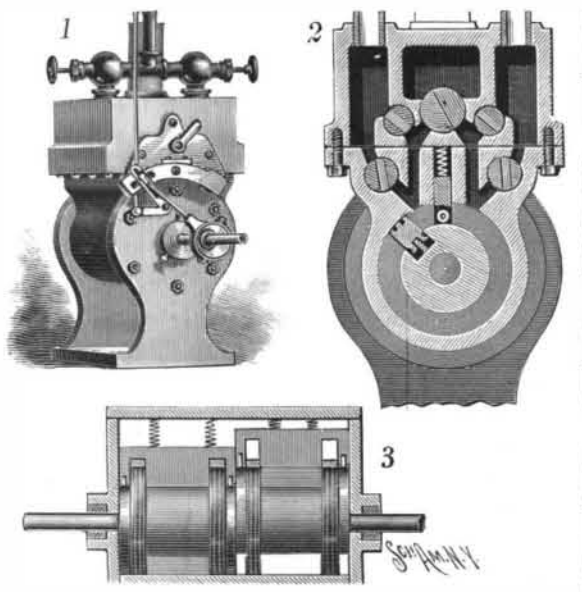
AN IMPROVEMENT IN ROTARY ENGINES.

The rotary engine illustrated herewith consists principally of a cylinder, in which a revolving piston is mounted; a spring-pressed abutment fitted to slide in the cylinder; cams which move the abutment outwardly against the tension of the springs; and valves which control the inlet and exhaust ports.

Of the accompanying illustrations, Fig. 1 is a perspective view of the engine; Fig. 2 a cross section; and Fig. 3 a side elevation of the piston.



AN IMPROVED ROTARY ENGINE.

The piston is duplex in form and turns concentrically with the cylinder. The two piston-heads are arranged diametrically opposite each other, and are pressed outwardly into the working chamber by means of springs, as shown in Fig. 2. Abutments placed at the top of the cylinder and provided with friction-rollers at their inner ends slide in a radially disposed guideway. As indicated in Fig. 3, one abutment operates in conjunction with one piston and its head, while the other abutment coacts with the other piston and its head. The abutment-rollers are pressed firmly into engagement with their respective pistons by means of springs (Figs. 2 and 3). Each abutment, as its corresponding piston-head approaches, will be moved outwardly against the tension of its spring by a cam formed on the piston, and will be returned to its normal position by the spring after the head has passed. Two chambers are, hence, always formed between the corresponding abutment and piston in each working chamber. As indicated in Fig. 2, two sets of ports and cut-off valves are provided, one for each working chamber.

In a lever connected with the valves, a slide-block is carried which is connected with an eccentric on the main shaft, and which is controlled by the governor-stem (Fig. 1). When the engine is in operation, the eccentric will rock the lever and the valves, in order to cut off or admit steam, the amount of cut-off depending upon the position of the slide-block controlled by the governor-stem and lever. In this manner the engine can be automatically caused to maintain a uniform speed.

The engine has been patented by its inventor, Charles G. Taylor, of Burlingame, Kans.

Acetylene for Street Lighting.

The city of Wabash, Ind., is soon to be lighted by an acetylene gas plant, now being installed by the Logansport and Wabash Valley Gas Company, otherwise known as the Deitrich Syndicate, says The Railway Review. The machinery and materials are now on the ground and the city authorities inform us that the street lights will probably be in operation shortly. The city has heretofore been lighted by artificial gas, in the usual way, and the substitution of acetylene for street lighting is an experiment which has been but little tried.

A NEW WAGON-JACK.

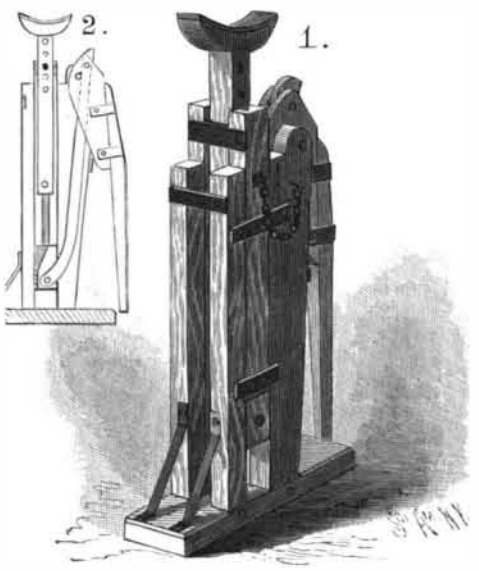
A wagon-jack has recently been patented by George W. Stoddard, of Billings, Mont., which is provided with means whereby the wheel-supporting standard can be adjusted in a lever-operated slide carried by the jack-body.

Fig. 1 of the annexed illustrations, is a perspective view of the jack, and Fig. 2 is a vertical section.

The jack-body is composed of connected side pieces, each made in two sections mounted on a base and spaced apart. One section of each side piece is provided with ears between which a lever is fulcrumed. Connected sliding bars are mounted between the sections of the side pieces. To the sliding bars a link is secured, as shown in Fig. 2, which link is so pivoted to the lever that it is virtually self-locking.

An apertured wheel-supporting standard carrying a supporting head for the wheel-hub has guided vertical movement in the space between the sliding bars and may be carried far beyond the upper ends of the sliding bars and held in adjusted position by passing a pin through a hole in the sliding bars and one of the apertures in the standard.

By moving the lever upwardly, the sliding bars are lowered. By carrying the lever downwardly, the sliding bars are raised and the wheel-supporting standard is forced up to elevate the wheel. When moved down, the lever prevents the standard from dropping or the sliding bars from moving down.



STODDARD'S WAGON-JACK.

SEVERE FIRE TEST OF THE MODERN "SKY-SCRAPER."

In the partial destruction by fire on the night of December 4 of the Home Life building, New York, the fire-resisting qualities of the tall skeleton building have been put to about as severe a test as could well be devised. Although this is by no means the first time that the skeleton-frame system of construction has been tested by fire, it is the first occasion on which a truly representative "sky-scraper" has been burnt out by a fierce fire, and the results of the trial are being noted carefully by all whose interests are in any way affected by this class of building.

By the courtesy of the New York Fire Department, we were given an early opportunity to visit the burned building, and, after a careful inspection of every floor from the eighth to the top, we must admit that it has fully demonstrated its fireproof qualities. Of course the term fireproof is an elastic one; but in this particular case the building has proved to possess all the fireproof qualities which the architects aimed to give it.

The building stands on Broadway, facing the City Hall Park. To the south of it on the same block is the Postal Telegraph building, a modern fireproof structure, while to the north of it, on the corner of the block, was a five-storied building occupied by Rogers, Peet & Company. The latter building was erected many years ago before the era of fireproof steel construction. It had the solid walls, wood floors, and cast iron columns common in earlier construction. The fire started in the basement of this building at 9:50 P. M., and spread with such rapidity that by 10:30 the roof had fallen in and the whole corner was one huge blazing furnace, the flames and heat from which were driven against the north wall of the sixteen-story Home Life building. The plan of the latter structure is in the form of the letter E, with the center of the letter removed. The open well or shaft thus formed was directly facing the fire, and up this shaft the flames of the adjacent burning building were drawn, setting fire to the woodwork of the windows, and starting fires on every floor from the eighth to the top. The heat of the fire was intensified by the fact that the heaviest gale of wind yet recorded in this vicinity was blowing from the northeast, the wind reaching a velocity of eighty miles an hour shortly before the fire started. Blowing from the northeast, the wind would come from the point of view at which our photograph was taken, and with this fact in mind the reader can understand to what a searching test the vast northern face of the Home Life building was subjected.

HOME LIFE BUILDING AFTER THE FIRE.

Not one of the windows on this side was protected by iron shutters, and the entrance of the fire through the windows on the several floors was only a question of time. The exposed upper portion of the building withstood the fire for about half an hour, but at 10:25 the flames ignited the woodwork of the windows, cracked the glass, and set fire to the office furniture. The firemen were able to do very little in the north and east of the building, the fierce gale driving the flames in upon them, and from the time the fire first gained a foothold until the combustible contents of the various floors had been burned out, the conflagration burnt with very little beyond the fireproof construction of the building to obstruct it.

The fireproofing was of the standard type and was fairly well representative of the best modern practice. The frame consisted of steel columns and girders incased in hollow, terra-cotta fireproofing, and the floors consisted of steel I-beams filled in with hollow, fireproof bricks, which overlapped and protected the bottom flanges of the I-beams. The sleepers upon which the wooden floor was laid were so placed that in case of a fire it would be impossible for any draughts of air to circulate