INVENTION

Rifle Bullets That Flash Help Marksman Correct Aim

Patent Enables Riflemen or Machine-Gunners to Have Advantage Now Exclusive with the Artillerymen

RIFLEMEN or machine-gunners in future will have an advantage now possessed only by artillerymen, who can tell where their shells fall by watching the flash or smoke of the explosion, and thus correct their aim. This improvement in small-arms fire control is expected to result from a new-type bullet on which U. S. patent 2,288,627 has just been issued to Frank Kowalski, Jr., now on service in the Army.

Small-arms bullets, the inventor points out, register their fall only when they drop on dusty ground or a relatively flat water surface. He undertakes to remedy the situation by providing hollow bullets, with metal very thin near the point, containing a smoke-making compound for daytime use, or an incendiary mixture that will make a flash at night. He states that in actual tests on the range these bullets have shown up well.

Rights in the patent are assigned to the government, without royalty payment to the inventor.

Science News Letter, July 18, 1942

"Squeeze-Down" Bullet

ANOTHER bullet is included among the week's crop of 742 patents. It is the invention of a German, Waldemar Born of Stuttgart, but application for the patent (No. 2,288,604) was made over a year ago, before this country became involved in the war. Herr Born's invention belongs to the class sometimes called "squeeze-down" bullets, which are intended for firing through rifle bores that diminish in caliber towards the muzzle, to secure greater powder pressure and hence higher velocity.

Around a rifle bullet of conventional type, having a little less than the caliber of the bore at the muzzle, there is a second envelope of metal, with one or more hollow bulges around its middle, of the caliber of the bore at the breech. This takes the rifling and spins the bullet, and at the same time is squeezed down to the muzzle caliber as it progresses through the bore.

Science News Letter, July 18, 1942

Better Gun-Casting Mold

ANOTHER invention of warlike purpose is offered by W. G. Donald of Philadelphia (also now in Army service) and J. L. Martin of Lowell, Mass., for government use without royalty. It is a mold for casting field guns, belonging to the category known as centrifugal casting molds. The mold, hung vertically, is spun rapidly after being filled with molten steel. This sets up a centrifugal force, which causes the densest and strongest part of the metal to form on the outside. The present invention improves this mold by making its suspending flanges just a trifle less than a tight fit in the suspending rotor, to allow for expansion when it is hot, and thereby to prevent the "freezing" of the mold in the rotor. The patent is No. 2,288,614.

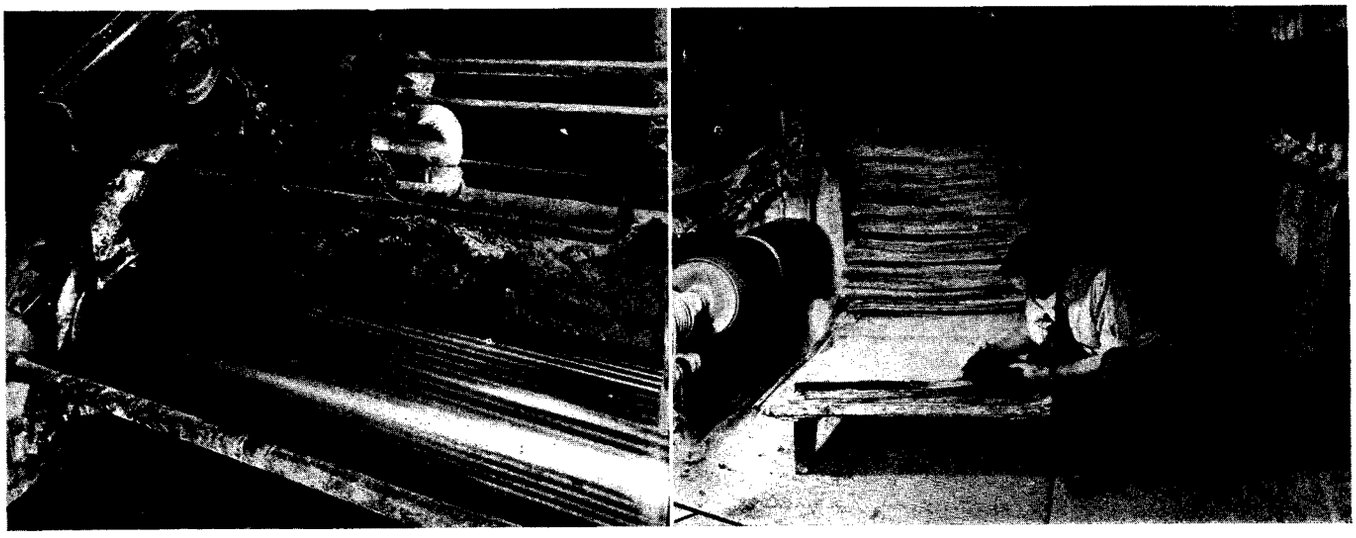
Science News Letter, July 18, 1942

Television for Pilots

TELEVISION comes to the aid of the airplane pilot who cannot see what is ahead of him or the ground because of obscuring fog or haze. Use is made of infra-red or long-wave light rays which, as is well known, will get through where ordinary light will not. This light is just as invisible to the human eye as ultraviolet or short-wave light. Photographs can be made by means of it; this is frequently done by reconnaisance planes. But the pilot lost in thick weather has no time to develop a picture. In the invention of Harold A. Adams of Bakersfield, Calif., the infra-red image is formed in a television transmitter and sent by wire, instead of through the air, to the receiver on the instrument board. Thus the invisible infra-red image is converted instantly into a visible image in which all movements can also be

RE-USE FOR WAR

Reclaimed rubber is thoroughly mixed or kneaded under pressure on steam-heated mill rolls (left). Final step is shown (right) in this view of a skid load of slabs of reclaim taken from the refiner. It is now ready to be made into articles of war.



seen. The camera may be located under the fuselage or in some other convenient place, with means to turn it in any direction in which the aviator may wish to "look." Mr. Adams' invention is covered by patent 2,288,871.

Science News Letter, July 18, 1942

Chemicals from Garbage

THE PRESENT national drive to get value out of all manner of scrap and waste materials might be aided by a garbage-reducing system on which patent 2,288,757 was issued to R. J. Thompson of Michigan City, Ind. In it the garbage is first ground fine, then digested by bacteria. The end-products of this fermentation, principally gaseous, are treated with sulfuric and nitric acids. Mr. Thompson states that his process recovers nitrates for explosives and fertilizers, also useful dyestuffs and other chemicals. He further claims that the apparatus is kept so completely gas-tight that the process is completely odorless.

Science News Letter, July 18, 1942

MILITARY SCIENCE

Wire-Dangling Rocket Not a New Weapon

BRITAIN'S newest anti-aircraft weapon, a rocket that trails long tentacles of entangling wires, is no new thing under the sun. Its essential idea was proposed during the first World War by Prof. R. W. Wood, noted Johns Hopkins University physicist, who was then overseas in war service. His idea was to have the wires spun out of an anti-aircraft shell. Ordnance men were interested in what they termed the "spaghetti shell," but the war ended before it could be developd to the field-test stage.

Since 1918 the general idea has persisted, and a number of inventors have had a go at it. Shells, rockets, balloons and airplanes have been among the means proposed for getting the menacing steel tentacles into the air. It has also been proposed to string small bombs at intervals on the wires, to act like miniature mines when the aircraft struck them or pulled them into contact by winding up the wire on its propeller.

A Swiss inventor, Erich Bickel of Baden, has been especially active in this field. He holds several U. S. patents, two of them issued in January and February of this year.

Science News Letter, July 18, 1942

INVENTION

Ideas From Talent Search Winners Given to Government

Ten Suggestions from Nine of the Forty Who Won Trips to Washington Forwarded to Inventors Council

IDEAS as to how science can help win the war received from boys and girls just graduated from high schools throughout the nation are being forwarded to the National Inventors Council by Science Service as a result of the first annual Science Talent Search conducted by Science Clubs of America.

Ten inventive suggestions are being sent to the government from nine among the 40 winners of the Science Talent Search.

All the suggestions deal with specific ways in which scientific methods and principles can aid the fighting forces of the United Nations.

An electronically controlled bomb sight is suggested by Paul Joseph Barthel, aged 18, from the Reitz Memorial High School, Evansville, Ind.

Buoys equipped with listening devices and radio apparatus would detect the sound of a submarine's engines and send out a warning, according to the plan of William Dorrance Worthington, 17, from Camden High School, Camden, N. Y.

Robert Edward Phillips, 18, of Herbert Hoover High School, Glendale, California, would use the sound of a boat's engines to explode mines, while his school-mate, William Denman Calhoun, aged 16, has detailed plans for a rocket bomb.

An incendiary bomb using the principle of the "oxygen lance" was designed by Wolf Karo, 18, from Utica Free Academy, Utica, N. Y. Homer Frederick Davis, 18, of the Frewsburg, N. Y. High School, has submitted the design of an internal combustion engine different from those in general use, and Robert Greiff, 16, of the Brooklyn, N. Y., Technical High School, plans to run machine shops by photo-electric cells.

Making alcohol from materials common in the United States is the ambition of Gilbert Dehnkamp, 16, of the Hinsdale, N. Y., Central High School, who submits a detailed scheme of the chemical process he has chosen.

Hugo Korn, 16, from Tuley High School, Chicago, Ill., has two ideas, one for a detector to be used in airplanes to spot factories in enemy country by infrared radiation, the other for an aerial camera which would be used in bad weather conditions.

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PUBLIC HEALTH

Smallpox Now at Lowest Ebb; Danger Seen in War Shifts

AN ALL-TIME low record for smallpox in the United States was set in 1941, but health authorities of the Metropolitan Life Insurance Company warn against overconfidence about the smallpox situation.

An increase in smallpox cases can confidently be predicted, they point out, if people generally get the false notion that vaccination against smallpox can be dispensed with. In that case the growing number of unprotected persons will provide a new fertile field for a resurgence of the disease.

The shift, because of the war, of thousands of families of war workers from smallpox areas to cities previously free of smallpox may lead to outbreaks in these cities. The best protection against this danger is a widespread and vigorous campaign for vaccination, including revaccination of adults.

Only 1,432 cases of smallpox were recorded for the entire country for the year 1941. Chief center for smallpox in the United States in past years has been in the northwestern corner of the country. Montana, Washington, Idaho, and