No. 799,282. PATENTED SEPT. 12, 1905.

H. VIGNEAULT.

POWER HAMMER.

APPLICATION FILED JULY 31, 1903.

2 SHEETS—SHEET 1.

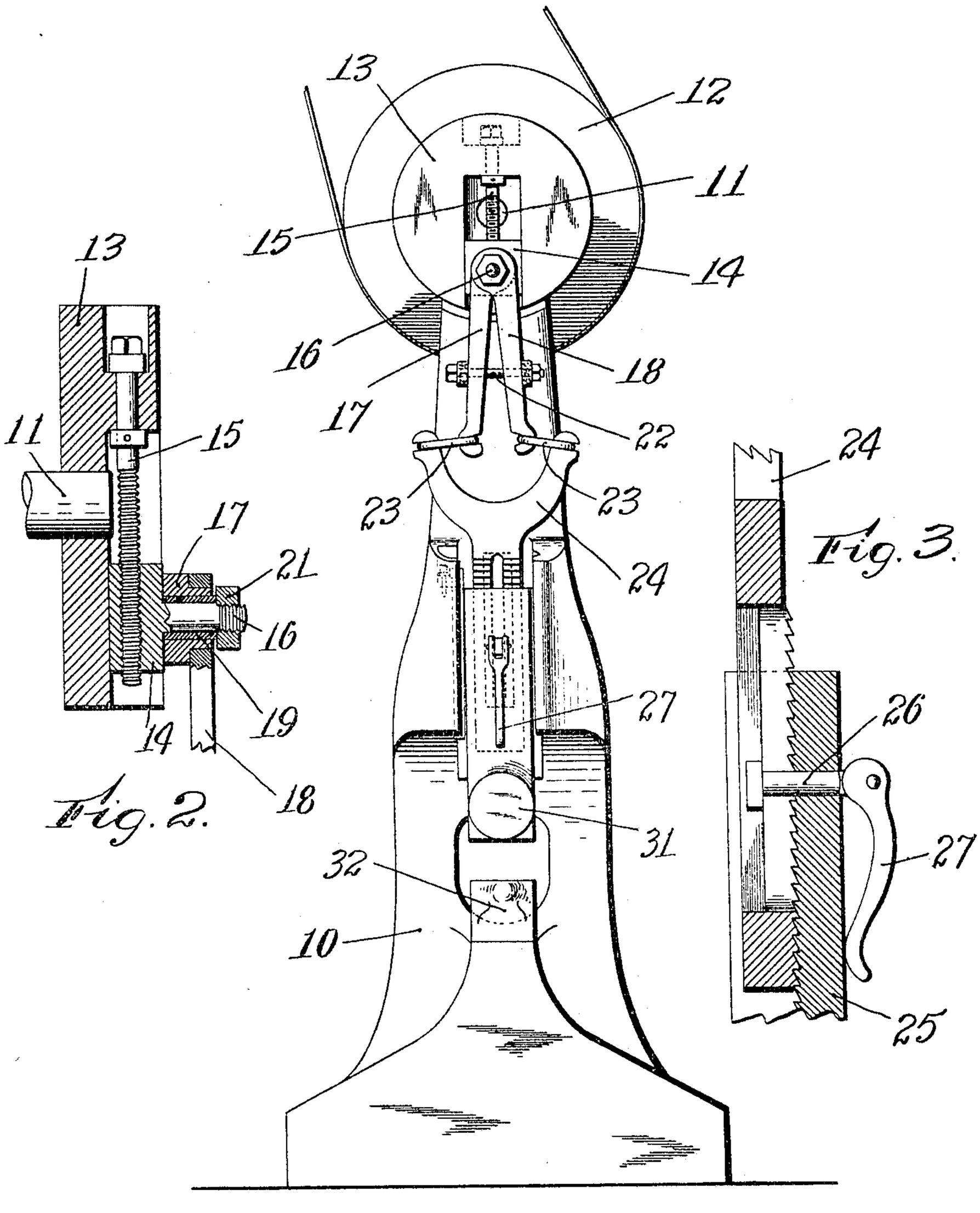

Fig. 2.

Fig. 3.

Fig. 1.

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G. M. Goddard.

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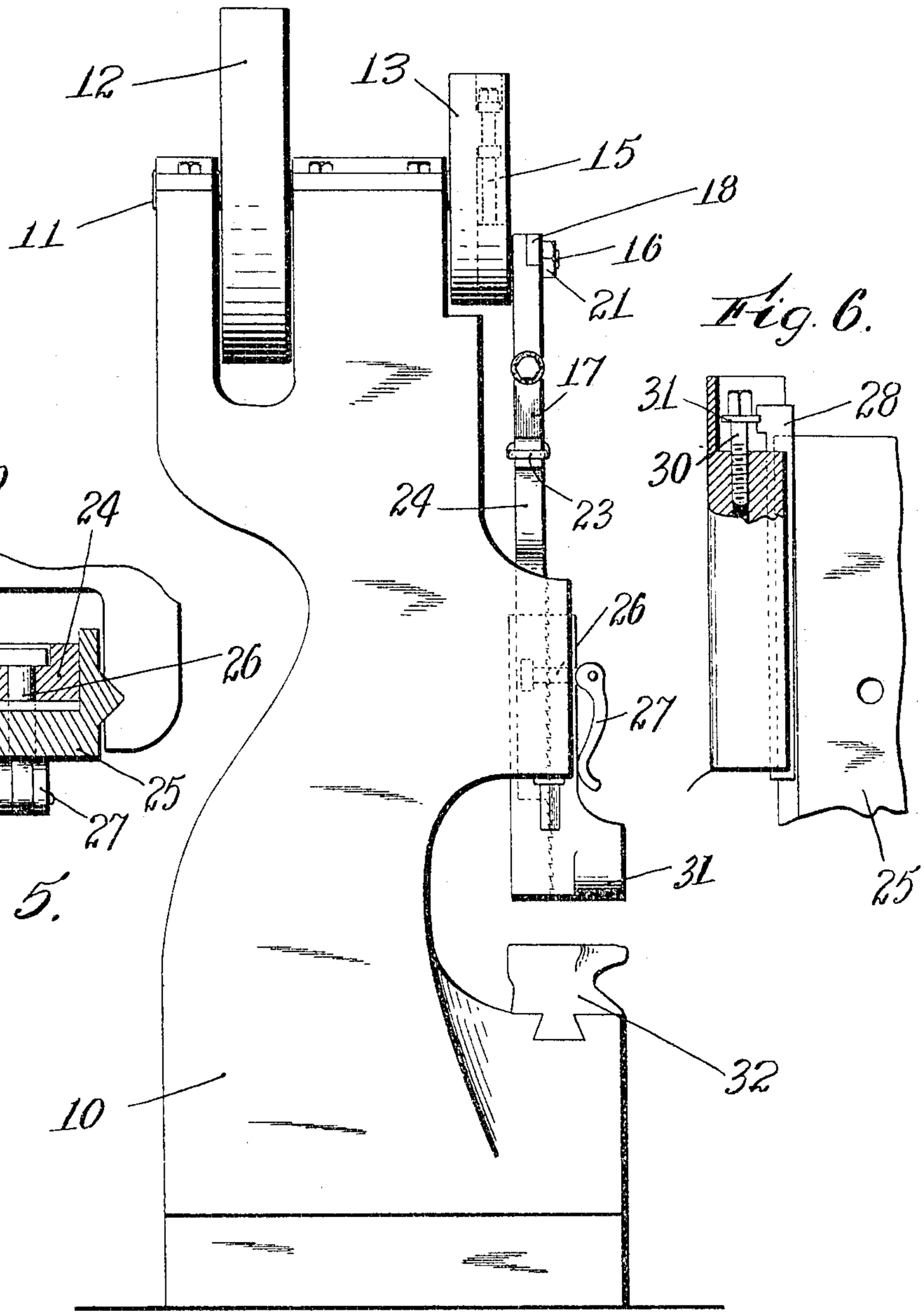

Fig. 4.

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

HERCULE VIGNEAULT, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CHRISTOPHER C. STONE, GEORGE C. STONE, WALTER A. STONE, AND GERDON A. BROWN, ALL OF CLINTON, MASSACHUSETTS.

POWER-HAMMER.

No. 799,282. Specification of Letters Patent. Patented Sept. 12, 1905.

Application filed July 31, 1903. Serial No. 167,693.

To all whom it may concern:

Be it known that I, HERCULE VIGNEAULT, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Power-Hammer, of which the following is a specification.

This invention relates to that class of power-hammers which are now extensively employed for hammering out or working larger forgings or pieces.

The especial object of this invention is to provide a strong, simple, inexpensive, and rigid form of power-hammer in which the parts are connected together so as to secure a large range of flexibility and in which a comparatively small number of nuts or other screw-threaded parts are employed which are liable to work loose.

To these ends this invention consists of the power-hammer and of the combinations of parts therein, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying two sheets of drawings, Figure 1 is a front view of a power-hammer constructed according to this invention. Fig. 2 is an enlarged sectional view of the stroke-adjusting connections. Fig. 3 is a detail view of the adjustable connection for the hammer-head. Fig. 4 is a side view of the machine. Fig. 5 is a transverse sectional view showing the manner in which the hammer-head is mounted in its ways; and Fig. 6 is a detail view, partly broken away, showing the means for taking up wear on the vertical ways of the machine.

In that class of power-hammers to which this invention relates a flexible or yielding connection is provided between the hammer-head and the crank-pin which actuates the same. In most constructions of this class flexibility at this point is usually provided by comparatively complicated arrangements of springs, and the parts of such mechanisms are usually held together by nuts or other threaded connections which are liable to be jarred loose.

One especial object of my present invention is to provide a flexible connection for a power-hammer in which the parts are detachably connected by solid links or metallic straps and in which the parts are so arranged that they will not work loose.

Further objects of my invention are to provide a simple form of knuckle-joint connection with the adjustable crank-pin of the machine, to provide a simple and readily-adjustable connection for regulating the height of the hammer-head, and to provide simple and efficient means for taking up wear on the ways of the machine.

Referring to the accompanying drawings for a detail description of a power-hammer constructed according to this invention, 10 designates the hammer-framework. Journaled in boxes at the upper end of the hammer-frame 10 is a driving-shaft 11, to which power may be applied through a belt-pulley 12. Fastened on the front end of the shaft 11 is a crank-disk 13, and dovetailed to the crank-disk 13 is an adjustable block 14, which may be moved from or toward the center of the crank-disk 13 by the adjusting-screw 15. The head of the adjusting-screw 15 is located in a recess or bored-out portion in the crank-disk 13, so that the head of the bolt will not project beyond the edge of the crank-disk. Extending from the adjustable block 14 and preferably formed integrally therewith is a crank-pin 16. The knuckle-joint by means of which the operative parts are mounted on the crank-pin 16 is most clearly illustrated in Fig. 2. As shown in this figure, the connections from the crank-pin 16 comprise a pair of swinging or coupler arms 17 and 18. A brass bushing or wearing-sleeve 19 is fitted onto the crank-pin 16, and the arm 17 is journaled on the bushing 19, while the outer arm 18 is journaled on a sleeve or hub formed integrally with the inner arm 17. The parts are held in place by the nut 21, which is clamped onto the end of the bushing 19. By means of this construction the bearing of the inner arm 17 will provide for the relative rotation of the crank-pin, while a separate bearing between the arms 17 and 18 will be provided for the slight oscillation or spreading of the arms 17 and 18 with respect to each other. I regard this as a desirable construction, because the joint between the arms will wear comparatively slowly, while the brass

bushing 19 may be replaced as frequently as required on account of wear due to the rotation.

At their lower ends the arms 17 and 18 are provided with inwardly-facing hooks which receive the links or metal loops 23, which are connected at their upper ends to outwardly-facing hooks extending up from the connecting-piece 24. At an intermediate point in the arms 17 and 18 I provide the cross bolt or pin 22, having springs at its ends normally tending to hold the arms 17 and 18 together, but permitting the same to open slightly, providing an easily-adjusted flexibility for permitting the hammer-head to descend different distances, according to the thickness of the stock being worked. The springs upon the cross pin or bolt 22 I have usually formed from blocks or bushings of rubber or similar compressible material, and these springs are shown in Figs. 1 and 4 of the drawings. Adjustably connected to the lower end of the piece 24 is a hammer-head 25. The adjustable connection between these parts is most clearly illustrated in Fig. 3. As shown in this figure, the connecting-piece 24 is provided with downwardly-facing ratchet-teeth, while the box-shaped hammer-head 25 is provided with coöperating upwardly-facing ratchet-teeth. These parts are clamped in their relatively adjustable positions by a clamping-bolt 26, having a head fitting into a way in the back side of the piece 24 and carrying a clamp-handle 27.

The means for taking up the wear upon the ways of the machine are most clearly shown in the second sheet of drawings. As shown in Fig. 5, the frame of the machine is provided with V-shaped ways for receiving ribs projecting from the hammer-head 25. The V-way at one side of the machine is planed or finished to a true vertical, while the V-way at the other side of the machine is planed at a slight inclination and receives the tapering gib or angle-iron 28. The tapering gib 28 is provided at its upper end with a notch which is engaged by the collar 31 on an adjusting-screw 30, which is threaded into the frame of the machine. As shown most clearly in Fig. 1, the adjusting-screw 30 is located in a cored-out portion or recess in the frame, so that its head does not project above the framework. The lower end of the hammer-head 25 is preferably provided with a rounding section or horn 31. The anvil or striking-block which coöperates with the hammer-head may be of an ordinary or preferred construction.

As herein illustrated, the anvil or striking-block 32 may be of substantially the form of an ordinary blacksmith's anvil and is detachably secured in the framework, so that it can be removed and strike-blocks of different shapes substituted therefor, if desired.

I am aware that numerous changes may be made in practicing my invention by those who are skilled in the art without departing from the scope thereof as expressed in the claims. I do not wish, therefore, to be limited to the construction I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a power-hammer, the combination of the crank-pin, the hammer-head, a flexible connection between the crank-pin and hammer-head, comprising a pair of swinging arms, the joint between the crank-pin and swinging arms being formed by a bushing on the crank-pin and a sleeve rigid with one of said arms and extending therefrom through the hub of the other arm.

2. In a power-hammer, the combination of a crank-pin, the hammer-head and a flexible connection between the hammer-head and crank-pin comprising a pair of swinging arms, the joint between the crank-pin and swinging arms being formed by bushings mounted on the crank-pin and by a sleeve rigid with one of the extending arms and extending therefrom through the hub of the other arm and a fastening-nut threaded onto the crank-pin and bearing on the end of the bushing to hold the parts in place.

3. In a power-hammer, the combination of a crank-pin, arms extending down therefrom, a hammer-head, arms extending up therefrom outside of the downwardly-extending arms, the downwardly-extending arms having inwardly-facing hooks at their lower ends and the upwardly-extending arms having outwardly-facing hooks, and links fitted into said hooks to form detachable connections with the hammer-head.

4. In a power-hammer, the combination of a box-shaped hammer-head having ratchet-teeth on its inner surface, a connecting-piece having coöperating ratchet-teeth, means for clamping the ratchet-teeth into engagement and means for operating the connecting-piece to raise and lower the hammer-head.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HERCULE VIGNEAULT.

Witnesses:
PHILIP W. SOUTHGATE,
JOHN F. CROWELL.