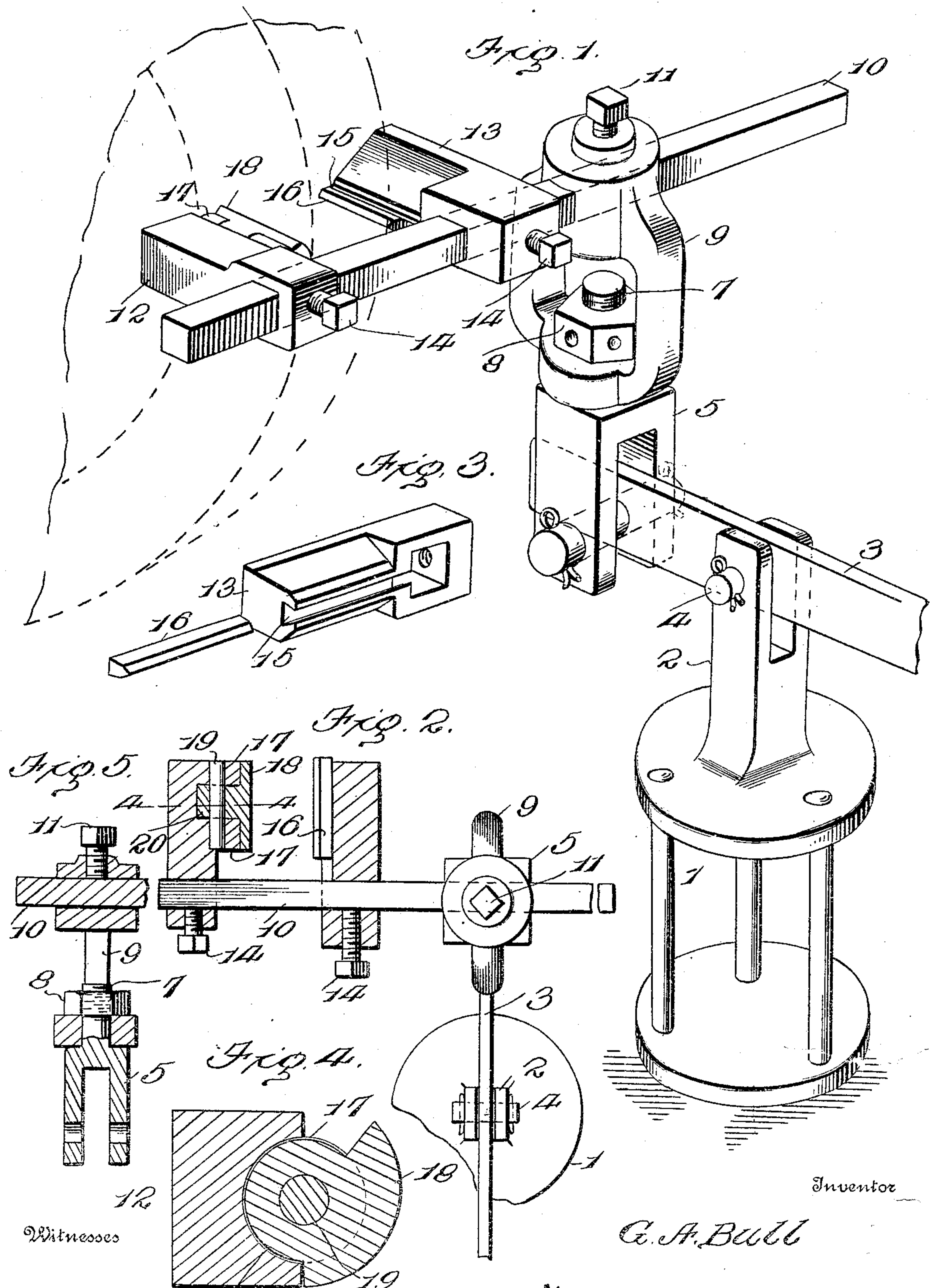


G. A. BULL.
ENGINE STARTING JACK.
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929,828.

Patented Aug. 3, 1909.



Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE A. BULL, OF BUCYRUS, OHIO.

ENGINE-STARTING JACK.

No. 929,828.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed June 22, 1908. Serial No. 439,880.

To all whom it may concern:

Be it known that I, GEORGE A. BULL, citizen of the United States, residing at Bucyrus, in the county of Crawford and State of Ohio, have invented certain new and useful Improvements in Engine-Starting Jacks, of which the following is a specification.

This invention is designed to provide effective, novel and easily manipulated means for moving the fly-wheel of explosive or internal combustion engines to a starting point, said means being of such formation as to admit of the appliance being conveniently and positively used in almost any conceivable position.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which:

Figure 1 is a perspective view of an engine starting jack embodying the invention. Fig. 2 is a top plan view, the jaws being in section. Fig. 3 is a detail perspective view of one of the jaws. Fig. 4 is a sectional view on the line 4—4 of Fig. 2, showing the parts on a larger scale. Fig. 5 is a sectional view of the stud and bar mounted therein.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The appliance comprises a stand 1 which may be of any construction, the same having a post 2 to which a lever 3 is pivoted at 4. A stud 5 is mounted upon one end of the lever 3, its lower end being forked to embrace said lever and pivoted thereto by means of a pin or like fastening 6. A stem 7 is provided at the upper end of the stud and is threaded to receive a nut 8, said stem passing loosely through the lower bar of a swivel frame 9 mounted upon the stud and adapted to turn to any relative angular position.

The swivel frame 9 has its lower bar widened and formed with an opening to receive the stem 7 and its upper bar both

widened and thickened and apertured to receive a bar 10. A set screw 11 is threaded into an opening formed in the upper bar of the frame 9 and secures the bar 10 in the required adjusted position. By having the frame 9 connected to the stud 5 by means of a swivel joint, the supporting bar 10 and lever 3 may be relatively adjusted to any angular position, thereby enabling the appliance to be located in the most advantageous and convenient position when fitting the same to the fly-wheel of an engine when it is required to move said fly-wheel to a starting position.

The bar 10 may be of any length and cross sectional area according to the special work for which the appliance is designed. By having the bar 10 adjustable in the frame 9, it may be moved to a position so as to attain the best results possible. Jaws 12 and 13 are mounted upon the bar 10 and are adjustable thereon to admit of the distance between them being varied to suit the width of the fly-wheel to be moved. The jaws 12 and 13 are of similar formation, each consisting of a block having an opening near one end to receive the bar 10 and provided with a set screw 14 for securing the jaw in the required position. An end portion of the jaw 13 is beveled from opposite sides and is formed with a dove-tail groove 15 in which a bit 16 of tempered tool steel is slipped. The jaw 12 is formed upon one side with knuckles 17 to which a cam 18 is pivoted by means of a pin 19, the latter passing through registering openings formed in the knuckles 17 and a knuckle 20 of the cam 18. The cam 18 is of tempered tool steel and serves to operate by a ratchet axis when the appliance is in use.

As indicated in Fig. 1, the jaws 12 and 13 are adjusted upon the supporting bar 10 so as to embrace opposite sides of the fly-wheel, the latter being indicated by dotted lines in said figure. The lever 3 may be located in the most convenient position according to the surroundings and conditions and upon lifting upon the outer end of the lever 3 the inner end of said lever with the gripping appliance is lowered, thereby permitting the jaws 12 and 13 to move downward upon the rim of the fly-wheel. When pressing downward upon the outer end of the lever 3, the inner end of said lever is elevated, carrying the gripping devices upward therewith and moving the fly-wheel

a corresponding distance. Upon oscillating the lever 3 the fly-wheel receives a step by step movement, as will be readily understood, and when the required position is reached, the engine is started and the jack laid aside for future use.

Having thus described the invention, what is claimed as new is:

1. In an engine starting jack, the combination of an operating lever, a stud mounted thereon and having a vertical stem, a horizontal pivot connecting the stud to the lever, a frame mounted upon the stem of said stud to turn freely thereon, means for securing the frame to said stem, and a supporting bar carried by said frame and provided with gripping jaws.

2. In an engine starting jack, the combination of an operating lever, a stud mounted thereon, a frame having swivel connection with said stud, and a supporting bar adjustably mounted upon said frame and provided with gripping jaws.

3. In an engine starting jack, the combination of an operating lever, a stud pivotally mounted upon said lever, a frame having swivel connection with said stud, a bar carried by said frame and adjustable longitudinally parallel with the axis of said stud, and gripping jaws mounted upon an end portion of the said bar.

4. In an engine starting jack, the combination of an operating lever, a stud com-

prising a forked portion embracing opposite sides of the lever and pivoted thereto, a threaded stem, a frame mounted upon said stem to turn thereon, a nut threaded upon said stem to secure the frame in the required position thereon, and a bar carried by said frame and provided with gripping means.

5. In an engine starting jack, the combination of an operating lever, a stud comprising a forked portion embracing opposite sides of the lever and pivoted thereto, a threaded stem, a frame mounted upon said stem to turn thereon, a nut threaded upon said stem to secure the frame in the required position thereon, a bar having adjustable connection with said frame, and gripping jaws adjustably mounted upon said bar.

6. In an engine starting jack, the combination of an operating lever, a supporting bar, connecting means between said supporting bar and lever, jaws adjustable upon the supporting bar, means for securing the jaws in an adjusted position, one of the jaws having a fixed bit, and a cam pivotally connected to the other jaw and adapted to ratchet in the operation of the appliance.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE A. BULL. [L. S.]

Witnesses:

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