

(No Model.)

2 Sheets—Sheet 1.

H. W. DOPP.

SOAP REMELTING AND CRUTCHING APPARATUS.

No. 285,736.

Patented Sept. 25, 1883.

FIG. 1.

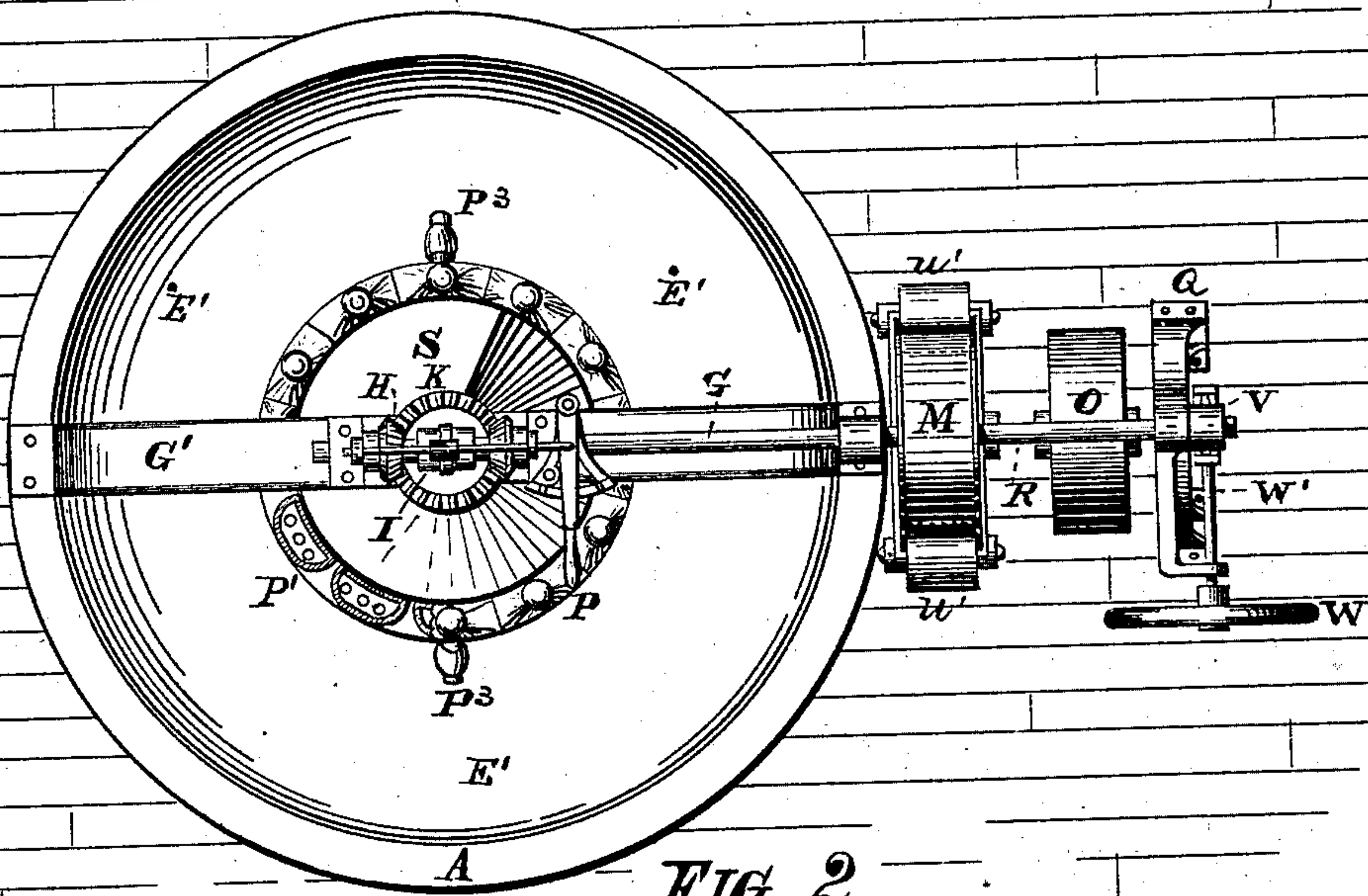
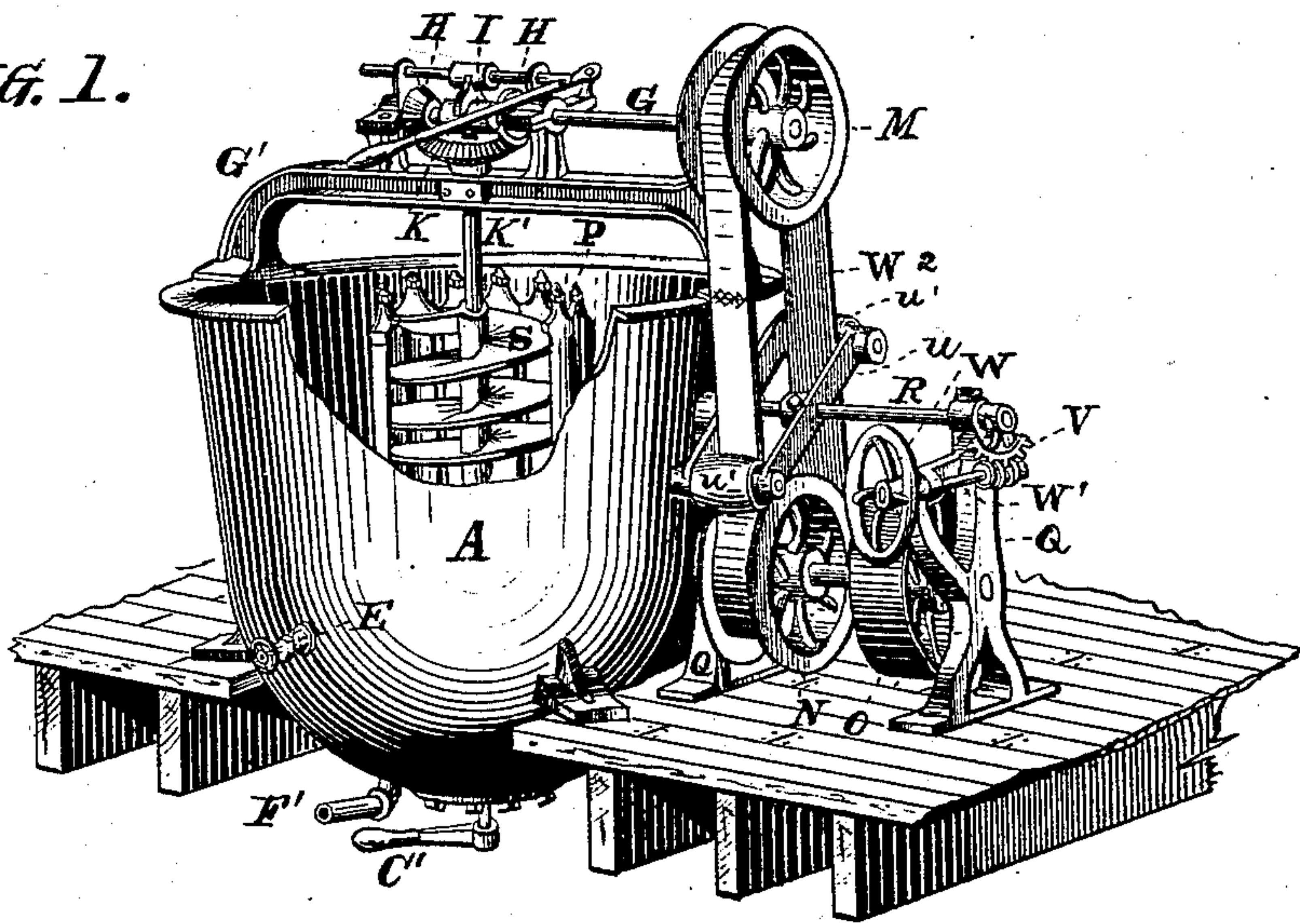


FIG. 2.

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FIG. 3.

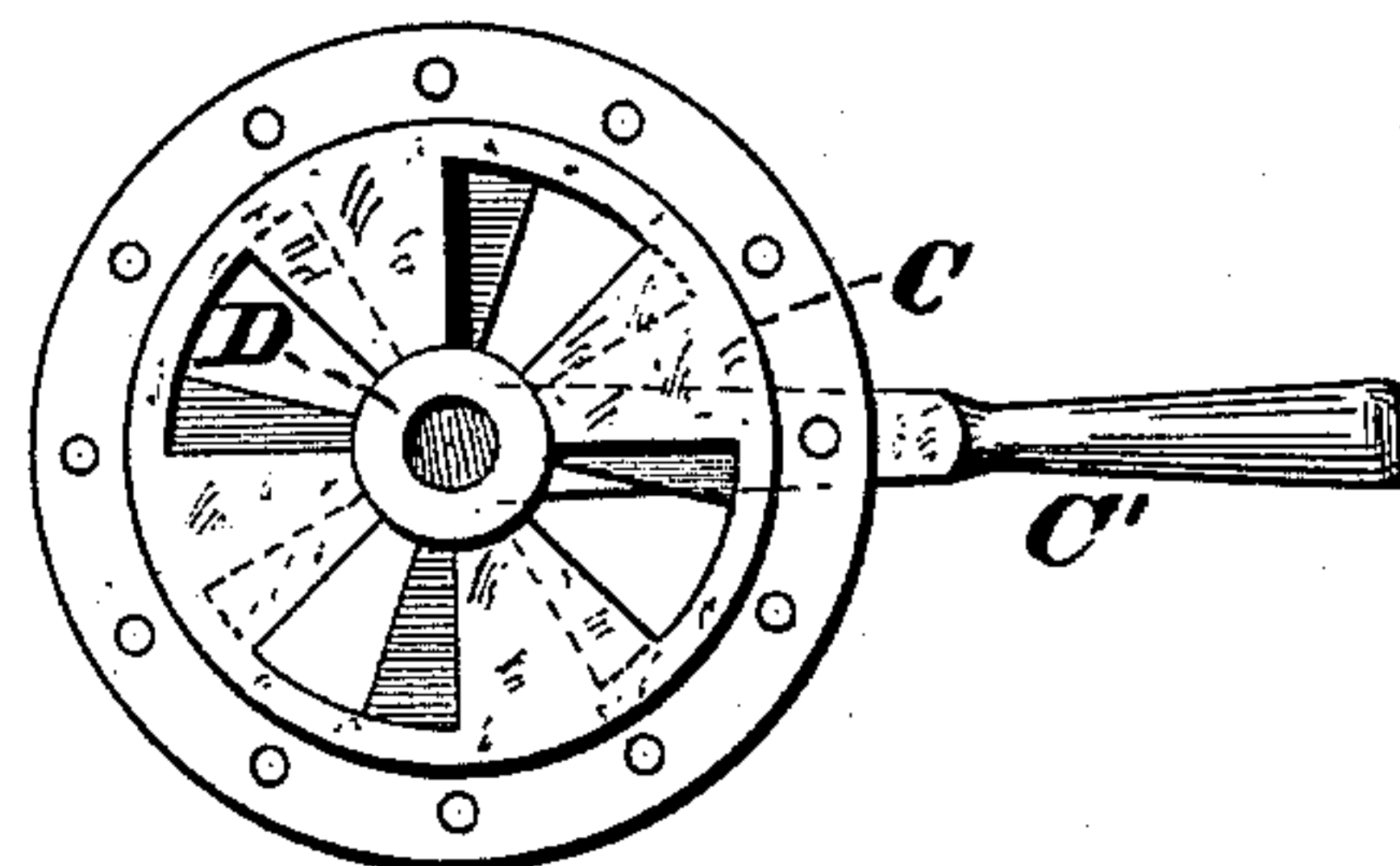
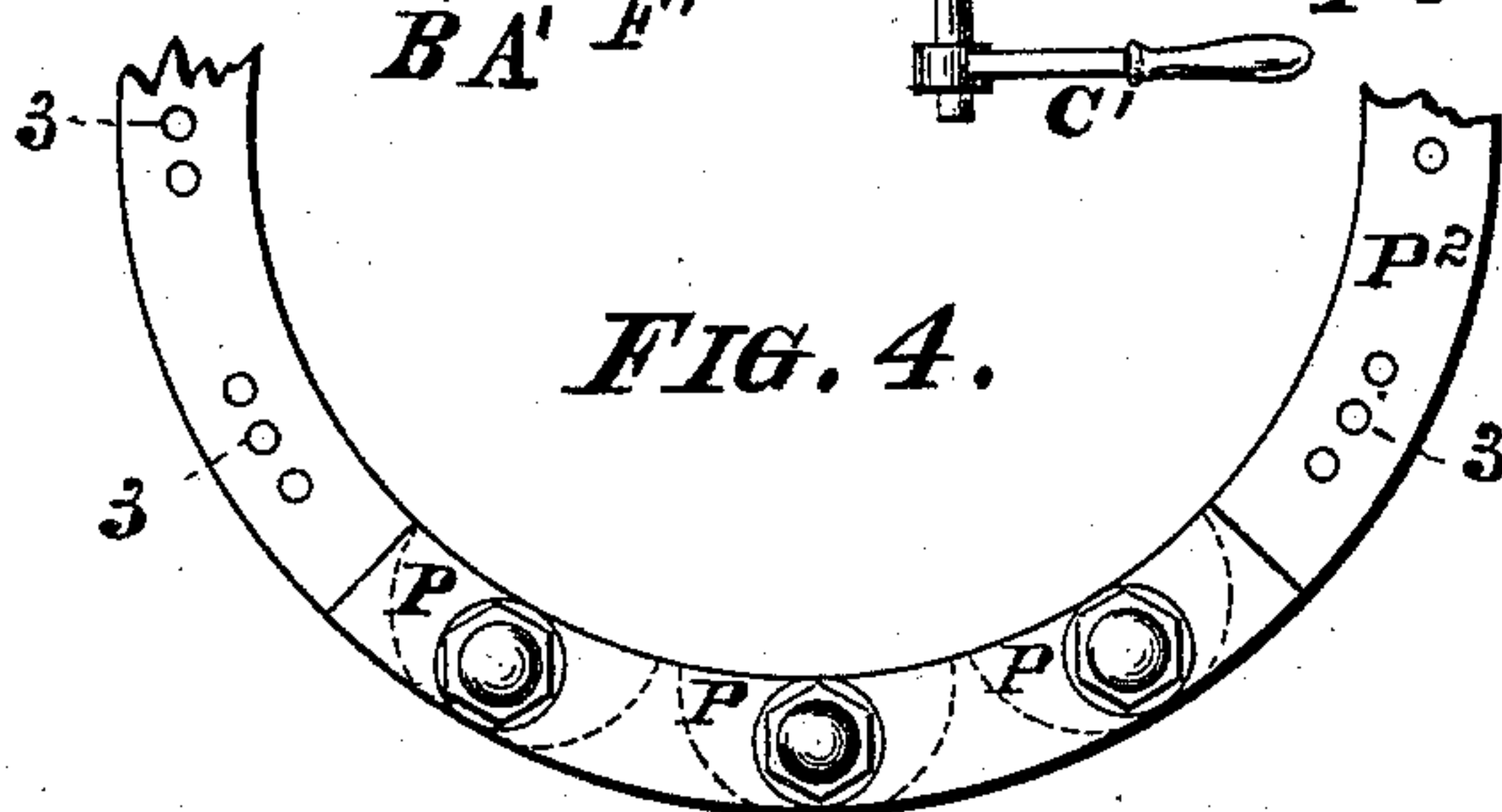
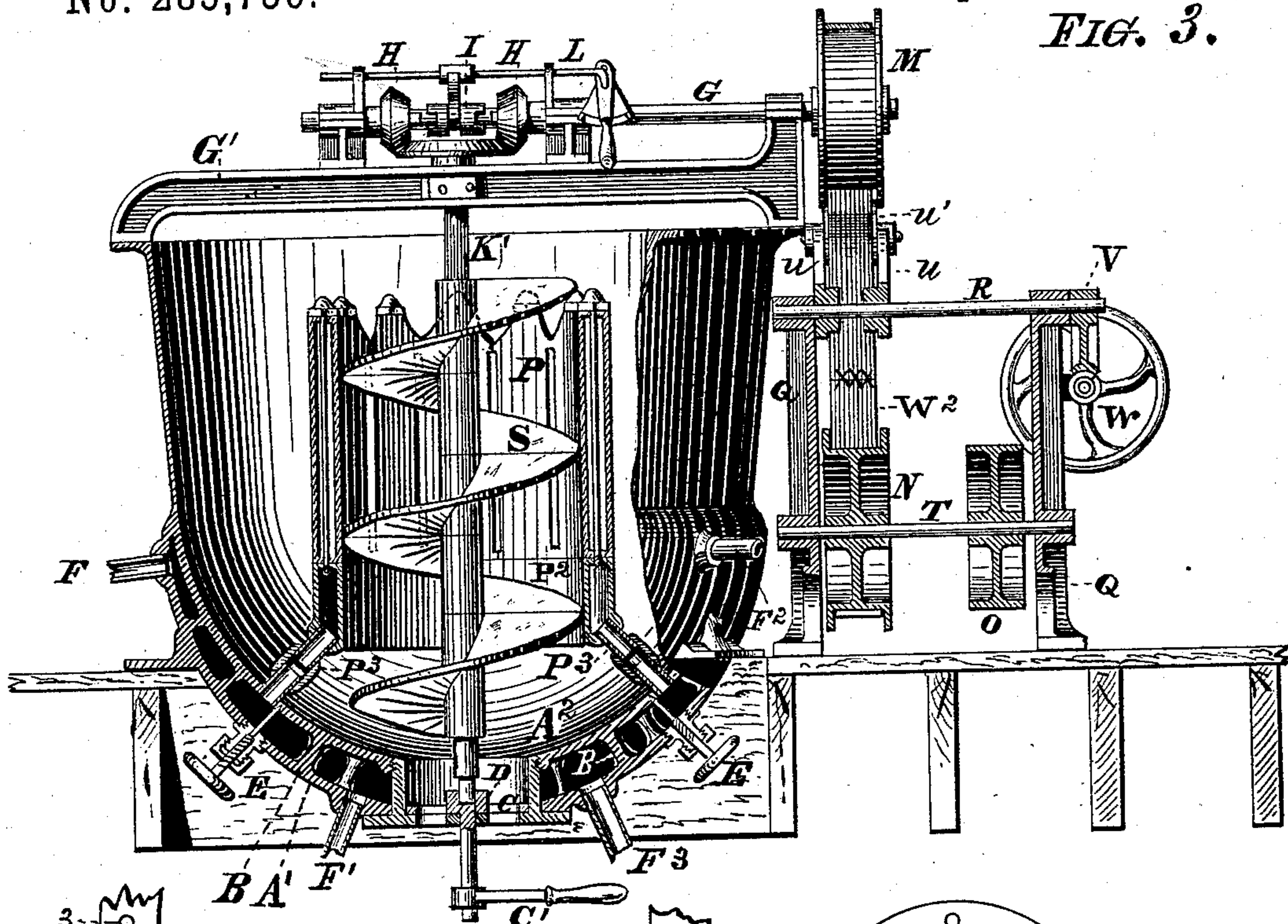


FIG. 6.

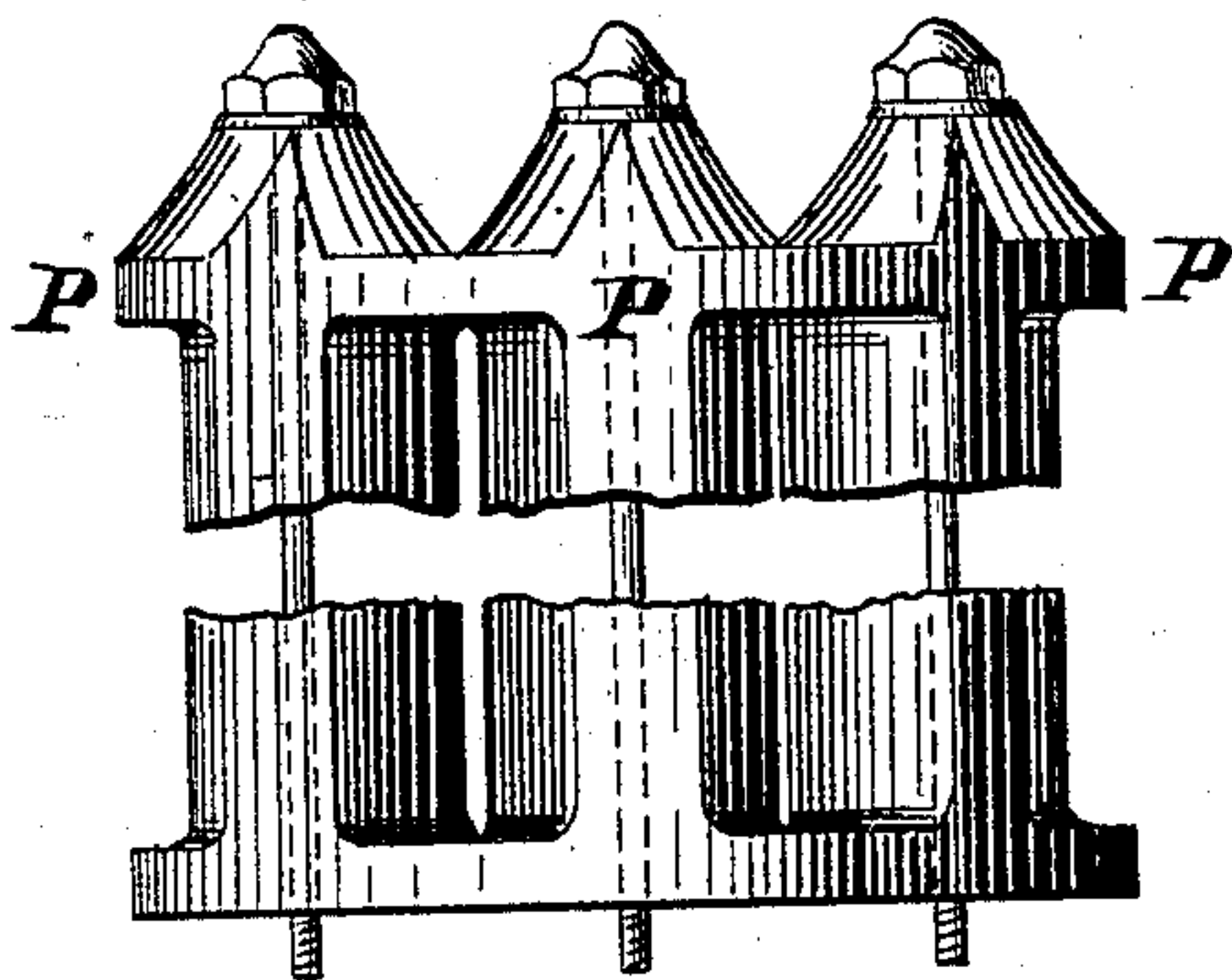


FIG. 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

H. WILLIAM DOPP, OF BUFFALO, NEW YORK.

SOAP REMELTING AND CRUTCHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 285,736, dated September 25, 1883.

Application filed March 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, H. WILLIAM DOPP, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Soap Remelting and Crutching Apparatus, and for the use of rendering purposes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The nature of my invention consists in the construction of an apparatus designed for various purposes—such as rendering and refining tallow, lard, or the like; for the manufacture of soap by the so-called “cold process;” for the manufacture of washing compounds, washing-crystals, &c.; for transforming old soap scraps into new soap by agitating the same when in process of remelting and steaming, and for many other purposes. I refer to the annexed specification and two sheets of drawings, with letters of reference marked thereon, which illustrate and explain my invention more fully.

Figure 1 is a perspective view of my apparatus as set up for use, having a section cut out for illustrating the agitating device, composed of a radiator of upright pipes, P, arranged in a circular line, in the center of which is placed a conveyer-screw, S. The whole is secured within the center of a steam-jacketed kettle, A. Fig. 2 is a plan view of my apparatus shown in Fig. 1. Two of the radiating-pipes (marked P') are shown in section. The radiating-pipes are arranged so as to leave a space of about five-eighths of an inch between each of them, the purpose of which will be hereinafter more fully explained. Fig. 3 is a partial perpendicular sectional cut through the center. Fig. 4 is a plan section of the lower portion (marked P²) of the radiator, to which pipes P are secured by means of bolts running through their center and screwing into the base of P² at holes marked 3. The remaining holes are for the steam communication to pipes P'. P² is constructed in shape of a hollow ring, and is secured, by means of four hollow studs, P³, (see Figs. 2 and 3,) in the center of the jacketed steam-kettle, to the

inner shell, leaving sufficient room between the bottom or inner shell, B, of the steam-kettle A and the lower portion of the radiator-ring P², so that the conveyer may be easily fed when the screw is set in motion. A supply of steam is constantly conveyed from the jacket part of the kettle through the hollow studs P³ into the radiator P². Fig. 5 is a perpendicular view of three of the radiator-pipes P. They are cast in one piece. Four of these complete a full circle. Fig. 6 is a plan view of a register discharge-valve. It is secured in the center of the kettle A and passes through the inner and outer shells, A² and A', as plainly illustrated in Fig. 3. The conveyer screw-spindle K' has its step D in center of said valve.

A is a steam-jacketed kettle.

A' is the steam-jacket, surrounding the inner shell, A². These terminate into one shell at the upper portion of the kettle.

Between the jacket and the inner shell are a number of stays, B B, cast together with the jacket and inner shell, so as to secure strength to the jacket and to cause the jacket to convey some heat over to the inner shell, and therefore utilize the heat of the steam more fully.

C is a register-valve passing through the jacket A and screwing into the inner shell, right in the center of the kettle, as seen in Fig. 3. The step D for the spindle of conveyer-screw S is arranged in the center of register-valve.

E E are four screw-valves screwed into the steam-jacket A. They have their valve-seats at E' in the shell A², at which place a hole for each valve is drilled in and through said shell and tapered out on the side next to the valve-spindle E. The spindles are turned taper, so as to fit close into said tapered holes E'. The object of said arrangement is to enable the passing of steam with pressure out of the jacket into the inner part of kettle A. When the valves E E are opened, the steam passes out with force in shape of jets. These jets are used for rendering and deodorizing purposes, for heating water quickly, or other like substances, when it is desired to be done faster than it could be by means of the steam-jacket alone.

F is a gas-pipe of one inch in diameter, through which steam is led into the steam-jacket from an ordinary steam-boiler.

F' is the discharge-pipe for the condensed water.

F² and F³ are pipes of same size as F F'. They may be used, in connection with cold water, for cooling purposes after steam has been used. Either of these pipes are closed or shut with respective valves that are not shown here. When the kettle is used for cooling, the steam and discharge pipe F F' are to be closed. Cold water is then let into the jacket and radiator P through pipe F³ and escapes through pipe F².

G is a shaft, having its bearings on a bracket, G', which runs across the center and top of kettle A, to which said bracket is secured, as seen in Figs. 1, 2, and 3. Said shaft is provided with two bevel-pinions, H H, and a movable clutch, I, which causes either one or the other of the pinions H H to run in the direction of the shaft G, or to set both of them free or at rest when shaft G is in motion.

K is a bevel-wheel, into which match the bevel-pinions H H. Said bevel-wheel K is fitted and keyed onto the end of the conveyer-screw spindle K'. The whole arrangement is for the purpose of transmitting motion to the conveyer-screw, and to make it turn either right or left, as may be desired.

I is the clutch-shifting rig.

M is a pulley secured on shaft G.

N and O are pulleys like pulley M. They are secured on a shaft, T, which has its bearings in bracket-stands Q Q, as plainly illustrated in Figs. 1 and 3.

R is a shaft having its bearings in top part of bracket Q Q. To said shaft R are secured two double levers, u u, and a worm-wheel segment, U.

u' are two friction-rollers, arranged in the end of levers u u, where they have their bearings. (See Fig. 1.)

W is a hand-wheel secured to a shaft provided with a worm-screw, W'. Said shaft is secured in bearings arranged on brackets Q Q, so as to make connection with the worm-wheel segment U, as seen in Fig. 1. The whole of this arrangement is designed to produce more or less friction upon the belt W² by means of the friction-rollers u' u', so that the pulley M, shaft G, &c., may be driven fast or slow, or be put at rest by reducing the pressure upon the belt W sufficiently so that it will slip and not drive the machinery any longer. It will be observed that by manipulating the worm-and-wheel arrangement when motion is conveyed by means of a belt to pulley O any desired speed may be obtained.

It may be observed that the mechanical devices may be materially changed and still obtain the result that my invention has in view. So, for instance, a coiled pipe could substitute the radiator P; or a jacketed cylinder, made either in segments or in a whole, may to the full extent perform the radiating purpose. In

place of the conveyer-screw a series of inclined blades or buckets, of screw shape, secured to spindle K', will answer the purpose of agitating and cutting soap scraps in the process of remelting. Furthermore, a steam-jacketed cylinder may be placed in a horizontal or vertical position, or the like, with an agitating arrangement inside the cylinder, and the application of a steam jet or jets, described under letters E E E' E', would certainly produce within a little longer time a like result, as is the object of my invention.

The object of shaping the radiator P at its upper end similar to a picket-fence is to facilitate the process of remelting by shearing and cutting up the soap scraps and chunks. Be it observed that when the conveyer-screw, blades, or buckets are in motion, revolving within the stationary radiator, passing the ports left between the pickets, they will act as shears, and any coarse scraps or chunks brought up by the conveyer-screw, inclined blades, or buckets, if such be used in place of the screw, will pass through these ports, and if met by the blade or screw will become cut up. The same follows to some extent by the arrangement of leaving the radiator-pipes P' apart, as before mentioned. Furthermore, the object of leaving the radiator-pipes P', or their substitutes, separate is to enable to work successfully much smaller quantities than the machine is designed for, and to produce by the centrifugal force of the screw, or its substitutes, a lateral current besides the upward and downward current. This adds largely to speeding the process of mixing or agitating the materials placed within the apparatus for that purpose; besides, it obviates the splashing of the liquid soap, or the like, which so frequently happens with other soap-mixing machines, even when running at a moderate speed.

To operate my machine for rendering purposes, fill the kettle up to the top with suets, turn on steam conveyed from an ordinary steam-boiler, and as soon as sufficient of the suet is melted give slow motion to the conveyer-screw by means heretofore described. The melted lard or tallow may be drawn off from time to time with a siphon or a faucet, that is to be placed into the side of kettle A at sufficient height from the bottom, so as to guarantee that nothing but the pure lard or tallow will be drawn off from the same. Said faucet is not shown in drawings. The scraps of the suets and the salt-water, which is frequently used for purifying the melted lard or tallow, which will settle at the bottom of the kettle, are to be drawn off through the outlet register-valve C by operating the handle C'.

For making new soap, washing compounds, &c., put fats, oil, or the like, into the kettle A. Melt the fats or heat up the oils to the desired temperature. Then put the agitator to work. Now add the necessary amount of alkali and other articles desirable, and as soon as the whole mass has become what is desired turn off the steam and turn on the cold water

to circulate through the jacket and radiator, so as to cool the contents of the kettle in a short time. The conveyer-screw is to be kept in motion. When the desired low temperature is reached, essential oils or other ingredients may be added, and when sufficiently mixed draw off through the valve C by operating handle C'.

For remelting soap scraps, fill the kettle A well with soap scraps and turn on steam, as before mentioned. Cover the top of kettle with two semicircular wooden covers. Now open valves E E, so that the steam with pressure, in shape of jets, will penetrate and cut up the scraps to some extent. In course of from ten to fifteen minutes set the agitator in motion, add more scraps until the kettle is filled up again, and cover the kettle, as before, and let the steam-jets work, as before, until the soap has attained the required amount of moisture. Now shut off the valves E E and keep the agitator at work until the soap has reached the perfection of new soap. By this process fourteen hundred to sixteen hundred pounds of soap can be worked over into new soap, ready for framing, in the space of twenty to thirty minutes. The soap is to be drawn off through valve C, as before mentioned. The motion of the conveyer-screw should be reversed and reduced to a moderate speed, so as to cause the thick soap to be forced downward and out through the valve C.

Be it observed that whenever steam is turned on (steam is used in jacket B) the outlet of the condensed water must be left open to some extent, so as to allow the condensed water a free discharge from the jacket. An automatic device may be applied to answer this purpose

fully, for which I have made application, and which is now pending before the Patent Office. 40

Having thus fully described my invention and the operation thereof, I beg leave to state what I desire to claim as new and useful and to be granted to me in Letters Patent.

1. In combination with a steam-jacketed kettle, pan; tub, or the like, a radiator, P, inclosing a conveyer-screw, S, or its equivalents, arranged in the center of a steam-jacketed structure, for purposes specified, or substantially the same. 45

2. With an agitator provided with a surface-heating device or devices, and in no other way, the moistening of the ingredients contained in said agitator by the introduction of saturated steam, for the purposes heretofore specified. 50

3. In combination with a conveyer-screw, or its equivalents, for agitation, a skeleton casing surrounding the screw, constructed with the view of producing, when the conveyer or agitator is in motion, a lateral and upward and downward motion to the mass agitated, as set forth. 55

4. In combination with a conveyer-screw, or its equivalents, a casing picketed either at one or at both ends, for the purposes named. 60

5. The conveyer-screw in an agitating device, for purposes specified, in combination with the two bevel-pinions H H, bevel-wheel K, and clutch I, for the purpose set forth. 65

6. The combination of register-valve C, step D, and spindle K', as set forth. 70

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Witnesses:

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