Nov. 1, 1932. W. E. NEWNAM 1,886,215

BAG HOUSE

Filed Jan. 19, 1928 5 Sheets-Sheet 1

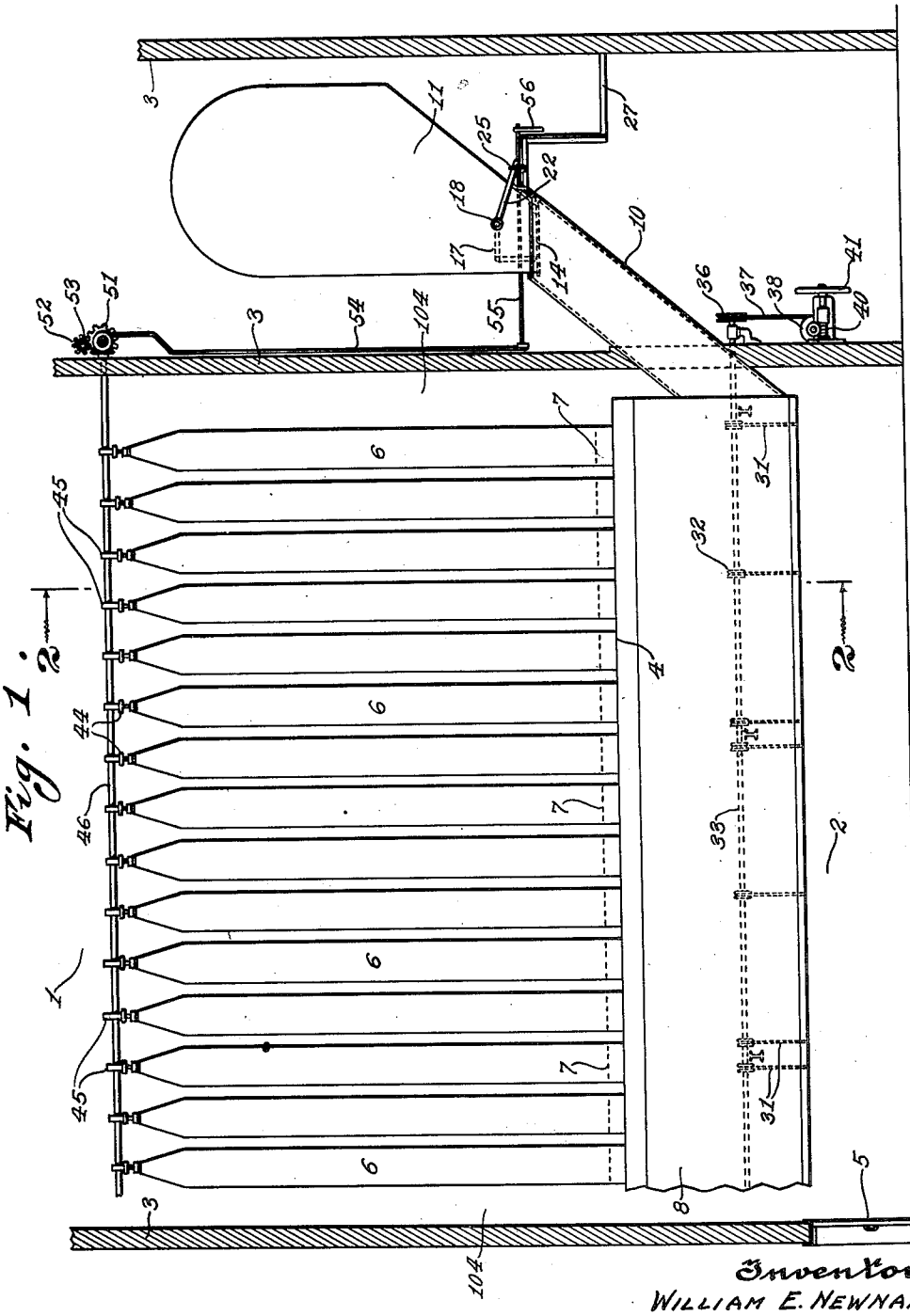


Fig. 1.

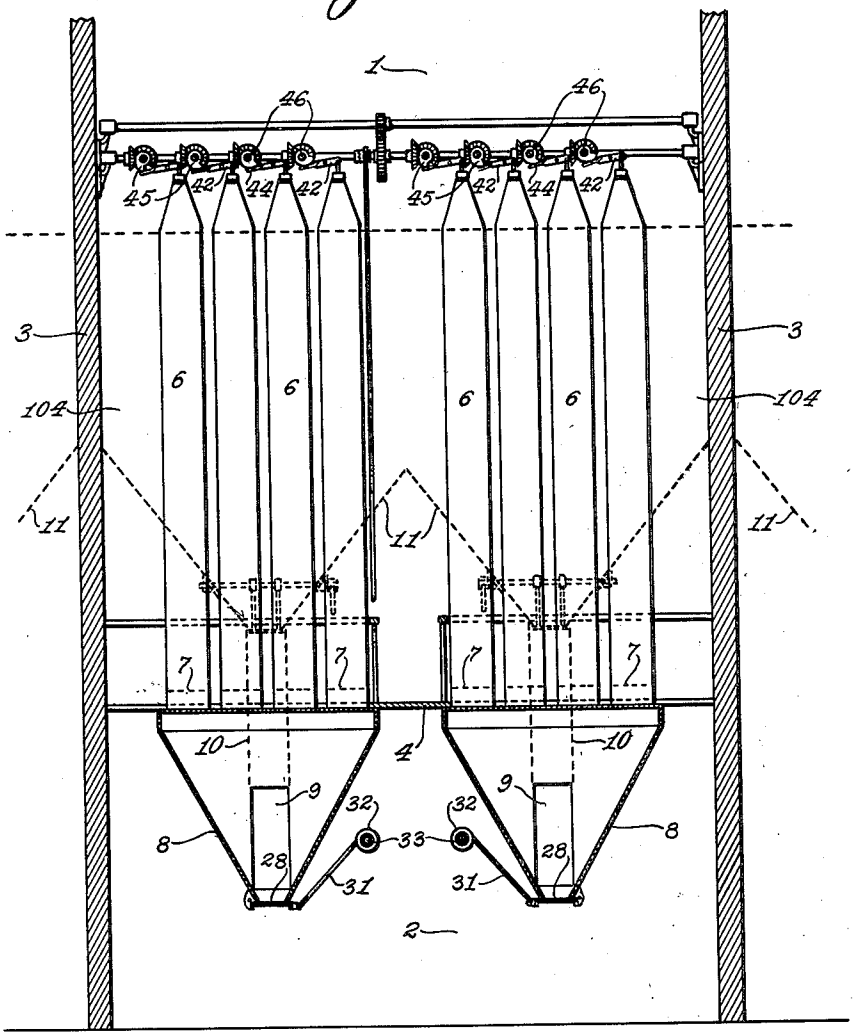
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BAG HOUSE

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Fig. 2.



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BAG HOUSE

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Fig. 3.

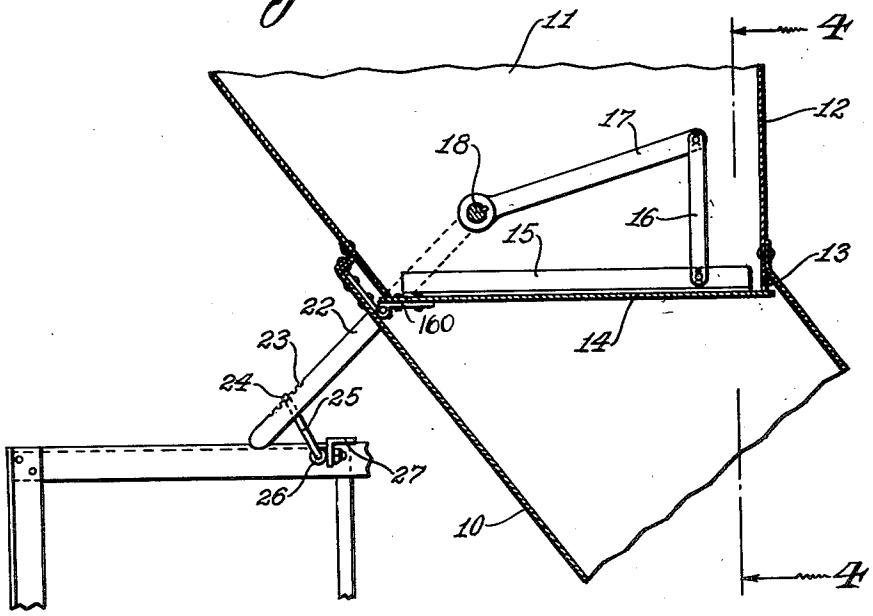
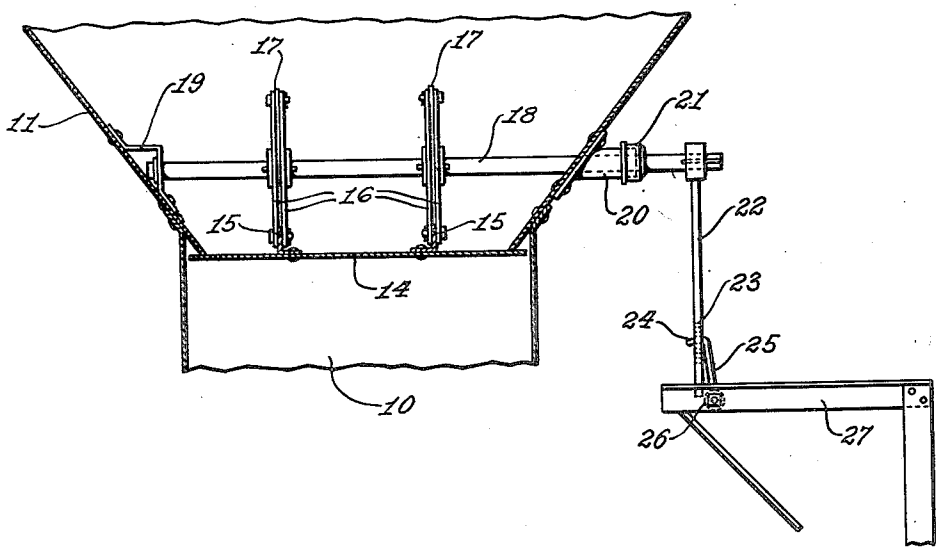


Fig. 4.



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Fig. 5.

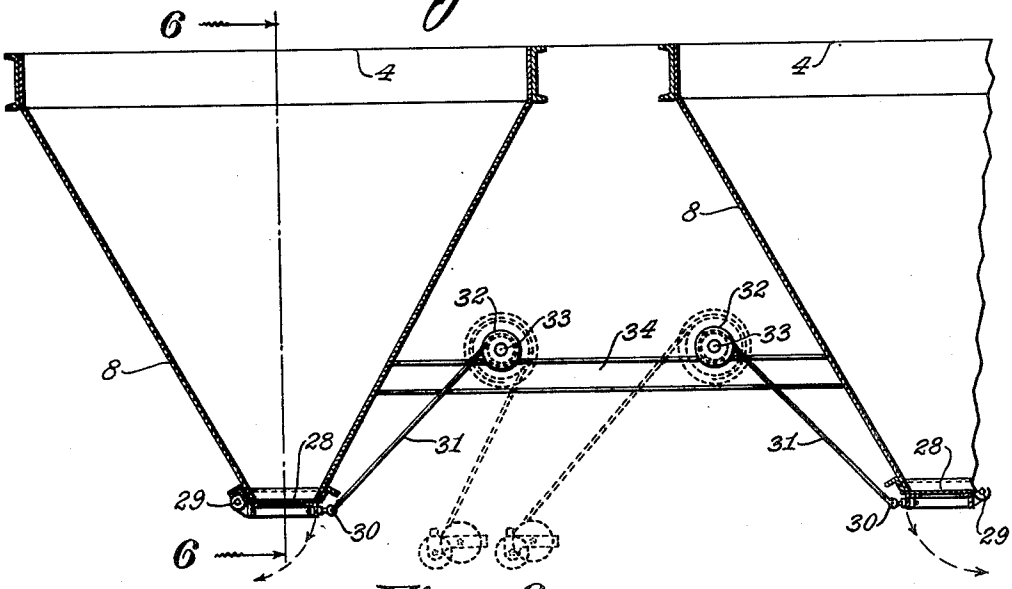
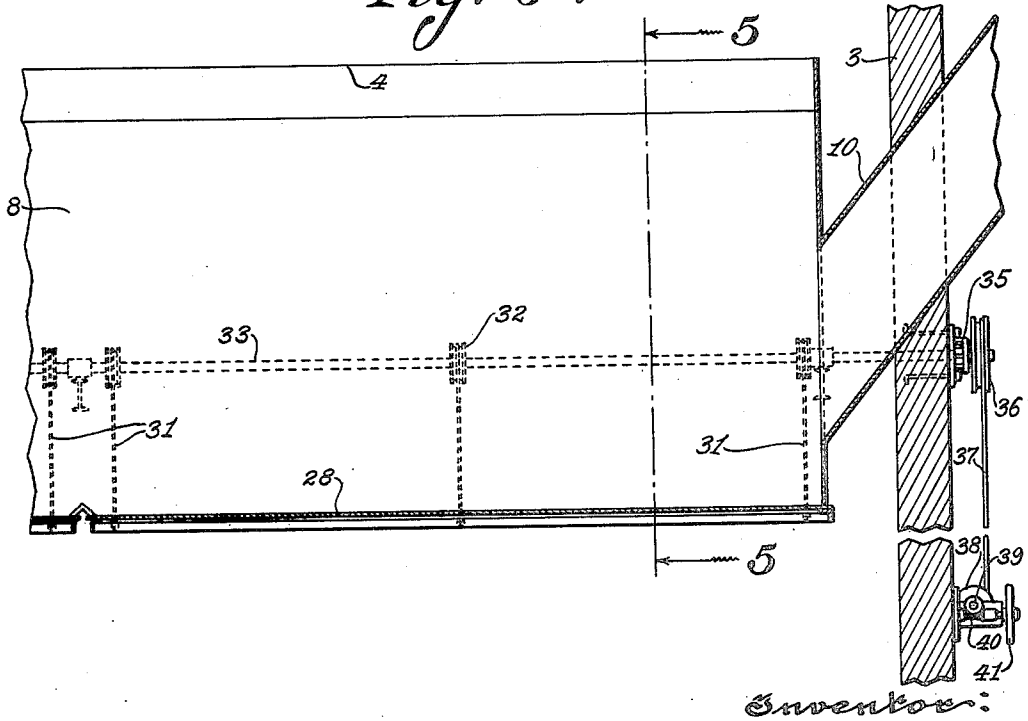


Fig. 6.



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Fig. 7.

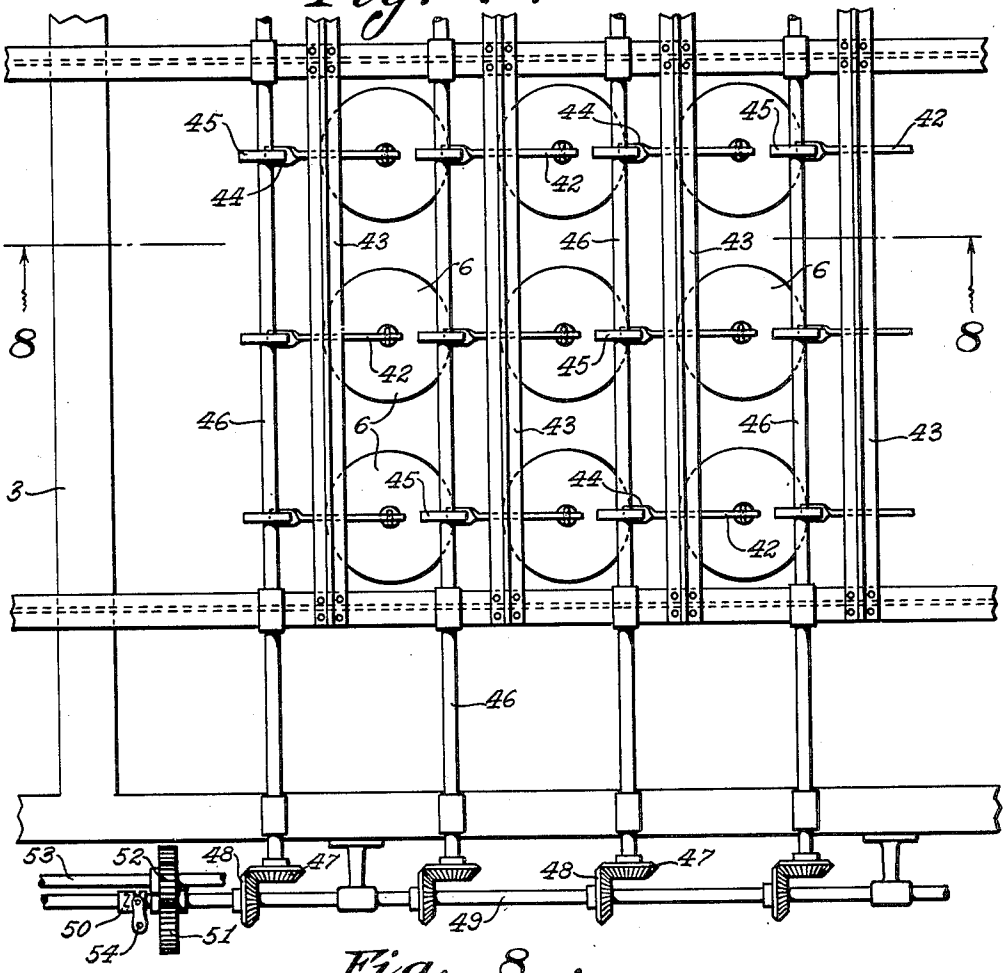
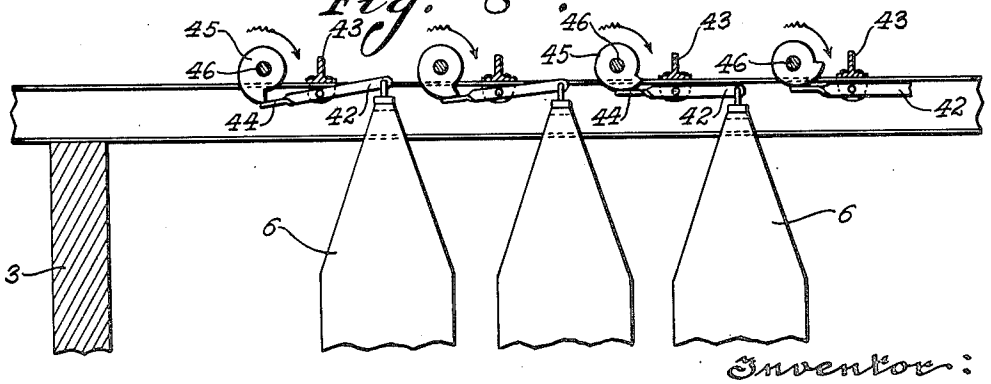


Fig. 8



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UNITED STATES PATENT OFFICE

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BAG HOUSE

Application filed January 19, 1928. Serial No. 247,836.

This invention relates to bag houses adapted more particularly for the recovery of metallic dust from fumes given off during the smelting of ores, such as lead ores.

In the operation of a bag house the fumes pass through cotton bags which strain or catch the dust. These bags are shaken at intervals so as to deposit the dust. This dust is then sintered to adapt it for subsequent use in a suitable furnace for the recovery of the metal.

One of the objects of this invention is to provide a bag house which is so arranged that the sintering process may be performed without interrupting the operation of the bag house in the recovery of the dust from the fumes.

Another object is to provide a bag house provided with an improved chamber structure for the fumes inlet or inlets, so that the operation of the whole may be controlled.

Another object is to provide a bag house having an improved hopper structure embodying a gate which is adapted to seal the bottom of the hopper.

Another object is to provide a bag house having improved bag shaking mechanism which is efficient in its action and readily controlled.

Further objects will appear from the detail description taken in connection with the accompanying drawings in which

Figure 1 is a longitudinal vertical section through a bag house embodying this invention;

Figure 2 is a transverse section taken on the line 2—2 Figure 1;

Figure 3 is an enlarged detail section of the chamber structure;

Figure 4 is a section on the line 4—4 Figure 3;

Figure 5 is an enlarged detail section of Figure 2 showing the hopper gate structure;

Figure 6 is a section on the line 6—6 Figure 5;

Figure 7 is a detail plan showing the bag shaking mechanism; and

Figure 8 is a section on the line 8—8 Figure 7.

Referring to the accompanying drawings, and more particularly to Figures 1 and 2, 1 describes a bag chamber and 2 a dust or sintering chamber arranged therebeneath and formed by walls 3 and a partition 4. The partition 4 does not extend completely across the chamber 2 but a space 104 is formed which is open to the chamber 1, which chamber is connected with the usual stack so as to provide a draft. The chamber 2 may be provided with a door 5. Arranged within the chamber 1 are a series of bags 6 fitting over the nipples 7 on the partition 4 and suspended at the upper end as hereinafter described, these bags being made of cotton or any other suitable material as is usual in bag house structures.

The bags are arranged in rows as shown in Figures 1 and 2, and these rows are in turn arranged in sections as shown in Figure 2. Arranged below each section is a hopper 8 which extends from the bag chamber and into the dust or sintering chamber. Each of these hoppers has opening therein a fume inlet 9 connected by a fume pipe 10 to the flue trail header 11 as shown in Figures 1, 2, 3 and 4. The legs 12 of the header extend into the pipes 10 so as to form projecting seats 13, each of which is arranged for cooperation with a damper 14 taking thereagainst. This damper is formed of sheet metal reinforced with angle bars 15 and pivoted at 160 to the pipe 10. Links 16 connect the bars 15 with arms 17 on a shaft 18 mounted on brackets 19 and 20, the latter being outside of the casing thus formed and being provided with a packing gland 21. Outside of the casing the shaft has keyed thereto an arm 22 arranged for manipulation and provided with notches 23 arranged to receive the tip 24 of a latch 25 swiveled in an eye bolt 26 which is in turn swiveled in the framework 27 of a platform. By manipulation of the arm 22 the damper may be opened and closed, and since it is light and quick acting it is not only readily manipulated, but when closed forms a seal, while when opened the passageway for the fume and dust is entirely clear.

Arranged at the bottom of each hopper 8, Figures 1, 2, 5 and 6, is a gate 28 pivoted at

29 on the hopper and provided with eyes 30, connected by cables 31 with pulleys 32 on a shaft 33 extending along the hopper and mounted on brackets 34 connecting the hoppers. The shaft 33 extends outside of the chamber 2 and passes through a gland 35. This shaft is provided with a pulley 36 connected by a cable 37 with a pulley 38 whose shaft has a worm wheel 39 with which meshes a worm 40 on a shaft operated by a hand wheel 41. The construction is such that the gates may be readily dropped from the exterior of the chamber. When closed these gates seal the hoppers in an effective manner.

Each bag 6 in Figures 1, 7 and 8, is mounted on one end of a lever 42 pivoted intermediate its ends on a cross bar 43 while the other end of the lever is flattened as shown at 44 and cooperates with a cam 45 on a shaft 46. There is a shaft extending along each row of bags outside of the bag chamber and to the ends thereof is fixed a bevel gear 47 meshing with a bevel gear 48 on a drive shaft 49. There is a shaft 49 for each bag section and each of these shafts has a clutch 50 arranged to clutch the shaft 49 to a gear 51 meshing with a gear 52 on a main drive shaft 53. The clutch is operated by a line of connections 54, 55 and 56, the latter being a handle arranged on a platform 27. The cams 45 for each row are each arranged in alignment so as to shake the bags in each row concurrently; however, the cams of the several bag rows are arranged in stacked relation so as to operate the rows in succession.

It will, therefore, be seen that the invention accomplishes its objects. During the normal operation the dampers 14 will be open while the gates 28 as well as the door 5 will be closed. The fumes are now borne through the hoppers and through the bags which strain or catch the dust while the gases issue into the chamber 1 and up the stack provided for that purpose. During this operation the bags are periodically shaken so as to deposit the dust from each bag section into its hopper 8. After a certain amount of accumulation of dust in the hoppers the dampers 14 are closed so as to cut off the supply of fume to the hoppers and the bags thereabove. The gates 28 are now to be opened so as to dump the dust into the sintering chamber 2. As soon as this is done the hoppers can again be closed while the damper 14 may then again be opened so as to again admit fumes to the hoppers. The dust can now be ignited and drawn through the door 5. During this ignition and withdrawal the bag house can, however, continue in operation on account of the provision of the gates 28.

While this invention is particularly applicable to bag houses for the recovery of fumes resulting from metallic processes, it will be understood that as to some of its features it is applicable more generally. It will, furthermore, be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and sub-combinations, that is contemplated by and is within the scope of the appended claims. It is, furthermore, obvious that various changes may be made in details of construction, within the scope of the appended claims, without departing from the spirit of this invention. It is, therefore, to be understood that this invention is not to be limited to the specific details shown and/or described.

Having thus described the invention what is claimed is:

1. A bag house comprising, a bag chamber, rows of bags therein, operating shafts extending along the respective rows, means on said shafts for shaking said bags, and a drive shaft connecting said operating shafts.

2. A bag house comprising, a bag chamber, bags in said chamber arranged in sections with each section comprising a series of bags arranged in rows, operating shafts extending along the respective rows, means on said shafts for shaking said bags, a drive shaft for each section connecting said operating shafts, a main shaft, and a clutch connecting each drive shaft with said main shaft.

3. A bag house comprising, a bag chamber, bags in said chamber arranged in rows, operating shafts extending along the respective rows, a drive shaft connecting said operating shafts, shaking means on said operating shafts and operatively connected with said bags and mechanism for operating said shafts to shake the rows in succession.

4. A bag house comprising, a bag chamber, bags in said chamber arranged in sections with each section comprising a series of bags arranged in rows, shaking mechanism for each bag, a shaft extending along each row and operatively connected with said mechanisms, and means for operating said shafts.

5. A bag house comprising, a bag chamber, bags in said chamber arranged in sections with each section comprising a series of bags arranged in rows, shaking mechanism for each bag, a shaft extending along each row and operatively connected with said mechanisms so as to operate the same successively, and means for operating said shafts.

6. A bag house comprising, a bag chamber, bags in said chamber arranged in sections with each section comprising a series of bags arranged in rows, shaking mechanism for each bag, a shaft extending along each row and operatively connected with said mechanisms so as to operate the same in successive groups, and means for operating said shafts.

7. In a bag house of the character described as a fume header; a fume conduit including a fume pipe and conduit means connected with said header and extending downwardly into said pipe; a downwardly projecting

valve seat on said conduit-means within said pipe, a valve hinged within said pipe and movable upwardly to engage said seat in order to close said fume conduit, and operating connections for said valve extending from the inside to the outside of said fume conduit.

8. In a bag house of the character described, a fume header; a fume conduit including a fume pipe and conduit means connected with said header and extending downwardly into said pipe; a downwardly projecting valve seat on said conduit-means within said pipe, a valve hinged within said pipe and movable upwardly to engage said seat in order to close said fume conduit, operating connections for said valve extending from the inside to the outside of said fume conduit, and means for packing said connections against the escape of fumes.

9. In a bag house of the character described, a bag chamber, a series of bags mounted therein, means for automatically shaking said bags, a hopper mounted below said chamber adapted to receive the dust collected by said bags, said hopper having a fume inlet and a dust discharge outlet, valves for selectively closing said inlet and said outlet, and a dust sintering chamber below said hopper adapted to receive the dust from said discharge outlet, constructed and arranged so that dust may be sintered in said sintering chamber while new dust is being collected in said hopper.

In testimony whereof I affix my signature this 3rd day of January, 1928.

WILLIAM E. NEWNAM.