

No. 780,738.

PATENTED JAN. 24, 1905.

L. VON SÜSSKIND.
HYDRAULIC PRESS.

APPLICATION FILED NOV. 1, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

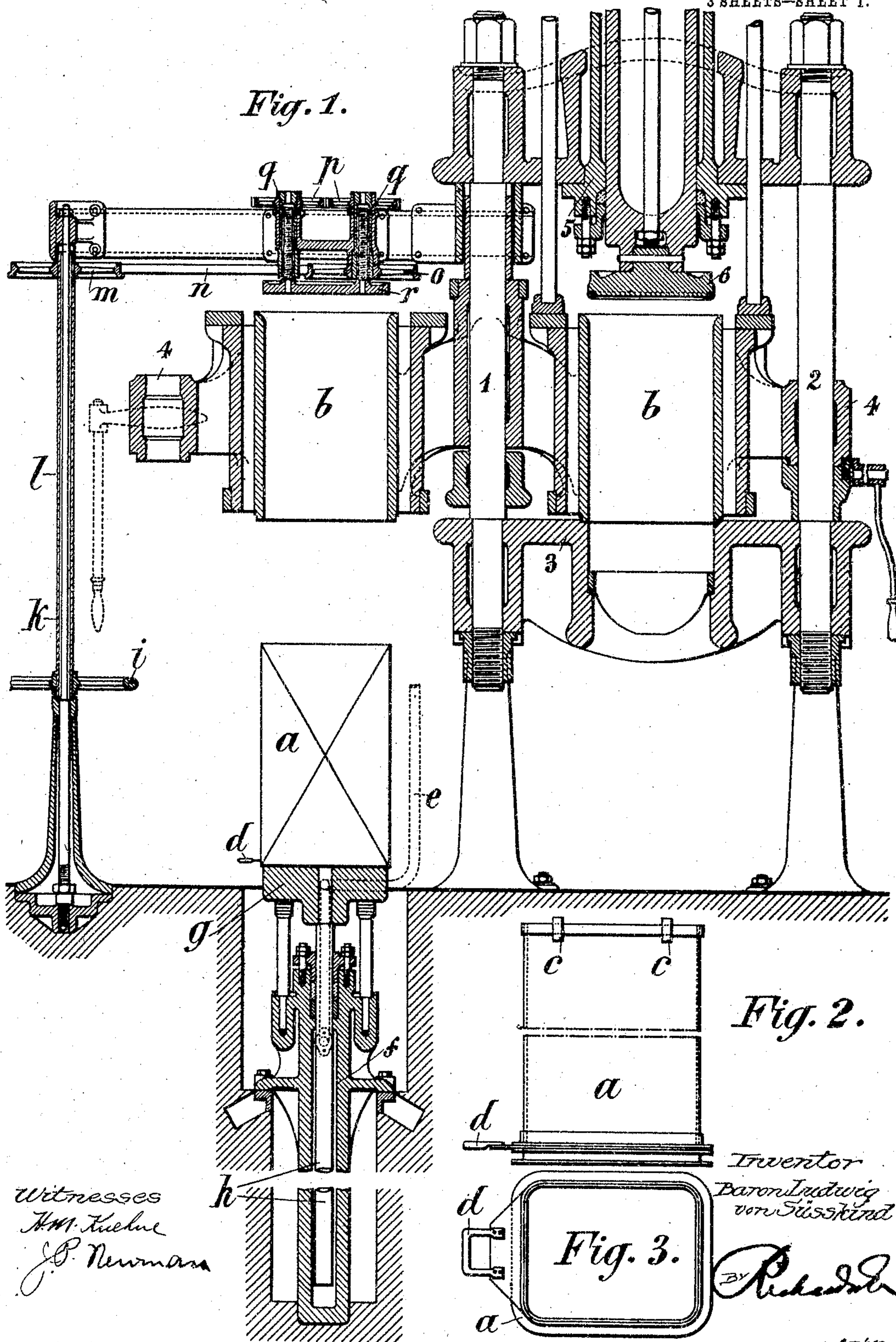
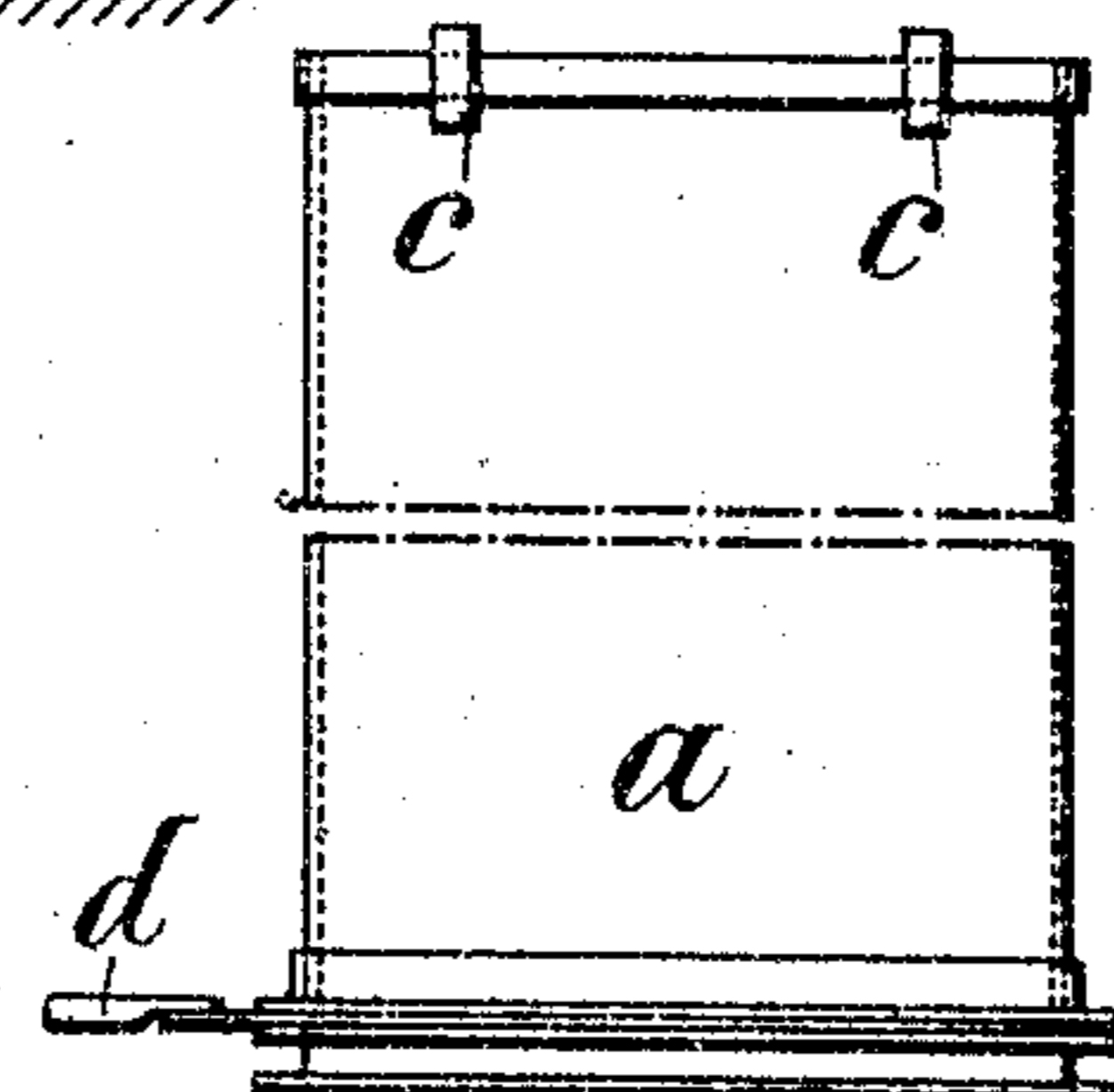
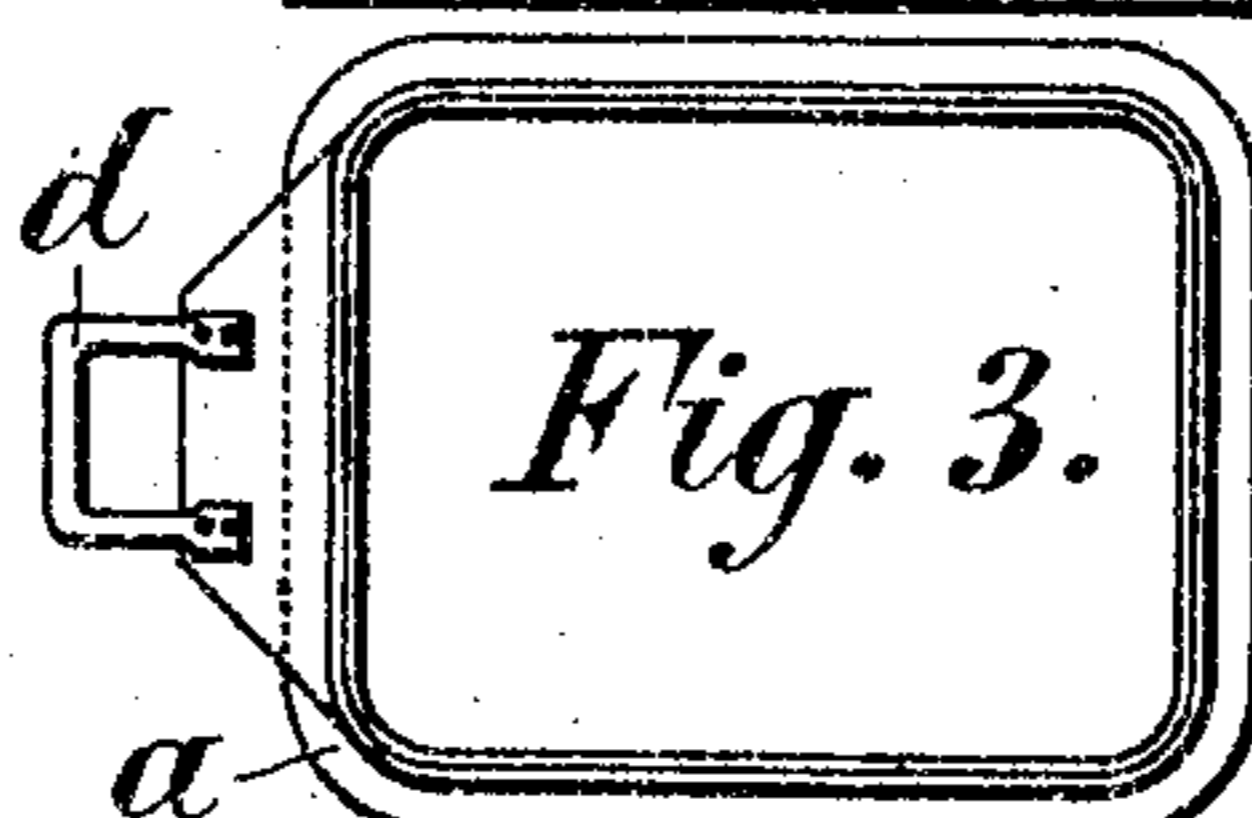


Fig. 2.



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Fig. 3.



By *P. Süsskind*

Att'y

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J. P. Newman

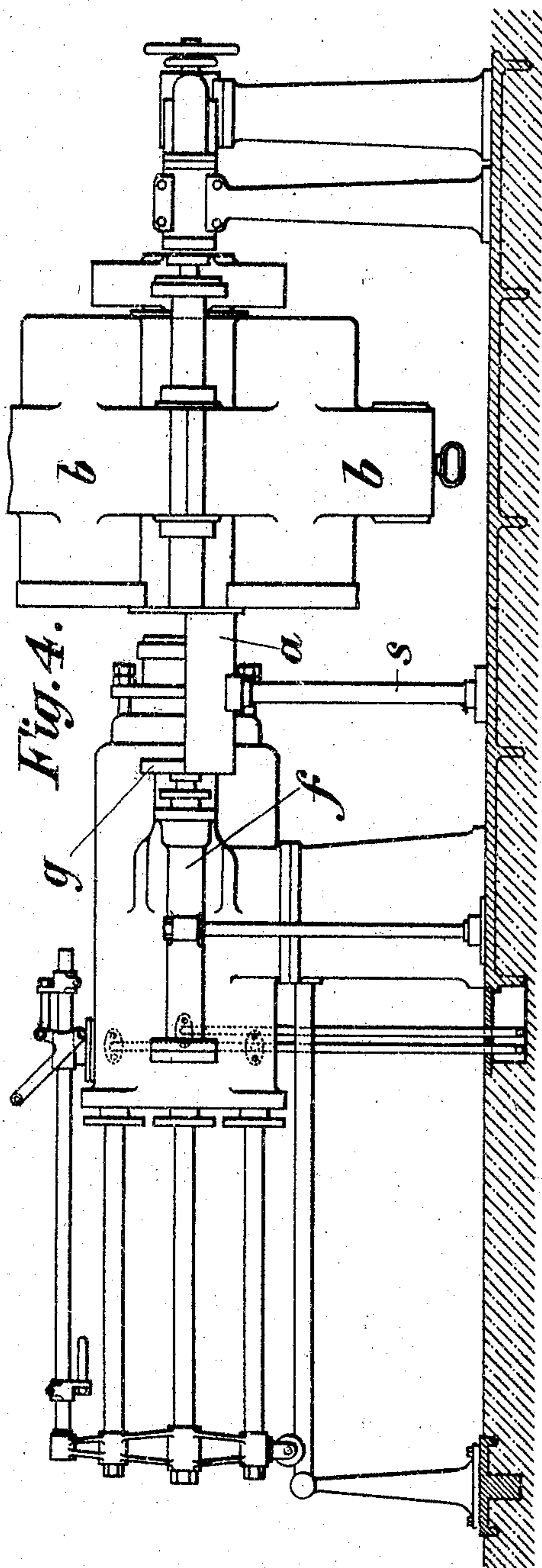
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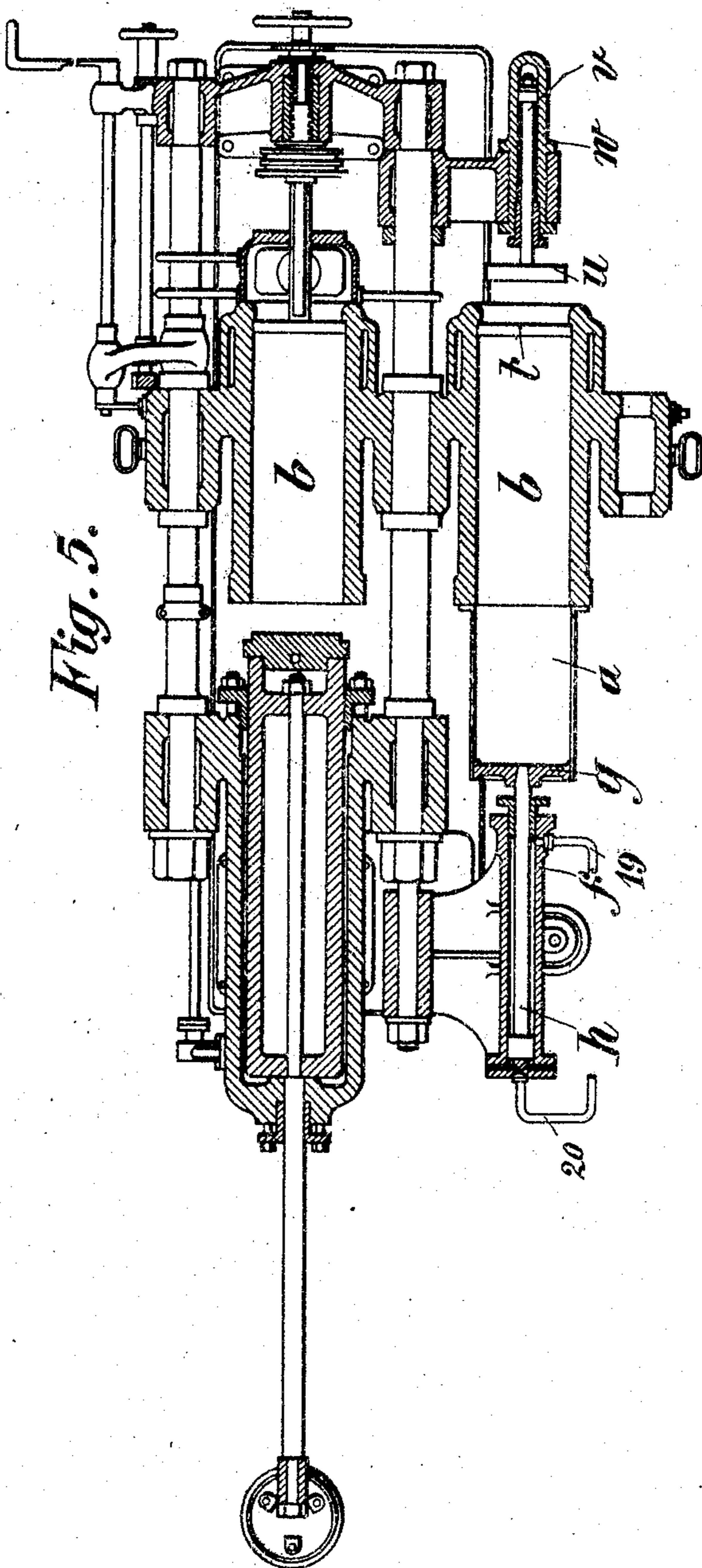
3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 6

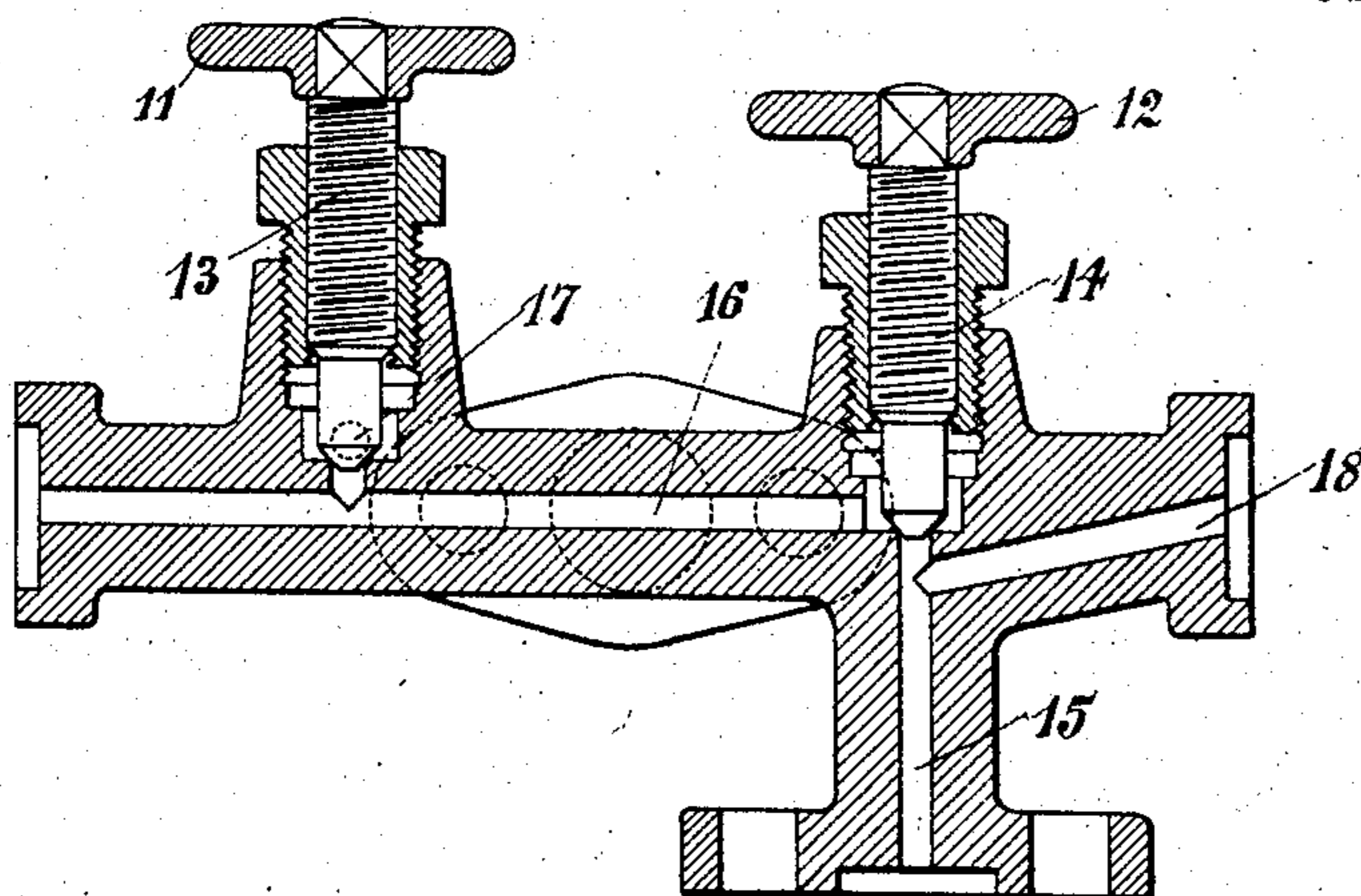


Fig. 7

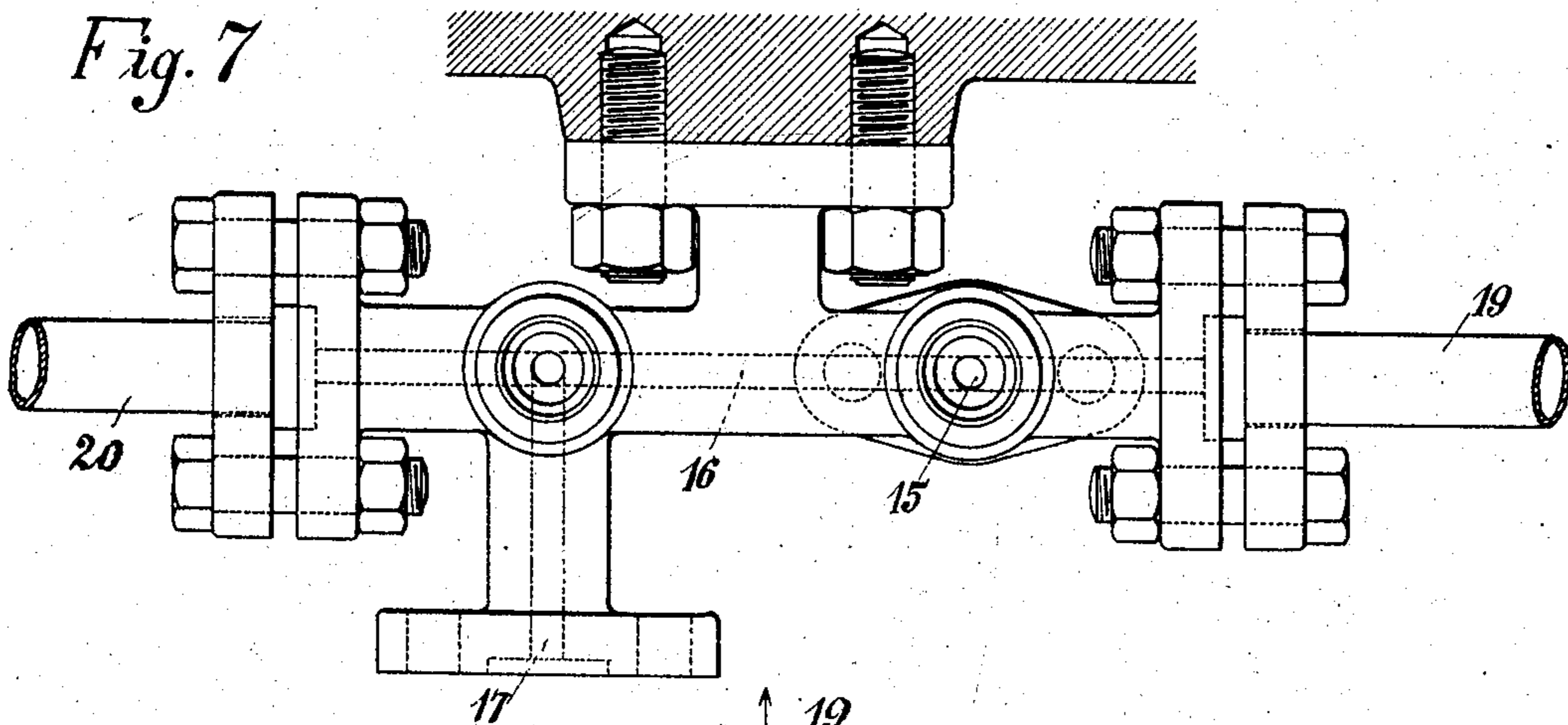
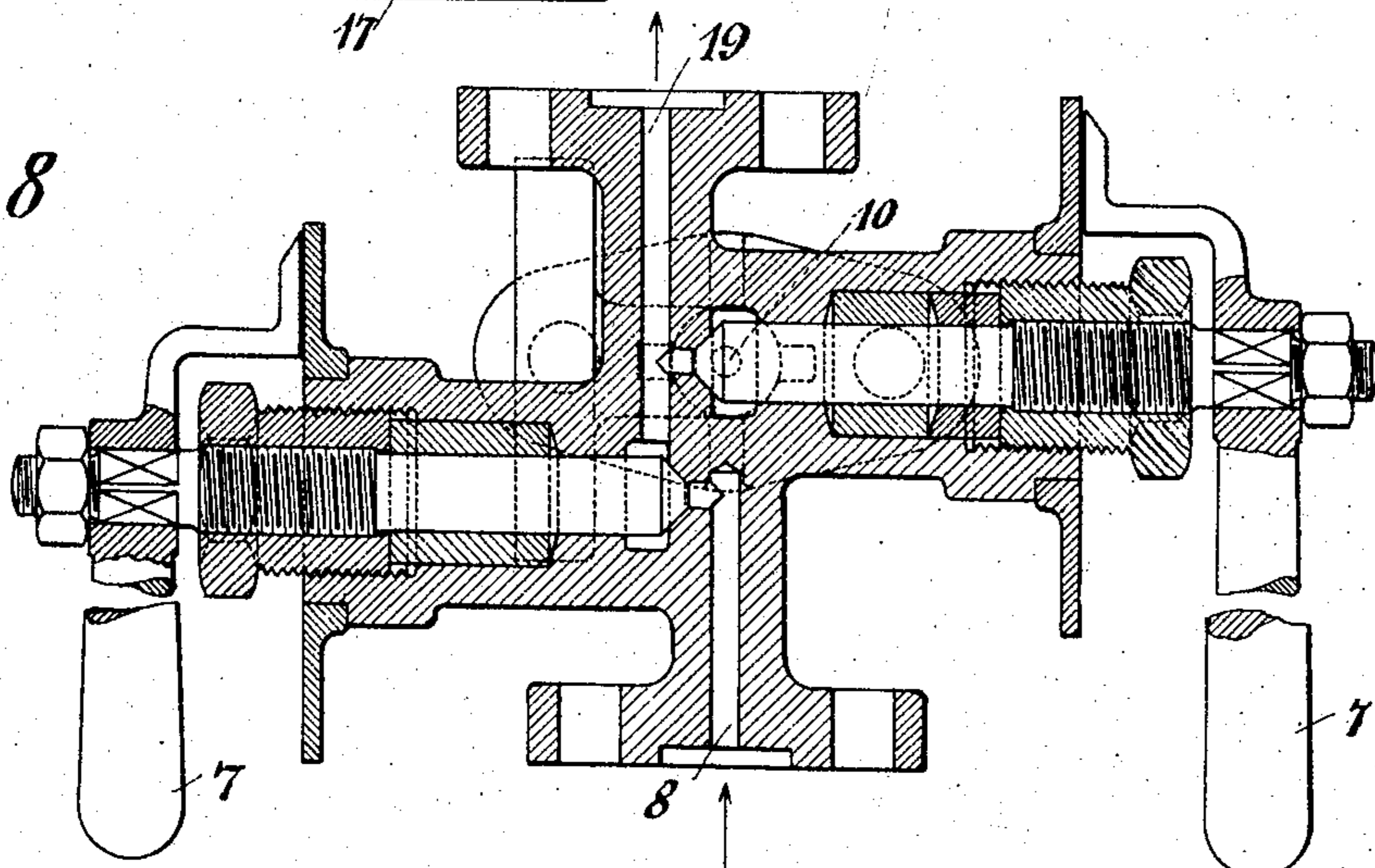


Fig. 8



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UNITED STATES PATENT OFFICE.

LUDWIG VON SÜSSKIND, OF ST. GEORGEN, NEAR ST. GALL,
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HYDRAULIC PRESS.

SPECIFICATION forming part of Letters Patent No. 780,738, dated January 24, 1905.

Application filed November 1, 1904. Serial No. 230,998.

To all whom it may concern:

Be it known that I, LUDWIG VON SÜSSKIND, a citizen of Germany, residing at St. Georgen, near St. Gall, in the canton of St. Gall, Republic of Switzerland, (whose post-office address is St. Georgen, near St. Gall,) have invented certain new and useful Improvements in Hydraulic Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

I have applied for patent in Switzerland on November 6, 1903; in Germany on November 25, 1903; in France on December 3, 1903, and in Italy on December 14, 1903.

This invention relates to hydraulic presses for viscous material, such as dough and the like.

The improved press is provided with a vessel receiving the material to be pressed and adapted for attachment to either of two pivotally-supported boxes. For the purpose of moving the material from the said vessel into a box coaxial with the charging position of the box is provided a pressing-stamp or piston with means for hydraulically operating the same.

In the accompanying drawings, which illustrate the invention, Figure 1 is a longitudinal vertical section of the improved hydraulic press vertically disposed. Fig. 2 is an elevation of the vessel for containing the material, and Fig. 3 is a plan thereof. Fig. 4 is a side elevation; and Fig. 5 a horizontal section, showing a modified construction in which the pressing devices are horizontally arranged, the boxes being in Fig. 5 shown turned round ninety degrees with respect to the position shown in Fig. 4. Fig. 6 is a longitudinal section of a double-acting valve device. Fig. 7 is a plan of this motion, and Fig. 8 is a longitudinal section of a single-acting valve-motion.

Referring to Figs. 1 to 3, 1 and 2 are two strong pillars or columns supported in the sole-plate 3 of the press. Around the column 1 are pivotally mounted two connected boxes 5, provided with lugs 4, having semicylin-

drical orifices for engagement with the column 2. The distance between the orifices in said lugs and the column 1 is equal to the distance between the columns 1 and 2, so that after rotation of the said boxes through an angle of one hundred and eighty degrees around the column 1 the lug of one or other of the boxes abuts against the column 2. The relations are such that in this position the vertical axis of the box not adjacent to the column 2 aligns with that of a pressure-cylinder *f*, disposed beneath, as hereinafter described. This position may be termed the "charging" position of a box. 6 denotes the pressure-piston guided in a cylinder 5 and which serves to press the material within the box through a mold attached to the sole-plate 3. The transportable vessel *a* serves to receive the material to be pressed and has a clear cross-section equal to that of the boxes, so that when the vessel is attached to either of the latter the one chamber coterminates with the other. At the upper end of the receptacle *a* are projections *c*, Fig. 2, which pass over the edge of the box *b* and grip the same, so as to prevent the vessel from lateral displacement. In the lower part of the vessel is a bottom *d*, adapted to be drawn out and provided with a handle. The presser-cylinder *f* is connected with a pressure-water pipe *e* and carries a plunger *h*, provided with a pressing stamp or head *g*, on which head is mounted the vessel *a*. The section of the head *g* is similar to that of the vessel *a*; but the sides are somewhat shorter, so that the same can enter into the hollow space of the said vessel.

Fig. 8 shows a single-acting valve-motion inserted into the pressure-water pipe *e*, Fig. 1. This device comprises two valves operated by hand-levers 7. The left-hand valve controls the communication between the passage 8, connected to the source of pressure, pump, &c., and the passage 19, connected to the pressure-water pipe *e*. The right-hand valve controls the communication between the passage 19 and the discharging-passage 10. Now if the left-hand valve is opened and the right-hand valve is closed the pressure-water flows through the passages 8 and 19 and the

pipe *e* to the pressure-cylinder *f*. If, however, the latter is to be discharged, the left-hand valve is closed and the right-hand valve is opened, so that the water may escape. This valve device is known to skilled men.

In order when moving material out of the vessel *a* into the box *b* above the same to prevent the material from running over, a counter-pressing device may be provided as follows: A hand-wheel *i* is carried on a hollow shaft *k*, which is rotatable around a fixed standard *l*, anchored at its upper and lower ends. At the upper end of the hollow shaft *k* is secured a belt-pulley *m*, whereby movements of the hand-wheel *i* are by means of a belt *n* transmitted to a second pulley *o*, thence to toothed wheels *p* and to nuts rigidly connected therewith, which latter are secured on the fixed spindles *q*, so that by suitable turning movement of the hand-wheel *i* the counter-pressure plate *r* is raised or lowered or the material pressed, by means of the stamp *g*, into the left-hand box *b* is more or less compressed from above.

In carrying out the invention it is to be assumed that the material to be pressed is brought from its place of production in the vessel *a*, the bottom *d* of which has been pushed in, into the room where the hydraulic press is arranged. The vessel *a*, which is full, is placed on the head *g*, so that their central axes coincide. After the base *d* has been drawn out pressure-water is admitted into the cylinder *f*, whereupon the plunger *h* raises the head *g*. When the projections *c* strike against the box *b*, the vessel *a* comes to rest, while the head *g* is raised farther within the hollow space of the vessel and so pushes the material out of the receptacle *a* into the box *b*. The boxes *b* are now turned through one hundred and eighty degrees around the column 1, so that the charged box comes under the piston 6 and the contents are there pressed into shape.

In the modification shown in Figs. 4 and 5 the boxes *b* are horizontally disposed. The vessel *a*, serving to receive the material to be pressed, is open at top and bottom and is fixed on a standard *s*. The pressure-head *g* is mounted so as to have a traversing movement through said vessel and is fixed on the piston *h*, guided through the pressure-cylinder *f*, which may be provided with a double-acting valve-motion. (Shown in Figs. 6 and 7.) The material to be pressed is brought into the vessel *a* and one of the boxes *b* brought in front of the said vessel *a*, so that their axes are in alinement. If now on admitting pressure-water the piston *h*, together with the head *g*, is moved to the right, then by means of the latter the material contained in the vessel *a* is pressed into the box *b* and compressed in the latter against the mold *t*. In order to be able to remove the latter from its seat for the purpose of cleaning and the like, coaxial with the box in its charging position on the side oppo-

site the piston *h* is arranged a pressing-plate *u*, fixed on a piston *v*, the said piston *v* being guided in a cylinder *w*, likewise connected with a pressure-water pipe and provided with a double-acting valve-motion. When the piston *v* is moved to the left, the plate *u* presses against the mold *t* and moves the latter away from its seat.

The double-acting valve-motion (shown by Figs. 6 and 7) comprises two similar valves 13 and 14, operated by the hand-wheels 11 and 12. The valve 14 controls the communication between the passage 15, connected to the pressure source, (pump, &c.,) and the passage 16 and the valve 13 control the communication between the passage 16 and the discharging-passage 17. From the passage 15 branches off a passage 18, connected by a pipe 19, Figs. 5 and 7, to the right-hand end of the pressure-cylinder *f*. The passage 16 is connected by a pipe 20 to the left-hand end of the pressure-cylinder *f*. Now if the piston *h* is to be forced from the left to the right the valve 14 will be opened and the valve 13 closed. Then the pressure-water flows through the passages 15 and 16 and the pipe 20 to the left or large face of the piston *h* and forces the same and also the water being on the right-hand portion of the cylinder *f* to the right. This water flows through the pipe 19 into the passage 18 and meets the pressure-water. If the piston *h* is to be pressed toward the left, the valve 14 will be closed and the valve 13 opened. The pressure-water then flows through the passage 18 and the pipe 19 to the right or smaller face of the piston *h*, so that the latter will be forced toward the left. The water being on the left face of the piston *h* flows through the pipe 20 and the passage 16 to the discharging-passage 17 and escapes. Because the pressure-water alternately acts upon two surfaces of different sizes two valves suffice; otherwise three valves would be necessary. A similar double-acting valve-motion may be used to operate the piston *v*, Fig. 5. If desired, such a double-acting valve-motion also could be combined with the vertical pressure-cylinder *f*, Fig. 1, in which case the piston *h* should be formed as a differential piston capable of receiving pressure alternately on one and on the other face.

What I claim is—

1. The improved hydraulic press, comprising, in combination, a supporting-column, two connected boxes pivoted thereon, an abutment for engagement with one of said boxes, a receptacle, means for supporting said receptacle with its axis alining with that of one of said boxes, a pressure-stamp and means for hydraulically and automatically pressing said stamp through said vessel.

2. The improved hydraulic press, comprising in combination, a supporting-column, two connected boxes pivoted thereon, a fixed abutment for one of said boxes, a transportable

receptacle having a clear cross-section the same as the section of the boxes, a pressing-stamp supporting said receptacle with its axis alining with the axis of one of said boxes, a counter-pressure plate disposed opposite said box and movable toward and away from said box, and hydraulic means for pressing said stamp through said vessel and into said box.

3. The improved hydraulic press, comprising, in combination, a supporting-column, two connected boxes pivoted thereon, a second column parallel thereto and serving as an abutment for one of said boxes, a hydraulic cylinder, a piston therein having a movement between said columns through the box disposed between said columns, a second hydraulic cylinder, a plunger therein, a head connected to said plunger and having its axis alining with that of the other box, and a transportable vessel carried on said head through which said head passes into the corresponding box, said vessel having projections engaging said box, substantially as described.

4. The improved hydraulic press, comprising, in combination, two parallel columns, two connected boxes pivoted on one of said columns and having lugs adapted to abut against the other of said columns, a hydraulic pressure-cylinder and a piston having a head adapted to move into the one box between said columns, a second hydraulic cylinder, a second piston, a head carried by said piston having its axis alining with the axis of the other of said boxes, a transportable vessel carried on said head and through which said head passes, and a manually-operated counter-pressure de-

vice acting on the other side of said second box, substantially as described.

5. The improved hydraulic press, comprising, in combination, a supporting-column, two connected boxes pivoted thereon, an abutment for engagement with one of said boxes, a receptacle, means for supporting said receptacle with its axis alining with that of one of said boxes, a pressure-stamp, a pressure-cylinder, a pressure-piston connected to the pressure-stamp and a pressure valve-motion for controlling the admission and discharge of the pressure fluid to and from the pressure-cylinder in order to press the pressure-piston in one or both directions.

6. The improved hydraulic press, comprising, in combination, a sole-plate 3, two vertical columns 1 and 2 mounted on said sole-plate, two connected boxes *b* pivoted to said column 1 having lugs for engagement with said column 2, the hydraulic cylinder 5, the piston 6 in said cylinder adapted to move into the box between said columns, the pressure-cylinder *f*, the plunger *h* therein, and the head *g* carried by said plunger and adapted to pass into the other of said boxes *b*, and the vessel *a* having the movable base *d* carried by said head *g* and having a clear section equal to that of said head, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LUDWIG VON SÜSSKIND.

Witnesses:

HERNANDO DE SOTO,
CARL KAUFMANN.