

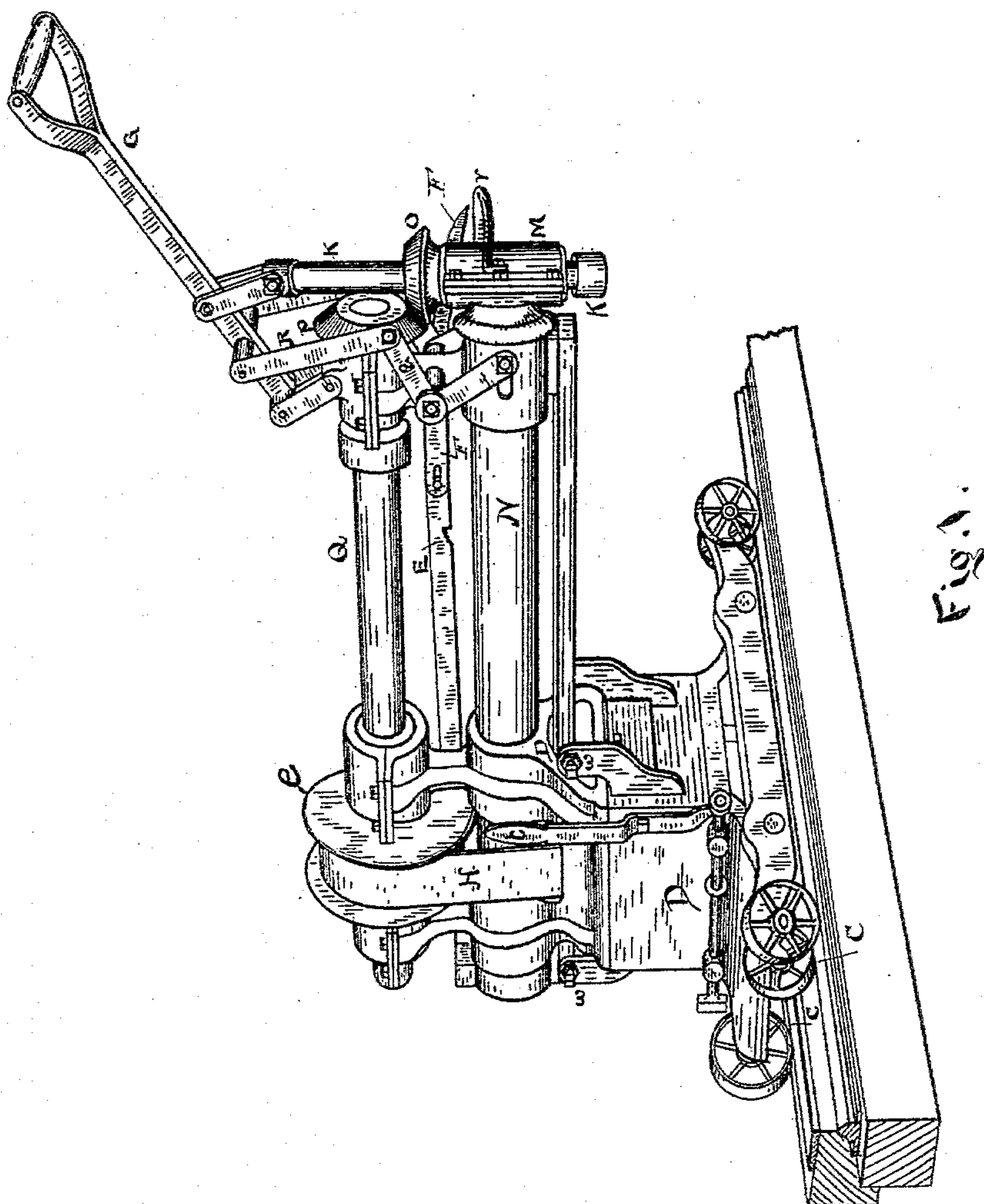
(No Model.)

3 Sheets—Sheet 1.

C. M. COLLINS.
BORING MACHINE.

No. 494,845.

Patented Apr. 4, 1893.



WITNESSES

J. F. Lascher
C. W. Gill

INVENTOR

Charles M. Collins
By his Attorney
R. W. Smith

(No Model.)

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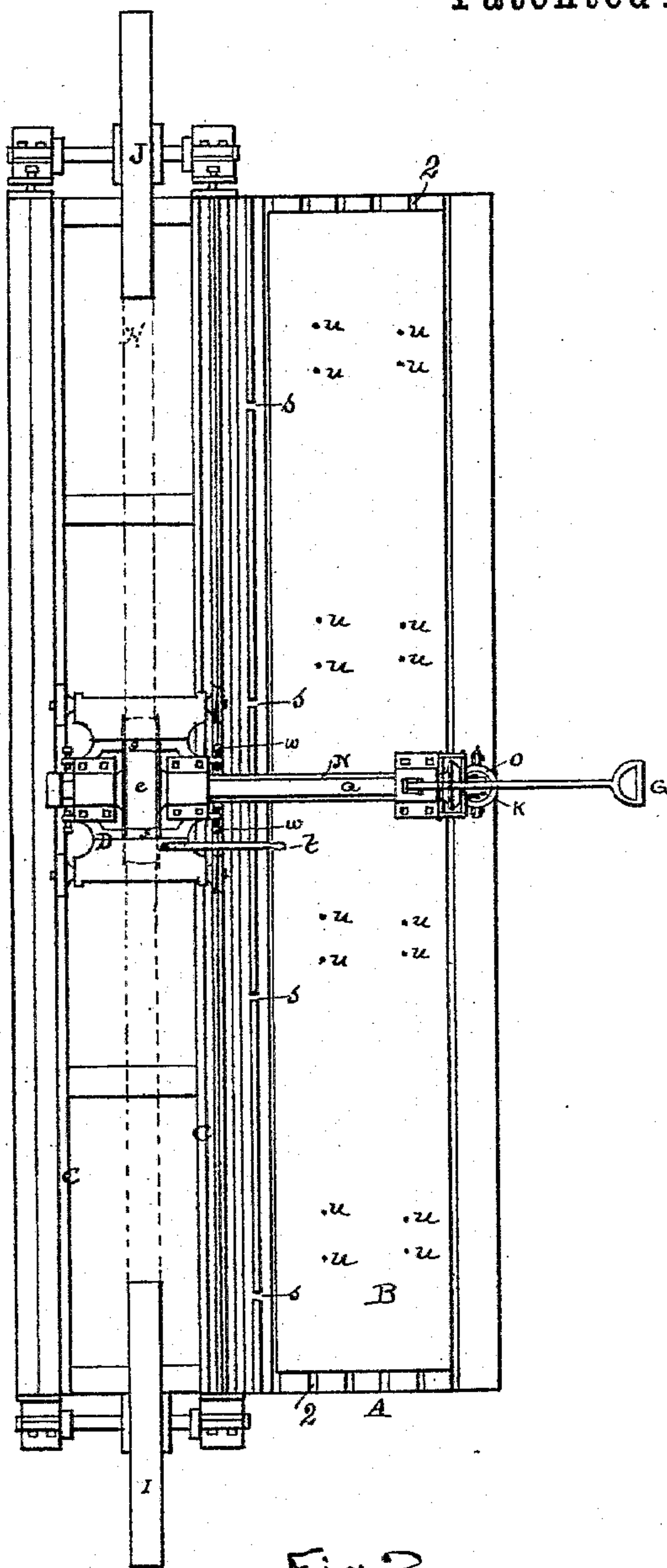


Fig. 2

WITNESSES:

C. W. Gill
J. F. Gascher.

INVENTOR

C. M. Collins
BY R. D. J. Smith
ATTORNEY

(No Model.)

3 Sheets—Sheet 3.

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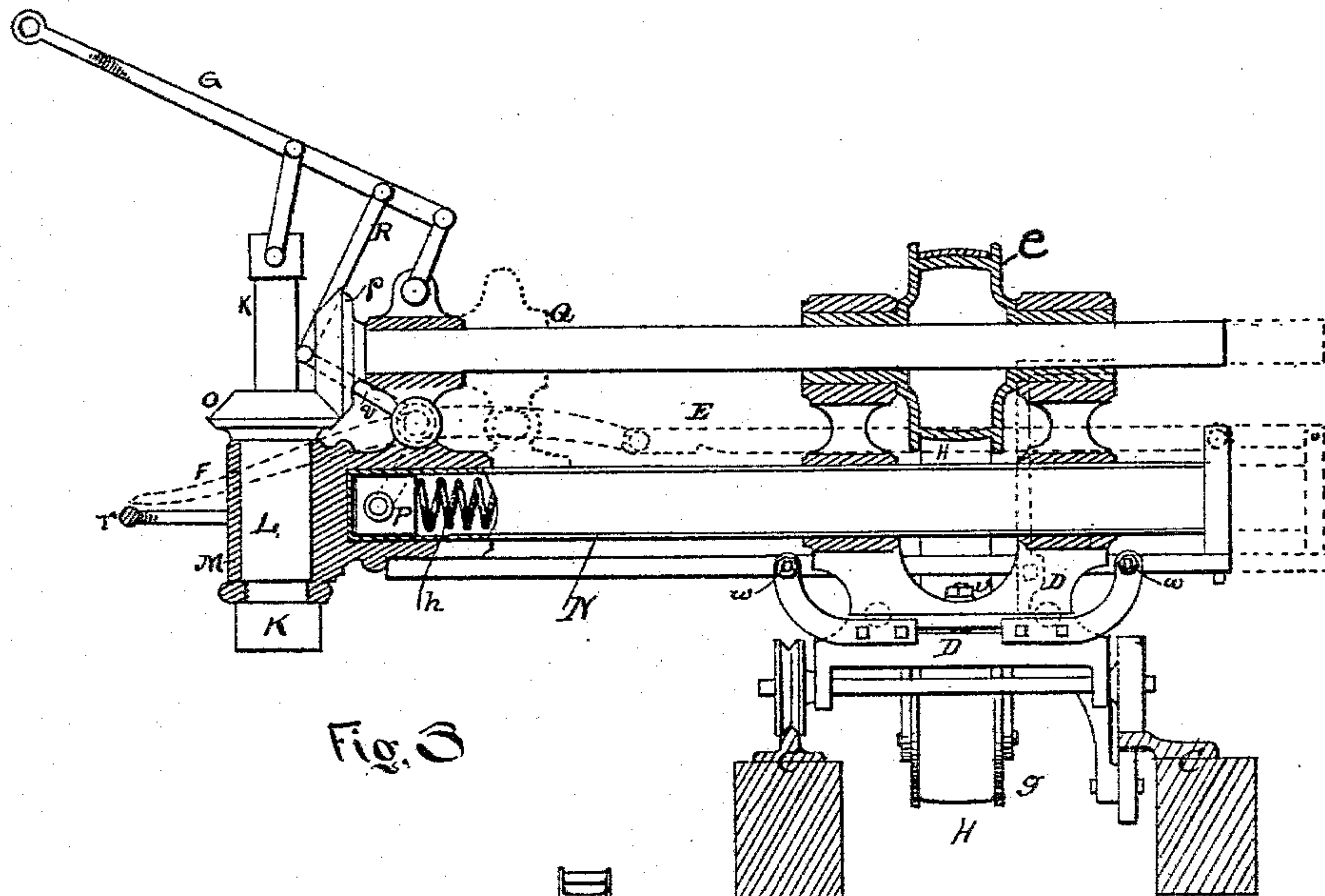


Fig. 3

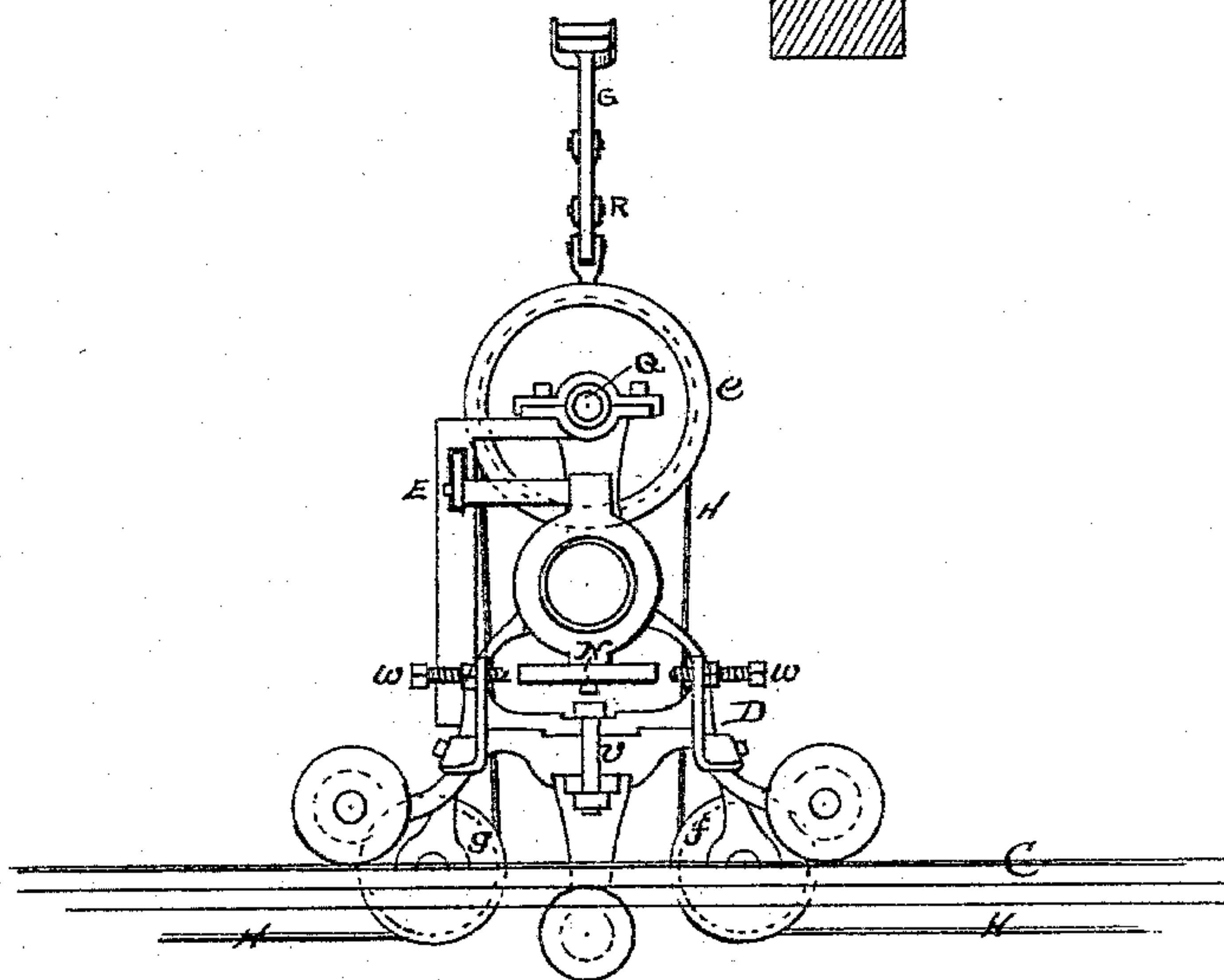


Fig. 4

Attest

C. W. Gill
J. F. Fischer

Inventor

C. M. Collins
By R. D. Smith
Att'y -

UNITED STATES PATENT OFFICE.

CHARLES M. COLLINS, OF SOUTH BEND, INDIANA.

BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 494,845, dated April 4, 1893.

Application filed July 16, 1891. Serial No. 399,784. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. COLLINS, of South Bend, in the county of St. Joseph, in the State of Indiana, have invented new and useful Improvements in Boring-Machines; and I do hereby declare that the following is a full and accurate description of the same, reference being had to the accompanying drawings, in which—

10 Figure 1 is a perspective view of my machine. Fig. 2 is a plan of the same. Fig. 3 is a side elevation of the same. Fig. 4 is an end elevation of the same.

This invention was devised for the purpose of accurately and rapidly boring a considerable number of holes in the sides of a wagon body for the reception of the several screws and rivets necessary for the attachment of the several parts, the wagon irons, &c., but it will appear evident that it is applicable to a great variety of work of that description; *i. e.* where a considerable number of holes are required, distributed over a considerable space. Generally such holes are located by means of 25 templets, which involves much time and is always liable to inaccuracy.

My invention consists of a bit carrying mandrel mounted with suitable driving gear upon a carriage and being capable of two motions in the same horizontal plane *i. e.* one toward the left or right, and another forward or backward so that the boring bit may be carried to any point within the range of said motions. These two movements are sufficient 35 to cover every case, but for additional convenience, I have added a third or pivotal motion to the mandrel carriage so that, for each adjustment of the traveling carriage to a certain point, holes may be bored on either side 40 of said point. This I find to be advantageous for the wagon work alluded to, wherein the holes required are mostly in pairs.

The bed of the machine has a table A of proper size to receive the blank or part to be 45 bored. In this case it is large enough to receive the side or the bottom board of a wagon body B, and also, along one side there is a track C, upon which moves the carriage which transports the boring apparatus. The table 50 A may be provided with suitable gages and

clamps to properly locate and secure each part B, as it is placed upon said table. The usual grooves for such clamps are indicated at 2.

A carriage D is mounted and travels upon the track C, and carries the boring apparatus 55 from end to end of the bed A. It also carries the pulleys *e, f, g*, which are traversed by the driving belt H.

At the extremities of the bed frame there are pulleys I and J, one of which may be the 60 main driving pulley, receiving its motion from a prime mover in any suitable way.

An electric motor may be substituted for the above described arrangement of pulleys and belt, to operate the boring tool, without 65 in any way changing the nature of the invention, because no novelty is claimed for the traversing belt which permits a change of location of the driven machinery.

The boring-bit mandrel K is upright and 70 slides in its driving sleeve L so that the tool may descend to bore its hole and ascend again to leave the same. The sleeve L is carried in a proper head M at the extremity of a carriage N which slides in guides on the carriage 75 D. so that, while said carriage D. carries the boring tool to the right or left the carriage N carries it forward or backward. The sleeve L is provided with a miter gear O, which 80 meshes with a similar gear *p* on the shaft Q which slides in and is driven by the pulley *e*. Motion is thus transmitted from the traveling belt H. to the mandrel K.

The head M. is provided with a handle *r* whereby the attendant manages and moves 85 the carriage to bring the boring bit to the point desired.

Notches or keepers *s.* in some fixed part of the machine, such as the track C are placed 90 at proper points to determine the proper arrest of the traveling carriage D which is provided with a latch *t.* to drop into said keeper and lock the carriage in position. Thus the carriage D is moved laterally from station to station and the carriage N is drawn forward 95 or backward as the case may require to bring the boring bit to the exact point desired. When these points occur in regular series, as in the wagon body referred to then the forward and backward adjustments are deter- 100

mined by the proper stops and nothing is left to chance or inequalities of judgment on the part of the attendant.

In the case of the wagon body side-board B, the holes *u*, are in pairs at different but uniform distances from the edge. To avoid the necessity of moving the carriage D over the short stages between the holes of the same pair, I have made the carriage D. in two parts and united them by a pivot bolt *v*, so that the forward end of the carriage N. may swing horizontally on said pivot bolt. The keeper *s*. is then arranged midway between the pairs of holes *u*, *u*, and the side swing referred to causes the boring bit to reach the point desired, first on one side and then on the other. Adjustable stops *w* serve to determine and limit this swinging motion.

For convenience in boring the holes *u*, *u*, in the wagon body and to determine the forward and backward movements of the carriage N, a latch E is mounted on said carriage N, and arranged to engage with some proper part of the carriage D. Said latch is controlled by the hand which grasps the handle *r* by means of a lever F. The latch E and lever F are shown by dotted lines in Fig. 3.

The mandrel K is provided with a hand lever G whereby it may be depressed to bring the boring bit down to its work, and there is also provided a counter spring having sufficient tension to lift said mandrel and bit when the lever G is released. To this end the spring *h* is provided and for convenience located within a tubular part of the frame N. In front of said spring there is a plunger P coupled with the hand lever G by means of the bell crank *q* and link R.

Having described my invention, I claim—

1. In a boring machine the combination with the bed, of a track along the same, a carriage movable on said track and having transverse bearings, a second carriage N on the first and comprising a sliding part carrying a suitable head and fitting and movable in one of said bearings, a vertical rotary bearing carried by said head, a mandrel sliding vertically in the latter bearing and having a bevel gear wheel, means for moving the mandrel up and down, actuating mechanism for rotating said vertical bearing, a transverse shaft carried in a bearing on said head and sliding in one of said transverse bearings, a bevel gear wheel on said shaft and meshing with the first mentioned gear wheel, and a driving pulley *e* on said shaft, substantially as set forth.

2. In a boring machine the combination with the bed, of a track along the same, a carriage movable on said track and having transverse guide ways or bearings, a second carriage on the first and movable in said bearings over the bed, a transverse belt pulley on said second carriage, stationarily mounted pulleys I, J, a lateral shaft mounted in bearings on said carriage and passing through and movable in said transverse belt pulley,

a mandrel sliding vertically in said carriage, and connecting mechanism between said lateral shaft and mandrel for rotating the latter, substantially as set forth.

3. In a boring machine the combination with the bed, of a track along the same, a carriage movable on said track and having transverse guide ways or bearings, said carriage being formed in two parts connected by a pivot or swivel, a second carriage on the first and movable on said guide ways over the bed, a vertically movable mandrel carried by the second carriage, and mechanism for rotating the mandrel, substantially as set forth.

4. In a boring machine the combination with the bed, of a track along the same, a carriage movable on said track and having transverse guide-ways or bearings, a second carriage on the first and movable on said guide-ways over the bed, and consisting of two parts pivotally connected a spring-controlled mandrel mounted in the second carriage, means for rotating said mandrel, and a hand lever for depressing it, substantially as set forth.

5. In a boring machine the combination with the bed, of a track along the same, a carriage movable on said track and having transverse guide-ways or bearings, a second carriage on the first and movable on said guide-ways over the bed, a vertical bearing carried by said second carriage, a mandrel sliding vertically in the latter bearing, a spring actuated plunger, connections between said mandrel and plunger and actuating mechanism for rotating the mandrel, substantially as set forth.

6. The combination of the bed, and a track along the same, pulleys situated at the ends of the track, a carriage movable on said track, and having guide-pulleys in line with the first mentioned pulleys, a second carriage mounted and transversely movable on the first carriage and having a transverse shaft, a pulley on said shaft adapted to receive a belt from the guide pulleys, a mandrel on the second carriage, and bevel gears connecting said shaft and mandrel, substantially as set forth.

7. The bed A and track C combined with the carriage D, adapted to travel on said track, and provided with a carriage N adapted to move in a direction transverse to the track C, fixed keepers *s* on a stationary part of the machine, and a latch *t* on the carriage the mandrel K to carry the boring tool and mechanism to cause the same to revolve.

8. The bed A. two rail track C combined with the wheeled carriage D. formed in two parts having a pivotal or swiveled connection adapted to travel on said track, the carriage N mounted on said carriage D. and adapted to slide thereon in a direction transverse to the track C, the mandrel K to carry the boring tool, and mechanism to cause the same to revolve.

9. The bed A and track C along the same and pulleys I. J. near the ends of said track combined with the carriage D. to travel there-

on, said carriage D. being provided with the belt pulleys *e. f. g.* and the carriage N provided with the mandrel K the shaft Q connected with said pulley *e* and the miter gears *o. p.* connecting said mandrel and shaft.

10. The bed A provided with a track C, and carriage D made in two parts united by a pivot bolt *v* combined with a carriage N adapted to move on the pivoted part of carriage D. in a direction transverse to the track C. and to swing on said pivot for the purpose set forth, a mandrel on said carriage N and actuating mechanism therefor.

11. In combination, the bed A provided with the track C, the carriage D. made in two parts pivoted together by bolt *v*, the carriage N having the mandrel K and adapted to slide and swing on the pivoted part, and the adjustable stop *w*.

12. In combination, the carriage D made in two parts united by the pivot bolt *v*. the carriage N having the mandrel K and adapted to slide and swing on said carriage D as set forth, and the lever F and catch E on said carriage N, substantially as set forth.

13. In combination, the carriage N, the head M thereon, the mandrel K in said head, the lifting lever G connected with the mandrel, and a lifting means for the lever consisting of the bell-crank lever *q* fulcrumed on the carriage and connected with the lever, and a spring *h* connected with the other arm of said bell-crank lever, substantially as set forth.

CHARLES M. COLLINS.

In presence of—

J. L. TAYLOR,
R. D. O. SMITH.