

ENGINEERING INVENTIONS.

Mr. George Cooper, of Augusta, Ga., has invented an improvement in cotton and hay presses, which relates to the combination of an engine and valve reversing gear with the follower of a press and the mechanism for operating the follower; also, to the employment of an automatic stop motion in connection with the engine and follower.

Mr. Absalom W. Cain, of Harrisburg, Ill., has invented a novel and apparently effective car coupler, which will permit the uncoupling of the cars from their tops, so that all the risk to life and limb that is incident to the ordinary methods of coupling or uncoupling by going between the cars is obviated.

Messrs. T. R. Gibson and M. F. Seeley, of Fremont, Neb., have patented an apparatus to be applied directly to the car wheel for the purpose of starting the car. It consists of a lever having fixed at one end a hook, which serves as a fulcrum, and near the same end a long hook which is pivoted on the lever.

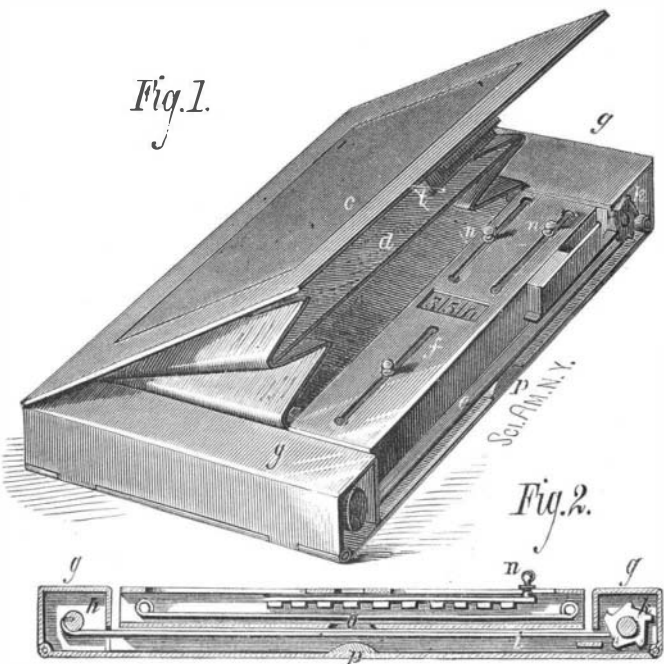
Mr. John C. Montgomery, of Palmetto, Tenn., has invented an improvement in water wheels and gates, which consists in a water wheel composed of a hub having a flat upper side, a convex lower side, a peripheral ring, made of greater depth than the hub and curving under it, so as to be of less diameter at the bottom than at the top, and a series of interposed curved buckets, which receive water at the top and discharge the same downwardly and inwardly to the center of the wheel.

NEW RECORDING POCKETBOOK.

The pocketbook shown in the accompanying engraving is the invention of Mr. Hugh C. Baker, of Hamilton, Ont., Canada. It is fitted with devices for registering or printing figures on a strip of paper by the act of closing the pocketbook, the object being to keep an accurate account of money taken from the pocketbook from time to time without using pen or pencil.

Fig. 1 is a perspective view representing the book open. Fig. 2 is a longitudinal section of the recording apparatus. The bottom, back, and hinged leaf or cover, *c*, are preferably made of thin sheet metal and covered and lined with leather or other material. At each end of the bottom plate there is a hinged box, *g*, each containing a roller for carrying a strip of paper two feet long that extends beneath the box, *f*. One roller is provided with a milled disk for convenience in turning it; the other has a ratchet wheel, *k*, that is engaged by a spring pawl whenever the book is closed, thus moving the paper strip so as to present a fresh surface to the type.

The pocketbook shown in the engraving has three lines of type, each containing the numbers from 0 to 9, so that any sum below 1,000 in dollars, or any sum below \$10 in cents, may be recorded. The types are carried by three flat strips



BAKER'S RECORDING POCKETBOOK.

that move under the top of the box, *f*, and each is provided with a stud, *n*, by which it is moved. In the underside of the box, *f*, there is a transverse slot, *o*, and immediately below this there is an elastic pad, *p*. The ink ribbon is carried by rollers at the ends of the box, *f*, and extends under the type and over the paper strip, and is moved by turning the small knobs seen projecting from the inner side of the box, *f*.

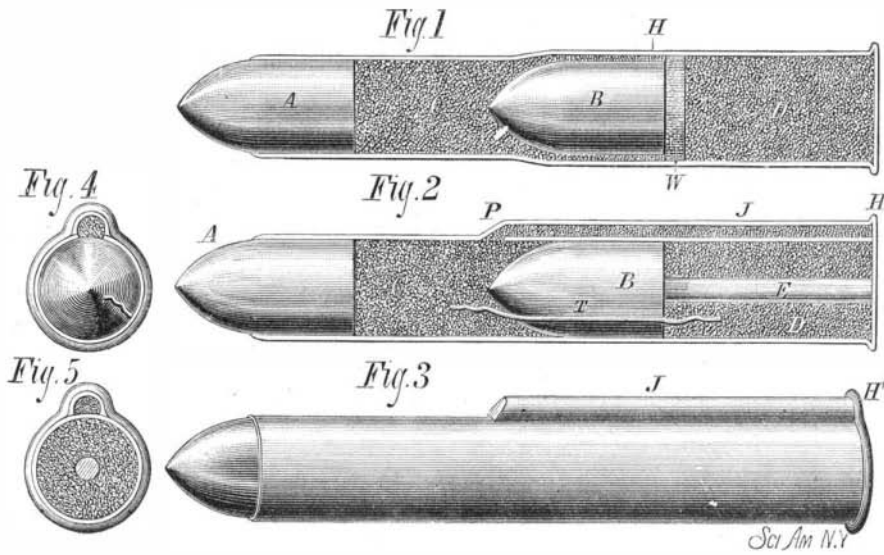
The cover, *c*, is provided with a projecting edge, *t*, that presses upon the upper side of the box, *f*, first moving it downward so as to cause the rotation of the ratchet wheel, then carrying it still further until the type, the ink ribbon, and the paper are brought to bear upon the pad, *p*, thus making an impression of the types upon the paper. The ordinary pressure used in closing the purse is sufficient to

make the impression. The backs of the strips carrying the types carry figures of the same value as the types underneath, so that the types may be readily adjusted.

The pocketbook is simple in its construction, and all of the parts are readily accessible for adjustment. The paper strip, in addition to the use already mentioned, may be used as a memorandum, as it extends across the book. If desired items may be jotted down opposite the figures.

THE TYLER CARTRIDGE.

We illustrate here with a new departure in cartridges, and one which the inventor claims will practically double the capacity of army rifles and revolvers. This invention consists in making the cartridge with a shell capable of taking in a num-



TYLER'S IMPROVED CARTRIDGE.

ber of balls, each ball supplied with a separate charge of powder, the charges of powder being separated from each other by means of easily combustible wads, the whole being arranged so that the charge of powder belonging to the foremost ball is always first exploded. This charge of powder, when fired, besides expelling the foremost ball from the barrel of the gun, ignites a combustible wad resting on the charge of powder belonging to the second ball. The wad, burning through, ignites the second charge of powder, which expels the second ball from the barrel, and ignites a combustible wad resting on the charge of powder belonging to the third ball, and so on for any number of balls, charges of powder, and combustible wads until the cartridge is emptied. In practice, however, the inventor thinks that a cartridge containing only two balls will be found the most effective, as it can be used more conveniently in a magazine rifle than a cartridge carrying a larger number. Fig. 1 shows a form of this cartridge, which was patented April 1, 1879. The internal diameter of the shell is slightly greater than the caliber

of the balls employed, except near its front end, where its diameter is reduced until it fits the balls; into this portion of the shell the front ball, *A*, is placed so that its point projects from the shell. The charge of powder, *C*, belonging to the ball, *A*, fills the space in the shell between this ball and the ball, *B*, and also between the ball, *B*, and the walls of the shell, thus resting on the combustible wad, *W*, as shown in the illustration. A ring of fulminating powder, *H*, is placed around the inside of the shell in contact with the charge of powder belonging to the ball, *A*. When this form of the cartridge is used, the hammer of the rifle will not strike against the base of the cartridge, but at a point on the side adjacent to the fulminate, *H*. The fulminate is placed in a ring around the inside of the shell, so that on whatever side of the shell the hammer strikes an explosion will follow. The charge of powder, *C*, expels the ball, *A*, from the gun, and at the same time ignites the combustible wad, *W*, resting on the charge of powder, *D*, belonging to the ball, *B*. This wad, burning through, ignites the charge, *D*, when the ball, *B*, is also expelled. The wads are used to separate the charges of powder, so that no more than one charge can be exploded in the same barrel at the same time. Of course the wads can be so made that any desired length of time

will intervene between the different explosions. Fig. 2 shows a form of this cartridge in which is used a reloading shell, and which is fired by the hammer striking from the rear. In this form of cartridge the hammer strikes against the fulminate, or a percussion cap, placed at *H*, and thus ignites the powder in the passage, *J*, which in turn ignites the charge, *C*, through the opening, *P*, in the shell. *E* is a rod of metal attached to the base of the shell to prevent the ball, *B*, from being forced out of position by the backward pressure of the charge, *C*, when exploded, and also to prevent any undue compression of the charge, *D*, from the same cause. In this form of the cartridge, the inventor proposes to employ a time fuse, *T*, passing through the ball, *B*, for the purpose of effecting communication between the two charges of powder, in place of the combustible wad shown

in Fig. 1. The small opening in the ball, *B*, through which the fuse, *T*, passes, is closed by the pressure of the charge, *D*, when exploded, by means of a simple device which will not add to the cost of the cartridge, and thus all escape of gas through this opening is avoided.

Fig. 3 is a perspective view of the cartridge shown in detail. Fig. 4 is a transverse section taken through the second ball of the cartridge, shown in Fig. 2. Fig. 5 is a transverse section of the same cartridge taken through the second charge of powder. Fig. 2 shows the exact size and shape of a cartridge containing two 0.45 caliber balls, regulation army weight, with a suitable charge of powder behind each ball.

Mr. Tyler proposes to adopt the well known Winchester army rifle to the form of cartridge shown in Fig. 2, furnishing a weapon carrying nine cartridges, each containing two balls, and these eighteen balls can all be discharged in about the same length of time required by the Winchester rifle to discharge nine of the ordinary cartridges. He expects to use the same form of cartridge in an army revolver, discharging twelve balls in the same time now required to discharge six. A very slight movement of the barrel, say one sixteenth of an inch, either to the right or to the left, between the different discharges from the same cartridge, will give sufficient divergence to the different balls, so that no two balls, after having traveled a comparatively short distance from the muzzle of the piece, can possibly strike the same individual.

It requires no argument to show the deadly nature of this invention upon the battle-field crowded with belligerents. A magazine rifle, using a cartridge carrying two balls, is equal to a rifle using a cartridge carrying only one ball under any possible conditions, while in the majority of cases the cartridge with two balls will practically double the capacity of the piece. The same may be said of an army revolver. Any rifle or revolver using the Tyler cartridge can also use a cartridge with one ball, thus rendering such rifles and revolvers suitable for sporting purposes, target practice, etc.

For further information address the inventor, Mr. John E. Tyler, Roxobel, Bertie county, N. C.

NEW BARBER'S CHAIR.

The accompanying engraving represents an improved barber's chair recently patented by Mr. Ludwig Marx, of West



MARX'S BARBER'S CHAIR.

Chester, Pa. It is very easily and quickly adjusted to suit the comfort of the occupant, and is simple and substantial. The seat is supported by a frame that rests upon rollers, and the back is hinged at its lower edge to the seat frame, and is provided with a slot for the rod, *A*, upon which the back both turns and slides as the seat is moved out or in.

A screw, *B*, journaled in the chair frame, engages a nut, *C*, attached to the bottom. By turning the screw shaft in one direction the seat is moved forward and the lower part of the back with it. The back turns on its pivot, and is thus inclined more or less as may be desired. By reversing the movement of the screw the seat is drawn back and the back is turned up more or less. In this way the chair can be adjusted in various positions, the movement being limited only by the length of the screw.

The American Arctic Expedition.

A dispatch to the Navy Department from Lieut. De Long, commanding the Arctic steamer Jeannette, states that the expedition arrived at St. Lawrence Bay, Siberia, August 25. All the party were well. The Jeannette was to leave for Cape Lodge Kamen, September 30, with the expectation of reaching Wrangal Land before the close of the season.