

G. H. GREIMANN.
EXCAVATOR.

APPLICATION FILED NOV. 15, 1916.

1,217,752.

Patented Feb. 27, 1917.

3 SHEETS—SHEET 1.

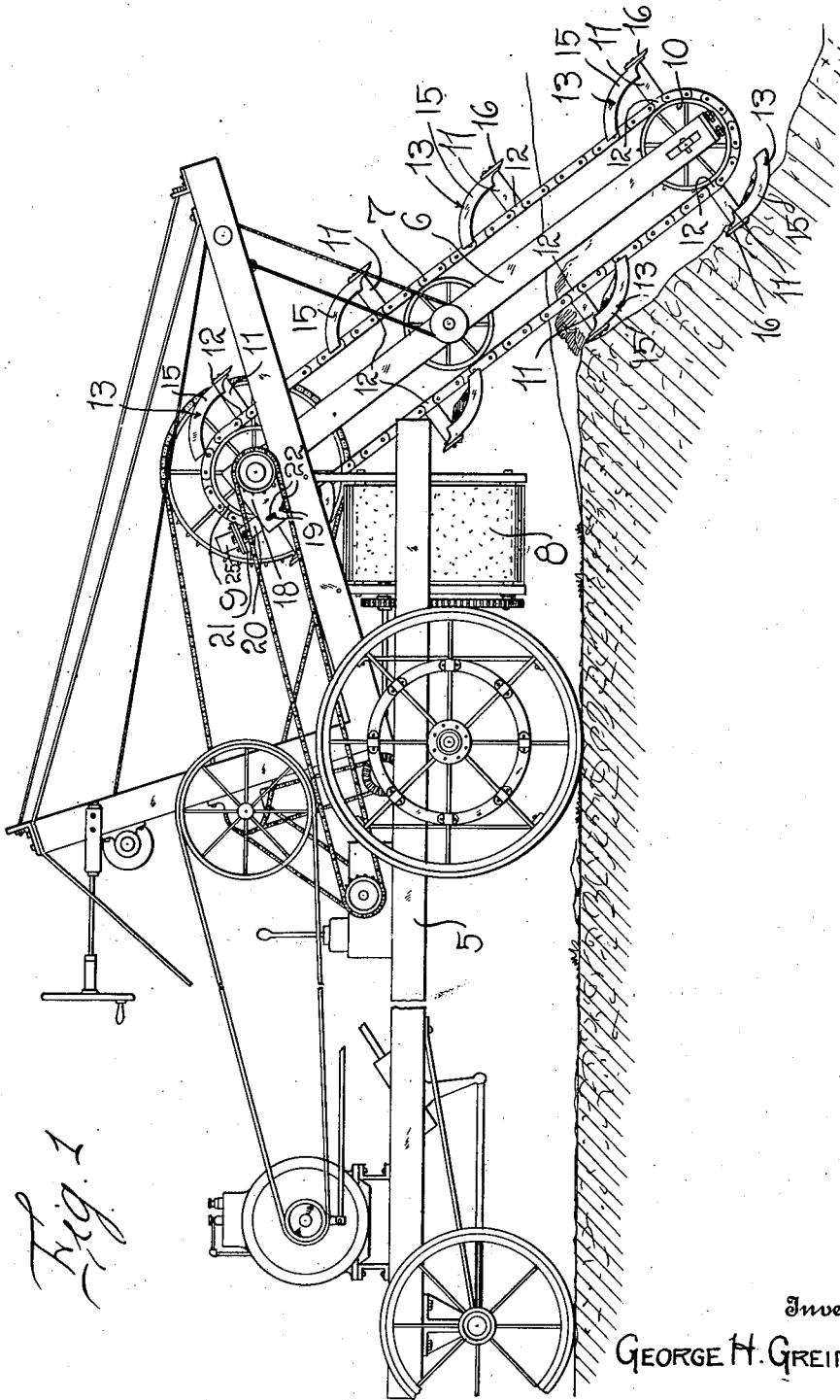


Fig. 1

Inventor
GEORGE H. GREIMANN

By *Watson E. Coleman*
Attorney

EXCAVATOR.

1,217,752.

3 SHEETS—SHEET 2.



GEORGE H. GREIMANN

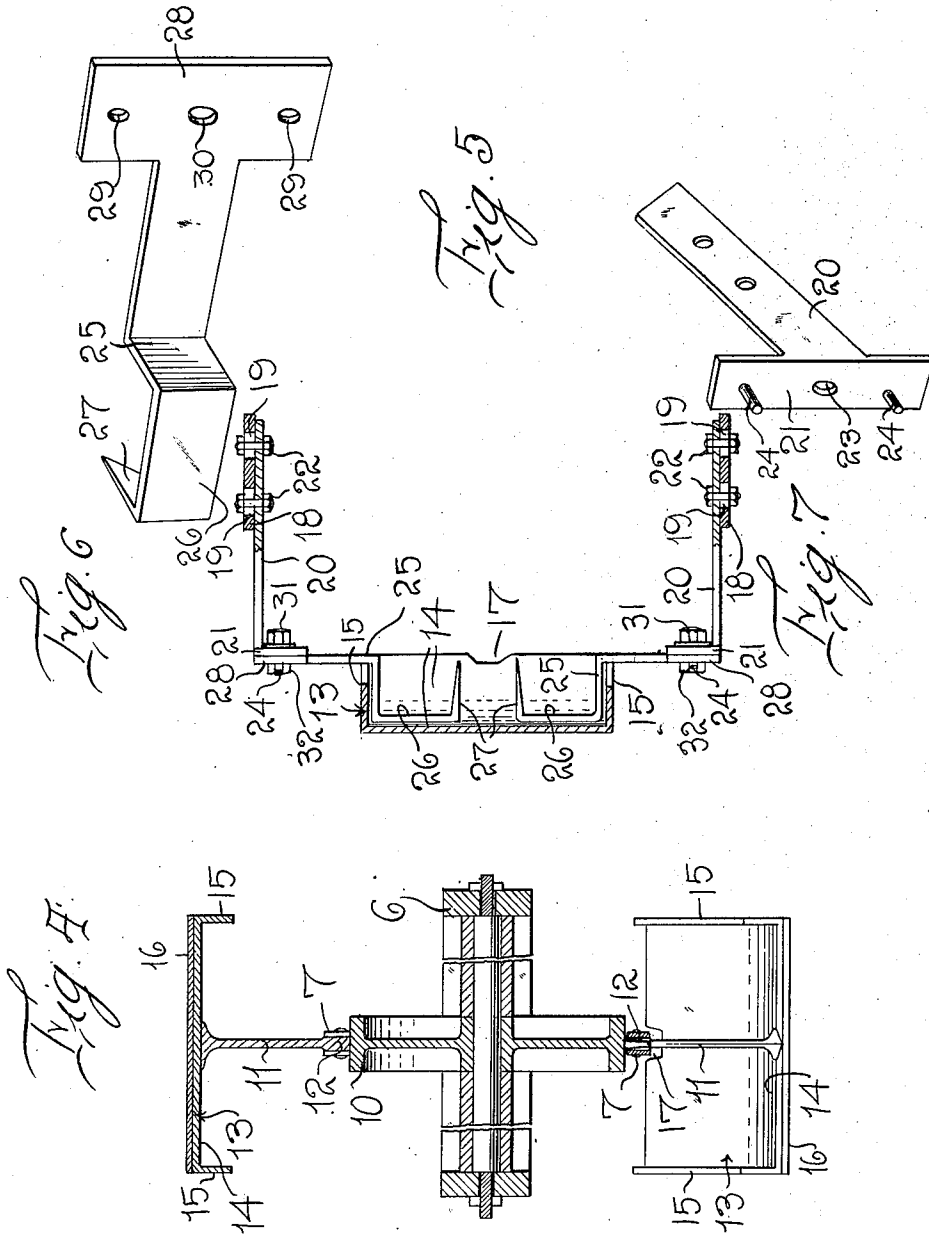
By Watson E. Coleman
Attorney

G. H. GREIMANN.
EXCAVATOR.
APPLICATION FILED NOV. 15, 1916.

1,217,752.

Patented Feb. 27, 1917.

3 SHEETS—SHEET 3.



Inventor

GEORGE H. GREIMANN

By *Watson & Coleman*

Attorneys

UNITED STATES PATENT OFFICE.

GEORGE H. GREIMANN, OF GARNER, IOWA.

EXCAVATOR.

1,217,752.

Specification of Letters Patent. Patented Feb. 27, 1917.

Application filed November 15, 1916. Serial No. 131,480.

To all whom it may concern:

Be it known that I, GEORGE H. GREIMANN, a citizen of the United States, residing at Garner, in the county of Hancock and State of Iowa, have invented certain new and useful Improvements in Excavators, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to an improved excavator and has for its primary object to provide a very simple construction and mounting of the excavator bucket upon the elevator chain, whereby a single chain may be employed and the buckets at all times held in proper relation therewith against shifting movement when loaded.

15 It is another important object of the invention to provide an excavator bucket which is of such construction that it is light in weight, as well as strong and durable, and will at the same time hold a maximum quantity of material.

20 It is an additional object of the invention to provide improved means for automatically scraping the bottom surface of the bucket and cleanly removing the contents therefrom when the latter is dumped.

25 It is one of the more specific objects of the invention to provide opposed scrapers to operate upon the bottom surface of each bucket, and improved means for mounting the scrapers for movement relative to the bucket, whereby stones or other objects which may become wedged in the bucket or between the scrapers may pass beyond the scrapers and thus obviate injury thereto.

30 With the above and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawings, in which,

35 Figure 1 is a side elevation of a ditching or excavating machine provided with my improved bucket and scraper device;

40 Fig. 2 is an enlarged fragmentary elevation, partly in section, of the bucket elevator;

50 Fig. 3 is a perspective view of one of the buckets;

Fig. 4 is a section taken on the line 4—4 of Fig. 2;

Fig. 5 is a section taken on the line 5—5 of Fig. 2;

Fig. 6 is a detail perspective view of one of the scraper members; and

Fig. 7 is a similar view of the adjustable support upon which the respective scraper members are mounted.

Referring in detail to the drawings, 5 designates a suitable wheel-supported frame, upon which the operating mechanism for the swinging boom 6 and the endless elevator chain 7 is mounted. It will, of course, be understood that as the present invention relates solely to the elevator bucket construction and scraping means therefor, various equivalent operating mechanisms for the boom and elevator may be substituted for those illustrated in the drawings. For the purposes of this explanation, it will suffice to state that upon the elevator 7, the buckets to be later described in detail are mounted and dump their contents upon a transversely inclined elevator 8 from which the material is discharged at one side of the machine into a suitable transporting vehicle.

The elevator 7 consists of a single endless chain which traverses the sprocket wheels 9 and 10 which are respectively mounted in the upper and lower ends of the swinging boom. The lower sprocket wheel 10 is preferably mounted for adjustment longitudinally of the boom so that slack in the chain may be taken up when necessary. The chain 7 is of the ordinary link type, and at intervals one of the links is omitted, and the end 12 of a standard 11, fixed to one end of the bucket 13, is substituted therefor and connected to the adjacent chain links by the ordinary pivots or coupling pins. The bucket 13 is formed from a single metal plate having a curved base or bottom wall 14 and angularly projecting flanges 15 on each of the longitudinal edges of said bottom wall. A separate cutting or excavating blade 16 is fixed to the under surface of the bottom wall 14 of the bucket and projects beyond the end thereof to which the standard 11 is secured, this projecting longitudinal edge of the plate 16 being beveled or sharpened,

as clearly shown in Fig. 3. The bottom wall 14 of the bucket, at its opposite end, has a rectangular notch or recess 17 centrally cut therein for the purpose of accommodating the stretches of the elevator chain 7.

Upon reference to Fig. 1 of the drawings, it will be observed that as the buckets successively pass around the lower sprocket wheel 10, the blades 16 thereon cut or bite into the earth and loosen the same so that the material will pass into the buckets between the side flanges 15. The curvature of the bottom wall of the bucket is such that the material will be retained therein against a gravity movement when the elevator is in operating position. After receiving its quantity of the material, the lower stretch of the chain 7, in the upward travel of the bucket, is engaged in the notch 17, thus effectively preventing any transverse shifting movement of the bucket or chain with respect to each other and preventing strain upon the pivotal connections between the standard 11 and the chain links.

To each side of the boom, at its upper end, a metal plate 18 is securely fixed, each of said plates being provided with spaced, aligned slots 19. A metal bar 20 is disposed against the inner side of each of these plates and projects upwardly longitudinally of the boom and has an obliquely disposed, angularly projecting flange 21 formed upon its upper end. A pair of bolts 22 extend through each of the bars 20 and through the slots 19 in the respective plates 18. Suitable clamping nuts are threaded upon the outer ends of said bolts, and it will be understood that by loosening the same, the bars 20 may be longitudinally shifted and adjusted. The flange 21 on each of the adjustable bars is centrally provided with an opening 23 and a pin or stud 24 adjacent to each end thereof.

Each of the scrapers consists of a metal bar 25 having one of its ends angularly bent, as at 26, and terminating in an inwardly projecting tooth or point 27. Upon the other end of the bar 25, an elongated, angularly disposed flange 28 is formed. This flange is provided adjacent its opposite ends with apertures 29 and also with a central opening 30. The flanges 28 of the scrapers are adapted for arrangement upon the upper faces of the respective flanges 21 on the bars 20, the pins 24 being received through the apertures 29. A bolt 31 is disposed through the coinciding openings 23 and 30. A nut 32 is threaded upon the upper end of the bolt. In operation, it will be understood that as the buckets successively move around the upper sprocket wheel 9, the material is dumped by gravity upon the transverse elevator 8. The bottom wall of each bucket successively comes into contact with the angular portions 26 of the two

scraper blades so that such loose material as still clings to the wall of the bucket will be scraped or removed therefrom. It will be understood that the bolt 31 is loosely mounted in the plates 21 and 28. Thus, if a stone should become tightly adhered to the bottom of the bucket or wedges between the ends 27 of the scraper members, the pressure upon said members will tend to pivotally move the scraper members with respect to the plates 21, thereby exerting a shearing pressure on the pins 24, causing the pins to break. Thus, the scraper members will give way and injury to the same will be avoided, the bucket, together with the obstructions, passing beyond and over the scraper members.

From the foregoing description, taken in connection with the accompanying drawings, it is believed that the construction, manner of operation and several advantages of my improved excavator will be clearly and fully understood. The forward edges of the bucket standards 11 are preferably beveled or sharpened, as clearly shown in Fig. 3, so that they will readily cut through the earth. In practice, I have found the bucket constructed and mounted upon the elevator chain in the manner described, to be very efficient and serviceable particularly when used upon light excavation work. The scraping members also, by reason of their construction and mounting, are reliable and efficient in practical use and will thoroughly remove such portions of the material as may adhere to the bottom of the bucket. It is manifest, however, that the particular form of these scraping members, as well as the construction and relative arrangement of the several other elements employed, may be greatly modified, and I, therefore, reserve the privilege of adopting all such legitimate changes as may be fairly embodied within the spirit and scope of the invention as claimed.

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

1. The combination with an elevator and a plurality of excavating buckets thereon, of a relatively stationary support, means for adjusting the support longitudinally of the elevator, a scraping blade pivotally mounted at one of its ends upon the support and extending transversely of the elevator, the other end of the blade being angularly bent to extend within the buckets and engage the bottom walls thereof, and means mounted in the support on opposite sides of the scraping blade to releasably prevent the pivotal movement of the blade.

2. The combination with an endless elevator, and a plurality of spaced excavating buckets thereon, of a relatively stationary, supporting member, means for adjusting the

supporting member longitudinally of the elevator, a scraper blade pivotally mounted upon the support for engagement with the bottom wall of the bucket, and breakable
5 pins mounted in the support upon opposite sides of the pivot of said plate and with which the blade co-acts, said pins yielding when the blade is subjected to excessive

pressure to permit of the pivotal movement of the blade with respect to the bucket.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

10

GEORGE H. GREIMANN.

Witnesses:

F. E. BLACKSTONE,

W. H. RAMSAY.