

H. WEIGEN.
SCREENING ATTACHMENT FOR POWER SHOVELS.
APPLICATION FILED SEPT. 26, 1917.

1,376,595.

Patented May 3, 1921.

2 SHEETS—SHEET 1.

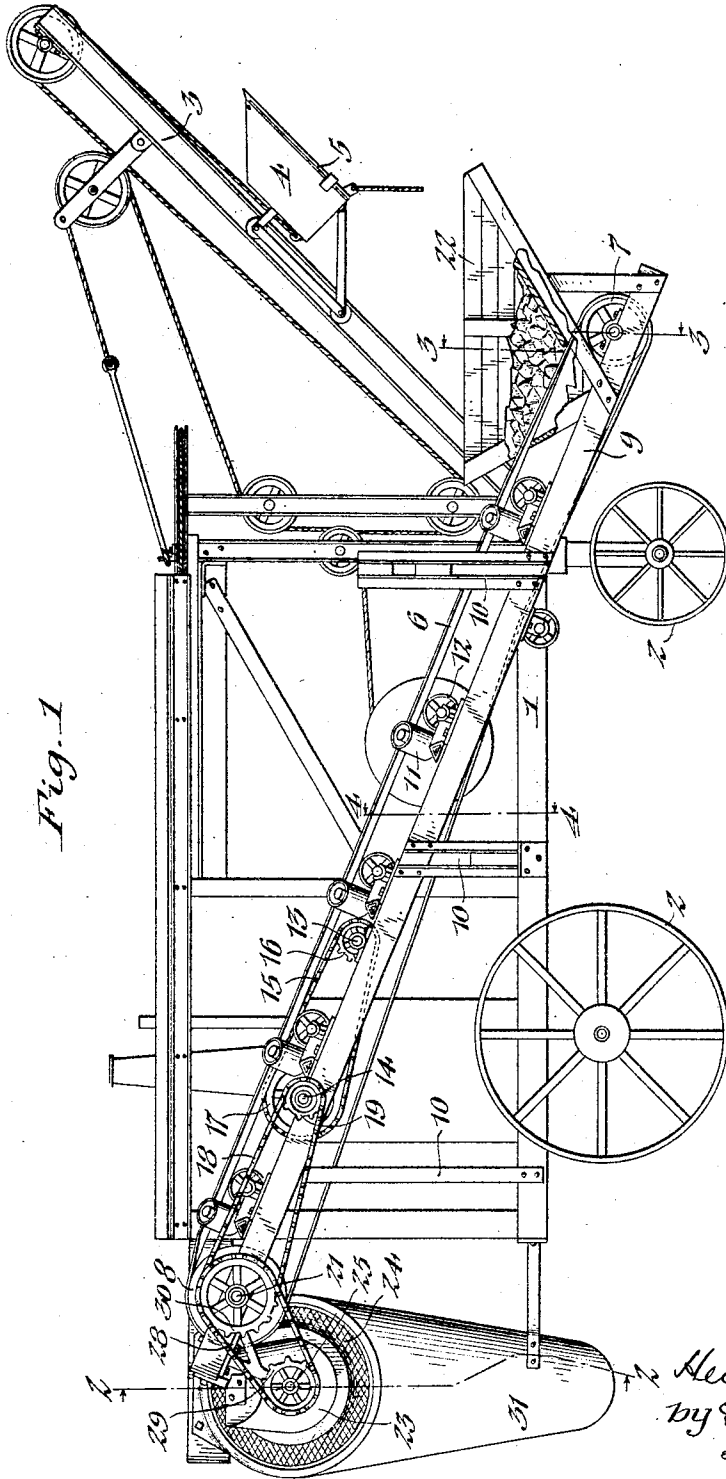


Fig. 1

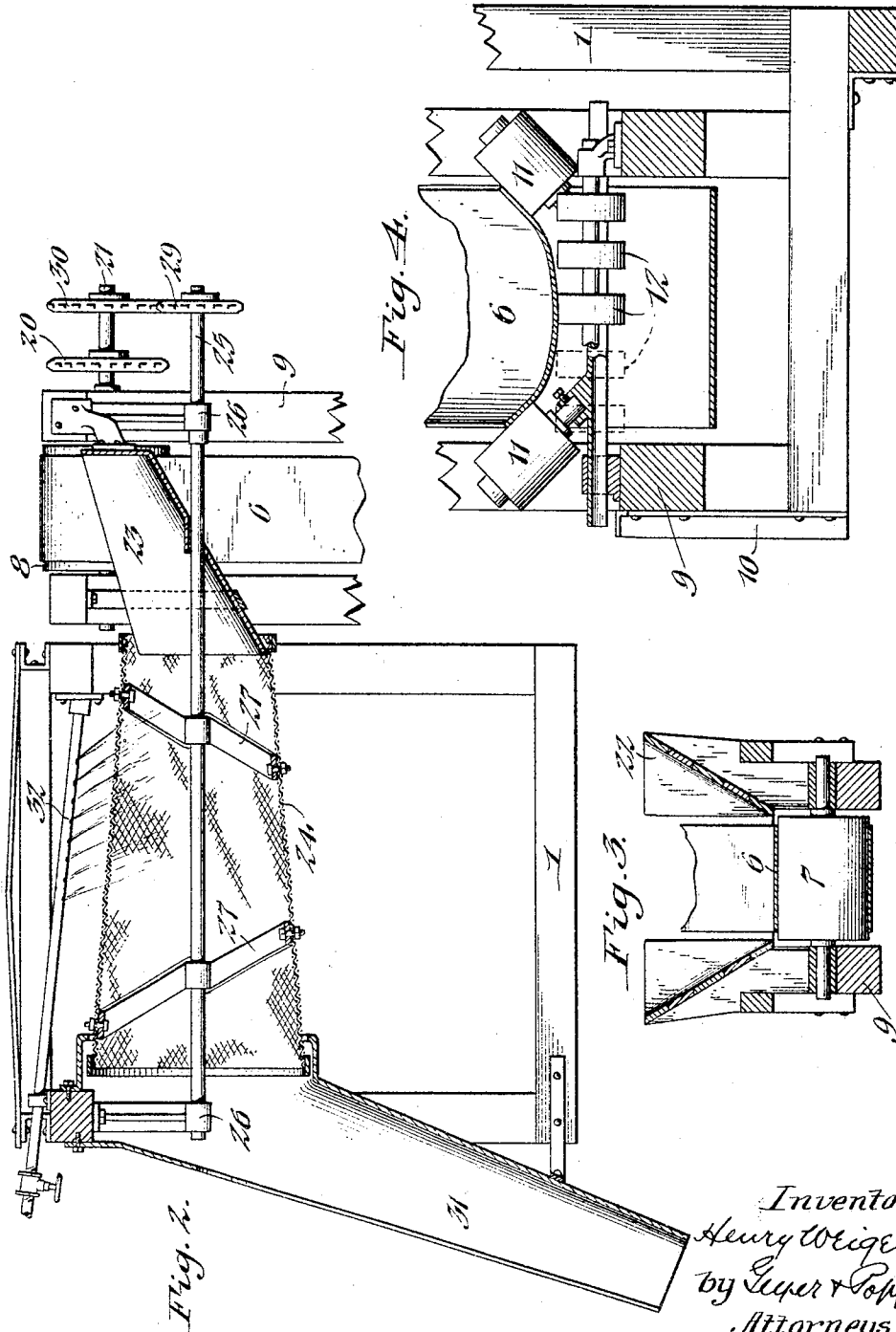
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UNITED STATES PATENT OFFICE.

HENRY WEIGEN, OF BUFFALO, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
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SCREENING ATTACHMENT FOR POWER-SHOVELS.

1,376,595.

Specification of Letters Patent.

Patented May 3, 1921.

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To all whom it may concern:

Be it known that I, HENRY WEIGEN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Screening Attachments for Power-Shovels, of which the following is a specification.

This invention relates to a portable screening machine which is more particularly adapted to be attached to a steam or power shovel for use in removing the cement concrete base of an old pavement and separate the stone therefrom so that the same may be again utilized as a part of the concrete base of a new pavement.

The object of this invention is to provide a screening attachment for a shoveling apparatus which is simple and inexpensive in construction, which can be readily attached to shoveling machines as now commonly constructed without requiring any material alteration in the same, and which will quickly, efficiently and economically screen a large amount of material without requiring any additional manual labor besides that which is now ordinarily employed for operating the steam shovel, thereby effecting a considerable reduction in the cost of work of this character.

In the accompanying drawings:—

Figure 1 is a side elevation, partly in section, of a steam shovel equipped with my improved screening attachment. Fig. 2 is a fragmentary vertical transverse section of the same, on an enlarged scale, taken in line 2—2, Fig. 1. Figs. 3 and 4 are similar views, taken on the correspondingly numbered lines in Fig. 1.

Similar characters of reference refer to like parts in the several figures.

The steam shovel associated with my improved screening mechanism may be of any suitable and well-known construction, that shown in the drawings being typical of one now in general use and comprising a carriage having a main frame 1 and wheels 2 supporting this frame, a beam 3 arranged at the front end of the frame and pivotally connected at its rear end with the lower front part of the frame so as to be capable of swinging with its front part both vertically and horizontally, and a shovel, bucket or scoop 4 slidable lengthwise on said beam and having a front open end or mouth and a

pivoted lid 5 which controls the outlet at the lower end thereof. The lowering and the lateral movement of the beam is effected by power which is transmitted thereto by any suitable form of tackle from a steam operated or other form of motor mounted on the carriage and the shovel is likewise moved lengthwise on the beam by an intermediate actuating mechanism which connects the same with the power plant on the carriage.

In the operation of this shoveling apparatus, the shovel or scoop is pushed forwardly with its mouth against the material which is to be excavated or removed during which time the beam is in its lowered position and the lid at the lower end of the shovel is closed. After a load or charge of the material has been taken into the shovel the latter together with the beam is raised and then these parts are swung laterally to one side of the path of the carriage and the lid of the shovel is opened so as to permit the contents thereof to be discharged by gravity therefrom through the lower end thereof.

The screening mechanism which embodies my invention is designed to receive the material thus discharged from the lower end of the shovel and carry the same lengthwise of the carriage preferably on one side thereof and to a screen arranged transversely at the rear end of the carriage where the stone which is to be used over again for the new pavement and the fine waste materials mixed therewith are separated and discharged in separate piles or receptacles at the rear of the machine where the same do not interfere with the progress of the shoveling operation.

In its general organization this screening mechanism comprises a conveyer, preferably of the belt type which has its belt 6 arranged lengthwise and in an inclined position on one side of the carriage so that the upper operative stretch of this belt is depressed at its front end while its rear end is elevated. The front and rear turns of this conveyer belt extend forwardly and rearwardly, respectively, from the front and rear ends of the carriage and pass around front and rear pulleys 7, 8 which are pivotally mounted on an auxiliary frame 9 connected with the adjacent side of the main or carriage frame by means of brackets 10 or

any other suitable manner. The upper operative stretch of the conveyer belt is preferably turned upwardly at its opposite longitudinal edges between its front receiving and its rear delivering portions by means of inclined guide rollers 11 which are mounted on the auxiliary frame and its bottom is supported by means of horizontal rollers 12 which are also mounted on this last mentioned frame, this construction being similar to that now commonly employed for conveyers of this character.

The power for operating this conveyer may be transmitted thereto from the power plant on the carriage by any suitable means those shown in the drawings being satisfactory and comprising a driving shaft 13 journaled transversely and horizontally on the auxiliary frame and operatively connected with the power plant on the carriage, a counter shaft 14 journaled horizontally and transversely on the rear part of the auxiliary frame, the chain belt 15 passing around a pinion 16 on the driving shaft and a sprocket wheel 17 on the counter shaft, and another sprocket chain 18 passing around a sprocket pinion 19 on the counter shaft 14 and a sprocket wheel 20 which is mounted on the shaft 21 which carries the rear or delivery pulley 8 of the conveyer belt.

Over the receiving part of the operative stretch of the conveyer belt is arranged a hopper 22 which is mounted on the adjacent part of the auxiliary frame in such position that when the material is discharged from the lower end of the shovel the same will be received by this hopper and directed to the receiving part of the conveyer belt. As the material is deposited on this belt the same is conveyed upwardly and rearwardly and discharged from the rear end thereof into a chute 23 which directs the same transversely and inwardly beyond the rear end of the main frame of the carriage.

As this material escapes from the chute it is received by a screen operating to separate the stones contained therein from the fine waste material such as pulverized concrete, sand, dirt, etc.

This screen is preferably constructed in the form of a cone frustum 24 which has its axis arranged horizontally and transversely adjacent to the upper rear part of the carriage frame and is rotated by means of a horizontal, transverse shaft 25 arranged axially within this screen. This shaft is journaled in bearings 26 which are arranged on the main and auxiliary frame and which is connected with the inner side of the screen by spiders 27. The lower or discharge end of the chute 23 projects into the small end of the rotary conical screen so as to transfer the material to be separated from the conveyer into the same. As the

screen rotates the fine material passes through its meshes and falls upon the ground immediately in rear of the carriage or into a receptacle provided for that purpose while the larger particles, such as stones, etc., are carried lengthwise of the screen and discharged from the large tail end thereof. This screen may be turned in any suitable manner but preferably by power derived from the power plant of the carriage through the medium of the conveyer driving mechanism as is shown in the drawings. This is accomplished by means of a chain belt 28 passing around sprocket wheels 29, 30 secured to the corresponding ends of the screen shaft 25 and the adjacent shaft 21 which carries the delivery pulley of the conveyer belt.

In order to carry the broken stones which have been separated from the screenings or fine particles a sufficient distance toward that side of the machine opposite to the conveyer so that the stones are not liable to become mixed with the screenings a discharge spout 31 is provided which has its upper or receiving end surrounding the tail end of the screen and inclines downwardly and laterally therefrom toward its lower or discharge end so that the stones are discharged at one side of the path of the machine, either on the ground or into a receptacle provided for the same.

If desired, the stones may also be washed as they pass from the head to the tail of the screen, this being effected by a perforated pipe 32 arranged over the screen and delivering jets of water in the same.

As the shoveling of the old concrete base of the pavement progresses and the machine advances, the broken recovered stone which is to be used over again for use in the new pavement or elsewhere may be delivered in a continuous spill bank or windrow on one side of the path of the machine, and the fine screenings may be in like manner discharged continuously immediately in rear of the machine, but if desired this separated stone and the screenings may be otherwise disposed of.

By constructing and mounting this screening mechanism on the shoveling apparatus it permits these two operations to progress simultaneously while the old pavement is being removed and permits the recovery of useful stones with no addition of manual labor other than required for operating shoveling apparatus, thereby effecting a considerable saving in cost when repaving streets in which a cement concrete base is employed.

I claim as my invention.

An attachment for a portable excavating apparatus having a carriage and a shoveling device which is arranged at the front end of the carriage and adapted to pick up the material from the roadway, comprising a con-

veyer adapted to be mounted lengthwise on one side of the carriage and having its front part projecting forwardly beyond said carriage and adapted to receive from said shoveling device the material to be separated while its rear part projects rearwardly beyond said carriage, and a screen adapted to be mounted on the rear part of said carriage and having its inlet arranged to receive the material to be separated from the rear end of said conveyer while its outlet is arranged on that side of the carriage opposite said conveyer. 10

HENRY WEIGEN.