

No. 637,566.

Patented Nov. 21, 1899.

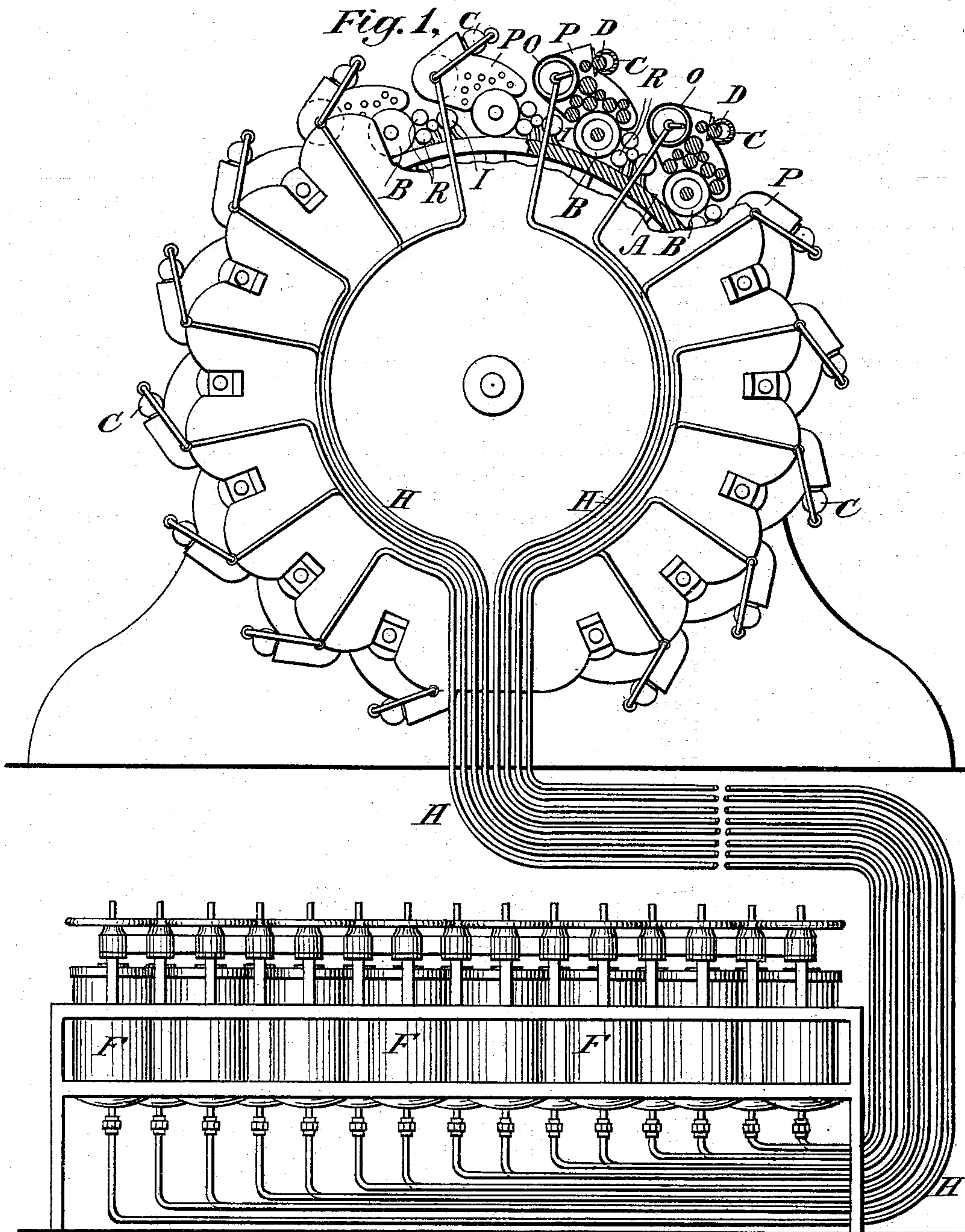
E. HETT.

MULTICOLOR PRINTING PRESS.

(Application filed Oct. 30, 1895. Renewed May 18, 1899.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:

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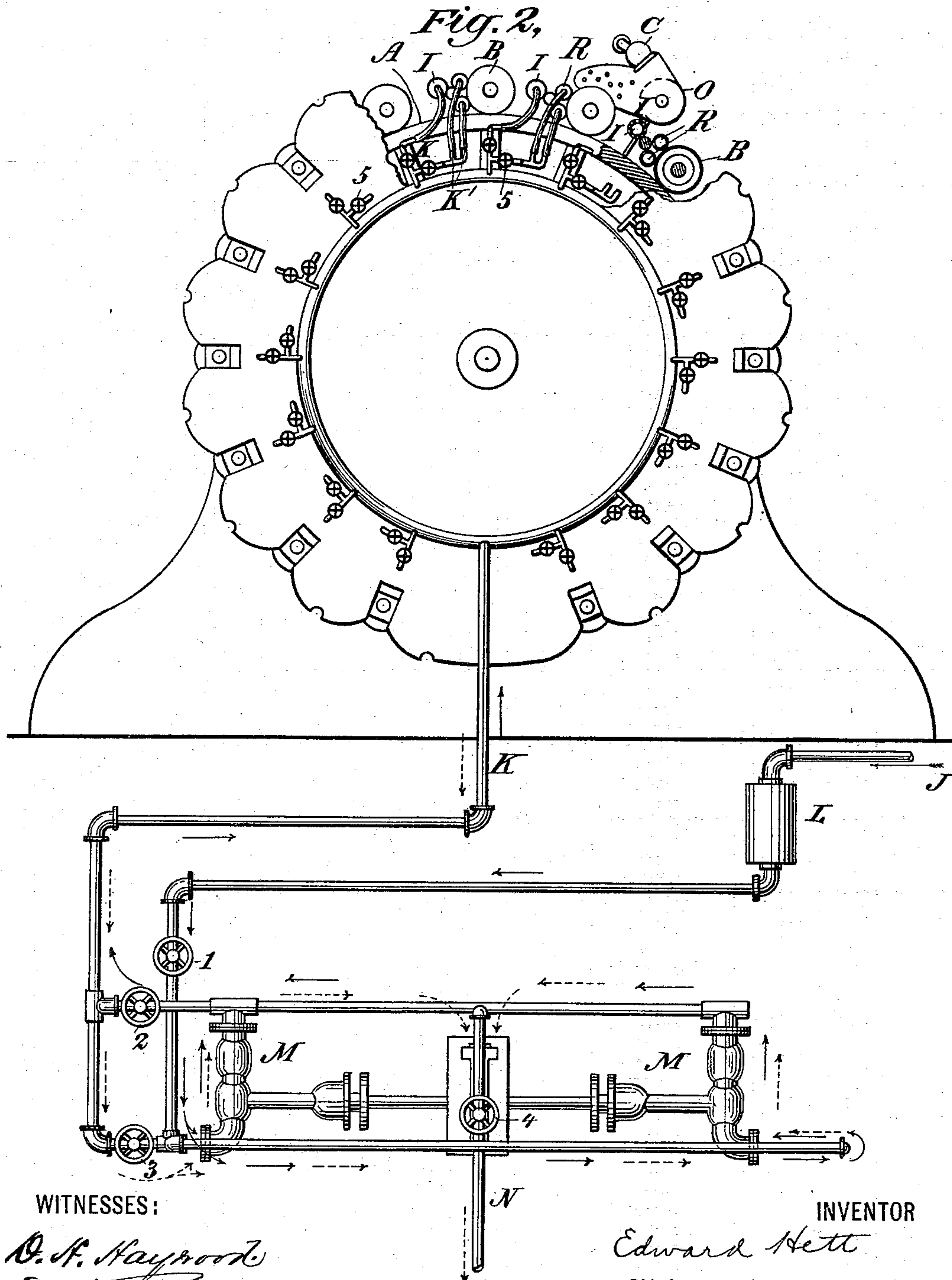
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MULTICOLOR PRINTING PRESS.

(Application filed Oct. 30, 1895. Renewed May 18, 1899.)

(No Model.)

4 Sheets—Sheet 2.



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4 Sheets—Sheet 3.

Fig. 6,

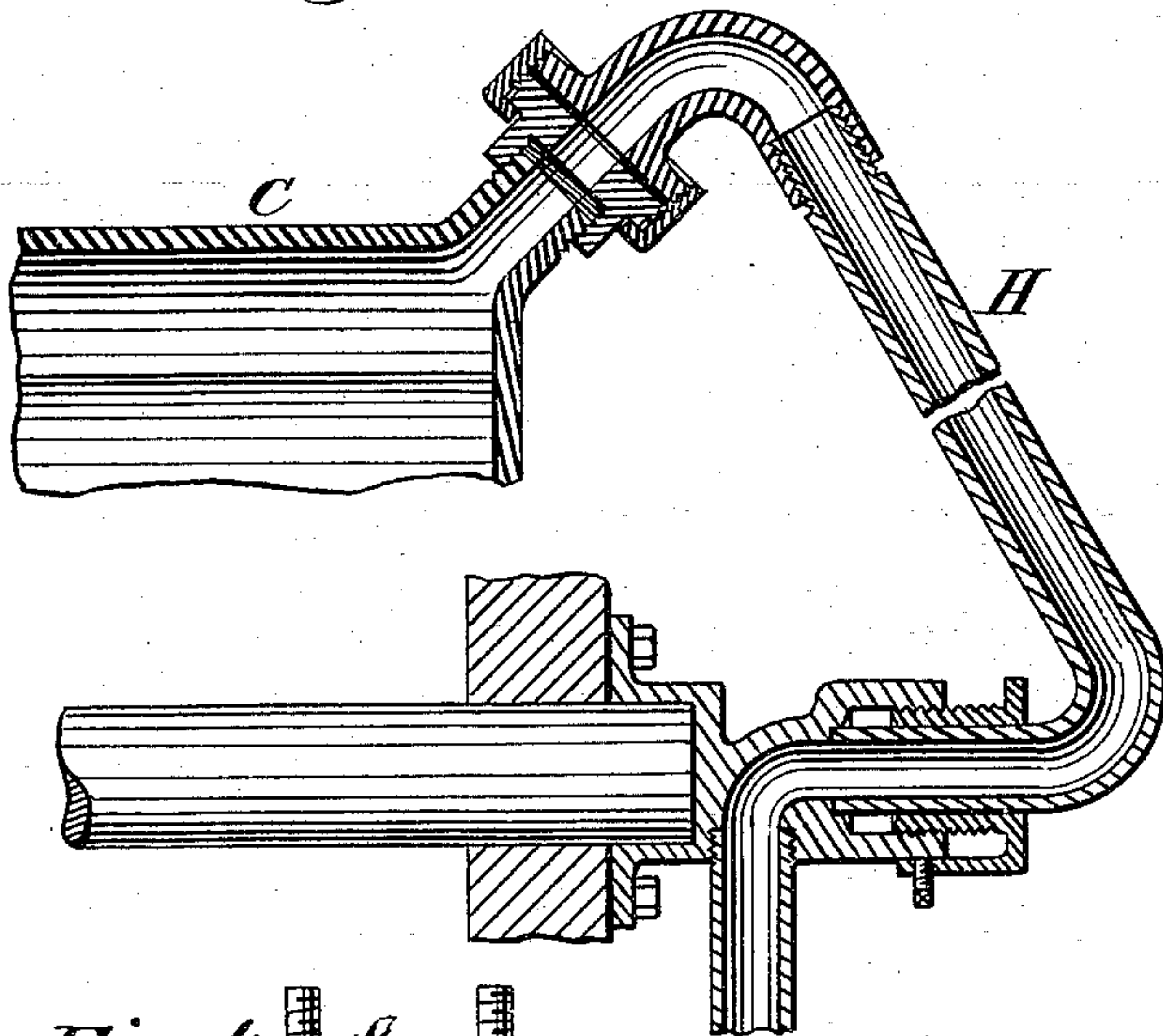


Fig. 5,

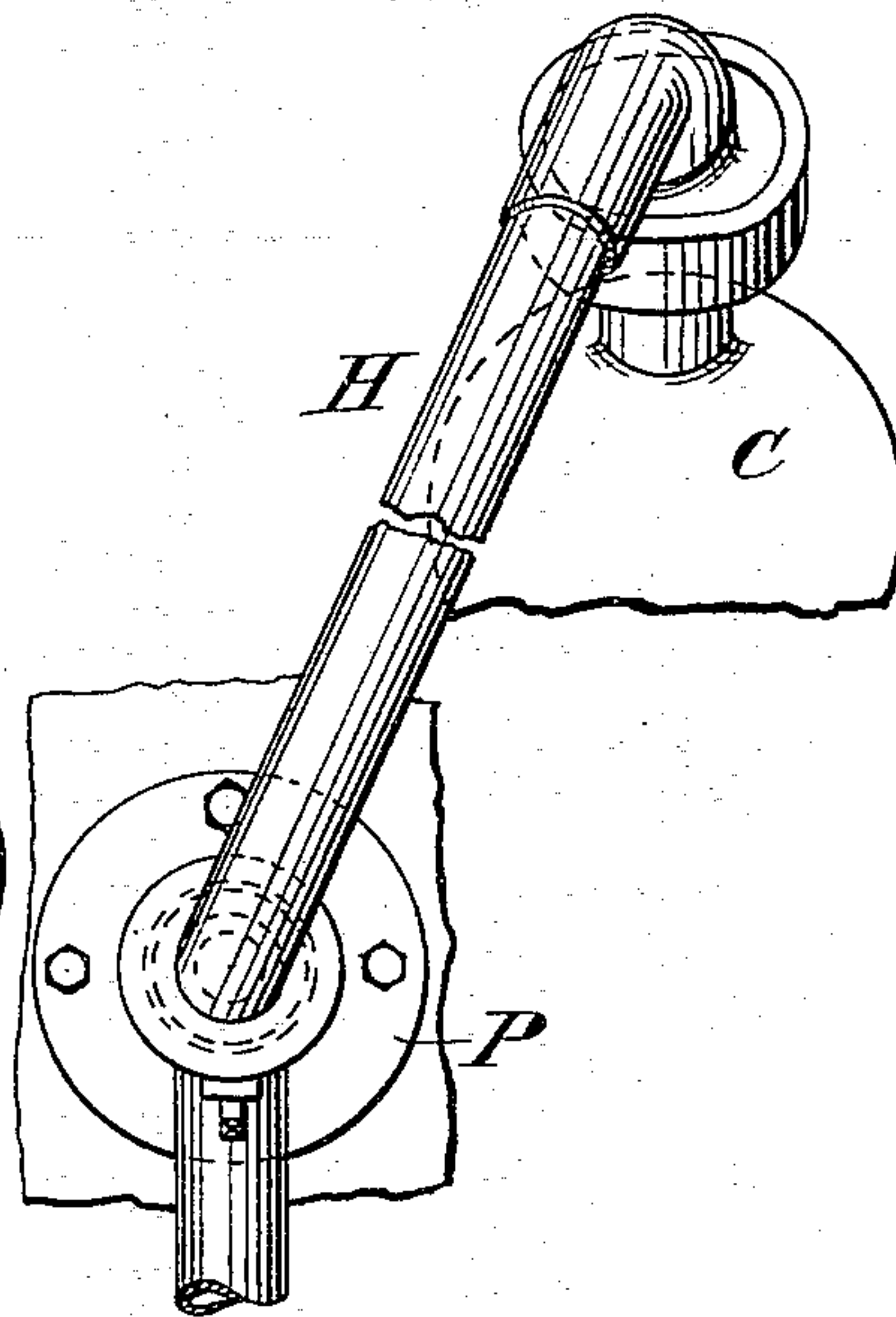


Fig. 4,

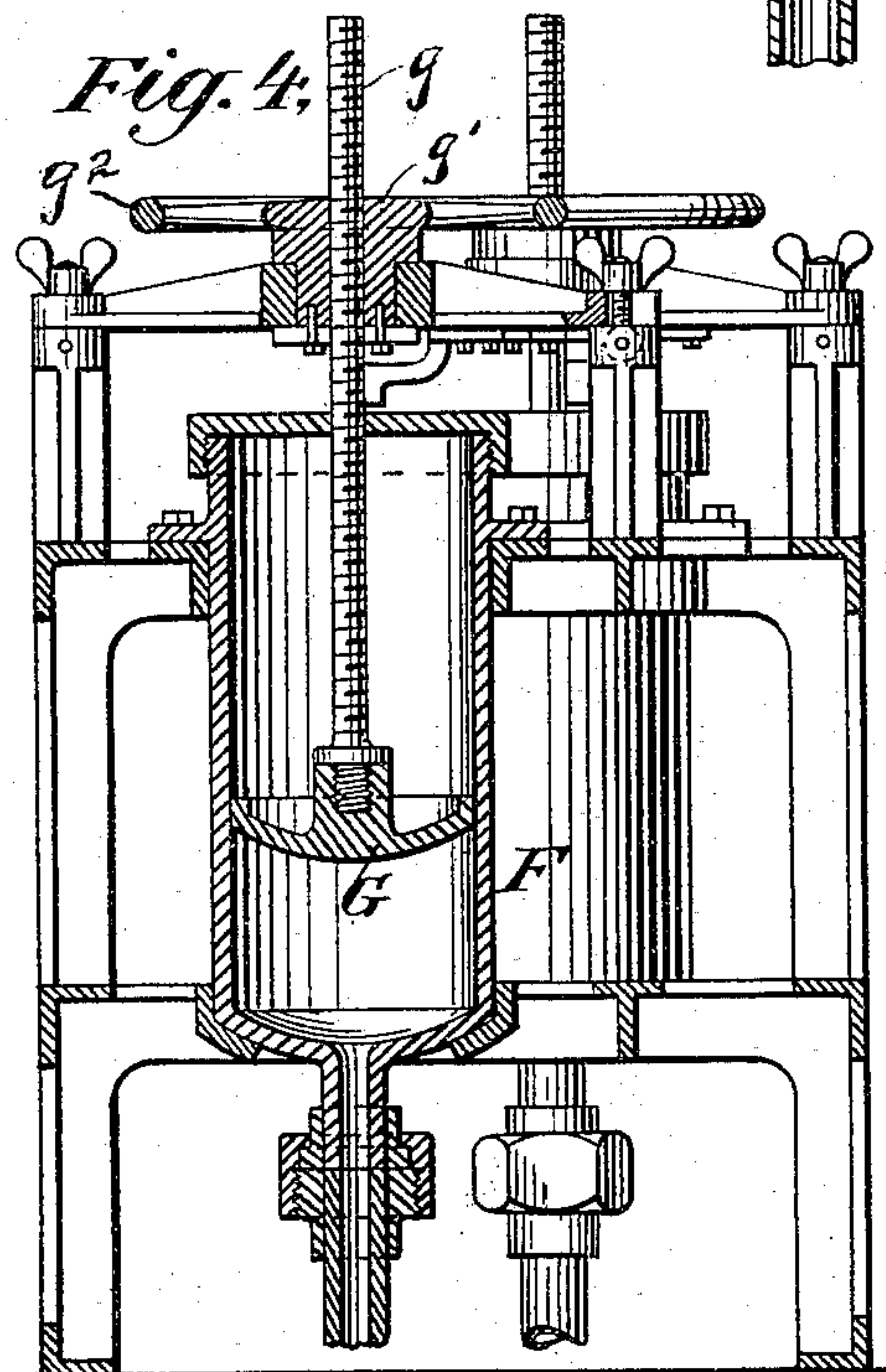
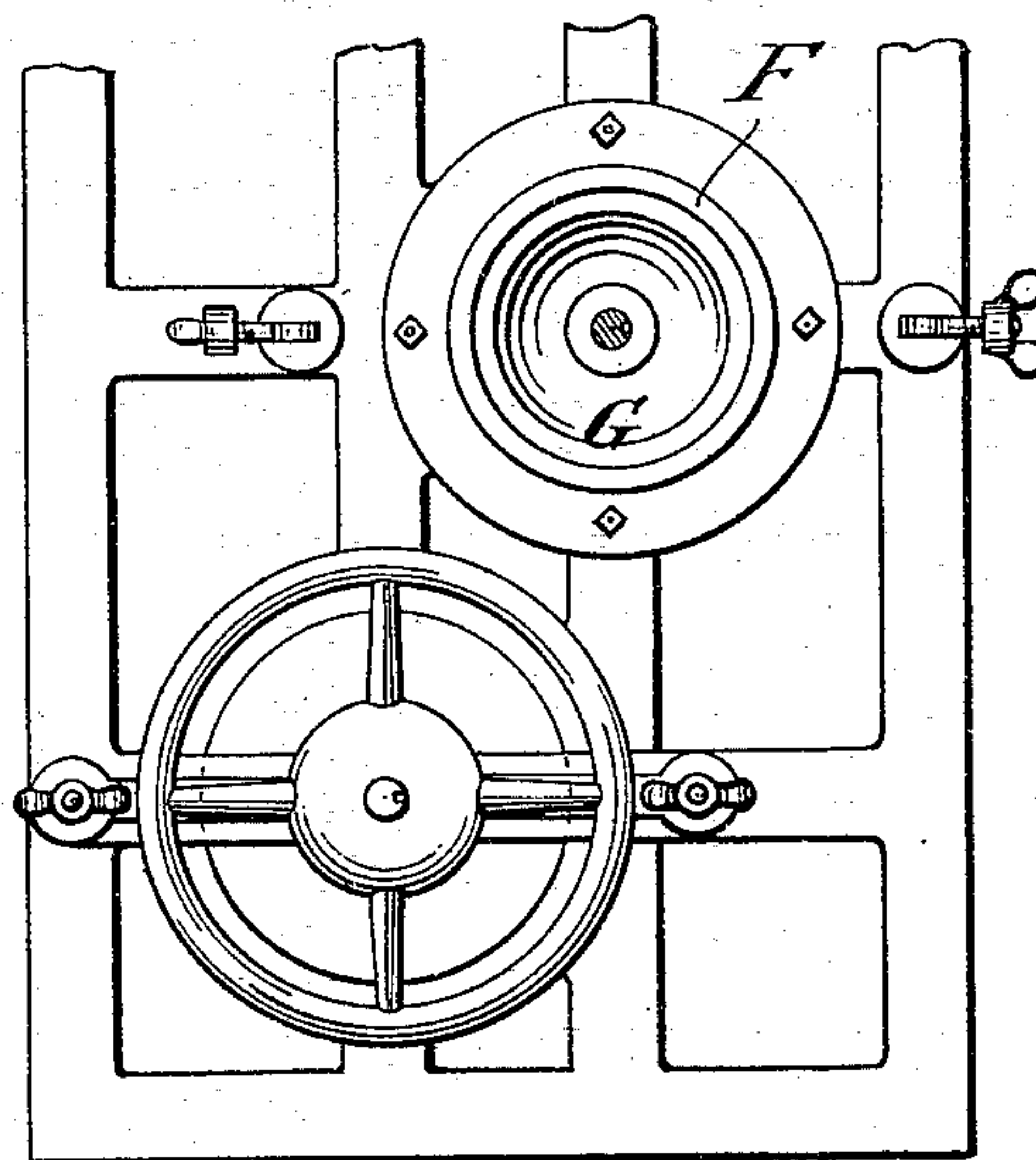


Fig. 3,



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(No Model.)

4 Sheets—Sheet 4.

Fig. 7.

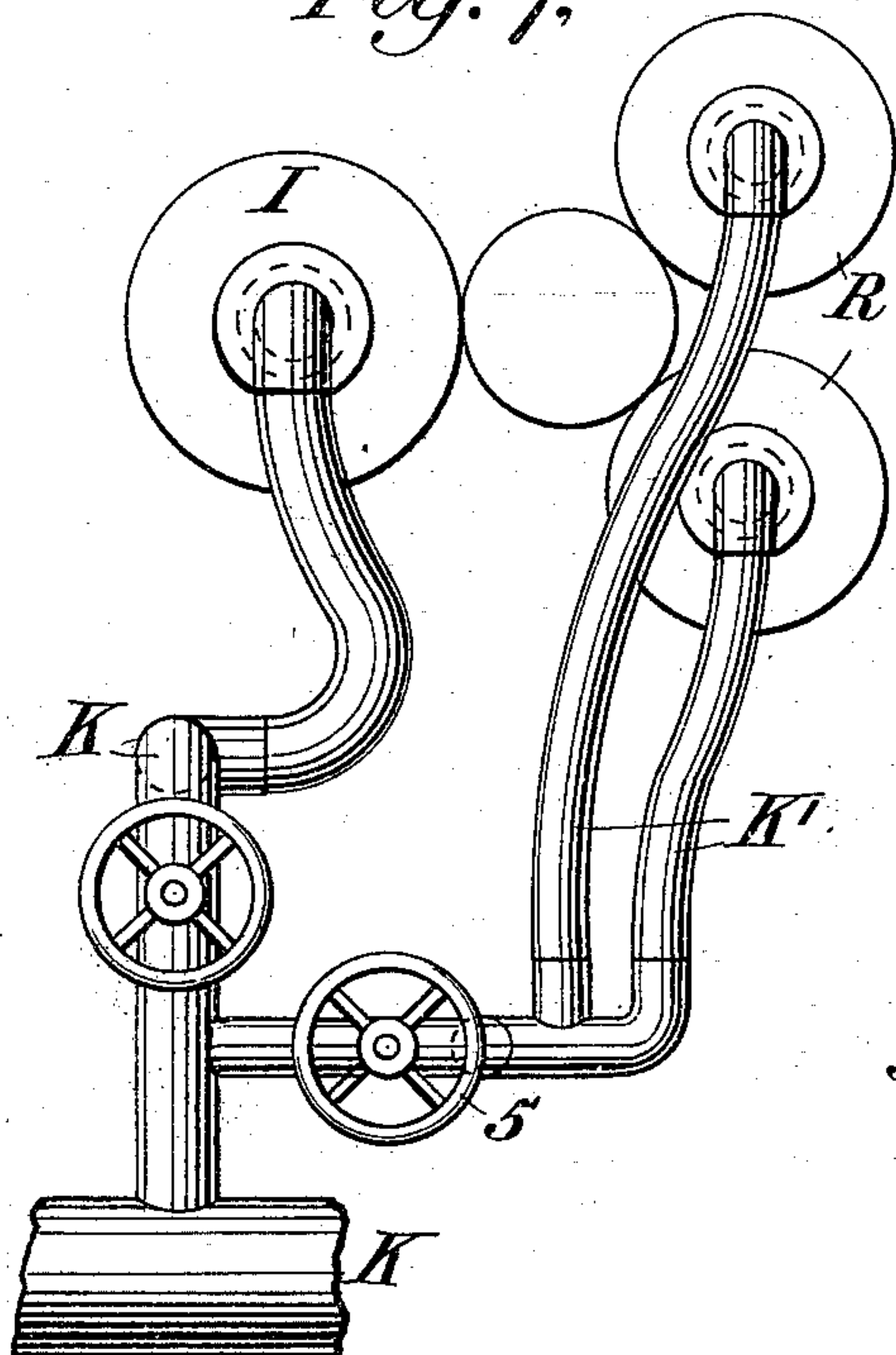


Fig. 8.

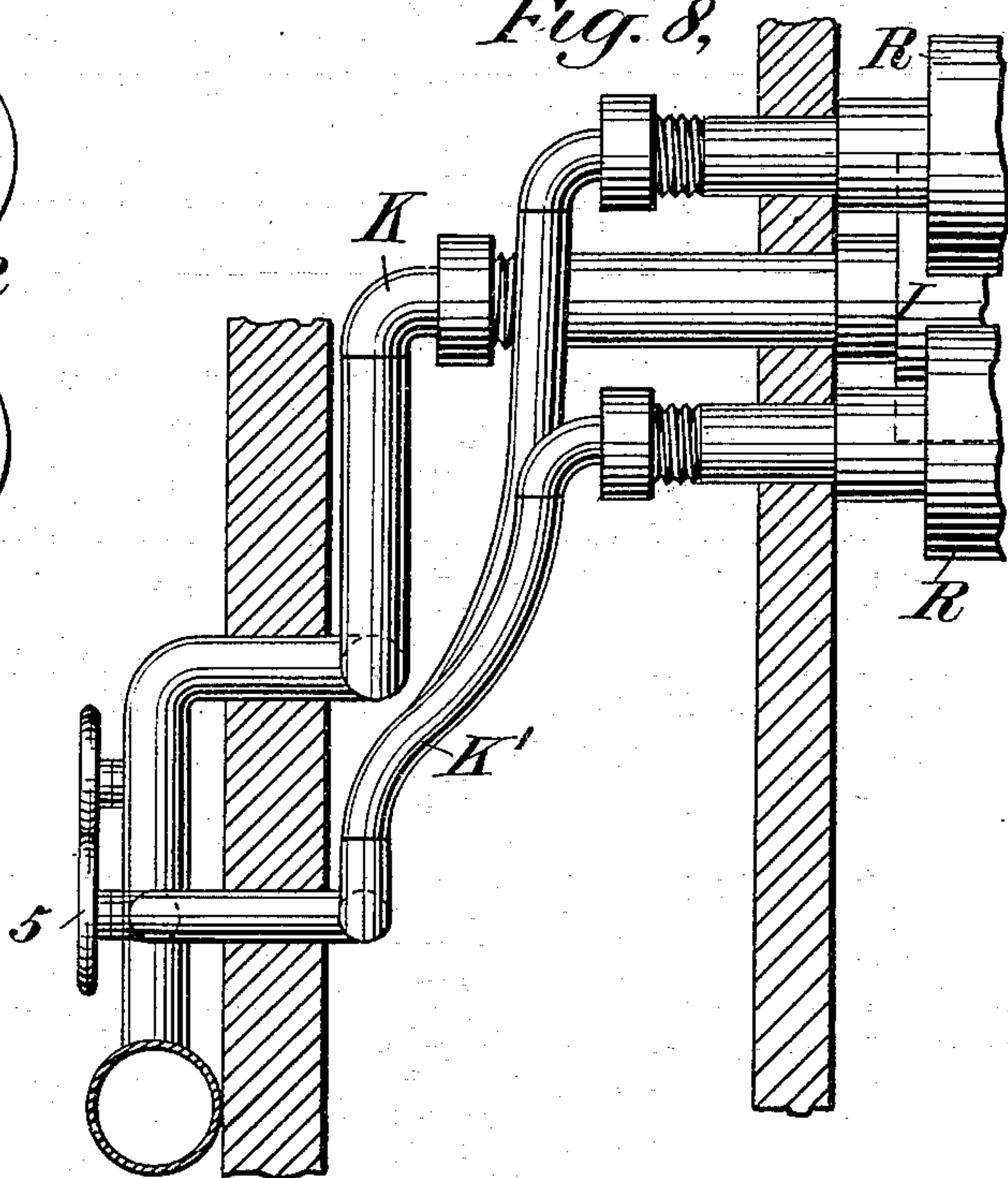


Fig. 12.

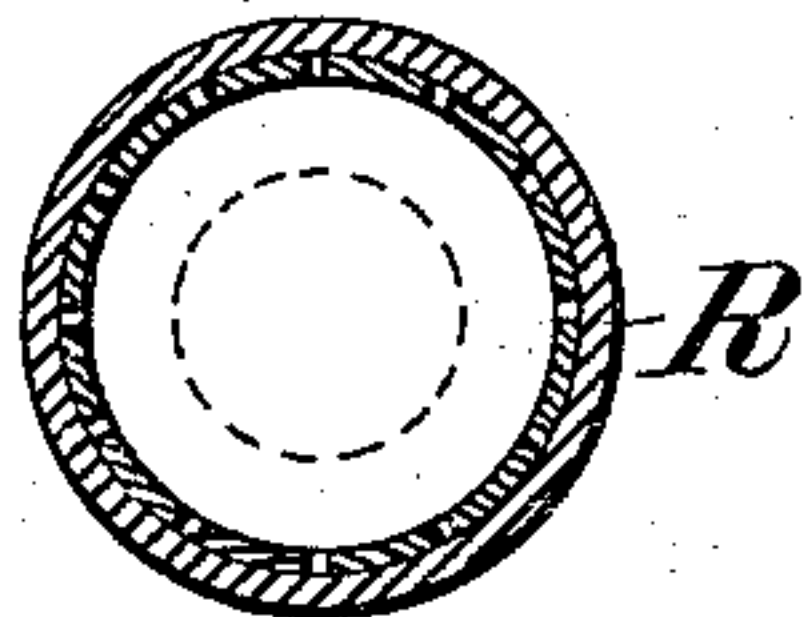


Fig. 11.

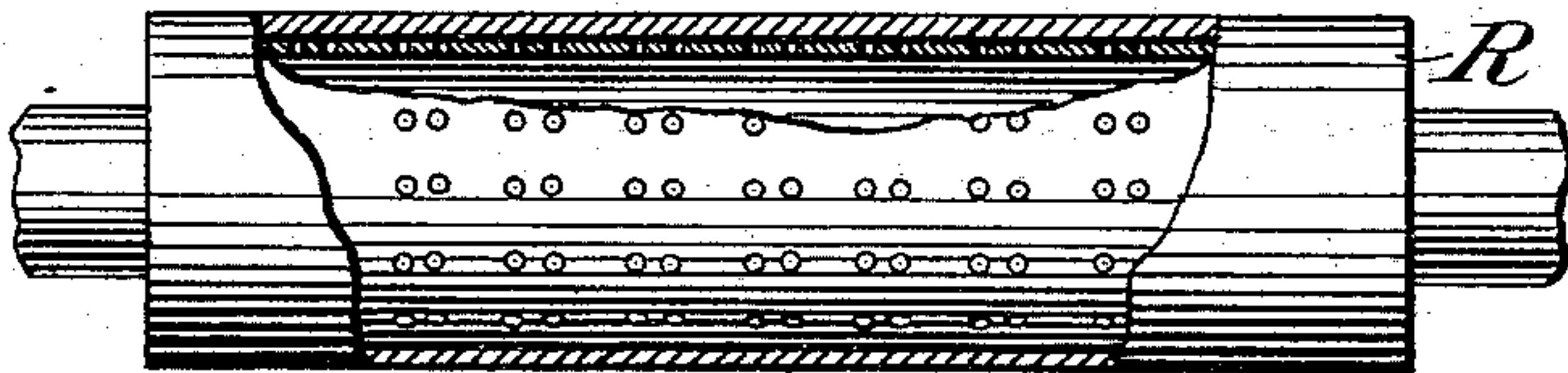


Fig. 9.

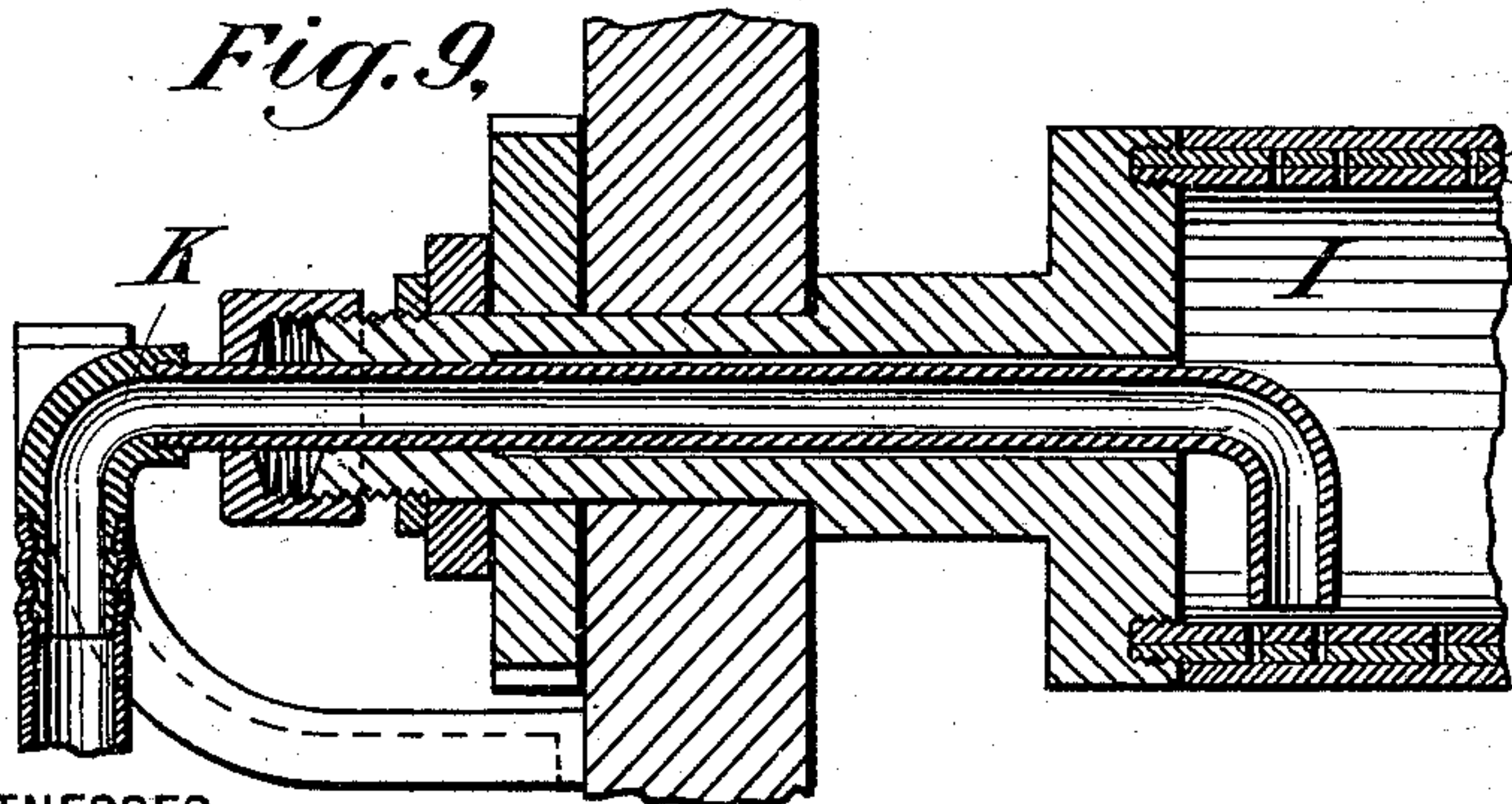
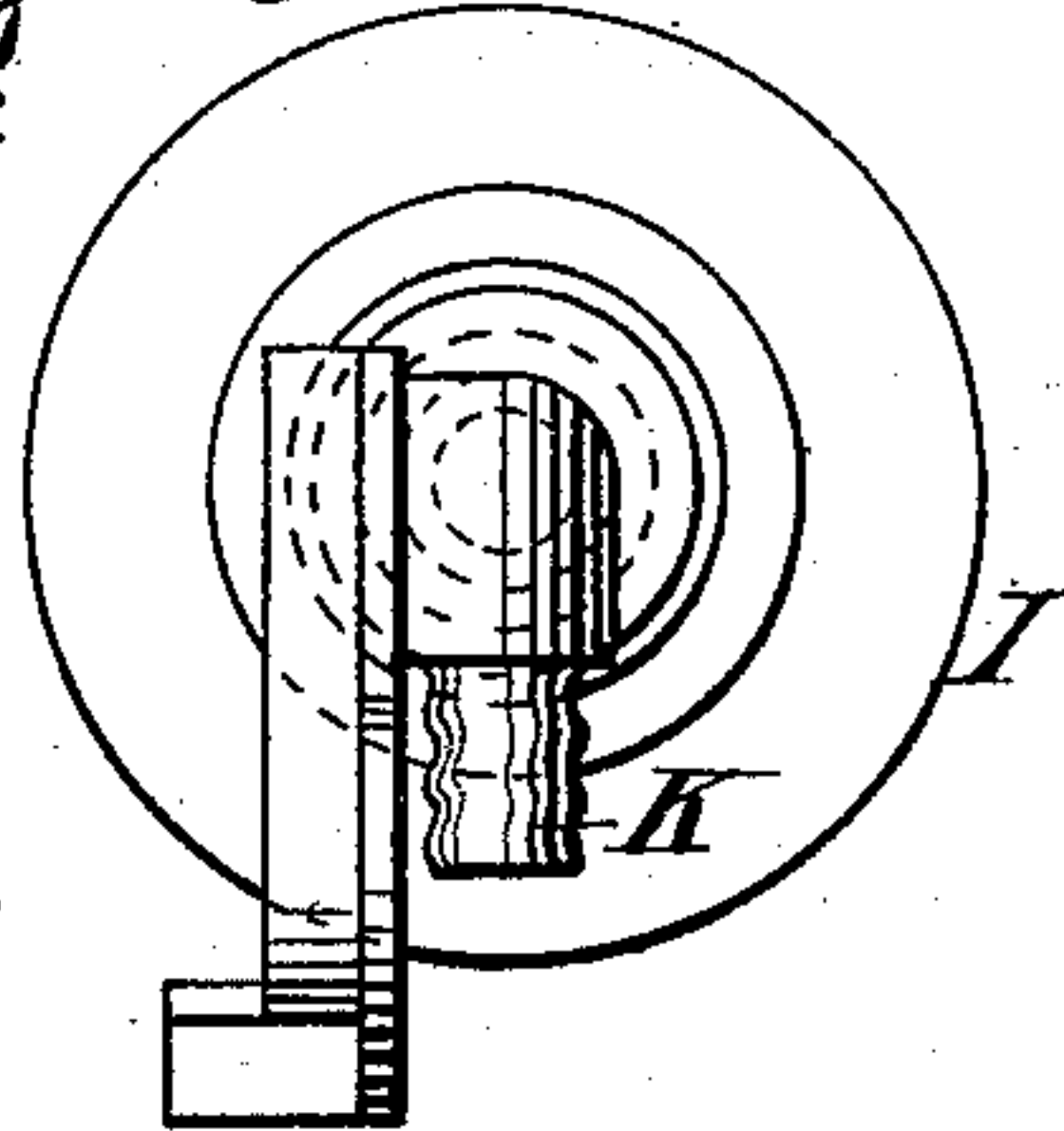


Fig. 10.



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UNITED STATES PATENT OFFICE.

EDWARD HETT, OF NEW YORK, N. Y.

MULTICOLOR-PRINTING PRESS.

SPECIFICATION forming part of Letters Patent No. 637,566, dated November 21, 1899.

Application filed October 30, 1895. Renewed May 18, 1899. Serial No. 717,287. (No model.)

To all whom it may concern:

Be it known that I, EDWARD HETT, a citizen of the United States, and a resident of New York, (New Dorp, Staten Island,) in the county of Richmond, State of New York, have invented a new and useful Improvement in Multicolor-Printing Presses, of which the following is a specification.

My invention has special reference to a multicolor lithographic printing press—such, for instance, as is shown in my application for patent filed July 19, 1894, and serially numbered 518,015, renewed May 27, 1899, Serial No. 718,570—although some of its features may have a more general application and use.

It has for its object to improve and perfect the inking and dampening mechanisms of such a press.

It consists of the devices and combinations herein set out and claimed.

The accompanying drawings, which form a part hereof, represent the inking and dampening mechanisms of a multicolor lithographic press embodying my invention.

Figure 1 is an end view, partly in section, with some of the parts broken away, of such a press and in connection therewith a diagrammatic representation of the connected ink-supplying parts. Fig. 2 is a similar view of the other end of the press and in connection therewith a diagrammatic representation of the connected water-supplying parts. Figs. 3 and 4 are detail top and sectional views, respectively, of the ink-supplying parts with some of the parts taken away; and Figs. 5 and 6 are detail views of parts of the ink-ducts, showing the connection with the ink-fountains. Figs. 7 and 8 are detail views of parts of the water-ducts, showing their distribution to the water-supply rollers. Figs. 9 and 10 show the connection, in section and in end view, of the water-ducts with the water-supply rollers. Figs. 11 and 12 show the dampening-rollers.

Like letters and numbers of reference in the several figures indicate like parts.

A indicates the impression-surface, which is a large drum driven in any suitable way.

B indicates a series of cylindrical printing surfaces or tubes, which may be driven and handled in any suitable way.

C represents a series of air-tight ink-fountains, one for each printing-surface and each mounted near its printing-surface, each ink-fountain being provided with the ordinary ink-feeding roller D in its mouth and a suitable group of ink-distributing rollers carrying the ink from the ink-feeding roller to the printing-surface and including a main ink-distributing roller O.

F represents a series of ink-reservoirs or mixing and storing vessels, which are situated at a distance from the press and the printing-surfaces—that is to say, relatively to the ink-fountains C. The ink-reservoirs are large enough to contain a considerable supply of ink. Each reservoir F is provided with a mechanism G for applying pressure to the body of ink in the reservoir, such mechanism consisting of a piston-head G, fitting the reservoir internally and constructed to force the entire body of ink downward before it, and a screw-threaded piston-rod *g*, working in the screw-threaded hub *g'* of a wheel *g*² to force it down.

H represents a series of systems of air-tight ink-ducts connecting each reservoir F with its ink-fountain C. These ink-ducts are led to the center of the mountings of the several main ink-distributing rollers O and from there are led to the corresponding ink-fountains C, as shown in detail in Figs. 1, 5, and 6, the swinging frames P, carrying the ink-fountains, being centered with the main ink-distributing rollers.

I represents a series of perforated water-supply rollers, each situated near one of the printing-surfaces. Each water-supply roller is provided with a suitable group of dampening-rollers R, carrying the water from the water-supply roller to the printing-surface.

J represents a water reservoir or pipe or supply placed at a distance from the press and from the printing-surface (that is to say, relatively to the position of the water-supply roller I) and constructed to provide a continuous supply of fresh—that is to say, of unused—water, and common to the entire series of water-supply rollers I.

K represents a system of water-ducts connecting the water-supply rollers I with the supply water pipe or device J. In this duct or system of ducts is a filter L, through which

all the water must pass, and a pump M, which is reversible, so that it may be used either to pump the water into the water-supply rollers I and intervening ducts or to pump the water out of them. The latter function would be resorted to when the press was stopped, as at night, and to dispose of the water pumped out of the water-supply rollers I and intervening ducts at such time there is a discharge-pipe N. The arrows indicate the course of the water through the ducts or the operation of the pump, the full arrows indicating the course of the water when it is being forced into the water-supply rollers I, the valves 1 and 2 being for such purpose open and the valves 3 and 4 closed, and the dotted arrows indicating the course of the water when it is being pumped out of the water-supply rollers I, the valves 3 and 4 being for such purpose open and the valves 1 and 2 closed. The water-supply rollers I are shown in some detail in Fig. 9, although the details of their construction form no part of the present invention. They preferably regulate at their peripheries the supply of water furnished by them, as by having two hollow perforated shells x y capable of motion, the one on the other, in such a way that the number of perforations that are open may be varied at will. There is of course the usual external covering of cloth or felt. In order to suitably and preliminarily moisten the accompanying groups of dampening-rollers R at the beginning of the printing operation, such of them as contact with the printing-surfaces may also be made hollow, as indicated in Figs. 11 and 12, and connected axially with the water-duct system K, as by supplementary ducts K', having valves 5, as shown in Figs. 7 and 8. These valves 5 are closed as soon as the several groups of dampening-rollers R are once thoroughly and sufficiently saturated, and the valves 5 will ordinarily be kept closed throughout the printing operations, the water-supply thereafter coming wholly through the water-supply rollers I. The dampening-rollers R consist of a single hollow shell, covered in the usual way with cloth or felt, and the axial water connections may be accomplished precisely as shown in Fig. 9 for the case of water-supply roller I, the entering pipe bending to near the bottom of the roller in both instances, so as to equally well answer the purposes of a draining-pipe when the pump connections are reversed. Heretofore it has been common to redampen with a sponge the cloth surfaces of dampening-rollers R after they have been standing long enough to dry and before the printing could be begun. In a multicolor-press this would be inconvenient and expensive of time. My water connections K' accomplish the work readily and rapidly and simultaneously for all the dampening-rollers.

The operation of the parts is as follows: All of the ink-reservoirs F may be situated in

a separate color-mixing room in the factory and the proper colors mixed and poured into the respective reservoirs or directly mixed in the reservoirs. The pressure apparatus G is then screwed down, forcing the ink through the ink-ducts H into the ink-fountains C, and from time to time, as required, the pressure is renewed and more ink forced through. Other pressure mechanisms or means could of course be used for the same purpose—for instance, steam or air or water-pressure or spring-pressure and others that would occur to the skilled mechanic—and the pressure might be automatic. Water from the continuous fresh supply is turned on and if necessary is pumped by the pump M into the water-supply rollers I and intervening ducts and at the commencement of the printing into the rollers R. The continuous supply of fresh—that is, of unused—water and the filter secure a cleanliness in the dampening operations that has hitherto been unknown in practical lithographic work and that is of the utmost importance in multicolor lithographic work and especially where zinc is the lithographic printing-surface employed in such multicolor-work. When the press is stopped, the water may be pumped out by the pump M. The air-tight ink-fountain and ink-ducts permit of the use of quicker-drying inks, a matter of the first importance in simultaneous multicolor lithographic printing, inks that would quickly form a surface skin and quickly thicken if exposed to the air. The air-tight fountains and ducts also prevent dust and dirt from getting into the ink and so assist toward the success of the zinc lithographic printing and of simultaneous multicolor lithographic printing. Thus the several ink and water mechanisms described cooperate to make possible the success of simultaneous multicolor lithographic printing, a result that has long been considered unattainable, but which I have attained by the present invention in connection with a related cycle of inventions. The manipulation of the inks at a distance from the press is an important factor in this result, as well as an economy and a means of attaining more skilful ink mixing and manipulation. Instead of being the work of pressmen in the factory it will be the work of specialists in a laboratory of the factory.

It is manifest that many of the mechanical parts of the machine shown in the drawings might be varied without departing from my invention. For example, the separate water-supply fountains need not be rollers.

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

1. In a lithographic press, the combination, substantially as described, with suitable impression and printing surfaces, of an inking mechanism including an air-tight ink-fountain near the printing-surface, and a group of intervening ink carrying and distributing rollers, a distant ink-reservoir, and a system

of connecting air-tight ink-ducts, and of a dampening mechanism including a water-supply roller or fountain near the printing-surface, and a group of intervening water carrying and distributing rollers, a common water pipe or device, and separate water-ducts connecting the common water-pipe with the water roller or fountain and with one or more of the dampening-rollers.

2. In a lithographic press, the combination, substantially as described, with suitable impression and printing surfaces, of a dampening mechanism including a water-supply roller or fountain near the printing-surface, and a group of intervening water carrying and distributing rollers, a common supply water pipe or device, and separate water-ducts connecting the common supply-pipe with the water-supply roller or fountain and with one or more of the dampening-rollers.

3. In a lithographic press, the combination, substantially as described, with suitable impression and printing surfaces, of a dampening mechanism including a water-supply roller or fountain near the printing-surface, and a group of intervening water carrying and distributing rollers, a common supply water pipe or device, including a filter, and separate water-ducts connecting the common supply-pipe with the water-supply roller or fountain, and with one or more of the dampening-rollers.

4. In a multicolor lithographic press, the combination, substantially as described, with a suitable impression-surface and a series of suitable printing-surfaces, of an inking mechanism including a series of air-tight ink-fountains near their respective printing-surfaces, a fountain for each separate colored ink to be printed by a printing-surface, and a series of groups of intervening ink carrying and distributing rollers, a series of distant ink-reservoirs, one for each separate fountain, and a series of systems of connecting air-tight ink-ducts, each system connecting a reservoir with its fountain, and of a dampening mechanism including a series a water-supply rollers or fountains near the respective printing-surfaces, and a series of groups of intervening water carrying and distributing rollers, a common supply water pipe or device, and separate water-ducts connecting the common supply-pipe with the water-supply roller or fountain-roller and with one or more of the dampening-rollers, the said ink-reservoirs being grouped together whereby the various colored inks may be blended or mixed and supplied to the ink-fountains as required under the care of one person from a single point.

5. In a multicolor lithographic press, the combination, substantially as described, with a suitable impression-surface and a series of suitable printing-surfaces, of an inking mechanism including a series of ink-fountains near their respective printing-surfaces, a fountain for each separate colored ink to be printed by a printing-surface, and provided with separate ink-forcing devices, and a series of groups

of intervening ink carrying and distributing rollers, a series of distant ink-reservoirs, one for each separate fountain, and a series of systems of connecting ink-ducts, each system connecting a reservoir with its fountain, and of a dampening mechanism including a series of water-supply rollers or fountains near the respective printing-surfaces, and a series of groups of intervening water carrying and distributing rollers, a common supply water pipe or device, and separate water-ducts connecting the common supply-pipe with the water-supply rollers or fountains and with one or more of the dampening-rollers, the said ink-reservoirs being grouped together whereby the various colored inks may be blended or mixed and supplied to the ink-fountains as required under the care of one person from a single point.

6. In a multicolor lithographic press, the combination, substantially as described, with a suitable impression-surface and a series of suitable printing-surfaces, of an inking mechanism including a series of air-tight ink-fountains near their respective printing-surfaces, a fountain for each separate colored ink to be printed by a printing-surface, and provided with separate ink-forcing devices, and a series of groups of intervening ink carrying and distributing rollers, a series of distant ink-reservoirs, one for each separate fountain, and a series of systems of connecting air-tight ink-ducts, each system connecting a reservoir with its fountain, and of a dampening mechanism including a series of water-supply rollers or fountains near the respective printing-surfaces, and a series of groups of intervening water carrying and distributing rollers, a common supply water pipe or device, and separate water-ducts connecting the common supply-pipe with the water-supply rollers or fountains and with one or more of the dampening-rollers, the said ink-reservoirs being grouped together whereby the various colored inks may be blended or mixed and supplied to the ink-fountains as required under the care of one person from a single point.

7. In a multicolor lithographic press, the combination, substantially as described, with a suitable impression-surface and a series of suitable printing-surfaces, of an inking mechanism including a series of ink-fountains near their respective printing-surfaces, a fountain for each separate colored ink to be printed by a printing-surface, and a series of groups of intervening ink carrying and distributing rollers, a series of distant ink-reservoirs, one for each separate fountain, and a series of systems of connecting ink-ducts, each system connecting a reservoir with its fountain, and of a dampening mechanism including a series of water-supply rollers or fountains near the respective printing-surfaces, and a series of groups of intervening water carrying and distributing rollers, a common supply water pipe or device, and separate water-ducts connecting the common supply-pipe with the

water - supply roller or fountains and with one or more of the dampening-rollers, the said ink-reservoirs being grouped together whereby the various colored inks may be blended or mixed and supplied to the ink-fountains as required under the care of one person from a single point.

8. In a lithographic press, the combination, substantially as described, with suitable impression and printing surfaces, of a dampening mechanism including a water - supply roller or fountain near the printing-surface, and a group of intervening water carrying and distributing rollers, a distant common

supply water pipe or device, and a system of connecting water-ducts including a reversible pump.

9. The combination, substantially as described, of water-supply pipe J, water-supply roller I, water-distributing rollers R, water-ducts K and supplementary water-ducts K'.

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

EDWARD HETT.

Witnesses:

GEO. W. MILLS, Jr.,

EDWIN SEGER.