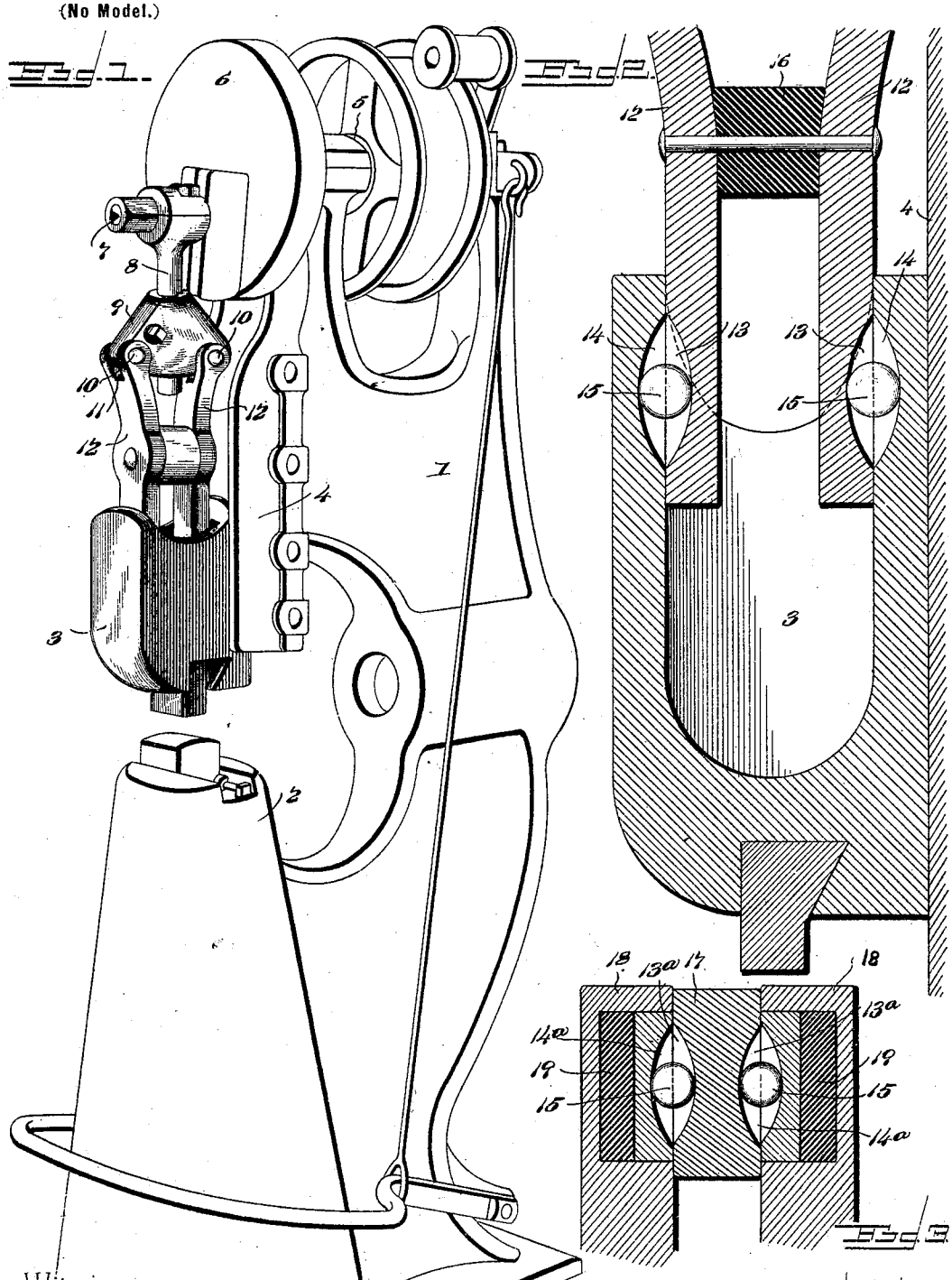
No. 619,048. Patented Feb. 7, 1899.

L. MAYER.

CUSHION COUPLING FOR TRIP HAMMERS.

(Application filed July 21, 1898.)

(No Model.)



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CUSHION-COUPLING FOR TRIP-HAMMERS.

SPECIFICATION forming part of Letters Patent No. 619,048, dated February 7, 1899.

Application filed July 21, 1898. Serial No. 686,500. (No model.)

To all whom it may concern:

Be it known that I, LOUIS MAYER, a citizen of the United States, residing at Mankato, in the county of Blue Earth and State of Minnesota, have invented a new and useful Cushion-Coupling for Trip-Hammers, of which the following is a specification.

This invention relates to cushion-couplings for trip-hammers; and it has for its object to provide a new and useful coupling of this character adapted to be applied for use with the operating connections for the reciprocating ram or hammer-head to provide a yielding coupling or connection which will overcome the inertia of the ram or hammer-head at the ends of the strokes, and thereby avoid severe strain and wear due to a positive coupling of the parts.

To this end the invention contemplates a yielding or "spring" coupling that can be utilized with the operating connections of a power trip-hammer of the rotating-crank type or of the rocking-beam type.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of a power trip-hammer of the rotating-crank type equipped with a coupling constructed in accordance with the present invention. Fig. 2 is an enlarged detail vertical sectional view showing the coupling connection between the coupling-arms and the reciprocating ram or hammer-head. Fig. 3 is a detail sectional view showing the application of the coupling at the center bearing of the beam of a power trip-hammer of the rocking-beam type.

Referring to the accompanying drawings, the numeral 1 designates the upright stand of an ordinary power trip-hammer having the usual anvil 2, above which is arranged to reciprocate the ram or hammer-head 3, working in the usual guides 4 at one side of the stand, and at the upper end of the stand is supported the drive-shaft 5, carrying at one end the crank-wheel 6, having the usual crank or wrist pin 7, to which crank or wrist pin is loosely connected one end of the short crank-pitman 8. The crank-pitman 8 has secured thereon a clamp-head or collar 9, to which is pivotally connected, as at 10, the upper bifurcated or forked ends 11 of a pair of coupling-arms 12. The coupling-arms 12 are preferably made of spring-steel, so as to be capable of springing in a direction toward and from each other, and are arranged in substantial parallelism, with their lower ends projecting within the interior cavity of the ram or hammer-head 3. The outer sides or faces of the coupling-arms 12, within the ram or hammer-head 3, have formed therein the vertically-disposed ball-sockets 13, which taper in depth toward each end and are deepest at their central portion, said vertically-disposed ball-sockets lying directly opposite correspondingly disposed and shaped sockets 14, formed in the adjacent inner faces of the ram or hammer-head, and the opposing sockets 13 and 14 form cups which completely house therein the coupling-balls 15, which provide a rolling interlocking connection between the arms 12 and the ram or hammer-head. To provide for exerting a normal outward pressure on the coupling-arms 12, so as to cause such arms to normally bind against the inner walls of the ram or hammer-head, a yielding buffer 16 is interposed and held between the arms, at a point intermediate the ends thereof, and said yielding buffer may be in the form of a rubber block, as illustrated in the drawings, or a spiral spring, which would be a mechanical equivalent thereof.

In the operation of the hammer by reason of the ball-coupling connection between the ram or hammer-head and the coupling-arms 12 the said ram or hammer-head will necessarily be permitted to have a greater throw than the throw of the crank or wrist pin and will therefore travel a greater distance in both of its strokes than the said arms 12, and this extra movement of the ram or hammer-head on account of the tapering shape of the sockets 13 and 14 will cause a compression of the arms 12 toward each other, such compression being gradually overcome by the yielding buffer 16, and in this way the inertia of the ram or hammer-head at the ends of its strokes is cushioned, so that the severe strain and wear due to a positive coupling of the parts are entirely overcome, while at the same

time the increased throw of the ram or hammer-head necessarily increases the force of the blow of the hammer.

In adapting the cushion-coupling to the rocking-beam type of power-hammer the coupling is preferably applied at the center bearing of the rocker-beam 17. (See Fig. 3.) This rocker-beam is operated and connected with the reciprocating ram or hammer-head in the usual way, so these connections are not shown; but in its movement to provide for operating the ram or hammer-head the said rocker-beam works between a pair of bearing-arms 18, which are provided in their inner faces with the vertically-disposed tapering ball-sockets 14^a, which are arranged directly opposite correspondingly disposed and shaped ball-sockets 13^a, formed in opposite faces of the rocker-beam 17, and within these sockets are housed the coupling-balls 15, such construction being in all respects similar to that previously described.

In the modification described to provide for adapting the coupling to a rocker-beam the cushion effect is secured, preferably, by arranging suitable cushion-buffers 19 in rear of the sockets 14^a in the bearing-arms 18, said cushion-buffers permitting the rocker-beam to carry the balls 14 up and down within the tapering sockets, thereby allowing for the gradual cushioning of the ram or hammer-head at the end of each stroke.

Other modifications of the invention will readily suggest themselves to those skilled in the art, and it will be understood that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a cushion-coupling for power-hammers, the combination with the reciprocating ram or hammer-head, of the operating connections therefor having separate relatively-yielding movable members provided in their adjacent faces with ball-sockets, and coupling-balls loosely housed within the registering sockets, substantially as set forth.

2. In a cushion-coupling for power-hammers, the combination with the reciprocating ram or hammer-head, of the operating connections therefor having separate relatively-yielding movable members provided in their adjacent faces with vertically-disposed sockets tapering in depth toward each end, and coupling-balls loosely housed within the registering sockets, substantially as set forth.

3. In a cushion-coupling for power-hammers, the combination of the reciprocating ram or hammer-head, the rotating crank carrying a head, a pair of coupling-arms pivotally connected at one end with the head carried by the crank, and having their other ends projecting within the ram or hammer-head, said coupling-arms and the ram or hammer-head being provided in their adjacent faces with vertically-disposed sockets tapering in depth toward each end, coupling-balls loosely arranged in said sockets, and a yielding cushion or buffer interposed and held between said coupling-arms, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

LOUIS MAYER.

Witnesses:
LORENZ L. MAYER,
Q. LEONARD.