

Nov. 20, 1934.

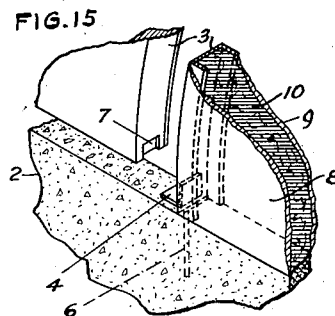
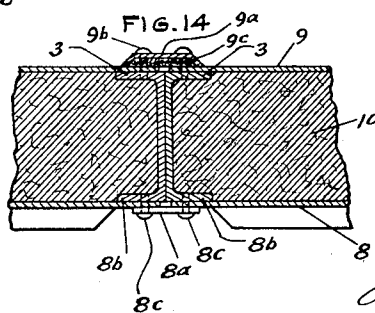
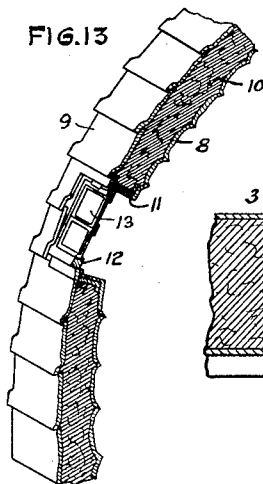
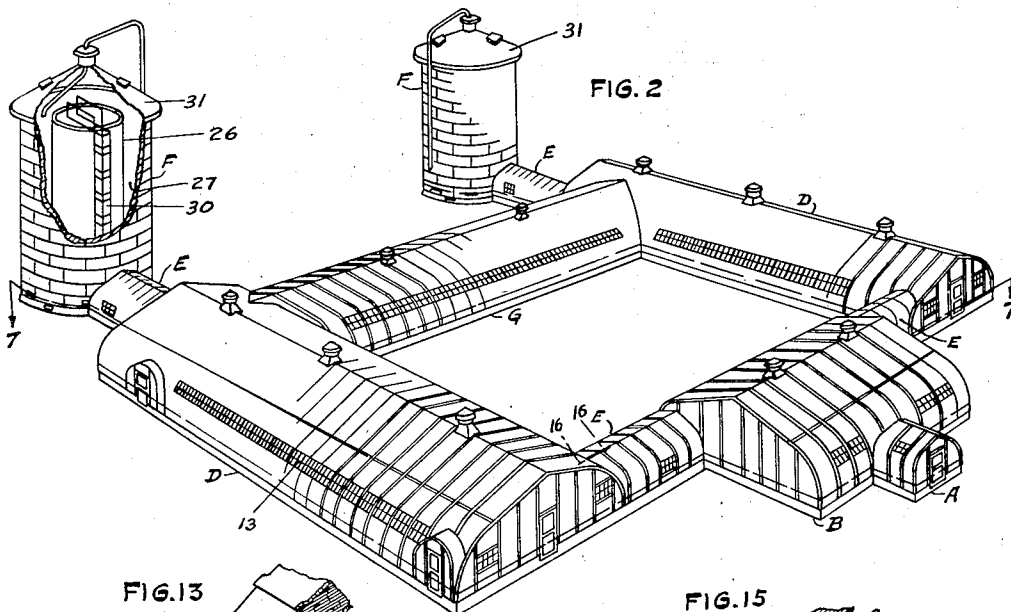
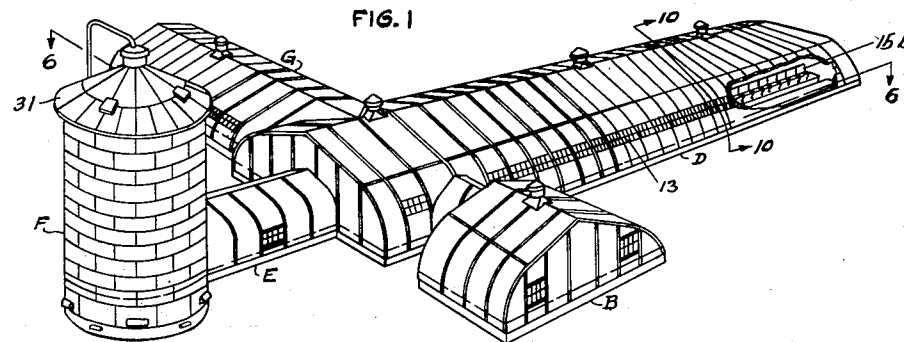
F. J. KREUTZER

1,981,418

BUILDING

Filed Oct. 25, 1932

6 Sheets-Sheet 1



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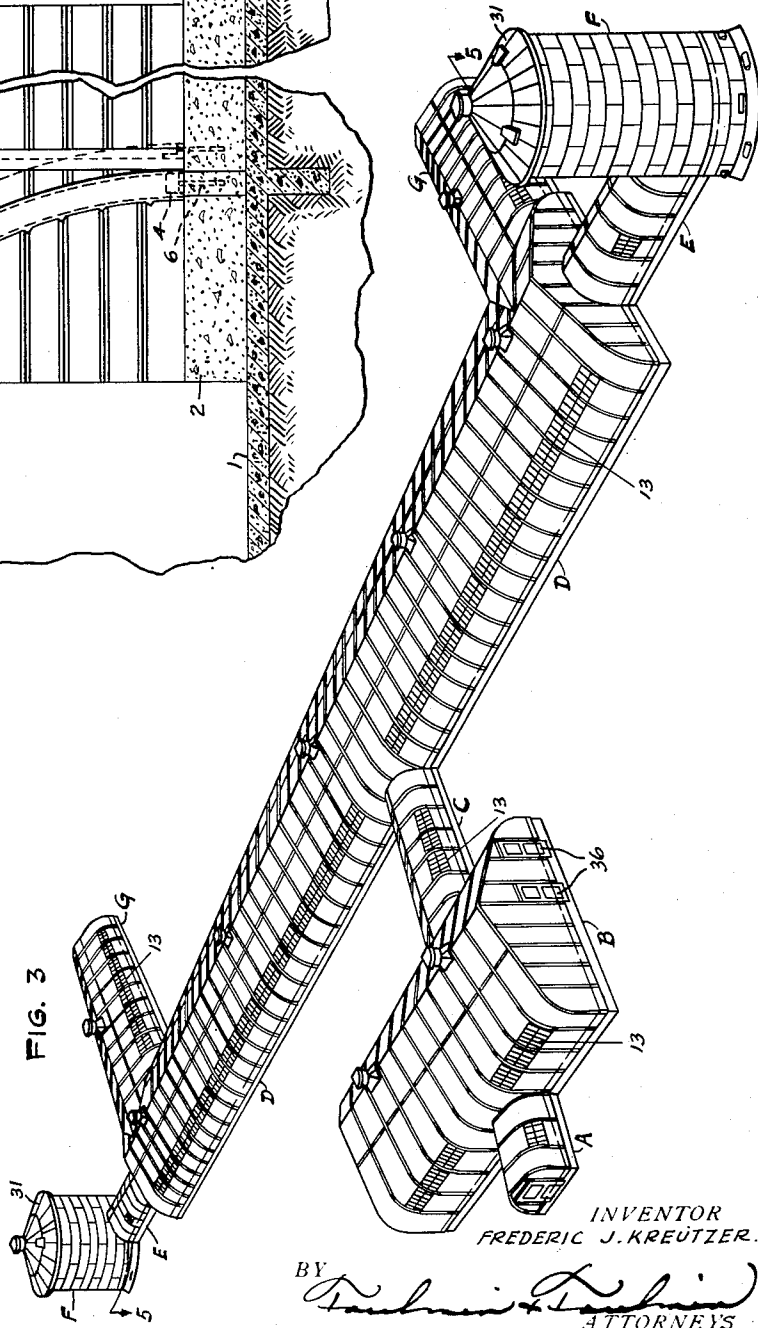
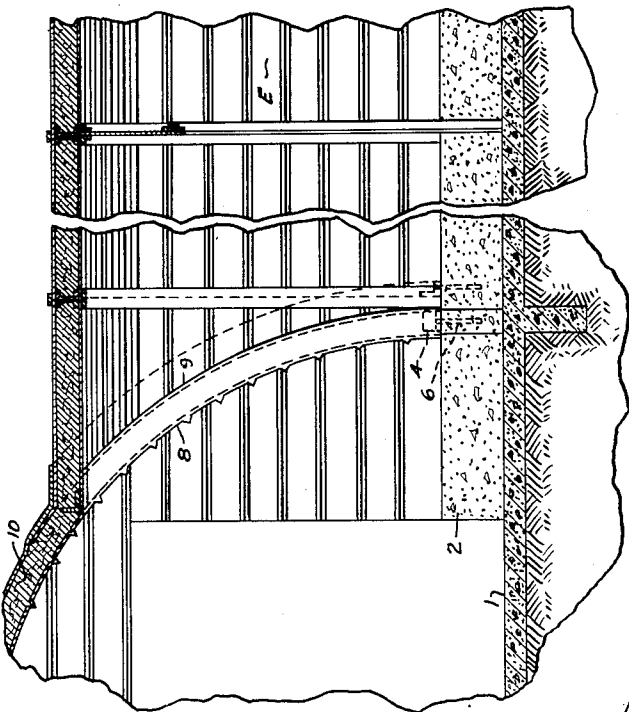
F. J. KREUTZER

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BUILDING

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Nov. 20, 1934.

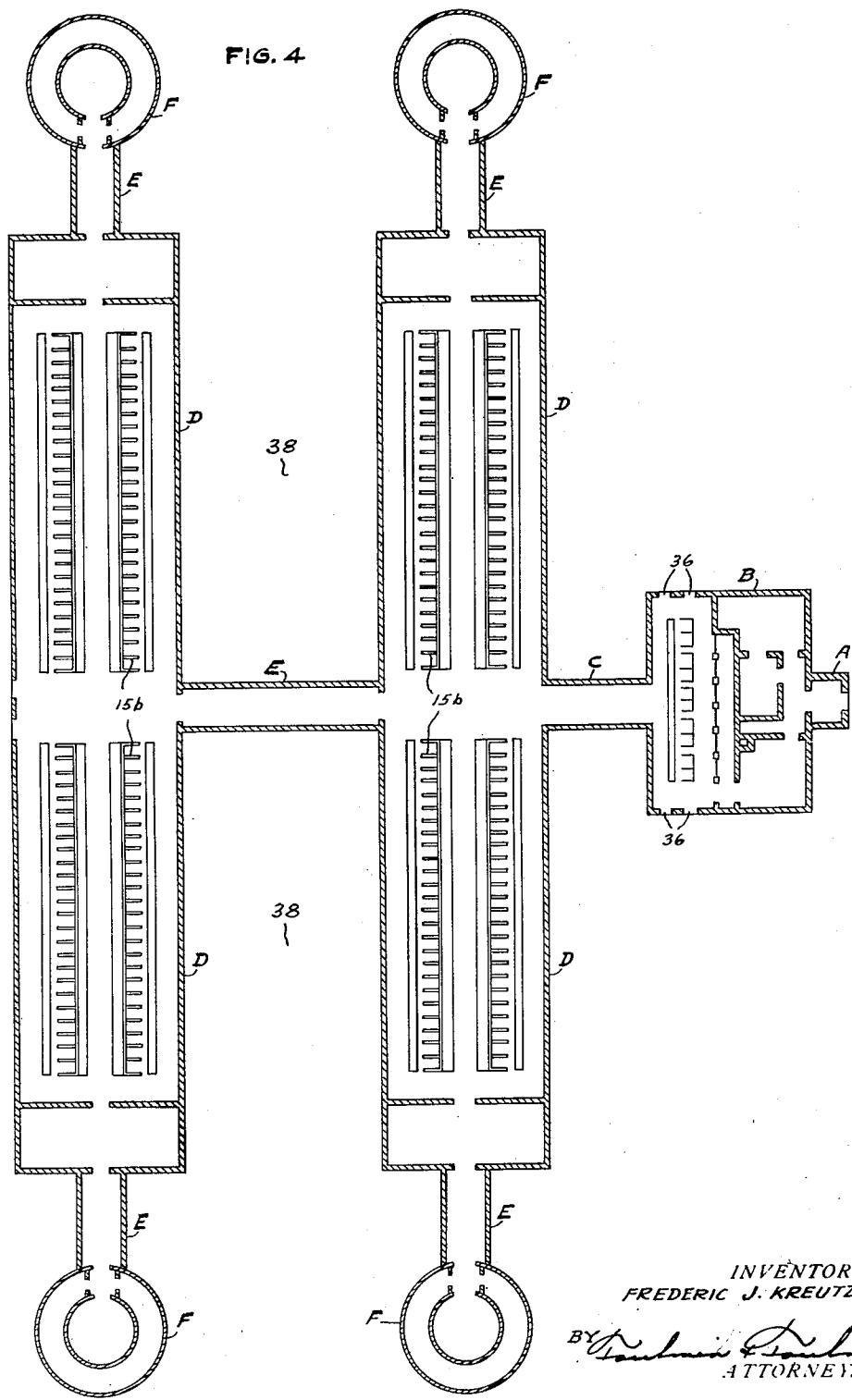
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6 Sheets-Sheet 3



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BUILDING

Filed Oct. 25, 1932

6 Sheets-Sheet 4

FIG. 5

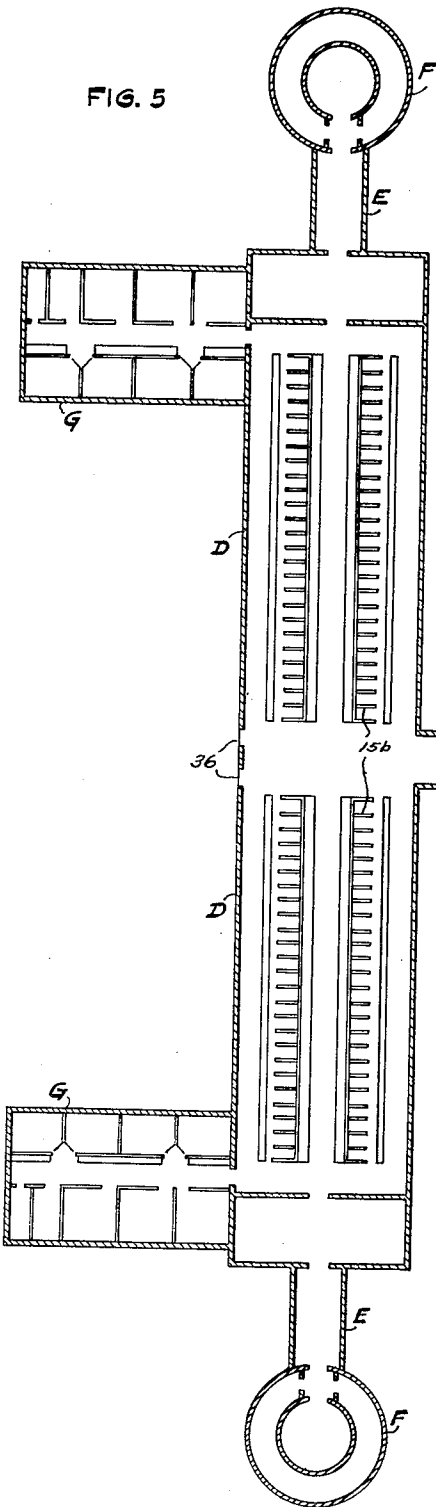


FIG. 6

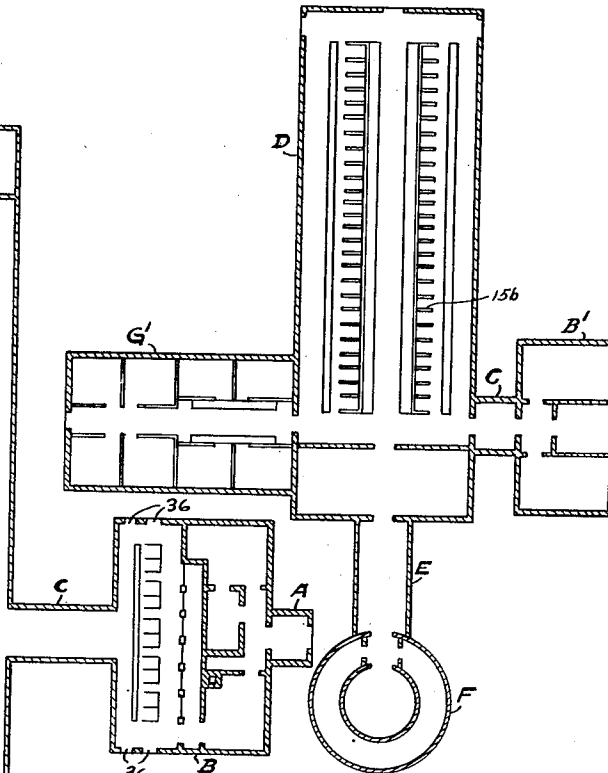
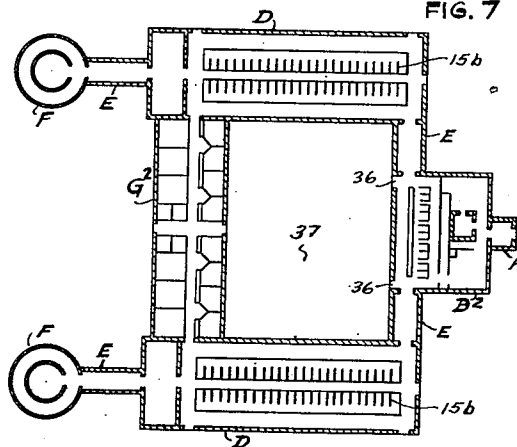


FIG. 7



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1,981,418

BUILDING

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6 Sheets-Sheet 5

FIG. 8

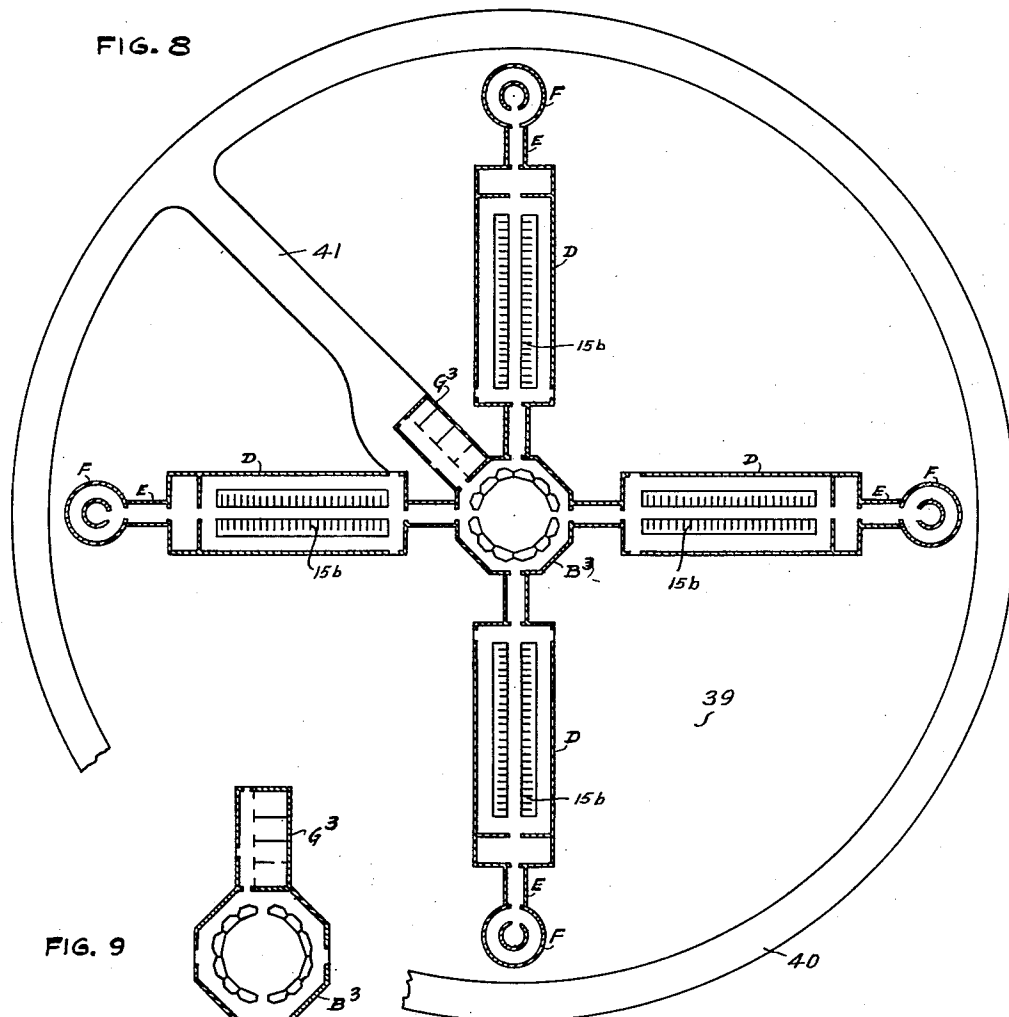
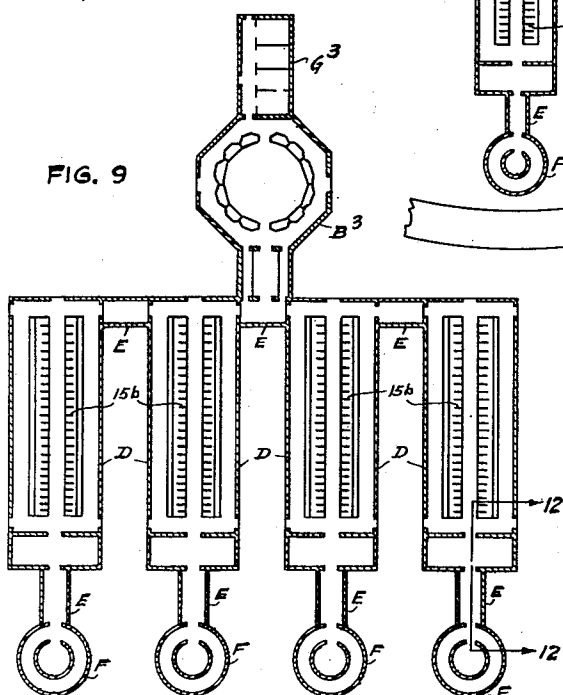


FIG. 9



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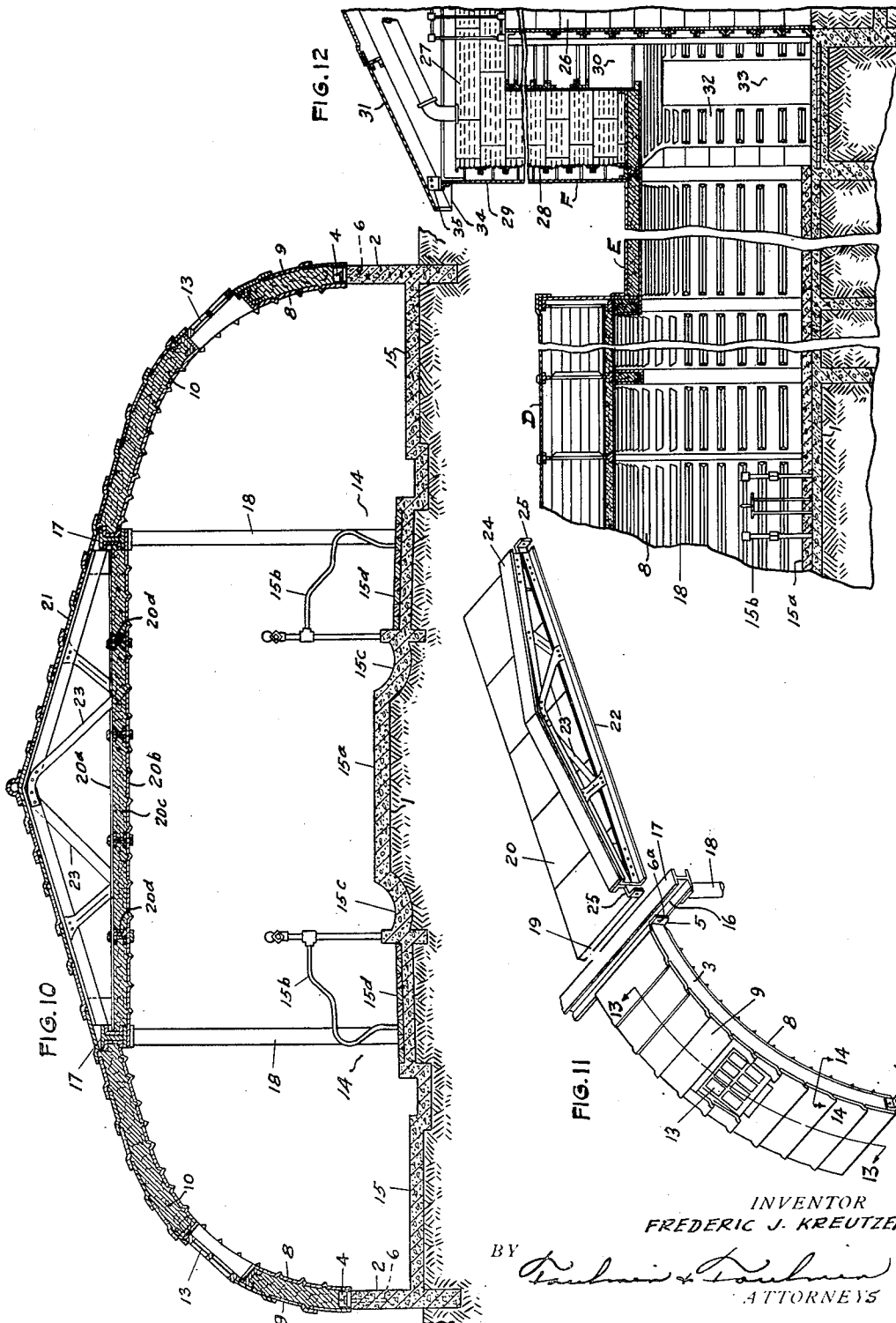
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BUILDING

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6 Sheets-Sheet 6



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UNITED STATES PATENT OFFICE

1,981,418

BUILDING

Frederic J. Kreutzer, Elmira, N. Y., assignor to
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Application October 25, 1932, Serial No. 639,490

2 Claims. (Cl. 119—16)

My invention relates to buildings and, in particular, to sectional, standardized, expansible buildings adapted to be erected in units to form enclosures of fireproof character for stock, and enclosures or protecting barriers for stock when exercising or feeding in the open.

It is a further object of my invention to provide a structure comprised of several unitary elements which, by multiplication of such standard unitary elements, can make buildings of different widths, heights and lengths and different combinations of buildings, all in connection with fireproof feed storage chambers.

It is a further object of my invention to provide a system of feeding from remotely located fireproof storage feed chambers enough feed which can be consumed by the stock in the buildings of this invention so that there will be no storage of feed and, therefore, no fire hazard in the buildings in which the animals themselves are located.

In particular, it is an object of my invention to provide the combination of a metal or other fireproof storage chamber for hay and, if desired, for ensilage, and to provide a common communicative passageway between said storage chambers and the stables comprising the buildings of my invention.

It is an object of my invention to provide adequate air circulation throughout the buildings and these storage chambers for the proper ventilation of the hay and of the buildings.

It is my object to provide a building having a fireproof foundation, such as concrete, accurate side walls having ventilation and light windows, and intermediate roof construction comprising a roof plate and a sloping roof, such roof section being supported upon spaced columns which also support the inside ends of the arcuate side walls.

It is an object to provide a dead air space filled with insulation in the side walls and a dead air space in the roof section to thereby insulate against the heat and cold on the outside of the building so they will not affect the interior of the building.

It is an object to provide the side walls of sectional metal so that the individual side wall unit comprises an arcuate strip having exterior independent overlapping metallic strips and an interior metal skin supported and spaced by arcuate metal ribs.

Referring to the drawings:

Figure 1 is an isometric perspective of a T-shaped barn and feed storage chamber combina-

tion partially broken away to show the arrangement of the interior of one of the barns;

Figure 2 is a square combination of buildings;

Figure 3 is a U-shaped combination of buildings with a remotely connected lactary or milking station;

Figure 4 is a plan view in section showing the arrangement of the units in parallel with feeding areas in between, with a remotely located milking station;

Figure 5 is a section on the line 5—5 of Figure 3;

Figure 6 is a section on the line 6—6 of Figure 1;

Figure 7 is a section on the line 7—7 of Figure 2;

Figure 8 is a plan view in section of the radial type of building arrangement with a central milking station and remotely located feed chambers with feeding pastures or exercise lots between the buildings;

Figure 9 is a horizontal sectional view of a common milking station and a plurality of longitudinally disposed parallel feeding barns and feed storage chambers; the details of the feed receptacle F being omitted;

Figure 10 is a section on the line 10—10 of Figure 1 showing the construction of the building;

Figure 11 is a perspective of one section of the building showing it in the process of assembly;

Figure 12 is a section on the line 12—12 of Figure 9;

Figure 13 is a section on the line 13—13 of Figure 11;

Figure 14 is a section on the line 14—14 of Figure 11;

Figure 15 is a perspective, partially in section, of two of the side wall sections about to be joined and permanently mounted on the foundation wall at their abutting bottom and side edges;

Figure 16 is an enlarged section through one of the side walls of the buildings and the communicating passageway buildings on the line 16—16 of Figure 2.

It will be understood that this building organization is comprised of certain fundamental essential elements which I have found necessary for the practice of housing and feeding stock, particularly dairy stock, although, of course, the principles apply to other types of animals.

These elements are: a remotely located venti-

lated chamber for the storage of feed, such as chopped hay, which may be continuously ventilated for the removal of gases to control the temperature to prevent spontaneous combustion.

- 5 Such a chamber is preferably made of metal so as to be proof against lightning. It is also preferably made of segmental sheets of metal in order to facilitate its manufacture at the factory and subsequent erection by bolting or welding
10 on a farm. Associated with this feed container may be a silo of any desired material and both of these containers are arranged to discharge into a common communication passageway or building to the unitary stable which is of sufficient size to accommodate stock that will be fed from these feed containers.

It is the principle of my system of feeding to never store any feed in the stable where it may become ignited either by spontaneous combustion, by a lantern, a carelessly thrown match, and the like.

- The third element is the provision of a stock building having no loft for hay storage, which thereby eliminates all danger of fire and confines the building to the one purpose of housing the stock in the best possible manner. Such a building is comprised of unitary sections which can be fabricated at a factory and assembled on the farm with ordinary labor. It is fireproof, being made preferably of metal, with a concrete or similar type floor, has no partitions and can be cross ventilated as well as longitudinally ventilated in order to insure proper ventilation to the stock and adequate cleanliness.

It is so arranged that the windows can direct sunlight on to the stock. It is insulated against heat and cold.

- The fourth element which may be employed
40 is a separate building of this character arranged for milking and connected by one of the communication units. In large installations I prefer to have each building for the housing of the stock arranged to accommodate approximately
45 fifty cows but this is a matter of choice. By having a milking station of very much less capacity the stock can be moved from the feeding position to the milking station and back again without interfering with the rest of the stock.

- 50 The milk can then be conveyed away from the milking station into adjacent rooms without the possibility of contamination by conducting the milking operation and the treatment of milk in communication with or in the presence of
55 the stock that are awaiting milking or are being fed, and this provides for a marked sanitary advance in the art of milking.

- It is a further object of the invention to provide buildings that are low in height and, therefore, form adequate enclosures for exercise lots or feeding pastures between the buildings where the stock are protected from the wind and snow and, at the same time, can secure adequate exercise, and on pleasant days, ample sunlight,
65 so that the stock in cold weather will not have to stand in the shadow of the buildings. Heretofore, in winter time, the southern exposures being limited in number, it has been necessary to have the stock for a portion or a large part
70 of the day stand in the shadow of the barns in the feed lots and exercise lots.

- Referring to the drawings in detail, A designates an entrance building which is preferably composed of the arcuate side wall sections hereinafter described. Such a building of the A type

is used for communication purposes. B, B¹, B² and B³ indicates a building used as a milking station, C a communication building, D feeding stables, E communication passageways to the feed storage chambers F.

Referring particularly to the detail construction of the buildings, as shown in Figures 10, 11, 12, 13, 14, 15 and 16, 1 designates the foundation which has side walls 2 on which are mounted the arcuate side wall sections shown in Figure 11. These side wall sections comprise a pair of arcuate rib plates 3 having bottom end flanges 4 and top end flanges 5. These rib plates 3 are preferably U-shaped in section as shown in Figure 15. The lower attaching plates 4 may be bolted by bolts 6 embedded in the side walls 2. The adjacent side wall sections may be recessed at 7 for the reception of the bottom plate 4.

These side plates 3 support interiorly a corrugated metal sheet 8 and overlapping exterior transversely disposed metal sheets 9. Between these sheets is placed any insulation material designated 10 to insulate from the heat and cold. The joint between adjacent sections is covered by an exterior strip 9a bolted by bolts 9b to the flanges of the U-shaped members 3. Beneath this strip 9a is a waterproof composition 9c. On the interior of this joint is a plate 8a overlapping the sheets 8 and connecting them to the flanges 8b of the U-shaped members 3 by bolts 8c. When desired, a window frame 11 may be placed in the side wall to carry a sash 12 having glass 13.

It will be noted that this window being arranged at an angle to a vertical plane is so disposed as to direct the sunlight on to the animals standing in the general area designated 14. It also provides light for adequate cleaning of the foundation 1 as at 15.

The upper ends of these arcuate side wall sections are attached by the plates 5 to bolts 6a into the recesses 16 of the longitudinally disposed I-beam girders 17 which are supported on spaced vertical posts 18 carried on the foundation 1. The upper ends of the side wall sections, therefore, are nested in the U-shaped recesses 16.

The other of these U-shaped recesses formed by the I-beam 17 receives the abutting end 19 of the ceiling plates 20 which are carried between the truss members which support the ceiling plates 20 and the roof members 21. These truss members are comprised of a horizontally disposed angle iron or I-beam 22 having diagonally disposed truss members 23 interconnecting and supporting I-beam roof members 24. Mounted on these truss members are angular end plates 25 for attachment of this roof unit to the girders 17. The ceiling plates 20 are comprised of sheets 20a and 20b which are spaced to form an air space 20c in which insulation material may be placed. They are connected together by either I-beams or abutting U-shaped members 20d which extend longitudinally of the building between the trusses. The whole combination of the upper and lower plates, the insulation and these beam members 20d combine to form what is known as the ceiling plate.

It will be noted that this central roof section comprising the truss, the roof and the ceiling plates is omitted in the case of buildings, such as A, C and E.

Feed chambers

The feed storage chamber is so arranged that the silo 26 and the ventilated hay storage chamber 27 formed by the foraminous false walls 28 within the exterior wall 29 discharge through a common chute 30. They are housed by a common roof 31. This chute communicates with a horizontally disposed communication passageway 32 leading into one of the communication buildings E.

This passageway 32 also has side doors 33 for entering the hay chamber 27. Thus, the adjacent barn D may be ventilated by the passage of air through the communicating building E, passageway 32, chute 30, out through the passageway 27 to the space beneath the roof 31 which is provided with a suitable ventilator or the air may pass out beneath the eaves 34 as the roof 31 is suspended above the wall 29 by the bracket plates 35, if so desired. The numeral 36 in Figs. 3, 4, and 5 designates doors.

In Figures 2 and 12 may be found a platform diagrammatically illustrated with railings extending above part 26.

It will be seen that, by the use of such buildings, it is possible to vary the width and the height of the buildings, as well as the length.

The height of the building is determined by the height of the foundation side walls 2 and the posts 18. The building may have one or more roof sections, or none at all.

It will be further observed that the load on the roof section is taken on the posts 18 but any lateral thrust is also transmitted through the side wall sections and thence to the foundation walls 2. Any load on the side wall sections is taken on the foundation side walls 2 and against the girders 17 and the intervening roof section. Thus, a very light, strong and insulated building is provided of indefinite extension but which can be manufactured from a few standard parts that can be easily erected by ordinary labor on the farm. When so erected, the building is not only fireproof but is lightning proof due to the mass of metal. There is no possibility of spontaneous combustion in the buildings devoted to the housing of the stock because there is no combustible material stored therein and the disastrous hazard of fire which destroys breeding stock that has taken years to develop is eliminated.

It will be understood that such stock is the product of many years of breeding and no money payment by way of insurance can replace the destruction of such animals. Therefore, it becomes a matter of vital importance to eliminate any chance of destruction by fire or lightning of animals that are irreplaceable. It is also necessary to have adequate sunlight and ventilation. It is likewise essential to remove the milking operation from any possible contamination and to provide buildings that will permit of the ready movement and circulation of the stock into and out of the buildings and to and from the milking station.

It will be observed that the stock can pass along the floor at 15 for this purpose, the feed can be delivered to the stock along the floor at 15a so as not to impede the movement of the stock. Adequate stalls or stanchions are connected at 15b and the feeding trough at 15c. The animal can stand upon the wooden or other floor 15d. The columns 18 can be located between the cows so as not to interfere with other

standing room. Consequently, the space within this building is substantially without any obstruction. All the animals can be observed from any point in the building. The carrying of feed along the passageway 15a may be readily effected by hand, by carts, vehicles on rails or by overhead carriers suspended from the trusses. The load of such carriers is taken on the columns 18 without imposing that load upon the side walls.

It is further observed that each one of these sections can be made of such size and weight as to be easily handled in erection. Furthermore, the building is one that can be completely salvaged in the event of it being torn down. Furthermore, it is capable of expansion so that as the herd grows, it is possible for the owner to continue to attach additional standard sections to take care of his needs as they develop. The foundation may be extended or restricted to suit the superstructure. The present invention relates to the superstructure and not to the foundation, which may be varied in extent to correspond to the superstructure.

Building arrangement

One of the primary purposes of this invention is to provide such a standard system that various forms of unitary buildings may be employed.

For instance, Figures 1 and 6, which represent a typical arrangement of a fifty-cow barn, show an entrance building or milking station, as desired, a building for box stalls as at G or G', a stable as at D, a feed storage chamber F and communication buildings E, all of metal and of similar interchangeable sections. The building G is adapted for the use of cows with calves, and the like.

In Figures 2 and 7, the stables D are arranged in spaced parallel relation with intercommunicating buildings E connecting into a milking building B². The rear ends of these stables are interconnected by a box stall stable G² while the ends of the buildings D are provided with communication buildings E connected to the feed storage chambers F which contain sufficient hay and ensilage for supplying the cows in each of the buildings D, to which they are connected.

In Figures 1, 2 and 12, there are disclosed pipes which are adapted to convey chopped hay under pressure to the interior of the hay containers.

It will be noted that the cows in one stable can reach the milking station building without going through the other stable D.

By this arrangement the cows can be led through the doors 36 into the exercise lot 37 where they may have the sunlight and the air and be protected from the winds. The buildings form the enclosure, and, therefore, no fences are necessary.

In the forms shown in Figures 3 and 5 it is possible to feed from either of the feed storage chambers F to both stables D but still possible to move the cows to and from the milking station B without going through the other stable and disturbing the feeding or the handling of the cows in that stable. By projecting the unitary buildings G to form a U-shaped enclosure with the stables D a partially protected enclosure for the stock when exercising is provided.

In the form shown in Figure 4, more complete enclosures are provided by arranging another unit of feed chambers and stables connected by

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a communication building E in parallel to form exercise lots therebetween as at 38.

In Figure 8 there is provided an arrangement by which the buildings are radially disposed in units connected into a central milking station B³. Between these radially disposed buildings are feed lots or exercising pastures 39 while around the entire series of buildings is an annular roadway 40 which joins a roadway 41.

Figure 9 shows a similar milking station with a plurality of stables D arranged in parallelism with their associated supply stations for feed in the chambers F.

It will be understood that I desire to comprehend within my invention such modifications as may be necessary to adapt it to varying conditions and uses.

I hereby make a cross reference to my co-pending application Ser. 637,027, filed Oct. 10, 1932, for improvements in Apparatus for storing and dispensing feed. While some of the figures of the drawings in that application and some of the figures of the drawings in this present application Ser. 639,490, are the same, other figures in the drawings of each of these two applications do show constructions not illustrated in the other; and nothing claimed in this application Ser. No. 639,490 is claimed in said co-pending application Ser. 637,027.

I make further cross reference to my co-pending application Ser. 669,898, filed May 8, 1933, which application is a divisional application of co-pending application Serial No. 637,027, above referred to. Application Serial No. 669,898 describes and claims a food container such as is

illustrated in Figure 4 and others of the drawings of this application.

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

1. In combination in a building system, a plurality of stock housing barns arranged in spaced relationship, a milking building arranged therebetween with interconnecting communicating buildings, and remotely located feed storage chambers connected to the barns, each of said barns having its own feed storage chamber thus remotely connected whereby the stock in each barn can be fed from each feed storage chamber and moved to and from the milking building without disturbing the stock in the other barn, said milking building comprising an octagonal building having annularly disposed milking stanchions arranged therein.

2. In a system of buildings, a plurality of metal buildings including at least one barn, certain of said buildings being formed of similar interchangeable metallic sections, and having foundations, and a metallic food containing building composed of sections dissimilar to the sections composing the other buildings, said barn being composed of metallic side wall and roof sections, and a metallic milking building, said metallic food containing building having a spaced foraminous interior false wall for ventilating the contents thereof, and metallic sectional buildings composed only of said side wall sections and forming a communicating means between two or more of said sectional buildings.

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