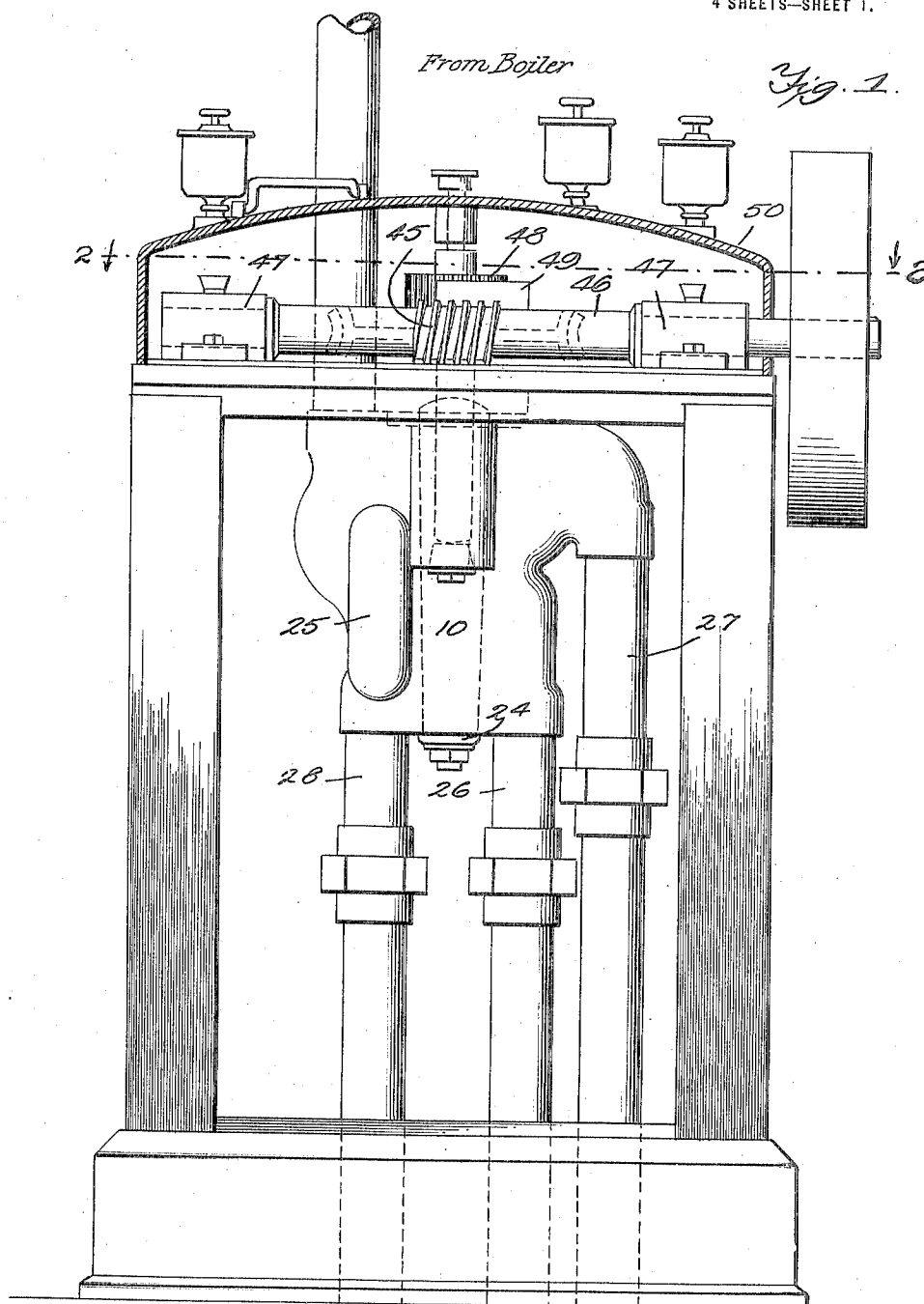


1,345,686.

L. METESSER.
VALVE.
APPLICATION FILED JULY 29, 1919.

Patented July 6, 1920.
4 SHEETS—SHEET 1.



Inventor
Lewis Metesser,

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VALVE.

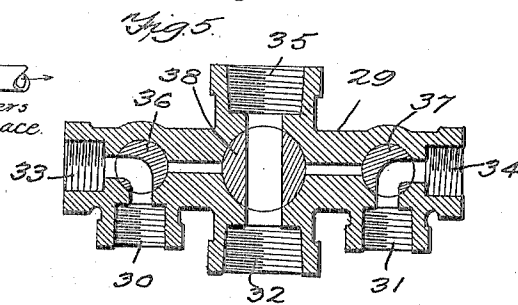
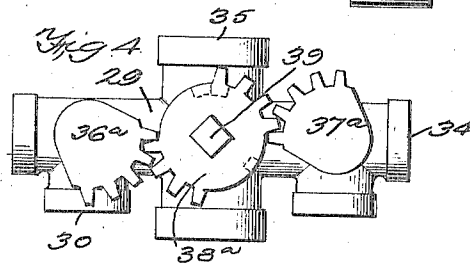
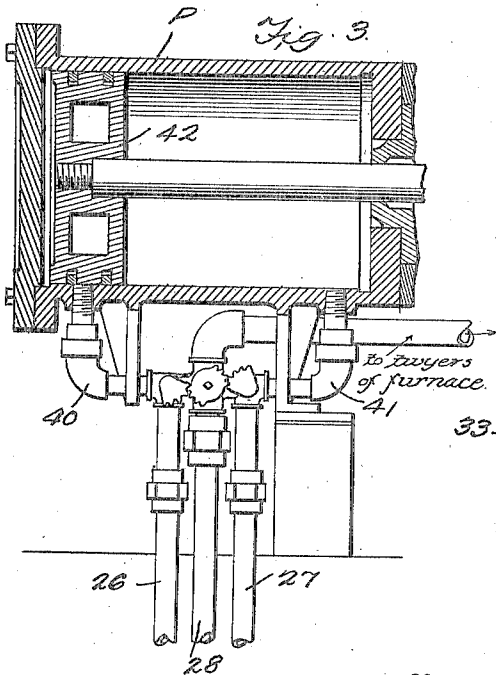
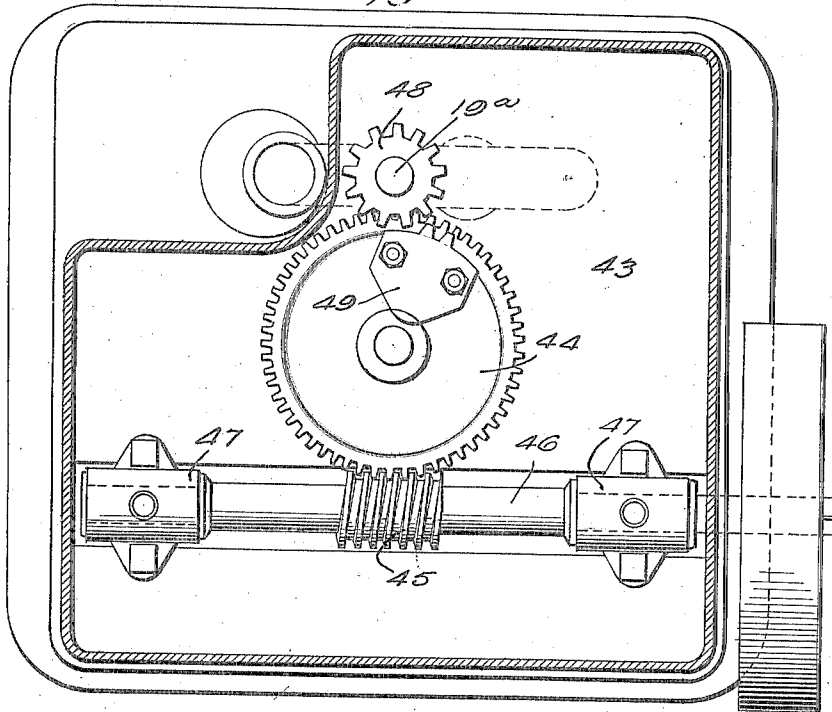
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4 SHEETS—SHEET 3.

Fig. 2.



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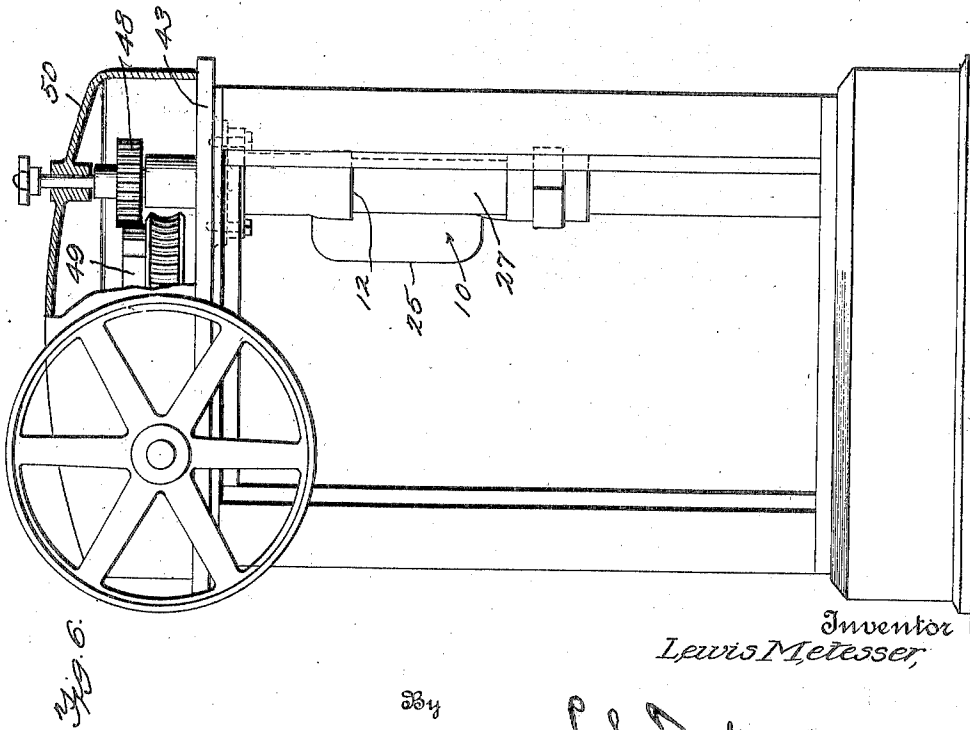
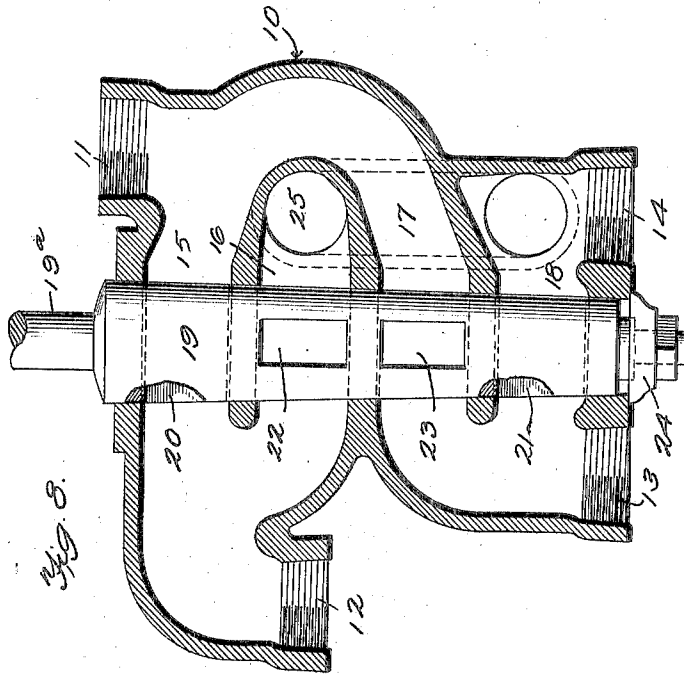
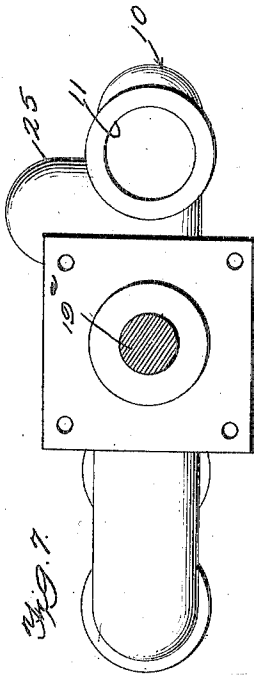
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4 SHEETS—SHEET 4.



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VALVE.

1,345,686.

Specification of Letters Patent.

Patented July 6, 1920.

Application filed July 29, 1919. Serial No. 314,118.

To all whom it may concern:

Be it known that I, LEWIS METESSER, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention relates to new and useful improvements in valves and operating mechanism therefor, and has for an object the provision of a valve adapted to deliver a fluid under pressure, to one or more points, and receive from these points the exhaust fluid and deliver it to a desired point.

A further object is the provision of means for governing the supply of fluid pressure to the ends of a cylinder or cylinders, having a movable piston, and receiving the exhaust fluids from a cylinder or cylinders and delivering them to a desired point, together with means for simultaneously cutting off the delivery and exhaust from any of the cylinders.

An important object is the provision of a single valve which will control the intake and exhaust of a plurality of cylinders.

A still further object is the provision of a novel cutout valve which will simultaneously close a plurality of conduits, as for example the intake and exhaust of the two ends of a pressure cylinder having a reciprocating piston.

Further objects will be obvious during the course of the following discussion.

In the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of my device, throughout which like numerals designate like parts.

Figure 1 is a side elevation, partly in section.

Fig. 1^a is a diagrammatic view showing the method of connecting the valve to simultaneously operate the stoking rams of a plurality of furnaces.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a side elevation partly in section, of a cylinder to which the fluid pressure is to be delivered.

Fig. 4 is a side elevation of a cutout, governing the admission and exhaust of the pressure mediums.

Fig. 5 is a section through the valve shown in Fig. 4.

Fig. 6 is a side elevation partly in section,

showing the operating mechanism of the valve.

Fig. 7 is a plan view of my valve, and,

Fig. 8 is a section taken through the valve casing, the plug of the valve being shown partly in elevation.

Referring now more particularly to the drawings, the numeral 10 indicates a valve casing provided with ports 11, 12, 13 and 14.

The casing is divided transversely into substantially horizontal passages 15, 16, 17 and 18. Arranged vertically within these passages and interrupting the same is the plug 19 of the valve. This plug is provided with a pair of ports 20 and 21, lying in the same vertical plane, and a second pair of ports 23 and 22, lying in a vertical plane at right angles to the plane of the ports 20 and 21. The port 20 lies in the passage 15, the port 22 in the passage 16, the port 23 in the passage 17, and the port 21 in the passage 18. The plug is slightly tapered and is provided on its bottom with the usual adjusting means 24. A bypass 25 is provided connecting the passages 16 and 18 with the port 14.

The port 11 will hereinafter be referred to as the intake port, and the port 14 as the exhaust port. Ports 12 and 13 will be referred to as the upper and the lower delivery ports, respectively.

Connected with the lower delivery port 13 is a pipe 26, with the upper delivery port 12 a pipe 27, and with the exhaust port 14 a pipe 28. A cutout 29 is provided having ports 30, 31 and 32, the pipe 26 connecting with the port 30, the pipe 27 with the port 31, and the pipe 28 with the port 32. Ports 33, 34 and 35 are also provided, the port 33 communicating by a passage with the port 30, the port 34 with the port 31, and the port 35 with port 32. Arranged in the passage connecting the ports 30 and 33 is a plug 36 having the usual aperture therein, adapted to align with the passage when plug is in a predetermined position. Plugs 37 and 38 are similarly arranged in the passages connecting the ports 31—34 and 32—35. The plug 38 is provided upon the stem thereof with a mutilated gear 38^a and the usual wrench or handle receiving lug 39. The plugs 36 and 37 are provided upon their stems with mutilated gears 36^a and 37^a respectively, engaging with the mutilated gear 38^a. It will be seen that when the plug 38 is turned in any suitable manner, the plugs 36 and 37 operate simultaneously therewith.

Connected with the port 33 is a pipe 40 which connects at one end of a pressure cylinder P having therein a piston 42. Connected with the port 34 is a pipe 41, communicating with the opposite end of the cylinder, this cylinder being shown as that which operates a ram feeding fuel to an underfeed furnace. The port 35 communicates with a pipe leading to any desired point, this point in the present instance being indicated as the air chamber of a furnace.

Mounted above the valve 10 is a support 43, upon which is rotatably mounted a gear 44. This gear is driven by a worm 45 formed upon a shaft 46, mounted in suitable journals 47 carried by the support 43, the shaft 46 being rotated in any desirable manner. The stem 19^a of the valve extends through the support 43 and is provided with a pinion 48. Suitably secured to the gear 44 is a segment 49 adapted to engage with the pinion 48 and shift the same, the amount of the shifting being 90 degrees at each engagement. The support is provided with a cover 50 which incloses the gears and operating mechanism, and excludes dirt, dust and the like.

The operation of my device is as follows:
The plug of the valve 10 is intermittently rotated as previously described, 90 degrees at each impulse. When the plug is in the position shown in Fig. 8, the fluid under pressure enters at 11, passes through passage 15, port 20, and out at 12 to the pipe 27, thence through port 31 of cock or cutout 29, through the passage in plug 37, through port 34 in the pipe 41, and thence into the right hand end of the cylinder P, forcing the piston to the position shown in Fig. 3. The plug of the valve 10 is now rotated 90 degrees, and pressure enters at 11, passes through passage 17, port 23, and out at port 13 into pipe 26, through cock or cutout 29 to the left hand end of the cylinder. The exhaust fluids from the right hand end of the cylinder return through the same passage by which they are led from the valve 10 to the cylinder, to the valve 10, and pass through port 22, passage 16, bypass 25, and out of the valve 10, at 14, into pipe 28, thence passing through plug 38 of the cock or cutout 29, and so on to the point of delivery. The valve, being again rotated, fluid pressure again enters at 11, passes through passage 15, port 20, and out at 12 to the right hand end of the cylinder. The exhaust fluid passes from the left hand end of the cylinder back to the same channel by which it entered, to the valve 10, entering at 13, passing through port 21 and passage 18, to the exhaust outlet 14.

To those familiar with the art, it will be obvious that the valve 10 may be connected with the plurality of the receivers simi-

lar to the cylinder P and deliver fluid pressure and receive exhaust fluids therefrom, simultaneously. By providing each of the receivers with a cock or cutout 29, it will be possible to cut off any of these receivers, 70 as desired.

If, for example, the valve is desired to control the fuel feed of a plurality of furnaces, the pipes 26, 27 and 28 may be provided with branches 26', 27', and 28' leading 75 to the cylinder operating the fuel feeding ram of each furnace. A portion of the fluid pressure delivered, which in the instance cited, would be steam, would be delivered through the cock or cut out 29 to the cylinders and the 80 exhaust from these cylinders will return to the air chamber of the furnace which the ram feeds. The operating cylinder of each furnace will be provided with a cock or cutout 29, similar to the arrangement shown 85 in Fig. 3. It will readily be seen that by cutting off the power from the cylinder, the admission of exhaust steam to the air chamber of the furnace is discontinued simultaneously. 90

As many changes are possible in the shape, size, and arrangement of parts, I do not limit myself specifically to the structure herein shown and described, and may resort to any such changes without in any 95 manner departing from the spirit of the invention or the scope of the subjoined claims.

Having now described my invention, what I claim is:

1. In a device of the type described, a 100 casing, an intake and an exhaust port formed in said casing, distribution ports formed in said casing, a four port plug arranged within said casing, said plug ports being arranged in pairs lying in intersecting planes 105 the ports of each pair lying in the same plane, one port of each pair communicating with said inlet port and the other port of each pair communicating with said exhaust port, each of said distribution ports communicating with one port of each of said pairs. 110

2. In a device of the type described, a casing, transverse partitions in said casing dividing the interior thereof into four passages, an intake and an exhaust port formed 115 in said casing, a pair of distribution ports formed in said casing, a four port plug arranged within said casing, one of said plug ports lying in each of said passages, said plug ports being arranged in pairs lying in intersecting planes, the ports of each pair lying in the same plane, one port of each pair communicating with said inlet port and the other port of each pair communicating with said exhaust port, each of said 125 distribution ports communicating with the port of one pair, connected with said intake port, and the port of the other pair communicating with said exhaust port.

3. In a device of the type described, a cas- 130

ing, an intake and an exhaust port formed in said casing, distribution ports formed in said casing, a rotatable four port plug arranged within said casing, the ports of said plug being arranged in pairs lying in planes intersecting at right angles, the ports of each pair lying in the same plane, one port of each pair communicating with said inlet port and the other port of each pair communicating with said exhaust port, each of said distribution ports communicating with one port of each of said pairs, and means for intermittently rotating said plug through an angle of 90 degrees.

4. The combination as set forth by claim 1, wherein a pinion is secured to the stem of the valve, a rotatable member bearing a segment is adapted to intermittently engage said pinion, and means are provided for rotating said member.

5. The combination as set forth by claim 1, characterized by the provision of a pinion secured to the stem of the valve, and a rotatable member bearing a segment adapted to intermittently engage said pinion, said pinion being rotated through an angle of 90° at each engagement.

6. The combination with a valve having a plug provided with pairs of ports arranged in planes intersecting at right angles, of a stem for said plug having a pinion secured thereto, a gear, means for rotating said gear, a segment secured to said gear adapted to intermittently engage said pinion, said pinion being rotated through an angle of 90 degrees at each engagement.

7. The combination with a valve having a plug provided with pairs of ports arranged in planes intersecting at right angles, of a support arranged above said valve, the stem of said plug extending upwardly through said support and being provided adjacent its upper end with a pinion, a gear rotatably mounted upon said support, means for rotating said gear, a segment secured to said gear adapted to intermittently engage said pinion, said pinion being rotated through an angle of 90 degrees at each engagement.

8. In a device of the type described, a casing, transverse partitions in said casing dividing the interior thereof into four passages, an intake and an exhaust port formed in said casing, a pair of distribution ports formed in said casing, one pair of said pas-

sages connecting said intake ports with said distribution ports and the remaining pair of passages connecting said exhaust port and said distribution ports, a rotatable plug closing all of said passages and provided in the portions thereof lying in each of said passages with a port, the ports of said plug lying within the passages communicating with said intake ports being disposed at an angle of 90 degrees and the ports lying within the passages connecting each distribution port with said intake and said exhaust ports being disposed at an angle of 90 degrees.

9. In a valve of the type described, a casing, an intake port and an exhaust port formed in said casing, an upper distribution port formed in said casing, a pair of passages connecting said upper distribution with said intake and exhaust ports, a lower distribution port, a pair of passages connecting said lower distribution port and said intake and exhaust ports, a plug extending through said casing and intercepting all of said passages, ports formed in said plug in each of said passages, the ports lying in the passages of each pair being disposed at an angle of 90°, and the port disposed in the passage of one pair connecting the distribution port with the intake being in the same plane with the port lying in the passage of the other pair connecting the distribution port and said exhaust port.

10. In a valve of the type described, a casing, an intake and an exhaust port formed in said casing, a pair of distribution ports formed in said casing, passages connecting said distribution ports and said intake and exhaust ports, a rotatable plug intercepting said passages, ports formed in said plug lying within said passages, the ports lying in the passages connecting either of said distribution ports with said intake and exhaust ports being disposed at an angle of 90° to the ports in the corresponding passages connecting the other of said distribution ports and said intake and exhaust ports, and to one another.

In testimony whereof I affix my signature in presence of two witnesses.

LEWIS METESSER.

Witnesses:

SAUL CASSIUS,
FLORENCE L. DIEHL.