S. J. HARRY.

DRILL FRAME.

APPLICATION FILED OCT. 25, 1910.

1,000,404. **Patented Aug. 15, 1911.**

Fig. 1.

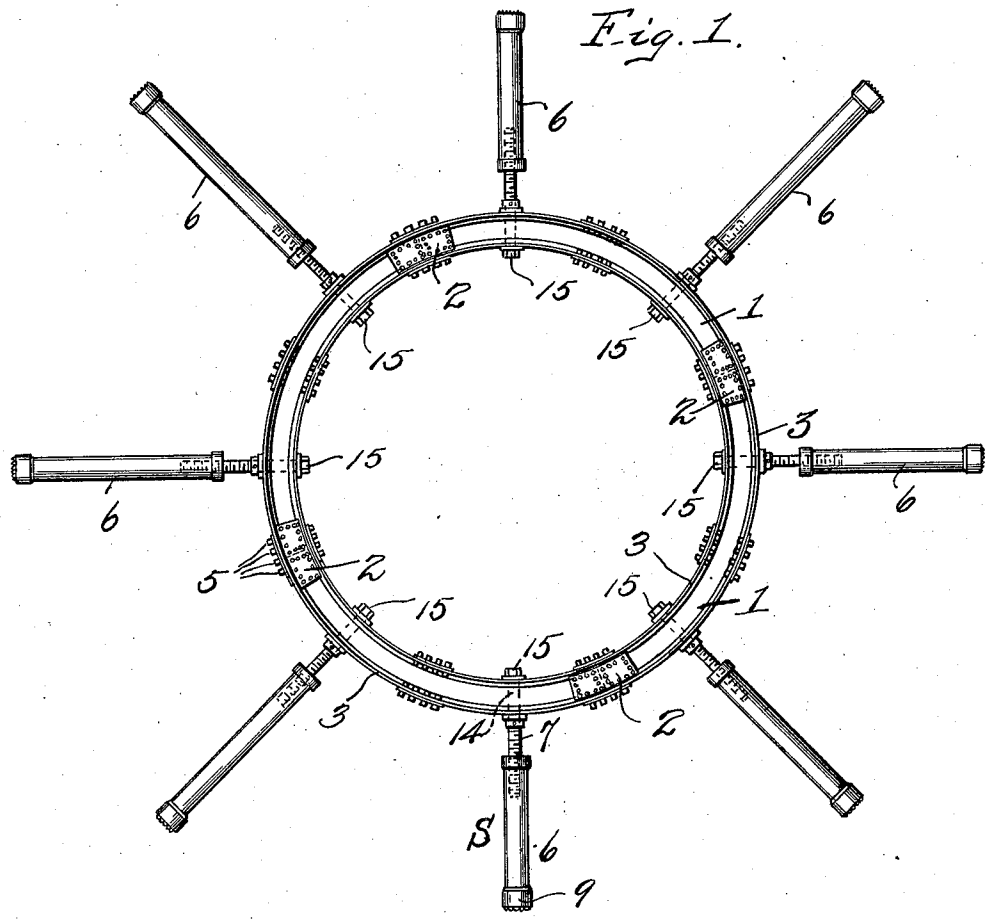


Fig. 4.

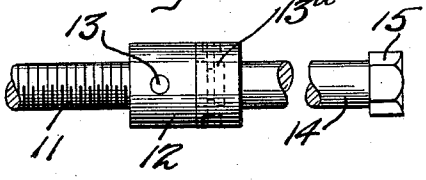


Fig. 3.

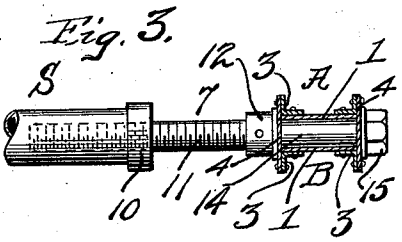
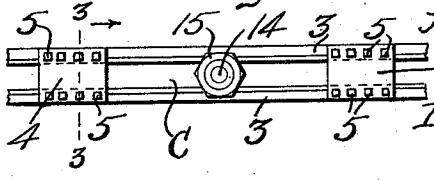


Fig. 2.



WITNESSES

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DRILL-FRAME.

1,000,404. Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed October 25, 1910. Serial No. 588,945.

To all whom it may concern:

Be it known that I, SAMUEL J. HARRY, citizen of the United States, residing at Connellsville, in the county of Fayette and State of Pennsylvania, have invented certain new and useful Improvements in Drill-Frames, of which the following is a specification.

This invention relates to the subject of mining or excavating operations, and more particularly to drill frames such as are employed in the sinking of shafts.

To this end the invention contemplates a simple and practical construction of drill frame, sometimes termed a shaft bar, that may be used in drilling circular, elliptical, or rectangular shafts and comprising all possible adjustments necessary for the jack-screws thereof so that every inequality or unevenness in the shaft walls may be compensated for and the drill frame proper rigidly secured and held in its adjusted position while the drilling operations are being proceeded with.

A further object of the invention is to provide a drill frame of a minimum number of parts, while at the same time being thoroughly reinforced and strengthened so as to be fully capable of the use required of the same.

A special object of the invention is to provide a novel and practical mounting of the jack-screws so as to give the same a great range of adjustment both laterally, that is, in a direction around the frame, and longitudinally, that is, in a direction toward and from the frame.

With these and many objects in view which will more readily appear to those familiar with the art 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.

While the invention is susceptible to structural modifications without departing from the spirit or scope of the same, the preferred and practical embodiment thereof is shown in the accompanying drawing, in which—

Figure 1 is a plan view of the drill frame constructed in accordance with the present invention. Fig. 2 is an inner edge elevation of a portion of the frame proper. Fig. 3 is an enlarged cross sectional view on the line 3—3 of Fig. 2. Fig. 4 is an enlarged detail view of a part of one of the adjustable jack-screws.

Like references designate corresponding parts in the several views of the drawings.

The improved drill frame includes in its organization a circular frame proper through and about which the drilling operations are carried on. This frame proper is in circular or ring form and essentially comprises upper and lower frame members designated generally by the reference letters A and B in Figs. 2 and 3 of the drawing, and these frame members are spaced apart in parallel relation to provide therebetween an adjustment guide way C designed to accommodate the inner members of the jack-screws as will be hereinafter more particularly pointed out.

The spaced apart upper and lower frame members A and B are of duplicate construction and each of the same preferably consists of a continuous series of segmental frame plates 1, which are united at their adjoining ends by means of cleat plates 2 which are riveted or bolted to the contiguous portions of the adjoining plates and provide means for securely fastening the frame plates together to make a continuous frame structure.

In addition to connecting the adjoining ends of the frame plates 1, by means of the cleat plates 2, the said frame plates 1 have riveted or otherwise rigidly secured to their outer and inner edge portions the angle iron reinforce bands 3 which serve to materially strengthen the frame structure at the outer and inner edges thereof while at the same time affording fastening bases for the bracing plates 4. These bracing plates 4 are arranged at the outer and inner edges of the upper and lower frame members and are riveted or bolted to the vertical flanges of the angle iron bands 3 as at 5. Hence, the plates 4 serve to rigidly brace the frame structure at a plurality of points around the same, and also rigidly maintain the frame members in their spaced apart relation.

A plurality of jack-screws are employed. Any desired number of these screws may be mounted upon the frame proper and arranged about the same. The said screws are designated in their entirety by the reference letter S and each of the same essentially consists of an outer strut member 6 and an inner screw member 7. The outer

strut member 6 may be conveniently in the form of a hollow cylinder provided at its outer end with a roughened or equivalent rest foot 9 and at its inner end with a nut element 10 in which is threaded the screw shank 11 of the screw member 7. The said screw shank 11 of the screw member 7 is provided at its inner end with an operating head 12 having the sockets or openings 13 therein to receive a turning implement such as a lever or bar, and said operating head 12 also has a swiveled mounting as at 13ª upon one end portion of an adjustable carrying bolt 14, which adjustably fits in the guide way of the frame proper and has mounted upon its inner extremity, at the inner side of the frame proper, a fastening nut 15, which serves to secure the bolt in any of its adjusted positions. It will thus be seen that each jack-screw has a carrying bolt 14 which may be shifted laterally or in a circular direction within the adjustment guide way C, and by means of the nut 15 may be held firmly in its adjusted position, while the operating head 12 may be easily turned to adjust the strut member 6 either inward or outward according to the character of the wall from which the frame proper is being jacked up.

If at any time it should be desired to put in timber in the shaft or take down loose stones or to do any work up from the bottom of the shaft, the drill frame can be hoisted to the proper elevation and used as a scaffold. Also through the medium of any suitable hoisting appliance, operated from the surface, the drill frame with its jack-screws can readily be hoisted up out of the way of the shots after the drilling is done. And in fact the improved drill frame described herein, by reason of its wide range of adjustment and adaptability, can be utilized under any and all conditions in the sinking of a shaft and may be readily employed in a shaft or tunnel of any size.

Changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

I claim:—

1. In a drill frame of the class described, a frame proper comprising upper and lower frame members rigidly held in a fixed relation to each other and spaced apart to provide an intervening adjustment guideway and a plurality of jack-screws provided at their inner ends with bolt members that are slidably and adjustably mounted in said guideway.

2. In a drilling frame of the class described, a frame proper comprising upper and lower frame members spaced apart to provide an intervening adjustment guide way, and a plurality of jack-screws arranged about the frame proper, each of said jack-screws comprising an inner bolt member slidingly and adjustably mounted in said guide way, an outer strut member having a rest foot and a nut element, and a screw member engaging said nut element and having a swiveled connection with said bolt.

3. In a drilling frame of the class described, a frame proper comprising upper and lower frame members each consisting of a series of connected segmental frame plates, and angle iron reinforce bands secured to the outer and inner edge portions of said connected plates, and bracing plates secured to the upper and lower frame members to hold the latter braced in their spaced apart relation, and a plurality of jack screws having carrying elements adjustably mounted between the upper and lower frame members.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

SAMUEL J. HARRY.

Witnesses:
S. ROBINSON,
G. S. MATTHEWS.