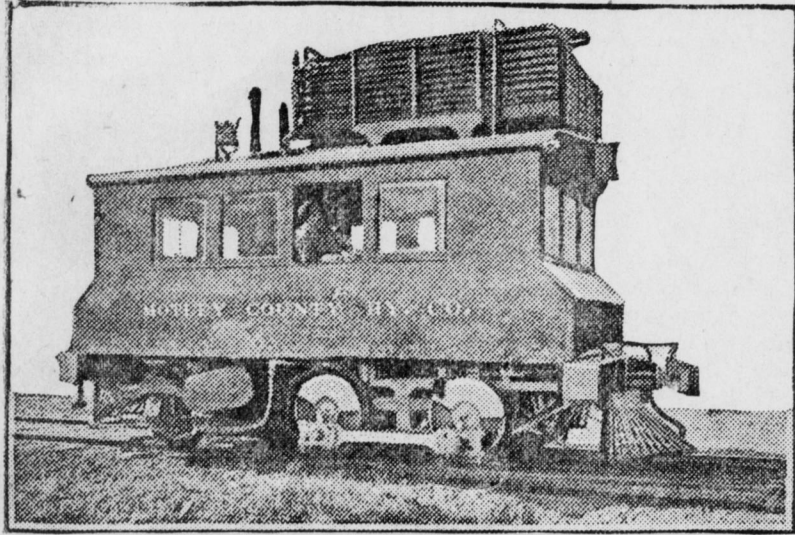


NEW SWITCHING LOCOMOTIVE



A 300 Horse-Power Gasoline Switching Locomotive.
From the Scientific American.

STOPS TRAIN AT ONCE

DEVICE SEEMS TO END POSSIBILITY OF COLLISIONS.

Most Thorough Tests Are Said to Have Demonstrated Value of the Invention Beyond All Possibility of Doubt.

At last a device has been invented and successfully tested which appears to solve the problem of preventing railroad collisions. This device goes to the root of the matter, acting automatically with the proper setting of train signals and relieving the locomotive engineer of all responsibility. Whenever the safety of the train and its human freight depends on a sudden stop, this device insures, without human intervention, the closing of the throttle and the setting of the air-brakes.

The most drastic tests covering a period of more than a year on 107 miles of double track equipped with 90 locomotives, made a triumphant showing in which there was not one failure of the device to operate. The device and its operation are thus described in a recent issue of the Railway Age Gazette:

The apparatus is electro-mechanical, so called. A ramp-fixed on the ties, 22 inches outside of the track rail, engages a member depending from the engine. The ramps are fixed in the rear of each automatic block signal a sufficient distance to allow room in which to stop fast trains. The ramp, when not electrified, causes an application of the air-brakes; when electrified, it energizes an electro-magnet on the engine which prevents the operation of the brake applying apparatus. There is no visual or audible signal, and no speed recorder; neither is the operation of the apparatus affected in any way by the speed of the train; though these additional features have been worked out, so that they could be readily applied.

Each ramp is 180 feet long with a short insulated section in the middle, making virtually two contact pieces. The outgoing end of the ramp is kept constantly electrified, so that an engine moving backward, as in switching operations, would never be stopped. The ramps are made of 35-pound standard T-iron.

The contact member on the locomotive consists of a shoe fastened to the bottom of a vertically movable piston working against a strong spring, the whole being supported on the back end of the crosshead guides. The piston is raised three inches when it engages the ramp, the ramp being three inches higher in the center than at the point near the end where the shoe strikes it.

The movement of the piston opens a valve, allowing air pressure from the air-brake train line to enter a small air cylinder in the cab of the locomotive. This pressure forces a piston upward; and this piston operates a crank controlled by an electric lock. The lock, mounted on an axle, revolves if its magnet is de-energized, but does not revolve if the magnet is energized. Revolving, an arm attached to it operates a three-ported valve, allowing air pressure from the train line to enter the operating cylinder. This opens the engine-man's air-brake valve, giving a service application of the brakes, and closes the throttle.

The electric lock is operated by a current from the roadside battery conveyed through a wire extending from the shoe upward through a pipe to the box in the locomotive cab which contains the lock.

Thus the absence of the electric current at a ramp, from any cause, will result in the application of the air-brakes. There is train line pressure in all pipes, and a failure of pipes or their connection also causes a stop.

Largest Locomotive.

A hundred years ago the first locomotive weighed about six tons, and drew eight loaded cars. At present the largest locomotive reported to be in use is a huge compound engine which measures 120 feet over all and weighs 750,000 pounds. It is an oil burner and carries 4,000 gallons of oil and 12,000 gallons of water. It cost \$45,000 to build. These giants have reached a point where one locomotive is so long that it is hinged in the middle with a flexible joint so that it can turn a curve without upsetting.

MOTIVE POWER IS GASOLINE

Switching Locomotive That Can Be Operated at Comparatively Small Expense.

In some places it is considered a luxury to use a switching locomotive because of the expense of maintenance and the consumption of fuel, while the locomotive is not in service, says the Scientific American. Hence, unless there is enough work for the locomotive to do the 24 hours of the day the work of switching is done by the engines of freight trains. In order to provide a suitable locomotive for such conditions, in which there will be a minimum of expense for operation and no expense during the idle hours of the locomotive, a gasoline switching engine has been designed and is now in use at Matador, Texas. A photograph of this locomotive is shown herewith. It has a 300 horsepower engine and exercises a tractive effort of 12,000 pounds, at six miles per hour. The engine is of six-cylinder type, with cylinders 11 by 15 inches. The power transmission, which is pneumatically operated, is effected by means of a sprocket on the crankshaft connected by chain to a sleeve working free on the rear driving axle and is then transferred under multiple disk friction-clutch to the forward driving axle, where, by an octaroon clutch, the power is either magnified by a series of gears to produce heavy tractive effort and high torque for starting processes, or is delivered direct to the driving wheels. Once the locomotive is in motion the gears are cut out, and it is operated by the direct connection.

FEWER ACCIDENTS ON LINES

Safety Devices and Greater Care Have Reduced the Number in a Gratifying Degree.

The accidents on United States railroads in proportion to the total number of passengers varies widely from year to year. The table shows that in 1900 the amazing toll of 2,550 deaths occurred among the employees of railroads, while 40,000 were injured. In other words, one man was killed for every 400 employees and one for every 26 was injured. The ratio improved in the next ten years, when only one man was killed for every 576 employees.

In 1900 there were 294 passengers killed and 4,000 injured. The statistics show that in 1900 one passenger was killed for every 2,216,591 carried; while for every 140,000 passengers one was injured.

In 1910 only one passenger was killed for every 3,500,000 carried. During the last year 270 passengers were killed in railroad accidents, 2,000 employees, 5,000 trespassers and 1,200 others, not trespassers, making the total for the year about ten thousand, as compared with 9,900 in 1911 and 9,682 in 1910.

During the last year the railroads paid out on account of injuries a total of \$27,640,851.

Shows Perils of Rail Men.

The hazardous nature of the work of locomotive firemen and engineers formed the subject of the testimony presented at Chicago before the federal board of arbitration hearing the wage dispute of 65,000 employees and 98 western railroads.

About 50 per cent of the firemen on western roads "die with their boots on," according to A. H. Hawley, grand secretary-treasurer of the firemen's brotherhood. Forty-seven per cent, he said, die in service and from railroad accidents.

"Of 1,224 disabilities reported to the brotherhood, 691 were caused by blindness and amputation," Mr. Hawley testified. For the last ten years there have been 5,026 deaths of brotherhood members and 1,224 disabilities.

Railroaders as Citizens.

The management of the Buffalo, Rochester & Pittsburgh railroad has promulgated a new code of operating rules wherein is set forth the close relationship the road is endeavoring to establish with employees and its desire that the latter shall be not only safe and reliable railroad men, but valuable and valued citizens of their respective communities, as well. To that end employees are adjured to maintain a correct attitude toward the public at all times, as well as to do their duty to the best of their ability and are given assurance that everyone is regarded by the management as in line for promotion, preferment depending wholly upon himself.



THE MAGIC SHOES

A long time ago two sisters, whose father and mother were dead, lived alone in a house on a country road. One sister was very bad, for she took all the money the father and mother left to support the little girls and gave the other sister very little. She would give her bread and cheese and a cup of goat milk in the morning and tell her that was all she could have that day. But the other sister was very good and did not complain; she would go into the fields and gather berries when she was very hungry. One day a little old lady knocked at the door of their home, and the bad sister opened the door. "Will you please give me a cup of water, my dear?" said the little old lady.

"No, I will not," the bad sister replied. "Go away; we do not want any beggars here." And she closed the door on the old lady.

But the good sister heard her, and ran to the door. "I will get you water," she said. "Sit down under this tree till I get some fresh from the well." And she led her to a seat.

"You should not speak so unkindly to old people," she told her sister. "You will be old some day yourself."

"That time is a long way off," replied the bad sister, tossing her head.

After the little old lady had drunk the water, the good sister brought her some cheese and bread and the milk she had saved from her breakfast. "This is all I can give you," she told her, "but you are very welcome to it."

The little old lady thanked her and ate some of the food. But when she had finished there seemed to be just as much left as the good sister had brought to her. Then the good sister saw that the little old lady's shoes were old and worn on the soles, so she went into the house and found a pair that had belonged to her mother, and put them on the old lady's feet.

When the bad sister saw what she had done, she was very angry and said:

"What a foolish girl you are. Those shoes could have been sold for money." But the good sister did not notice her, and bade the little old lady wear the shoes. The old shoes she threw into the road, but the old lady told her to get them and keep them, and if ever she should be in trouble to put them on. To please her the good sister picked them up. The little old lady thanked her again for her kindness, and told her they should meet again.

After a while the bad sister married a man who was as selfish and greedy as herself, and they treated the good sister very badly. One night they told her she could not live with them any longer. The poor girl went to her room to gather her few belongings, and in the back of the closet she found the little old lady's cast-off shoes. Then she remembered what she had told her, and feeling that she was in trouble now, she slipped the shoes on. To her surprise they just fitted her, and now there were no holes in the soles. She walked along the road with her little bundle under her arm, wondering where she should go, when she noticed she was in a very beautiful park. A little fawn ran up to her, and she gave him a piece of bread, which she had in her pocket. He ran along beside her, and soon they were in front of a very handsome mansion. Then the good sister noticed that she was not touching the ground, that she seemed to glide on the air. She glided or flew up the steps of the big house, and as the door opened a beautiful little girl appeared and took her by the hand. "Come," she said, "my grandmother expects you."

The good sister was very much surprised, but she did as the little girl said, and soon she was in a brilliantly lighted room, where a table was spread with all kinds of dainty things to eat, and there at the head of the table sat the little old lady to whom she had been kind. But how differently she was dressed! Her hair hung in little white curls beneath a dainty lace cap, and her gown was of heavy black silk, and upon her hands were beautiful jewels.

"So they turned you out?" asked the old lady. "Well, the shoes brought you to me just as I intended, and now you never will be treated unkindly again, for you are to live here with my granddaughter and me."

Then she told the little girl to take her to her room, and there the good sister found a nice soft bed, beautiful furniture, and everything a girl could wish for. In the closets were lovely dresses, and there were shoes and stockings and hats. And she lived with the little old lady and her granddaughter ever after.

One day when she was riding in her carriage, drawn by four beautiful white horses, she suddenly came upon her sister and her husband. They were sitting by the road, and the sister was crying. The good sister had her coachman stop. "What are you crying about, poor woman?" she asked. Of course, they did not recognize her in her beautiful clothes. The bad sister dried her eyes and stared at the handsome coach. "Oh, dear lady!" she said, "the rain came and the wind blew, and our crops were spoiled, and our home was taken from us," and she

began to cry again. The good sister threw them a heavy purse filled with gold. "There is money," she said, "to buy your home back and start your farm again." And away she went in a cloud of dust.

The bad sister little dreamed that the kind lady was the much-despised sister that she had turned out of the house.

The good sister had returned good for evil, and her life was long and happy.

WHIZZED AROUND IN CIRCLE

Much Amusement Given by Use of "Whirligig"—Excellent Way to Learn How to Skate.

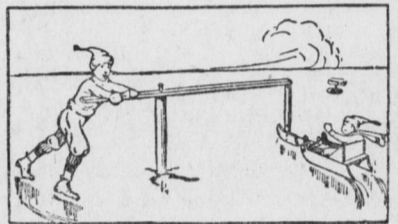
Grandfather was always making something new and useful for someone at our house and we, as children, never tired of following him around and watching him "tinker."

One day we saw him with father going down to the little pond near the house with a large post, writes Annette Jackson in Farmer's Mail and Breeze. What could they be going to do? Of course we went along to see.

Father pulled off his boots and stockings, rolled up his trousers, and with the post on his shoulder waded out to the middle of the pond. Then he pounded the post into the mud until it was firm and solid and standing about four feet above the water. A sharpened iron rod was then fastened in a hole in the top of the post.

We asked all sorts of questions, but were told to wait till the pond froze and then we would find out.

Grandfather then began work on a long pole that father had brought from the woods. This he smoothed and squared and braced, boring a hole in it about eight feet from one end and 14 feet from the other. On the



An Ice Whirligig.

tip of the longer end he made a curved runner. How our curiosity was excited, and how we longed for the pond to freeze!

Cold weather came at last and the water froze. Then the two men took the long pole and placed it on the post, the rod forming a pivot on which the pole swung. The runner rested on the ice and we were told to take hold of the short handle. Father fastened one pretty sled to the runner and put Charlie on it. Then we pushed and the sled just whizzed around in a big circle.

What fun we had all winter with our "whirligig!" Sometimes one of us would stoop down and hold on to the runner and slide around, but our parents told us we must not do this for it wore out the shoes too fast.

It was a fine way to learn to skate, for one could hold to the pole while the others turned it, learning first to keep one's balance and then to take the stroke.

Other children were always coming out from town to play with the "whirligig" and it furnished us with amusement all winter when the ice was not too deeply covered with snow. I think we never as children had anything that gave us more exercise and pleasure than our "whirligig."

BEST KIND OF ICE-BREAKER

Folks Can't Help Feeling Acquainted After They Have Enjoyed Hearty Laugh Together.

A laugh is the best kind of ice-breaker for a party or social. Folks can't help feeling acquainted after they have had a good hearty laugh together, no matter if they were all strangers at first. A good way to get the laugh started is to try a laughing game.

Choose two captains and let them select players for each side, the players standing in two rows facing each other as in a spelling match. When everyone is ready, the hostess throws an old felt hat on the floor between the rows. If it falls crown up, all the players in the line on the left must begin to laugh as heartily as possible. If anyone in the opposite line laughs or even smiles, he must go over to the other side. In three minutes the hat is thrown again, and if it falls with the brim up, the right line must laugh and try to win back the players they lost, and as many others as they can coax into a smile. The game is continued till one side wins all the players.

Sympathy in Sunny Hours.

It is any amount easier to sympathize with those in trouble than to keep the command, "Rejoice with them that do rejoice." Many a girl who is as sweet and kindly as an angel when some schoolmate is sorrowful, looks askance at another who is in high spirits over some good fortune, and feels a little pang of envy. Something is wrong with your sympathy if it is reserved for your friends' dark hours.—Girls' Companion.

And He Was Right.

"Well, young man," said the serious-looking uncle to his nephew, "will you please tell me what the end of this year brings to you?"

"Why certainly, uncle," was the reply; "it brings the beginning of another year."

Cut on Russian Lines



A VERY distinctive and elegant style, and one of the easiest for the home dressmaker to follow, is shown in the dress pictured here. It is a style especially well adapted to plump figures. This dress of velvet, trimmed with embroidered bands, is innocent of a waist line, and because of this and its other peculiarities it is altogether out of the ordinary.

Imagine the effectiveness of a strong, rich shade of blue, a little darker than sapphire, in an excellent quality of velvet, when contrasted with bands of trimming closely covered with small steel beads. The combination is very fine, and dark green or black used instead of blue will prove quite as handsome.

There is a straight underskirt of silk, having the lower part of velvet. The simply cut upper garment hangs over this in lines of uncompromising plainness.

The belt and round neck are defined by the embroidery of beads, the sleeves are long and plain. This gown

is a good illustration of the axiom that rich materials look best when simply made up, for it is unusual and impressive. But the model is not suited to commonplace materials.

Another development in an entirely different material is equally effective. This is demonstrated in a gown made of twine-colored net, the overgarment showing the net laid in side plaits a half inch deep. But in this gown a silk cord partly defines the waist line, which it encircles at the belt, falling below it at the front and fastening in a knot at one side like a Greek girdle. The underskirt is of plain net over a foundation of satin in the same color.

Although there is no flare in the skirt or upper garment, they are both roomy. It is the lack of definition of the figure that adapts the velvet model to the stout figure. But in the dress made of net the plaiting of the material and the addition of the girdle produce a gown which is ideal for a slender figure.

The Widely Featured Godet Veil



THE fad of the hour is the straight-hanging ample veil, rippling about the lower edge and just as full as it well can be made. It is of dotted or figured net and usually it is in black, although a warm gray or mode or dark fawn color is liked immensely. The latter are often finished with a lace pattern about the lower edge, which does not interfere at all with their being bound.

The usual binding is a narrow fold of black satin. A recent arrival is the black veil with binding of white satin. A few varieties are bordered with ribbon an inch wide, but the great majority of all the veils are cut circular, hang to a point a little below the shoulders, and are bound with a narrow fold of black satin.

An extreme of the mode is made of a square of black filet net having small solid squares scattered over its surface. The net is a yard wide. A circular piece is cut out from the center and the opening is hemmed in a narrow hem into which a round elastic cord is run. The edges are bound with a narrow fold of white satin. The veil is adjusted to the hat by the elastic cord and hangs full, and in points, to waist line.

It is an easy matter to make one

of these pretty veils, and anyone can afford to indulge in a fad that costs so little. The prettiest touch is added by tacking a rose or a small nosegay of bright flowers to the border at the left side. This is the very latest trick of adornment and is wonderfully pleasing.

JULIA BOTTOMLEY.

New Muffs Are Small.

As if to show just what length fashion would have us follow, the latest muffs are infinitesimally small. Quite absurd do they appear after the huge pillow affairs we have been cheerfully hauling around with us for the past few seasons. It may be that the long, tight sleeves, fur banded as they are on the modish suit, interfere with the huge muff, so milady demands that a smaller affair be designed for her comfort.

Useful Frock.

A useful little day frock is of old parchment-colored woolen rep trimmed with braid, very wide silk braid to match, worked over again in places with very narrow braid in black, and the buttons are wooden, matching the parchment hue, while there is an odd little waistcoat, of which little "seen" in black and white checked velvet