

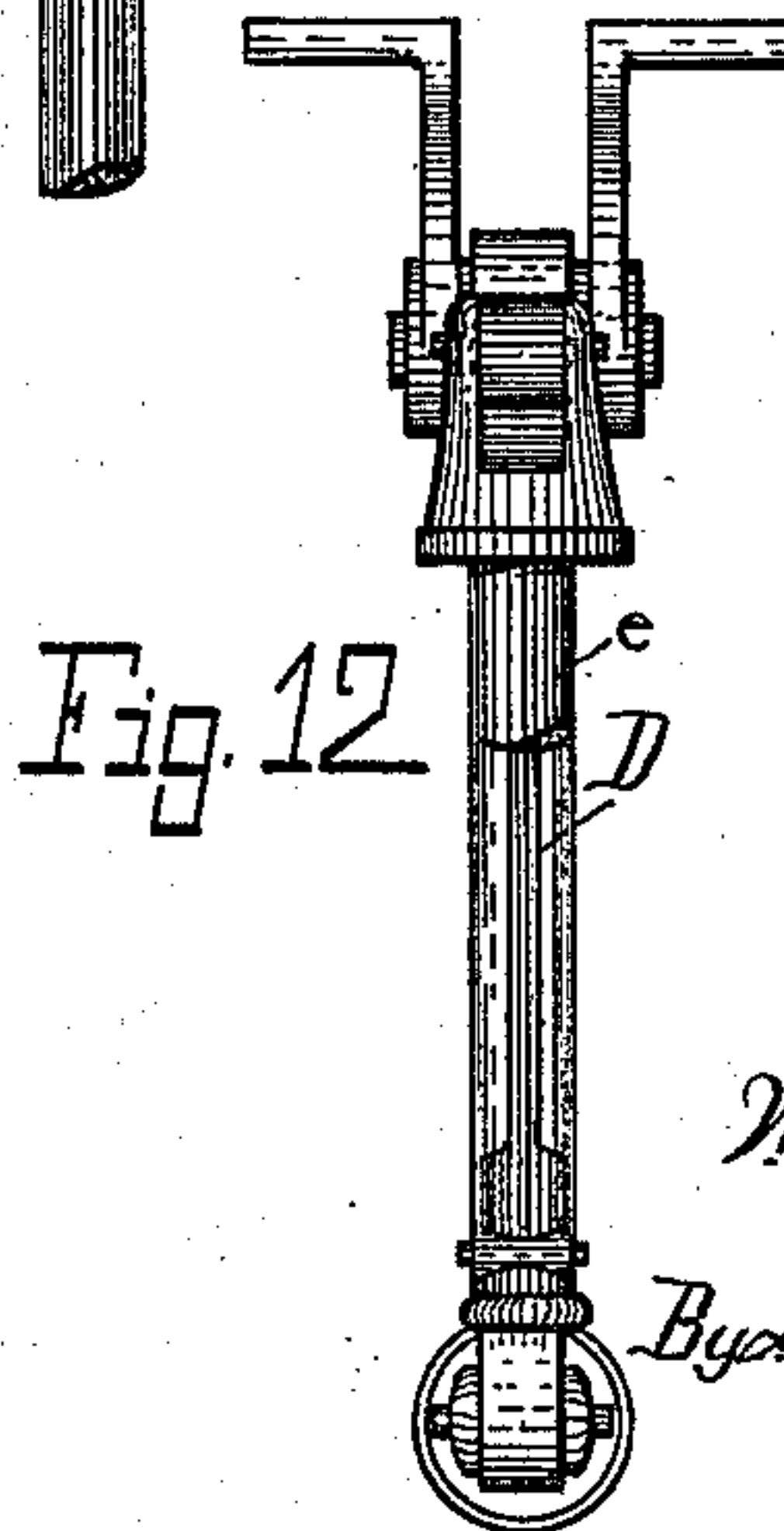
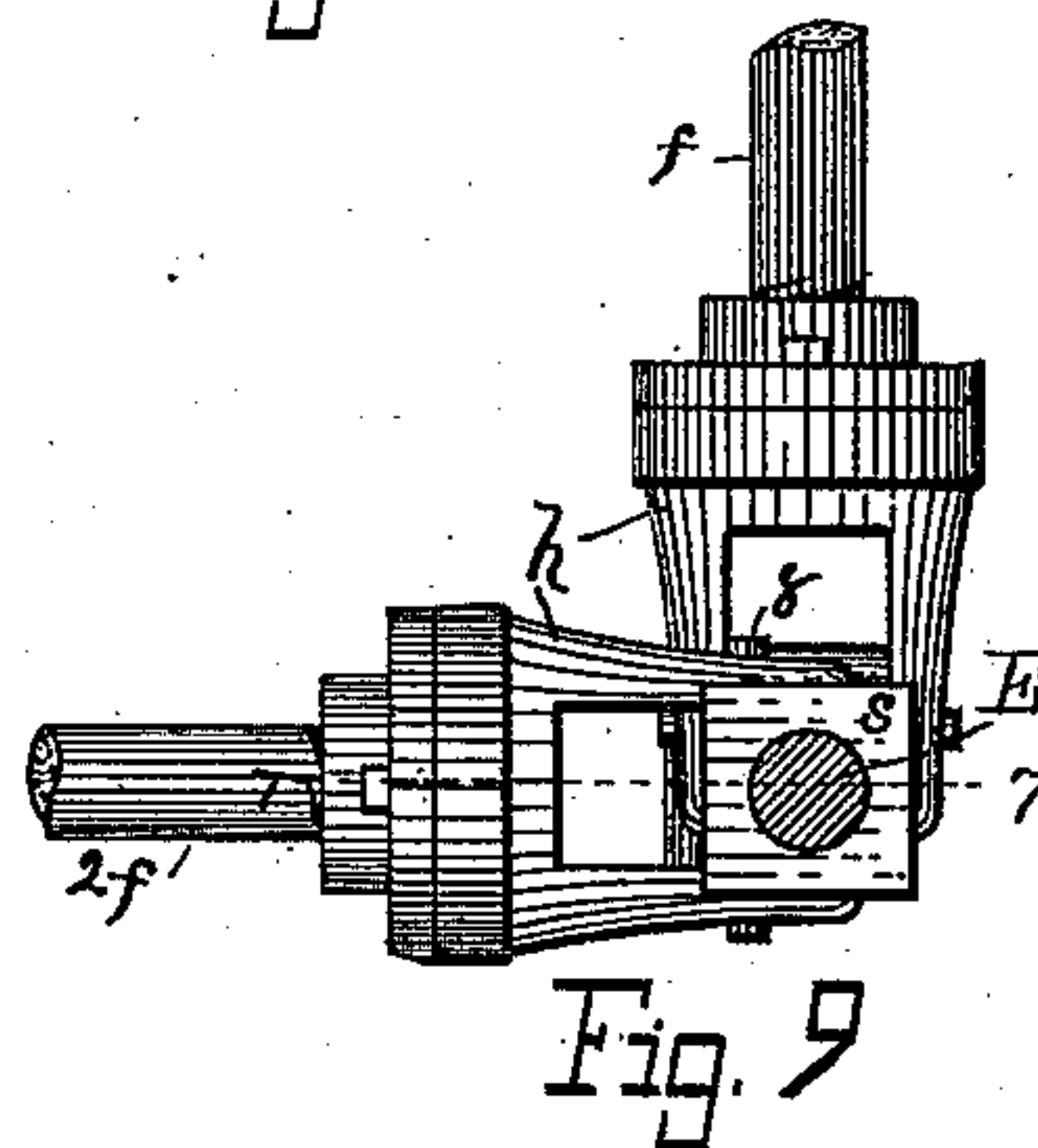
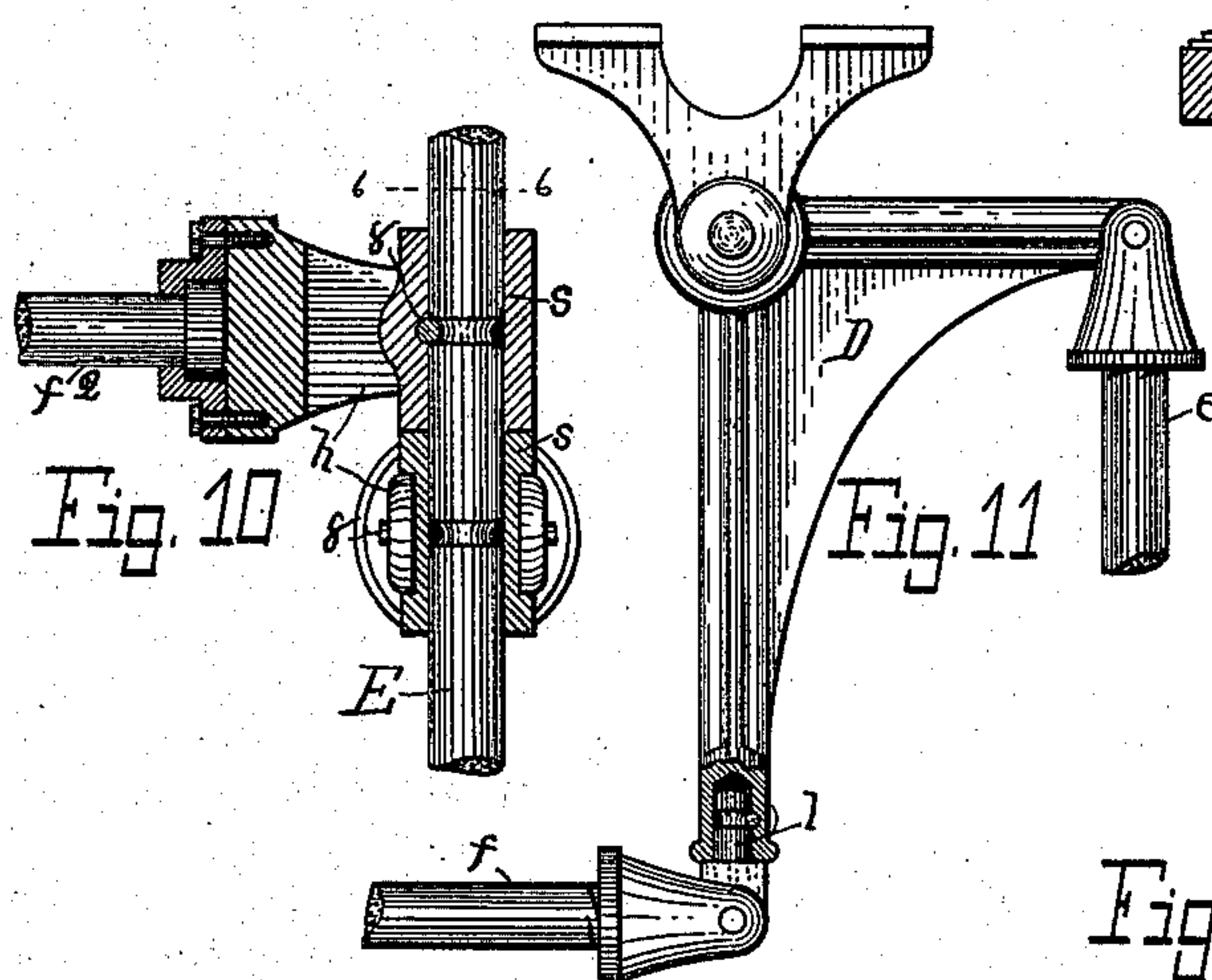
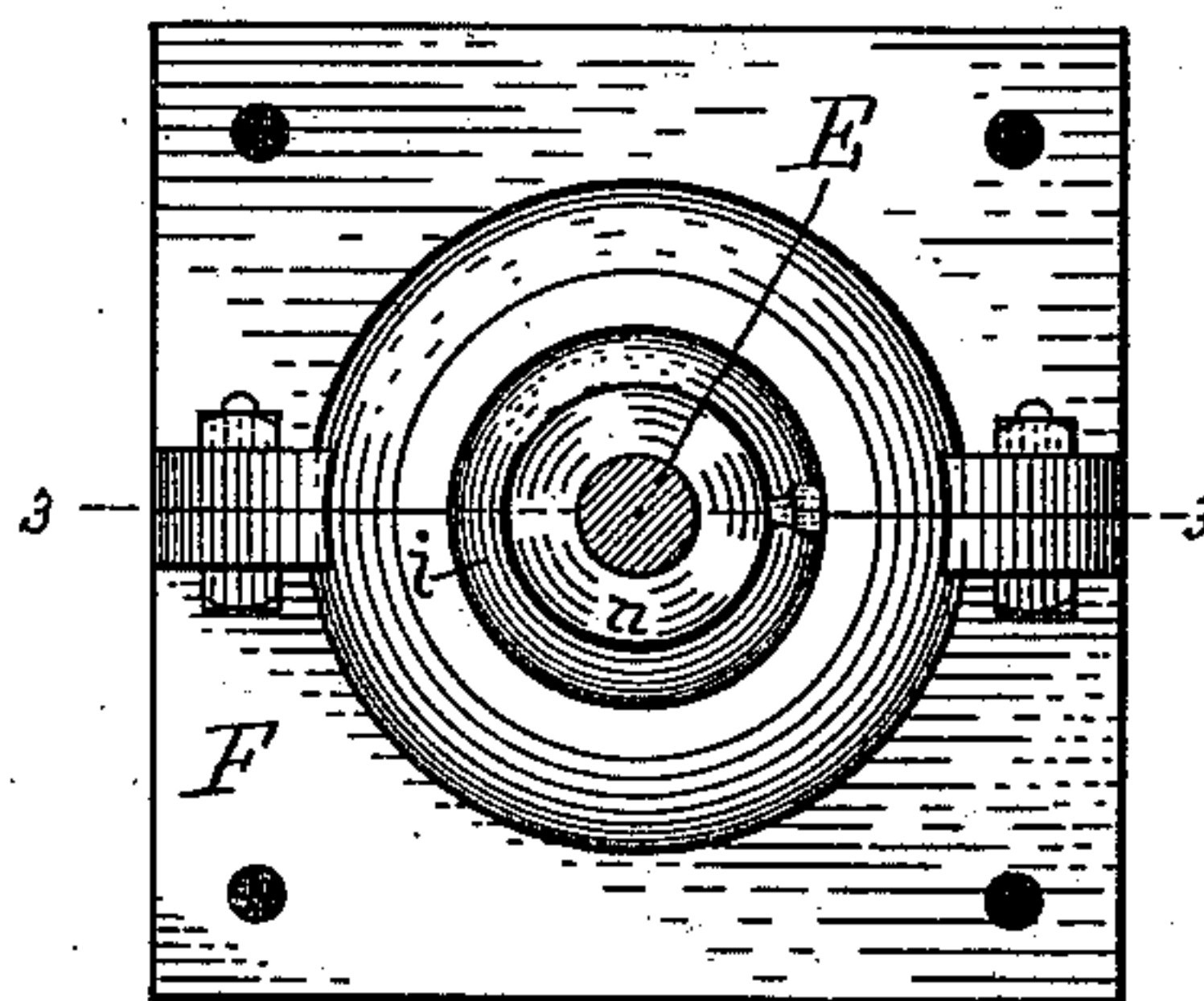
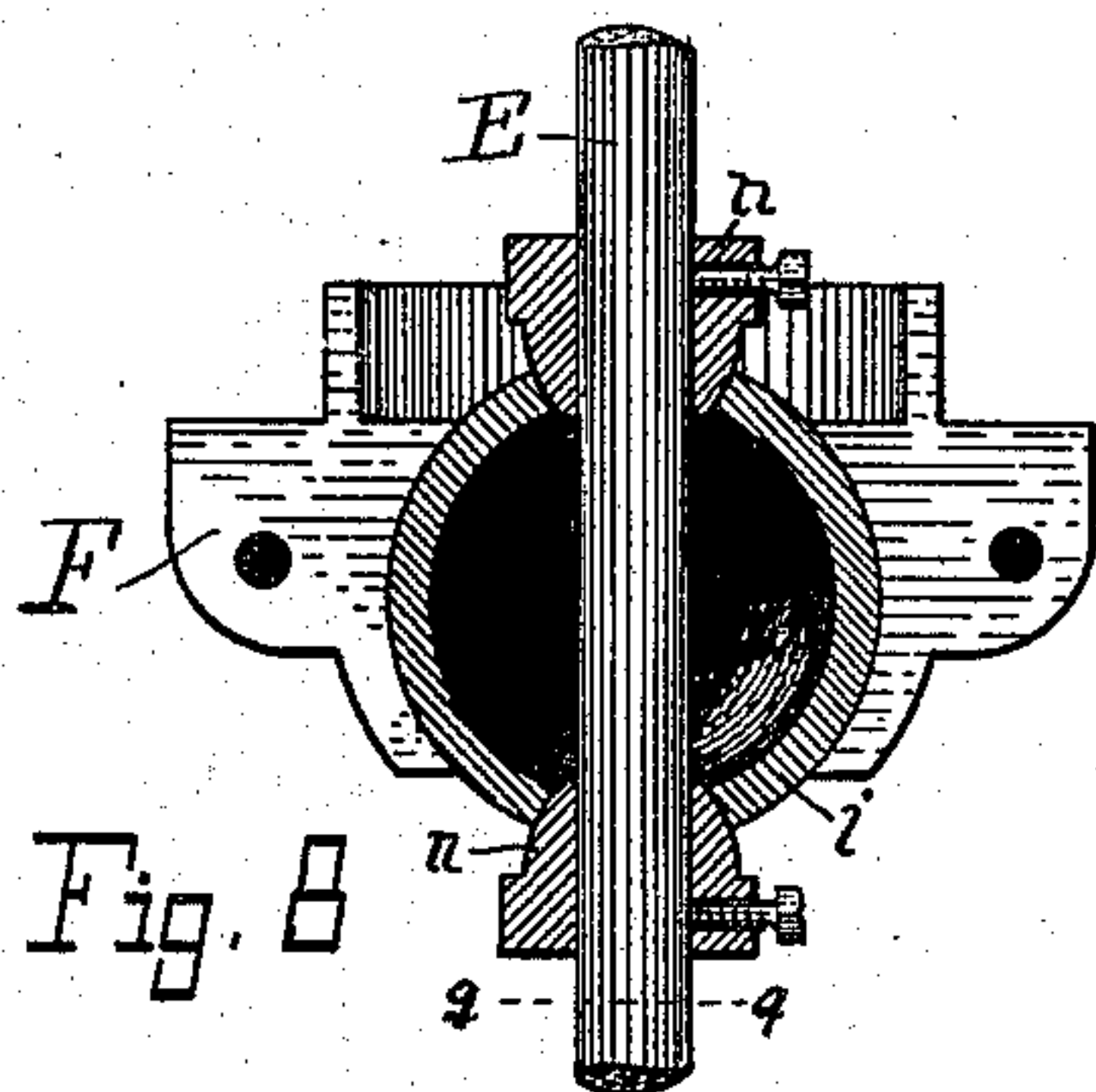
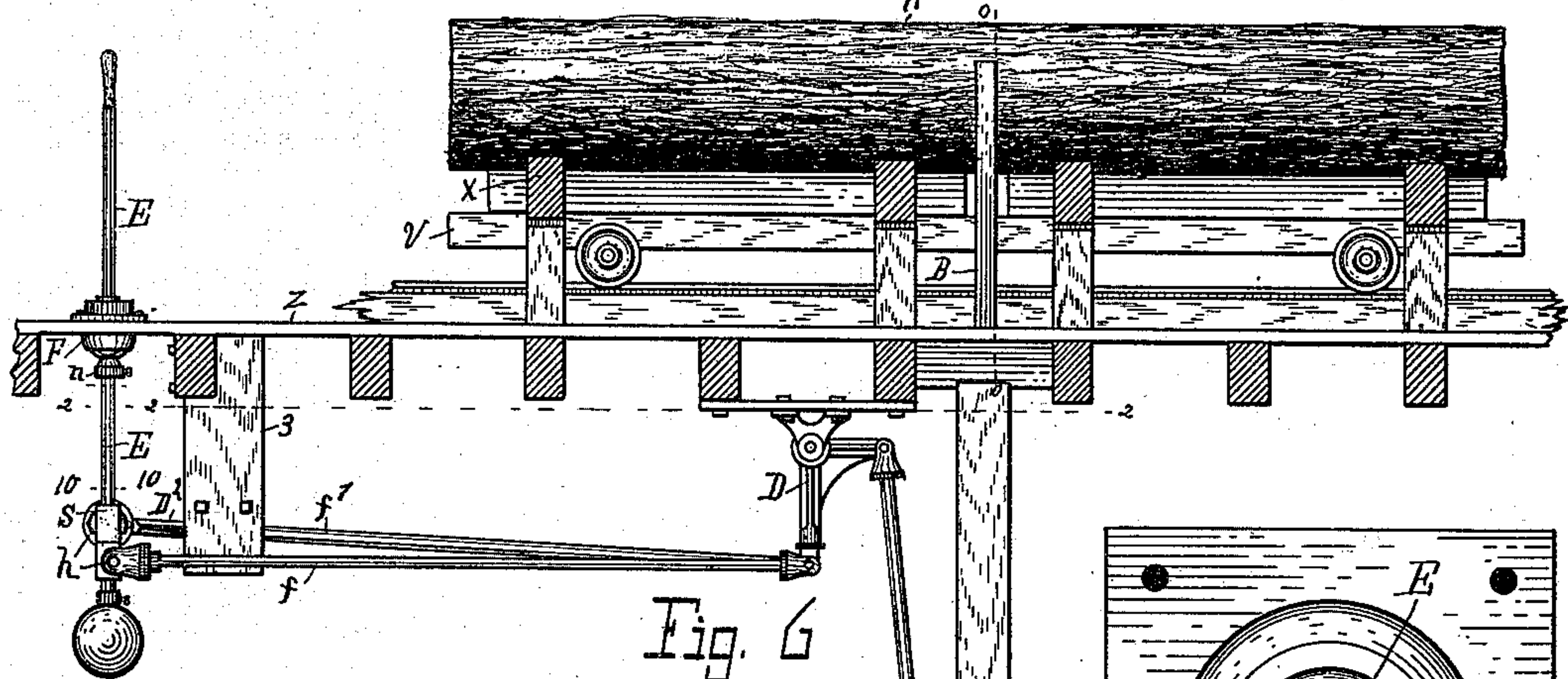
(No Model.)

2 Sheets—Sheet 2.

W. E. HILL.
LOG LOADER.

No. 413,721.

Patented Oct. 29, 1889.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM E. HILL, OF KALAMAZOO, MICHIGAN.

LOG-LOADER.

SPECIFICATION forming part of Letters Patent No. 413,721, dated October 29, 1889.

Application filed August 12, 1889. Serial No. 320,505. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. HILL, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a new and useful Log-Loader, of which the following is a specification.

This invention relates to that class of log-loaders in which a tilting or oscillating lever is employed, and which lever is operated by steam-cylinders and piston-rods.

The principal object of this invention consists in an operating-lever having a capacity for a so-called "universal movement" under the hand of the operator, which lever is connected by certain means with the valve-rods of the steam-cylinder, whereby the operator has a better control of the machine than heretofore, so far as I am aware.

Other objects consist in the combination of certain parts, substantially as below described and claimed.

In the drawings forming a part of this specification, Figure 1 is an elevation, parts being in vertical section on line *o o* in Fig. 6, looking from a point at the right of the latter-named figure; Fig. 2, a sectional plan on lines 2 2 in Figs. 1 and 6; Fig. 3, enlarged lettered details from Fig. 1; Fig. 4, a section on line 5 5 in Fig. 3; Fig. 5, a section of details, enlarged; on line 4 4 in Fig. 1; Fig. 6, an elevation looking from a point at left of Fig. 1; Fig. 7, an inverted plan and section on line 9 9 in Fig. 8; Fig. 8, a section on line 3 3 in Fig. 7, said Figs. 7 and 8 illustrating lettered details, enlarged, from Figs. 1 and 6; Fig. 9, a section on line 10 10 in Fig. 6, enlarged; Fig. 10, a section on line 7 7 in Fig. 9; Fig. 11, enlarged lettered details from Figs. 1, 2, and 6; and Fig. 12 is a view of Fig. 11, looking from a point at the right.

Referring to the lettered parts of the drawings, *z* is the floor of a mill, *x* a log-skidway, and *v* a log-carriage of ordinary construction and arrangement.

At *A A'* are two upright steam-cylinders having pistons *I I* and valve-rods *c*, as heretofore. These cylinders are rigidly attached at their base to a suitable support, Fig. 1, and at *e e'* are extensions to the valve-rods *c*, the latter being pivotally attached to the former by means of the straps *a a*, said straps being

adjustably clamped to the valve-rods *c* by bolts, Figs. 1, 3, and 4, so that the rods *e e'* of a fixed length can be made to serve where the distance from the floor *z* to the steam-cylinders varies.

The log-loading lever *B* is in the form of an inverted **T**. The upper end may be provided, if desired, with teeth on the side next to the log *H*. Each end of the base of the lever *B* is pivoted to a bracket *C*, Fig. 5, and each of these brackets slide up and down on guides *w*, Fig. 1, and said brackets *C* are preferably provided with a friction-wheel *y*, to traverse the guides *w*. (Shown in Fig. 1.) One of the brackets *C*—the right-hand one in Fig. 1, and the one shown in Fig. 5—has a thimble *d*, into which the end *b* of the base of the lever *B* is loosely inserted, so as to play back and forth in said thimble *d* during the operation of the machine, when the lever tilts and moves up and down from one position to another, as shown by dotted lines in Fig. 1, and more particularly explained in the description of the operation given farther on in the specification.

To the floor of the mill or other suitable support are pivoted the bell-cranks *D D'*, Fig. 1. To these bell-cranks the rods *e e'* are pivotally attached at the upper end, as clearly illustrated by the bell-crank *D* and rod *e* in Figs. 6, 11, and 12, said bell-crank and rod being the same as appears at the left hand in Figs. 1 and 2. Pivotaly attached to a suitable support, which the pendent beam 3, Figs. 1, 2, and 6, will serve to illustrate, is a bell-crank *D²*. Rod *f'* is pivotally attached at each end to the bell-cranks *D' D²*, Figs. 1 and 6. To the bell-crank *D²* is pivotally attached a rod *f²*, and the other end of said rod *f²* is attached in a swiveled manner to a coupling *h*, Figs. 9 and 10, said coupling being pivotally attached to a collar *S*, said collar *S* being swiveled on the lower end of the lever *E*. The rod *f* is pivotally attached to the bell-crank *D* by means of a pintle *l*, swiveled in the end of said bell-crank *D*, Fig. 11. Thus the rod *f* can swing laterally and vertically. The other end of the rod *f* is swiveled to another coupling *h*, the same as rod *f²* in Fig. 10, and said coupling is pivoted to another collar *S*, same as described in relation to rod *f²*, Fig. 9. It should be stated that the end of rod *f²* which

is attached to the bell-crank D^2 is pivoted to a swiveled pintle, same as rod f in Fig. 11. The collars $S S$, Fig. 10, are prevented from sliding on the lever E by means of channels 5 and pin 8, as clearly appear in said figure. The pintles l are kept in place in the bell-cranks in a like manner, as Fig. 11 shows. The lever E is fulcrumed between its two ends by a ball-and-socket joint $F i$, attached to the 10 floor z or other suitable support, Figs. 1, 6, 7, and 8. The lever is adjustably kept at the proper height by the thimbles n , which are attached to the lever by set-screws, or in any other suitable manner, and which thimbles 15 engage the ball i above and below, Fig. 8.

Any desired operating lever or levers may be employed in connection with the stationary cylinders, the lever B , and the brackets C , and guides W , one of which brackets has the 20 thimble d , receiving the sliding end of the base of said lever B ; hence I do not wish to confine this part of the invention to the universal lever E and the rods connecting it with the valve-rods.

By means of the universal lever E and the rods and cranks connecting it with the valve-rods of the steam-cylinders the operator can operate the valves of one or both of the cylinders $A A'$ at a time. To illustrate, referring to Fig. 6, if the operating-lever E be 30 swung to the right or left the valves of the cylinder A will be operated, and by swinging said lever E obliquely to the direction above described the valves of both cylinders will be 35 operated. This will be readily seen by referring to Fig. 2, in connection with Fig. 6; or he can shut the steam off from one cylinder and let it onto the other, by one movement, by swinging the lever E in a direction to pull 40 on rod f and push on rod f^2 , and vice versa.

In Fig. 1 the piston-rod of the cylinder A' is supposed to be moving upward, and the rod of cylinder A downward, which action is illustrated by the dotted position of lever B , 45 which lever is tilted over, ready to act upon the log shown in dotted lines. The operator, by a proper manipulation of the operating-lever E , can now raise the left-hand piston I and hold the other at rest if he so desires; or 50 he can lower the right-hand one at the same time he raises the left-hand one, and then can raise or lower both pistons together, or any other action he may wish to produce to cause the lever B to advantageously and quickly 55 load the log onto the carriage or to turn it on the carriage, or to hand-spike it. In short, he can cause the lever B to make as many desired changes in its movements as though manipulated by hand, and all this with a single 60 hand of the operator handling a single lever E , leaving the other hand of the operator free to control the feed of the log-carriage.

Having thus described my invention, what I claim is—

1. In a log-loading machine, the combination of two upright stationary steam-cylinders, the lever having the oppositely-extended arms at the base, the end of one of said arms being pivoted to the piston-rod of one of the cylinders, and the end of the other arm 7 having both a pivoted and a sliding attachment to the piston-rod of the other cylinder, substantially as set forth.

2. In a log-loading machine, the combination of the steam-cylinders fixed in a stationary or rigid position, the lever having oppositely-extending arms at the base, a bracket 75 attached to the end of each piston-rod of said cylinders, one arm of said lever being pivoted to one of the brackets, a thimble through 80 which the end of the other arm reciprocates, said thimble being pivoted to the other bracket, and guideways traversed by said brackets, substantially as set forth.

3. The combination of steam-cylinders, a 85 lever operated by the piston-rods of said cylinders, an operating-lever having a ball-and-socket fulcrum, and suitable rods and cranks connecting the operating-lever with the valve-rods of steam-cylinders, whereby the valves 90 of each cylinder are operated by the single lever, substantially in the manner set forth.

4. The combination of the upright steam-cylinders and piston-rods, a lever operated by said pistons, an operating-lever having a ball-and-socket fulcrum, the bell-cranks above the 95 cylinders, the valve-rods pivoted to said bell-cranks, the operating-lever having the ball-and-socket fulcrum, a rod pivoted at one end to a coupling and said coupling attached in 100 a swiveled manner to one of the bell-cranks, the other end of said rod being swiveled to a coupling, two collars loose on the operating-lever, so as to turn, the latter-named coupling being pivoted to one of said collars, a 105 short rod swiveled to a coupling and said coupling being pivoted to the other collar, a bell-crank to which the other end of the short rod is pivoted indirectly by a coupling, said coupling being swiveled to the latter 110 bell-crank, and a rod pivoted at one end to said bell-crank and at the other end to the other of the bell-cranks over the cylinders, substantially as set forth.

5. In a log-loader employing the steam-cylinders, an operating-lever fulcrumed to tilt in 115 any direction, and jointed by connected rods and cranks between said lever and the valve-rods of the cylinders, all arranged and combined to cause the actions of the valves, substantially as set forth. 120

In testimony of the foregoing I have hereunto subscribed my name in presence of two witnesses.

WILLIAM E. HILL.

Witnesses:

WALTER S. WOOD,
RICHARD L. FROST.