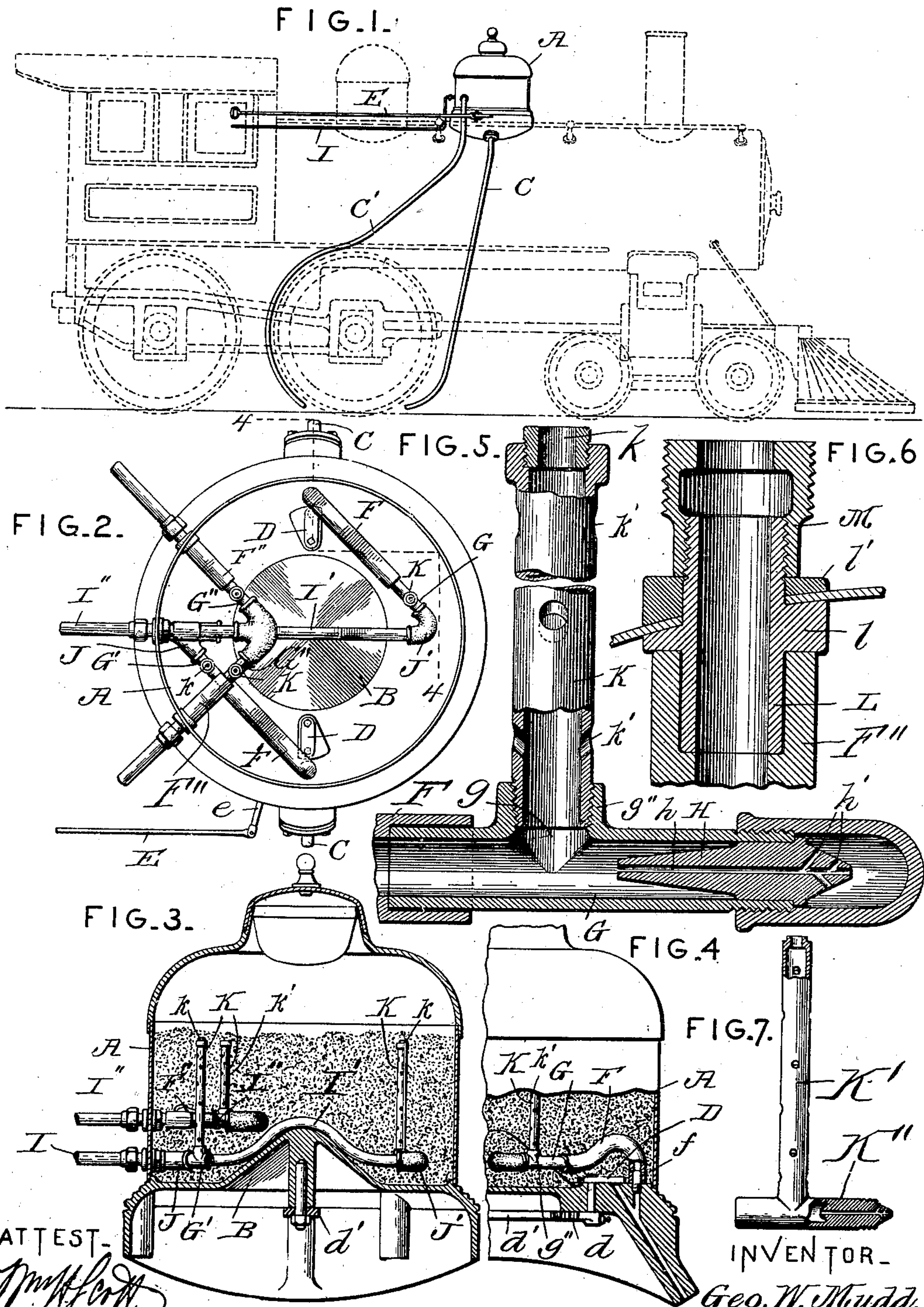


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TRACK SANDING APPARATUS FOR LOCOMOTIVES.

(Application filed Jan. 25, 1901.)

(No Model.)



ATTEST.

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UNITED STATES PATENT OFFICE.

GEORGE W. MUDD, OF MOBERLY, MISSOURI.

TRACK-SANDING APPARATUS FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 671,651, dated April 9, 1901.

Application filed January 25, 1901. Serial No. 44,699. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MUDD, a citizen of the United States, residing at Moberly, Randolph county, in the State of Missouri, have invented a certain new and useful Improvement in Track-Sanding Apparatus for Locomotives, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a diagrammatic view showing my improved track-sanding apparatus in position on a locomotive. Fig. 2 is a top plan view of the apparatus in position in the sand-box. Fig. 3 is a vertical sectional view through the sand-box. Fig. 4 is a similar view taken on line 4 4, Fig. 2. Fig. 5 is an enlarged detail view of the intake stand-pipe. Fig. 6 is a detail view of the coupling, and Fig. 7 is a side elevational view of the stand-pipe and its T connection in the form of an integral casting.

This invention relates to a new and useful improvement in track-sanding devices, and is designed particularly for use in connection with locomotives.

The object of this invention is to utilize compressed air as a medium for effecting the discharge of sand from the reservoir usually arranged upon the boiler of the locomotive, the same being delivered upon the rails in front of or behind the driving-wheels for well-understood purposes. The pipes for conveying compressed air to the sand-box preferably run from the cabin of the locomotive and are provided with suitable valves within easy reach of the engineer, so that by opening one or the other of said valves the sand can be discharged onto the rails in front of or behind the driving-wheels, as desired. In addition to this, if for any reason the source of supply for compressed air fails or it is not desirable to use compressed air, the usual manually-operated valve can be manipulated so as to permit the sand to fall by gravity through the pipes and onto the rails in front of or behind the driving-wheels.

The construction of my present invention involves the use of well-known devices and parts which can be found on the market, so

that repairs when necessary can be made quickly and readily without necessitating the use of special castings or other specially-made parts which may not be immediately accessible to a shop.

In practice it has been found that, notwithstanding the fact that sand used for track purposes on locomotives is supposed to be screened before being introduced into the box, it frequently occurs that gravel is found in the sand or the sand becomes caked, so that the inlet-opening into the pneumatic sanding apparatus is choked to such an extent that successful operation of the apparatus is seriously impeded, if not defeated.

The principal object of my improved construction shown in the drawings is to provide an intake which is not liable to become choked, notwithstanding the presence of gravel in the sand. To accomplish this, the intake is in the form of a stand-pipe having a bore of larger diameter than the openings leading thereto, there being a number of such openings located at different planes in the sand-box, so that should one of said openings become choked the remaining openings are free to admit sand to the apparatus. Of course anything passing through any of the small intake-openings will pass freely through the larger bore of the stand-pipe and also through the other pipes leading to the wheels, so that the apparatus will work successfully at practically all times. This stand-pipe might be said to serve as a screen to prevent the admission of particles into the sand-delivery pipes, the size of which particles would prevent their passages through the pipe.

With the above object in view my invention consists in the construction, arrangement, and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings I have shown a locomotive in dotted lines in Fig. 1 to which is applied my improved sanding apparatus; but I wish it to be understood that this apparatus could as well be used in connection with street-cars, &c., where compressed air could be had.

A indicates the sand-box, which is provided with the usual crown or raised bottom B, from each side of which lead pipes C, the openings to said pipes being controlled by ordinary

swing-valves D, as shown in Fig. 2. Beneath the box the stems of these valves are provided with segments d , which mesh with a toothed lever or gear-wheel d' , to whose spindle is connected a rod or rock-arm e , carrying an operating-rod E, leading back into the cabin of the locomotive. This construction is well understood. When the rod E is pulled, the valves D are swung laterally to permit the sand in the box to fall by gravity into the pipes C to be delivered onto the rails in front of the driving-wheels.

f indicates a nipple screwed into an opening branching from the opening leading to pipe C, said nipple extending above the bottom of the box, as shown in Fig. 4, and having its upper end plain or unthreaded.

F indicates an elbow-pipe whose vertical member fits loosely over the nipple f and whose horizontal member is formed with a socket for loosely receiving the end of a short section of pipe G, which contains the blast-nozzle H. This short section of pipe G is formed with an opening g , preferably in its upper wall and into which leads a perforated stand-pipe K, the same being in advance of the mouth of the nozzle, whereby when a blast of compressed air is forced through the nozzle the air drives the sand falling through said stand-pipe in front of it through the removable section of pipe F and into the branch of the opening leading to the pipe C. As shown in Fig. 3, a pipe I is employed for conducting compressed air to the nozzle H, said pipe leading from the cabin of the locomotive and through the wall of the sand-box into a Y-shaped coupling J, in one member of which is secured one end of section of pipe G, while in the other member a pipe I' is secured for conducting compressed air to an elbow-coupling J', into the other member of which coupling is threaded a short section of pipe G', formed with the opening g' , which receives the pipe K in its upper face for supplying the sand in front of a nozzle. A removable section of pipe F' is loosely arranged on the end of this short section of pipe G', and at the other end said pipe F' coöperates with another nipple in the opposite side of the box, (not shown,) but which directs the sand into a branch opening leading to the opposite pipe C.

From the above construction it will be noted that the air admitted through pipe I will force the sand in the box to pass through pipes F and F' into the openings leading to the pipes C and thence to both rails in front of the driving-wheels. So far as this construction is concerned it is similar to that shown and described in United States Letters Patent No. 630,550, granted to me August 8, 1899, with the exception of the removable sections of pipe F and F'. These sections of pipe F and F' are preferably made of chilled iron, the walls thereof being sufficiently thick to resist the cutting action of the sand. These pipes are removably arranged in position, telescop-

ing over the sections of pipe G and G' at one end and over the nipples at the other, as shown in United States Letters Patent No. 652,324, granted to me June 26, 1900.

In order to sand the rails in the rear of the driving-wheels, I arrange sand-delivery pipes C', (see Fig. 1,) leading behind the front driving-wheels and from the sand-box. These pipes C' pass through the vertical walls of the sand-box a short distance and coöperate with removable pipes F'', formed with sockets for loosely receiving the inner ends of said delivery-pipes. These removable sections of pipe F'' are made of chilled iron and with sufficiently thick walls and respond in purpose and function to the description heretofore given with respect to sections of pipe F and F'. Short sections of pipe G'', in whose upper walls are formed openings which receive the perforated stand-pipe K, are loosely received in the inner ends of these pipes F'', said sections of pipe G'' containing the blast-nozzles (not shown) and being threaded into a forty-five-angle T-coupling, into the central boss of which leads a pipe I' from the cabin of the locomotive, which pipe supplies compressed air to the blast-nozzles for forcing the sand into and through the delivery-pipes and behind the driving-wheels.

It will be noticed that my improved apparatus can be employed to sand both rails in front of or behind the driving-wheels and that the parts composing my improved apparatus are simple in construction and easily applied. The pneumatic sanding apparatus does not in any way affect the manual control of the usual valves, and it may be said that the pneumatic feature is simply an addition to the well-known form of manually-operable valve now in general use. The same delivery-pipes are employed for conducting the sand to the rails in front of the driving-wheels which are employed in connection with the manually-operable valve-controlled sanding apparatus.

The above apparatus can be applied to well-known types of locomotives in use, is cheap, and can be quickly and readily repaired at small expense.

Referring now to Fig. 4, it will be observed that the section of pipe corresponding to the sections G, G', and G'' is provided with a threaded boss g'' around the sand-inlet opening, into which is received a pipe K, said pipe having approximately the bore of the section of pipe G. This pipe K is provided with a plug k at its upper end, said plug having a reduced bore, so that sand from the top may fall through the opening in said plug into the section of pipe G in front of the nozzle H. Pipe K is also provided with a series of openings k' , arranged at different planes, said openings extending downwardly in order to prevent the lodgment of sand on the bottom walls thereof. Sand passing through these openings or any of them will pile in the section of pipe G in front of the nozzle H, so that when a

blast of air issues from said nozzle it will force the sand outwardly through the delivery-pipes and the supply of sand through said stand-pipe. In other words, assuming that the openings k and k' are taking sand there will be practically a solid column of sand in the stand-pipe, the nozzle taking an amount from the bottom of said column proportionate to the pressure of air issuing through said nozzle. Of course the blast of air must be strong enough to move the sand through the delivery-pipe, and when the pile of sand in front of the nozzle is dislodged the action of the blast from the nozzle is in the nature of ejecting the sand in the pipe before it. As the level of the sand falls in the sand-box the weight of the column of sand is proportionately decreased; but as long as there is an opening below the level of the sand available the sand will fall thereinto, and it is estimated that a single free opening will supply enough sand to the rails to meet the requirements. There are preferably stand-pipes arranged to supply sand in front of all of the nozzles in the apparatus.

The nozzle H, heretofore referred to, is preferably provided with a main bore h of uniform diameter throughout its length, into the rear end of which open numerous branch bores h' of preferably corresponding diameter, said branch bores being practically reserves in the event that the main bore becomes choked or clogged by a foreign particle lodging at the back of the nozzle and being of such size as to prevent its passage through the nozzle. Where there are two or more openings available to the air, there is little liability of them all becoming choked at the same time, and, furthermore, if a particle of material lodges against the rear face of the nozzle and closes one of the openings the other openings will be available to the passage of air through the nozzle.

In Fig. 6 I have shown a coupling arranged in the side wall of the sand-box, to which are removably attached the sand-delivery pipes. This construction enables the separate attachment and removal of the internal and external pipes. This coupling consists of a coupling-pipe L, whose inner end is received by the socket end of the internal sand-delivery pipe, said coupling-pipe L having a collar l formed thereon, which is interposed between the internal sand-delivery pipe and the side wall of the sand-box, while a washer l' embraces the outer end of the coupling-pipe and fits against the outer face of the wall of the sand-box, said coupling-pipe being clamped in position by a coupling-nut M, which is threaded upon the outer end of the coupling-pipe L, to which coupling-nut M is secured the external sand-delivery pipe.

In Fig. 7 I have shown a construction wherein the perforated stand-pipe, its T connection, and nozzle are all formed in an integral casting, said parts being lettered K' , K'' , and K''' , respectively.

I am aware that minor changes in the arrangement, construction, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. The combination with a sand-box, of a sand-delivery pipe, a nozzle, and an intake stand-pipe for supplying sand through the top wall of the delivery-pipe and in front of the nozzle, said stand-pipe having openings of smaller diameter than its bore, through which the sand from the sand-box passes; substantially as described.

2. The combination with a sand-box, of a sand-delivery pipe, a nozzle, and a perforated stand-pipe connected to the delivery-pipe for supplying sand thereto in front of the nozzle; substantially as described.

3. The combination with a sand-box, of a sand-delivery pipe, a nozzle, a stand-pipe having perforations of smaller diameter than its bore, and a plug in its upper end having an opening of smaller diameter than its bore; substantially as described.

4. A stand-pipe for pneumatic sanders having inclined perforations at different planes; substantially as described.

5. A stand-pipe for pneumatic sanders having perforations in its side walls of smaller diameter than the bore of said pipe, and a plug in the upper end of said pipe having an opening of smaller diameter than the bore of said pipe; substantially as described.

6. The combination with a sand-delivery pipe, of a nozzle having a single discharge-opening in the delivery-pipe, and two or more intake air-openings in its rear face; substantially as described.

7. The combination with a sand-delivery pipe, of a nozzle having a delivery-opening of uniform bore throughout its length, and branch openings leading from the rear face of the nozzle, each branch opening having a bore corresponding to the main delivery-bore; substantially as described.

8. The combination with a sand-box, of a sand-delivery pipe having a socket, a coupling-pipe passing through the side wall of the sand-box, its inner end being received in said socket, a collar on said coupling-pipe, and interposed between the socketed end of the delivery-pipe and the wall of the sand-box, a washer embracing the outer end of said coupling-pipe and fitting against the outer face of the wall of the sand-box, and a coupling-nut secured upon the outer end of said coupling-pipe for clamping the coupling-pipe in position; substantially as described.

9. A new article of manufacture for pneumatic sanders, the same consisting of a perforated stand-pipe, a delivery-pipe arranged at an angle thereto, a wall at one end of the delivery-pipe which is bored to form a nozzle,

all of said parts being formed in an integral casting; substantially as described.

10. A new article of manufacture for a device of the character described, the same consisting of a perforated stand-pipe, a delivery-pipe arranged at right angles thereto and forming therewith a T-shaped fitting, and a wall at one end of said second-mentioned pipe which is bored to provide a nozzle, all of said

parts being formed in an integral casting; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 22d day of January, 1901.

GEORGE W. MUDD.

Witnesses:

FRANK D. HUDSON,
R. TANNER.