

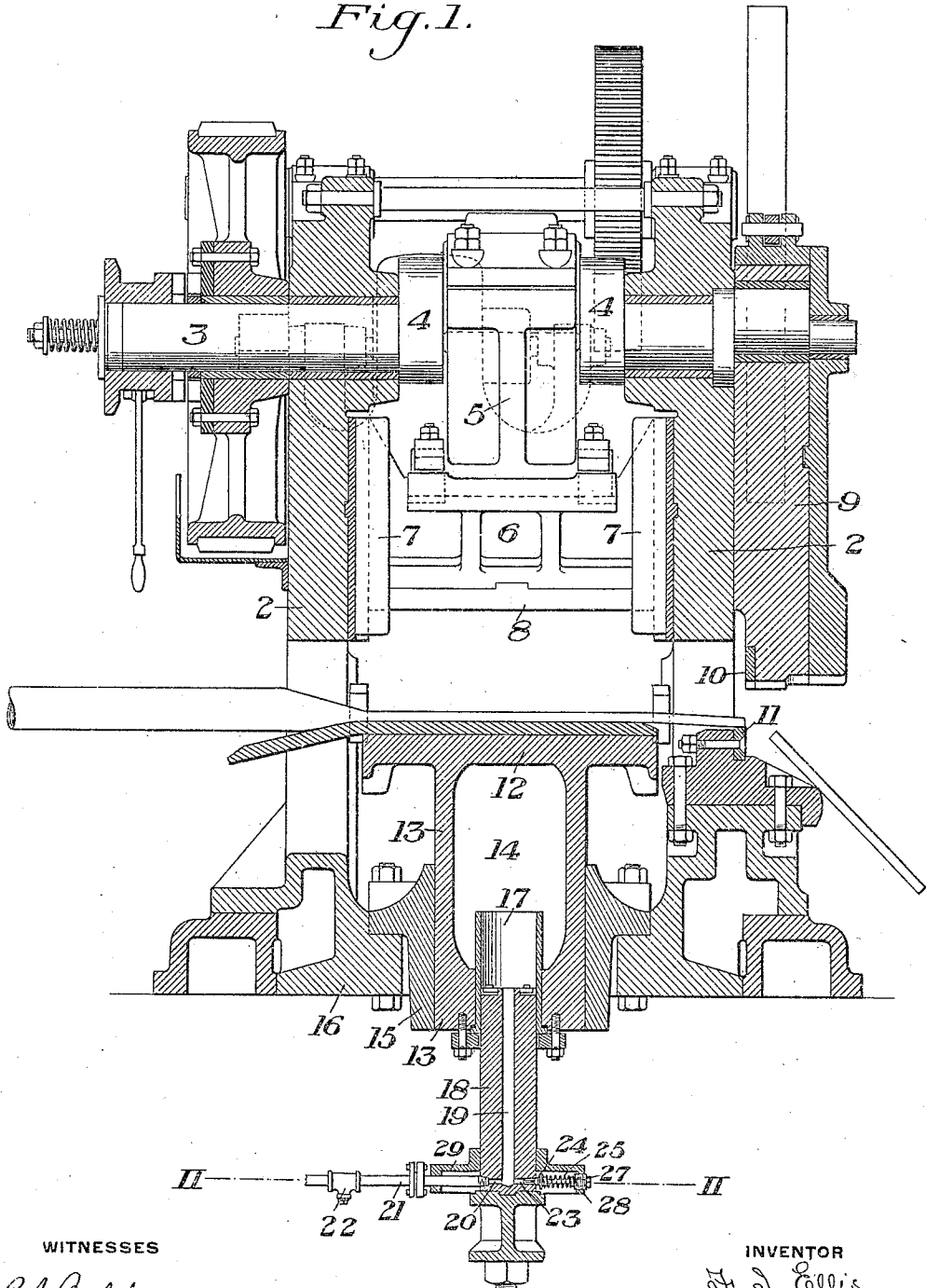
F. I. ELLIS.
 PIPE CRUSHING AND SHEARING MACHINE.
 APPLICATION FILED MAY 12, 1909.

955,117.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

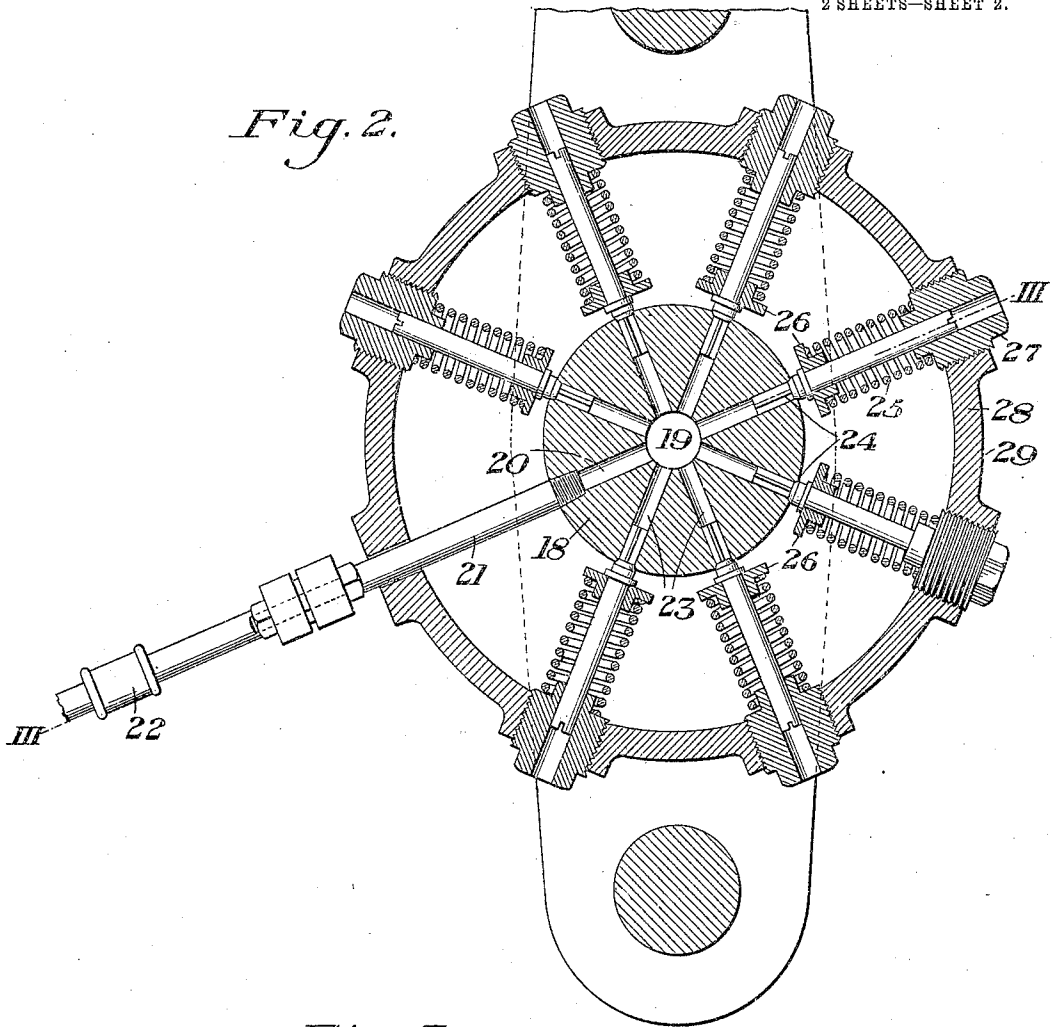
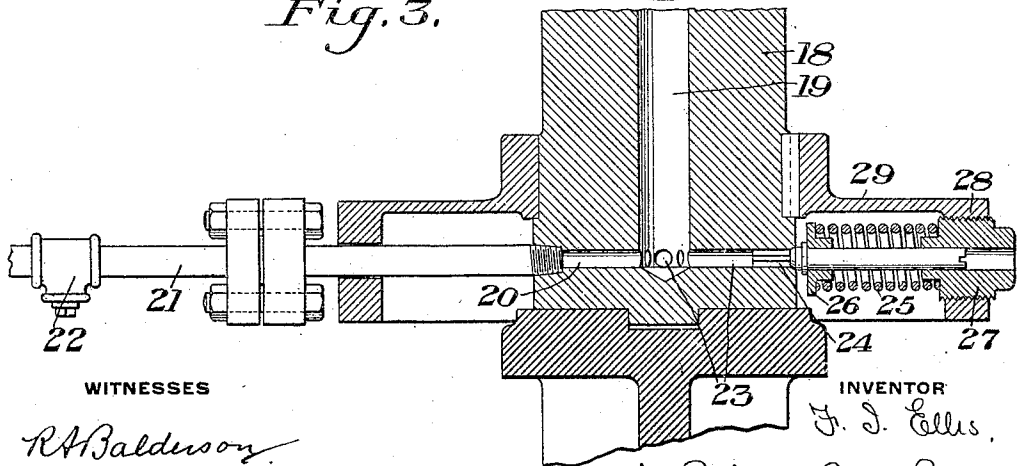


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

FRANK I. ELLIS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO UNITED ENGINEERING & FOUNDRY COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

PIPE CRUSHING AND SHEARING MACHINE.

955,117.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed May 12, 1909. Serial No. 495,507.

To all whom it may concern:

Be it known that I, FRANK I. ELLIS, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Pipe Crushing and Shearing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section of one form of machine embodying my invention; Fig. 2 is a section on a larger scale on the line II—II of Fig. 1; and Fig. 3 is a section on the line III—III of Fig. 2.

My invention has relation to pipe-crushing and shearing machines, such, for example, as the machine described and claimed in my patent, No. 823,326, dated June 12, 1906, and is designed to provide a novel arrangement of the bed plate of the machine. In machines of this class, as heretofore constructed, the bed plate has been made rigid and in crushing pipes of more than usual resistance it frequently happens that the machine is broken or injured, due to the fact that all the parts of the machine are rigid, and are unable to yield to the increased resistance. My invention provides a bed plate which is practically rigid in the normal operation of the machine, but which can readily yield to unusual stresses.

Referring to the accompanying drawings, the numeral 2 designates the end housing of the machine, 3 the main shaft provided with cranks 4 which act upon the pitmen 5, pivotally connected to a cross head 6, moving between the side guides 7. To the lower part of the cross head is secured the pipe-crushing head 8.

9 is a vertically reciprocating slide or plunger carrying at its lower end the shear blade 10, which coacts with the stationary shear blade 11.

The machine as thus far described and as shown in the drawings is substantially similar in all respects to that of my prior patent, above mentioned.

12 designates the bed plate of the machine which, instead of being fixedly secured to the machine foundation as in my said patent, is arranged to have a limited vertical movement toward and away from the crushing head 8. In the preferred form of my in-

vention which I have illustrated in the drawing, this bed plate has a downward extension 13, which has an interior chamber 14, acting as the chamber of a cylinder. The extension 13 is guided at its lower end in a guide member 15, secured to the base portion 16 of the frame of the machine and providing an elongated guide bearing for the said extension. Secured to the lower end of the extension and extending upwardly into the chamber 14 is a hollow sleeve 17, which telescopes over a piston member 18. Extending vertically upward through this piston member is a port 19, which communicates at its lower end through a radial port 20 with a fluid supply pipe 21, having therein a check valve 22. The port or passage 19 also communicates at its lower end with a plurality of radial exhaust or escape ports 23, each of which is controlled by a valve 24, normally held seated by a spring 25. These springs are seated around the valve stems between collars 26, carried by the valve stems, and adjustable screw plugs 27, seated in the flange 28 of a valve head 29, which is secured to the lower end of the piston member 19.

The operation will be readily understood. The supply pipe 21 is connected to a source of fluid supply, preferably liquid under constant head or pressure, and the fluid from said pipe normally maintains the cylinder chamber 14 filled and holds the bed plate 12 in its normal raised position, the pressure in said cylinder being sufficient so that in the usual operation of the machine the bed plate is to all intents and purposes practically rigid. When, however, the pressure on the bed plate exceeds the predetermined maximum which may be determined by the tension given the valve-seating springs 25, the valves 24 will open and permit of the escape of a portion of the fluid from said chamber through the ports 23, the check valve 22 being, of course, closed.

The advantages of my invention will be readily understood by those familiar with the art, since it provides simple and effective means for preventing injury to the machine when subjected to abnormal stresses.

Various changes may be made in the details of construction and arrangement of the parts. Thus, various cylinder and piston devices may be connected to the bed plate to

act in the manner described; the arrangement of the relief ports and relief valves may be varied, and the invention may be applied to other machines besides the particular machine herein shown.

I claim:

1. In a machine of the character described, having a movable die and a relatively fixed anvil or bed plate, means for permitting the anvil or bed plate to yield to the work, comprising a piston and cylinder device connected with the anvil or bed plate and having a chamber connected with a source of pressure, and means for relieving excess of pressure in said chamber, the connection with the source of pressure also forming means for returning the anvil or bed plate to normal position, substantially as described.

2. In a machine of the character described, a movable bed plate having a hollow extension, a guide for said extension, a relatively fixed piston member extending within the

extension, means for supplying a fluid under pressure to the interior of said extension, and relief valves arranged to permit of a discharge of a portion of the fluid from said extension upon movement of the bed plate in one direction; substantially as described.

3. In a machine of the character described, a movable bed plate having a hollow extension, a guide for said extension, a piston member extending into the extension, an inlet passage extending through the piston member, an inlet conduit communicating with said passage, and a plurality of relief valves also communicating with said passage; substantially as described.

In testimony whereof, I have hereunto set my hand.

FRANK I. ELLIS.

Witnesses:

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H. M. CORWIN.