

F. G. GASCHE.
STEAM HAMMER.

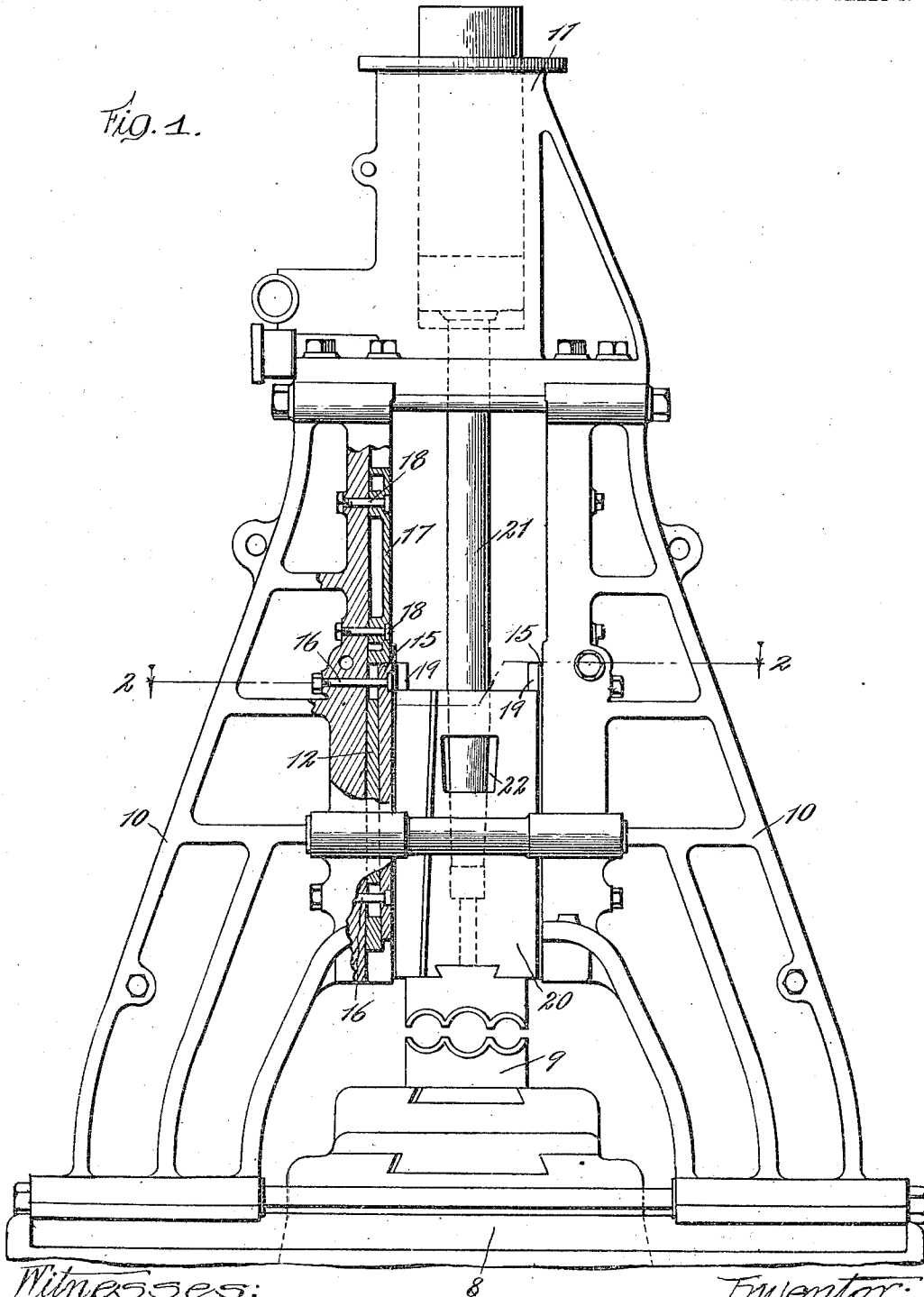
APPLICATION FILED JAN. 2, 1908.

960,891.

Patented June 7, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

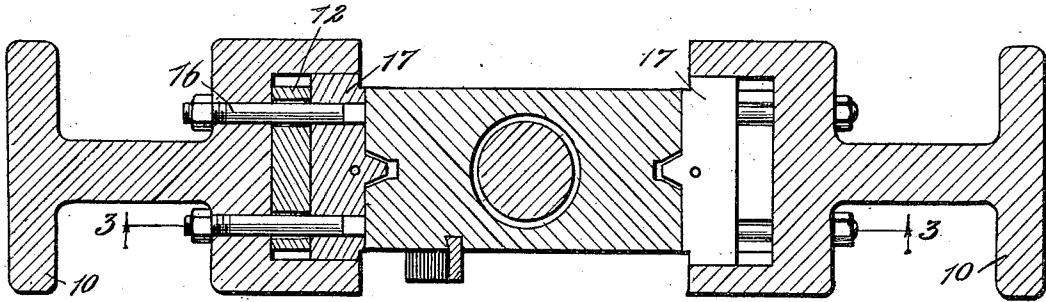


Fig. 3.

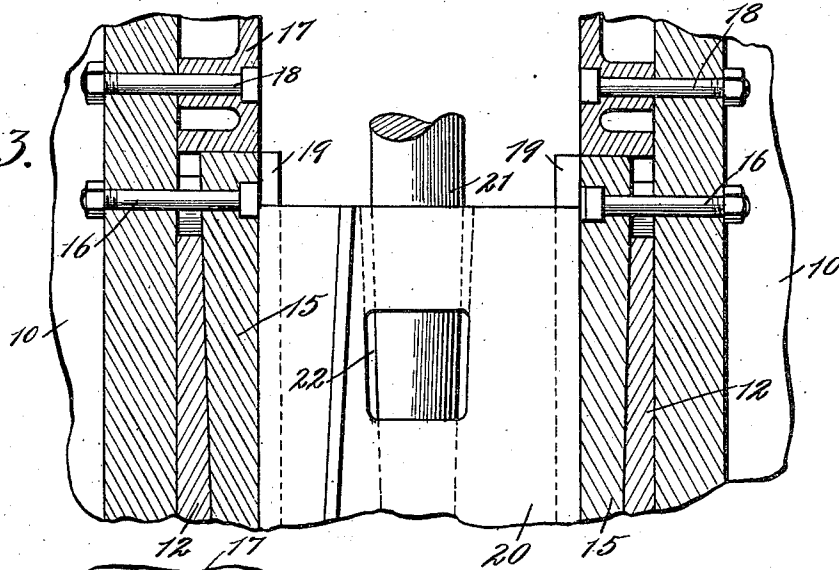


Fig. 4.

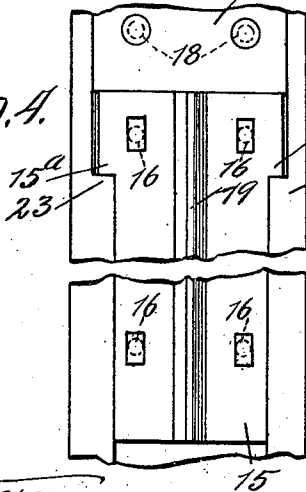


Fig. 5.

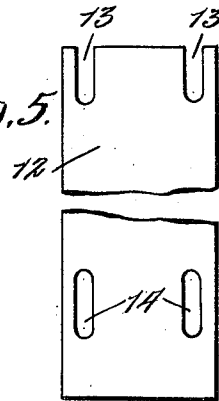
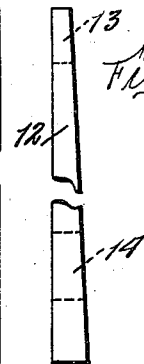


Fig. 6.



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UNITED STATES PATENT OFFICE.

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STEAM-HAMMER.

960,891.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed January 2, 1908. Serial No. 408,905.

To all whom it may concern:

Be it known that I, FERDINAND G. GASCHE, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Steam-Hammers, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to steam hammers, and its principal object is to provide a new and improved construction which will prevent or lessen the liability of breakage in the shaft or rod which connects the steam hammer with the steam operating cylinder.

As is well known, in the operating of steam hammers the rod upon which the head or ram is mounted and by which it is operated is very apt under the great strain of the operation to break, and these breakages are particularly likely to occur at the top surface of the head or ram just where the rod enters the socket in the head into which it is driven. These breakages at this point are caused by the fact that in the operation of the hammer the article which is being hammered, either because of its shape, or because of its position, is apt to lie not directly below the center of gravity of the hammer head. This causes a tendency of the hammer to rock slightly in its sliding bearings which causes a strain at the point where the rod enters the hammer head at the top, causing breakages to occur at that point.

It is the principal object of my invention to provide a new and improved hammer and connecting rod, by which, as has been said, these breakages may be prevented or their liability to occur very much lessened. Generally speaking, I accomplish this object by enlarging the opening in the hammer head into which the rod is driven for a considerable distance below the top so as to form an annular space around the shaft of the rod extending some distance down into the head,—preferably from one-third of the way down to a point near the center of gravity of the hammer head. As the hammer head therefore rocks slightly to one side or the other for the reason above stated, the strain will be much less upon the rod at the point of its solid connection with the hammer head.

My invention has for a further object to

provide the improvements in hammers hereinafter pointed out.

In the drawings:—Figure 1 is a side elevation, partially in vertical section, to show the bearing guides and their connection with the framework. Fig. 2 is a section on line 2—2 of Fig. 1. Fig. 3 is a vertical section on line 3—3 of Fig. 2. Fig. 4 is an enlarged detail, being a surface view of one of the guides, partly broken away. Fig. 5 is an enlarged detail, being a front view of one of the distance blocks, also broken away. Fig. 6 is a side elevation of the distance block, also broken away.

8 indicates the base on which is supported a suitable die, as 9, upon which the thing to be hammered is placed.

10 indicates framework of suitable form and construction, mounted upon the base 8.

11 indicates the steam cylinder by which the hammer is operated and which is of any well-known form and construction, and is supported in the usual manner in the framework 10.

12 indicates distance blocks which are slightly beveled so that their opposing surfaces approach gradually toward one another from the bottom toward the top, and which are provided with notches 13 and slots 14 through which the bolts hereinafter provided for pass for securing the parts together.

15 indicates guides which are sloped upon their rear faces so as to narrow in thickness from the top toward the bottom, as is best shown in Fig. 2, which bevel corresponds with the bevel of the distance blocks 12 so that when the parts are placed in position the opposing bearing blocks,—one upon each side,—may have their opposing faces between which the hammer slides parallel with each other throughout.

The guides 15 and distance blocks 12 are secured to the frame work by bolts 16 which pass through the notches 13 and slots 14 and have their heads sunk into the outer surface of the guides 15. The notches 13 and slots 14 are of sufficient length to permit of suitable longitudinal movement of the distance blocks 12, by means of which, by moving the distance blocks either up or down, the distance between the opposing surfaces of the guides 15 may be slightly diminished or increased and thereby adjusted to the hammer.

The guides 15 are provided near their upper ends with shoulders 15^a which are supported by corresponding shoulders 23 in the frame, as is best shown in Fig. 4, which supports them against downward movement.

17 indicates blocks which are bolted to the framework by suitable bolts 18 whose heads are countersunk in the blocks 17.

When fixed in position, the lower ends of blocks 17 rest upon the tops of the guides 15 and serve to lock them firmly in position against the shoulders 23. The distance blocks 12, guides 15, and blocks 17 are all mounted within a suitable recess upon each side of the frame, as is best shown in Fig. 2.

19 indicates tongues, preferably wedge shaped in section, upon the working faces of the guides 15, extending longitudinally of said guides and vertically in the machine.

The opposing working faces of the guides 15, which, as has been said above, are parallel with each other throughout, are smooth in order to effect a close but sliding contact with the corresponding faces of the hammer-head hereinafter described. The tongues 19 coöperate with correspondingly-formed grooves in the hammer-head hereinafter described.

20 indicates a hammer-head which is slidably mounted between the guides 15 with the tongue 19 entering a correspondingly-shaped groove extending longitudinally of each side of the hammer-head.

Upon each side of the longitudinal groove in the hammer-head the faces of the hammer are smooth and parallel with each other throughout and parallel with the working faces of the guides 15, and the hammer-head is of such a size as to fit snugly but with a close sliding contact on the plane faces of the guides 15, whereby the hammer-head slides up and down with its plane faces bearing on the plane faces of the guides and is restrained from lateral movement by the co-operation of the tongue and groove.

It will be obvious that by this construction the parts are easily put together and the guides may be readily removed, when worn, by the unfastening of the bolts and the removal of the blocks 17. It is obvious also that this may be done without removing the hammer-head from its normal position; for when the blocks 17 are removed and the bolts 16 loosened and removed, the distance blocks 12 may be moved downward sufficiently to give play of the parts and then the guides may be lifted out of position and easily removed. When it is desired to replace new guides, it will be obvious that they can be placed in position without removing the hammer-head from its normal position; for the new guides may be slid into position, adjusted to properly engage the hammer-head by driving up the distance blocks and thus forcing the guides

toward each other against the hammer-head, and the blocks 17 may be again placed in position.

The hammer-head is bored centrally for the reception of the shaft or hammer rod 21. The upper portion of the central bore of the hammer is made larger than the rod 21 so that when the rod is in position there will be an annular space around it. This enlarged portion of the bore extends downward for say from one-third of the length of the hammer-head to about the center of gravity thereof. The lower portion of the bore gradually diminishes in size and is of a size to permit the tapered end of the hammer shaft or rod 21 to be forcibly driven into it so as to afford a rigid and firm connection between the rod and the hammer-head.

22 indicates openings, one upon each side of the hammer-head, near the bottom of the enlarged portion of the bore thereof, rendering the lower portion thereof accessible.

The rod 21 connects with the usual piston in the cylinder 11.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a hammer, the combination with a frame, guides mounted in said frame and having plane bearing surfaces adapted to sustain normal pressures independent of the constraint of surfaces in other planes on said guides, of a hammer head slidably mounted between said guides and having plane bearing surfaces, and coacting tongues and grooves on said hammer head and guides adapted to prevent lateral movement of the parts.

2. In a hammer, the combination with a frame, guides removably mounted in said frame and supported against downward movement but adapted to be slid upward on said frame, and a hammer-head slidably mounted between said guides, of blocks removably mounted in said frame and when in position bearing against the tops of said guides to prevent upward movement thereof.

3. In a hammer, the combination with a frame, guides slidably mounted in said frame and having inclined rear surfaces, coacting shoulders on said guides and frame adapted to support said guides in position against downward movement, wedge-shaped distance blocks adjustably mounted between said frame and said guides, and a hammer-head slidably carried between said guides, of blocks removably mounted on said frame and adapted when in position to bear upon the upper ends of said guides to prevent upward movement thereof.

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