

No. 679,716.

Patented July 30, 1901.

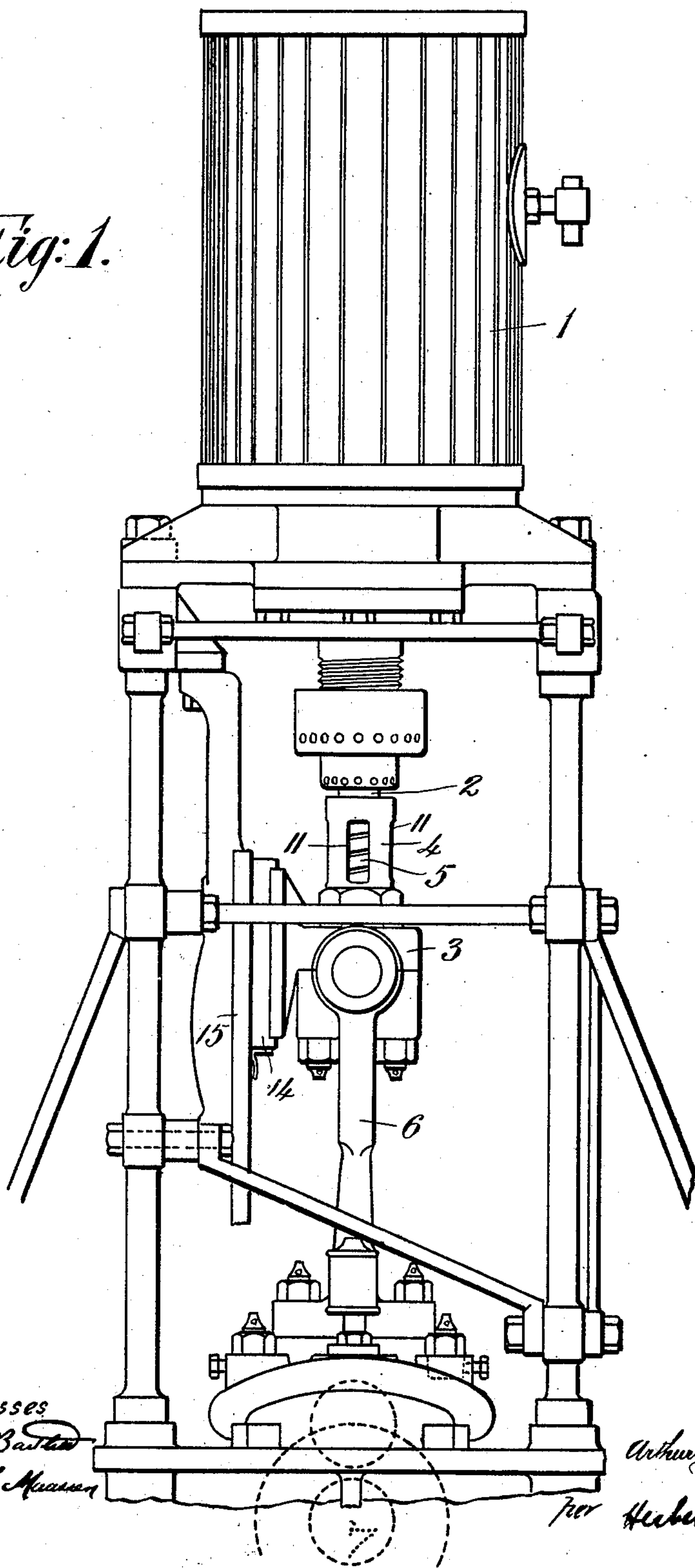
A. G. ENOCK.
COMPRESSOR AND PUMP.

(Application filed Jan. 18, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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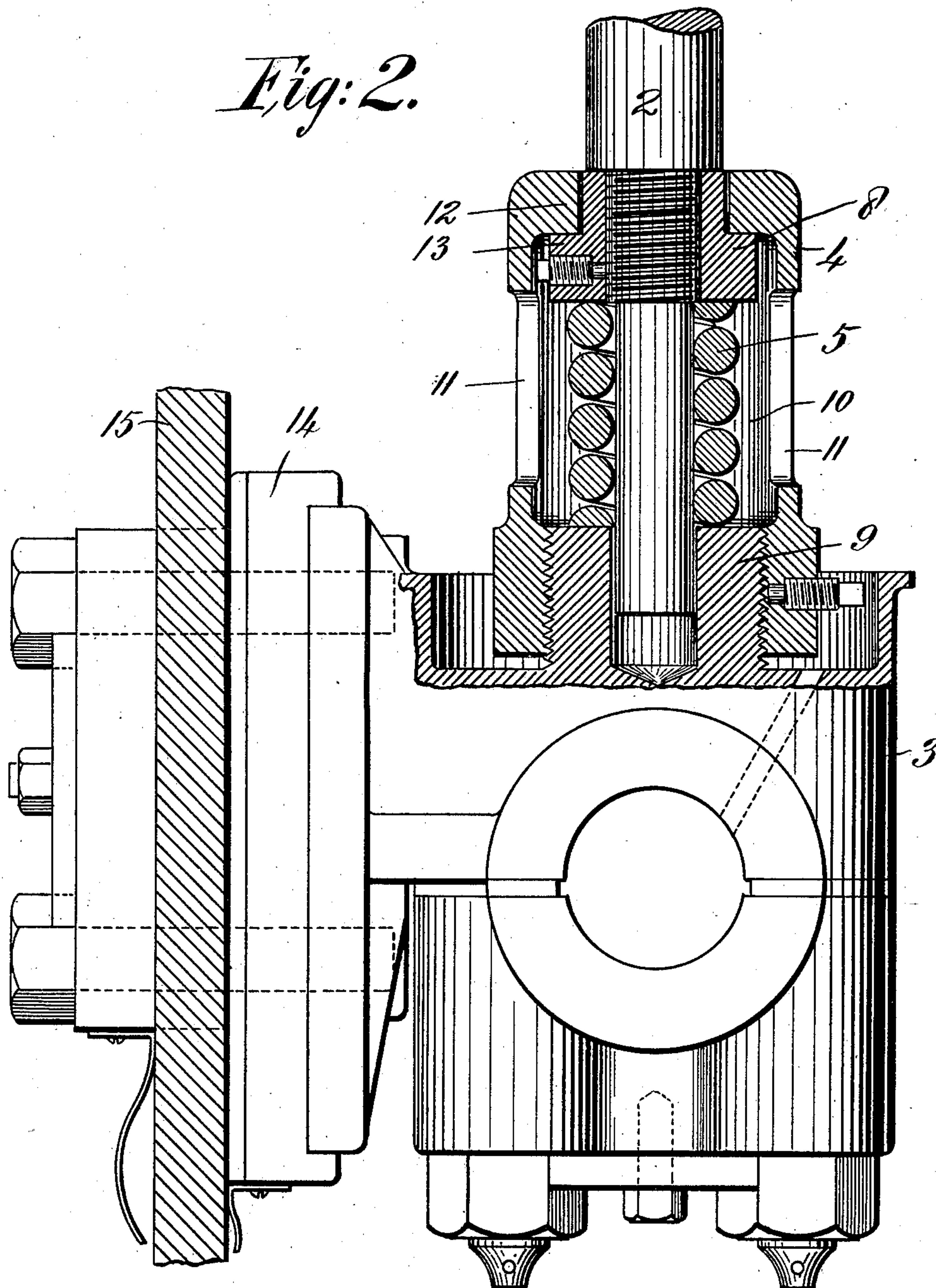
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(No Model.)

2 Sheets—Sheet 2.

Fig: 2.



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UNITED STATES PATENT OFFICE.

ARTHUR GUY ENOCK, OF WILLESDEN, ENGLAND.

COMPRESSOR AND PUMP.

SPECIFICATION forming part of Letters Patent No. 679,716, dated July 30, 1901.

Application filed January 18, 1901. Serial No. 43,806. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR GUY ENOCK, a subject of the Queen of Great Britain, residing at 20 Church road, Willesden, in the county of Middlesex, England, have invented a new and useful Improvement in Compressors and Pumps, of which the following is a specification.

This invention relates to machinery for compressing gases or pumping liquids, and has for its object the provision of means for reducing the clearance in the compressor or pump cylinder by the introduction of a spring in connection with the piston.

This invention relates particularly to compressors or pumps provided with pistons in which either the inlet or delivery valve is situated. Hitherto in order to enable the piston to make metallic contact with the cylinder-head to minimize the clearance springs have been introduced either in the cylinder-head or in the piston for taking up the thrust when the piston makes contact with the cylinder-head. In this construction, however, the spring is liable to rapid deterioration on account of its being subjected alternately to high and low temperatures. According to my invention I introduce a spring at some suitable place between the crank-pin and the piston in such a position that said spring is always subjected to the temperature of the room in which the compressor or pump is operating. By this construction the ready removal of the spring is also facilitated and the spring is always visible.

In the accompanying drawings, Figure 1 is a general view illustrating the main working parts of a compressor or pump constructed according to my invention. Fig. 2 is a view of the cross-head and one end of the piston-rod with a spring connection.

In Fig. 1, 1 is the lagging of the compressor-cylinder.

2 is the piston-rod, which is connected with the cross-head 3 through the cage 4, containing the buffer-spring 5. The cross-head 3 is provided with a shoe 14, guided by the slotted guide-plate 15 and is driven by the connecting-rod 6 from the crank-shaft 7. The lower end of the piston 2 is provided with a screwed collar 8, which serves as an abutment for the spring 5, which surrounds the

lowermost portion of the piston-rod. The other end of the spring abuts against the projection 9, which forms part of the cross-head and upon which is screwed the cage 10, containing the spring and serving to transmit the motion of the cross-head during the return stroke by the engagement of the flange 12 with the shoulder 13 of the collar 8.

The operation of the device (shown in Fig. 2) as is follows: While the compressor is making its forward or compression stroke the thrust of the connecting-rod is transmitted to the piston through the buffer-spring 5, so that when at the end of the stroke the piston makes contact with the rigid cylinder-head said spring is further compressed and takes up the lost motion and thrust which would otherwise cause breakage of any of the working parts of the compressor. Shortly after the commencement of the return stroke the shoulder 12 of the cage 10 abuts against the shoulder 13 of the collar 8 and transmits the motion of the cross-head to the piston. The cage 10 is provided with slots 11, one of which is shown in front elevation in Fig. 2, so that the spring is visible during the operation of the compressor and can easily be renewed or adjusted by unscrewing or adjusting the cage 10, which is screwed upon the projection 9 of the cross-head. In this construction the spring 5 and cage 10 may be considered as forming either part of the piston-rod or of the cross-head or as an intermediate compound tension and compression member connecting the two.

The construction may readily be applied to double-acting pumps.

What I claim is—

1. In pumps and compressors, the combination of a cross-head and piston-rod, a projection on the cross-head having a socket into which the end of the piston-rod fits, a collar mounted on the piston-rod, a spring embracing the piston-rod and confined between the collar and projection, a cage secured on the projection and surrounding the spring, and an inwardly-projecting flange on the cage adapted to engage the collar, substantially as described.

2. In a device of the character described, the combination of a cross-head and a piston-rod, a projection on the cross-head having a

socket into which the end of the piston-rod fits, a collar threaded on the piston-rod and provided with an annular shoulder, a spiral spring embracing the piston-rod and bearing 5 on the projection at one end and on the collar at the other end, a slotted cage threaded on the projection and surrounding the spring and collar, and an inwardly-projecting flange on the cage adapted to engage the shoulder 10 of the collar, substantially as described.

3. In refrigerating-compressors the combination of a cross-head 3, a cage 4 carried by said cross-head and provided with slots 11, a spring 5 contained in said cage and always 15 subjected to the normal temperature of the

engine-room, a collar 8 on the piston-rod adapted to bear against said spring and to receive the thrust of the cross-head during the working stroke and a flange 12 on the cage adapted to engage with the collar 8 during the return stroke, substantially as described. 20

In testimony whereof I sign my hand to this specification in the presence of two subscribing witnesses.

ARTHUR GUY ENOCK.

Witnesses:

CLEMENT LEAN,

HERBERT ARTHUR MARSHALL.