

No. 720,215.

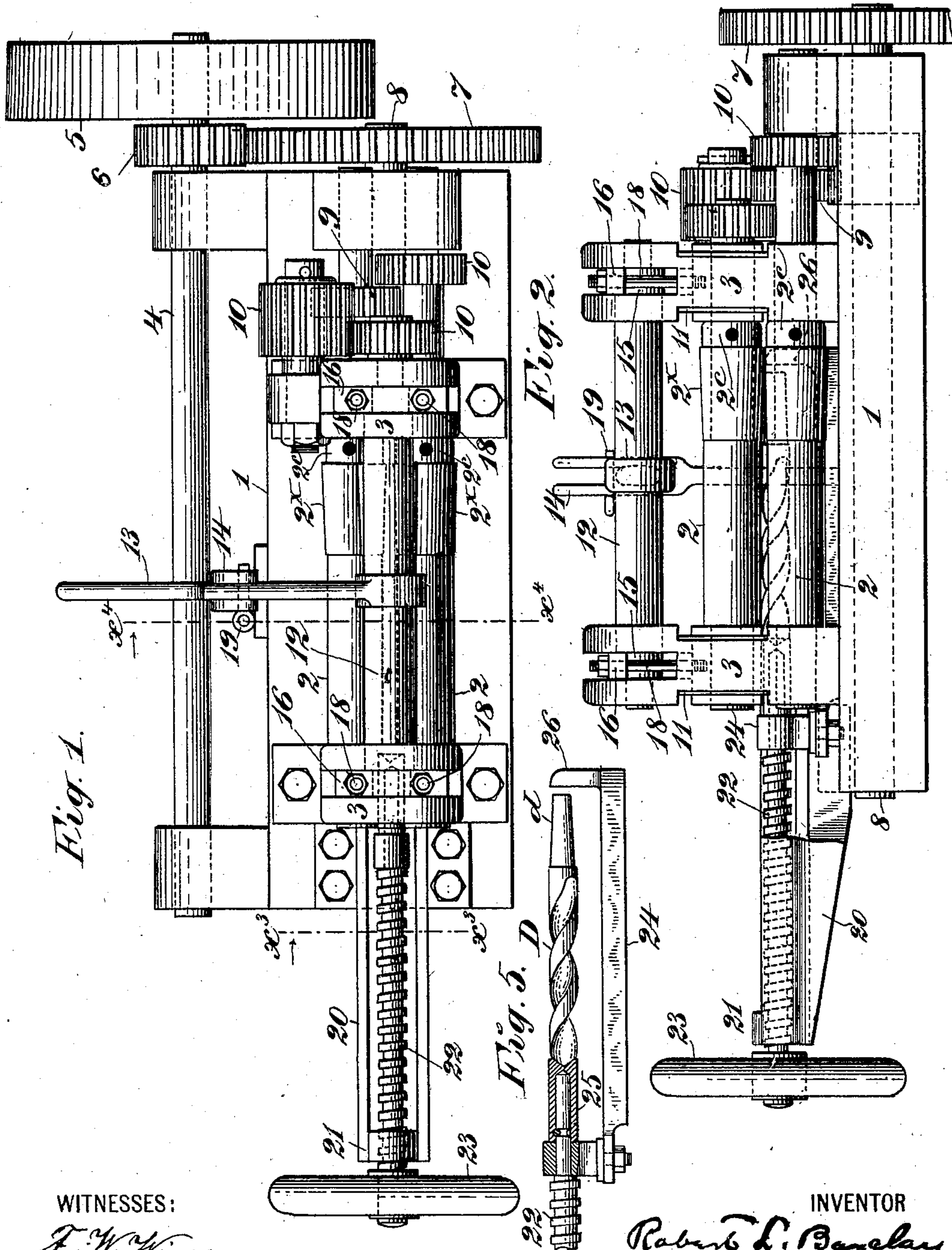
PATENTED FEB. 10, 1903.

R. L. BARCLAY.
MACHINE FOR STRAIGHTENING TWIST DRILLS.

APPLICATION FILED JUNE 19, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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Fig. 4.

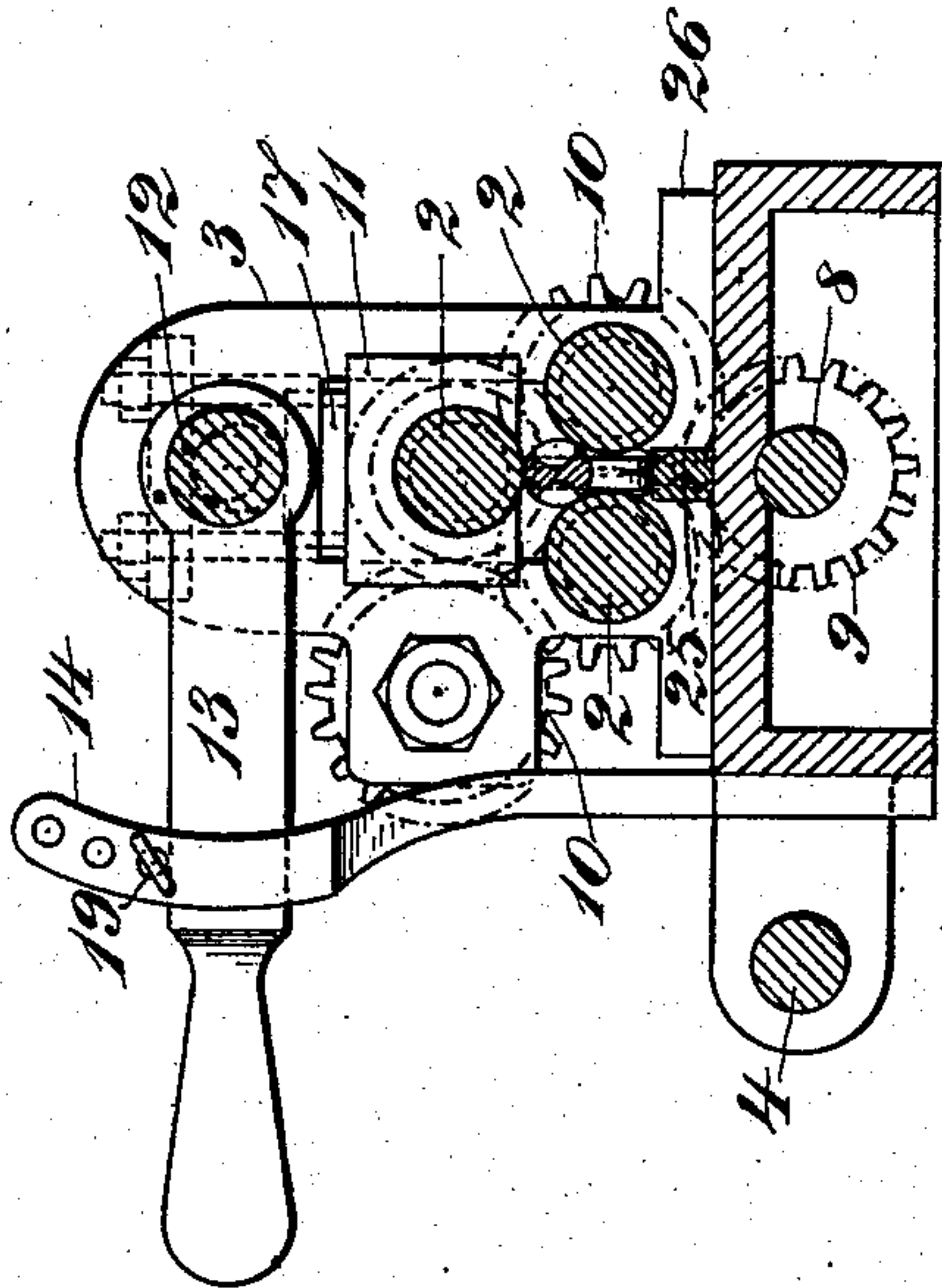


Fig. 8.

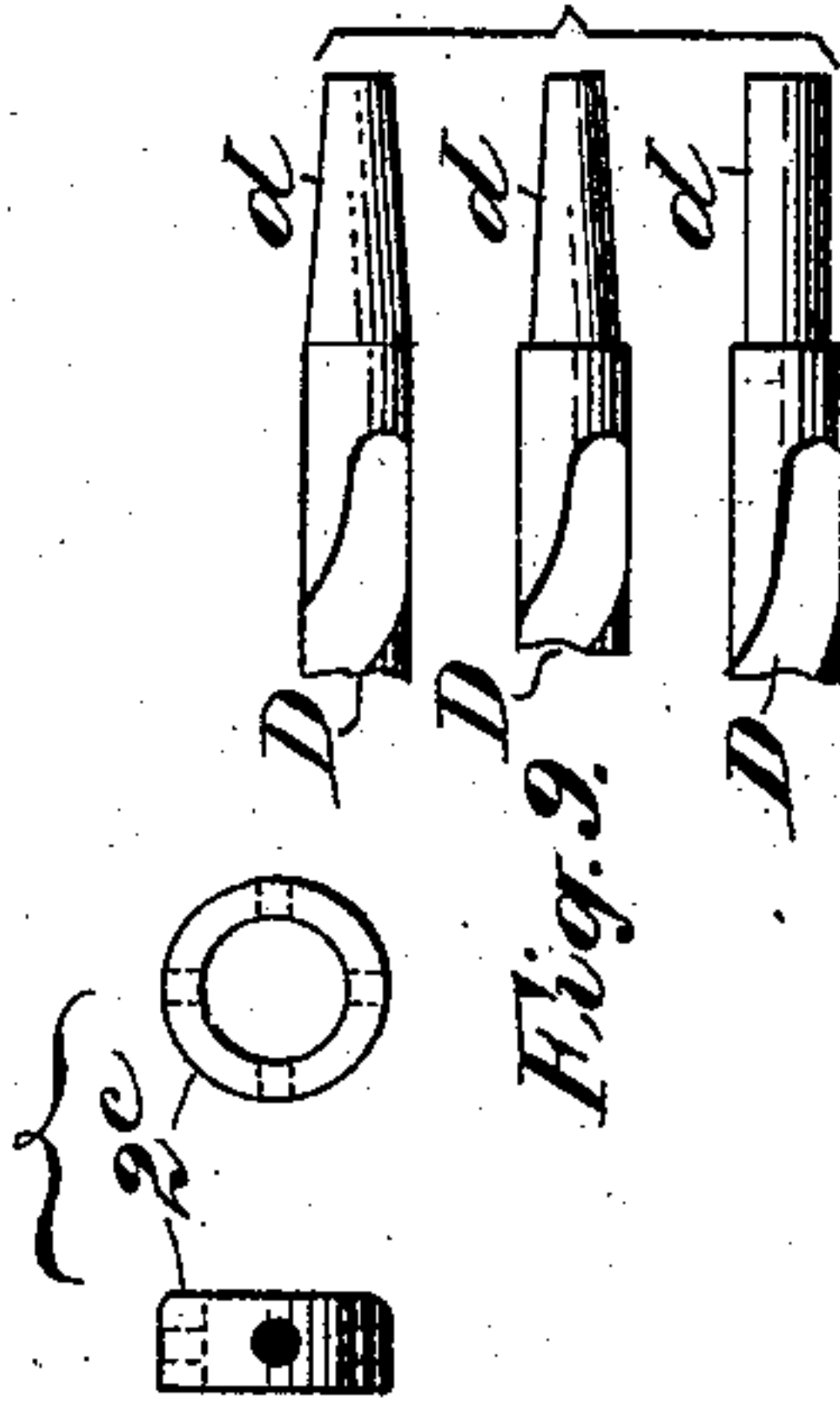


Fig. 9.

Fig. 7.

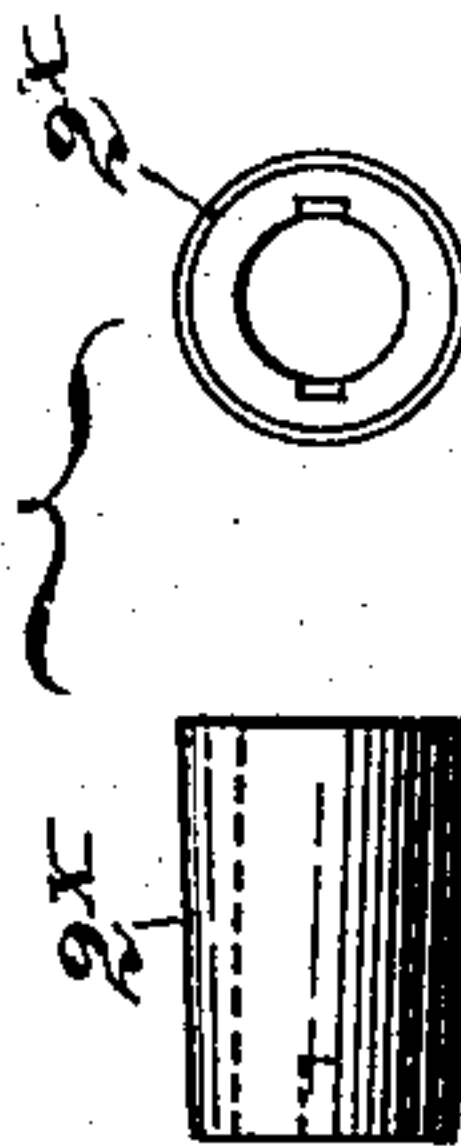


Fig. 6.

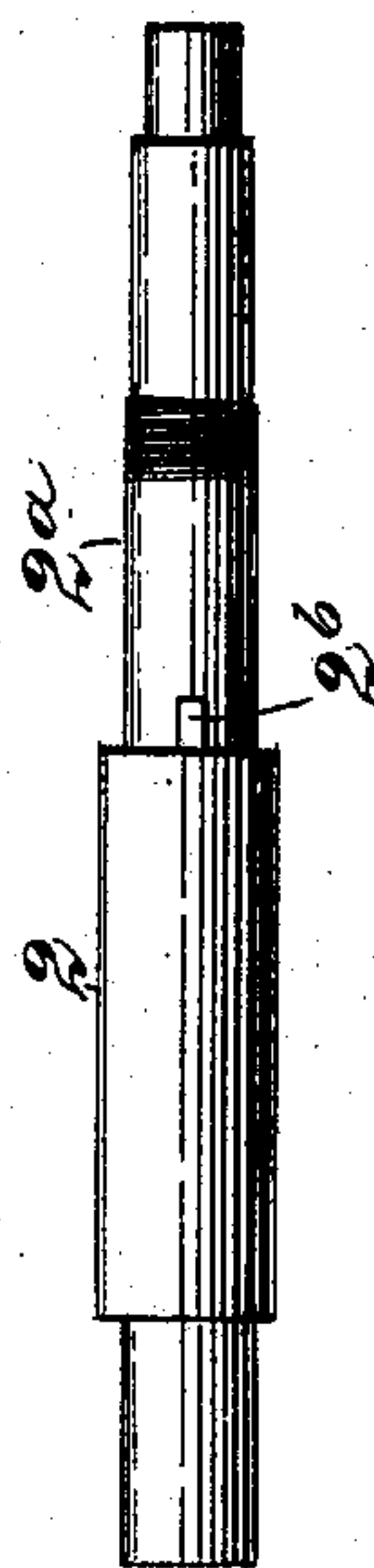
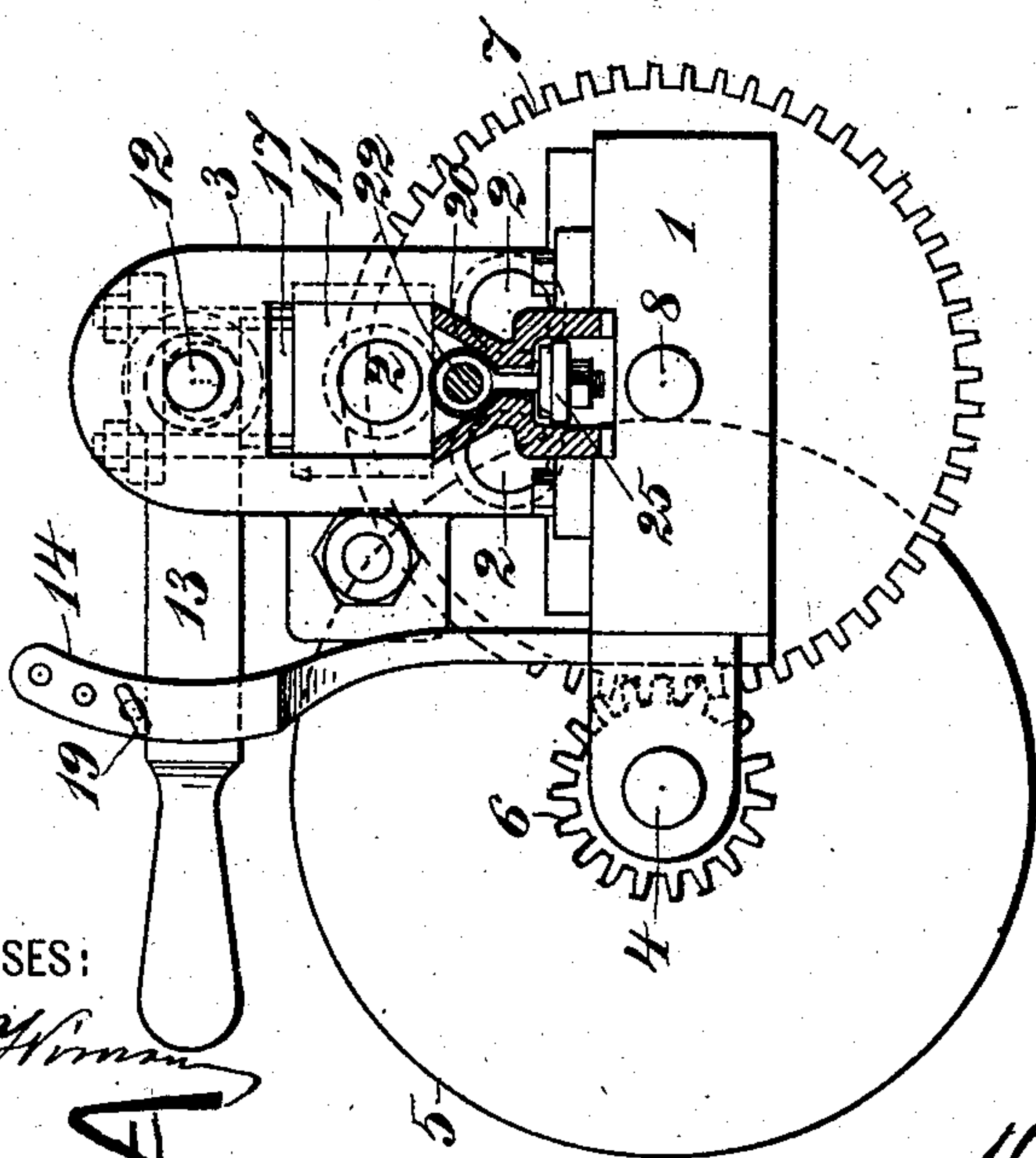


Fig. 3.



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ROBERT L. BARCLAY, OF BROOKLYN, NEW YORK.

MACHINE FOR STRAIGHTENING TWIST-DRILLS.

SPECIFICATION forming part of Letters Patent No. 720,215, dated February 10, 1903.

Application filed June 19, 1902. Serial No. 112,297. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. BARCLAY, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, and city and State of New York, have invented certain new and useful Improvements in Machines for Straightening Twist-Drills, of which the following is a specification.

After a twist-drill has been twisted it requires to be straightened and trued up, and the present invention relates to a machine for effecting this object.

The invention has for its object to provide a machine for the purpose which shall be simple and effective and which is adapted to drills of different diameters and provided with shanks of different sizes and shapes. The machine also has special means for feeding in and extracting the drill.

In the accompanying drawings, which serve to illustrate an embodiment of the invention, Figure 1 is a plan of the machine. Fig. 2 is a side elevation thereof. Fig. 3 is an end view with the feeding device in transverse section at line x^3 in Fig. 1. Fig. 4 is a transverse section at x^4 in Fig. 1. Fig. 5 is a view of the feeding device detached. Fig. 6 shows one of the straightening-rolls detached. Fig. 7 includes a side and end view of the roller-sleeve for straightening the drill-shank. Fig. 8 includes a side and end view of the nut for securing the said sleeve on the straightening-roll. Fig. 9 shows different forms of drill-shanks.

For a better understanding of the invention it may be stated primarily that the machine comprises three straightening-rolls arranged in the form of a triangle and geared together, so that when one is driven they all rotate. The drill is forced shank first into the triangular space between the rolls, which latter bear on and roll it as it is fed in. There are removable sleeves which form that part of the rolls which roll and straighten the drill-shank, and a screw device is provided for forcing in and withdrawing the drill.

1 is the bed-plate, and 2 2 2 are the three straightening-rolls, mounted relatively in bearing-blocks 3, fixed on the bed-plate.

4 is a driving-shaft having on it a pulley 5 and a pinion 6, which gears with a spur-wheel 7. This wheel 7 is on a shaft 8, and on this

shaft is a wheel 9, which drives the rolls 2 in the proper direction through a suitable series of gear-wheels, (designated generally by 10.) It will suffice to say that these last-named gear-wheels are so arranged as to drive the rolls 2 positively at a uniform speed and in such directions as to impart a rolling motion to the drill. The two lower rollers are mounted in fixed bearings—that is, they are not adjustable; but the upper roller is mounted in sliding blocks 11, which are adapted to play up and down in guideways in the respective fixed bearing-blocks 3. Mounted in the fixed block 3 is a rock-shaft 12, provided with a handle 13, which may engage a forked guide 14 on the bed-plate. On the shaft 12 are two eccentrics 15, occupying slots in the blocks 3 above and over the sliding blocks 11. These eccentrics are embraced each between a cap 16 and a distancing-plate 17, which rests on the top of the block 11, and two bolts 18, which pass through the cap 16 and are set in the block 11, hold the parts together. By using thinner or thicker plates 17 the upper roller may be adjusted up or down to suit the diameter of the drill to be straightened, and by rotating the shaft 12 the upper straightening roller may be lifted a little, so as to free the straightened drill from pressure and allow it to be drawn out easily. There may be a pin 19 in the forked guide 14 to hold the arm or handle 13 against flying up.

For feeding in and withdrawing the drill the mechanism now to be described is employed.

Extending out from the end of the bed-plate (at the left in Figs. 1 and 2) is a trough-like support 20 for the drill, and at the outer end of this support is a nut 21, through which screws a feed-screw 22, having a crank or hand-wheel 23. This screw is alined with the drill, and at its inner end it has a bearing (see Fig. 5) in an upright which forms part of a carriage 24. Collared rotatively on the end of the screw 22 is a bearing-piece 25 to interpose between the screw and the drill D. On the extreme inner end of the carriage 24 is an upright extractor 26 to engage the drill and draw it out.

So far as described the operation is as follows: The screw 22, drawing with it the carriage 24, is run back or out to the full extent,

and the drill to be straightened is placed in the trough or guide 20 in front of the bearing piece or pusher 25, as indicated in Fig. 5. The machine is now set in motion and the drill forced or fed into the bite of the rolls, the movement being longitudinally of the latter. When the drill shall have been fed or pushed into the position indicated in Fig. 2, where the drill is seen in dotted lines, the screw is reversed and the drill drawn out, the extractor 25 engaging the end of the shank thereof. To relieve the pressure on the drill while it is being extracted, the handle 13 may be thrown up or raised, so as to slightly elevate the upper roll.

In drills having the same diameter the shanks thereof sometimes differ in diameter and form, as indicated in Fig. 9—that is, the tapered shank d may be as large as the body at the point where it merges into the same, or it may be of less diameter than the body at this point, or it may be without taper. These three forms are shown in Fig. 9. To accommodate the machine to such variations in the drill-shank, that part of the roll (see Figs. 6, 7, and 8) which straightens the shank is made in the form of a removable sleeve 2^a , which is slipped onto the part 2^a of the roller and held against rotation by a key 2^b on the roller, which engages a keyway in the sleeve. A nut 2^c is screwed onto the roller to hold the sleeve in place. Obviously sleeves of different kinds or contours to suit the difference in the shanks may be fitted on the rolls. Where the shank is of larger diameter than the body of the drill, as is sometimes the case, the feeding devices shown cannot be employed. In this case the drill is fed in sidewise before the machine is started by elevating the upper straightening-roll. When the drill is in place, the machine is started and pressure is put upon the drill by means of the handle 13, and the upper roll is gradually pressed down until the drill is straightened. The limited movement of the movable roll toward and from the two other rolls is not sufficient to disengage the teeth of the driving-gears which connect the rolls for simultaneous rotation. It is not essential that the rolls be all of the same diameter, but they should have the same peripheral speed.

While the machine described is especially

designed for straightening and rolling twist-drills, it may be utilized for straightening and rolling other small tools having a general circular cross-section.

Having thus described my invention, I claim—

1. A machine for the purposes specified, comprising a set of straightening-rolls having each a removable sleeve which forms the part of the roll that operates on the drill-shank, and means for driving said rolls.

2. A machine for the purposes specified, comprising a set of straightening-rolls, having each a removable sleeve which forms the part of the roll that operates on the drill-shank, means for driving said rolls, and means for moving one roll of the set from the others.

3. A machine for the purposes specified, comprising a set of three straightening-rolls each having that portion which operates on the drill-shank readily removable for interchanging, means for rotating said rolls simultaneously and at a uniform rate, means for moving one of said rolls from the others, and means for adjusting the rolls to operate on drills having different diameters.

4. A machine for the purposes specified, comprising two rolls rotatable in fixed bearings, one roll parallel with the other two and rotatable in movable bearings, means for moving the last-named roll toward and from the other two, means for driving the rolls, and means for feeding the drills endwise into the bite of the rolls and for extracting the same.

5. A machine for the purpose specified, comprising straightening-rolls, means for driving the same, a support 20 for the drill to be fed, means for feeding the drill into the rolls, comprising the nut 21, the screw 22, and the end piece 25, rotative on the screw, and means for extracting the drill, comprising the carriage 24, coupled to the feed-screw and provided with the extractor 26, substantially as set forth.

In witness whereof I have hereunto signed my name, this 18th day of June, 1902, in the presence of two subscribing witnesses.

ROBERT L. BARCLAY.

Witnesses:

HENRY CONNETT,
PETER A. ROSS.