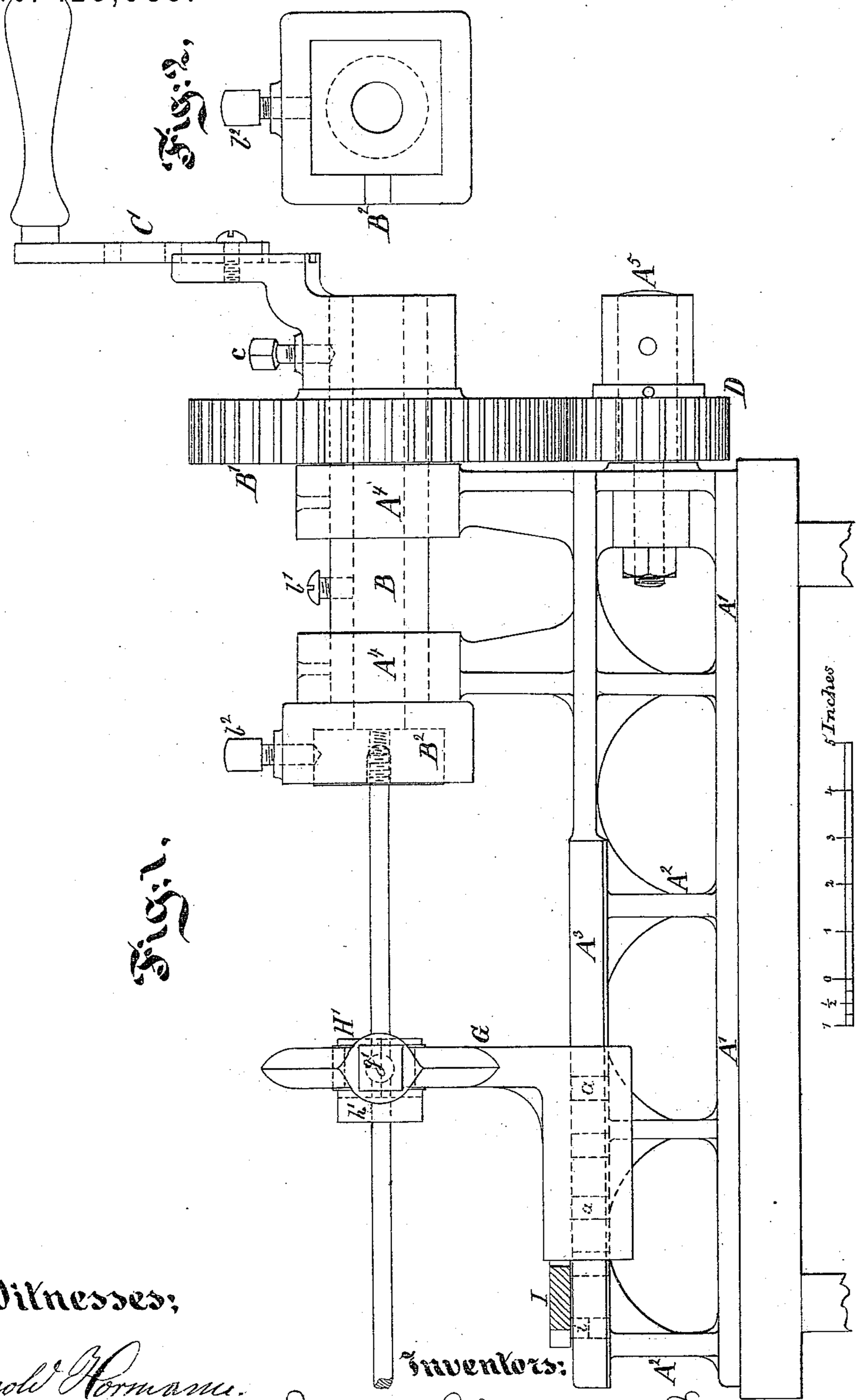
4 Sheets--Sheet. 1.

P. OLINGER, H. S. MANNING & D. A. GREENE.

Improvement in Machines for Screw-Cutting and other Purposes.

No. 125,983. Patented April 23, 1872.



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Wm. C. Dey

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by their attorneys F. S. Lyon

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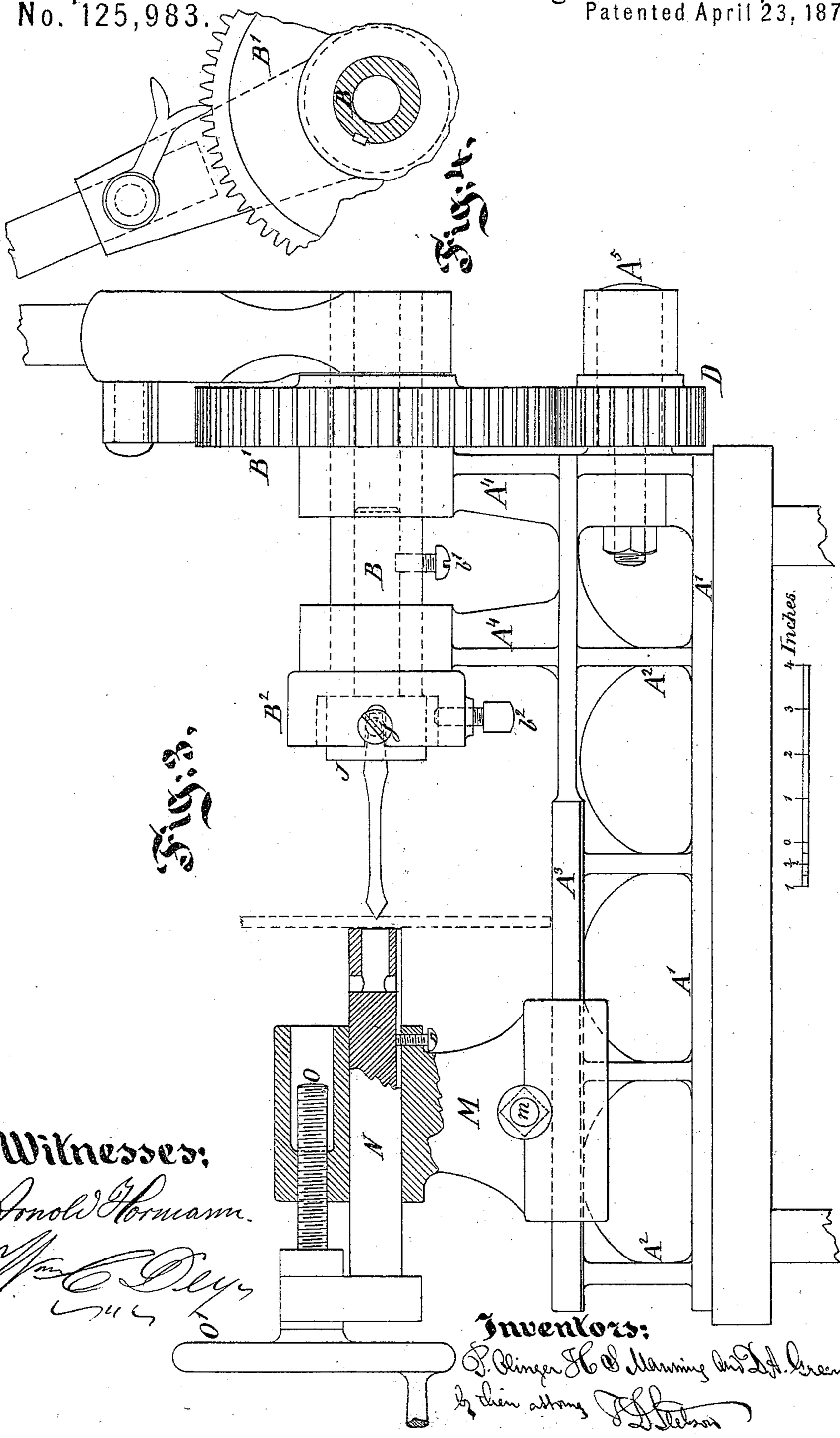

Fig. 2.

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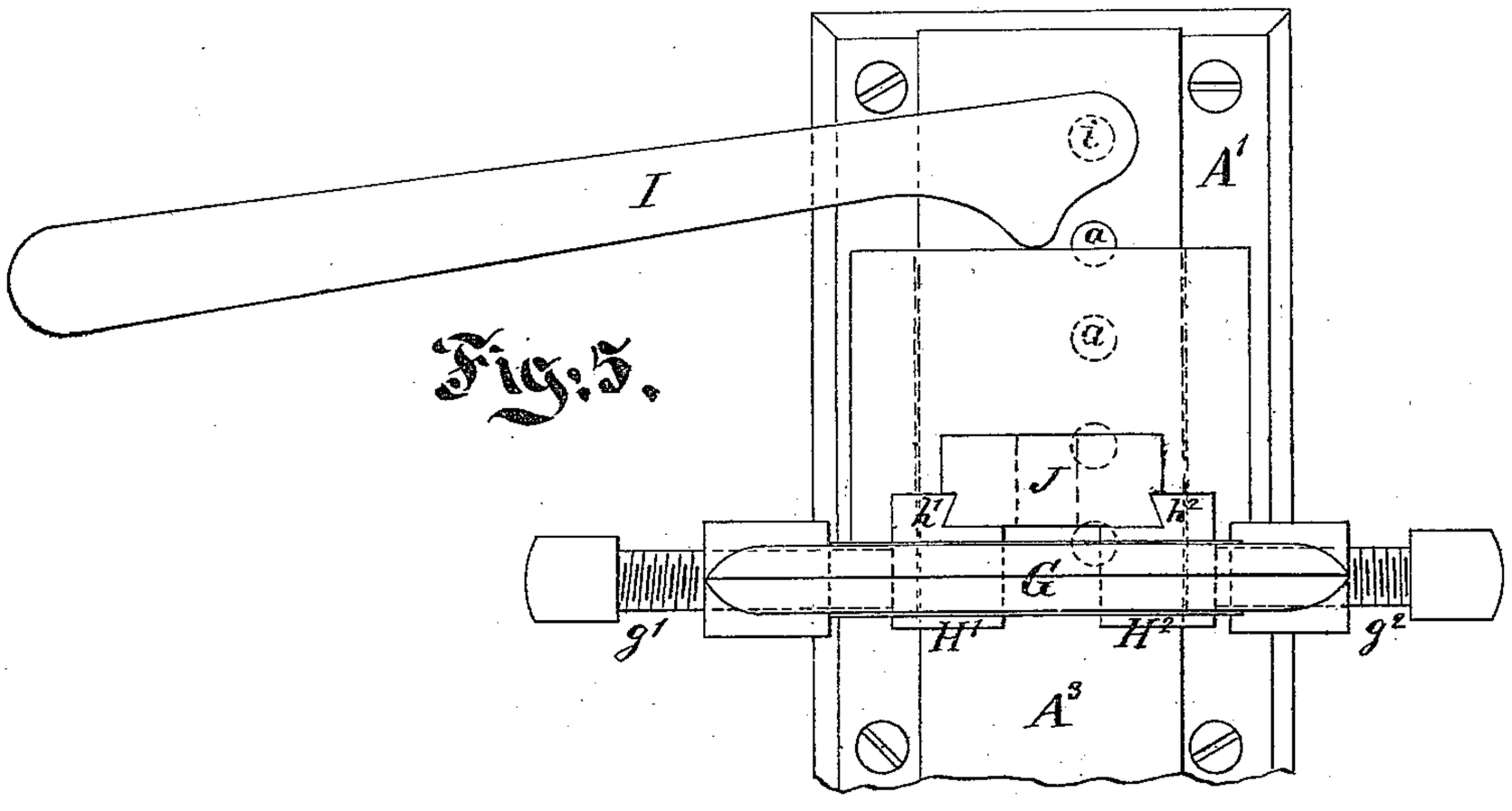
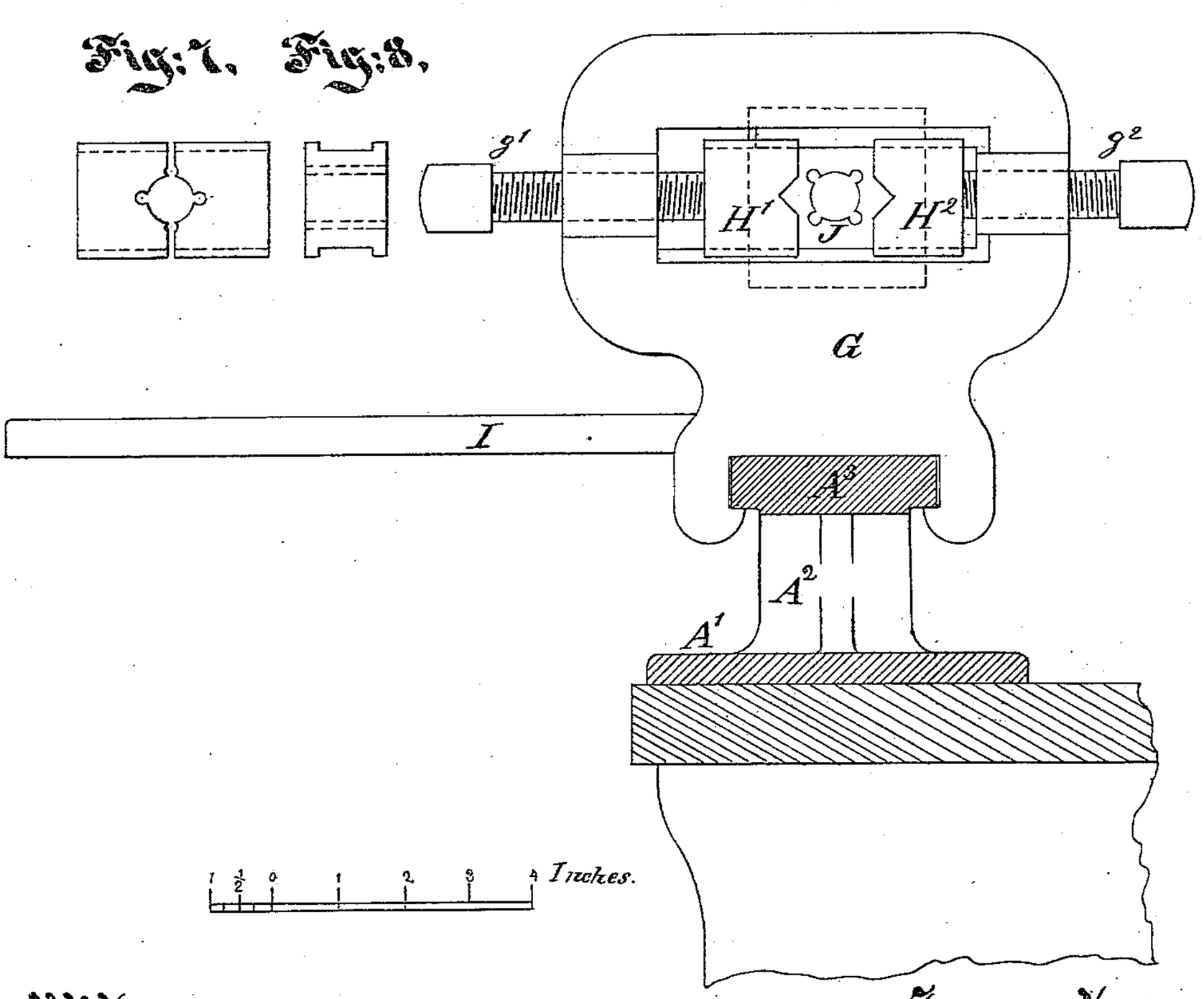


Fig: 5.

Fig: 6.

Fig: 7. Fig: 8.



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P. OLINGER, H. S. MANNING & D. A. GREENE.

Improvement in Machines for Screw-Cutting and other Purposes.

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Fig:9.

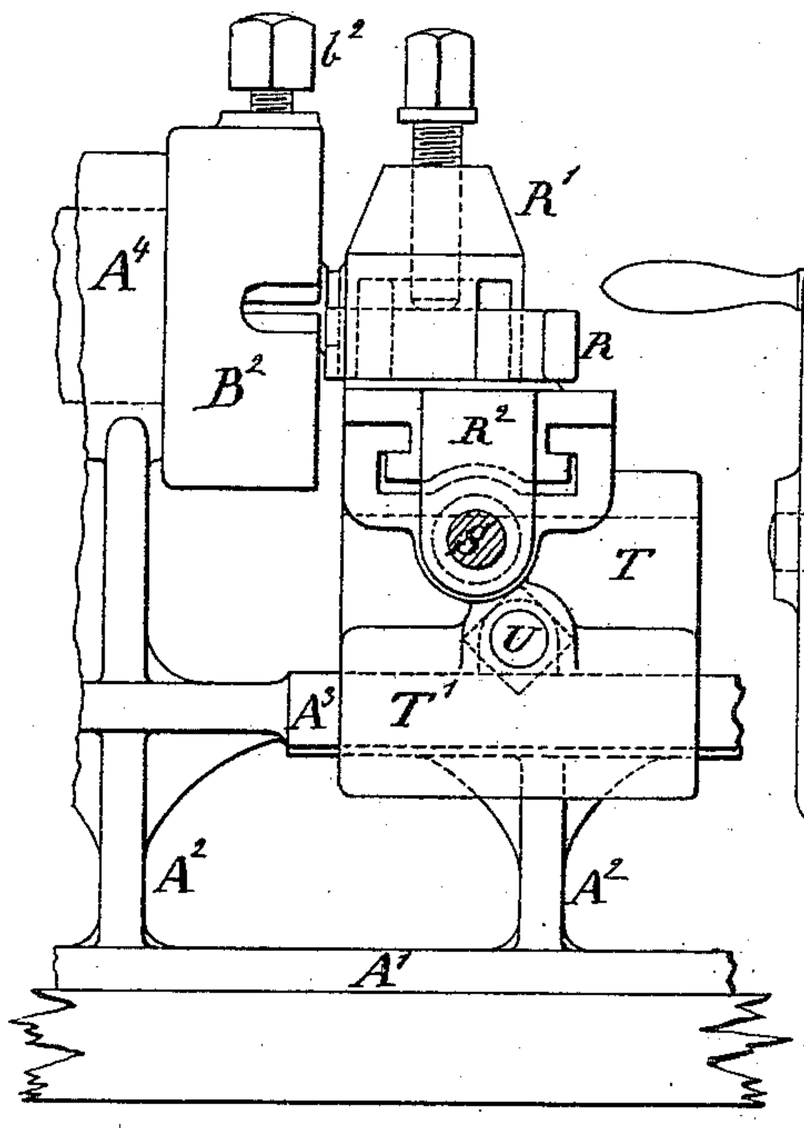


Fig:10.

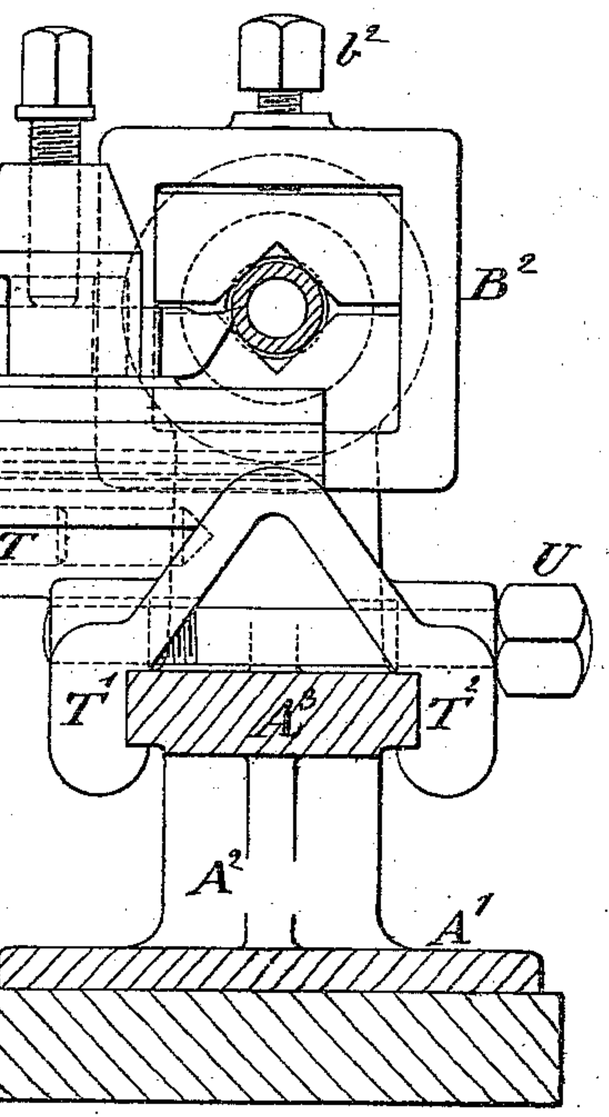
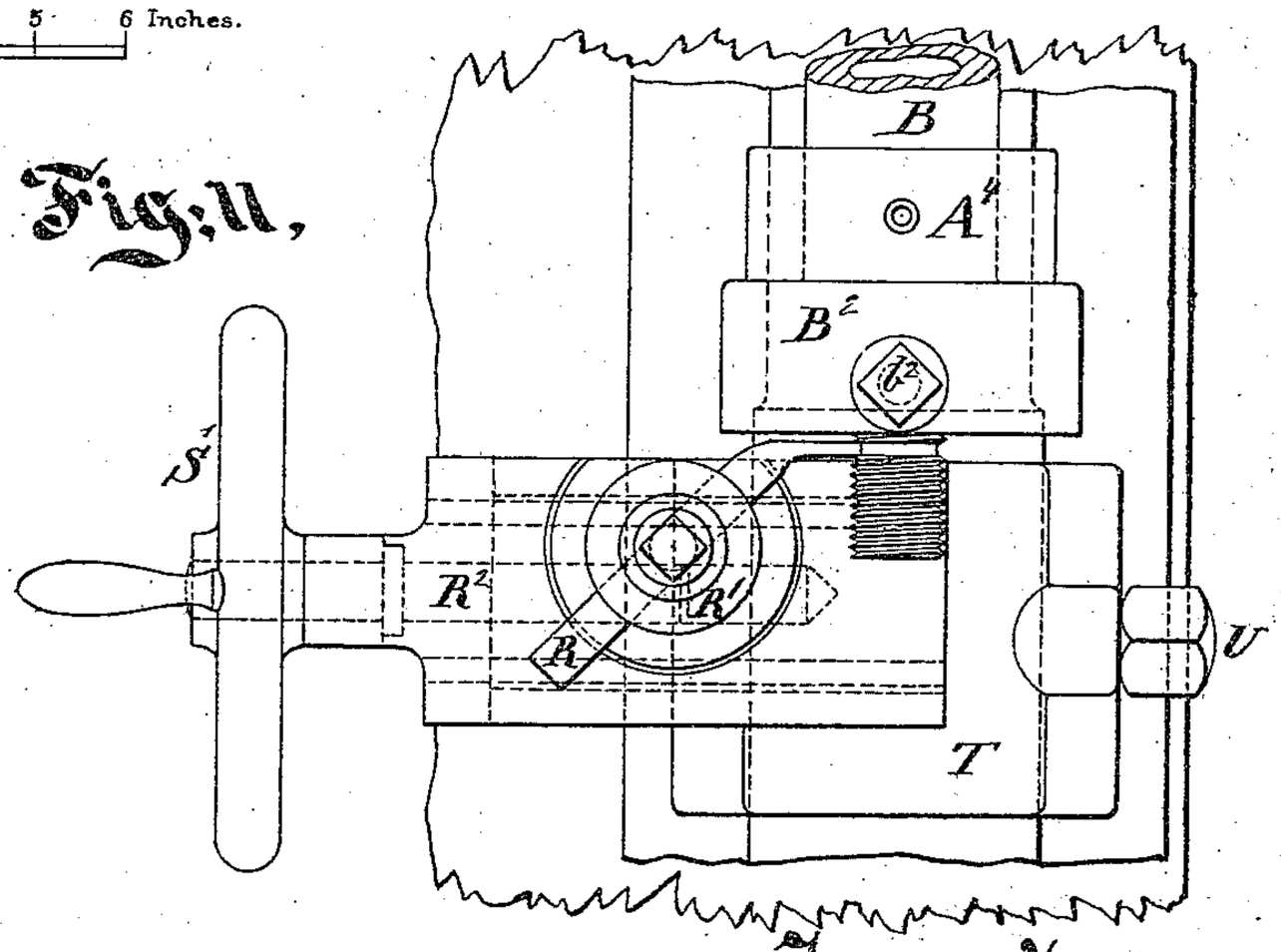


Fig:11,



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by their attorneys F. D. Stetson

UNITED STATES PATENT OFFICE.

PIERRE OLINGER, OF JERSEY CITY, NEW JERSEY, AND HENRY S. MANNING AND DARWIN A. GREENE, OF NEW YORK, N. Y., ASSIGNORS TO HENRY S. MANNING, OF NEW YORK CITY.

IMPROVEMENT IN MACHINES FOR SCREW CUTTING AND OTHER PURPOSES.

Specification forming part of Letters Patent No. 125,983, dated April 23, 1872.

Specification describing a certain Improvement in Machines for Screw Cutting, Tapping, and other operations, invented by PIERRE OLINGER, of Jersey City, Hudson county, New Jersey, and HENRY S. MANNING and DARWIN A. GREENE, both of New York city.

The improved machine is adapted for use on the bench in small shops where it is to be worked by hand; but it may also be driven by power. It is a cheap tool, capable of operating a drill or tap, or screw-cutting dies, and it possesses certain advantages over any tool for the purpose before known to us.

The following is a description of what we consider the best means of carrying out the invention. The accompanying drawing forms a part of this specification.

Figure 1 is a side elevation, showing the machine in condition for cutting a thread on a long rod or bolt. Fig. 2 is a face view of the box which holds the cutting-dies. Fig. 3 is a side view, partly in section, showing the machine in condition for drilling. It is shown as equipped with the peculiar impelling-lever referred to below as sometimes employed when a bolt is being cut which is too long to allow the use of a crank. With a small drill, as shown, a crank may usually be preferred. Fig. 4 is a view of the impelling-lever and a portion of the adjacent gear-wheel, in which the pawl engages. The view is at right angles to that in Fig. 3. The remaining figures are details relating to screw cutting.

Fig. 5 is a plan view of a portion with a solid die for screw cutting, mounted in the tail-center in the rear of the blank-dies. Thus equipped the blank-dies do not, as in Fig. 1, hold the rod against turning, but on the contrary allow the rod to turn and stand at a distance therefrom, so as to produce no direct effect thereon. Fig. 6 is a front view of the tail-center thus equipped. Figs. 7 and 8 represent a sectional die for screw cutting, adapted to be mounted in place of the blank dies in the tail-center.

Similar letters of reference indicate like parts in all the figures.

The fixed framing, which is bolted down upon the bench, is formed in a single casting, which we will designate when necessary by the single letter A, and the several parts thereof by the letters A^1 A^2, &c. The base is A^1, and the uprights thereon are marked A^2. A horizontal piece, which serves as a way for the traveling tail-center is marked A^3, and two uprights which support the bearings for the main shaft are marked A^4. The main shaft is marked B, and is hollow throughout. One end is splined to receive a gear-wheel, B^1, and also to receive a crank, C. The other end is enlarged to form a square casing, B^2, adapted to receive cutting-dies, solid or divided, and to confine it or them by the screw b^2. D is a smaller gear-wheel revolving on a fixed stud, A^5. By transferring the crank C to the boss of this wheel D an increased purchase or operating force is attained, as will be obvious. The operating crank may be transferred from the shaft B to the boss of the wheel D and back again, at pleasure, being secured on either by the pinching-screw *c*, which takes in slight recesses made to receive it. The tail-centers are exchangeable. We will mark them respectively G and M, and describe first the tail-center G, which is adapted for screw cutting, and as shown in position for use in Fig. 1. This part G is always free to slide on the way A^3. It is adapted to receive two blank-dies, H^1 H^2, which are introduced in the opening represented, and are forced together by the screws g^1 g^2. To cut a screw, the bolt is introduced through the blank-dies H^1 H^2 when separated, and then seized firmly by turning the screws g^1 g^2. Next, the tail-center G, with the bolt attached, is pressed forward, (peculiar means for doing this conveniently and powerfully will be presently described,) and the shaft B being turned by the crank C the die or dies in the box or casing B^2 seize and commence to cut the proper thread on the end of the bolt. The tail-center G and its attached bolt may now be left free, and the crank C being turned the bolt is cut properly, the tail-center G moving forward to accommodate the required motion of the bolt as the cutting proceeds. In cutting a long bolt the blank-dies H may be caused to let go, and the tail-center moved back, and the screws g^1 g^2 be again tightened several times, and, as the work proceeds, the threaded portion of the bolt will

extend through the hollow interior of the shaft B. When, by such gradual movement of the bolt forward, or from any other cause, a bolt extends out beyond the opposite end of the shaft B, it will be in the way of the hand in rotating the crank. In such case both hands may be employed to pass the crank around, letting go with one and taking hold with the other at each revolution. This mode of operating, however, can only be employed when the crank is applied directly to the shaft B. When it is applied to the boss of the wheel D the crank cannot be revolved entirely around. For this emergency we provide a lever and pawl, serving as a ratchet, which may be employed on the boss of the wheel D, or made larger and applied to the shaft B, as shown in Figs. 3 and 4. By vibrating the lever with this ratchet an intermittent rotary motion is given, and the screw-cutting proceeds intermittently and less rapidly.

Referring, now, to the other end of the machine, we have provided holes *a* in the part A^3, and a hand-lever, I *i*, adapted to employ these holes as fulcrums for urging forward the tail-center G. The point *i* of the lever being applied in one of the holes, and the lever operated, the tail-center is pressed forward gradually, and with any required degree of force. It may sometimes be desirable to turn the bolt and to hold the cutting-die in the tail-center. We have provided for holding a large solid die in the tail-center, behind the blank-dies, and by means thereof it may be held firmly. The blank-dies H^1 H^2 have projections on their back faces, as represented by h^1 h^2. The solid dies being formed with dovetailed edges, as shown, a solid die may be introduced at the back of the widely-opened blank-dies, as shown in Figs. 5 and 6, and it will be firmly secured by operating the screws g^1 g^2. Any ordinary or suitable means being employed to hold the bolt firmly, and compel it to turn with the rotation of the shaft B, the screw cutting proceeds as before.

We will now describe the machine with the other tail-center, M, as shown in Fig. 3. This tail-center is divided for a considerable height, and we find cast-iron is sufficiently elastic to allow the lower cheeks to spring open and slide easily on the way A^3, or be clamped tightly together by the screw *m*, as may be preferred. When this screw *m* is slackened this tail-center M may move freely backward and forward. When the proper position is found it is clamped firmly by a half turn, more or less, of the screw *m*. N is a sliding center, acting in the tail-center stock M. It is operated by the screw O, turned by the hand-wheel O′. The point, if one is allowed to go with it, should be removed, and the plain end of the piece N be alone employed in drilling, as shown.

In drilling with this machine we mount the drill in a removable socket piece, J, having a side screw, *j*, which performs the double function of securing the drill in the socket-piece J, and also of locking the socket-piece J and its contents within the box or casing B^2, so that it is compelled to revolve therewith. The entire socket-piece J and its contents are held in the shaft B by the pinching-screw b^1. When the drill is in position, and is rotated by the operating of the crank, the work to be drilled is urged forward by operating the screw O, and thus moving forward the center N, as will be obvious.

We are aware that most of the details of our machine have been before employed separately, but the cost of a multiplicity of tools is the great drawback to the success and usefulness of small shops. Our invention, by combining in one small cheap machine the capacity for a great variety of work, makes it possible for inventors and other mechanics with small means, and at a distance from large shops, to execute work which would be otherwise impracticable. Although we have spoken of the long piece operated on as a bolt, it will be obvious that it may work also on rods of any name, or on gas-pipes and hollow pieces of any kind or name. Its greatest advantages are felt in treating hollow pipes and tubes. The cutting off of nipples or short threaded lengths of tubing for joining and extending pipes, which is one of the uses of this tool, supplies a want which gas-fitters have long felt, and the extraordinary convenience of effecting all the several ends by one small cheap machine will be readily appreciated.

In order to conveniently cut off short lengths of bolts or tubing we have provided an attachment analogous to a slide-rest, and shift the material forward intermittently and run the cutter inward. This addition is more particularly useful in producing very short lengths of tubing, threaded or not, for couplings and analogous uses. This arrangement is represented is position for use in Figs. 9, 10, and 11, where Fig. 9 is a side elevation of a portion of the apparatus with the hand-wheel for screwing forward the cutter removed. Fig. 10 is an end view, and Fig. 11 a plan view. In these figures the cutter which cuts off the tube is represented by R; the tool-stand which holds it by R^1; and the slide which carries it transversely to the ways or length of the machine by R^2. The screw which feeds the cutter forward is marked S, and the hand-wheel which operates it S′. These parts are mounted in a manner analogous to the lathe-tool in a stock, T, which is clamped upon the ways in any desired position by means of spring-clamps T^1 T^2, operated by a pinching-screw, U.

To operate with this attachment the tube, previously threaded throughout its whole length, is introduced through the hollow mandrel, and is pushed through to the proper extent and clamped by turning the screw b^2. The mandrel B, with the threaded tube, is now rapidly rotated, and the hand-wheel S′ turned to

carry the cutter R inward. As soon as this cutter has progressed inward sufficiently to cut off the length of tube it is run back, the machine stopped, and the screw slackened, when another similar length of the tube is fed forward and again secured, and the operation repeated.

We claim as our invention—

The shaft B, with chuck and suitable gearing, mounted in a frame, A, in combination with the interchangeable devices G and M and the slide-rest attachment, as specified.

In testimony whereof we have hereunto set our hands this 26th day of January, 1872, in the presence of two subscribing witnesses.

PIERRE OLINGER.
H. S. MANNING.
D. A. GREENE.

Witnesses to the signatures of OLINGER and MANNING:

EDGAR B. WATKINSON,
CHARLES C. BETTS.

Witnesses to signature of GREENE:

THOMAS D. STETSON,
WM. C. DEY.