

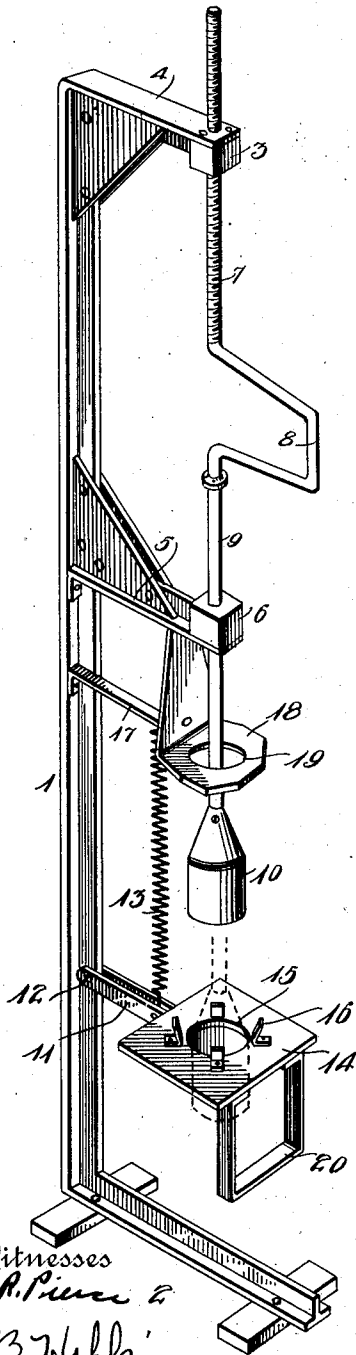
J. B. ENGSTROM.
TILE MACHINE.
APPLICATION FILED JUNE 5, 1911.

1,022,933.

Patented Apr. 9, 1912.

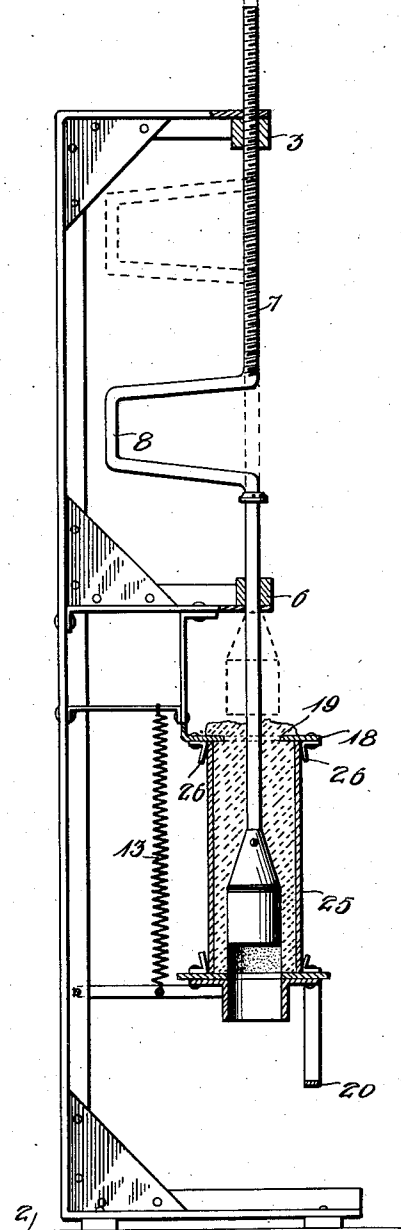
3 SHEETS-SHEET 1.

FIG. 1



Witnesses
D. R. Pinner &
O. B. Hopkins

FIG. 2



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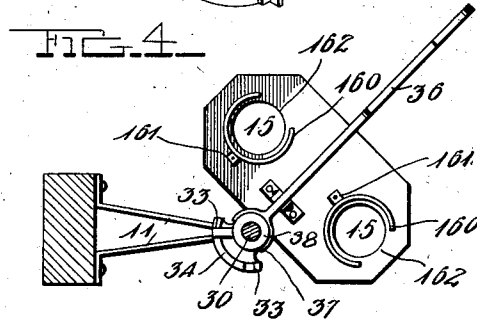
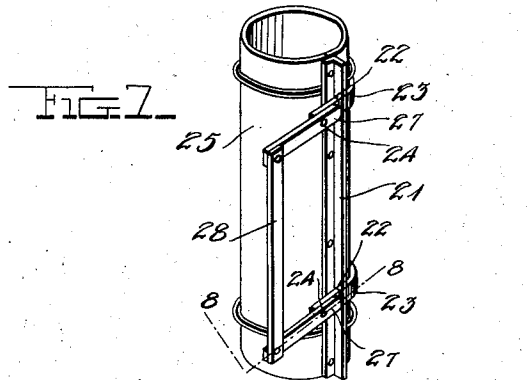
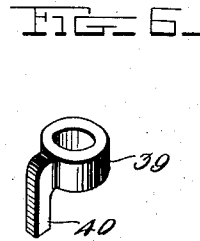
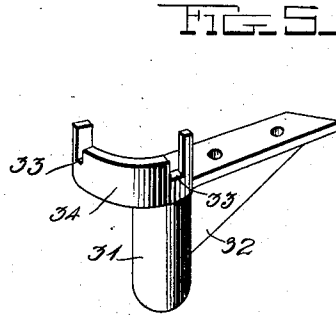
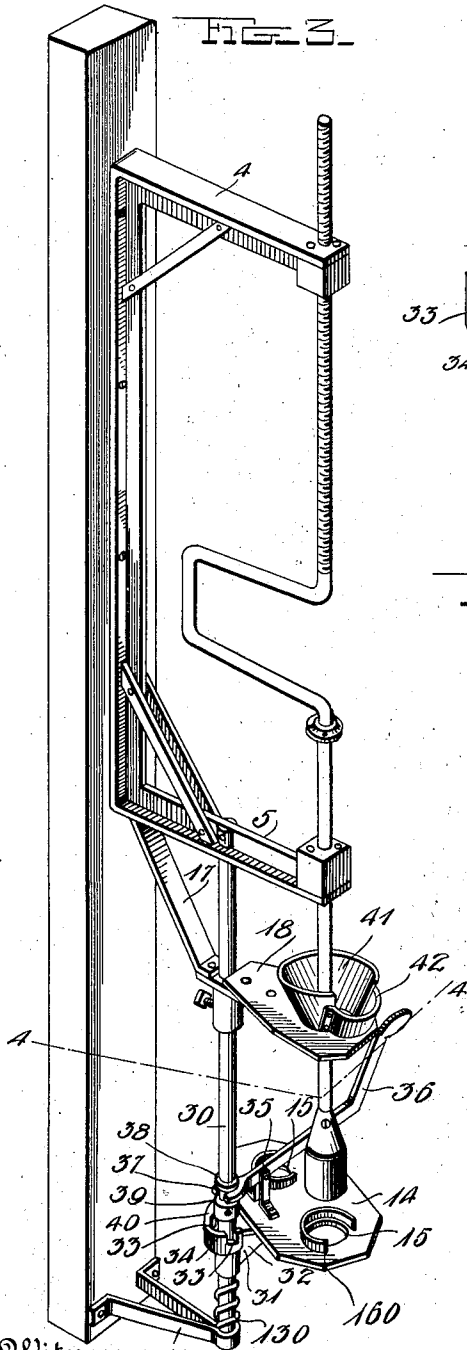
Attorneys

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3 SHEETS-SHEET 2.



Witnesses
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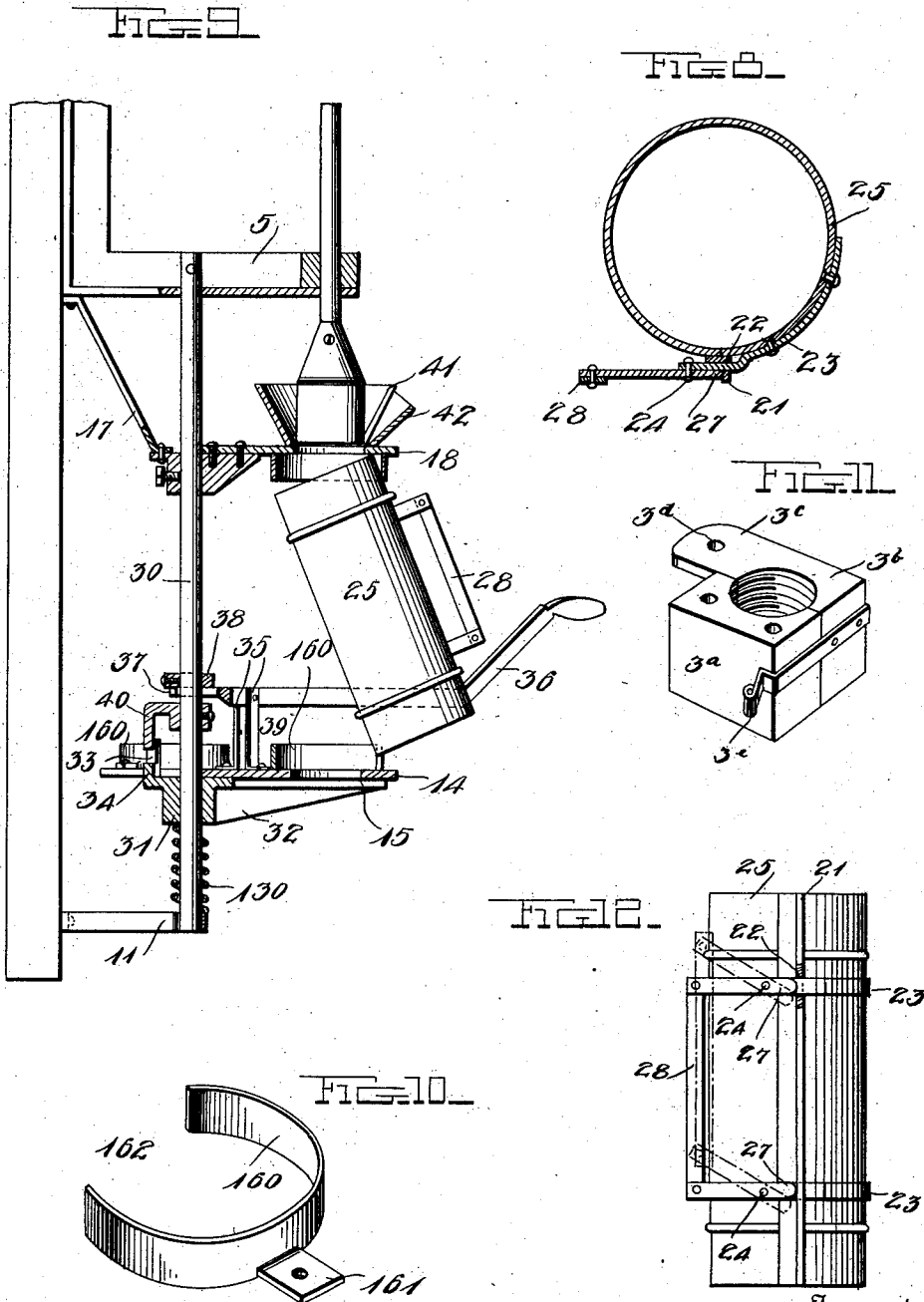
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3 SHEETS-SHEET 3.



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UNITED STATES PATENT OFFICE.

JACOB B. ENGSTROM, OF MANCHESTER, IOWA.

TILE-MACHINE.

1,022,933.

Specification of Letters Patent.

Patented Apr. 9, 1912.

Application filed June 5, 1911. Serial No. 631,331.

To all whom it may concern:

Be it known that I, JACOB B. ENGSTROM, a citizen of the United States, residing at Manchester, in the county of Delaware and State of Iowa, have invented certain new and useful Improvements in Tile-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to plastic apparatus, and more especially to the compacting formers used in tile machines; and the object of the same is to mold a hollow tile within a tubular jacket by means of a conical core movable upward through the axis of said jacket and compressing the plastic material between the latter and the core.

A further object of this invention is to produce an improved form of jacket, and to provide means for its ready insertion in and removal from the machine, and an amplification of the latter whereby a plurality of jackets may be employed so that one may be removed and replaced by another while the other jacket within the machine is being utilized to form the tile.

These and other objects are accomplished by the construction hereinafter more fully described and claimed, and as shown in the drawings wherein—

Figure 1 is a perspective view of the simpler form of my machine showing the core as descending and illustrating it in dotted lines at its lowermost position. Fig. 2 is a side elevation of the same machine with the jacket in place and in section, showing the core as ascending and illustrating it in dotted lines at its highest position. Fig. 3 is a general perspective view of the preferred form of my machine, showing the table as compound. Fig. 4 is a section on the line 4—4 of Fig. 3. Figs. 5 and 6 are perspective details of the bracket and the collar which will be described hereinafter. Fig. 7 is a perspective view of my preferred form of jacket, and Fig. 8 is a horizontal section thereof on the line 8—8 of Fig. 7. Fig. 9 is a vertical section through the lower portion of the machine shown in Fig. 3, illustrating the core as raised, the table as depressed by means of its lever, and a jacket in the act of being inserted, its upper end

being within the flange beneath the top and its lower end about to be sprung into the flange upon the table. Fig. 10 is a perspective detail of one of the spring table flanges. Fig. 11 is a perspective detail of a split nut referred to in the following specification. Fig. 12 is a side view of the shell.

In the drawings the numeral 1 designates a standard rising from the floor or a suitable base 2 and having arms projecting forward from it as shown. The uppermost arm 4 carries a nut 3, and it may here be said that this nut might be split as seen in Fig. 11 so that it could be opened to permit the plunger and core to be run down quickly and then closed to permit it to be run up slowly. The intermediate arm 5 carries an eye 6 in axial alinement with and directly below the nut 3. Through the latter takes a screw 7 at the upper end of a crank 8 whose lower end 9 forms a plunger rod which is journaled for rotation and reciprocation through the eye 6 and whose lower extremity carries a conical core 10. The lowermost arm 11 is pivoted as at 12 to the standard 1 and supported by a spring 13, and this serves as a swinging bracket and carries the table 14 which is shown as single in Fig. 1 and double or compound in Fig. 3, the former having a single hole 15 and the latter two holes through it, surrounded by upright lugs 16. Yet another arm 17 or bracket is provided for carrying the top plate 18 which also has a hole 19 into which the plastic is introduced, and on the lower side of this top are depending lugs 26, like those numbered 16. Said lugs are adapted to engage the extremities of the shell or jacket 25 which constitutes a cylindrical mold for forming the exterior of the tile, and in size its extremities are such that they will pass inside the lugs 16 and 26 whereas its interior circumference is as much larger than the external circumference of the core as the thickness the finished tile is to possess and the holes through the bottom or table and the top are sufficiently large to permit the larger end of the core to pass through them in the act of making the tile.

With this construction of parts, the operation of the simpler form of my machine is as follows: One of the shells is inserted at its lower end inside the lugs 16 on the table 14 and the latter depressed by its foot-loop

20 against the tension of its spring 13, the upper end of the jacket is then inserted into the lugs 26 beneath the top 18, and the operator releases the loop 20. The plunger is then run down so that the core 10 assumes a position about as shown dotted in Fig. 1, and the plastic material poured slowly into the hole 19. As it accumulates around the smaller end of the core, the crank 8 is manipulated to cause the screw to travel upward through the nut 3 and draw the core upward and meanwhile rotate it; and as the plastic partly sets the spiral upward movement of this core on account of its conical shape presses the plastic outward within the jacket and shapes the interior of the tile. Finally the core moves upward to the position shown dotted in Fig. 2 so that its lower end is out of the jacket, and the latter can be disconnected from the machine by a reversal of the above described operation for inserting it, after which it is carried to a remote point and the plastic permitted to harden or if desired the same may be baked or kiln-dried. After that the shell is removed so as to loosen it upon the tile, and the latter is removed.

By a rather simple amplification of the construction above described is produced what I call the preferred form of my improved mold. This consists in making the table 14 compound or double as best seen in Figs. 3 and 4 and providing it with two holes 15 surrounded by flanges 160 best seen in Fig. 10 and yet to be described, and pivotally mounting the table so that it may swing from side to side. The arms or brackets 17 are made to support an upright rod 30 on which may be coiled an expansive spring 130 beneath an eye 31 of a bracket 32 (Fig. 5) which is secured beneath the table 14, and this bracket also has a flange 34 provided with two notches 33. Pivoted between lugs 35 on the table 14 is a lever 36 whose inner end is forked as shown at 37 and embraces the rod 30 between a shoulder 38 thereon and a collar (Fig. 6) 39 fast on the rod and having a depending dog. As seen in Fig. 9, when the front end of the lever 36 is depressed its fork 37 acts as a fulcrum, and the lugs 35 depress the table 14 and its bracket 32, the eye of the latter compressing the spring 13; this causes one of the notches 33 to disengage the dog 40 after which the lever and table may be swung around the upright rod 30 so that the other hole in the table comes beneath the plunger. It will be clear to those familiar with this art that in using this my preferred form of the machine, after a tile has been formed within one jacket and the plunger raised out of it, another empty jacket may be placed within the flange at the other end of the table and the latter turned so as to bring it under the plunger. This brings the jacket containing

the finished tile to one side of the plunger, and it may be removed for subsequent treatment in the manner described above provided only that the flange is of such construction as to permit. I have therefore devised the spring flange 160 best seen in Fig. 10, and comprising an upright body curving throughout nearly a complete circle and having an ear 161 riveted fast upon the table 14, while the open side of the flange or mouth 162 is opposite said ear as shown in Fig. 4, and therefore the jacket can be slipped out of this flange with ease.

Amplifications of refinements of this device may be made at will, and some of them will now be described: The top plate 18 may carry a funnel 41 around its hole 19, as best seen in Fig. 3, and this funnel may have a pouring lip 42 over which the plastic can be poured when filling the mold. The split nut best illustrated in Fig. 11 may comprise a fixed half 3^a carried by the upper arm 4, and a movable half 3^b mounted on a short arm 3^c of its own and pivoted at 3^d to the longer arm 4, while any suitable form of catch 3^e holds the halves together when the parts are assembled to engage the threads on the screw 7. However, it is to be understood that this description and illustration is only typical of one form of nut which may be employed.

In Figs. 7 and 8 is best shown the jacket 25 which I preferably employ in connection with this machine. The same comprises a shell of sheet metal split along one side and adapted to be turned into the shape of a cylinder, one edge of the sheet having an L-shaped flange 21 through which are holes 22 and the other end carrying metallic straps 23 passing through said holes and projecting some distance beyond the flange 21 as shown. The numerals 27 designate latches pivoted at 24 to the straps 23 and having their outer ends pivotally connected by a bar 28 which forms the handle for the jacket, their inner ends bearing against the radial portion of the L-shaped flange when the handle is swung to the position best seen in Fig. 7. It is obvious that when it is swung aside the latches 27 turn upon their pivots 24 and their inner ends disengage the flange 21 so that tension on the straps 23 is released and the shell can open to permit the finished tile to drop out. Here again I desire to be understood as illustrating and describing this form of shell merely for the purpose of showing one of many such constructions which might be employed in connection with this machine. It is not absolutely essential that a split shell shall be employed, for after the tile is finished and kiln-dried or otherwise permitted to harden, it might be possible to push it out of a truly cylindrical shell longitudinally. The spring flanges are not imperatively necessary with

this form of my device, and in fact in Figs. 1 and 2 I have shown said flanges as L-irons bolted upon the plate 14 rather than as continuous flanges surrounding the hole 15.

5 These and other modifications and amplifications will occur to the manufacturer, and may be adopted at will without departing from the spirit of my invention.

What is claimed as new is:

10 1. In a tile machine, the combination with an upright standard having a series of arms, a nut and a guide-eye carried by two of them, a cranked plunger passing loosely through said eye and having a threaded upper end screwing through said nut, and a
15 conical core carried by the lower end of the plunger; of a table forming the mold-bottom and having a hole larger than the larger end of said core, a plate forming the mold-top and having a similar hole, a bracket piv-
20 otally supported from said upright and carrying said table, a spring supporting the bracket from one of said arms with yielding force so as to permit the depression of the
25 table, flanges surrounding the holes in the table and top on their adjacent faces, and a shell forming the mold-jacket whose extremities are adapted for removable inser-
30 tion within said flanges when the table is depressed.

2. In a tile machine, the combination with an upright standard having a series of arms, a nut and a guide-eye carried by two of them, a cranked plunger passing loosely
35 through said eye and having a threaded end passing through said nut, and a conical core carried by the lower end of the plunger; of a plate carried by a third arm and constituting the mold-top and provided with a hole
40 larger than the larger end of said core, a rod depending from said arm, a spring mounted loosely on said rod, a table supported by said spring and having a hole similar to that in the plate, the table con-
45 stituting the mold-bottom, and a mold-jacket whose extremities are adapted for removable insertion between said bottom and top.

3. In a tile machine, the combination with
50 an upright standard having a series of arms, a nut and a guide-eye carried by two of them, a cranked plunger passing loosely through said eye and having a threaded end passing through said nut, and a conical core
55 carried by the lower end of the plunger; of a mold-top carried by a third arm on said standard, a rod depending from this arm, a spring on the rod, a swinging bracket pivotally mounted on said rod and yieldingly
60 supported by said spring, a table carried by the bracket and having a plurality of holes similar to that in the plate, means for swinging the table from side to side to bring any hole beneath that in the plate, a
65 flange surrounding each hole in the table,

and a mold-jacket whose extremities are adapted for removable insertion between said top and table and within said flanges.

4. In a tile machine, the combination with
70 an upright standard, a vertically movable and rotary plunger carried thereby, and a conical core at the lower end of the plunger; of arms projecting from said standard, a plate carried by one of them and having a hole larger than the larger end of said core, a rod connecting the arms, a spring thereon,
75 a table pivotally mounted on said rod and yieldingly supported by said spring and provided with a plurality of holes similar to that in the plate, a lever connected with the table, a collar fast on the rod and having a dog, a bracket fast on the table and having
80 notches with which said dog engages when any hole in the table is beneath that in the plate, and a mold-jacket whose extremities are adapted for removable insertion between said table and plate.

5. In a tile machine, the combination with an upright standard, a vertically movable plunger carried thereby, and a conical
90 core at the lower end of the plunger; of arms projecting from said standard, a rod connecting the arms, a spring thereon, a table having a plurality of holes larger than said plunger, a bracket supporting the table and having an eye pivotally mounted on
95 said rod and yieldingly supported by said spring, a lever connected with the table and forked at its inner end, a shoulder and a collar on the rod between which said fork engages, a dog on the collar, a flange on the
100 bracket having notches with which said dog engages when any hole in the table is beneath that in the plate, and a mold-jacket whose extremities are adapted for removable insertion between said table and plate.

6. In a tile machine, the combination with an upright standard having a series of arms, a nut and a guide-eye carried by two of them, a cranked plunger passing loosely through
110 said eye and having a threaded end passing through said nut, and a conical core carried by the lower end of the plunger; of a mold-top carried by a third arm on said standard and having a hole surrounded by a depending flange, a rod depending from this arm, a spring on the rod, a swinging bracket pivotally mounted on said rod and yieldingly
115 supported by said spring, a table carried by the bracket and having a plurality of holes similar to that in the plate, means for swinging said table from side to side to bring any hole beneath that in the plate, a spring flange surrounding each hole in the table, and a mold-jacket whose extremities are adapted for removable insertion between
120 said table and top and within their flanges.

7. In a tile machine, the combination with a vertically movable plunger, a core at its
130 lower end, a plate having a hole through

which said core may move, a funnel rising
from the plate around said hole and having
a pouring lip, and a flange depending from
the plate around said hole; of a laterally
5 movable table below said plate and having
two holes corresponding with that in it,
mechanism for moving this table to bring
either of its holes beneath and in register
with the hole in the plate, and for each hole
10 in the table a spring flange consisting of an
upright band forming a nearly complete

circle and open at one side to constitute a
mouth and an ear at the opposite side of the
band secured upon the table.

In testimony whereof I have hereunto set 15
my hand in presence of two subscribing wit-
nesses.

JACOB B. ENGSTROM.

Witnesses:

MELVIN J. YORAN,
J. M. COOLIDGE.

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