

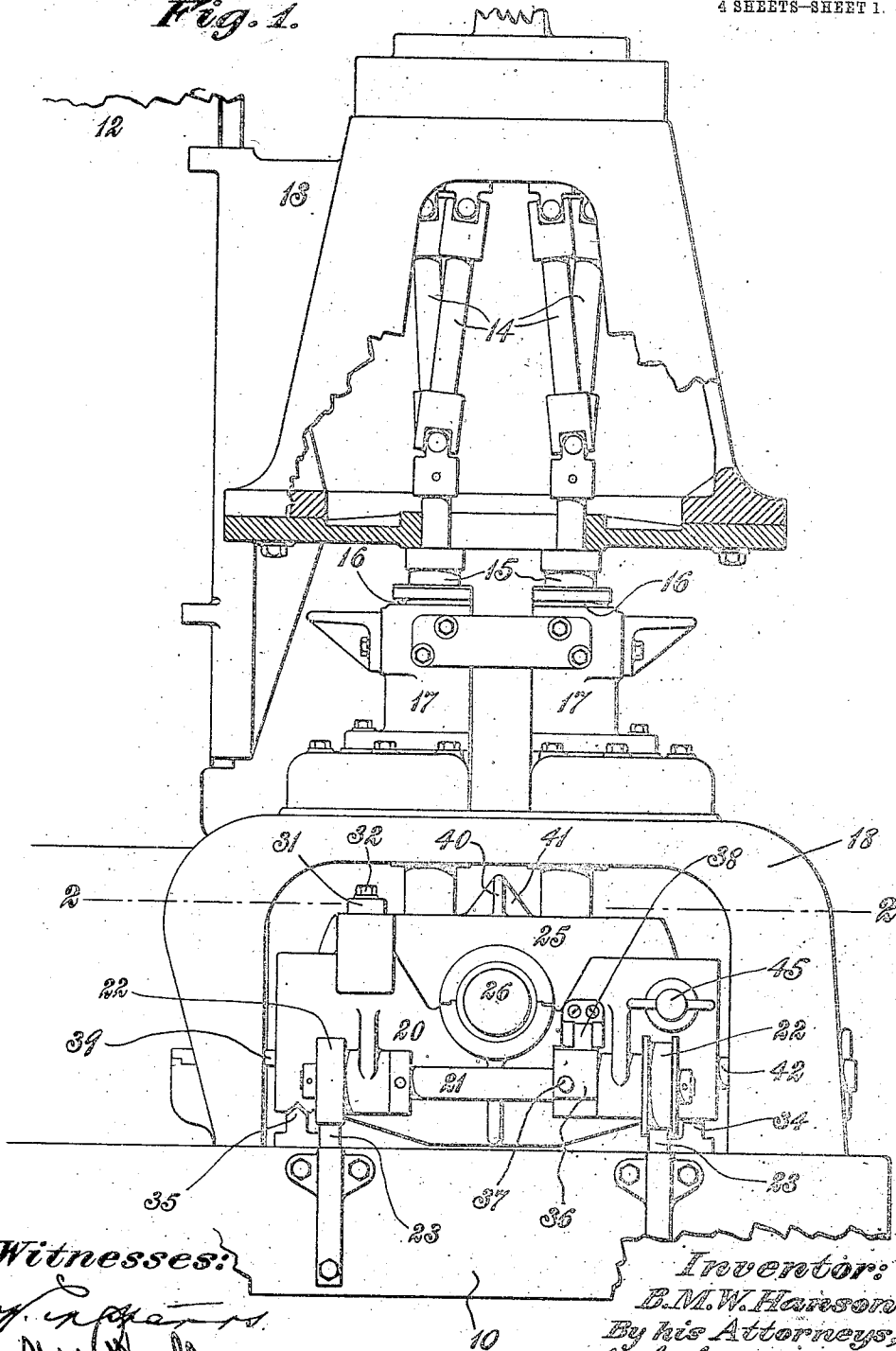
B. M. W. HANSON.
 WORK CARRYING MEANS.
 APPLICATION FILED OCT. 7, 1910.

1,042,000.

Patented Oct. 22, 1912.

4 SHEETS-SHEET 1.

Fig. 1.



Witnesses:

J. H. H. H.
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Inventor:

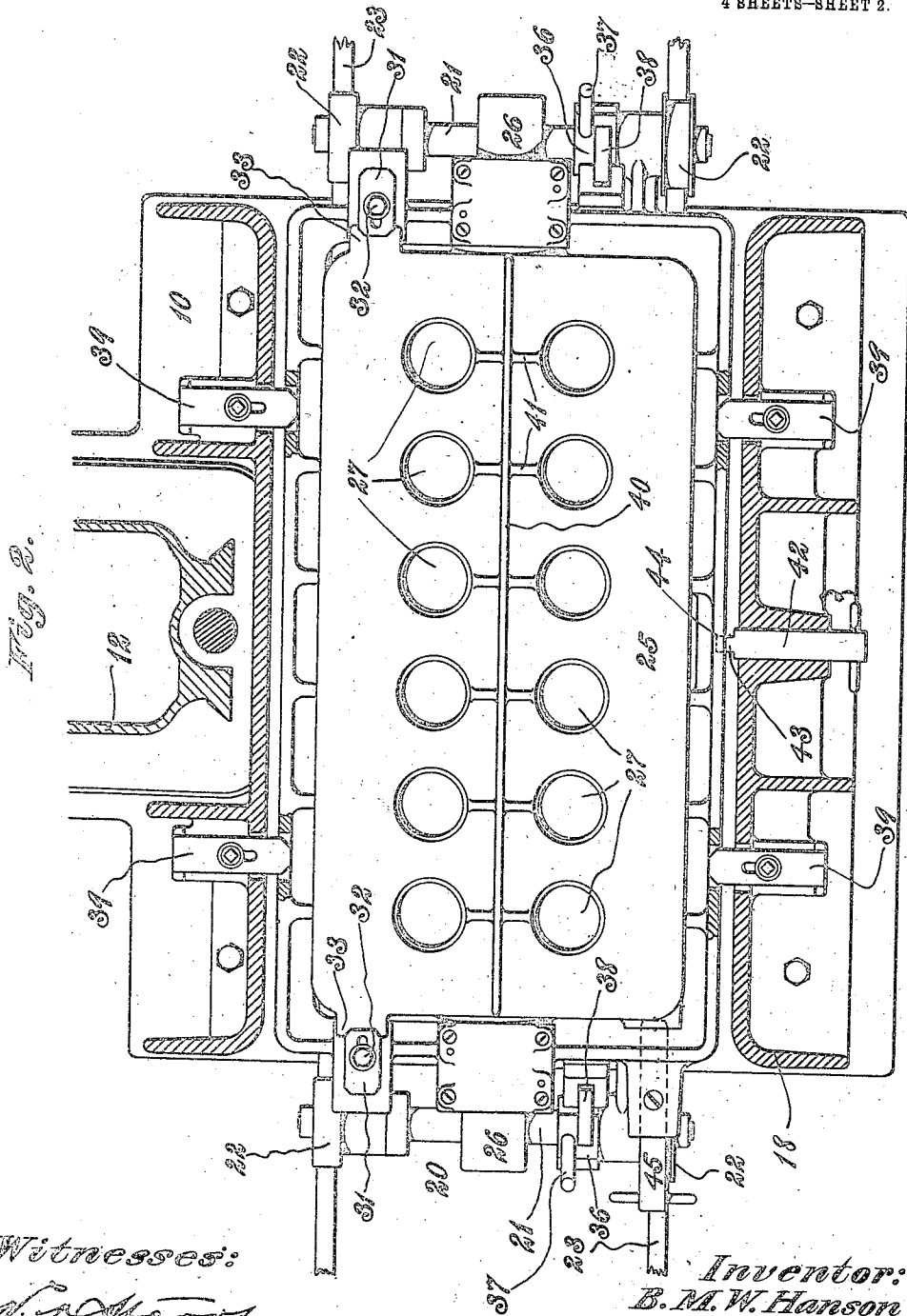
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4 SHEETS—SHEET 2.



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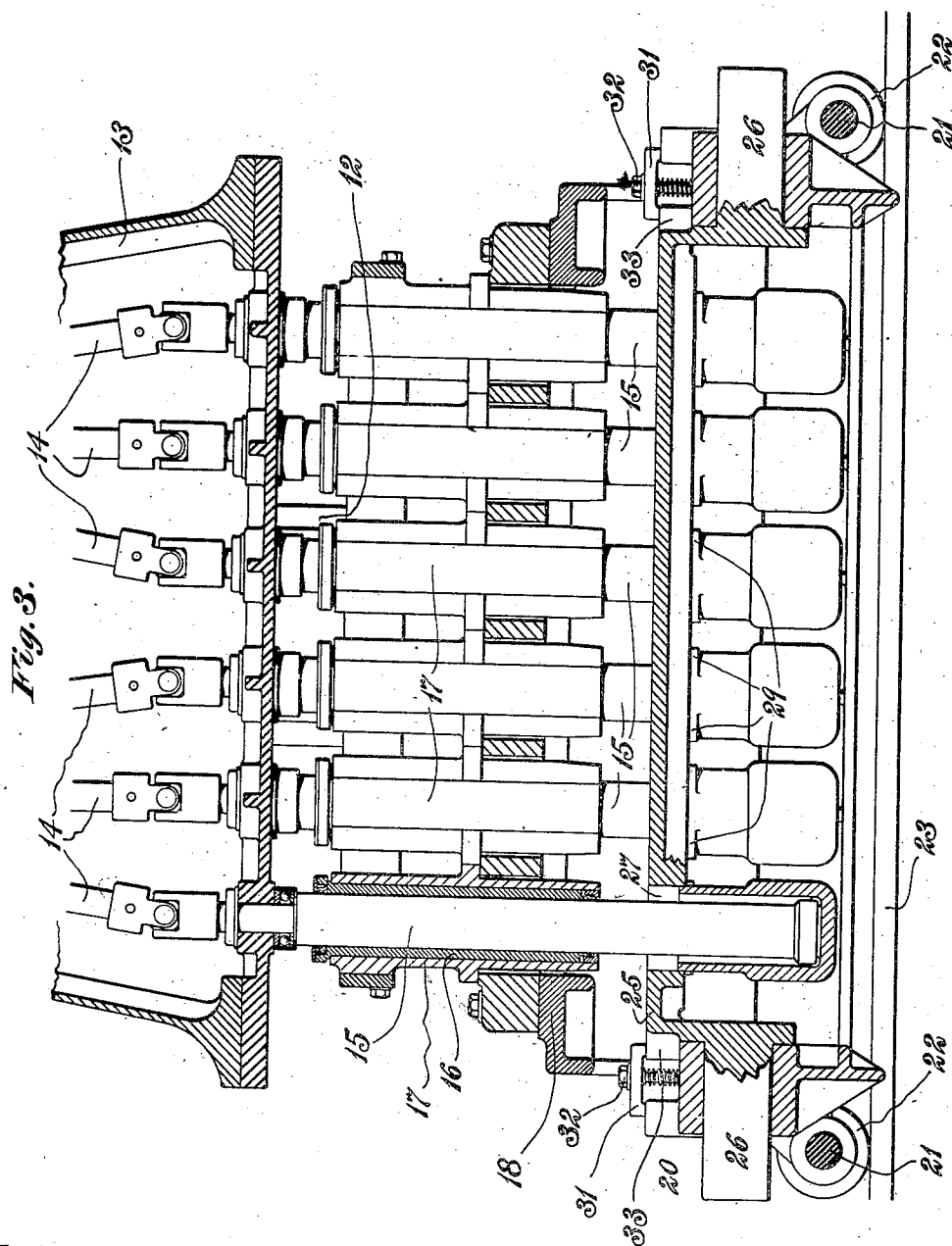
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4 SHEETS-SHEET 3.



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4 SHEETS-SHEET 4.

Fig. 5.

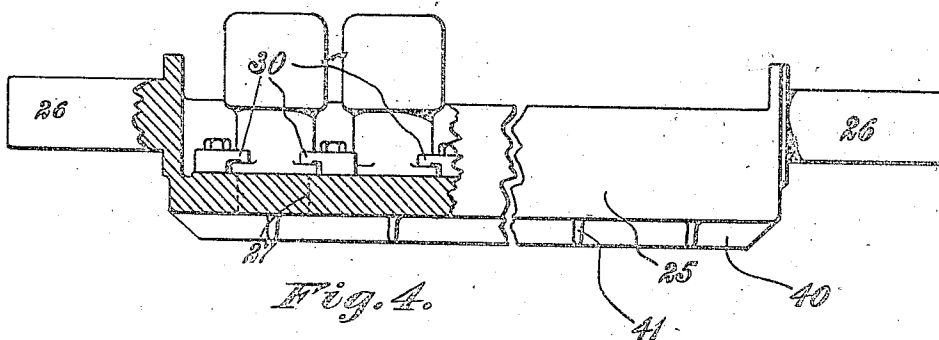


Fig. 4.

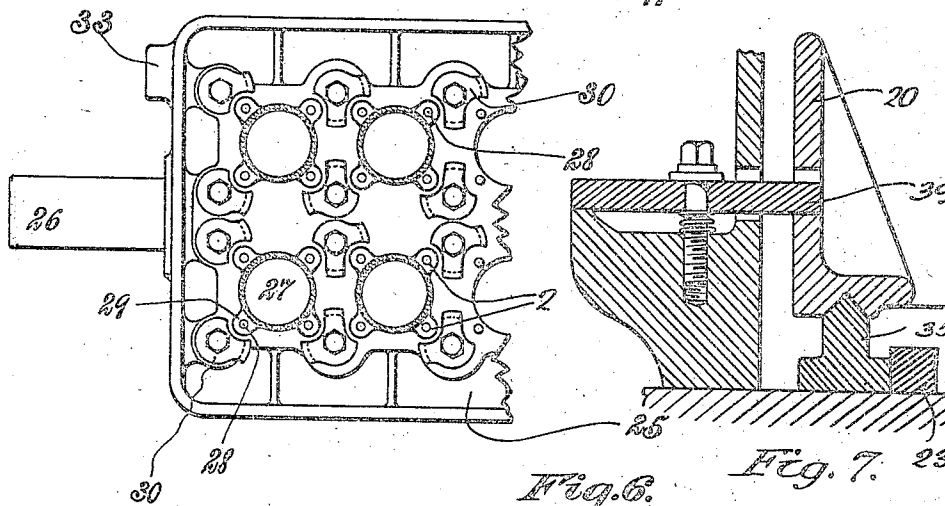
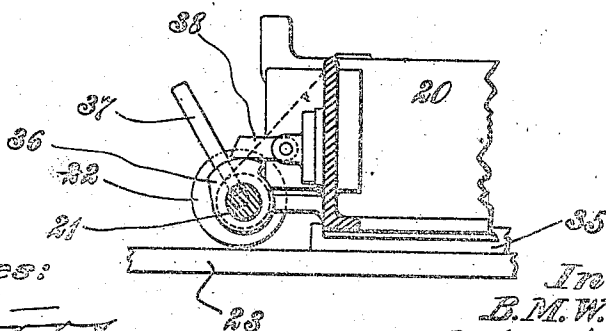


Fig. 6.

Fig. 7.



Witnesses:

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UNITED STATES PATENT OFFICE.

BENGT M. W. HANSON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO PRATT & WHITNEY COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF NEW JERSEY.

WORK-CARRYING MEANS.

1,042,000.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed October 7, 1910. Serial No. 585,821.

To all whom it may concern:

Be it known that I, BENGT. M. W. HANSON, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Work-Carrying Means, of which the following is a specification.

This invention relates to work carrying means, and while the same can be employed with advantage in many different connections, it is of especial utility when utilized in conjunction with various styles of metal working machines.

In the drawings accompanying and forming part of the present specification I have illustrated in detail, one effective form of embodiment of the invention and to enable those skilled in the art to practise the invention will fully set forth said disclosure in the following description. I do not restrict myself, however, to the features thus shown and described, as I may depart therefrom in several respects within the scope of my invention included in the claims succeeding said description. In the showing thus made the work carrying means is represented as incorporated in or forming part of a boring machine, and is of such character as to support several articles and to rigidly maintain the same in position to be operated upon.

The machine is represented as organized for simultaneously holding several cylinder blanks which are adapted to be bored at the same time. By the mechanism I can handle simultaneously a large number of blanks, and when the same are in position to be bored can assure that the operations are performed with preciseness.

Referring to said drawings: Figure 1 is a side elevation of a boring machine equipped with work carrying means involving my invention, a portion of the head of said machine being in section and broken away. Fig. 2 is a horizontal section on the line 2-2 of Fig. 1. Fig. 3 is a vertical section, the section being from side to side of the boring machine. Fig. 4 is a view of a portion of the work carrier. Fig. 5 is a sectional elevation of the same. Fig. 6 is a detail view hereinafter more fully described. Fig. 7 is a sectional detail view showing a means for clamping the truck to its support when in lowered position.

Like characters refer to like parts throughout the several figures.

As will be gathered from what I have indicated work carrying means comprising my invention can be employed in different ways, but in the drawings the same is shown as associated with a multiple-spindle boring-machine which I shall describe but briefly, and this primarily to set forth the nature of the invention. Said machine includes a base or bed 10, and a column 12 rising therefrom and in the present instance this base or bed 10 constitutes a support for the work carrying means. The head 13 is slidable vertically of the column 12, and it is provided with a plurality of adjustable spindles 14 to which are connected the boring bars or tools 15 which turn in bushings 16 fitted in the tubes 17 rigidly carried in some suitable manner by the yoke or bridge 18 supported by and fastened for example by bolts, to the bed or base 10.

The carrying means, as will hereinafter appear, is made in the form of a truck provided with a work carrier, and this truck with the carrier is moved under the arch, yoke, or bridge 18 so as to bring the work in position to be acted on by the cutters carried by the boring bars 15 the lower ends of which extend below the tubes 17. A truck such as answers satisfactorily my purpose is that denoted in a general way by 20, and it is shown consisting of an open or skeleton frame provided at its ends with bearings for receiving the normally stationary axles or shafts 21, the outer ends of said axles or shafts being somewhat reduced and being also eccentric to the longitudinal axes of the respective axles and rotatively carrying wheels 22 which are adapted to travel on parallel rails 23 extending in the present instance laterally of the bed or base 10 on the upper side thereof, the wheel on one side of the truck being as shown in Fig. 1 peripherally grooved so as to accurately guide the truck or carriage along the rails.

The work carrier is denoted in a general way by 25, and it is shown as being approximately of pan or cradle form, although its shape is not a matter of consequence. The work carrier 25 is preferably supported for rocking motion by the truck or carriage 20, and for this purpose may be provided at its ends with trunnions 26 supported for oscillation in openings in the ends or cross

bars of the truck, it being understood that the work carrier or pan 25 may be when occasion requires, rocked or oscillated within the openings of the truck or carriage. The work carrier is adapted in the present case for supporting cylinders of the type employed in hydrocarbon engines, and these cylinders are subjected to the action of the several boring tools 15, the work carrier 25 having openings 27 in which the cylinders are fitted while being bored, the said boring tools being projectable into the cylinders through these openings. I prefer to clamp the cylinders to the work carrier, and any suitable clamping means may be provided for this purpose and also to positively prevent turning of said cylinders, although there may be cases where radically different means might be provided for securing the cylinders in place to the carrier. Around the openings 27 in the body of the carrier are pins 28, and these pins are adapted to enter openings in the lugs or ears 29 near the upper open ends of the cylinders, and they effectually prevent turning of the said cylinders. In the present instance there are four pins 28 in connection with each of said openings 27. The body of the work carrier 25 is shown as provided on its inner side with pivoted clamping members 30, and these clamping members are adapted to be swung over the lugs 29 so as to securely hold the respective cylinders in position. The clamping members are shown as occupying their ineffective position in Fig. 4 and their operative position in Fig. 5, and it will be clear that there are several clamping members in connection with each cylinder, although this is not essential.

When the cylinders are applied to the work carrier, the truck 20 will be in a retracted position or from under the yoke or bridge 18, while at the same time the work carrier will be inverted as shown in both Figs. 4 and 5 so as to facilitate the application of the cylinders to the work carrier. When the cylinders have received the respective pins 28, and when the several clamps 30 have been set, the said work carrier will be reversed by hand or otherwise so as to bring the cylinders in pendent relation to the work carrier and therefore in position to be bored. When the said work carrier is thus reversed, I prefer to provide positive means for holding it in such relation, and for this purpose the sliding clamps 31 may be provided, said clamps being supported by the truck or carriage 20 and being longitudinally slotted to receive the screws 32 tapped into said truck or carriage as shown best in Fig. 2. These clamps 31 are shown as set in said view, and they engage at such time projections 33 at two of the corners of the carrier. To release the carrier 25 from the influence of these clamps 31, the screws 32 are backed out

slightly and the clamping plates 31 slid from off the projections 33 whereby the carrier 25 can be turned, this operation occurring after the plurality of cylinders has been bored.

As already explained the cylinders will be applied to the carrier 25 when the truck 20 is in a retracted position, and when the cylinders are mounted in position and when the carrier 25 is swung down and clamped as previously set forth, the carriage or truck 20 will be advanced so as to bring the respective cylinders into vertical coincidence with the axes of the boring tools 15 and in condition to have said cylinders bored at which time the truck or carriage as a whole is clamped in place. Said truck or carriage is preferably clamped to the base or bed 10, the latter having opposite ways 34 and 35 to which the said carrier is substantially and directly clamped, the way 35 being approximately of V form. During the travel of the truck or carriage 20, the same will be above the said ways 34 and 35. It will be evident, however, that by turning the shafts 21, the terminal portions of which, it will be remembered, are eccentric, the truck or carriage may be lowered onto the ways 34 and 35 and afterward clamped to insure stability, and this operation will occur when the cylinders are in position to be bored. The shafts or axles 21 are shown provided with enlarged portions 36 having handles 37 by which said shafts or axles may be turned to effect the lowering or raising of the truck or carriage, and these enlarged portions 36 during the travel of the truck or carriage are engaged by pivoted latches 38 on the frame of the truck or carriage, so that during such action the truck or carriage can be maintained positively in its elevated position. By lifting these latches 38 when the carriage or truck is positioned for the boring operation the truck may descend onto the ways 34 and be clamped thereon by clamping members 39 on the bridge or yoke 18 which, as will be understood, is a part of the framing of the machine. The clamping members 39 are practically similar in construction and operation to the clamping members 31 for which reason it is not necessary to describe these features again.

It is believed that the operation of the device will be fully understood from what I have already stated, but notwithstanding this, I deem it desirable to briefly refer to the same. It will be obvious that the cylinders are connected with the carrier 25 when the same is in the position as shown in Figs. 4 and 5, and when the necessary number of cylinders has been applied the carrier 25 will be reversed and then clamped by the members 31 as already indicated. At this time it will be clear the truck is in its elevated and retracted position. The truck with the work carrier will then be advanced

to bring the cylinders in proper position with relation to the respective boring tools 15 which at this time are being elevated so as to permit the positioning of the truck with its series of cylinders. When the truck is thus positioned it is lowered and then clamped as already indicated, at which time the boring operation on the whole series of cylinders will be commenced. At the conclusion of the boring operation the truck is freed from the influence of the clamping members 39 and then elevated after which it is retracted. The carrier 25 is then released from the action of the clamping members 31 and then inverted so that the bored cylinders can be lifted from place after the clamping members 31 have been moved to their releasing position. As a matter of strength the carrier 25 may be provided with a longitudinal rib 40 and ribs 41 extending laterally from said longitudinal rib.

For convenience in locating the truck 20 longitudinally of the bed 10 and to hold it against displacement, prior to the setting of the clamps 39, the sliding bolt 42 (see Fig. 2) is provided, said bolt having a reduced end 43 to engage a hole 44 in the side of the truck. Similarly as a means to prevent relative movement between the work carrier 25, and its support, prior to the setting of the clamps 31, the sliding bolt 45 is carried by the frame of said support or truck 20.

What I claim is:

1. A device of the class described comprising a traveling truck, a work carrier on said truck, means for raising and lowering the truck, and means for clamping the truck to its support when in lowered position.

2. A device of the class described comprising a traveling truck, a work carrier on the truck, means for raising and lowering the truck, and means on the support of the truck, for clamping said truck to said support when the truck is in its lowered position.

3. A device of the class described comprising a truck having axles provided with eccentric portions, wheels rotative on said eccentric portions, means for turning said axles to effect the lowering and raising of the truck, a work carrier on the truck, and means for holding the truck against movement when in lowered position.

4. A device of the class described comprising a truck axles supported by said truck provided with eccentric portions, wheels rotatively connected with said eccen-

tric portions, means for turning the axles to effect the lowering and raising of the truck, latching means on the truck for engaging the axles to normally hold the truck in elevated position, and a work carrier on said truck.

5. A device of the class described comprising a traveling truck, a work carrier reversibly supported by said truck, means for positively holding the truck in a predetermined position, means for positively holding the work carrier in a predetermined position on the truck, and means for removably supporting the work by the work carrier.

6. A device of the class described comprising a traveling truck, means for raising and lowering the truck, means for clamping the truck to its support when in lowered position, a work carrier reversibly supported by the truck, and means for clamping the work carrier to the truck when in one of its positions.

7. A device of the class described comprising a bed provided with rails, a truck having axles furnished with eccentric portions, wheels on the eccentric portions, to travel on said rails, means for turning said axles to effect the raising and lowering of the truck, ways on said bed, onto which the truck is adapted to be lowered, means for clamping the truck to said ways, a work carrier reversibly supported by said truck, and means for positively holding the work carrier in one of its positions.

8. A device of the class described comprising a reversibly mounted work carrier, means for positively holding the work carrier in one of its positions, and means for removably connecting the work with said work carrier, the latter having an opening for the passage of an operating tool.

9. A device of the class described comprising a traveling truck having an open frame, a work carrier supported for oscillation within said frame and having an opening for the passage of an operating tool, means for separably connecting the work with said work carrier, and means for positively holding the work carrier against movement with respect to the truck during work.

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

BENGT M. W. HANSON.

Witnesses:

W. M. STORRS,

H. W. KILBOURNE.