

No. 763,373.

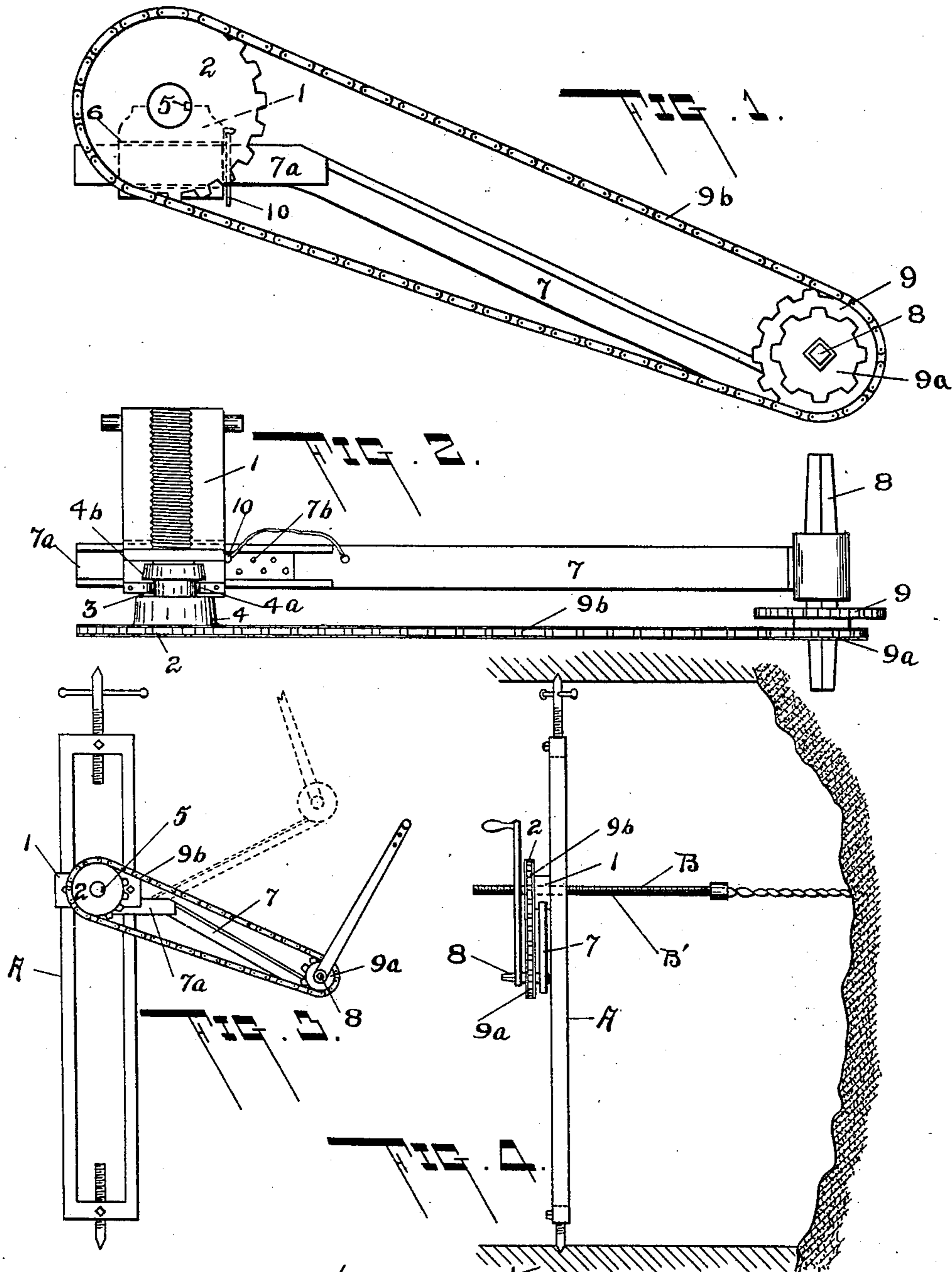
PATENTED JUNE 28, 1904.

T. G. DAVIS.
DRILLING MACHINE.

APPLICATION FILED SEPT. 17, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

James C. Hanson.
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Thomas G. Davis. INVENTOR

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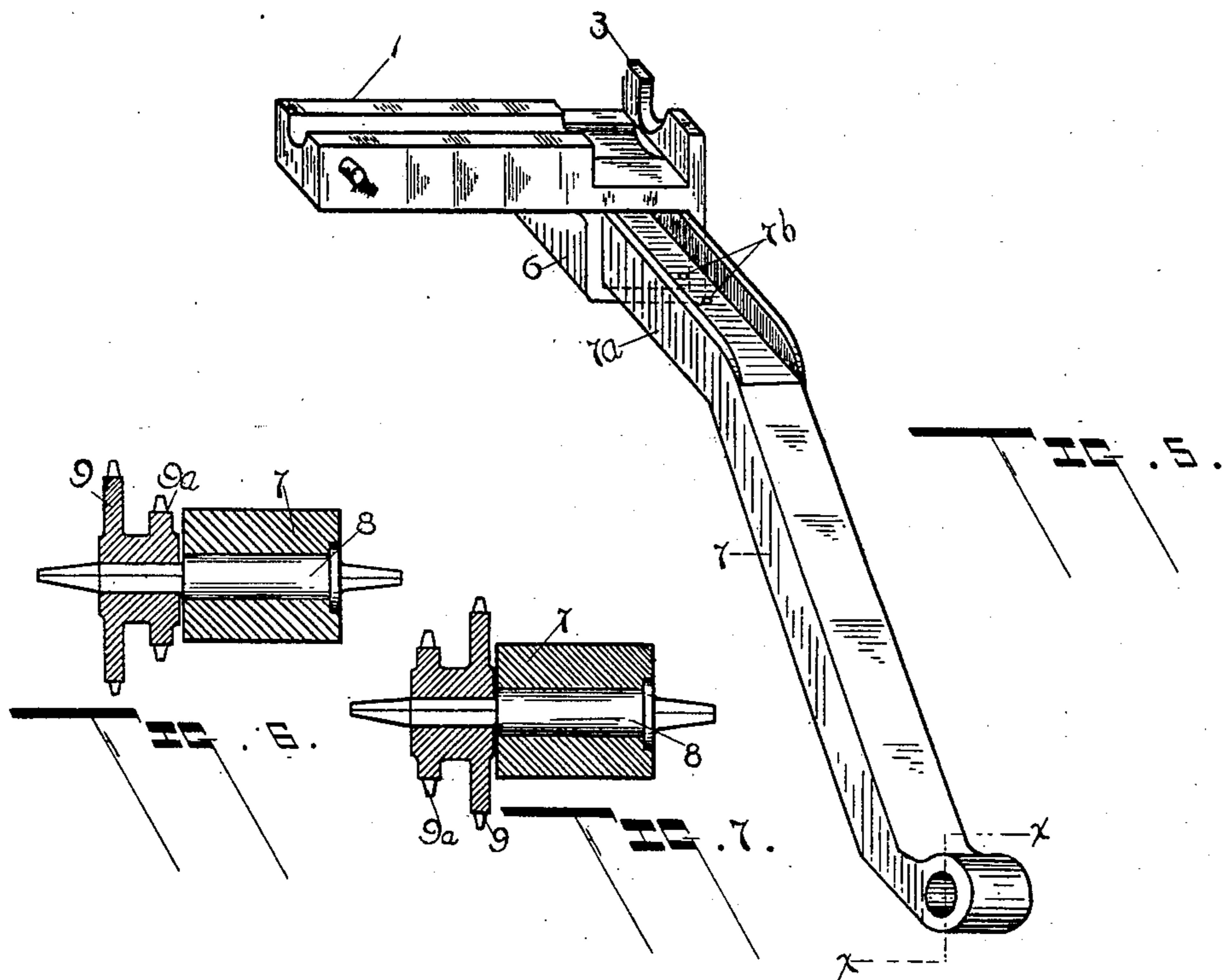
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WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS G. DAVIS, OF WEST BAY CITY, MICHIGAN.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 763,373, dated June 28, 1904.

Application filed September 17, 1903. Serial No. 173,591. (No model.)

To all whom it may concern:

Be it known that I, THOMAS G. DAVIS, a citizen of the United States, residing at West Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Drilling-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention is an improvement in coal or rock drills, and relates more particularly to mechanism for driving hand-operated drills. It is applicable to existing forms of drills and can be easily attached to the drill and quickly removed therefrom, besides being capable of being shifted into such a position that the drill may work close to the floor of the mine or close to the roof without interfering with the operation of the driving-cranks or their handles. Means is also provided for changing the speed and leverage of the drill.

The invention consists in the mechanism, its parts, and the combination of parts herein described and claimed, or the equivalent thereof, and is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the driving-chain and its supporting-bracket. Fig. 2 is a top plan view of the same. Fig. 3 is a front elevation of a drill with my driving device attached, and Fig. 4 is a side view of the same. Fig. 5 is a perspective view of the reversible arm and the lower half of the spindle-bearing. Figs. 6 and 7 are part-sectional views taken on the line *xx* of Fig. 5, illustrating the application of the interchangeable sprockets.

The device consists in a drill-driving mechanism mounted on any suitable form of drill-frame A. The driving mechanism is carried by a vertically-slidable internally-threaded split box or bearing 1, of usual construction, in which the threaded drill-spindle B revolves. A sprocket-wheel 2 is revolvably mounted in a thrust-bearing 3, carried by the box or bearing. The sprocket-wheel 2 has a projecting hub 4, with an annular groove 4^a engaging the thrust-bearing 3, so that the hub and sprocket may revolve without advancing. A collar 4^b

is thus formed on the hub 4 to take the reactionary thrust of the drill-spindle B.

The drill-spindle has a longitudinal key-seat B', and a key 5 is fixed in the bore of the sprocket-wheel 2 to engage the key-seat of the spindle, permitting the spindle to advance through the hub as the latter revolves.

Slidably mounted in a socket 6, formed in the lower part of the box 1, is the offset end 7^a of an inclined bracket 7. The bracket carries at its outer end a revoluble crank-shaft 8. Upon this shaft is removably mounted a pair of sprockets 9 and 9^a. A sprocket-chain 9^b connects one of these sprockets to the sprocket-wheel 2. The sprockets 9 and 9^a are of different sizes and have central openings, so they can be slipped off the shaft 8, turned over and replaced, as is indicated in Figs. 6 and 7. By this arrangement either the small or large sprocket can be used, the smaller sprocket being employed for heavy work and slow drilling speed, and the larger sprocket being used for lighter work and higher speed.

To secure proper chain adjustment when the sprockets are changed, holes 7^b are provided in the offset end of the bracket 7. A pin 10 is dropped into the hole nearest the box 1 when the chain is sufficiently tight and engages the end of the bracket 1, fixing the distance between the sprockets.

The bent bracket 7 permits the cranks to be offset above or below the horizontal plane of the drill, as indicated by dotted lines in Fig. 3. This construction is of importance in drilling, for it permits the drill to be operated close to the floor or roof of the mine without danger of bruising the workman's hands, as is frequently the case with the common forms of cranks connected direct to the drill-spindle.

By the means above described I have produced a simple, compact, and efficient mechanism for driving drills that can be quickly shifted to admit of drilling close to floors, roof, and walls and so arranged that its leverage or driving power can be quickly changed to suit the material to be drilled.

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

1. In a drill-driving mechanism the combi-

nation with the frame, the threaded drill-spindle having a key-seat, and the vertically-movable internally-threaded box having a socket and a thrust-bearing; of an inclined bracket
5 having an offset end engaging said socket; means for adjusting the offset end of the bracket in the socket; a sprocket-wheel having an annular grooved and centrally-bored hub mounted in said thrust-bearing; a key
10 fixed in the bore of the hub to slidably engage the key-seat of the spindle; a crank-shaft at the outer end of the inclined bracket; sprocket-wheels removably mounted on said crank-shaft, and a driving-chain on said wheels, for
15 the purposes set forth.

2. In a drill of the class described, the combination with the frame, the threaded drill-spindle having a key-seat and the vertically-movable, internally-threaded box to receive
20 said spindle; of a thrust-bearing carried by said box; a sprocket-wheel having a centrally-bored hub revolubly mounted on the thrust-bearing; a key fixed in the bore of the sprocket-wheel hub to slidably engage the key-seat of

the spindle; an inclined bracket having an off- 25
set end removably secured to said box; a crank-shaft at the outer end of the inclined bracket; sprocket-wheels removably mounted on said crank-shaft and a driving-chain, all arranged
30 for the purposes set forth.

3. In a drill of the class described the combination of a thrust-bearing carried by the spindle-box; a centrally-bored sprocket-wheel revolubly mounted in said thrust-bearing; means for positively rotating the drill-spindle
35 with the sprocket-wheel while permitting longitudinal movement of the spindle; an offset bracket reversibly secured to said box; sprocket-wheels carried by the outer portion of said bracket and means for rotating said
40 sprocket-wheels to operate the spindle.

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

THOMAS G. DAVIS.

Witnesses:

A. H. Goss,
F. W. DE FOE.