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# CAUTIONS REGARDING GAS-APPLIANCE ATTACHMENTS



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# CAUTIONS REGARDING GAS-APPLIANCE ATTACHMENTS [1]

By John H. Eiseman

ABSTRACT

This circular discusses certain cautions to be observed in considering gas-appliance attachments, usually represented as being able to save a large part of the gas used for cooking and heating purposes. Few of the attachments tested showed any reduction in gas consumption, and, in addition, most of them created hazardous conditions when used on appliances which were otherwise safe when normally operated.

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## I. INTRODUCTION

During the spring and summer of each year many of us are given opportunity, usually by house-to-house salesmen, to buy various attachments which, it is claimed, will materially reduce gas bills if installed on our gas appliances. These devices are of many different types; some of them are placed over gas-range burners, some in the vent of the oven or water heater, and some in the piping leading from the gas meter.

During the past few years the Bureau of Standards has been requested to test a number of these attachments and, because many of them not only do not fulfill the claims made for them, but create hazardous conditions when used, it is believed that the results of these tests should be brought to the attention of those to whom the attachments are offered for sale.

The primary objection to most of these attachments is that they are not safe. They tend to cause incomplete combustion of the gas with the consequent liberation of carbon monoxide. Carbon monoxide is a gas which cannot be seen, has no odor, and will cause headaches, nausea, or even death if breathed in small amounts for a sufficient length of time. It is the same gas whose presence in the exhaust from automobiles has caused many serious accidents when engines

[1] A condensed form of this paper was published in Good Housekeeping, February 1934. This original article has been printed for those who desire more detailed information.

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have been allowed to run in closed garages. Gas burns completely without liberating even the smallest trace of carbon monoxide when the supply of air is adequate and free access of air to the flames is not prevented by adjacent parts of the appliance. However, too large a circulation of air past the burners and heating surfaces carries away some heat which would otherwise be useful and thus increases the amount of gas required to do our cooking or water heating.

All manufacturers of gas appliances are well acquainted with these facts and give them due consideration in designing their products. The manufacturers know that by making certain changes, such as placing the burners of the gas range closer to the utensil, they can reduce the amount of gas required; but they also know that if such changes were made, the appliances would be less safe. They therefore sacrifice some economy of use in order to provide a margin of safety.

Unfortunately, many of the "gas-saving" [2] devices and accessories which are offered to the public merely reduce the margin of safety needed to protect the users, and are doing nothing more than the manufacturer of a gas range or water heater could do more effectively himself if the question of safety were not involved. The equivalent of the various plates, baffles, screens, and obstructions offered for sale as "gas-savers" could easily be incorporated in an appliance at very small cost when it is first built.

Competition in the gas-appliance industry is just as keen as it is in any other field, and if these devices could safely accomplish the savings claimed for them they would very quickly be adopted by the appliance manufacturers themselves, who are always on the look-out for some means of making a better appliance than their competitors.

Even the gas companies welcome an appliance which will do the same work with less gas, because gas is in close competition with other fuels and the gas companies would rather lose a small fraction of the income from a customer to whom their service has become more satisfactory than to lose him altogether.

It has always been of interest to note the great similarity in the claims made for all of the various "gas-saving" attachments. An unusually inventive salesman may claim 36 percent and an unusually modest one only 25, but the figure is always around 30 percent. Is this figure of 30 percent based on facts or is it chosen as the one most likely to result in a sale? We might be skeptical if the saving claimed were 50 percent or more and uninterested if it were only 10 percent. Although many of these devices have been tested at the Bureau of Standards, none has ever been found which would save as much as 25 percent under any condition of practical use. In fact there have been only a few which saved any gas at all. Even in the few cases in which there was a small saving, it has always been accomplished at the expense of safety.

Although most of the salesmen for these devices are well equipped with testimonials from satisfied users, the general character of testimonial advertising is too well known to require much comment. It is probable that the reductions reported in some of the gas bills are genuine but erroneously credited to the so-called "gas-saving" devices. Practically all of the sales campaigns conducted for these devices take place in the early spring and summer. Records of the gas companies

[2] Wherever the words "saver, gas-saver, gas-saving, or grease-absorber" are shown in quotation marks in this circular it indicates that the particular devices referred to are reputed to save gas or remove grease by their manufacturers. Such terms do not signify that the alleged function is actually performed.

show that in most cases the amount of gas used per customer decreases in the spring. Therefore, if these devices are installed at a time when most people normally begin to use less gas, they often receive the credit which really belongs to the warm weather. Moreover, once our attention is directed to saving gas, we may become more careful in the use of it. By turning down the gas under water or food that is already boiling, turning off the gas when not actually in use, and using hot water no more often than necessary, we will save gas and may in this way seem to justify the expenditure for a device which has taken no part in the saving effected.

## II. "GAS-SAVERS" FOR USE ON RANGE BURNERS

Perhaps the appliance attachments most frequently offered for sale are so-called gas-savers which are placed around the top burner of a gas range or between the burner and the utensil. Many designs of this type of device are offered, ranging from vertical collars, figure 1 A, to flat plates with openings for the flames, but the most common of them resemble the one shown in figure 1 B. These devices do not, in general, correct any fault which may exist in the customer's appliance, except that of a burner placed too far below the cooking top, a condition which is now rarely found. They occupy much of the space between the burner and utensil, interfering with the escape of the products of combustion and consequently with the access of air to the flame. The use of these devices invariably causes a lifting or elongation of the flames, a condition which usually results in the formation of some carbon monoxide.

The effect on the flame of a typical device of this kind is shown in figure 1 B. On the left is pictured a top burner with the flames all of the same height, as they should be. When a utensil is placed above such a burner, the gas is completely burned and the heat is distributed uniformly under the bottom of the utensil. Placing a "gas-saver" above such a burner produces the effect shown on the right. A utensil placed over this burner is enveloped in flame because the gas does not encounter the air necessary to burn it until it is passing up the sides of the utensil. The salesman takes advantage of this appearance to claim that the amount of gas being used is now excessive and that a great saving can be made by reducing it.

The prospective buyer is told that by placing a "gas-saver" on the burner the gas bill will be reduced by 25 percent or more. Although many of these so-called gas-savers have been tested, the results obtained with four of them will sufficiently represent the results of all. The burner used was of a standard type, star-shaped and placed 1¾ inches below the cooking top, the average distance on modern ranges. The tests were made and the products of combustion analyzed; first, with the burner alone, and then with each of the gas-saving devices that are shown in figure 1 C placed upon it. Numbers 1 and 2 are made of cast iron, no. 3 (shown in place on the burner at the right) of pressed steel, and no. 4 of soapstone on a steel frame.

The results are shown in table 1. The terms used in expressing these results are probably unfamiliar to most readers of this article, but easy to explain. The statement that gas is burned at the rate of "6,000 Btu per hour" means that it is burned at such a rate that the temperature of 6,000 pounds of water would be raised 1° in 1 hour if

all the heat produced by burning the gas went to heat the water. A gas range burner usually takes from 9,000 to 12,000 Btu per hour. An efficiency of "35 percent" means that only 35 percent of the heat produced did actually go to heating the contents of the utensil. The significance of the number of cubic feet of carbon monoxide produced will appear, if one considers the small size of most kitchens and the fact that air containing two hundredths of 1 percent of carbon monoxide will cause headaches and air containing one tenth of 1 percent may cause death if breathed for a long time. The only safe condition is, therefore, the one in which no carbon monoxide is produced.

TABLE 1.—*Tests of gas savers installed on a standard star burner*

| Condition of test | Gas rate | Efficiency | Carbon monoxide [1] |
|---|---|---|---|
| | *Btu per hr* | *Percent* | *Cu ft per hr* |
| Without saver | 6,000 | 35.3 | 0.0 |
| With no. 1 saver | 6,000 | 37.4 | .8 |
| With no. 2 saver | 6,000 | 41.7 | .56 |
| With no. 3 saver | 6,000 | 35.3 | 1.05 |
| With no. 4 saver | 6,000 | 35.2 | .57 |
| Without saver | 9,000 | 36.3 | 0.0 |
| With no. 1 saver | 9,000 | 37.5 | .93 |
| With no. 2 saver | 9,000 | 38.8 | .99 |
| With no. 3 saver | 9,000 | 36.2 | 1.07 |
| With no. 4 saver | 9,000 | 35.7 | 1.66 |
| Without saver | 11,000 | 37.7 | 0.0 |
| With no. 1 saver | 11,000 | 36.3 | .79 |
| With no. 2 saver | 11,000 | 37.3 | .89 |
| With no. 3 saver | 11,000 | 36.4 | .93 |
| With no. 4 saver | 11,000 | 36.3 | 1.99 |

[1] For safe operation no carbon monoxide should be produced.

The results of this series of tests show that carbon monoxide was formed by all of the gas savers at each gas rate used and also that there is no justification for any of the claims of 30-percent reduction in the gas bill.

The most recently tested "gas-saver" was of the conical type, and had a small star-shaped plate of metal suspended in the flame between the burner and the utensil. The metal plate was supposed to contribute to the efficiency of the heating process by acting as a radiator. The so-called "saver" not only increased the amount of gas required for an average heating operation, but produced so much carbon monoxide that samples of the atmosphere above the burners were beyond the range of the instrument used for determining the carbon monoxide.

Even if the "gas-savers" actually saved the 30 percent usually claimed for them, the result would be less important than we are likely to assume. The records of gas companies show that the cost of the gas used by an average family for cooking is usually not more than $1.50 per month, and at least one third of the gas is used in the oven. Bills of $5 or more are always to be attributed to additional uses of gas, such as water heating, room heating, laundry work, etc. If all the top burners could be equipped with devices which would save one third of the gas burned the saving would amount to no more than a cent a day for the average family.

## III. BURNER PROTECTORS

Devices which are sold under the name of "burner protectors" vary from simple flat metal discs to designs such as those shown in figure 1D. They are placed directly on the grids of a gas range and protect the burners by catching any material which spills or boils over from the cooking utensils which are placed upon them. The one illustrated has a hole in the center and four raised supports on which to rest the utensil. This accessory, being held at a sufficient distance from the burner, allows the gas to be completely burned, but it nearly doubles the amount of gas used and greatly increases the time required to cook a given quantity of food. This is an example of a device that fulfills the claims made for it, but at the expense of two other equally desired results, low gas consumption and speed of cooking.

## IV. ATTACHABLE SOLID TOPS

Another attachment which has had a wide sale is the attachable solid top, one model of which is shown in figure 1E. This is a device also handled solely by house-to-house agents. It is designed to replace the grids of the open-top range. A few of the claims made for the use of such an attachment are: (1) That it reduces the gas bill; (2) that it is safe and produces no carbon monoxide; (3) that it doubles the cooking capacity; (4) that it keeps the food from burning; (5) that it applies an intense heat; (6) that the flames are protected from a draft of air; (7) that from 2 to 4 articles can be cooked with only 1 burner lighted; (8) that the top itself is easily cleaned; (9) that burners are kept clean and free from clogging; and (10) that cooking utensils are protected and prevented from tipping.

Considering these claims in the order named, comprehensive tests made on several of these attachable solid tops have failed to show anything which would indicate that a reduction in gas bills can result from their use. On the contrary, in some cases, the amount of gas used for typical cooking operations was found to be twice as great. They are certainly not safe, because extremely dangerous quantities of carbon monoxide are produced with many stoves under normal conditions of use. The protection they offer in preventing flowing dress sleeves from taking fire over an open burner is sometimes more than offset by the fact that flames may "lap" out at the front where they are not expected. Such an attachment does not double the cooking capacity because it is not possible to cook over any part of the top under which no gas is being burned. It is possible to keep the finished dishes warm, but this is merely a convenience and does not mean a saving in gas, for the same result can be accomplished, with no more gas, on an open-top range by merely reducing the gas rate beneath those utensils in which cooking is completed. Claims 4 and 5 are inconsistent. If the food is kept from burning, it means that the heat is not as intense as when a grid top is used. The flames are protected from drafts, but they are so well protected that it is impossible for the necessary air to reach them, a condition which is far more dangerous than occasional drafts in the kitchen. It is impossible to cook several dishes when only one burner is being used, unless the rate at which gas is supplied to the single burner is greater

than the combined rates necessary to cook each dish over individual burners on an open top. It may be easy to clean such a top, but a number of users have found it necessary to clean them more frequently than they had to clean the grids. The use of an attachable solid top does protect the burners from being clogged; and the smallest utensils are less likely to be tipped over.

The disadvantages of an attachable solid top far outweigh its few advantages; it creates a hazard and is not economical. Attempts to eliminate the production of carbon monoxide from one of these tops by cutting away portions to provide for ventilation did not result in obtaining complete combustion until most of those features regarded as desirable had been sacrificed.

What is said about attachable solid tops should not be interpreted as necessarily applying to ranges built with solid tops by their manufacturers, most of which are safe and very satisfactory appliances.

## V. THE "HOT-WATER-FOR-NOTHING" FALLACY

With no gas range burner can all of the heat liberated by the gas be transferred to the food being cooked. This had led to the development of a number of devices for utilizing the waste heat, among the most common of which are the so-called "water-backs". These are installed around or over a gas-range burner and are connected to a water-storage tank. When gas is being used, the water in the water-back is heated and flows to the top of the storage tank from which it may later be drawn for use.

One of the devices of this kind which has been tested is shown in figure 2A. This attachment is designed to replace the grid of an open-top range, but is open enough and placed sufficiently high so that it does not interfere with the combustion of the gas. Although this particular design does not restrict the combustion space, several similar devices which have come to our attention do cause the formation of carbon monoxide because they are placed directly in the flames, or so closely surround the burner that some of the air needed for combustion is excluded.

The purchaser is led to believe that such a device provides hot water for nothing, that is, without affecting the amount of gas required for cooking. The meal is supposed to be prepared, and hot water stored, with the same amount of gas as was formerly used for cooking only. The water-back shown was studied to determine whether or not this was true. It was installed over a standard top burner on a well-designed range and connected to a 20-gallon water-storage tank. The tests showed that the amount of gas used and the time required to do a given amount of cooking were both doubled when the water-back was used. Although some water is heated and stored in the tank, the amount thus heated, and the final temperature attained, are not sufficient to make up for the increase in the amount of gas required for cooking. Such a device, therefore, does not give something for nothing.

Considering the fact that the water heated by this device during a cooking operation may not meet the housewife's need with respect to temperature, amount, or the time when it is available for use, heating the water in an old-fashioned tea kettle, to say nothing of a modern water heater, is certain to be more satisfactory.

## VI. OBSTRUCTIONS PLACED IN THE VENTS OF OVENS, WATER HEATERS, ETC.

The most dangerous class of attachments are those which are placed in and partially close the vents or flue outlets of appliances. Such obstructions are varied in construction and in the purposes they are said to serve. Some of them are alleged to remove grease, smoke or odors; others to dissolve carbon monoxide or remove it by "catalytic action"; others to remove water and prevent condensation on windows in cold weather; others to add water and "humidfy the fumes", still others to "trap" or retain heat, or to perform such meaningless but high sounding functions as to "eliminate all products of combustion", "to vaporize all fumes" or to "break up the heat waves" and "allow the saturated heat fumes generated by the gas flame to pass freely up the chimney."

Many people who have observed that hot gases escaped through the vents of ranges, water heaters, and other appliances have thought it possible to reduce this loss by partially or completely closing the opening. Several who have tried to put the idea into practice have paid for the experiment with their lives. The idea is correct to a certain extent. Reducing the amount of unneeded air flowing through an appliance does tend to reduce the waste heat. Beyond that point an appliance rapidly becomes a more dangerous producer of carbon monoxide than any automobile in a closed garage.

As in the case previously discussed, manufacturers of appliances are thoroughly familiar with the means for improving gas economy and with the penalty for exceeding the limit of safety, and it is reasonably certain that every appliance has been designed to make the amount of excess air as small as the designer, usually an expert in his field, believes to be entirely safe. To permit anyone, interested only in making sales, to install anything which will reduce the circulation of air through an appliance is, therefore, rash and may be suicidal. In the case of furnaces originally built to burn another fuel, but "converted" for the use of gas, it is sometimes desirable to reduce the vent opening. Even in this case, it cannot be too strongly recommended that the reduction of the opening be made by a workman of undoubted competence who is directly and fully responsible for the installation and adjustment of the burner in its new surroundings.

A device which is a simple obstruction is shown in figure 2 B. This figure not only shows the design of the device but illustrates two of the uses advocated by the manufacturer. One of the claims made for it was that "every type of water heater" equipped with it "gives greater satisfaction with two thirds of usual flame." The effect of the device when installed in the flue of a well-designed water heater was accordingly tested at the Bureau. The first study made was the determination of the greatest amount of gas that could be safely used with and without this device in place. Because this particular device is adjustable it was tested both in the wide-open and closed positions. With the obstruction in place in its wide-open position it was found necessary to reduce the gas rate to two thirds of that normally used, in order to avoid the production of carbon monoxide. When tested in the closed position it was necessary to reduce the rate nearly to half that normally used. In order to provide a reasonable margin of safety with the obstruction in place, even in its wide-open position, it would be

necessary to reduce the gas rate to little more than half that normally used. Such a gas rate would be entirely too low for satisfactory hot-water service with this appliance because it would require too long a time to heat a given quantity of water.

The effect of this device on the amount of gas required for heating a given quantity of water was also studied. The results of these tests showed that more gas was required to heat the same amount of water when the device was used, either in its closed or wide-open position, than was needed when the heater was used without it.

## VII. "GREASE ABSORBERS"

Another accessory which obstructs the vent is the device which is attached to the flue collar of a gas range to "remove grease" and keep the kitchen walls clean. These attachments have different names, such as "grease obsorbers", "flue filters", etc. The first device of this kind tested by the Bureau of Standards is shown in figure 2C. It contained 2 layers of steel wool, 1 in the lower section and 1 in the upper. The test showed that only a very small percentage of the grease in the flue products was retained by the steel wool, the remainder passed into the kitchen as before, but was more generally diffused and therefore did not form a dark streak on the wall directly above the flue opening. Although very little grease is absorbed during any given cooking operation, it would only be a matter of time before enough dirt would be collected to greatly reduce the effective flue opening. This device would then become a flue obstructor and would create the same hazard from carbon monoxide as the other devices of this kind previously described.

The manufacturer of this device was advised to remove the steel wool and leave an unobstructed passage to the open air at least equal in area to that of the original flue passage, and he did so. Later, however, several modifications or imitations of the original device with the steel-wool filter have appeared. Other attachments to be used in the same way contain small pans for water in which it is alleged that the carbon monoxide will dissolve. The greatest quantity of carbon monoxide which could possibly dissolve in the water is negligibly small.

Where kitchen ranges are used without connection to a chimney, a deflector, which may be a simple elbow, placed on the vent, serves the useful purpose of preventing the wall from becoming streaked. Several ornamental deflectors for which no other claim is made are available and these may be used with safety if the free passage is fully as great as in the vent opening of the original appliance.

## VIII. OBSTRUCTIONS PLACED IN THE GAS LINE

There have appeared on the market during the last few years several devices which are designed to be placed in the gas piping between the gas meter and the gas appliances. Some of these are small brass fittings shaped like a thimble and containing a baffle on the inside, a wire gauze on the inlet, and an orifice or small hole in the outlet end. Others are cylindrical tubes of brass or aluminum with a wire gauze at each end and a spiral baffle fastened in the center. A third type recently tested is very similar to the flue obstructor illustrated in figure 2B, but small enough to be inserted into a gas pipe or gas-pipe fitting.

Illustrations of all three of these types are shown in figure 2D. Still another type consists of one or more simple perforated plates arranged in a fitting which screws into the gas pipe.

All of these devices have as their chief claim the saving of gas, which is supposedly accomplished by reducing the amount needed for a given heating operation. Claims made for some of them are wholly nonsense, such as that they "atomize the gas", or that they "eliminate stratification of the gases in the pipe." There is only one thing which any of these attachments can do and that is to reduce the amount of gas which can flow through the gas pipe under a given pressure. In other words, they merely act as obstructions to the flow of gas from the meter to the appliance. Partially turning off the gas cock at the meter will accomplish the same result, a practice which seems to be quite popular in some localities, although it does not usually result in saving any gas.

In considering the effect on gas service of installing such a device, it should be pointed out that the amount of gas delivered to appliances is always readily adjusted by at least two controls, both of which are already available on every gas appliance. One of these is commonly called the orifice and is a small opening through which the gas is delivered to the burner. Back of the orifice there is, on nearly every appliance, an adjustable valve or cock by means of which the flow of gas may be controlled to any rate desired at the time of use. The orifice serves to limit the amount of gas which can be obtained with the control cock wide open. If this "on-full" gas rate is too high for efficient operation, it is much easier to reduce the size of this orifice than it is to install an obstruction in the gas piping. The introduction of such an attachment, therefore, simply amounts to adding a device which is entirely unnecessary to do exactly the same thing that can be accomplished more readily and effectively with the one already present, namely, the orifice itself. The adjustment of the orifice should be made by the gas company and is usually done without charge.

Furthermore, it is far more advantageous to limit the flow of gas at the orifice than farther back in the line for two reasons, one of which has to do with the injection of air into the burner and is too technical to be briefly explained. The other is that most gas lines supply more than one appliance or at least more than one burner on a single appliance. If the device reduces the gas flow sufficiently to control any one burner, it can do so only because the obstruction will not pass more gas than is required by the single burner. Consequently, when several burners are being used at the same time, this limited quantity of gas must be distributed between all of them and no one of them will receive enough.

## IX. PRESSURE REGULATORS

Another accessory sometimes sold from house to house is a pressure "regulator" or "governor." When pressures are too high or very irregular, the gas is hard to control and the most satisfactory service is not obtainable. A regulator will remedy this difficulty in certain cases. Every gas company is under obligation, which is usually specified in its franchise or in municipal or State rules, to maintain satisfactory conditions of pressure at every customer's premises. If

such conditions cannot be maintained except with the aid of a regulator, it is the company's duty to install one and to pay for it. If you believe that you need a regulator, it is suggested that you ask the gas company to determine the conditions of pressure in your home by means of a 24-hour record. If, after the investigation, you still want the regulator, whether you need it or not, it is suggested that, before buying one from a canvasser, you ascertain the cost of a regulator purchased outright through the gas company, a local gas fitter, or other established dealer. Regulators are available in an abundance of good makes at reasonable prices.

## X. CONCLUSIONS

It may be stated as a general principle that the greatest care should always be exercised in using any attachment that has not been manufactured by the maker of the original gas appliance for that particular purpose. The possible employment of such attachments may not have been considered when the appliance was designed, and their use may create a hazard where none existed before. Rarely, if ever will such attachments make the savings claimed for them.

There is great difficulty in discussing briefly so general a subject as that of the numerous devices which are sold as gas-savers without creating some incorrect impressions. Correspondence received since the publication of the article in the February issue of Good Housekeeping indicates that unnecessary alarm has been created regarding devices of certain types, and the three paragraphs following have been introduced to cover such cases that have been brought to the attention of the Bureau.

1. There is no hazard in using utensils of unusual form on gas ranges, laundry stoves, etc., provided they are not placed closer to the burners than the upper surface of the support designed to hold them and do not cover a larger surface area than utensils in common use (dish pans, wash boilers, etc.). They must not cover the top (except a solid top) completely, since a large open area between the burners and the supporting frame must be available for the escape of products of combustion.

2. Appliances designed for use with solid or liquid fuels which are subsequently "converted" to use gas nearly always require the installation of some means of controlling the draft not incorporated in the original appliance. In the flues of these appliances and of home-made or very special equipment which has not been carefully designed, some obstruction of the flues may be necessary. The adjustment of the draft is an important operation which greatly affects both economy and safety. It should always be done by a workman of undoubted competence who takes the full responsibility for the installation and continuing good performance of the appliance.

3. All appliances, except incinerators, which are connected to chimneys should have "draft hoods" (also called "back-draft diverters", "draft controls", etc.), between the appliance and the chimney unless the appliance is so constructed that the pressure at the vent is brought to equilibrium with the room by means of auxiliary passages through the appliance itself. A draft hood provides an opening to the atmosphere of the room through which air can be

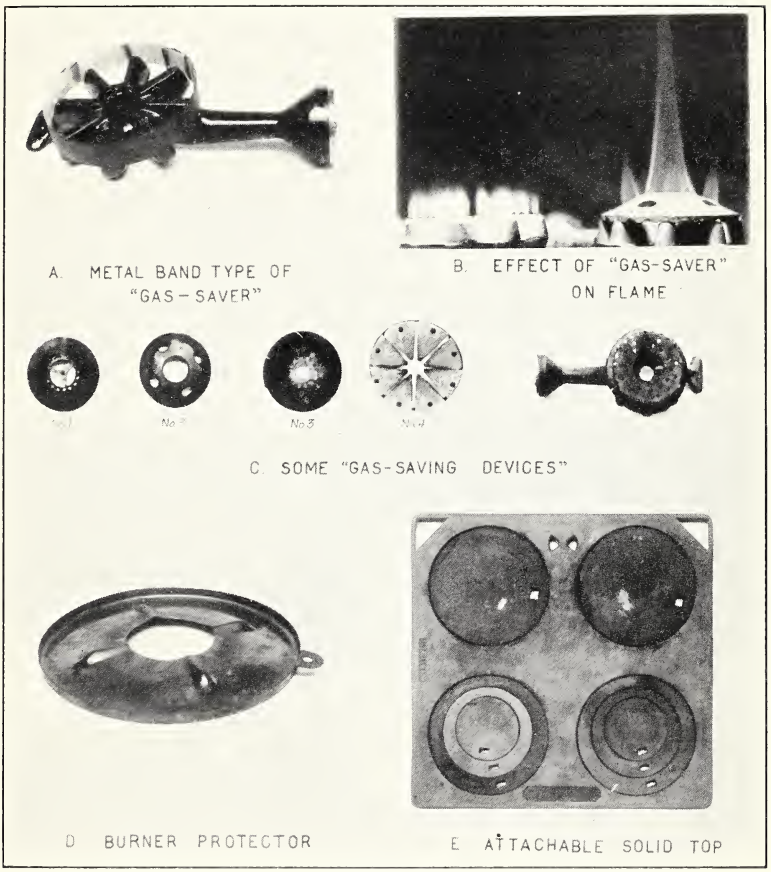
A. METAL BAND TYPE OF "GAS-SAVER"
B. EFFECT OF "GAS-SAVER" ON FLAME
No.1
No.2
No.3
No.4
C. SOME "GAS-SAVING DEVICES"
D. BURNER PROTECTOR
E. ATTACHABLE SOLID TOP

FIGURE 1.

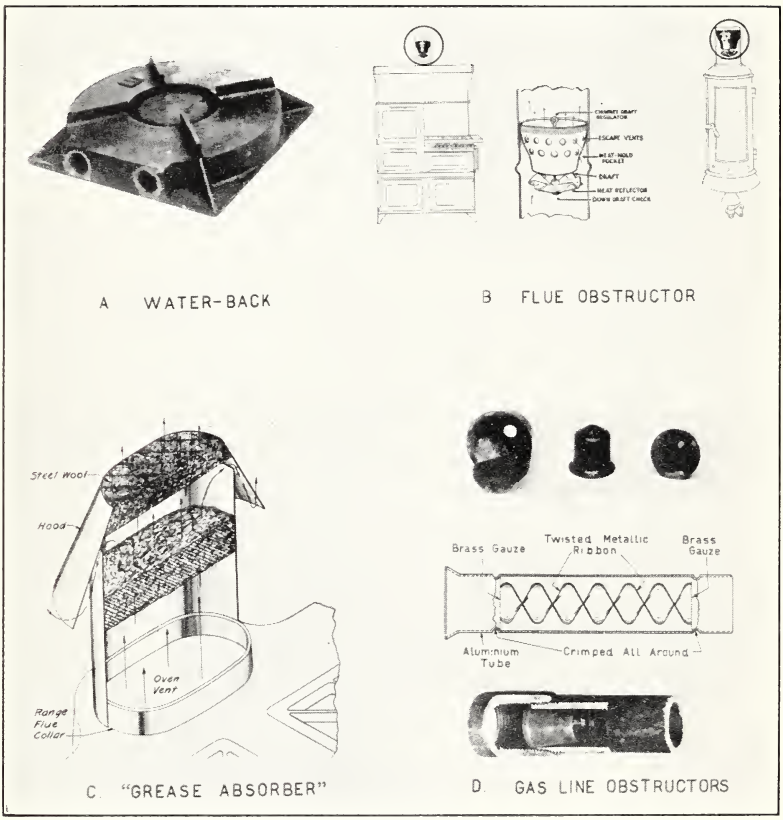
A WATER-BACK
B FLUE OBSTRUCTOR
ESCAPE VENTS
DRAFT
HEAT REFLECTOR
Steel Wool
Hood
Oven Vent
Range Flue Collar
C "GREASE ABSORBER"
Brass Gauze
Twisted Metallic Ribbon
Brass Gauze
Aluminium Tube
Crimped All Around
D GAS LINE OBSTRUCTORS

FIGURE 2.

drawn when the chimney draft is excessive and through which air blown down the chimney by gusts of wind can escape without affecting combustion. Draft hoods are almost always provided and installed by the manufacturers of appliances including "conversion burners", but a few old or "home-made" installations will be found for which draft hoods have not been provided, and hoods should be purchased for these with the advice of the gas company or a local heating engineer.

WASHINGTON, February 14, 1934.

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