No. 681,983. Patented Sept. 3, 1901.

A. SCHOELLHORN & H. S. ALBRECHT.

PULVERIZER.

(Application filed Feb. 11, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. I.

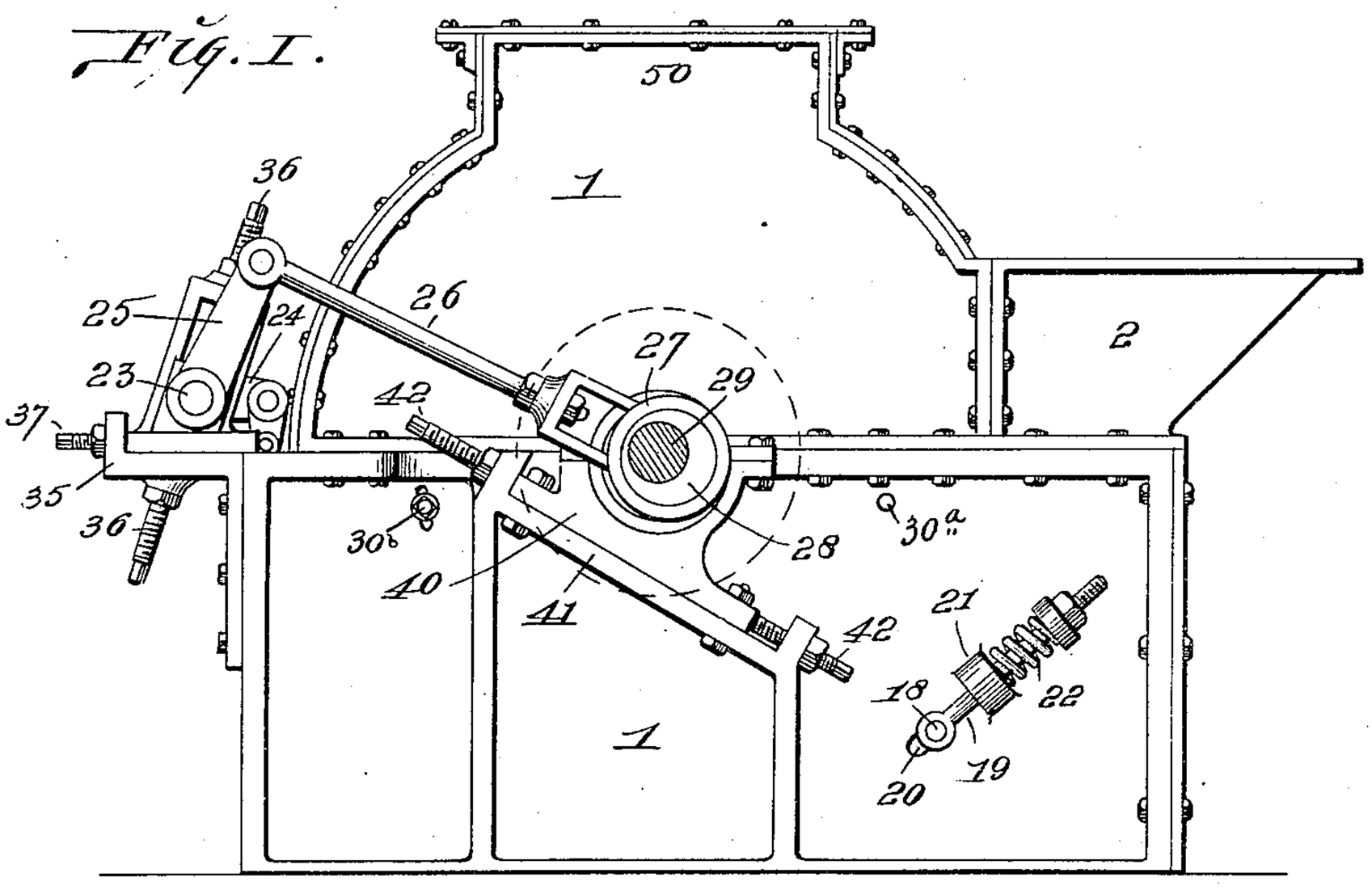


Fig. II.

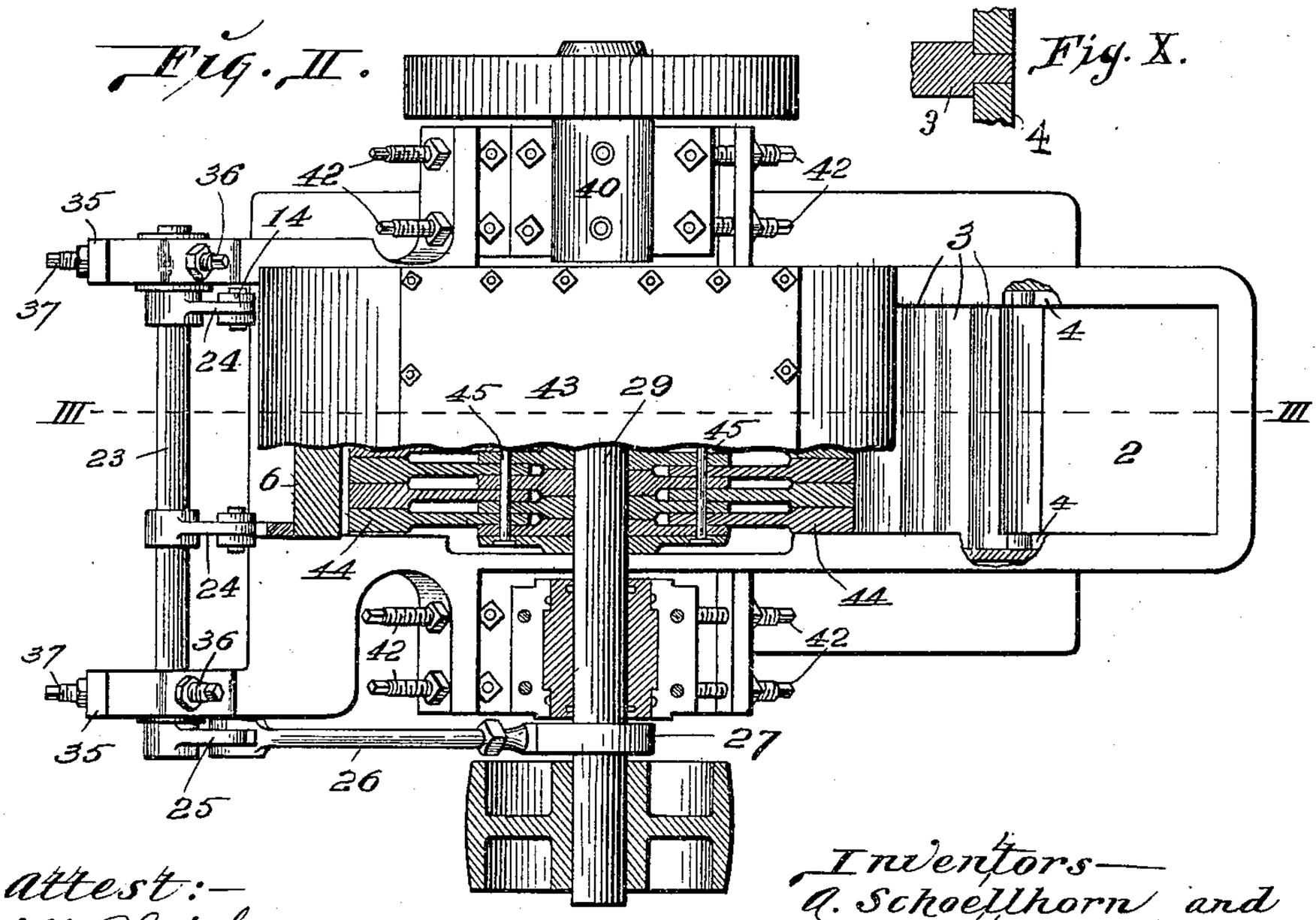


Fig. X.

Attest:—
W. P. Smith
E. C. Knight

Inventors—
A. Schoellhorn and
H. S. Albrecht.
By Wright Bros
Atty's

No. 681,983. Patented Sept. 3, 1901.

A. SCHOELLHORN & H. S. ALBRECHT.

PULVERIZER.

(Application filed Feb. 11, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. III.

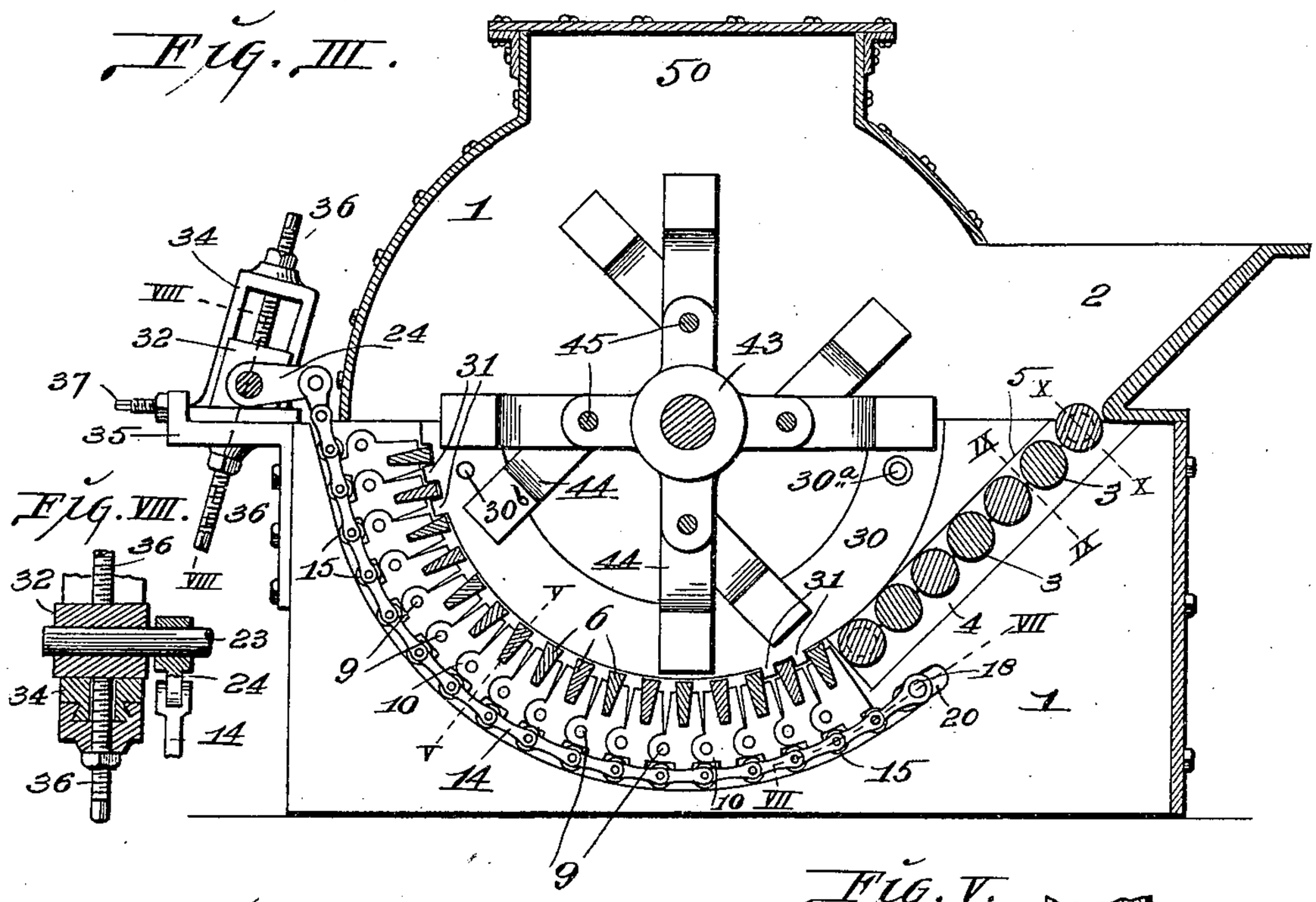


Fig. VIII.

Fig. IV.

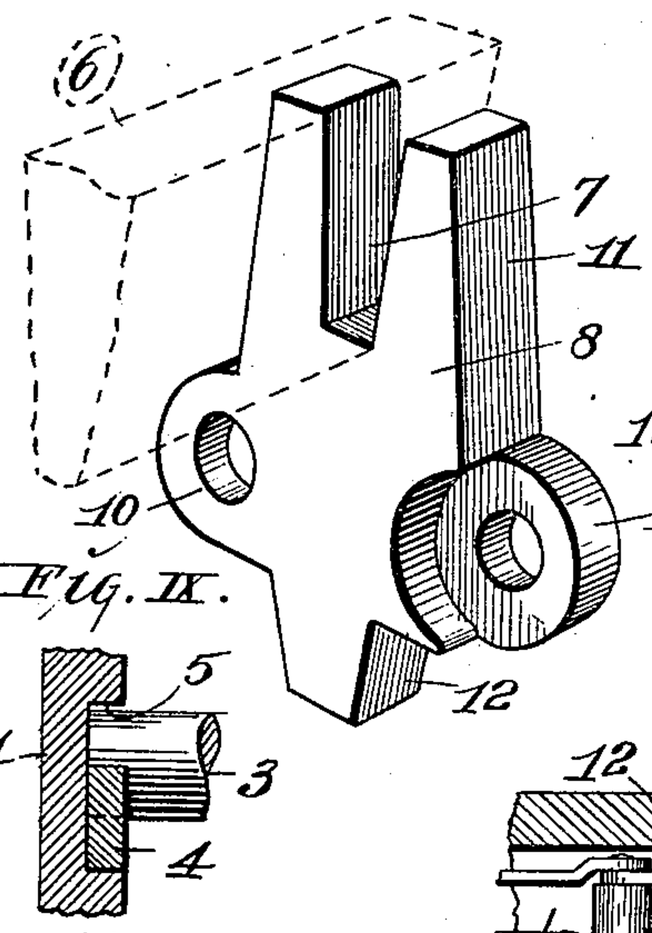


Fig. VI.

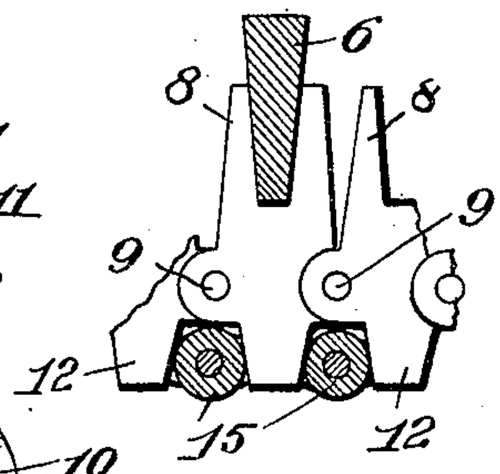


Fig. V.

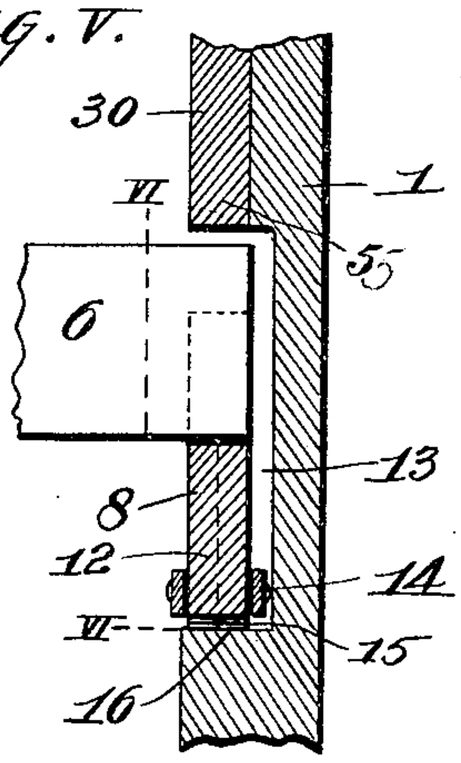
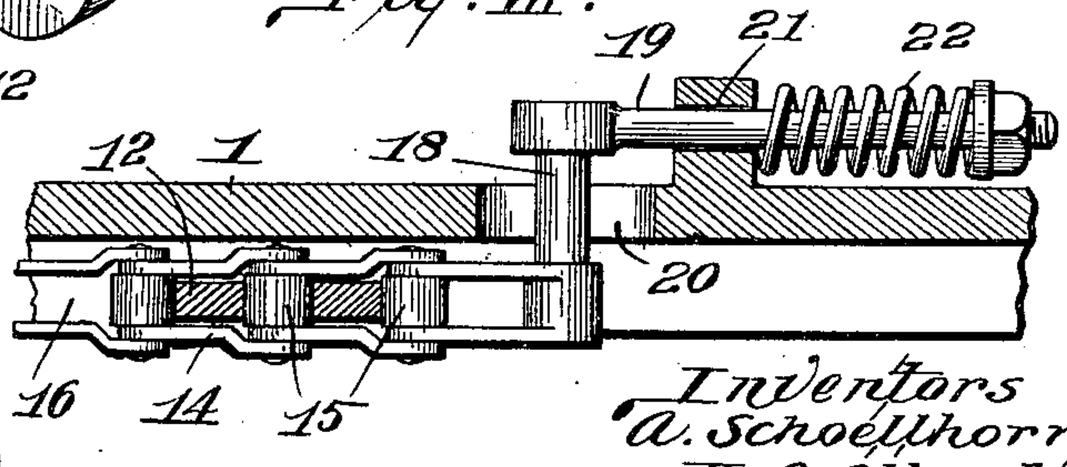


Fig. IX.

Fig. VII.



Attest:—
W. P. Smith.
E. C. Knight

Inventors
A. Schoellhorn and
H. S. Albrecht.
By Knight Bro
Atty's.

UNITED STATES PATENT OFFICE.

AUGUST SCHOELLHORN AND HERMAN S. ALBRECHT, OF ST. LOUIS, MISSOURI.

PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 681,983, dated September 3, 1901.

Application filed February 11, 1901. Serial No. 46,778. (No model.)

To all whom it may concern:

Be it known that we, AUGUST SCHOELLHORN and HERMAN S. ALBRECHT, citizens of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Pulverizers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to certain improvements in machines for pulverizing various materials, such as clay, shale, asphaltum, &c.

One object of our present invention is to produce a machine into which the material will be freely fed notwithstanding it may be of a sticky or adhesive nature.

Another object of our invention is to produce a pulverizing-machine that will have a moving self-cleaning screen or cage.

Still another object of our invention is to so form the casing or housing of a pulverizer as to minimize the escape of fine dust through the feed-hopper.

Our invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side view of our improved pulverizer. Fig. II is a top view part in horizontal section. Fig. III is a vertical section taken on line III III, Fig. II. Fig. IV is a perspective view showing one section of the jointed blocks of the screen, part of one of the screen-bars being shown in dotted lines. Fig. V is an enlarged detail vertical section taken on line V V, Fig. III. Fig. VI is a vertical section taken on line VI VI, Fig. V. Fig. VII is an enlarged detail section taken on line VII VII, Fig. III. Fig. VIII is a vertical section taken on line VIII VIII, Fig. III. Fig. IX is a section taken on line IX IX, Fig. III. Fig. X is a sectional view on the line X X, Fig. III.

1 represents the casing or housing of the machine, that is divided horizontally into two parts, which are bolted together, as shown.

2 is the hopper of the machine through which the material is fed. As the material enters the machine it is received by rollers 3, down which it travels. These rollers provide for free movement of the material into the machine, even though it may be of a sticky or adhesive nature. The rollers are supported on plates 4, (see Figs. III and IX,) that are set into grooves formed in the inner faces of the lower part of the housing. The plates have semicircular grooves that receive the ends of the rollers, and the rollers are held in the grooves by the shoulders 5, that form the upper walls of the grooves that are made in the inside faces of the housing. Two of the rollers, one at or near each end of the series, are formed with reduced ends that fit in their grooves in the plates 4, these rollers thus acting to hold the plates from moving inwardly, and thus being dislodged from the grooves that are formed in the housing to receive them, as shown by full lines in Fig. II and by dotted lines in Fig. III. The screen or cage of the machine consists of bars 6, fitting in notches 7, formed in the upper faces of fingers or blocks 8, that are pivoted together at 9 by means of perforated ears 10 on the blocks that receive connecting-pins, the two ears of each block being offset, as shown in Fig. IV, so that the ears of the adjacent blocks will match therewith and form a smooth surface on each side of the blocks considered as a whole. The upper portions of the blocks are formed with tapered sides 11, so that V-shaped spaces are left between the blocks, so as to permit the blocks to move on their pivots 9 when the machine is in operation. Each block has a downwardly-extending ear 12. Fitting in grooves 13, formed in the inner faces of the housing, are chains 14, each link of which is composed of two members, the members of the various links being connected by pins passed through friction-rollers 15, that bear against the lower shoulders 16 of the grooves 13, as seen in Figs. III and V. The ears 12 of the blocks 8 fit in the links of these chains between the rollers 15, as shown in Fig. VI. One end of each chain is spring-connected to the housing, as shown in Fig. VII, by means of pins 18 and bolts 19, the pins 18 passing through slots 20 in the side walls of the housing and the bolts 19 passing through perforated ears 21 on the outside of the housing. Between the ears 21 and the nuts on the bolts are located springs 22. The other end of

each chain is connected to a rock-shaft 23 by means of cranks 24. (See Fig. II.) On one end of the shaft 23 is a crank 25, connected by a rod 26 and strap 27 to an eccentric 28, secured to the main shaft 29 of the machine. When the machine is set into operation, the eccentric 28 will impart a rocking movement to the shaft 23, which in turn will impart a rocking movement to the blocks 8 on their connecting-pivots, the V-shaped spaces between the upper ends of the blocks permitting them to thus move or gyrate back and forth on their connecting-pivots as they are moved, through means of the chains 14, by the rocking of the shaft 23. As the blocks are thus rocked the bars 6, carried thereby, are moved back and forth in a direction transversely of their length, so that material is not allowed to stick between them, and the screen composed of the bars is thus made self-cleaning. To prevent a vertical movement of the screen as the shaft 23 is rocked, we provide the wearing-plates 30 of the machine (which in themselves are old and require no description) with lugs or projections 31, that fit between the outer ones of the series of bars 6, as shown in Fig I. The screen is thus held from moving vertically, while the blocks are free to have the rocking movement on their pivots. As the cranks 24 move downwardly the chains are drawn back by the springs 22, which yield as the cranks 24 move upwardly, and the chains are thus kept taut at all times. The shaft 23 is journaled in sliding boxes 32, supported in yokes 34, that rest upon and have a dovetail connection with brackets 35, secured to the back of the machine. (See Figs. III and VIII.) The boxes are held between set-screws 36, and by adjusting the screws the boxes may be raised and lowered, so as to move the screen bodily in an upwardly direction as the bars 6 of the screen become worn away, and should it be desired to adjust the boxes 32 toward the forward side of the machine this may be done by set-screws 37, that jam against the backs of the yokes 34. In order that the wear-plates 30 will not interfere with the vertical adjustment of the screen by moving the boxes 32, they are pivoted at 30^a to the housing at the hopper side of the machine, and their other ends are connected to the housing by bolts 30^b, that fit in slots formed in the housing. By loosening on the bolts the plates can be adjusted with the screen and when the bolts are tightened again the plates will be held in position. The shaft 29 is journaled in adjustable boxes 40, resting on shelves 41, cast upon or secured to the outer faces of the housing of the machine. The boxes may be adjusted by set-screws 42. On the shaft 29 within the housing is a beater consisting of spiders 43, between which bars 44 are pivoted by bolts 45, these bars acting to pulverize the material fed to the machine when in operation.

50 represents a top extension of the housing forming a chamber above the hopper 2, into which the dust can rise when the machine is in operation and from which much of the dust will find its way back down through the machine instead of escaping through the hopper, thus reducing to a minimum the escape of dust from the machine.

We claim as our invention—

1. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a series of rollers located beneath the hopper of the housing, a part of the series of rollers having reduced ends, and grooved plates set into the inner faces of the housing to support the series of rollers, said plates being held in position by the rollers having the reduced ends.

2. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a screen arranged beneath the beater; said screen consisting of bars normally in constant automatic oscillation supported by blocks pivoted together and provided with means for rocking them on their pivots when the machine is in operation, substantially as set forth.

3. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a screen arranged beneath the beater and consisting of bars normally in constant automatic oscillation, blocks pivoted together and supporting the bars, chains connecting with the bars, and means for moving the chains to rock the bars in a direction transverse to the line of movement of the material through the machine, substantially as set forth.

4. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a screen arranged beneath the beater and consisting of bars normally in constant automatic oscillation and means for supporting and rocking the bars in a direction transverse to the line of movement of the material through the machine when the machine is in operation, substantially as set forth.

5. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a screen located beneath the beater and consisting of bars normally in constant automatic oscillation, and means for supporting the bars and by which they are rocked in a direction transversely of their length, substantially as set forth.

6. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a screen located beneath the beater; said screen consisting of bars, blocks pivoted together and which are notched to receive the bars, chains connecting with the blocks, and means for moving said chains, said blocks having tapering sides permitting them to rock on their pivots, substantially as set forth.

7. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a screen located beneath the beater; said screen consisting of bars, blocks pivoted

together and notched to receive the bars, chains located beneath the blocks, and between which downward extensions of the blocks fit, spring-actuated bolts connecting the chains at one end to the housing, a rock-shaft to which the other ends of the chains are connected, and a rod and eccentric connection between said rock-shaft and the shaft of said beater, substantially as set forth.

8. In a pulverizer, the combination of a housing, a beater located within the housing, and a screen located beneath the beater; said screen consisting of bars, blocks pivoted together and supporting the bars, chains yieldingly connected at one end to the housing of the machine, and means to which the other ends of the chains are connected and by which the blocks are moved on their connecting-pivots when the machine is in operation, substantially as set forth.

9. In a pulverizer, the combination of a housing, a beater located within the housing, and a screen located beneath the beater; said screen consisting of bars, blocks pivoted together and supporting the bars, chains connecting with the blocks and which are spring-connected at one end to the housing, a rock-shaft to which the other ends of the chains are connected and means for rocking the shaft while the machine is in operation, substantially as set forth.

10. In a pulverizer, the combination of a housing, a beater located within the housing, and a screen located beneath the beater, which consists of bars and blocks pivoted together and which support the bars, a rock-shaft, means connecting the rock-shaft to said blocks by which the latter are moved in one direction on their pivots when the machine is in operation, and means for moving the blocks in the other direction, substantially as set forth.

11. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a screen located beneath the beater which consists of bars and blocks pivoted together and supporting the bars, a vertically-adjustable rock-shaft, a connection between said shaft and said bars, whereby the latter are moved in one direction on their pivots while the machine is in operation, and means for moving the blocks in the other direction, substantially as set forth.

12. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a screen located beneath the beater, which consists of bars and blocks pivoted together and which support the bars, means for rocking the bars in one direction on their pivots, means for moving the bars in the other direction, and means for holding the bars from moving in a vertical direction, substantially as set forth.

13. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a screen located beneath the beater which consists of bars and blocks pivoted together and supporting the bars, means for rocking the blocks in one direction on their pivots, means for moving the bars in the other direction, and means for holding the bars from moving vertically consisting of wearing-plates having projections fitting between part of said series of bars, substantially as set forth.

14. In a pulverizer, the combination of a housing, a beater arranged within the housing, and a screen located beneath the beater which consists of bars and blocks pivoted together and supporting the bars, chains connecting with the blocks, and fitting in grooves formed in the inner walls of the housing, friction-rollers carried by said chains, means for yieldingly connecting one end of the chains to the housing, and a rock-shaft to which the other ends of the chains are connected and by which the chains are moved to rock the blocks on their pivots, substantially as set forth.

15. In a pulverizer, the combination of a housing, a beater located in the housing, and a screen located beneath the beater; said housing having a top extension 50 forming a dust-chamber, substantially as set forth.

AUGUST SCHOELLHORN.
H. S. ALBRECHT.

In presence of—
E. S. KNIGHT,
N. V. ALEXANDER.