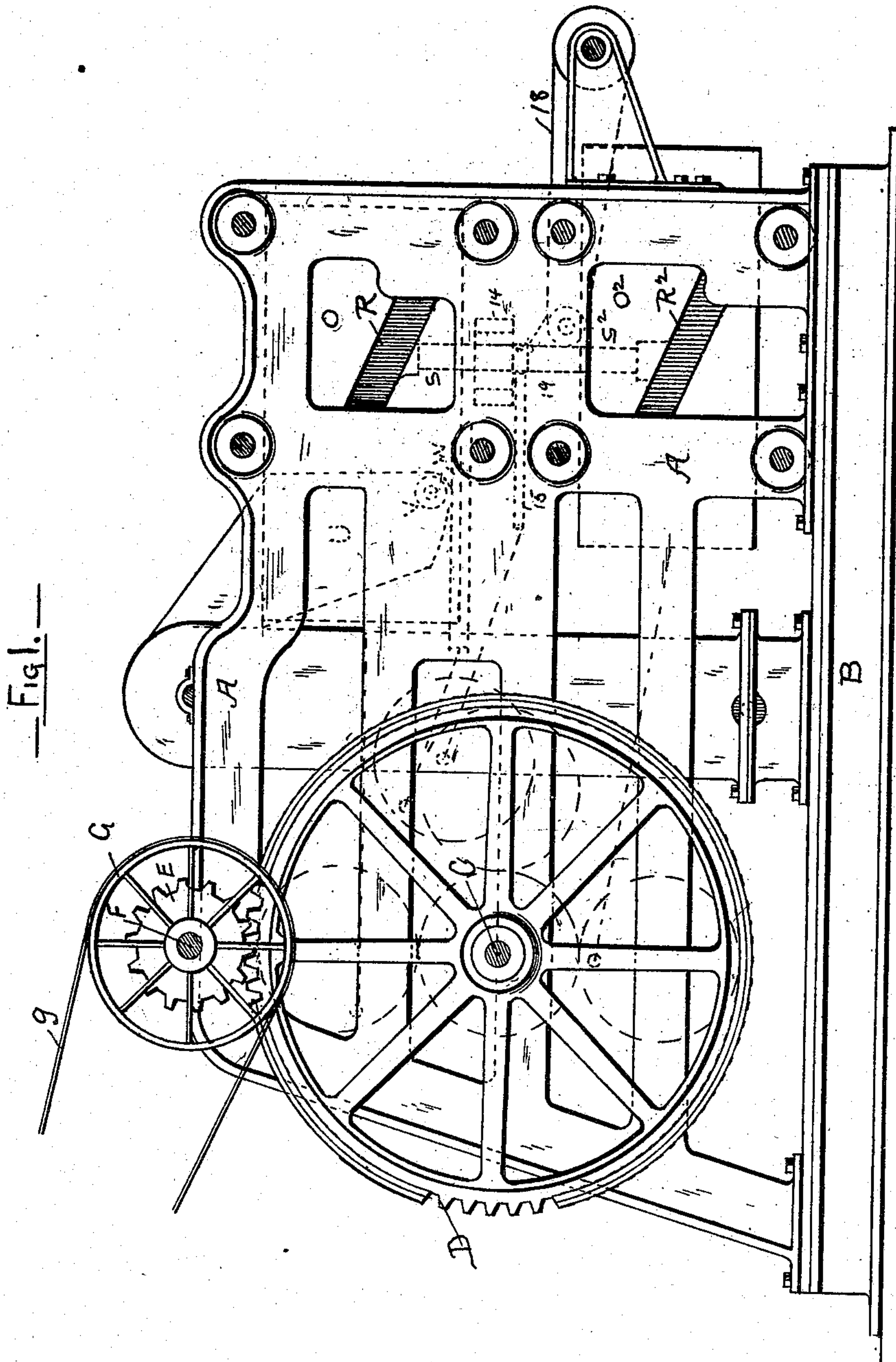


No. 840,608.

PATENTED JAN. 8, 1907.

J. H. CURELL.  
BRIQUET MACHINE.  
APPLICATION FILED OCT 2, 1906.

4 SHEETS—SHEET 1.



Witnesses  
H. Brothershead.  
C. Barrett

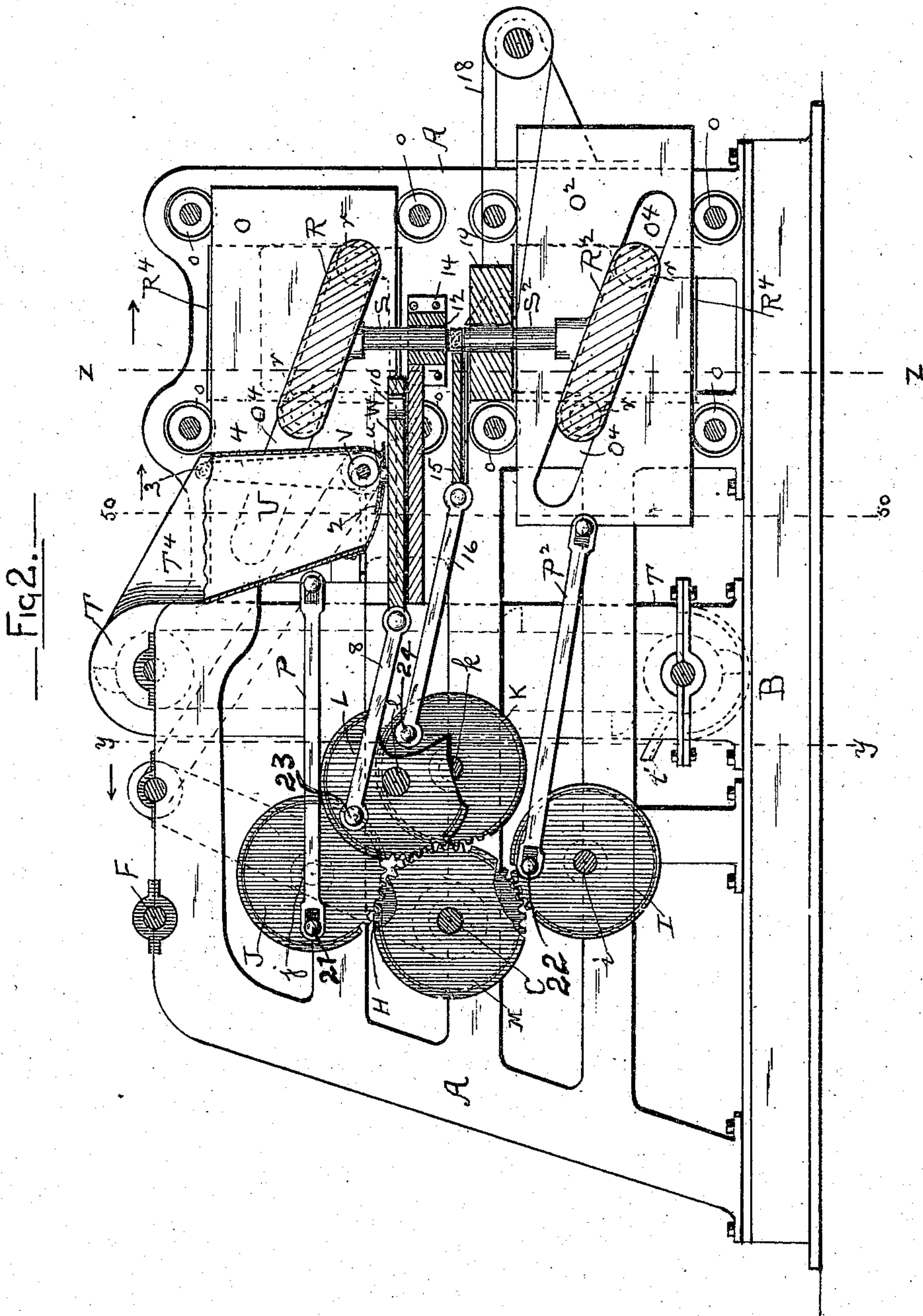
Inventor  
James H. Curell,

No. 840,608.

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APPLICATION FILED OCT. 2, 1905.

4 SHEETS—SHEET 2.



Witnesses  
H. Brotherhood.  
E. Barrett.

Inventor  
James H. Curell,

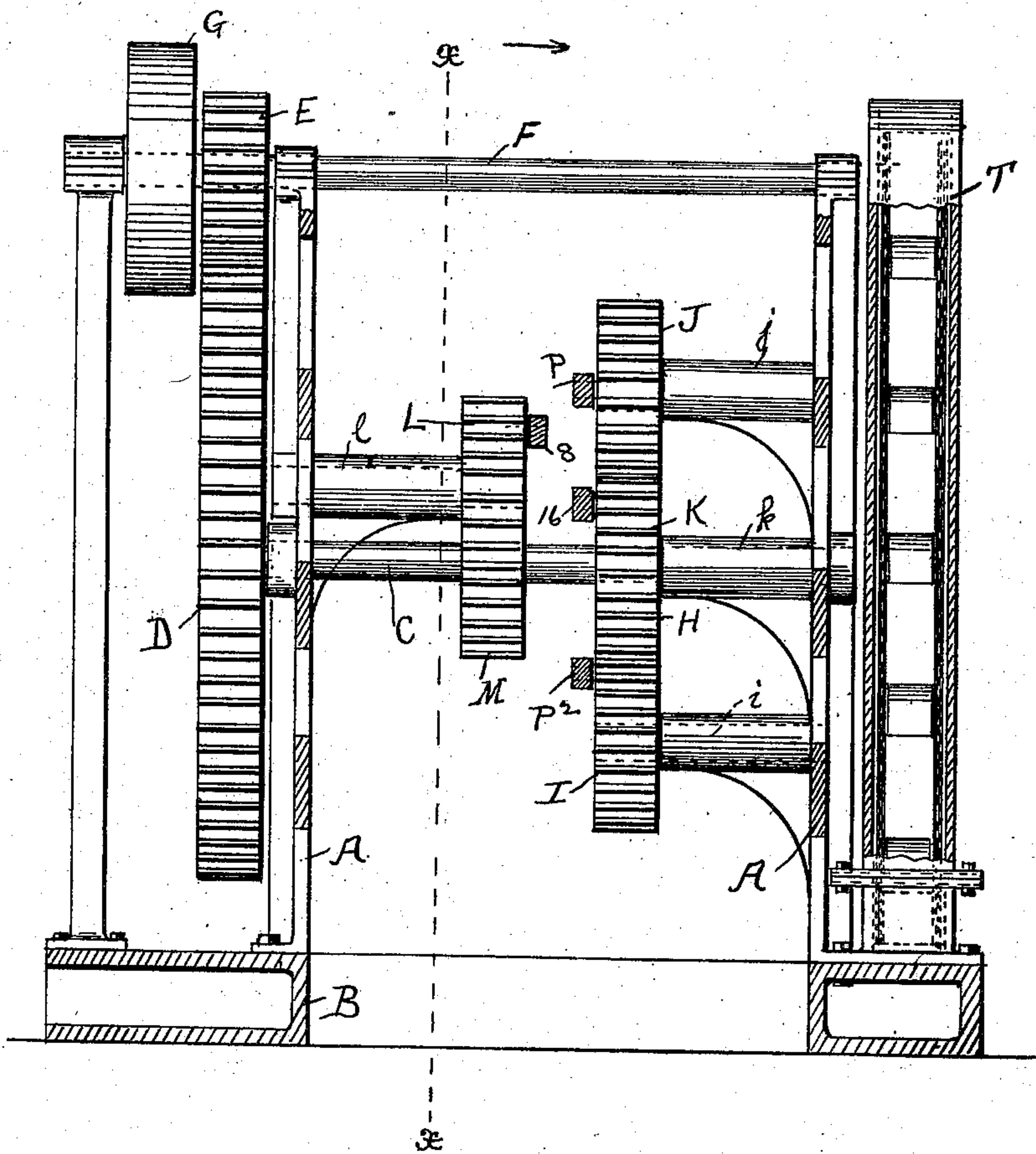
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4 SHEETS—SHEET 3.

Fig 3.



Witnesses  
A. Boothman  
G. Barrett.

Inventor  
James H. Curell



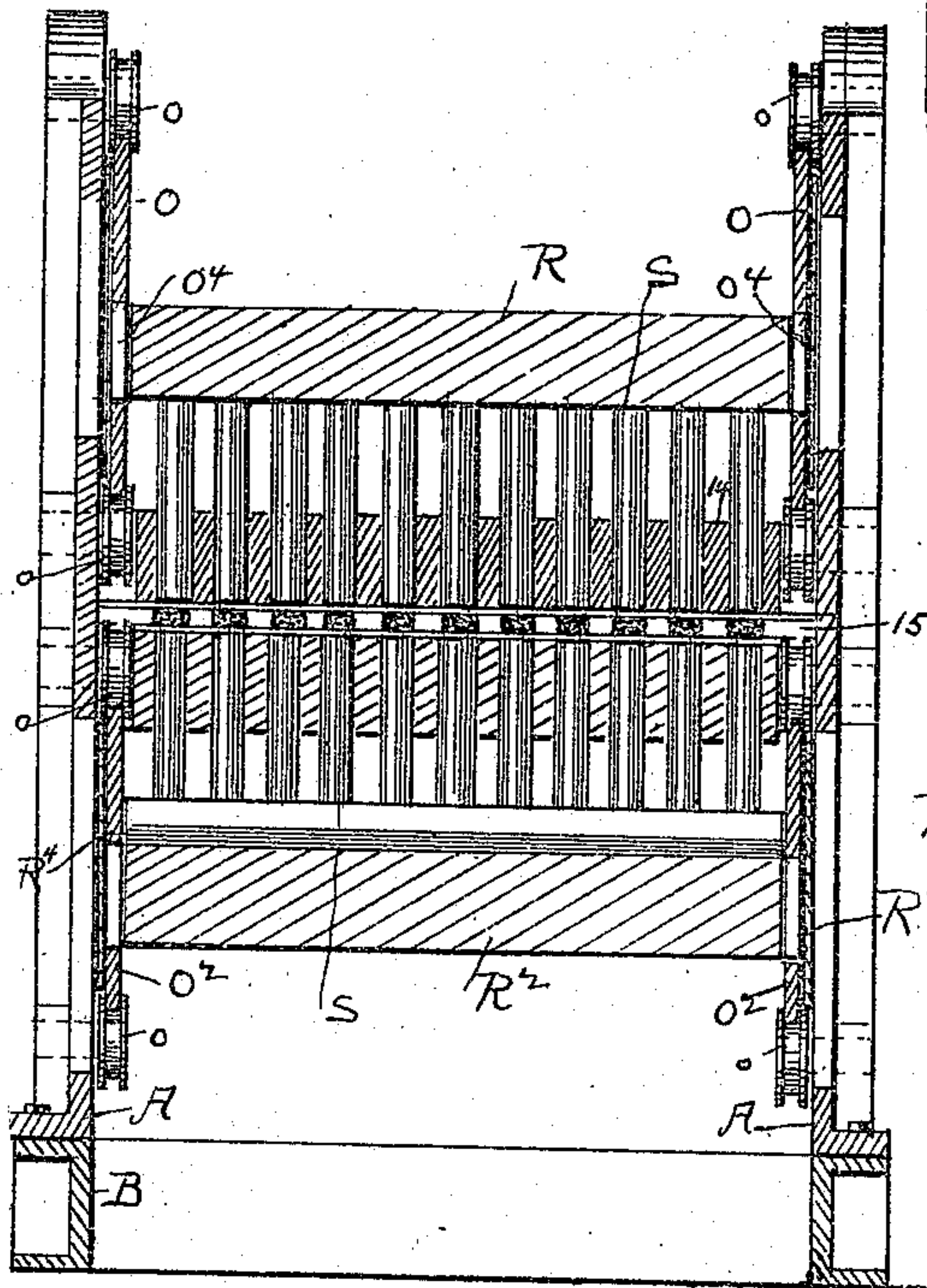
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4 SHEETS—SHEET 4.

— Fig 4 —



— Fig 5 —

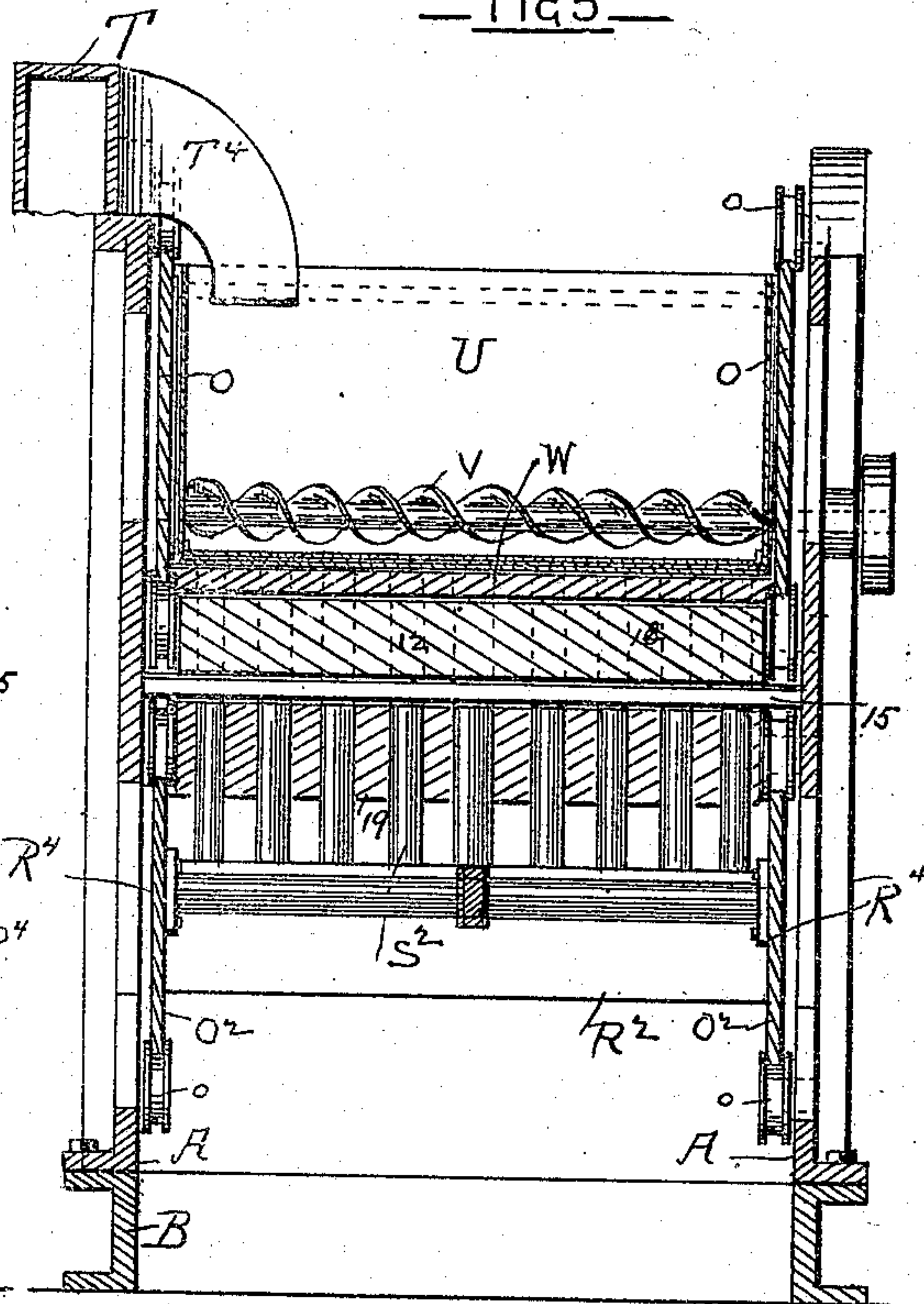
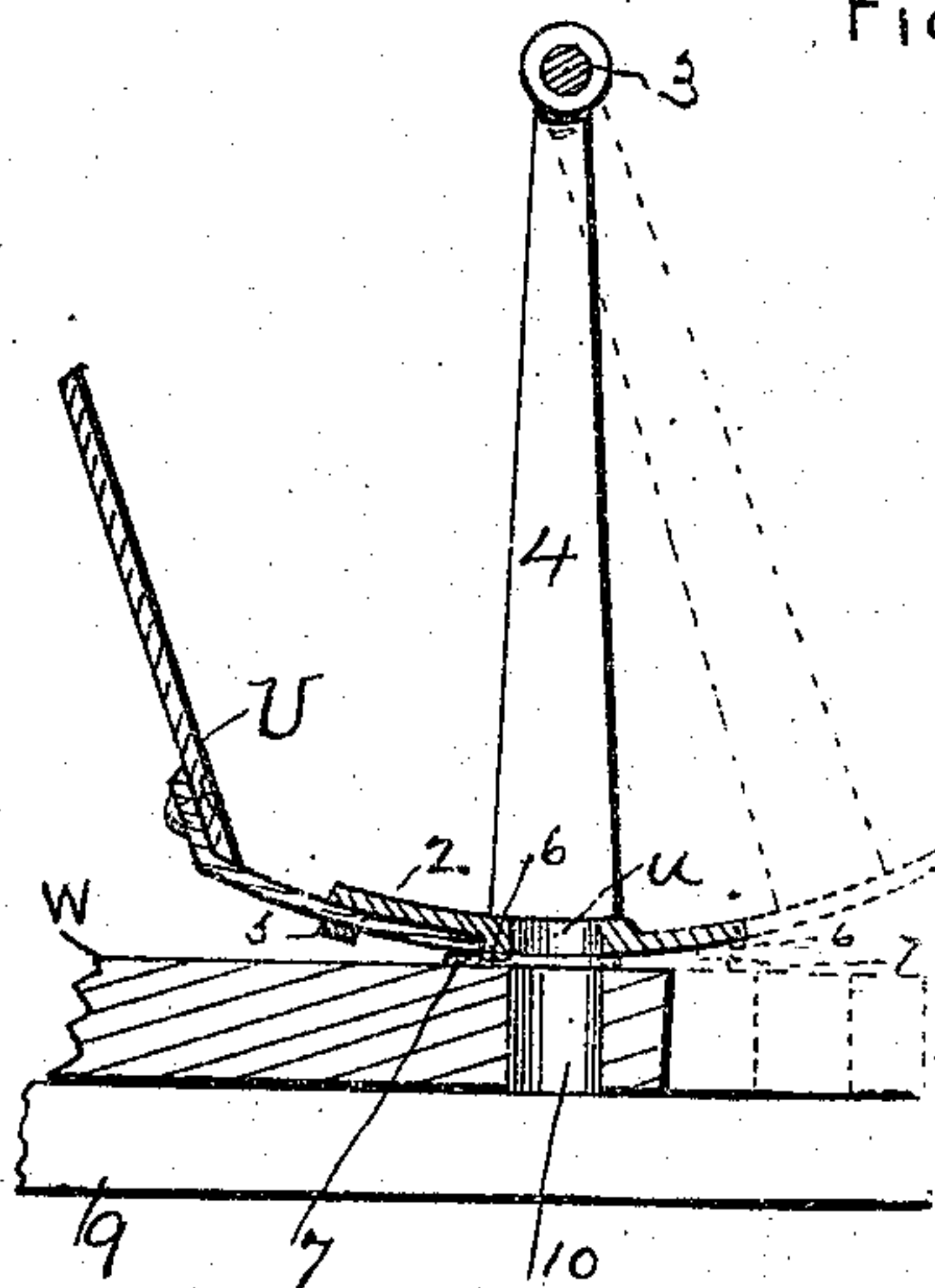
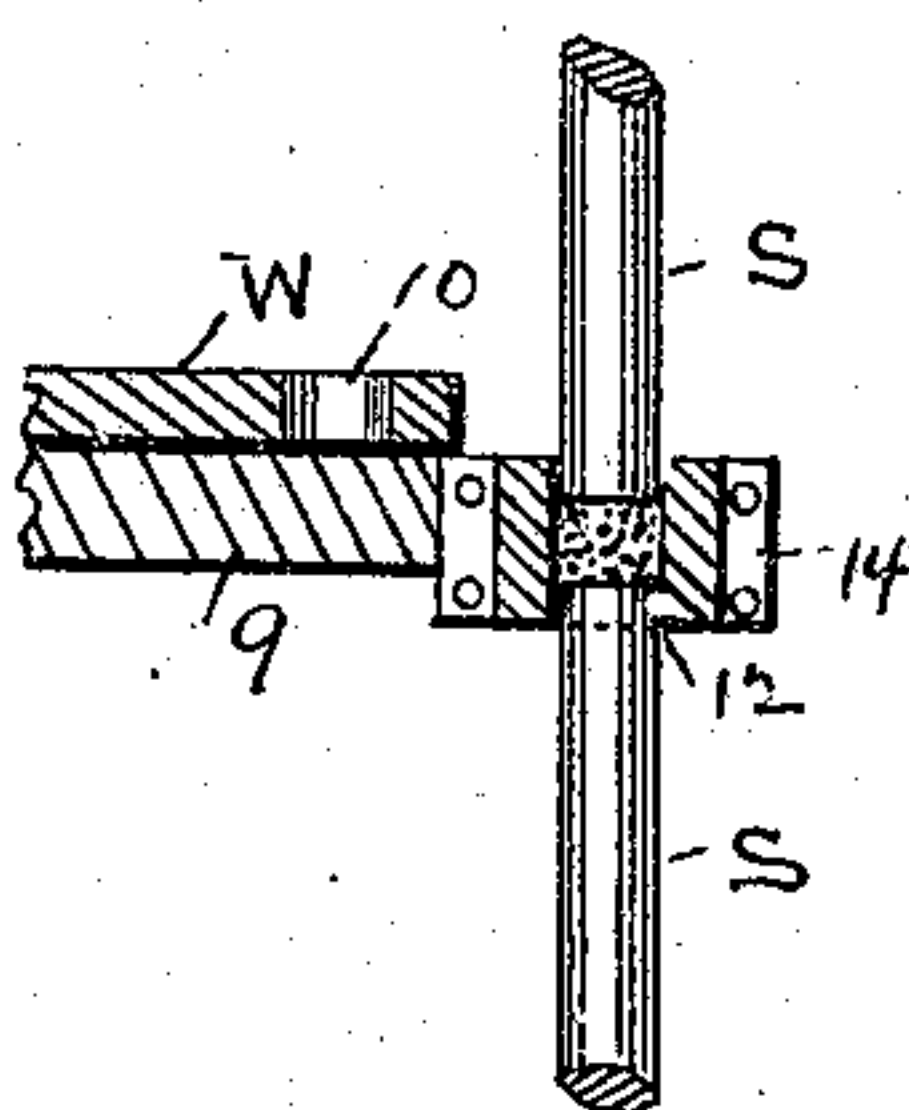


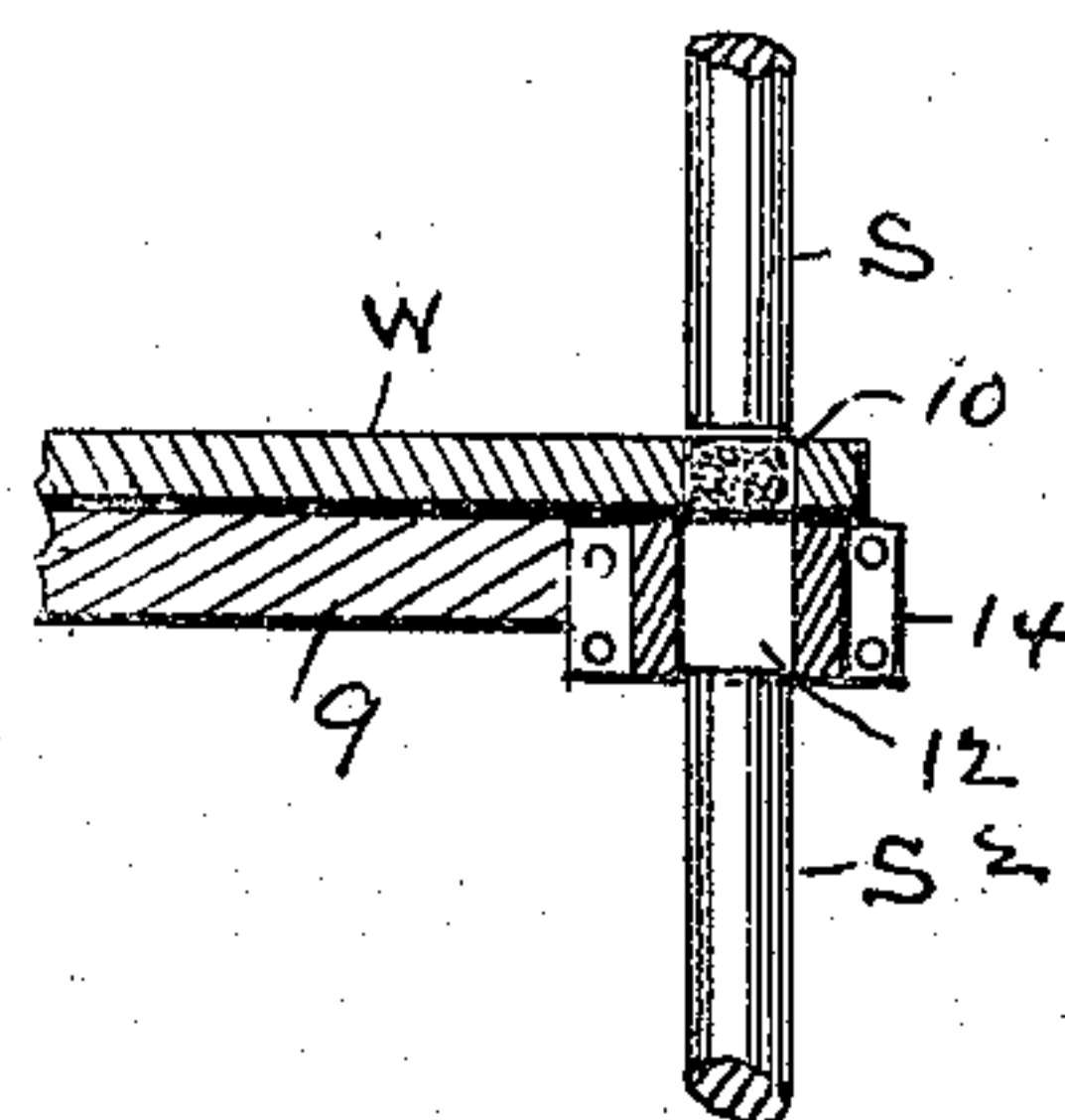
Fig 6.



— Fig 7 —



— Fig 8 —



Witnesses  
J. Brothers hood.  
C. Barrett.

Inventor  
James H. Curell,



# UNITED STATES PATENT OFFICE.

JAMES H. CURELL, OF NEW YORK, N. Y.

## BRIQUET-MACHINE.

No. 840,608.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed October 2, 1905. Serial No. 281,002.

*To all whom it may concern:*

Be it known that I, JAMES H. CURELL, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Briquet-Machines, of which the following is a specification.

My invention relates to a machine for making briquet or fuel blocks composed of culm or dust-coal, peat, or any other similar material of a fuel nature.

The object of my invention is to produce a machine of this class which will form briquet or fuel blocks by means of compound pressure.

Another object is to produce a briquet-machine which is simple in construction, easily operated, and adapted to manufacture or compress briquets more rapidly than other machines of a similar character.

Heretofore briquets have been pressed by a single pressure by means of a single plunger operating in a pocket or hollow holder and only upon the upper side of the briquet. Experience has proven that such a compression is insufficient, for the reason that it presses but one end of the briquet, while the other or lower end or surface lying in the pocket simply resists the pressure of the plunger directed upon the upper side. Briquets must be compressed equally between two plungers, and the purpose of my invention is to overcome the above defect and to make a machine which will give each briquet a compound pressure.

Referring to the drawings, Figure 1 is a side elevation of my machine. Fig. 2 is a longitudinal view on line X X, Fig. 3, looking in the direction of arrow. Fig. 3 is a cross-section on line Y Y, Fig. 2, looking in the direction of arrow. Fig. 4 is another cross-section on line Z Z, Fig. 2, looking in the direction of arrow. Fig. 5 is another cross-section on line 50, Fig. 2, looking in the direction of arrow. Fig. 6 is an enlarged detached sectional view of the automatic device for operating and closing the mouth of the receiver. Fig. 7 is a detached view of part of the plungers and the compression-pocket frame and sliding-pocket frame in section to show how a briquet is pressed by compound pressure. Fig. 8 is a similar view to Fig. 7, showing how the material is deposited into the compression-pocket and the position of the plungers when this is done.

Letters A A represent the side frames of the machine, which may be of any shape and made of any suitable material. These side frames are bolted upon a bed-plate B at a certain distance apart, which is determined by the size and capacity of the machine.

The side frames support the driving-shaft C, which revolves in bearings secured on the said frames. One end of this shaft C has keyed onto it, just outside the frames, the large gear-wheel D, which meshes into the pinion or smaller gear-wheel E on the shaft F, having journaled bearings on the top of the frames. This shaft F has also keyed on it the driving-pulley G, connected by belt *g* to any suitable power, mechanism, or motor.

Inside the frames is placed a series of gear-wheels H, I, J, K, L, and M, all of the same diameter and pitch. Gear-wheel H is keyed on the driving-shaft C, gear-wheels I, J, and K are keyed on independent shafts *i*, *j*, and *k*, but so placed as to mesh into the gear-wheel H, from which they obtain their motion. Gear-wheel L is keyed on an independent shaft supported on the opposite side of the machine, (see Fig. 3,) which position made it necessary to key on driving-shaft C another gear-wheel M to transmit power from said shaft to said wheel L. (See Fig. 3.) The object of these gear-wheels will be fully explained hereinafter.

Letters O O<sup>2</sup> represent four plates made of metal and adapted to slide backward and forward on or upon grooved rollers *o*, two of which are placed above the plates and two below them. (See Fig. 2.) These rollers are journaled in the frames in any suitable manner. The plates O O<sup>2</sup> are operated by the crank-rods P P<sup>2</sup>. P is connected by wrist-pin 21 to gear-wheel J and journaled to the sliding plate O and P<sup>2</sup> by a wrist-pin 22 to the gear-wheel I and also journaled to the sliding plate O<sup>2</sup>. (See Fig. 2.) Each of these plates has an inclined opening O<sup>4</sup> cut through it, in which move on rollers or wheels the plunger-beams R R<sup>2</sup>, which are each attached to a slide R<sup>4</sup>, placed between the plates O O<sup>2</sup> and the frame and also sliding in a V-shaped groove. (See Figs. 2, 4, and 5.)

It will be observed that when the plates move backward and forward they will cause the beams R R<sup>2</sup> and the slides R<sup>4</sup>, also the plungers S S<sup>2</sup>, attached to said beams, to move up and down, and by adjusting the wrist-pins on the wheels I and J the pitmen P P<sup>2</sup> can be so regulated or set as to give to



each set of plungers an exact movement to and from the other set.

Alongside the machine is placed the bucket elevator T, of ordinary construction and suitably driven. The hood of this elevator has an inlet-spout  $t'$  and an outlet spout or chute  $T^4$ , emptying into the receiving-hopper U, placed inside the machine between the two plates  $O$   $O^2$ . (See Figs. 2 and 5.) Within the receiver U is placed the worm-wheel V, suitably journaled and revolved by a belt outside the machine. The floor of the receiver is provided with a series of openings  $u$ , corresponding with the number of plungers the machine will require. These openings  $u$  are automatically opened and closed by the slide 2, (see Fig. 6,) which is suspended by arms 4 from a shaft 3. This slide has two lugs 5 and 6, which engage with lug 7 on the sliding-pocket frame W. As the sliding-pocket frame W moves backward to be charged it comes in contact with lug 5 on slide 2 and opens valve 2 to be recharged. It then passes under lugs 5, and on the return motion of the slide its lug 7 comes in contact with lug 6 on valve 2 and closes it and then passes under it as it moves onward to fill the pockets in the compression-pocket beam 14. This sliding-pocket frame W is operated by the crank-rod 8, connected by a wrist-pin 23 on the gear-wheel L and journaled to slide-plate U, which slides upon the guide-plate 9, that is intended to close the pockets 10 of the slide when they are being filled from the receiver, and also during its travel forward to the compression-pockets 12, cut in the cross bar or beam 14, extending across and suitably supported on the frames.

15 is the shoving-off bar, suitably supported and connected to the gear-wheel K by a wrist-pin 24 and a crank-rod 16 and suitably journaled to the shoving-off bar. The object of this bar will be explained in the operation of the machine, which is as follows: The material out of which the briquets are formed is shoveled into the elevator through the inlet-spout  $T'$ , where it is instantly carried up by the buckets and emptied into the outlet-chute  $T^4$  and thence into the receiving-hopper U, where it is manipulated by the revolving worm-wheel V, placed therein. As the large gear-wheel D revolves it will give motion to the series of gear-wheels H, I, J, K, L, and M, moving thereby the several parts of the machine connected to said gear-wheels. Now when wheel L brings the sliding plate W so that the pockets 10 thereof will be opposite the openings  $u$  (see Fig. 6) of the receiver the material will fall into said pockets, and when they are filled the wheel L as it continues to revolve will move them forward until they are directly over the pockets 12 of the compression-pocket beams 14. (See Fig. 8.) Before this takes place the top set of plungers S

have been moved upward by the plates O and revolving gear-wheel J sufficiently to allow the sliding-pocket frame W to pass underneath the said plungers. (See Fig. 8.) At the same time that the top set of plungers have been moved upward the bottom set of plungers  $S^2$  have also been moved upward by the plates  $O^2$  and revolving gear-wheel I far enough to allow them to just enter the compression-pockets 12 in order to close the latter, so as to catch the material deposited therein by the sliding-pocket frame W. The sliding-pocket frame is then instantly returned into position under the receiving-hopper to have the pockets refilled, as before described. The two sets of plungers are now forcibly brought together (see Fig. 7) within the compression-pockets 12 by the gear-wheels I J, thereby giving to each briquet therein a compound pressure—an equal pressure—below and above not attained before by similar machines. When the pressure has been completed, the bottom set of plungers are dropped down below the compression-pockets 12, the top set descending far enough to allow the shoving-plate 15 to shove off the compressed briquets upon the carrying-apron or belt 18, where they are carried off and away from the machine.

To steady the upper ends of the lower plungers, I pass them through the guide-beams 19. (See Fig. 2.)

The exact or precise movements of all the parts are dependent solely upon the series of gear-wheels and also the manner the crank-pins and connecting-rod of each part are attached to said wheels.

I am aware that the plungers can be operated by compressed air or hydraulic pressure without departing from the principle of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. In a briquet-machine, the combination of the gear-wheels I J, the sliding plates  $O$   $O^2$ , the friction-wheels  $o$   $o$ , the pitmen  $P^2$  attached at one end by wrist-pins to gear-wheels I J, the other ends journaled to the aforesaid sliding plates, the vertical sliding plates  $R^4$  to which the cross-beams are attached and the plungers attached to the cross-beams, and means of operation substantially as and for the purpose set forth.

2. In a briquet-machine, the combination of the sliding plates  $O$   $O^2$ , the inclined slots  $o^4$ , the vertical sliding plates  $R^4$ , to which the top and bottom cross-beams are attached, the friction-wheels  $r$ , journaled to vertical slides  $R^4$ , and means of operation substantially as and for the purpose set forth.

3. In a briquet-machine, the combination of the sliding plates  $O$   $O^2$ , the inclined slots  $O^4$ , the friction-wheels  $r$ , attached to the vertical slides  $R^4$ , the pitmen  $P$   $P^2$  attached at one end by wrist-pins to gear-wheels I J, the



other ends journaled to the aforesaid sliding plates, and means of operation substantially as and for the purpose set forth.

4. In a briquet-machine the combination  
5 of the sliding-pocket frame W, having a lug  
7 attached to it, a pitman 8 attached at one  
end by a wrist-pin to gear-wheel L, the other  
end being journaled to the aforesaid frame,  
and means of operation substantially as and  
10 for the purpose set forth.

5. In a briquet-machine the combination  
of the hopper U, the valve-slide 2, the lugs 5  
and 6 on said valve-slide 2, the arm 4, the  
worm-wheel V, placed in the hopper and  
15 means of operation substantially as and for  
the purpose set forth.

6. In a briquet-machine the automatic  
combination of the gear-wheels I, J, L, and  
K, the wrist-pins, 21, 22, 23 and 24, the pit-  
20 men P P<sup>2</sup>, 8 and 16, the sliding plates O O<sup>2</sup>  
and the inclined slots O<sup>4</sup>, the friction-wheels

o, the vertical sliding plates R<sup>4</sup>, having cross-  
beams and plungers attached to them, the  
friction-wheels r firmly attached to the slid-  
ing plates R<sup>4</sup>, the feed-slide W, the shoving- 25  
plate 15, the pocketed compression-beam at-  
tached to the frame, the carrying-belt 18 and  
means of operation substantially as and for  
the purpose set forth.

7. In a briquet-machine, the combination 30  
of the gear-wheels I, J, L, K, and M, the driv-  
ing-wheel D, pinion E and band-wheel G and  
means of operation substantially as and for  
the purpose set forth.

Signed at New York, in the county of New 35  
York and State of New York, this 28th day of  
September, A. D. 1905.

JAMES H. CURELL.

Witnesses:

A. BROTHERHOOD,  
C. BARRETT.