becently patented inventions． Agricultural Impiements． CULTIVATOR．－Jonn McL．Wrigrt，Oberlin， Kan．This cultivator is so constructed that the weight
of the driver will act to hold the shares out of contact with the ground．When no downward pressure is ex erted upon the handles of tbe beams，the weight of the driver in the saddle will be sufficient to raise the plow－
beams so that the shares will be removed fro：n the ；round．By pressing down upon the handles，the shares may be buried in the ground to a previously de termined extent．

## Electrical Apparatus．

electric switch．－Max H．Caspabi，Manhat tan，New York city．The switch consiets essentially of the two poles or binding posts for the circuit－wires．The binding－posts are ingulated from each other and are
placed at different elevations．The mercurs－chamber placed at different elevations．The mercurs－chamber may be raised or lowered so as to cause the mercury to tact．By means of this device a clean contact－surface between the two parta of tbe switch is maintained．

## Bicycle－Appliances．

BiCYCLE－FRaME－Jeremiah C．Parrer，Red Bank，N．J．Tbis bicycle－frame belongs to that class in
which the frame is so constructed that it may be adjusted which the frame is so constructed that it may be adjusted
for regulating the tension of the driving－chain．A split for regulating the tension of the driving－chain．A split
encket tube is carried rigidy at the lower end of the cen－ encket tabe is carried rigidly at the lower end of the cen－
tral brace，and receives the stem of the lower braces．By be，the rear upper braces and the rear wheel will be mocel in a：justed position by means of a clamp．
bicycle－gear．－Cephas Whitney and Alpred
C．Lazarus，Kingeton，Jamaica．The crank－shaft in C．LAZABEUS，Kingston，Jamaica．Th：crank－shaft in
this bicycle－gear is provided with the usual cranke，in this bicycle－gear is provided with the usual cranks，in
the free end of each crank a shaft being journaled．On the free end of each crank a shaft being journaled．
the outer end of the shaftarms are carried provided with pedals．An armextends from the shaft at right anglee
thereto．An eccentric has its disk fixed to the bicycle frame and ite eccentric－rod pivotally connected with the arm extending at right angles to the shaft．By this ar rangement extended crank－arms are produced in which the extension is always at right angles to a line draw through the center of theeccentric－disk and the center of the crank－shaft．Great leverage is hence obtained with
out causing the foot to move through a large circle．

## Mechanical Devices．

FRICTION DRIVING DEVICE FOK SHAPING－ machines．－Wendell $P$ ．Norton，Torrington， Conn．The friction driving device patented by this in－
ventor comprises two driving－pullegs loosely mounted to rotate in opposite directions．Between the driving pulleys a friction pulley is arranged to he moved into
frictional contact with the inner surfaces of the pulleg frictional contact with the inner surfaces of the pulley－
rims．Spring－arms connect the rim of the friction－pulley with the hub and are adapted to yield laterally and longi tudiually．Thus there is obtained a uniform contact of the peripheral surface of the rim with the inner sur－
faces of the pulleys ；and shock and jar are prevented． FIRE－ESCAPE．－James
Western Australia．In the fire－escape provided by the present invention there is mounted within a casing
cord－carrying drum having toothed wheels connected therewith．Reciprocating bars have projecting pointe engaging the teeth of the wheels，thus providing an es drum＇s rotation under the weight of the user．The de vice may be used for deacending from any height，and may be advantageously employed in mines and wells PAPER－CUTTING ATTACHMENT FOR BOX
COVERING MACHINES．－I Iidor Dreypubs，Man Covering machines．－Iridor Dreypuss，Man hattan，New York city．The invention provides im
provemente in machines for sutomatically cutting of strips of paper or like material，which are being glued on pasteboard or other boxes．The machine is so
constructed that the cutters can be adjuated higher o lower and forward or back without requinng any regu vice can be operated by band at any time to cut out defective piece of paper without in any way interfering with the automatic operation of the device．
INTEREST－INDICATOR．－Cbarles C．ADAMs，
Charlotte，N．C．The interest－indicator is so constructed Charlotte，N．C．The interest－iudicator is so constructed toat by depressing a key corresponding with the princi－
pal，mechaniem wiil be operated to bring into proper pal，mechanism wiil be operated to bring into prope
adjustment tigures representing the interest upon that principal for a series of periods，so that the operator can readily determine at a glance the amount of the intere for the desired period．The means whereby the desired results are obtained consist primarily of rollers carryit interest lists adapted to register with period liste．

## Miscellaneous Inventions．

knockdown barrel．－Phills Mayotre，Es canaba，Mich．In certain industries，especially in tha to return the empty kege－an expense which might greatly reduced by employing collapsible barrels．It is the purpose of the present invention to provide such barrel，not with the ordinary strap toope，but with stont chains，the ende of which are bolted together．By re moving the chains the barrel falls apart．
LiNE－GUARD FOR VEHICLE－POLES．－Fletcher vention is to provide a line or rein－guard tor the tongue or pole of a vehicle，which will effectually
preveut the inside check－lines of a double barness rom becoming entangled with or lodging upon the end of the pole or tongue of the vehicle in front
of the neck－yoke ring．The guard is so constructed that it may be permanently secured to the pole or ongue in such a manner that it will not interfers with the bitching or unhitching of the neck－yoke，it being possible readily to slip the neck－yoke ring on off the tongue or pole a t pleasure．

PHOTOGRAPHIC DEVELOPING APPARATUS． Albert Gooder，Brookville，Pa．This，Alm－developing
device coniista essentially of a tray containing the de veloper，in which tray，frames are mounted adjustabis relative to each other and relative to the tray．Roller are located withn the tray and upon the frame，and justed to supporte for the film．The device may be ad signed to prevent scratching of the bromid emulsion． PIANO－HAMMER．－John Oster，Jr．，Newport disk clam piano－hammer comprises a rotatable elastic disk clamped peripherally by spring clamping－jaws re
ceived and embraced by a socket－holder．The jaws are held and locked down in the socket to grip the disk Should any portion of the felt or other elastic materia become hard from frequent impact，the diek may b
readily loosened and turned．There are，moreover，no projecting parts on the side of the diek to cause inter ference
playing．
hack－Clamp．－James G．b．Rouse，Way Crobe， a．The invention is in the nature of an improved clamp for holding turpentine producmg and gathering sird to cut out the tool．The clamp comprises a bod having a flat bearing edge provided with meaus for se curing the booly to a tree or post．The front edge has a seat portion and a clamping slot and screw．When the
clamp is in position，a reamer may be applied to the seat clamp is in position，a reamer may be ap
tbe clamp in order to cut out the tool
MONEY－ORDER－BLANK PROTECTOR，CUTTER and hand－Restr．－Grorge Johnson，Jersey City， N．J．By providing a device comprising a base，sup
porting－posta carried on the base，and a hand－rest having ransverse arme for extending over the face of a block of money－order－blanke and engaging the poste，this in ventor enables a postmaster conveniently to fill out money－order－blank and to separate the several parte
from one another and the filled caupon from the block． lantern－holder．－George a．Cornish，Gillette， ．J．This invention is a device for holding lanterns 8 hat the rays of light wiil be effectively shed therefrom． rily of a wire atructure forming arms consist prima－ which the lantern is held in place．
tilting－Chair．－alpred E．Quinlan，Sheboy which a oounted to turn．The bearing 18 formed with long tudinal flanges terminating in lateral arms arranyed to support the pivot for the yoke at one side of the bearing
and below the upper end thereof．The entire device can and below the upper end thereof．The entire device can
be readily applied to a chair－seat． be readily applied to a chair－seat．By the arrangemen
descrihed，the bearing is well above the pivot，on which the rocking takes place，thus reducing friction on the
bearing surface
CHART FOR DRAFTING GARMENT－PAT terns．－Marie Tucee，Manhattan，New York city prpose of this invention is to provide a garmen drafting pattern designed accurately to draft the out it an easy and waiste and skirts and arranged to per－ parts．The device consista of pivotally－connected sec tions slidably or otherwise adjustable to one another，the
neceesary graduations being marked on the sections．

## Designs．

miners＇candlestick．－William h．Pleas NTs，Victor，Col．The essentialfeatures of this desig volutions at one side of the shank，which embrace th candle．At the other side a hook risesvertically． ransverse member emanates from the convolutions and displa y－box．－MAX W．Becton．Manhattan，Ne York city．The box is designed to display fountain ens or eimilar articles，and is，therefore，longitudinal cles to be digplayed
LOCE－BAR FOR COVERS．－HERMAN KABN，Troy body，having at ite ends lips decreasing in thicknees in opposite directions，and projections rising from the upper face of the body．The device is especially ser viceable in locking the covers of jars，which operatio he previonsly－mentioned projections facilitat
boX．－Richard M．Colgate，Weat Orange．N．J． The box is rectangular in shape and is ornamented by
decorative panels．At one surface circularintaglio fig res triangularly disposed are arranged．The box is de igned primarily to contain soap．
Erbatum．－In our ipgue of March 25，1899，we de scribed in these columns a new surgical splint invented
by Robert W．Barton，whose address was given a Marion，Kansas．The address should have read Marion，

Note．－Copies of any of these patents will be furn shed by Munn \＆Co．for ten centa each．Please se the name of the patentee，title of the invention，and date of this paper．

## NEW BOOKS，ETC

A Select Bibliography of Chemis TRY， $1492-1897$ ．By H．Carrington
Bolton．First Supplement．Wash ington：Smithsonian Institution
1899．8vc．Pp． 489 ．
A few years ago we received the frrst section of this work，and now we have a Supplement half as big as the
parent volume．At the time we noted the original wort we congratulated Prof．Bolton upon his wonderful achievement，and also complimented the Smithsonian nnstitution for the remarkable services which they bave done to scientiffc literature in publiehing such a notable volume，which could never be issued by any private pub－ lisher．In the preparation of the present Supplement Pror．Boran has ous parts of the world．They promptly responded，and have contributed more than 2,000 titles，iucluding 780 Russian， 20 Finnieh，and 13 Arabic．The same general method be used in the first volume has been adopte
The volume is a monument of American scholasship．

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H．W．Knight $\&$ Son，Seneca Falls，N．Y．Drawer 111 Patent for Sale．－Book－rest and ball and socket join Entirely new idea．）Geo．W．Morrison， 8014 Frankfor ve．，Pbila．
For Sale or on Rogalty－Patents Nos． 433,805 and 584
19－game apparatus．R．F．de Grain． 643 G St．，S．E， Washington，D．C．
The celebrated＂Hornsby－Akroyd＂Patent Safety 01
Engine is huilt by the De La Vergne Refrigerating Ma－ mine Company．Fort of East 13sth Street，New York． The hest hook for electricians and beginners in elec
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information and not for publication．
seferences to former articles or answers should



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Scenentific American Supplements referre
to may be had at the office．Prue 10 cente each．
Books referred to promptly supplied on receipt
Books referred to promptly supplied on receipt of
price．
verals sent for examination should be distinctly
marked or labeled．
（7638）A．L．N．asks：1．Should the condenser for an induction coil be in the primary or in
the secondary circuit ？If in the primary，should the the coil and carbon of the battery ：A．The condense of an induction coil is not to be put in either the primary orthe secondary circait．The coudenser is connected
acroses the primary clranit．Attach one side of the con－ denser to the sarye place as the wire from the zinc of the attery and the other side to the same place as the wir rom the carbon side of the battery．It thas receives the primary circuit．2．In a nagnet made of tubes，and every tube inside the larg－ est one wound with a layer of wire，is many times stronger tban one made out of a solid piece；hence，would t be a good idea to put some of the iron wires in the core a coil between each layer of the primary circuit？A．No would be a very bad idea to build the primary of an in ou published any article about making liquid air？it o，in which Supplement \＆A．There are twenty arti cles on liquid air in as many Supplements．We can send them to you at 10 cents each．4．What substance would he best to mix in lard to get a good corn cure？
Purchase corn cures ready preparedof your druggist． Purchase corn cures ready preparedof your d
have no formula for a corn cure，using lard．
（7639）E．J．W．asks ：1．What is the componad that is used in dry batteries \＆A．There are
many formula for the paste used in dry cells．The sctive material is usually ammonic chloride dissolved place between the zinc and carbon plates， 2 Can a $4 \times 5$ photograpbic lens（single or double view）be used for magic lanteru 9 A．Yes；any lens cau be used to project of the slide．3．How do you find the distance that the lens sbould be from the plano－convex condensin lenses $\rho$ A．The distance is upually found by esperi－ the screen．It may be found from the formula
$\underset{\sim}{\boldsymbol{D}} \underset{\text { which }}{\boldsymbol{D}} \mathrm{D}$ is distance of lens from screen， $\boldsymbol{d}$ is distance in which $D$ is distance of lens from screen，$d$ is distance
of lens from slide，and $F$ the focal length of the lens． of lens rom slide，and $F$ the focal length of the lens．
4．Can one large magoifying glase lens be ueed in place of a pair of plano－convex lenses for a lantern 9 A．A magnifying glass can be used as a condenser for a lan－
tern，if nothing better can be had．It answers well with suulight，but is not powerful enough to bend in the （7640）Reader fom a lamp．
（7640）Reader asks：Is the line current， e．，the carrent induced in tbe secondary of the in－ action coil，in a telephone circuit an alternatiug current （7641）G．W．D．writes： 1 am desirous of monring the best formula for making or casting phono－ graph cylindera for making records．Also instructions sary for their uuccessful manufacture and manipula tion for my own personal use．Plesse inform me how such information can be got．A．The composition of the phonograph cylinder is a carefully guarded trade
secret．

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all foreign countries may be bad on application，and per－ sons contemplating the securing of patents，either a home or abroad，are invited to write to this office for our extensive facilities for conducting the business， A61 Broadwav，New York．

## INDEX OF INVENTIONS

## For which Letters Patent of the

 United States were Issued for the Week Ending APRIL 4，1899，AND EACH BEARINGTHAT DATE． （See note at end of list about copies of these patents．）






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 Damping envelops．etc．apparatus for． D．Ka



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