Nov. 11, 1930. J. A. McCRACKEN 1,781,292

HAND FOAMITE FIRE EXTINGUISHER

Filed Sept. 28, 1927

Fig. 1

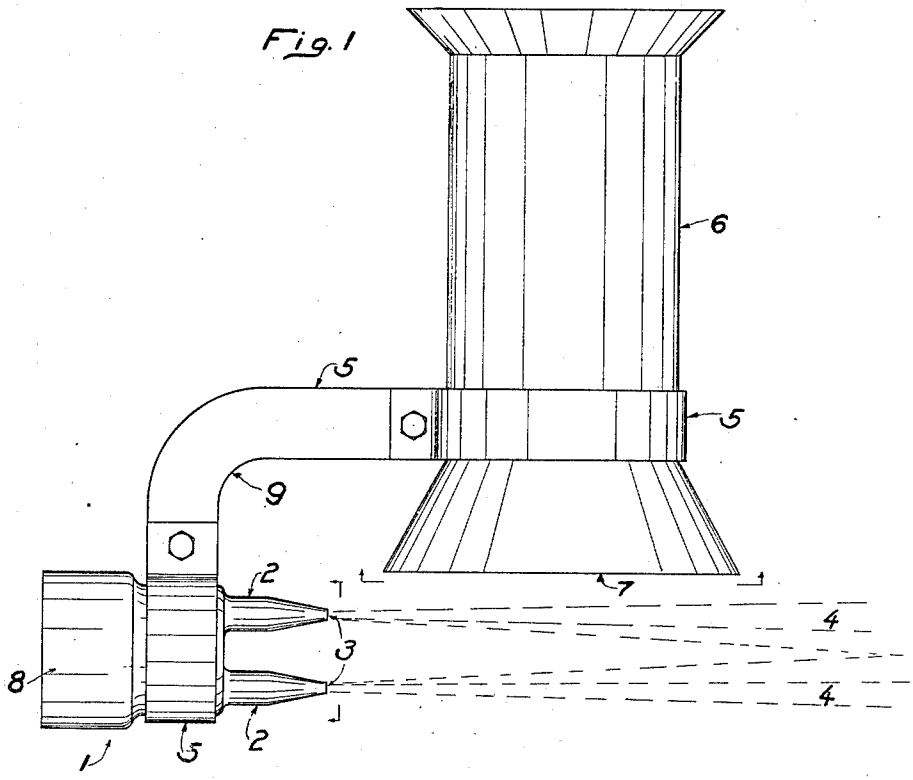


Fig. 2

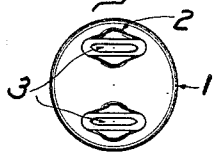
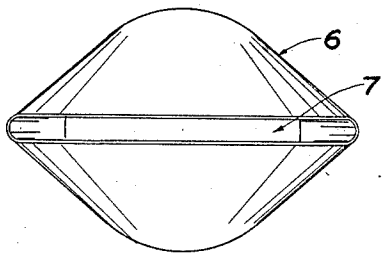


Fig. 3



James A. McCracken

INVENTOR

Patented Nov. 11, 1930 1,781,292

UNITED STATES PATENT OFFICE

JAMES A. McCRACKEN, OF LOS ANGELES, CALIFORNIA

HAND FOAMITE FIRE EXTINGUISHER

Application filed September 28, 1927. Serial No. 222,634.

An object of my invention is to provide a means for producing a continuous stream of fire foam which will be of such dimensions and weight that it can be attached to a water-pressure hose and held in the hand of the operator.

A further object of my invention is to provide a device for the stated purpose which will be so simple and cheap that it may feasibly be permanently placed at numerous water outlets and thus provide emergency protection against incipient fires prior to the arrival of more elaborate apparatus.

A further object of my invention is to provide permanent foamite fire protection at points which cannot readily be reached with a portable apparatus and which cannot be protected by the methods heretofore used without the installation of a large and expensive permanent plant.

These advantages and the manner in which they are attained will be evident from an inspection of the accompanying diagrammatic drawings and the following description thereof. In these drawings

Figure 1 illustrates a complete preferred embodiment of my invention in side elevation.

Figure 2 is an elevation in face of the nozzle 1 shown in Figure 1, with the sub-nozzles 2—2 and the flattened ends 3—3 thereof.

Figure 3 is a bottom elevation of the powder canister indicated at 6 in Figure 1, showing the shape of the flattened spout 7.

Referring to the drawings, 1 is a special hose nozzle adapted to be screwed onto a hose coupling at the threaded end 8, and provided with two sub-nozzles of a less diameter as shown at 2—2. These nozzles are flattened at the end as indicated at 3—3 to produce a flattened stream of the water entering the nozzle under pressure at 8. The cross-sectional shape of these streams is something as indicated by the divergent lines 4—4 in Fig. 1 but in plan they should spread to a narrow fan. The manner of constructing such jets is well known and need not be described, but it should be said that the sub-nozzles or jets 2—2 should be firmly made fast to the nozzle 1 so that the flattened ends 3—3 will remain parallel.

Around the intermediate portion of nozzle 1 is fastened a metal clamp 5, which is bent to substantially a right angle at 9 and clamped around the canister 6. This canister should be so placed that the spout 8 will lie substantially over the center of the water jets 4—4 and parallel thereto. The height of the spout above these streams is not material, but is preferably a little higher, relatively, than the drawing would indicate.

In operating my device it is attached to a water hose and water pressure turned on by means of the usual control valve not shown. The canister is then filled with a mixture of the foamite materials in powdered form. My invention is not limited to any definite proportions of such materials, but I would suggest a mixture consisting of 6 parts by weight of commercial aluminum sulfate

$$(Al_2(SO_4)_3 \cdot 18H_2O)$$

3½ parts by weight of commercial sodium bicarbonate ($NaHCO_3$), and ½ part commercial licorice reduced to the form of and weighed as a dry powder. These materials should be thoroughly and completely intermixed and reduced to such fineness as to completely pass a 30 mesh screen, and must be completely dry when mixed. These materials should be intermixed in advance and put up in cans holding a little less than the capacity of the canister, and as they will interact and lose their efficiency if allowed access to the air, such cans should be tightly sealed (as by a strip of paraffin painted on the joint) in such manner as to completely exclude air while allowing the covers to be readily removed.

The streams of water issuing at high velocity from the sub-nozzles 2—2 will pick up the band of powder which will run down from slot 7 in the bottom of the canister and, admixing with such powder, produce a stream of foam of the best quality. It is possible also to use a single sub-nozzle, producing only one water stream, but the use of the double stream is advantageous in that any powder making its way through the first

stream will be picked up and thus made useful by the second, thus avoiding wastage of material which will occur when only a single stream is used.

In order to illustrate the proportions in which this device may be constructed, and without limiting myself to the sizes named, I will say that the canister 6 may be of a capacity of say one quart and the slot 7 in the bottom thereof about one inch wide. The sub-nozzles 2—2 are one-fourth inch pipe size and flattened down to about one-eighth inch, or a brass tip may be used instead of flattening the pipe. The two streams should converge about 6″ to 8″ from the tips.

A 2½ pound charge of powder will run through the canister nozzle in 10 seconds, requiring a water flow of 10 gallons per minute, equivalent to 15 pounds powder per minute or 1½ pounds per gallon water. Each gallon of water will produce 7½ to 8 gallons foam, which may be directed accurately for a distance of say twenty five feet.

It will be understood that in this small size the device is adapted to be held in one hand while the operator keeps the canister filled with powder from packages previously opened. If alone in the presence of an incipient fire the operator would have to open a number of packages and place them within easy reach before starting the water stream. If a larger size is used it would require two persons to operate the device, one directing the stream while the other feeds the canister. It will be noted that no regulation nor control is required, and that if the supply of foam is momentarily interrupted by the canister running out, it starts again instantly on refilling.

When, in the attached claims, I refer to a "foam producing powder" I would be understood as meaning a mixture in any suitable proportions of previously dried and powdered aluminum sulfate (or its equivalent), sodium bicarbonate (or its equivalent) and licorice (or its equivalent), all being of the kinds and qualities used commercially in the production of fire foam.

I claim as my invention:

1. A device for extinguishing fires by means of fire foam, comprising: a nozzle for attachment to a source of water under pressure and adapted to deliver said water in a plurality of superposed streams of high velocity, and a hopper suspended over said streams, said hopper having an opening at its lower end positioned to deliver a stream of foam producing powder into said water streams.

2. A device for extinguishing fires by means of fire foam, comprising: a nozzle for attachment to a source of water under pressure and adapted to deliver said water in a plurality of superposed streams of high velocity, and a hopper suspended over said streams, said hopper having a slot at its lower end positioned to deliver a stream of foam producing powder into said water streams.

3. A device for extinguishing fires by means of fire foam, comprising: a nozzle for attachment to a source of water under pressure and adapted to deliver said water in a plurality of superposed streams of high velocity, and a hopper swingingly suspended over said streams, said hopper having an opening at its lower end positioned to deliver a stream of foam producing powder into said water streams.

4. A device for extinguishing fires by means of fire foam, comprising: a nozzle for attachment to a source of water under pressure and adapted to deliver said water in a plurality of superposed streams of high velocity, and a hopper swingingly suspended over said streams, said hopper having a slot at its lower end positioned to deliver a flattened stream of foam producing powder longitudinally into said water stream.

5. A device for extinguishing fires by means of fire foam, comprising: means for producing a plurality of unconfined superposed streams of water under high velocity, and means for introducing into said water streams an unconfined stream of foam producing powder.

In witness that I claim the foregoing I have hereunto subscribed my name this 14 day of Sept., 1927.

JAMES A. McCRACKEN.