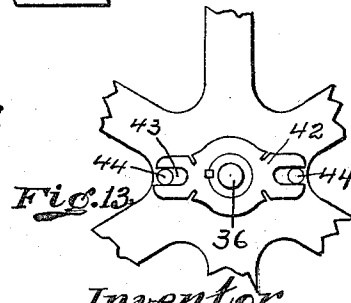
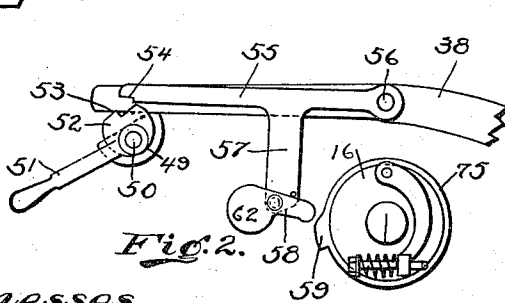
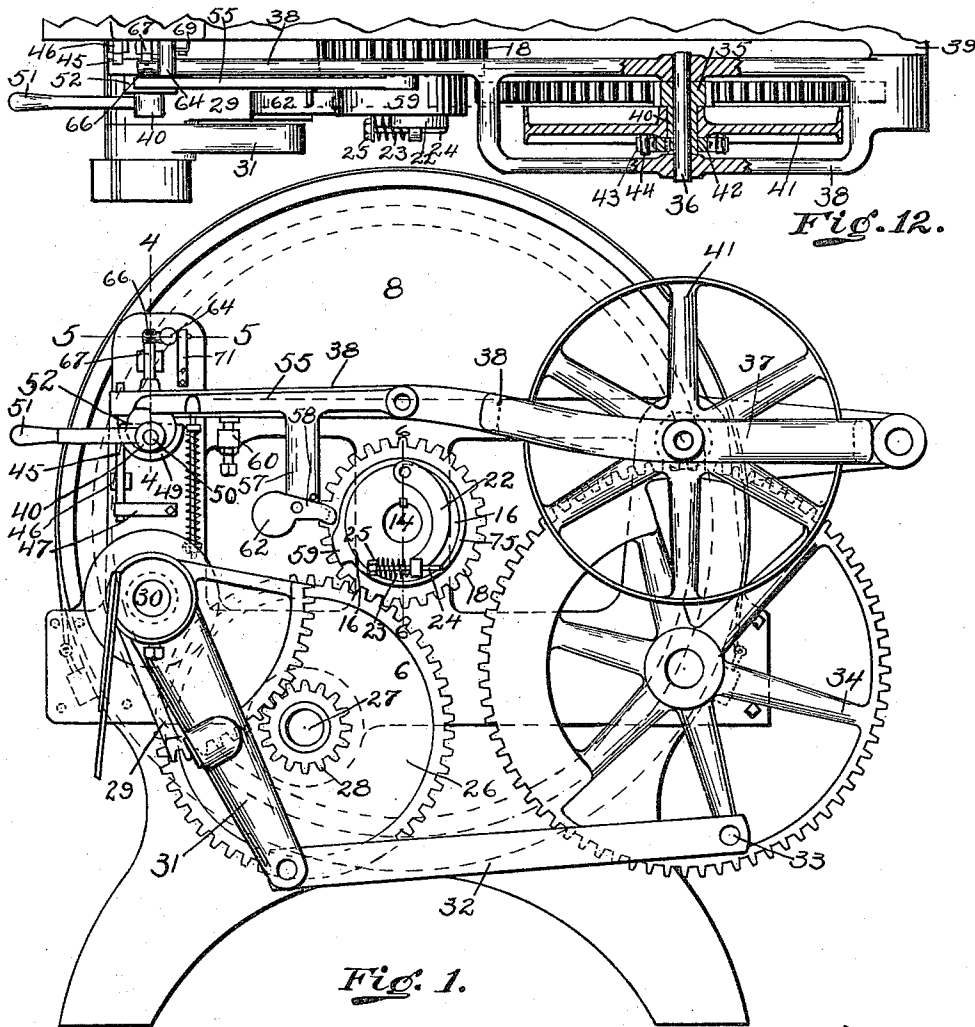


E. W. BLUM.
DRIVING MECHANISM FOR LAUNDRY WASHING MACHINES.
APPLICATION FILED AUG. 19, 1910.

1,043,195.

Patented Nov. 5, 1912.

3 SHEETS-SHEET 1.



Witnesses
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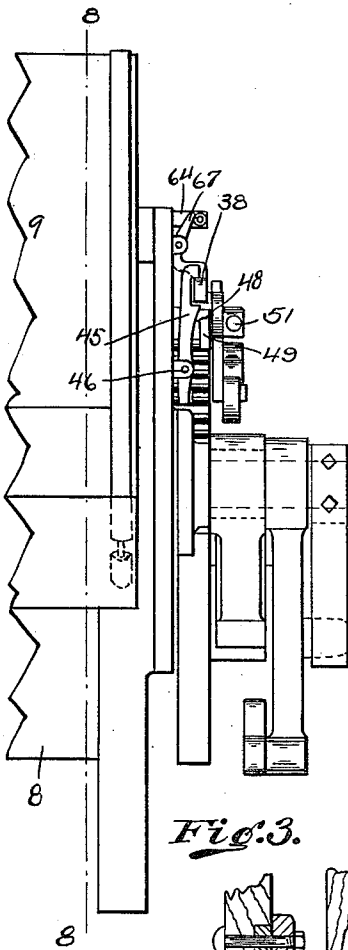


Fig. 3.

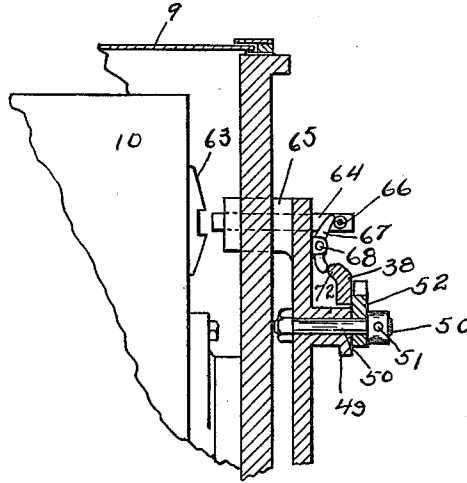


Fig. 4.

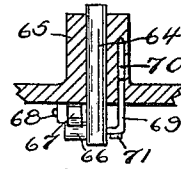


Fig. 5.

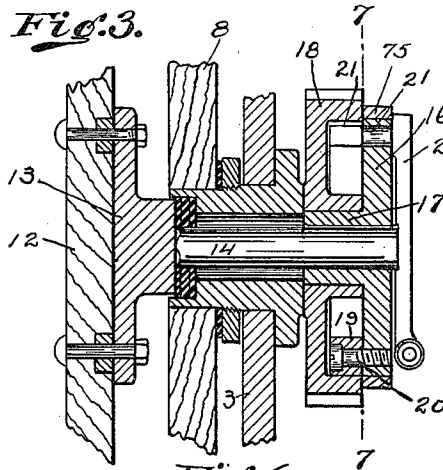


Fig. 6.

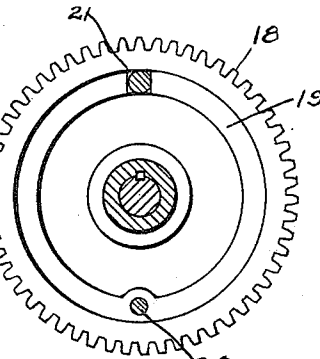


Fig. 7.

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3 SHEETS—SHEET 3.

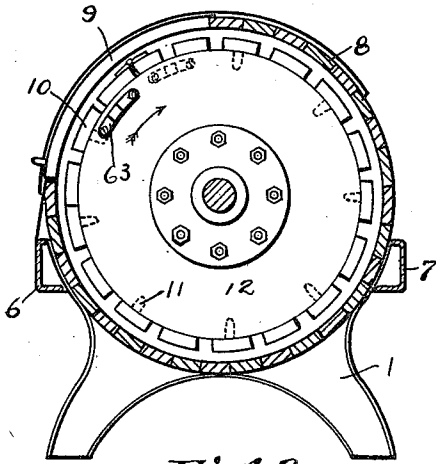


Fig. 8.

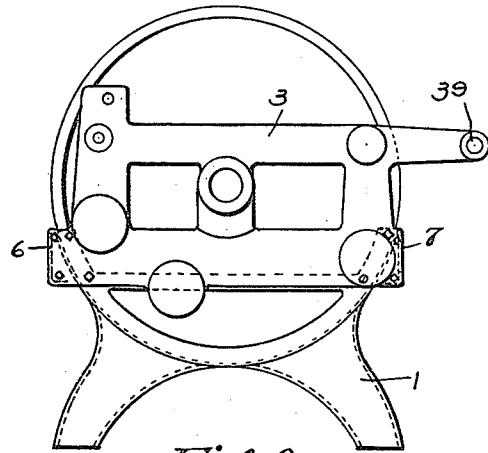


Fig. 9.

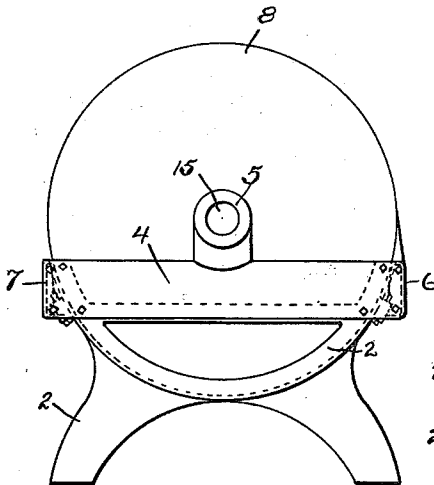


Fig. 10.

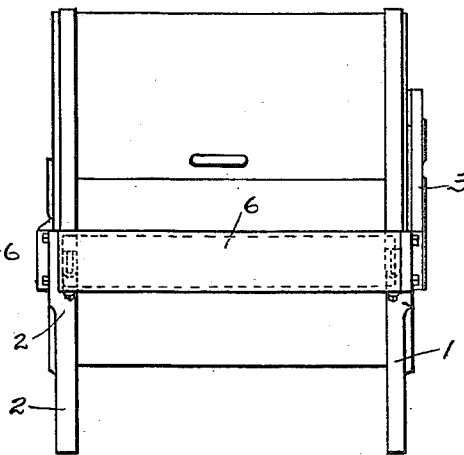


Fig. 11.

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UNITED STATES PATENT OFFICE.

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DRIVING MECHANISM FOR LAUNDRY WASHING-MACHINES.

1,043,195.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed August 19, 1910. Serial No. 577,964.

To all whom it may concern:

Be it known that I, EDWARD W. BLUM, a citizen of the United States, and a resident of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Driving Mechanism for Laundry Washing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to the driving mechanism for washing machines such as are employed in laundries and driven by power, and the object of the invention is to improve the efficiency of such driving mechanism and obviate the disadvantages experienced with those constructions of machines ordinarily in use by that novel construction and arrangement of parts to be hereinafter particularly pointed out and claimed.

Power washers ordinarily embody a horizontally disposed and fixed cylindrical casing mounted in fixed standards at the ends and with the fixed standards held together by tie rods. Within the fixed cylinder is mounted an oscillatory or rotary cylinder for the clothes to be cleaned, which cylinder is rotated or oscillated first in one direction and then in the other. The means employed for reversing the rotation of the cylinder has ordinarily consisted of a tight driving pulley and a pair of loose pulleys with two belts, one straight and the other crossed, and belt shifting devices to shift the straight and the crossed belts alternately to the tight driving pulley. Wide belts cannot be conveniently used on account of difficulty of shifting and the narrow belts required are readily affected, weakened and destroyed by the steam and heat. Moreover with lighter belts and constant shifting, high speed cannot be obtained.

One of the special features of my invention therefore consists of my novel construction whereby I am able to provide a single driving pulley always driven in the same direction with transmission gearing for rotating and reversing the rotatory cylinder. In this way I am able to employ a wide belt and to drive the machine at much greater speed, and with heavier load.

Another feature consists in providing a solid and substantial framework for the machine for supporting the operating mecha-

nism and for binding together the end standards whereby liability to sag and warp and to get out of alinement incident to the ordinary frames of power washers is obviated.

Other features of novelty consist in the means provided for automatically locking the rotatory cylinder when the driving pulley is disconnected to stop the operation of the machine and in which the rotatory cylinder is locked always in position to permit free access thereto for the clothes.

Other features of novelty and invention will be particularly referred to in connection with the description of the operating parts.

In the drawings, Figure 1 is an end elevation of my improved machine. Fig. 2 is a detail of the cam mechanism for locking the inner cylinder. Fig. 3 is a side elevation of the power mechanism. Fig. 4 is a detail sectional view taken on the line 4, 4, of Fig. 1. Fig. 5 is a similar section taken on the lines 5, 5, of Fig. 1. Fig. 6 is a similar section taken on the lines 6, 6, of Fig. 1. Fig. 7 is a section of the clutch mechanism taken on the lines 7, 7, of Fig. 6. Fig. 8 is a cross section of the entire machine taken on the lines 8, 8, of Fig. 3. Fig. 9 is an end elevation of the front end of the frame. Fig. 10 is a similar elevation of the rear end of the frame. Fig. 11 is a side elevation of the frame structure. Fig. 12 is a plan view, partly in section, showing the method of mounting the driving pulley. Fig. 13 is a detail front elevation of the parts shown in Fig. 12.

1 and 2 are the substantial end standards for the framework of the machine. The front end standard has securely bolted to it a frame plate 3, provided with the necessary bosses and hubs for mounting the operating parts, in order to provide a solid and substantial end frame. The rear end frame 2 is also provided with a frame plate 4, having a central boss 5 to form the journal bearing for the rotatory cylinder shaft. These two end frames are solidly braced and secured together by the side plates 6, 7, bolted to the ends so as to form a solid and substantial framework, and in this framework is fixedly mounted a horizontally disposed fixed cylinder or frame 8 which forms the outer casing of the washing machine. This fixed cylinder is usually formed of metal or of staves properly bound together

with hoop bands, but the material and construction of the cylinders is not of importance. The outer cylinder is provided with a door 9 to give access to the inner rotating cylinder. This inner cylinder is of the usual perforated construction, provided lengthwise on the inside with ribs 11 for stirring the clothes, and closed at the ends by the walls 12, each end wall being provided with a plate 13 carrying the axle 14 at the operating end and the axle 15 in line therewith at the opposite end. The axle 15 is journaled in the hub bearing 5 at the rear end and the axle 14 is journaled in the plate 3 at the front end. The axle or shaft 14 is rotated in either direction by the power driven mechanism of the machine to rotate the inner cylinder first in one direction and then in the other.

Keyed to the outer end of the shaft 14 is a disk 16, provided with the hub 17, upon which is loosely mounted the gear 18. The front face of the gear 18 is recessed to receive the split friction ring or band 19 which engages the overhanging flange of the gear 18 on the inside. This friction band is secured by the pin 20 to the inner face of the disk 16. The clutch band 19 is split, and between the ends of the band is inserted a square pin 21, which is formed cylindrical to pass through an aperture in the disk 16 and has secured thereto on the outside of the disk the lever 22. The lower end of this lever is spring-pressed by the coiled spring 23, mounted on a rod 24 which passes through a projection on the lower end of the lever 22, and is secured to the disk 16, the spring bearing between an adjustable nut 25 on the end of the rod and the face of the lower end of the lever 22. In this way, the lever will be normally swung toward the right to turn the square end of the pin 21 so as to expand the friction band 19 and obtain a friction clutch between the disk 16 and the gear 18. The gear 18 meshes with the gear 26 mounted on the stud 27, bolted to the frame plate 3, and the hub of this gear engages a pinion 28 which in turn engages the sector rack 29 mounted on the stud 30 also bolted to the frame plate 3. The stud 30 carries the arm 31, which engages the sector 29, and the outer end of this arm is connected by the link 32 with the crank pin 33 on the gear 34, also journaled in the frame plate. The gear 34 meshes with the pinion 35 mounted on the shaft 36 which shaft is in turn mounted in the inclosing frame 37 on the lever 38, which is pivotally mounted on the boss 39 on the frame plate 3.

Mounted on the elongated hub 40 of the pinion 35 is the driving pulley 41. In order to take up the shock when starting the machine, this pulley is not keyed to the pinion 35 but loosely mounted on the pinion hub.

Keyed or otherwise secured on the outer end of the pinion hub is a plate 42 bifurcated at each end at 43, and studs 44 on the driving pulley engaged in these bifurcations. There is sufficient lost motion in this construction and sufficient resiliency in the forks to take up the shock experienced in coupling the driving pulley and pinion, when driven by suitable belt, with the gear 34 in starting the machine.

It will be evident that with the transmission construction described, by the rotation of the driving pulley 41 in one direction by the driving belt or otherwise, that the sector rack 29 will be oscillated to rotate the shaft of the inner cylinder of the machine, first in one direction and then in the other. No belt shifting device is required and as wide and heavy a belt as required may be used and the mechanism driven at any desired speed.

The machine mechanism is instantly disconnected from the driving mechanism by disconnecting the driving pinion 35 from the gear 34 by raising the lever 38 on which the driving mechanism is mounted. It is important, however, that the machine should not be stopped except when the door 10 in the rotating cylinder is in register with the door 9 in the outer casing and that the inner cylinder should be locked in this position. In order to accomplish this I provide as follows: The lever 38 extends across the end of the machine and is held down in locked position with the pinion 35 in engagement with the gear by the latch 45 pivoted to the frame at 46. The lower end of this latch is engaged by the spring 47, so that normally the latch engages the outer end of the lever 38 and holds the same locked down. The latch 45 is pushed back to release the lever 38 by the beveled lug 48 mounted on the inner face of the cam secured to the pin 50, which pin is rocked by the handle 51. The cam 49 is in the shape of a half disk, and as the handle 51 is raised above the horizontal position illustrated in Fig. 1, the flat surface of the cam will raise the lever 38, the latch 45 having been released by the lug 48. There is another cam 52 secured to the pin 50, which is provided with a notch 53, which engages a corresponding notch 54 in the outer end of the lever 55, which is pivoted at 56 to the main lever 38, so that as long as this lever 55 stands in its normal position, the main lever cannot be raised. The lever 55 has a depending arm 57 which carries the dog 58, pivoted on its lower end, and when the lever 38 is in its lowermost position, resting on the supporting block 60 secured to the frame, and the handle 51 in a horizontal position, the dog 58 projects into the pathway of the cam 59 which is formed on the annular band 75 mounted and secured by screws on

the periphery of the disk 16. The handle 51 normally stands inclined downwardly as shown in Fig. 2, and in this position the cam 52 raises up the lever 55 so that the dog 58 is not within the pathway of the cam 59. When, however, the handle 51 is raised into the horizontal position shown in Fig. 1, the lever 55 drops down bringing the end of the dog which is weighted at 62 within the pathway of the cam 59. When the disk 16 is rotated in one direction, the dog will simply swing on its pivot, but when the disk is rotated in the other direction, the cam 59 will raise the dog and with it the lever 55, taking the end of the lever out of the pathway of the cam 52 and allowing the handle 51 to be entirely raised. This movement causes the lever 38 to be raised and the pinion 35 to be disconnected from the gear 34. The cam 59 is located in such timed relation to the position of the door 10 in the rotating cylinder that when the cam raises the lever 55, the door of the inner cylinder will register with the opening through the fixed case.

Secured on the end face of the rotating cylinder is a catch plate 63, while 64 is a shot bolt projecting through a boss 65 on the end frame. The outer end of this bolt is provided with a roller 66 which is engaged by the latch 67 pivoted at 68 to the frame. The bolt 64 is prevented from rotating by the bent rod 69 which passes through an opening in the bolt and is bent inwardly to engage a hole 70 in the face of the boss 65 (shown in Fig. 5).

71 is a spring normally pressing the bolt 64 inwardly, and the bolt is held in its outward position by the latch 67. The lower end of the latch is engaged by a projection 72 on the lever 38, so that when the lever is held in its normal locked position, the bolt 64 will be held out of engagement with the catch plate 63. The moment the lever 38 is raised as hereinbefore described to disconnect the driving mechanism, and which disconnection can only be made as hereinbefore described when the openings in the two cylinders are in register, the latch 67 is released and the bolt projected inwardly by the spring 71. This action is so timed that the bolt will be thrown inwardly just after the notch in the catch plate 63 has passed the bolt, and the weight of the clothes in the rotating cylinder will cause the inner cylinder to move in the opposite direction, thus allowing the bolt to engage the catch without jar. As long as the bolt is in engagement with the latch and the cylinder is locked, the heel of the latch will stand in the pathway of the projection 72 on the lever 38, so that the driving pulley and gear will be held out of engagement with the driving train of gear as long as the cylinder is locked in position.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a machine of the character described, the combination with a support and a rotary member mounted therein, of a single driving pulley having constant rotary movement, a swinging frame within which the driving pulley is mounted, connecting mechanism intermediate the pulley and the rotary member, a catch to lock the swinging frame, and means for releasing said catch to shift the swinging frame to disconnect the connecting mechanism.

2. In a machine of the character described, the combination with a support and a rotary member mounted therein, of a single driving pulley having constant rotary movement, a swinging frame within which the driving pulley is mounted, connecting mechanism intermediate the pulley and the rotary member, a catch to lock the swinging frame, and means for releasing said catch, and a lock for said releasing means said rotary member having a cam to shift said lock, whereby the driving pulley may be disconnected only in predetermined positions of the rotary member.

3. In a machine of the character described, the combination with a support and a rotary member mounted therein, of a single driving pulley having constant rotary movement, a swinging frame within which the driving pulley is mounted, connecting mechanism intermediate the pulley and the rotary member, a catch to lock the swinging frame, and means for releasing said catch, a lever to lock said releasing means, and a dog pivotally mounted on said lever the connecting mechanism having a cam to contact with said dog to shift the lever, whereby the driving pulley may be disconnected only at predetermined positions of the rotary member.

4. In a machine of the character described, the combination with a support and a rotary member mounted therein, of a single driving pulley having constant rotary movement, a swinging frame within which the driving pulley is mounted, connecting mechanism intermediate the pulley and the rotary member, a catch to lock the swinging frame, and means for releasing said catch to shift the swinging frame to disconnect the connecting mechanism, and a bolt to lock the rotary member normally inactive, with means for operating said bolt actuated by the movement of the swinging frame in disconnecting the driving pulley.

5. In a machine of the character described, the combination with a support and a rotary member mounted therein, of a single driving pulley having constant rotary movement, a swinging frame within which the driving pulley is mounted, connecting

mechanism intermediate the pulley and the rotary member, a catch to lock the swinging frame, and means for releasing said catch, and a lock for said releasing means said
5 rotary member having a cam to shift said lock, whereby the driving pulley may be disconnected only in predetermined positions of the rotary member, and a bolt to lock the rotary member normally inactive,
10 with means for operating said bolt actuated by the movement of the swinging frame in disconnecting the driving pulley.

6. In a machine of the character described, the combination with a support and
15 a rotary member and shaft mounted therein, with means for rotating same alternately in opposite directions, of a bolt mounted in the frame to lock the rotary member thereto, means to prevent the locking of said bolt,
20 means for disconnecting the driving power, and a cam connected with said rotary shaft, to release said locking bolt at predetermined positions of the rotary member.

7. In a machine of the character described, the combination with a support and

a rotary member and shaft mounted therein, with means for rotating same alternately in opposite directions, means for disconnecting the driving power, a device to prevent disconnecting and a cam connected with said
30 rotary shaft to release said device to permit disconnection.

8. In a machine of the character described, the combination with a support and a rotary member and shaft mounted therein,
35 with means for rotating same alternately in opposite directions, means for disconnecting the driving power, a device to prevent disconnecting and a cam connected with said rotary shaft to release said device to permit
40 disconnection, a bolt mounted in the frame to lock the rotary member thereto, means to prevent the locking of the bolt, and means for disconnecting the driving power, operating to release the bolt.

EDWARD W. BLUM.

Attest:

GEORGE A. TURRELL,
K. SMITH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."