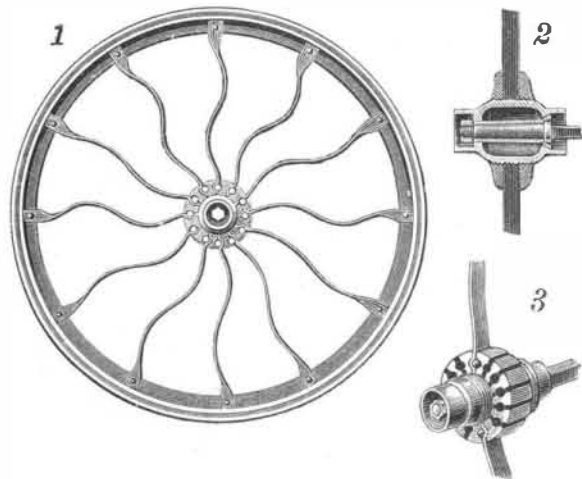


rail, which forms the subject of one of the patents, has scalloped flange, and the sleeper has a dovetailed slot just wide enough to receive the widest portion of the rail flange. When the wide portion of the rail flange is in the slot, the rail cannot be moved laterally, and the ribs of the sleepers overlap the flange to prevent all vertical motion. An occasional spike is used to prevent creeping. With this construction the rails and sleepers are designed to be quickly adjusted in position.

Further information relative to this invention may be obtained of Messrs. Perkins & Co., No. 228 Produce Exchange, New York City.

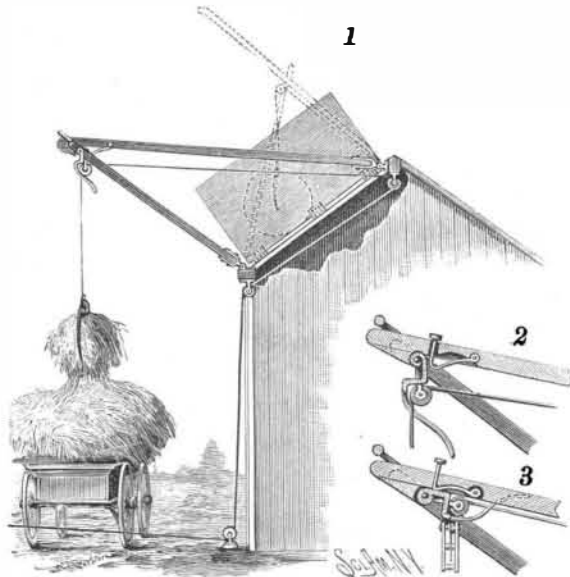
**AN ALL-METAL SPRING VEHICLE WHEEL.**

The wheel shown in the illustration, patented by Mr. James Carpenter, is very light, but is designed to



CARPENTER'S VEHICLE WHEEL.

be exceptionally strong and durable, having more spring than wheels made in the ordinary way, and being, therefore, less liable to wear or breakage from use on rough pavements or hard roads. The felly is T shaped, and between it and the metal tire is a thin strip of paper or similar material, making the tire set firmly, and deadening any sound which might be made in use, the tire felly and strip being united by rivets in the usual way. The wheel is thus designed to be practically noiseless. The spokes are strips of spring steel bent into reverse curves, varying according to the amount of spring desired, their outer ends being bent at right angles to form flanges and riveted to the felly, the flanges of the spoke entering mortises in the standard of the felly. The inner ends of the spokes have a semicircular bend fitting in a corresponding opening in a rim of the hub, as shown in Figs. 1 and 3, where they are made fast by bolts or rivets, or they may be additionally secured by caps or bands screwed against both sides of the rim, the outer sur-



MACHIN'S HAY STACKER.

face of the hub being screw-threaded for such purpose. The hub is cast in the form of a hollow shell, with openings for the passage of the axle box, as shown in Fig. 2, and projecting ends to protect the nut and keep out dirt. The box is slightly tapering, with the taper end on the outside, where it is screw-threaded, and the outer head of the hub is screw-threaded on the inside, for engagement with the taper end of the box, the inner head of the hub being countersunk to correspond with the flaring end of the box. With this construction, each spoke is independent of the others, and any one can be readily taken out and another inserted in its place at any time, without interfering with the other parts of the wheel, the spokes being inserted from either side of the wheel. The wheel is adapted for all kinds of vehicles, from baby carriages and bicycles to the heaviest trucks, and for heavy trucks it is claimed that no other springs will be required than the spokes of the wheels. The construc-

tion of this wheel is inexpensive, and many sets made have already had quite extended use.

For further information relative to this invention, address or apply to the inventor, rooms 97 to 101, Potter Building, No. 38 Park Row, New York City.

**AN IMPROVED HAY STACKER.**

A device which can be readily set up in a field, to facilitate forming a hay stack, or attached to barracks or to a barn, to lighten the labor of removing the hay from the wagon and placing it where desired, is shown in the accompanying illustration, and has been patented by Mr. Miller Machin, of Bowen, Ill. Fig. 1 shows the device applied to a barn, the dotted lines representing the parts in their uppermost position, and Figs. 2 and 3 are views of parts in different positions. On the outer end of an arm pivoted to a ridge pole or other support is a head adapted to be engaged by a tripping lever pivoted on a short transverse rod, the ends of the latter rod being secured in the outer ends of long rods or levers pivoted at their inner or lower ends on the roof of the barn at each side. On the rod carrying the tripping lever is a support for a pulley, and a rope fastened to the rod extends downward under a pulley of the head block of a hay fork, thence through the forked end of the tripping lever, over a pulley, and inward over another pulley, and down to the barn floor, where it passes under a pulley mounted to turn in suitable bearings, and is extended to be attached to a pulling gear for a horse or other hoisting power. When the fork is inserted in the hay, and the rope is pulled, the fork rises with its load until the head block strikes the tripping lever, a further pull causing the side rods or levers to swing upward and inward, and swinging upward the central pivoted arm, as shown in dotted lines. When the operator now backs up the horse, or releases the pull on the rope, the hay may be placed where desired, the weight of the parts causing the levers to swing outward again into the normal position for raising a load. This device can also be readily applied to a number of stacking poles set in the usual manner on the ground, and fastened together near their upper ends.

**A DOUBLE COMBINATION LOCK.**

The lock herewith illustrated, which has been patented by Mr. John E. Farnsworth, has a series of levers to engage and disengage the locking bolt, cams actuating the levers, and gear wheels moving the cams at different rates of speed, making possible a great number of changes and preventing the opening of the lock without knowing the combination. As shown in Fig. 2, which represents the lock with the front plate removed, the locking bolt, B, has rack teeth on its under side meshing with a gear wheel, C, on the knob spindle, which has an indoor and an outdoor knob. At the inner end of the bolt is a plate, B<sup>2</sup>, adapted to travel on top of a series of levers, one of which is shown at F, and all fulcrumed on a pin, A', the under sides of the levers being curved and adapted to ride on the peripheries of the cam wheels, E', F', G', Fig. 3, one of the cam wheels being shown in Fig. 6. The cam wheel, E', turns loosely on a shaft, H, extending through the casing and carrying pointers, H', and indicating on dials, I, Fig. 1, on the inside and outside of the casing. On the face of the cam wheel, E', is a pinion meshing in a gear wheel on the shaft, J', the gear wheel being connected by a pinion and sleeve with spindles, carrying each an inside and outside knob, while on the shaft is another gear wheel operating the pointer, L<sup>2</sup>, on the dial. On the shaft, J', are also pinions, one of which meshes into a gear wheel of the cam wheel, F', and connected with the pointer, F<sup>4</sup>, of the dial. As shown in Fig. 1, the combination is 15-30-45, the pointer, H, be-

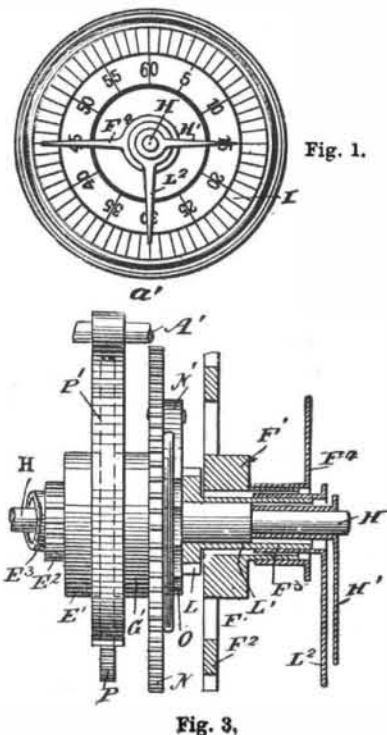


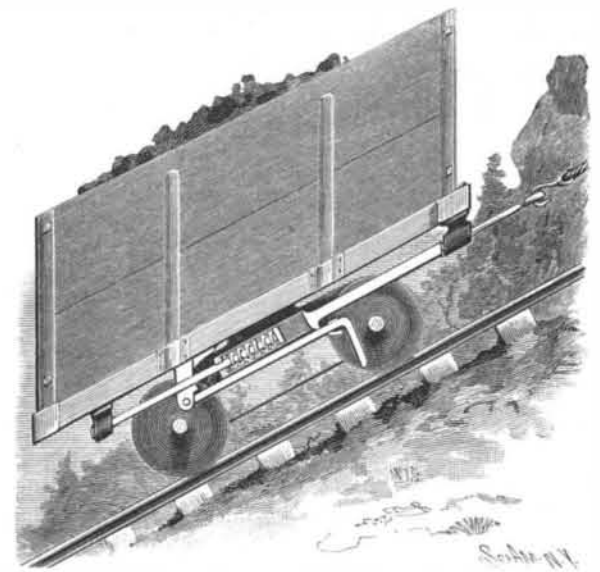
Fig. 3.

ing shifted only in the direction of the hands of a watch. When the knobs controlling the other pointers are moved in an inverse direction, one pointer moves faster than the other, owing to their being connected to the pinion by differential gear wheels. The bolt being in the innermost position, and the operator turning these knobs backward, the outward movement of the bolt is then prevented, and the other knobs cannot be turned. The bolt cannot be moved until all the pointers have come to their proper position. In order to change the combination the operator removes the front plate or the entire lock from the door and shifts the sets of pointers, care being taken to move the two pointers of each set, for the inside and outside dials, to the same numeral desired to form part of the combination.

Further information relative to this invention may be obtained of Messrs. Farnsworth & Williams, Bazine, Kansas.

**A SAFETY DEVICE FOR INCLINED ROADS.**

The device shown in the accompanying illustration is adapted for attachment to passenger cars as well as for other purposes, to give greater security in moving cars up and down an incline, only one cable being required. It is a patented invention of William Peach, M.D., of No. 76 Monterey Street, Allegheny, Pa. On the under side of the frame of the car is a sliding draw-



PEACH'S SAFETY DEVICE FOR INCLINED ROADS.

head, with a link to which the power cable is attached, and two rearwardly extending bars connected by a cross bar. Passing through this cross bar is a rod whose rear end is attached to the frame of the car, the other end of the rod being attached to a crosshead sliding on the rearward extensions of the drawhead. A spiral spring on this rod holds the drawhead back when there is no strain upon it. Hinged in bearings beneath the car is a U-shaped bar, whose side members have each a downwardly projecting hook, adapted to engage a cross tie of the track. These side members are connected by a cross bar, which rests in a hook on the under side of the sliding drawhead when the latter is drawn forward by the cable, the side hooks being then held up as shown in the illustration. A stop on the under side of the drawhead limits the distance it may be drawn out, but when the strain is removed, by the breaking of the cable or other accident, the spring causes it to be instantly drawn backward, permitting the hooks to drop between and clutch the cross ties of the track, stopping the car at any point where the accident occurs.

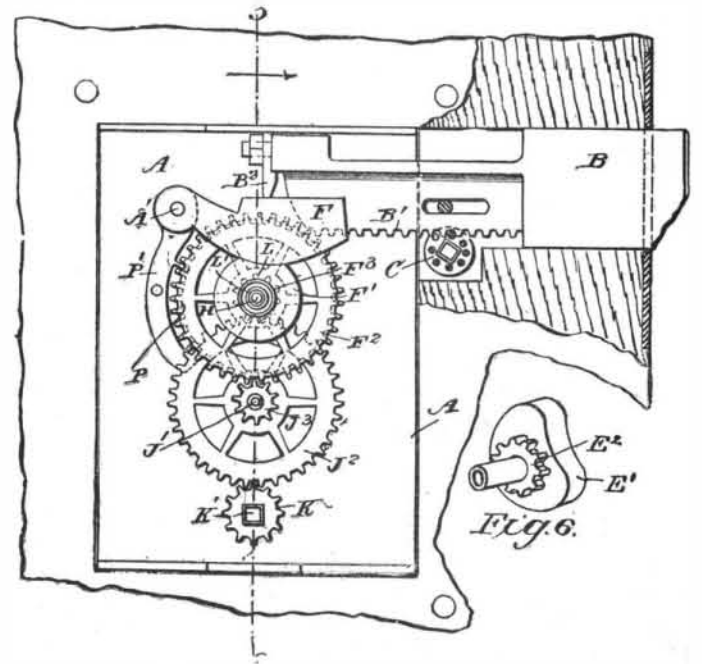


Fig. 2.