July 12, 1932. L. M. SHERIDAN 1,866,824

CONVERTER HOOD

Filed Sept. 12, 1930 3 Sheets-Sheet 1

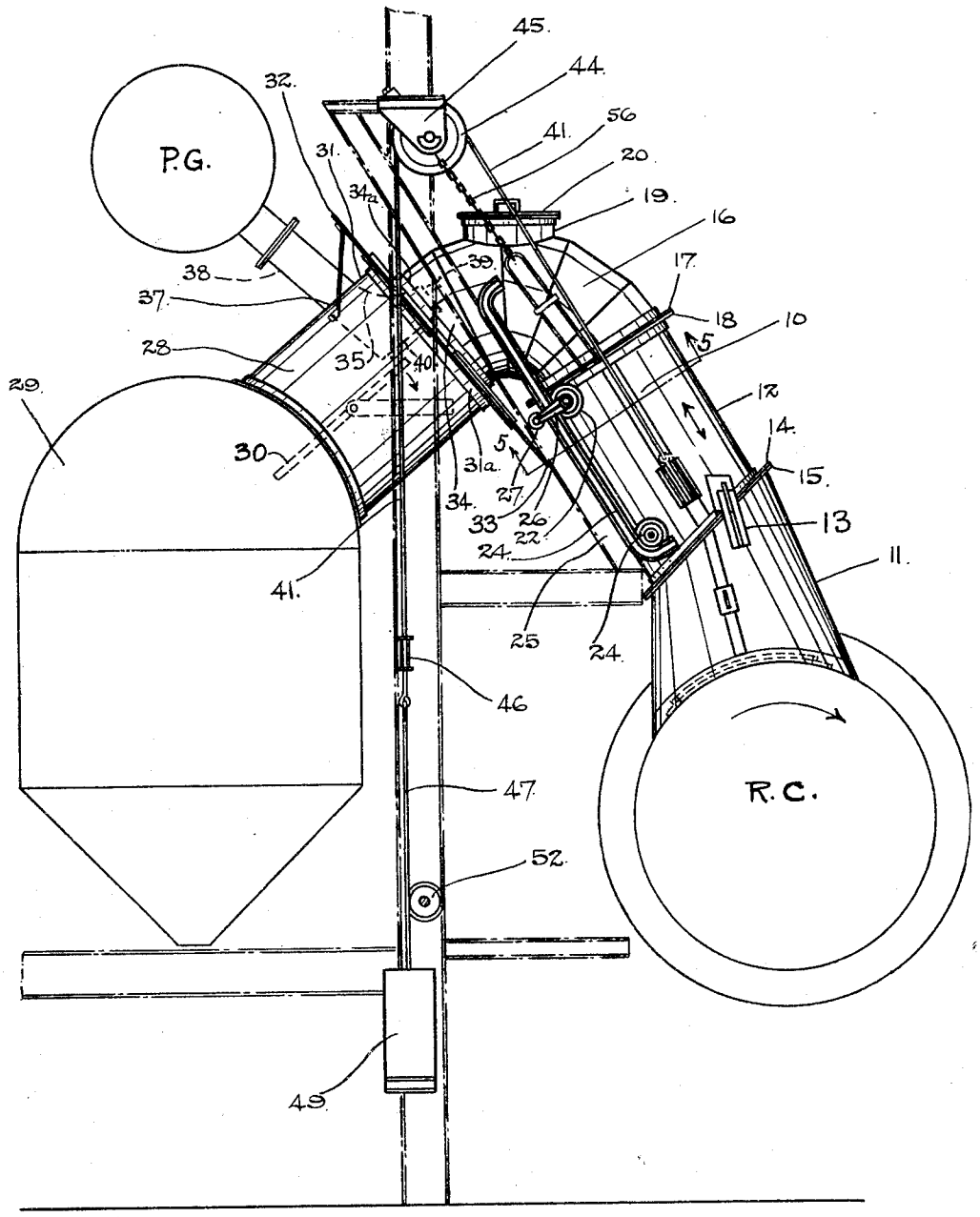


FIG. 1.

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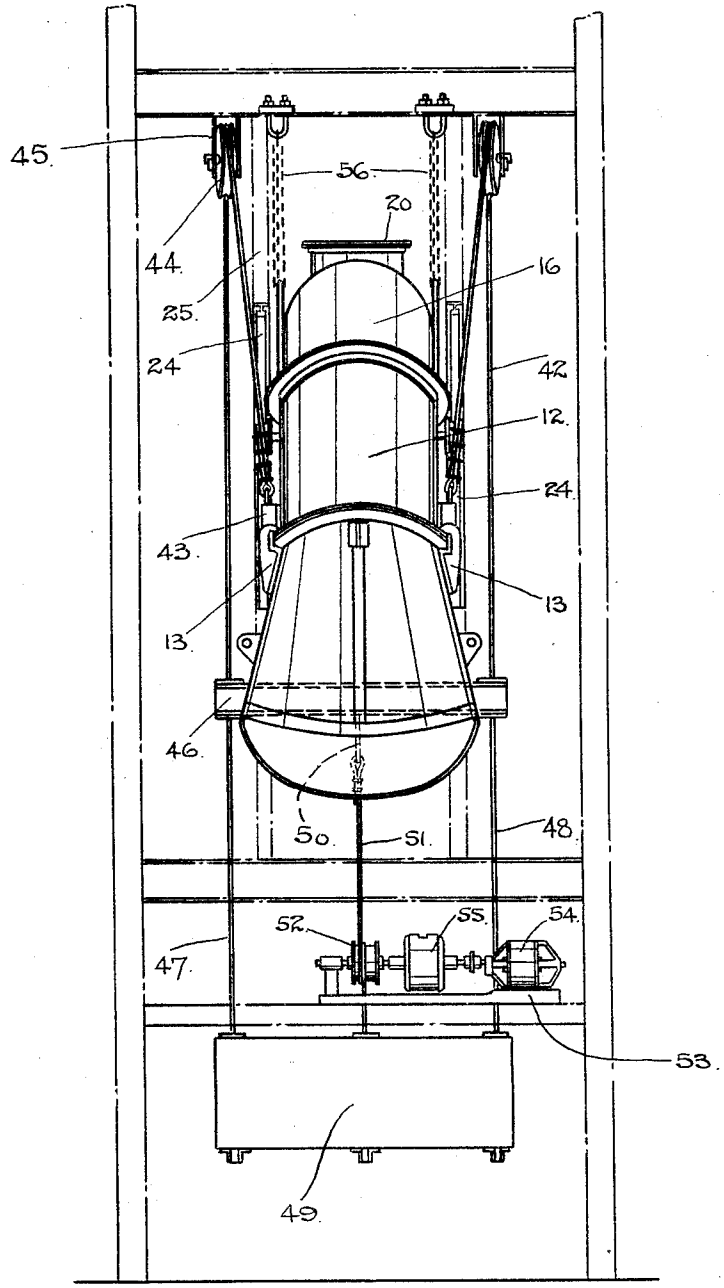


FIG. 2

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CONVERTER HOOD

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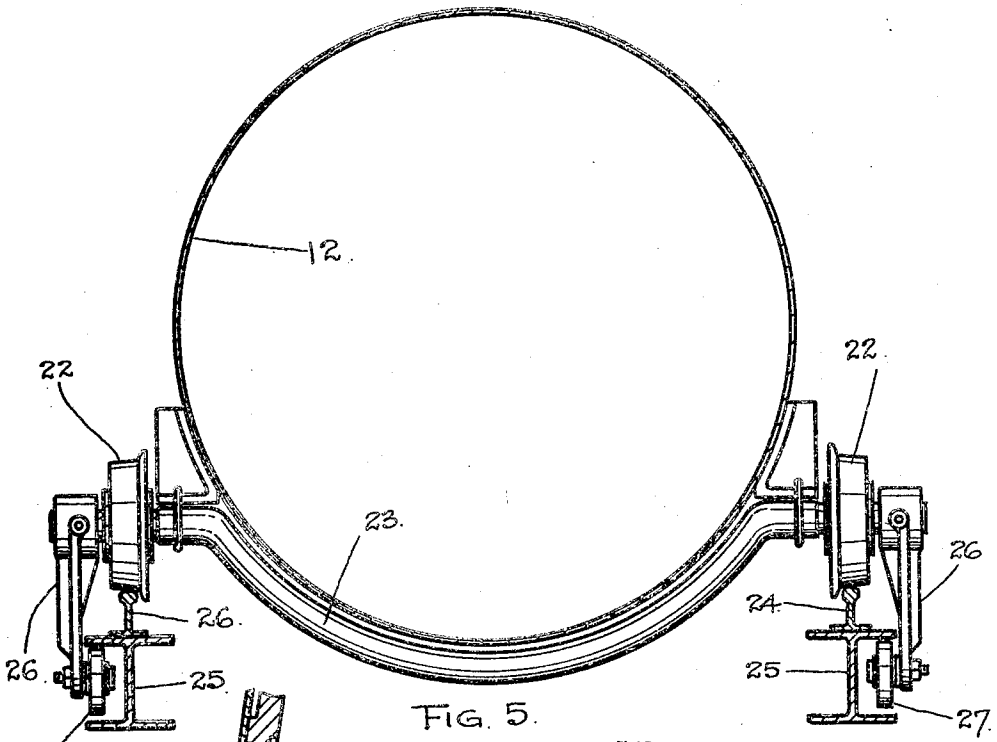


FIG. 5.

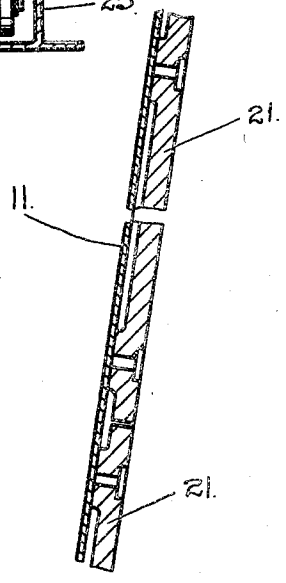


FIG. 4.

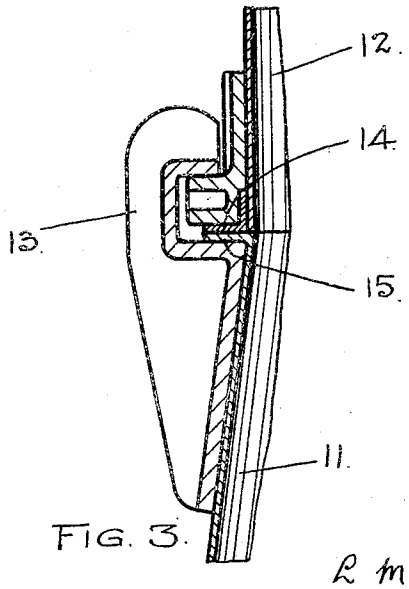


FIG. 3.

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Patented July 12, 1932 1,866,824

UNITED STATES PATENT OFFICE

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CONVERTER HOOD

Application filed September 12, 1930. Serial No. 481,576.

This invention relates to a converter hood, as described in the present specification and illustrated in the accompanying drawings which form part of same.

The invention consists essentially of the novel features pointed out broadly and specifically in the claims for novelty, following a description containing an explanation in detail of an acceptable form of the invention.

The objects of this invention are to furnish a movable hood applicable to converters for blowing metals particularly of the non-ferrous group such as copper; to provide an adjustable hood for a Bessemer type converter adapted to receive the gases therefrom and direct them into a stack; to prevent the gases and fumes from the converter from permeating the atmosphere with injurious results to the operators; to eliminate the possibility of an excess of air going into the flues and thereby diluting the pure gas and rendering it unsuitable for the manufacture of sulphuric acid and generally to provide a converter hood efficient for the purposes set forth simply constructed and operated and economical as to first cost and maintenance.

In the drawings Figure 1 is a side elevation of a complete installation according to this invention.

Figure 2 is a front elevational view of Figure 1.

Figure 3 is a fragmentary sectional detail disclosing the lining of the hood.

Figure 4 is a fragmentary sectional detail of the clamp between the sliding flue and the hood.

Figure 5 is a cross sectional detail taken on the line 5—5 in Figure 1.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings the numeral 10 indicates a sliding hood formed of the bottom hood section 11 which is detachably secured to the stack 12 by the clamps 13 securely fastened to said hood section 11 and engaging the flanges 14 and 15, and the elbow 16 which is fixedly secured to the stack 12 by suitable fastenings through the flanges 17 and 18. A manhole 19 having the removable cover 20 is provided in the elbow 16 to provide access to the interior of the elbow and stack.

The hood portion 11 is adapted to fit over the mouth of the converter and consequently receives a considerable amount of heat. To prevent the burning thereof the interior is lined with the metal plates 21 which are bolted to the side walls and form a protecting lining for the hood section.

The stack portion 12 is provided with the flanged wheels 22 which are rotatably mounted on the axles 23 and form a means for allowing the entire hood to roll on the track 24 the ends of which are curved upwardly to form stops to limit the travel thereof. The tracks 24 are supported by the beams 25 which form part of the steel work supporting the entire structure. Additional support for the hood is provided by the brackets 26 which are mounted in the extremities of the axles 23 and are provided with rollers 27 which roll on the inner sides of the beams 25 and thereby prevent the hood from tilting when it is being moved along the trackway.

The stationary stack 28 is directly connected to the flues 29 communicating with the atmosphere, a damper 30 being provided to completely close the stack 28 when not in operation.

The upper portion 31 of the stationary stack is provided with the two extensions 32 and 33 which suitably support and are flush with the upper face thereof and are fixedly secured by fastening through the flange 31*a* and form a flat surface for the lower face 34 of the elbow 16 to abut, a tight joint being formed between the two surfaces by the flange 35 encircling the elbow 16 and bearing against the extensions 32 and 33 of the stack 28.

It will be seen on referring to Figure 1 that the track 24 and the supporting beam 25 are not parallel with the joint between the elbow 16 and the stack 28. This is to facilitate the separation of the two surfaces when the complete hood is moved upwardly for it will be seen by this construction that on the upward movement of the hood the lower face 34 of the elbow 16 moves away

from the stationary stack, the faces only closely abutting when the hood is in its operating position.

To facilitate the extraction of pure gas from the hood for the manufacture of sulphuric acid an opening 37 is provided in the side of the stationary stack 28 through which passes the pipe 38 which extends into the interior of the stack in the form of a scoop open at the bottom 39 and the front 40 and is so positioned in the center of the gas stream as to collect the gas and direct it through the pipe 38 into the high percent gas flue where it is directed to the acid manufacturing plant.

To raise and lower the hood a counterbalance mechanism is employed which consists of a pair of steel cables 41 and 42 fixedly secured at 43 to the stack 12 and passing over the pulleys 44 mounted on brackets 45 secured to the steel work, the other ends of the cables being secured to the cross beam 46 which is in turn connected by the rods 47 and 48 to the heavy counterbalance weight 49.

To the center of the cross beam 49 is secured the eye 50 to which is attached the operating cable 51. This cable is tightly wound around the drum 52 of the hoisting unit 53 and is fixedly secured to the counterbalance weight 49.

It will therefore be seen that the weight of the hood is balanced by the weight 49 and to raise or lower the hood the drum 52 is rotated by the electric motor 54 through the reduction gearing 55 which has the effect of lifting or lowering the weight 49 and thereby sliding the hood along the tracks 24, the chains 56 merely taking the weight of the hood in its closed position and action as a safety means.

In the operation of this invention the hood is first moved up and backwardly on the inclined runway 24 by the operation of the hoisting unit 53. The converter is then charged or emptied and the hood moved downwardly again into its operating position. The gas and products of combustion from the converter are directed through the stack 12 and the elbow 16 into the stationary stack 28 and from thence into the main flue 29 of the plant into the atmosphere unless directed into pipe 38.

It will therefore be seen that none of the harmful products of combustion permeate the atmosphere which the operators are working in and the pure gas when required for sulphuric acid manufacture is collected free from any excess of air and is therefore in a much more suitable condition for use.

It will further be seen that the entire structure is very simply handled and effects the charging or pouring of the converter in no way at all.

Although an electric hoisting unit is disclosed in the drawings compressed air or any other source of power may be applied to the operating cable without altering the scope of this invention in any way.

What I claim is:—

1. A converter hood comprising a plurality of sections extending from a stationary delivery stack and movable in relation thereto, a roller running gear on fixed rails supporting said sections, cables attached to an intermediate section and trained to and from suitable pulleys and an operating mechanism suitably driven and coacting with a compensating weight adapted to slide said sectional stack over the mouth of a converter.

2. A converter hood comprising a sectional sliding stack formed of a hood section adapted to cover the mouth of a converter, an intermediate stack section and an elbow section movable relatively to a stationary delivery stack, a gas collecting scoop within said stationary stack, a roller running gear on fixed rails supporting said sections, cables attached to said intermediate section and trained to and from suitable pulleys and an operating mechanism suitably driven and coacting with a compensating weight adapted to slide said sectional stack over the mouth of said converter.

3. A converter hood comprising a sectional sliding stack formed of a hood section adapted to cover the mouth of a converter, an intermediate stack section detachably secured by clamps to said hood section and an elbow section fixedly secured to said intermediate stack movable relatively to a stationary stack, a roller running gear formed of a plurality of flanged wheels journalled on axles fixedly secured to said intermediate stack, a trackway fixedly secured to a supporting beam adapted to engage said wheels and allow said sections to slide thereon, cables attached to said intermediate section and trained to and from suitable pulleys and an operating mechanism suitably driven and coacting with a compensating weight adapted to slide said sectional stack over the mouth of said converter.

4. A converter hood comprising a sectional sliding stack formed of a hood section adapted to cover the mouth of a converter, an intermediate stack section detachably secured by clamps to said hood section and an elbow section fixedly secured to said intermediate stack movable relatively to a stationary stack, a roller running gear formed of a plurality of flanged wheels journalled on axles fixedly secured to said intermediate stack, a trackway fixedly secured to a supporting beam adapted to engage said wheels and allow said sections to slide thereon, auxiliary rollers supported on brackets journalled on extensions from one of said axles, adapted to engage the inner face of said supporting beams and hold said wheels to said tracks, cables attached to said intermediate section and

trained to and from suitable pulleys and an operating mechanism suitably driven and coacting with a compensating weight adapted to slide said sectional stack over the mouth of said converter.

5. A converter hood comprising a sectional sliding stack formed of a hood section, adapted to cover the mouth of a converter, an intermediate stack section detachably secured by clamps to said hood section and an elbow section fixedly secured to said intermediate stack movable relatively to a stationary stack, a roller running gear formed of a plurality of flanged wheels journalled on axles fixedly secured to said intermediate stack, a trackway fixedly secured to a supporting beam adapted to engage said wheels and allow said sections to slide thereon and so disposed as to allow said elbow to lift off said stationary stack during the sliding movement, cables attached to brackets fixedly secured to the outer walls of said intermediate stack and directed to and from pulleys rotatably mounted in suitable brackets and secured at their opposite ends to a sliding beam, a compensating weight suitably secured to said beam and an operating mechanism suitably driven and coacting with said compensating weight adapted to slide said sectional stack over the mouth of said converter.

6. A converter hood comprising a sectional sliding stack formed of a hood section adapted to cover the mouth of a converter, an intermediate stack section detachably secured by clamps to said hood section and an elbow section fixedly secured to said intermediate stack movable relatively to a stationary stack, a roller running gear formed of a plurality of flanged wheels journalled on axles fixedly secured to said intermediate stack, a trackway fixedly secured to a supporting beam adapted to engage said wheels and allow said sections to slide thereon, cables attached to brackets fixedly secured to the outer walls of said intermediate stack and directed to and from pulleys rotatably mounted in suitable brackets and secured at their opposite ends to a sliding beam, a compensating weight fixedly secured by tie rods to said beam, a flexible connection between said beam and said compensating weight adapted to be attached to an operating mechanism for sliding said sectional stack over the mouth of said converter.

7. A converter hood comprising a sectional sliding stack formed of a hood section adapted to cover the mouth of a converter, an intermediate stack section detachably secured by clamps to said hood section and an elbow section fixedly secured to said intermediate stack movable relatively to a stationary stack, a roller running gear formed of a plurality of flanged wheels journalled on axles fixedly secured to said intermediate stack, a trackway fixedly secured to a supporting beam adapted to engage said wheels and allow said sections to slide thereon, cables attached to brackets fixedly secured to the outer walls of said intermediate stack and directed to and from pulleys rotatably mounted in suitable brackets and secured at their opposite ends to a sliding beam, a compensating weight fixedly secured by tie rods to said beam, a flexible connection between said beam and said compensating weight adapted to be wound around a rotatable drum operatively connected to a suitable source of power and forming an operating mechanism for sliding said sectional stack over the mouth of said converter.

8. A converter hood comprising a sectional sliding stack formed of a hood section adapted to cover the mouth of a converter, an intermediate stack section detachably secured by clamps to said hood section and an elbow section fixedly secured to said intermediate stack movable relatively to a stationary stack, a roller running gear formed of a plurality of flanged wheels journalled on axles fixedly secured to said intermediate stack, a trackway fixedly secured to a supporting beam adapted to engage said wheels and allow said sections to slide thereon, cables attached to brackets fixedly secured to the outer walls of said intermediate stack and directed to and from pulleys rotatably mounted in suitable brackets and secured at their opposite ends to a sliding beam, a compensating weight fixedly secured by tie rods to said beam, a compensating weight fixedly secured by tie rods to said beam, a flexible connection between said beam and said compensating weight adapted to be attached to an operating mechanism formed of a rotatable drum adapted to engage said flexible connection and operatively connected to a reduction gear coupled to a suitable source of power and thereby form a means for lifting said compensating weight in one direction of rotation and lowering said compensating weight in the opposite direction and thereby sliding said sectional stack to its operating and non-operative positions.

Signed at Copper Cliff, Canada, this 26th day of July, 1930.

LESLIE MITCHELL SHERIDAN.