No. 673,631. Patented May 7, 1901.

J. H. ALLEN.

RIVETING MACHINE.

(Application filed Mar. 6, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

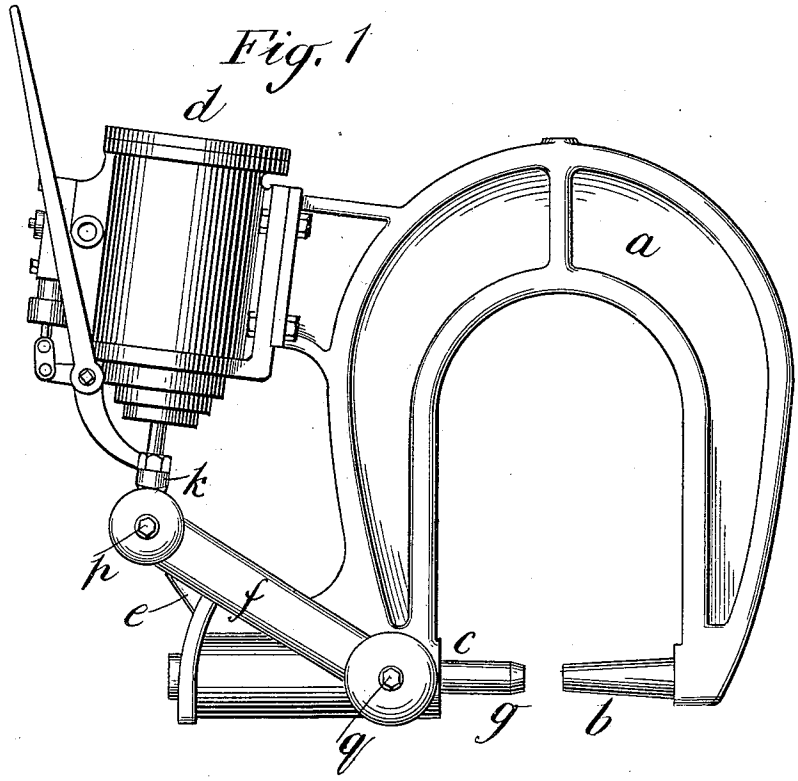

Fig. 4,

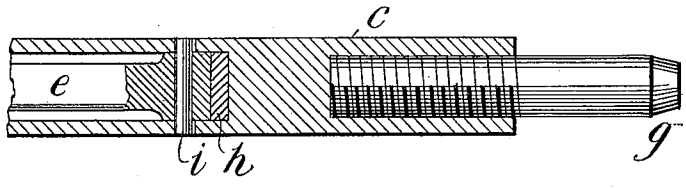

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Fig. 2,

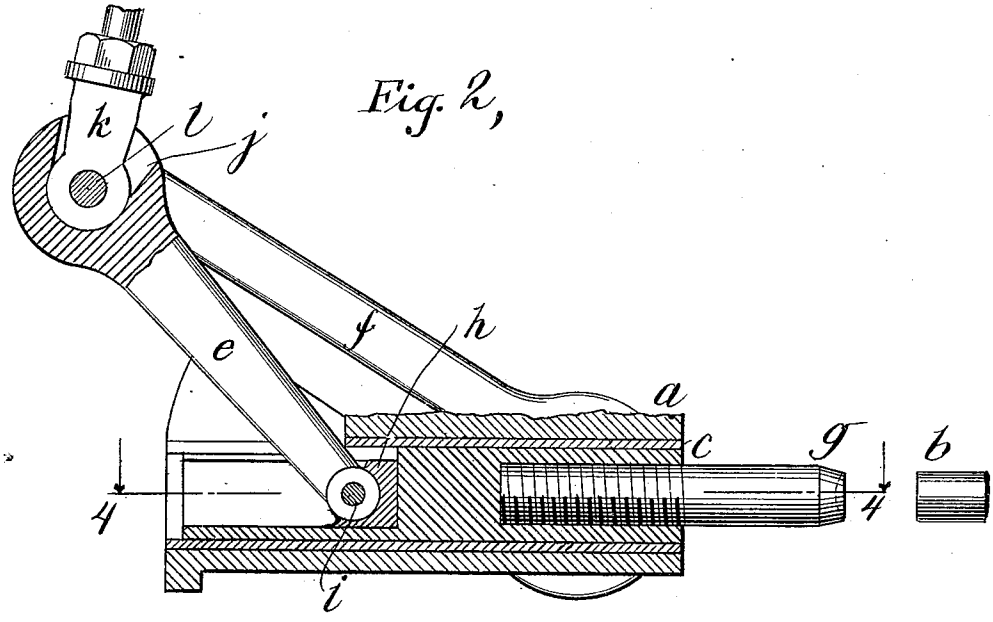
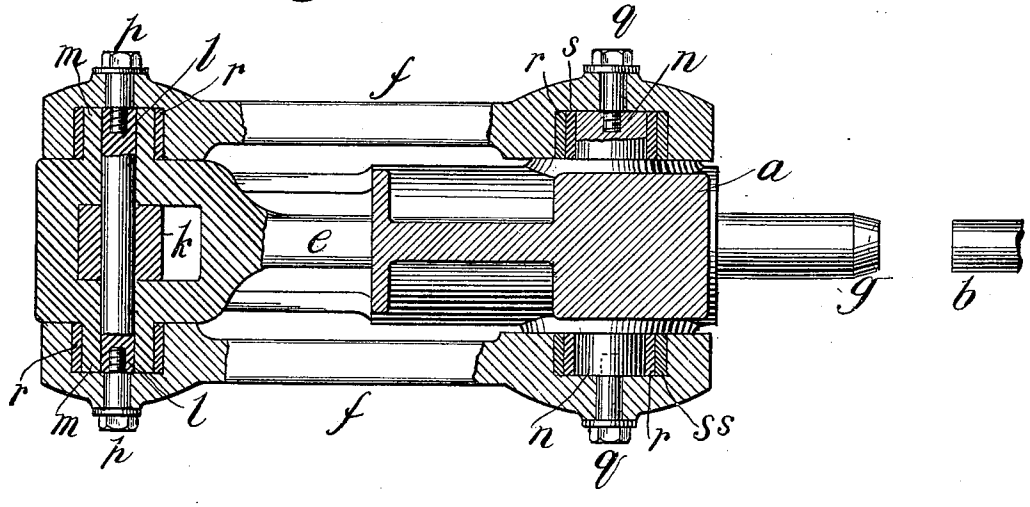


Fig. 3,



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UNITED STATES PATENT OFFICE.

JOHN H. ALLEN, OF NEW YORK, N. Y.

RIVETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 673,631, dated May 7, 1901.

Application filed March 6, 1901. Serial No. 50,097. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. ALLEN, a citizen of the United States, and a resident of the borough of Bronx, city of New York, State of New York, have invented new and useful Improvements in Riveting-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

My invention relates to riveting-machines, and particularly to improvements in that type of riveting-machines known in the trade as "Allen" riveters.

My invention consists in improvements in the link connections between the movable riveting-head and the power member of the operating-engine; and it consists particularly in providing the compression-link member with integral trunnions adapted to receive the ends of tension-link members employed, in providing a central pin through the compression member axially in a line with the trunnions, in providing a cross-head which is arranged in a cut-away portion of the compression-link member and pivotally mounting the same upon the central pin, and in certain details of construction and combination of parts, as hereinafter more fully set forth, and as illustrated in the drawings herewith.

The objects of my invention are to improve the construction and increase the efficiency of a riveting-machine of this type, to lessen the cost of manufacture while increasing the strength and durability thereof, and generally to improve the operation while lightening and simplifying the parts.

I will now proceed to describe a riveting-machine embodying my invention and will then point out the novel features in claims.

In the drawings which form a part of this specification, Figure 1 is a view in side elevation of a riveting-machine embodying my invention. Fig. 2 is a view in detail of certain link members employed and certain correlated parts, partially in side elevation and partly in central longitudinal section. Fig. 3 is a view of substantially the same parts, but taken from a point at right angles to the point of view of Fig. 2. Fig. 4 is a detail sectional view of certain parts, the section being taken upon the plane of the line 4 4 of Fig. 2.

The riveting-machine herein illustrated is of the Allen type, and comprises a yoke or frame *a*, having a stationary riveting-head *b* and a movable riveting-head *c*, an operating-engine *d*, and link connections between the movable riveting-head *c* and the operating-engine. The link connections comprise a compression-link member *e* and two tension-link members *f f*.

The movable riveting-head *c* has a plunger *g*, which is slidably mounted in a sleeve carried by or forming a part of the yoke or frame *a*. The plunger *g* is provided with a thrust-block *h*, and one end of the compression-link member *e* bears against this thrust-block and is pivotally connected to the plunger by a pin *i*. The pin *i* is preferably loosely fitted in an orifice in the link member *e*, so that when the link member is operating to force the plunger forwardly the link member may bear against and be wholly supported by the thrust-block *h*, while upon its return movement the link may withdraw the plunger by reason of the pivot-pin connection therewith. The opposite end of the compression-link member *e* has a cut-away portion *j*, which receives within it a cross-head *k*, with which the connecting-rod of the operating-engine is provided. A central pivot-pin *l* connects the cross-head and the compression-link member together, and the cross-head is provided with a thrust-bearing contiguous to the cut-away portion of the link member. The compression-link member *e* is provided on opposite sides thereof with integral trunnions *m*, which are concentric with the pivot-pin *l*. Trunnions *n* are provided upon the frame or yoke *a*, which project from the sides of the sleeve thereon, and the tension-link members *f f* are each pivotally supported at one end by and upon one of the frame-trunnions *n* and at the other end thereof by and upon one of the trunnions *m* of the compression-link member. It follows from this construction that when power is applied to straighten or aline the link members for the purpose of riveting the great strain between them is carried by the trunnion of the compression member and not by the pivot-

pin *l*. The pivot-pin *l* may therefore be of small diameter, for its only work will be to hold the parts together when not in operation and to assist in returning the parts to their normal positions.

The pivot-pin *l* will preferably be somewhat loosely fitted to the cross-head *k* in order that the cross-head may bear against the thrust-bearing provided in the compression-link member while operating to force the compression member forwardly. The great strain between the compression and tension links is not, however, borne by any part of this bearing, the strain here being only that of the pressure exerted by the engine.

Bolts *p p* and *q q* pass through the tension-link members and are tapped, the former into the ends of the pivot-pin *l* and the latter into the trunnions *n n* of the frame *a*. These bolts operate solely to keep the parts together, no lateral or transverse strain being carried thereby.

I provide suitable bushings, as of phosphor-bronze, between the link members and between the tension-link members and the frame-trunnions *n*. The link members are preferably all constructed of steel in order that they shall withstand the enormous strain put upon them, and the phosphor-bronze bushings provided between them form better wearing surfaces than if two parts of the same material were in movable contact with each other. I may in addition provide wrought-steel bushings *s*, as shown, around the trunnions *n*, as these trunnions, being cast in one piece with the yoke or frame *a*, will preferably be of cast-steel.

By constructing the compression-link in the manner described I am enabled to make the bearing-surface of the trunnions thereon of ample size to withstand the heavy strain they are subjected to, while at the same time I am enabled to keep the size of the cross-head relatively small. This is advantageous, for it is desirable to construct the cross-head and compression-link of different materials in order that they may work well together, and as the compression-link member should be of steel the cross-head may conveniently be of phosphor-bronze. Phosphor-bronze being a costly metal, the small size of the cross-head is a factor in lowering the cost of manufacture.

The compression-link member is strengthened materially by the web of metal which unites the otherwise bifurcated jaws and forms the thrust-bearings for the cross-head, and the entire construction and combination of parts is one which produces a light and inexpensive structure, coupled with great strength, rigidity, and durability in operation.

It is obvious that modifications may be made in the details of the construction above described within the spirit and scope of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. In a riveting-machine, the combination with a compression-link member one end of which is in connection with a movable riveting-head, and the other end pivotally connected to the power member of an operating-engine, said link member having trunnions on opposite sides thereof and formed integrally therewith, of two tension-link members, each pivotally supported at one end upon one of the trunnions of the compression-link member, and on the opposite end upon a stationary portion of the frame, substantially as set forth.

2. In a riveting-machine, the combination with a stationary yoke or frame, a stationary riveting-head thereon, a movable riveting-head carried thereby and an operating-engine, of a compression-link member having a cut-away portion near one end thereof and a thrust-bearing contiguous thereto, a cross-head mounted in the cut-away portion of the compression-link member and adapted to engage the thrust-bearing therein, a pivot-pin connecting the cross-head and the compression-link member together, said cross-head being also connected to the power-transmitting member of the operating-engine, and having trunnions on opposite sides thereof, and formed integrally therewith, and two tension-link members, each pivotally supported at one end upon one of the trunnions of the compression-link member, and at the opposite end upon a stationary portion of the frame, substantially as set forth.

3. A compression-link member for a riveting-machine having a cut-away portion near one end and a thrust-bearing contiguous thereto and formed in a web which connects the otherwise bifurcated portion of the link members together; and having trunnions formed integrally with the said link member and projecting on opposite sides thereof, said trunnions adapted to receive the ends of tension-link members, substantially as set forth.

Signed at New York, N. Y., this 4th day of March, in the year 1901.

JOHN H. ALLEN.

Witnesses:
HENRY D. WILLIAMS,
JOSEPH N. FOLWELL, Jr.