Aug. 8, 1967

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3,334,849

DRILL MOUNTING

Filed Feb. 14, 1966

4 Sheets-Sheet 1

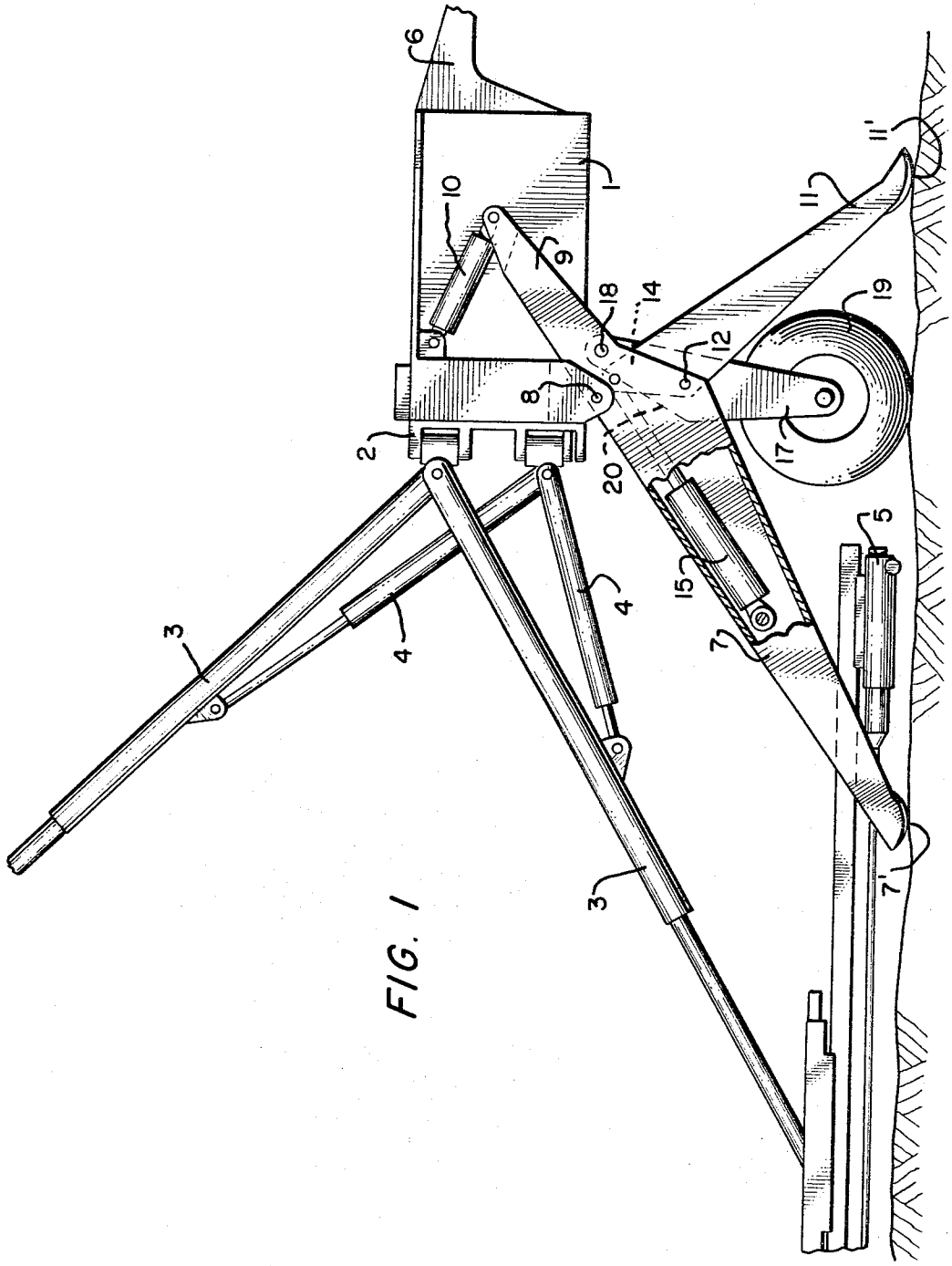


FIG. 1

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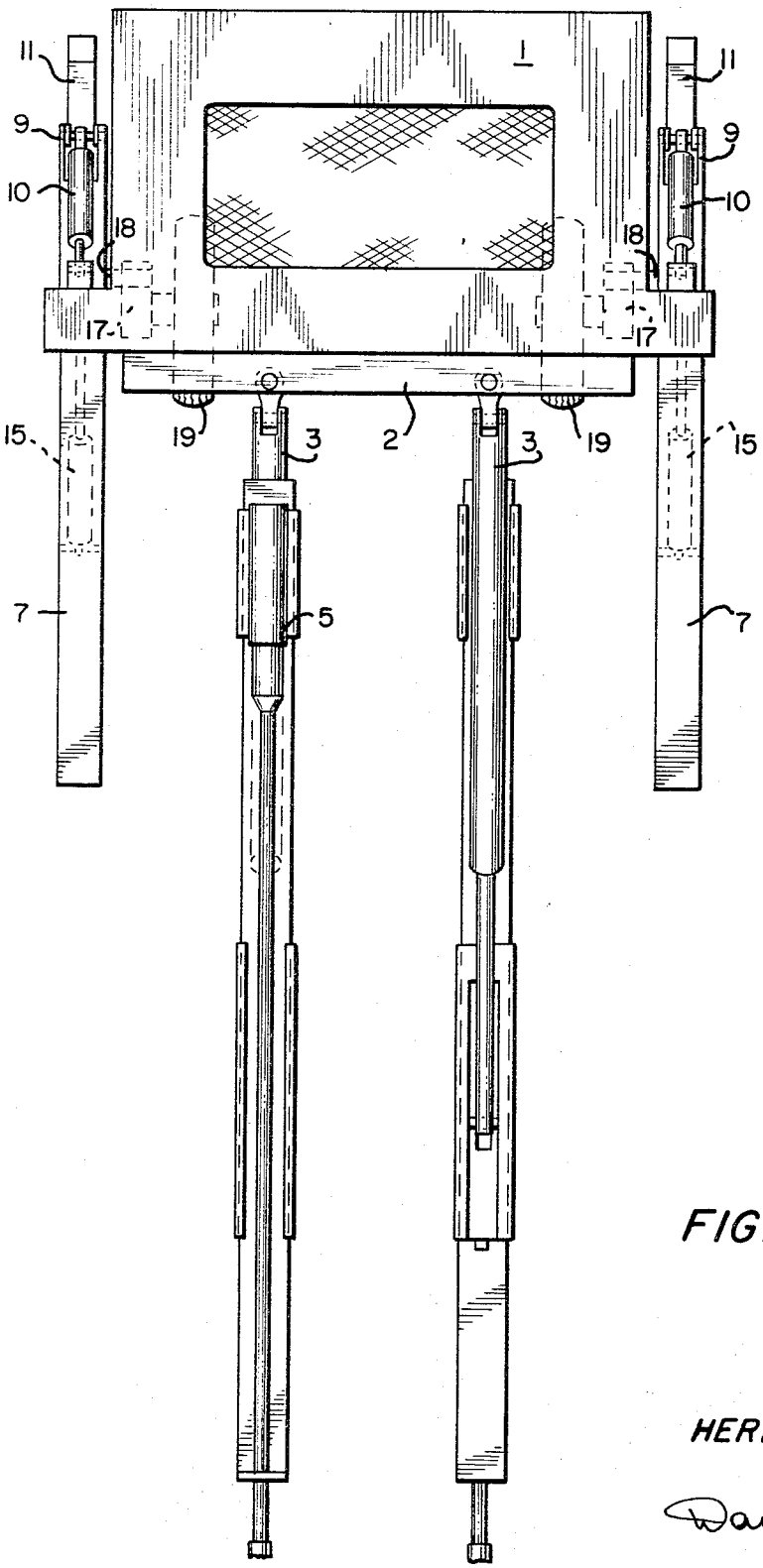


FIG. 2

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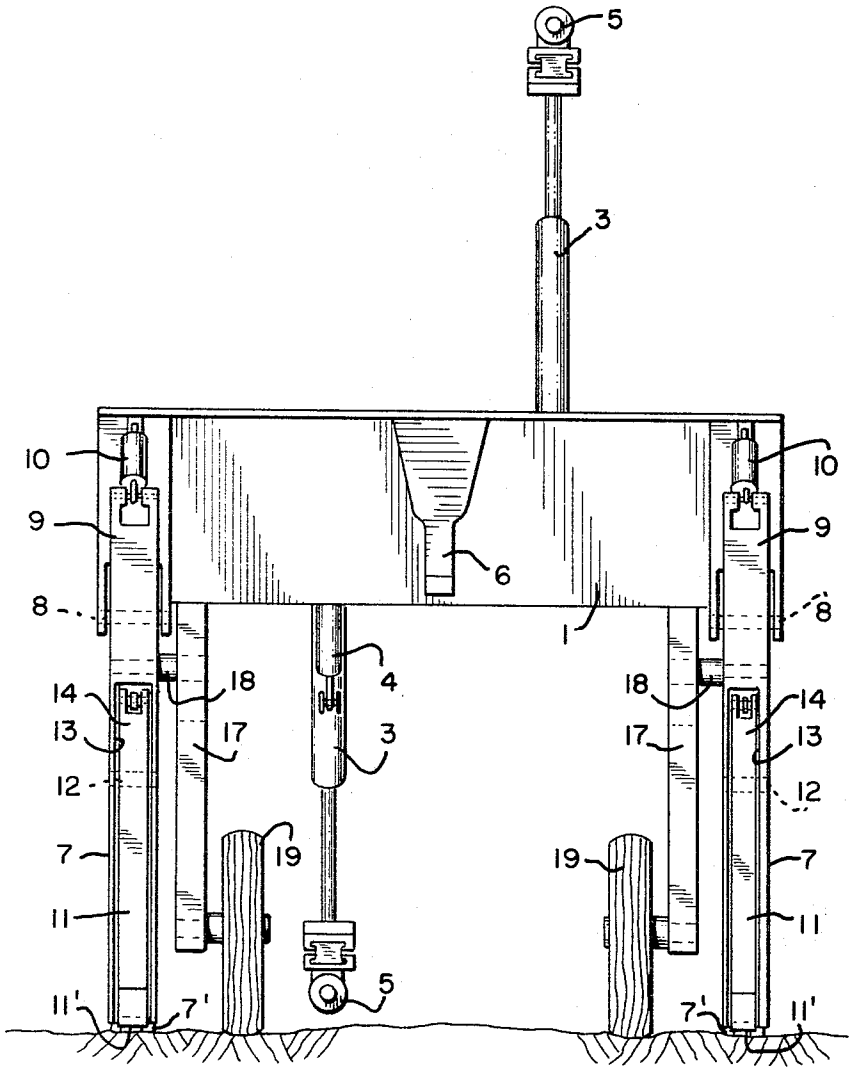


FIG. 3

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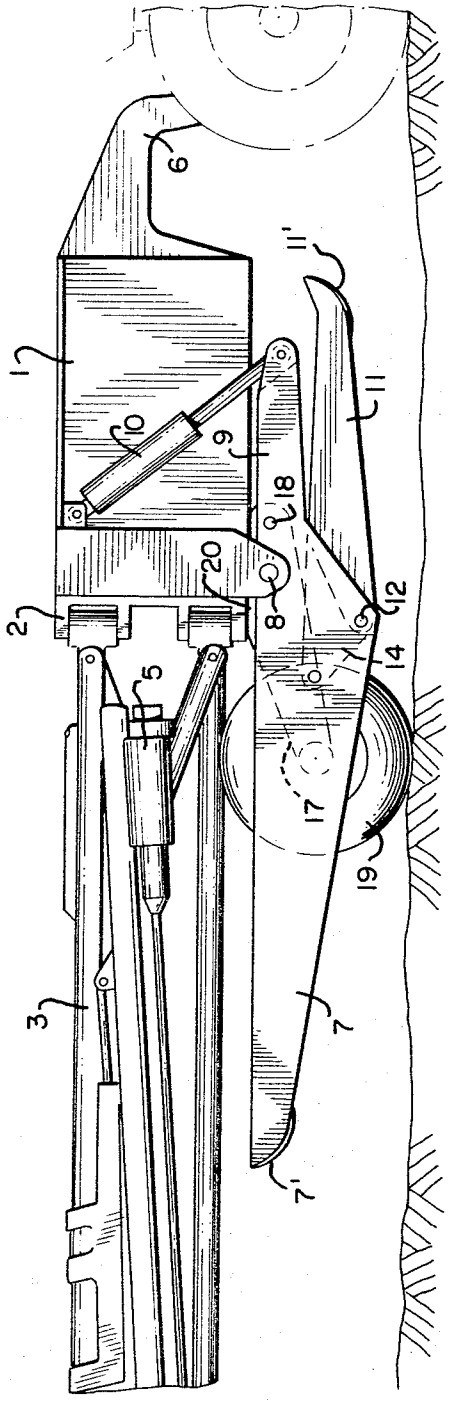


FIG. 4

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DRILL MOUNTING

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Claims priority, application Norway, Mar. 13, 1965, 157,206
4 Claims. (Cl. 248—13)

The present invention relates to a drilling rig or drilling machine of the type comprising a frame supporting movably mounted drilling booms and having wheels for supporting the frame for transporting purposes and legs for supporting the frame in a drilling position. A number of drilling rigs of the above type have been proposed or used in the past, none of which have proven to be completely satisfactory.

The principal object of this invention is to provide a drill mounting of the foregoing type which substantially eliminates or minimizes the problems created or encountered by prior art drill mountings of the above-mentioned types.

Another important object of this invention is to provide a drilling rig which takes up a minimum of space in height as well as in width during transportation by aid of tractor or the like.

It is a further object to provide a drilling rig which provides a relatively rigid and vibrationless support for drilling equipment when supported by its legs on the ground or a tunnel floor.

A further object is to provide a drilling rig of the above-mentioned type on which drill booms supported on the rig can be moved over the largest possible angle and area without interference with the drilling rig.

The above-mentioned objects are attained, in brief, in a drilling rig or drilling machine of the above-mentioned type having legs that can be swung down on each side of the frame and are constituted by two mutually hinge-connected legs that are rotatably mounted to the frame and to each other, as well as being movable in relation to the frame and to each other, by aid of fluid-operated means, between two extreme positions, namely, one wherein the legs lie mainly parallel below and adjacent to the frame, and another wherein the frame rests on these legs. A wheel arm having a wheel is pivoted below and on each side of the frame. These wheel arms are movable between a position wherein the drilling machine is supported on the wheels, and a second position wherein the wheels are suspended in a nonsupporting position.

The invention is described in connection with the enclosed drawings wherein:

FIG. 1 is a side elevation of a drilling rig constructed in accordance with this invention and shown in a drilling position;

FIG. 2 is a plan view of the drilling rig of FIG. 1;

FIG. 3 is a rear elevational view of the drilling rig; and

FIG. 4 is a side elevation of the drilling rig in its transportation position.

The drilling rig shown in the drawings includes a frame **1** carrying brackets **2** for pivotally supporting a pair of drilling booms **3**. Each of the booms **3** can be moved in both the horizontal and vertical planes by means of conventional hydraulic cylinders **4** (the cylinders for moving the booms **3** in the horizontal plane are not shown in the drawings). The booms **3** carry conventional rock drills **5** supported on their outer ends. The frame **1** is further provided with a conventional hook **6** at its rear end adapted to be connected to a tractor or the like for transporting the drilling rig. The foregoing structure is conventional and forms no part of the present invention.

The frame **1** is provided with a pair of long legs **7** with each leg being pivoted on a pivot pin **8** on an opposite side of the frame **1**. Each long leg **7** has a foot **7'** at its lower end adapted to engage the ground. In addition, each long leg **7** includes an upper arm **9** projecting rearwardly from the pivot pin **8**, and a hydraulic cylinder **10** is interconnected between the outer end of the upper arm **9** and the frame **1**. The cylinder **10** is operative to pivot the long leg **7** between a drilling position shown in FIG. 1 and a horizontally folded position shown in FIG. 4.

A short leg **11** is pivoted to the rear portion of each long leg **7** on a pivot pin **12**. A shoe **11'** is mounted on the bottom of the short leg **11** for engaging the ground. As illustrated in FIG. 3, the upper portion of each short leg **11** projects into a pocket **13** provided in the rear face of each long leg **7**. Each short leg includes an upper arm **14** connected to a hydraulic cylinder **15** located within the hollow pocket **13** in the leg **7** and operative to pivot the short leg **11** about the pivot pin **12**. The drilling position of the short leg **11** is shown in FIG. 1 while the folded transporting position is shown in FIG. 4.

A wheel arm **17** is pivoted to the inside of each long leg **7** about a pivot pin **18** located near the pivot pin **8**. The lower end of each wheel arm **17** carries a wheel **19**. In addition, each wheel arm **17** has an inclined surface **20** on its upper forward edge adapted to abut the bottom of the frame **1** when the drilling rig is folded, as shown in FIG. 4. In this position the wheel arms **17** rigidly support the drilling rig on the wheels **19** so that the rig can be transported by a tractor or the like, as shown in FIG. 4.

Operating the hydraulic cylinders **10** and **15** will erect the long legs **7** and the short legs **11** to the position shown in FIG. 1. This is carried out by retracting the cylinder **10** and extending the cylinder **15**. Preferably, both the cylinders are operated simultaneously. In the erected position of the legs **7** and **11**, the wheels **19** are depending in an out-of-way position and are inoperative to support the weight of the drilling rig, this weight being supported entirely by the legs **7** and **11**.

When the legs **7** and **11** are folded up to the transporting position, as shown in FIG. 4, with the drilling rig supported on the wheels **19** and the wheel arms **17** engaging the bottom of the frame **1**, the total height of the drilling rig is greatly reduced. All the booms **3** with the drilling equipment **5** are at the same time moved into nested positions extending horizontally from the frame **1**, as shown in FIG. 4, to reduce the width of the drilling rig. The resulting dimensions of the drilling rig are sufficiently small to enable it to be transported through relatively narrow tunnels or the like. It is of the greatest importance to have at one's disposal a drilling rig which, in transporting position, occupies a minimum of room. This is obtained by the special arrangement of the support legs which is described above and can be folded up below the frame that carries the drilling equipment in a way that takes up a minimum of room in height and width.

In addition, in the drilling position of the drilling rig, as shown in FIG. 1, the legs **7** and **11** provide the drilling equipment with a very stable support. As shown in FIG. 1, the drilling equipment **5** can be moved down between the legs **7** on each side of the frame **1** without interference from the wheels **19** and wheel arms **17**.

As it will be understood, the embodiment that is shown in the drawing and described above is only meant to illustrate the inventive idea, which can be modified in several ways within the scope of the following claims. Thus the mutual link connection between the legs **7** and **11** as well as the location of the pivot pin **8** on the frame are not restricted to the embodiment illustrated in the drawings. The wheel arm **17**, which can be freely

suspended, may likewise be connected to the frame or the legs in some other way than that which is shown and described.

Having described my invention, I claim:

1. A foldable drilling rig or drilling machine comprising:

a frame;

at least one drill boom rotatably mounted on said frame and adapted to carry drilling equipment;

a pair of mutually hinged legs located on each side of said frame with at least one of said legs being pivoted to said frame;

fluid-operated means operative to move said legs between two positions including a folded transporting position wherein said legs are folded substantially parallel below said frame and an erected drilling position wherein said legs extend downwardly to engage the ground and support said frame;

said one leg of each pair of legs including an upper arm extending beyond its pivot to said frame; and

said upper arm being interconnected to said frame by one of said fluid-operated means which is operative to swing said one leg about its pivot.

2. The drilling rig of claim **1** wherein:

the other leg of each pair includes an upper arm extending beyond its hinge on said one leg; and

said last named upper arm is interconnected to said one leg by another of said fluid-operated means which is operative to move said other leg about its hinge on said one leg.

3. The drilling rig of claim **1** including:

a wheel arm pivoted beneath said frame and carrying a wheel at its free end, said wheel arm being movable between a position folded beneath said frame wherein it supports said drilling rig in the transporting position of said legs and a suspended position wherein it depends beneath said frame in the erected drilling position of said legs where it is out of the way of said drill boom on said frame.

4. The drilling rig of claim **3** wherein:

said wheel arm is freely pivoted on said one leg near the pivot of said one leg on said frame.

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