ble the strains on the apparatus. The inven-
tor improves speed regulation of rotating parts by providing
fluid supply.

Railways and Their Accessories. CAR-SEAT,-F. BENNETT and S. A. WALE
ER, New York, N. Y. In this patent the iner, New York, N. Y. In this patent the in-
vention refers especially to a car-seat of that vention refers especially to a car-seat of that
class in which the back is made to shift from class in which the back is made to shift from
one position to another, so as to reverse the one position to another, so as to reverse the
seat, and in which the seat proper is made to seat, and in which the seat proper
change its inclination in correspondence to the change its inclination in corresponde it resides in a certain novel manner of mounting the sults and in a peculiar arrangement of th foot-rest with respect to the mounting devices.
RAIL-JOINT.-C. J. Shea, F'reeport, N. Y. Mr. Shea's invention is an improvement in that
class of rail-joints in whick bolts, nuts, and class of rail-joints in whick bolts, nuts, and fish-plates are dispensed with, the meeting ends
of the rails being provided with interlocking tongues or projections. He has devised a construction and arrangement of parts whereby supported vertically and also held in more rigid alinement laterally.
railroad-switch.-L. L. Lake, Fon tanet, Ind. This invention is designed to dis pense with frogs as ordinarily used. It proleaves the main track smooth and unbroken when the main line is open and in which the switch-rail is raised slightly above the main
track where it crosses the rails of the main track where it crosses the rails of the main
track and has an adjustable crossover-section which in one position leaves the main rails open and continuous and in another position
laps over one of the main rails and carries the laps over one of the main rails and cairries the
wheels of the cars over the main rail onto the siding or diverging track.
Rail-Joint.-J. W. Enright and E. J EnRigitr, New Orleans, La. In this instance the improvement has reference to railway con-
struction, and concerns itself especially with struction, and concerns itself especially with
rail-joints. The object of the invention is to produce a rail-joint of simple form which will operate without necessitating the use of bolts
and nuts to hold the abutting ends of two rails firmly together
RAilway-Rail joint.-II. C. Brewster, C. A. Duthlrage, and W. L. Glidmen, Shreve-
port, La. In this patent the invention. is an mproved means for connecting and supporting the meeting ends of railway-rails. It is more
particularly an improvement in forms of truss connections and braces in which slidable wedges are employed to enable the parts to be readily tightened in order to preserv
yielding support for the rails.
LOCOMOTIVE FIRE-BOX
Fremont, Neb. The object of -J. Nisssen to so construct the fire-box and connected parts of a locomotive as to enable the contents to
be dumped at will from the cab. To this end be dumped at will from the cab. To this end
he employs in connection with the dumping ash-pan an operating device for the grate and ash-pan, such device passing into the locomo-
tive-cab, so as to bo readily operated by the engine-driver or his assistant.

Car-coupling.-S. E. Jackman, New York, N. Y. This improvement relates to cars traveling on inclined or switchback railways,
such as are used in places of amusement, and such as are used in places of amusement, and
the object is the provision of a coupler arranged to safely couple adjacent cars to allow and steep inclines of the track without danger of the cars becoming uncoupled or jumping
the track. the track.

## Pertaining to Recreation

ADJUSTABLE LEG FOR BILLIARD-TA-BLES.-C. D. SEym@ur, Rensselaer, N. Y. The purpose in this improvement is to provide sim-
ple and readily-operated means for raising and lowering the legs of billiard-tables or like articles of furniture for the purpose of leveling the bed or top of the article, it being possible such adjustment with little exertion.
toy pistol.-L. h. Hinaman, Port Jervis, N. Y. In operation the handle is drawn back-
ward, pulling the plunger to the rear against the resistance of the rubber band, and the re retains the hammer in elevated position and the plunger at the rear of the barrel. The projectile being dropped in the open end of the barrel and the cap placed in the cap-seat, a
pull on the trigger will elevate curved arin and release hammer and explode cap. The
plunger is drawn forcibly forward projecting marble with considerable force.
VELOCIPEDE.-F. M. Thompsen, East Liverpool, Ohio. The object of the present invention is to provide for excluding the connec-
tions between the front and rear legs from view tions between the front and rear legs from view
and for supporting the front of the sulky in such manner as to relieve the strain of such support from the imitation figure of the horse and to provide for a spring cotions and for an adjustable seat for the sulky. It relates espe-
cially to that class of such devices which is cially to that class of such devices which is represente
'Thompson.
game apparatus.-H. e. Henwood, New York, N. Y. Mr. Henwood's invention pertains to game apparatus, and more particu-
larly to those in which various chance combinations in cards, dice, or the like may be
secured my means of appropriate operating
and controlling mechanism. His principal ob
jects are to provide a convenient and effective apparatus of this character for agreeable

## Pertaining to Vehicles.

VEHICLE FOR EXHIBITING GOODS.-E. of this vehicle is divided by means of part tions in such a way that spaces or compart side. These compartments are intended to be
utilized as show-windows and to be dressed with exhibits. The vehicle may also serve for transportation of goods and other purposes The arrangement can be provided in vehicle of all sorts, even hand-vehicles, and is in ne way confined to vehicles drawn
DEVICE FOR PREVENTING ACCIDENTS. -C. Mathews, Coalmont, Ind. The princi means for readily and quickly detaching draftanimals from. a vehicle and for simultaneousl applying a brake to stop the vehicle if it is time to provide means for effectually guiding the vehicle after the horse is detached.

VEHICLE-WHEEL-M. G. BABIe, Ne tates, N. Y. Mn ticularly wheels for automobiles and like vehi cles; and the purpose of the construction is
the provision of a wheel in which dishing strain is avoided and in which all necessary eccentric vibrations may take place at the cen
ter of the hub-section of the wheel when the wheel is in action.
vehicle.-J. J. Furchtraf, Joetia, III. The aim of the inventor is to provide a vehi cle arranged to permit easy traveling, especial
ly over rough surfaces, and capable of being use as a sled, skate, and the like. The device is very simple and durable in construction and allows the carrying of heavy loads with comparatively little power or exertion on the AUTOMATIC WAGON-BRAKE-E Veatch, Palco, Kan. This improvement in operation is entirely automatic. The brake may be easily applied to an or inary wagon and may be used with or without
ing equally efficient in both cases. It is sim-
ple in construction, and is not liable to ple in construction, and is not liable to get
out of order. Since considerable strain is brought to bear upon no part, the
breakage is reduce to a minimum.
Tlimilacol'ring. - C. Vivies-Navarro. Ponce, Porto Rico, The principal objects of the invention are to provide means wherey
the exertion of the pull upon the thills tongue will be yieldingly resisted, so that the sudden starting up of the draft-animal will not cause a sudden jolt of the vehicle and so
as to relieve the animal and vehicle from sudden strains of all kinds; also to provide similar means for causing the same kind of a resistance when the animal backs or the ve vehicle brat
Vehicile-brake.-D. Grubb, Pike County Ind. Mr. Grubb's invention is an improvement particularly in that class of brakes in
which the brake is automatically set by the holding back of the team in descending an incline. ine means for use in setting brakes sired the handle-lever may be fitted at its socketed end on an upwardy-projecting arm,
the handle-lever being secured in any desired the hande-lever being secure in any desire
adjustment by a rack. This handle-lever may adjustment by a rack. This handle-lever may
also be utilized to lock the brakes free of the also be ut
wheels.

## Designs.

DESIGN FOR A SANDWICH-SIGN.-J. J Meyer, New York, N. Y. This ornamental
sign comprises a design representing a sausage partly covered by a roll or cheese sandwich placed on a flat broad surface. The top end long holes. The sign carrier looks through the upper apertures and the whole is supporte by shoulder hangers and waist band.
DESIGN FOR AN ASH-TRAY.-A. $Q$. and of circular form. Upwar continuation of the well-rounded sides at the front constitute a partial hood, the rest and greater part re-
maining open. The tray shows considerable depth, its bottom is flat, and a very graceful downward-curved handle is riveted at the back
end of the tray.
design for a bracelet.-C. S. Hurd, ewark, N. J. In this case the design is for a bracelet exteriorly ornamented with leaves
and flowers on a mottle background. Six slightly prominent scroll-worked Shields are face article.
DESIGN FOR A MINGER-ILING..-.J. L. and unique design the top of the ring is set to hold two dog heads, one on each side of the
setting. The heads are in alinement, back to back, and slightly separated by a deep depression in the setting. The paws on which the
heads rest hang over the curve of the ring. Note.-Copies of any of these patents will be furnished by Munn \& Co. for ten cents each. Please state the name of the patentee, title of

Business and Personal ZUants.
READ THIS COITMN CAREFWLLY-Y Mou
will find inquiries for certain classes of articles
numbered in consecutive order. II
fou manu.

 For bride erecting engines. J. s. Mundy, Newarl, N. Inquiry No. 7704.-W anted, addre
"U. S." Metal Polish. I

Drying Machinery and Presses. Biles, Louisville, Ky Inquiry No. 7706.-Wanted makers of cross-arm

Handle \& Spoke Mchy. Ober Mfg. Co., 10 Bell st

## Inquiry No. gyay-For Iow concrete biock machinery.

Wanted.-Purchaser for Monazite, Molvbdenite and Wolfram. Apply Monasite, Box ir, New York.
Inquiry No. $9 \% 08$. - For makers of shoe cobbler For sale Cheap.-Steam power shop nearly new, 1 Inquiry
ce plants.
I sell patents. To buy, or having one to sell, write
Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y. Inquiry No. \% \%10.- For makers of hand power
and borse power mackinery for sa wing wood. The celebrated "Hornsby-Akroyd" Patent Safety oil Engine is built by the De La Vergne Machine Com onany
Foot of East 138th Street, New York Inquiry No. 7711 . - For makers of milking appaWANTED. - Ideas rexarding patentable device for
water well paste or mucilage bottle. Address Adhe ve, P. O. Box 773, New York.
Inquiry No. y712.-W anted, a feather renovator.
1 have for sale the U. S. and all foreign rights of new patent Improvements in Water Tube Types of Boilers
Great economizer. J. M. Colman, Everett, W Wash. Inquiry No. gy 1:3.-For makers of soundboards
(reedoards) for organs. Manufacturers of patent articles, dies, metal
stamping, screw machine work, hardware speciaities, machtnery tools and wood fibre products. Quadriga
Manufacturing Company, 18 South Canal St., Chicazo. Inquin y No. Vq $14 .-$.For makers of plan and ball.
bearing casters and malleable iron wheels and axles or bearing casters and malleable iron wheels and axles or
For Sises.
SALe.- Patent for absolutely non-refiliable botSimple in construction, perfect in operation. Wil cost only a trifle more than regular whisky bottles.
Apply to James Clausen, 2525 Rauschenbach Ave., St. Louis, Mo. Patented Dec. 12, 1905, No. 806,917.

## Inquiry No. y'715.- ron work and accessories

Patents.-Wanted, the service of a patent exper and experienced specification writer. No one need ap ply who has not bad a thorough education along tech
nicallines, and who has not had experience in paten practice. Munn \& Coo, 361 Broadway, New York.
Inquiry No. g'y 6 .-For manufacturers of pump
or ditchers that can be run by
$6 \% \mathrm{~h}$. p. engine. NOTICE.
To the Inventor Members of the American Manufac turing Co., 113 Adams St., Chicago., Ill. As I have infor mation that would be of interest to inventor member
of the American Manufacturing Co., I would like to enter into communication with said inventor members. not holding office, with the sole object of placing them in charge of information which will materially protect Wakefield, Chester, Vermont, an ex-stockholder Inquiry No. N'\%1\%.-For manufacturers of glazin
glass for glazing leather. WANTED.-High-class machini
Good wages. No labor troubles.
Driggs-Seabury Ordnance Corporation, Sharon, Pa.
Traquiry No. 7718:-T
Inquiry No. 9 の19.-For manufacturers of brick-
lnquiry No. yg20.-For manufacturers ofmachin-
ery for making excelsior.
Inquiry No. $\mathbf{y}$ (ing machinery. For manufacturers of knit
Inquiry No. yrge.-Wanted, address of party
Willing to manufacture. and place on market, on a ruy
alty basis, a new fiying toy.
Inquiry No. yr2 3.- For manufacturers of mills or
instruments for puiverizing lime or marble into impalp-
able powder.
Inquiry No. \%ry4.-For manufacturers of ex-
tremely fine sieves for impalpable powder.
Inquiry No. grys.- For manufacturers of instru-
ments for amusing people.
Inquiry No. \% Y\% 6.- Wanted. address of party
manufacturing teiephone receiver cushons.
Inquiry No. gray.
fetti making machines.
Inquiry No. g'a8.
ing machines for men.
Inquiry No. 7899.-For manufacturers of watch-
man's detector.
Inquiry No. \%r30.-Wanted, address of parties
manufacturiog matches.
Inquiry No. 9781 .-For manufacturers of solid
rubber balls, from 1 to 3 inches in diameter.
 Inquiry No. 7 7 33.-For manufacturers of hand
driven printing presses with accessories. Inquirv No. ${ }^{\text {g/734.-Wanted, address of parties }}$
dealing in Smith
chines.
Inouiry No. 8735.-For manufacturers of merry-
go-rounds.
Inquiry No. ${ }^{\text {g\% 36.-F }}$ - For manufacturers of small
toy eugines castings in brass and iron.
Inguinry No. \#7.37.-For manuacturers of smal

Wotes
andQueries.
Names and Address must accompany all letters or
no attention will be paid thereto. This is for

though we endeavore to a reply to altearch, either by by
letter or in this department, each must take
his turn.
Buyers wishin
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to purchase any article not adver-
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of houses manufacturing or carrying
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rather than general interest cannot be expected
without remuneration

Books referred to promptly supplied on receipt of
Mrice.
$\begin{gathered}\text { Minerals } \\ \text { marked or for examination should be distinctly }\end{gathered}$
seded.
(9870) H. J. B. asks: 1. I wish to learn why, in building the A. C. dynamo de-
scribed in SUPPLEMENT 155s, the fields are ound on brass tubes. When in a medical coil we slip a brass tube over the core, which takes up the lines of rore and keeps them
ound down within the tube. If the bras tube has such an effect in one place, why not
in the other? A. Your idea that brass can stop magnetic lines of force is erroneous. There is no known insulator for magnetism Iron and steel furnish an easier path for magnetic lines than any other substance. Hence if we wish to protect a magnet from externa
magnetism, we cover it with a box of iron Other substances, such as brass, allow lines of orce to pass with about the same dinculty
as does air. Hence brass may be used as as does air. Hence brass may be used as a
spool for the field coils of a dynamo with no harm, especially when, as in this case, a strong spool is required. In the case of the medical , is whe you refer, the action of the bras of force at all. The interrupted current in the primary coil acts upon the brass or copper,
or any other metal, in the tube which is or any other metal, in the tube which the
slipped over the primary coil to produce in the ube currents of electricity, which are in th phosite direction to the primary current, and ing power of the primary upon the secondary. With the tube over the primary there is less current in the secondary; when the brass tube drawn out the secondary current increases off by brass. Eday currents, opposing the primary, are produce when the tube is pushed over the primary, and cut down when the tube
is withdrawn. There is not one effect in one is withdrawn. There is not one effect in one
place and an opposite effect from the same cause in another. The action in the two places lowed in the primary of a medical coil without interruption, there would be no eddy current in the brass tube and no induced currents in
the secondary. This is the way the current flows in the field magnets of the dynamo. The interruption of the primary current in the medi cal coil causes the eddy currents in the bras
tube and the currents in the secondary coil 2. If the armature should be wound with much finer wire, what would the eff ect be? A
a finer wire on the armature of the small al ternator would cut down the amperes but leav the volts the same, if the same number of he volts would be increased, and the amperes reduced more than in the first case. 3. Where-
in does this alternating current differ from that generated by the glass plate machine or the induction coil? The dynamo described in
Supplement 1558 is said to give the same effect as the current from an ordinary medical coil ut the wire is much coarser. Does the fiel mary of the coil? A. An alternating current is one in which the electromotive force rises hrou zero to its highest value, then fan was previously above zero, rising again to zere. This series of changes constitutes a cycle. second in the various forms of alternating curthe induction the plate electre machine nor in any such manner. Both of these have thei electromotive force raised till a spark jumps takes place repeatedly. The current is pul sating and not alternating. An alternating current will, however, produce spasmodic conThe field winding does not represent the primlines of force through an armature. The arma ture revolving through this flux produces an current over the external circuit, doing its re uired work there
(9871) A. B. D. asks: Please tell in the Notes and Queries column of the Scien-
Tific American, or otherwise, how to ascertain the candle-power of an are lamp. Also how to
make a small searchlight. A. It is not easy to measure the candle-power of an arc lamp, ifferent irections. The mean spherical candle power is the rated candle-power. This is the
mean of all measurements above and below the horizontal, and is the true average candlepower. It is the most difficult to obtain. The "nominal candle-power" is the one oftenest
spoken of commercially. It is a value arbitarspoken of commercially. It is a value arbitar-
ily taken to correspond to a certain consumption of energy in the arc. Thus an arc taking 450 watts is called a 2,000 -candle-power lamp,
and 300 watts are assumed to give 1,200 can-
dles. These numbers are perhaps near the maximum numbers are perhaps near the A small searchlight may be simply an are light so arranged that it can be swung to
throw its light strongly in different directions by attaching to it a parabolic refiector. Such a one as is used on a locomotive headlight would be good for the purpose. SUPRLEMENT
No. 1276 contains a description of a portable projector which may be useful in making
(9872) F. K. W. asks: Will you please write to me telling me the dimensions for a
smoke box for making rings? I wish to use it smoke box for making rings? I wish to use it
simply for experimenting. What substance should be put over the end to be knocked?
What size hole? A. A box for making smoke rings may be of almost any size. One which 8 a good many years is about 18 inches long and diameter in one end. A sheet of pure rubber
is fastened over the other end with cleats. The advantage of a box of some size is that it
contains a large volume of air with which to contains a
form rings.
(9873) P. writes: Regarding Answer 9840, I would say J. F. overlooks the essen-
tial point in the question, namely, the ability of a moving body to overcome resistance to
its motion. The two balls of equal size present equal surfaces to the air and experience equal resistance from the air so long
as their velocities are the same. But there seems to be a failure to see that the resistance ball must overcome in the same manner that a moving car must overcome the friction of
the brake applied to its wheels. The falling ball must displace air, and the displacement of the velocity of the resistance dependent upon of the falling ball to displace air depends upon the weight of the falling ball, since it is mo-
mentum which pushes the air aside, and this varies both with the weigtrt and the velocity of the ball. The lighter ball cannot push air out of its path as easily as the heavier ball.
It will soon find itself left behind in the race and the heavier ball will reach the ground first, since the retardation increases as the time of fall increases. It may be accepted as Mechanics," page 33, sec. 71: "The attraction
of the earth being the same on each particle of the earth being the same on each particle
of a body, a light body would fall as rapidly as a heavy one if there were no resistance
their movements; and this is confirmed by periment, by letting bodies fall in a vacuum The resistance of the air varies with the sur-
face against which it acts, but in falling bodies the ability to overcome this resistance bodies fall faster than light ones in the air But the velocity of heavy bodies, such as iron, do not differ much from each other bodies fell as J. F. reasons they should, rain drops would hit our devoted heads with the often a mile, and would, as shot would, give us a smart blow, to say no more.
(9874) P. C. D. asks: Will you please explain the cause of the light line around dark shadows cast by an are light? It occurs occasionally in photographs, especially those taken at sunset. A. The bright border sometimes seen around a dark object against a
bright surface is due to the sharp contrast o the object and its background, which also canses the dark object to seem smaller than it actll-
ally is. The light line seen around a dark object in a photograph seems to be due to
another cause. It appears that the gelatine film is thicker in one part than in another as a from the thick to the thin part act row band where the print is thinner and so (9875) C. A. R. asks: 1. It is a known fact that weakening the field of an electric motor decreases its speed, and yet it would
stop if the field current was opened. Now, a what point does weakening the fiel cease to A. If the armature current for a motor is supplied at a constant voltage, strengthening
the fiel has the effect of decreasing the speed and weakening the field increases the speed of
the motor, for equal power. This is due to the counter electromotive force generated by the armature of the motor by its rotation. It
makes no difference whether an armature is driven by electricity or by some other power, an E. M. F. is generated by it in the opposite direction to that of the same machine as a motor. The current fowing in a motor is
weaker the faster the motor runs. This is well explained by Thompson in his "Elementary Lessons, under motors. We send the
book for $\$ 1.50$. 2. Many people think it is a book for $\$ 1.50$. Many people think it is a
strange wonder that electricity is used to such
an extent and yet no one knows what it is. sometimes tell them that its "being" is not
much more wonderful to scientists than that of heat, light, giavitation, and many othe things. To what extent do answer right? yet known regarding the nature of electricity was certain that much more is known that as Whewell's "Recent Advances," or Thompson's "Electricity and Matter," will give a
fair presentation of the subject. We furnish the first-named book for $\$ 2$, and the second for $\$ 1.25$. 3. How is the speed of gasoline matic? A. The speed of a gasoline engine is regulated in one of several ways-by throttling feed of gasoline for several revolutions, manipulation of the exhaust valve or with electric ignition, by cutting off the spark. These changes may be operated by a ball governor a device to give warning signal by either light, , or both, at the approach of street cars separate device of its own at a certain place to indicate when the car is coming. Is any such thing in use anywhere ; if not, why not?
A. Any novel device you may invent for signal ing the approach of a car to a crossing can ing the approach of a car to a crossing can be
patented, and might be sold to railway people 5. What can you say for the device by which it is claimed a person when telephoning can
see the one talked to? see the one talked to? A. We cannot say any
thing about a device for seeing a person to whom one is talking by the telephone and who is at the other end
seen such a device.

## NEW BOOKs, ETC

A Treatise on Concrete, Plain and Re INFORCED. By Frederick W. Taylor,
M.E., and Sanford E. Thompson S.B. New York: John Wiley \& Sons 1905. 8vo.; pp. $585 . \quad 176$ figures. The present treatise, which is a most com plete one, is designed for practising engineer erence book on concrete for engineering stu dents. The entire subject of concrete and the process of concreting is described, including
classification and use of cementing standare and special tests for cement, strength and composition of cement, mortars, reinforced concrete, mixing concrete, depositing concrete, effect of sea water on concrete and water fire ard rust protection, sidewalks and base-
ment fioors, buiding construction, foundations and piers, dams and retaining walls, arches tonnels and conduits, reservoirs and tanks and cement manufacture are all a dequately treated
There is little question that this book will be of very great value at the present time, when utilization of an intere
Graphic Methods of Engine Design. By Arthur H. Barker, B.A., B.Sc. Lon don: Technical Publishing Company grams. Price, $\$ 1.50$.
The author had a two-fold object in view second edition. In the first place, he attempted to describe and explain clearly a series of easy and practical constructions for use in the
drawing office by young mechanics aspiring to positions in such offices, and having little idea quired in designing engines on correct principles. The author's second object is to show tween the science of engineering and exact chanics. The mechanism of the steam engine forms a very complete series of illustrations
of these principles, and the book is intended to make clear their application to practical work. Examples of a almost every principle found in books on elementary dynamics are numerically, besides being also fully described. of his work to the subject of balancing, and this subject will be found discussed in a very
interesting and easily-understood manner by all who read the work.
INDEX OF INVENTIONS
For which Letters Patent of the United States were Issued for the Week Ending

January 9, 1906.
AND EACHEBARINGTHAT DATE
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|  | Cutotf. antomatce. E. G. \&. J. R. Rose. Cut-out, transformer. It. P. Hetherington |
|  | ducts, suction apparatus for, C. M. ooi, A. w. Feltman |




