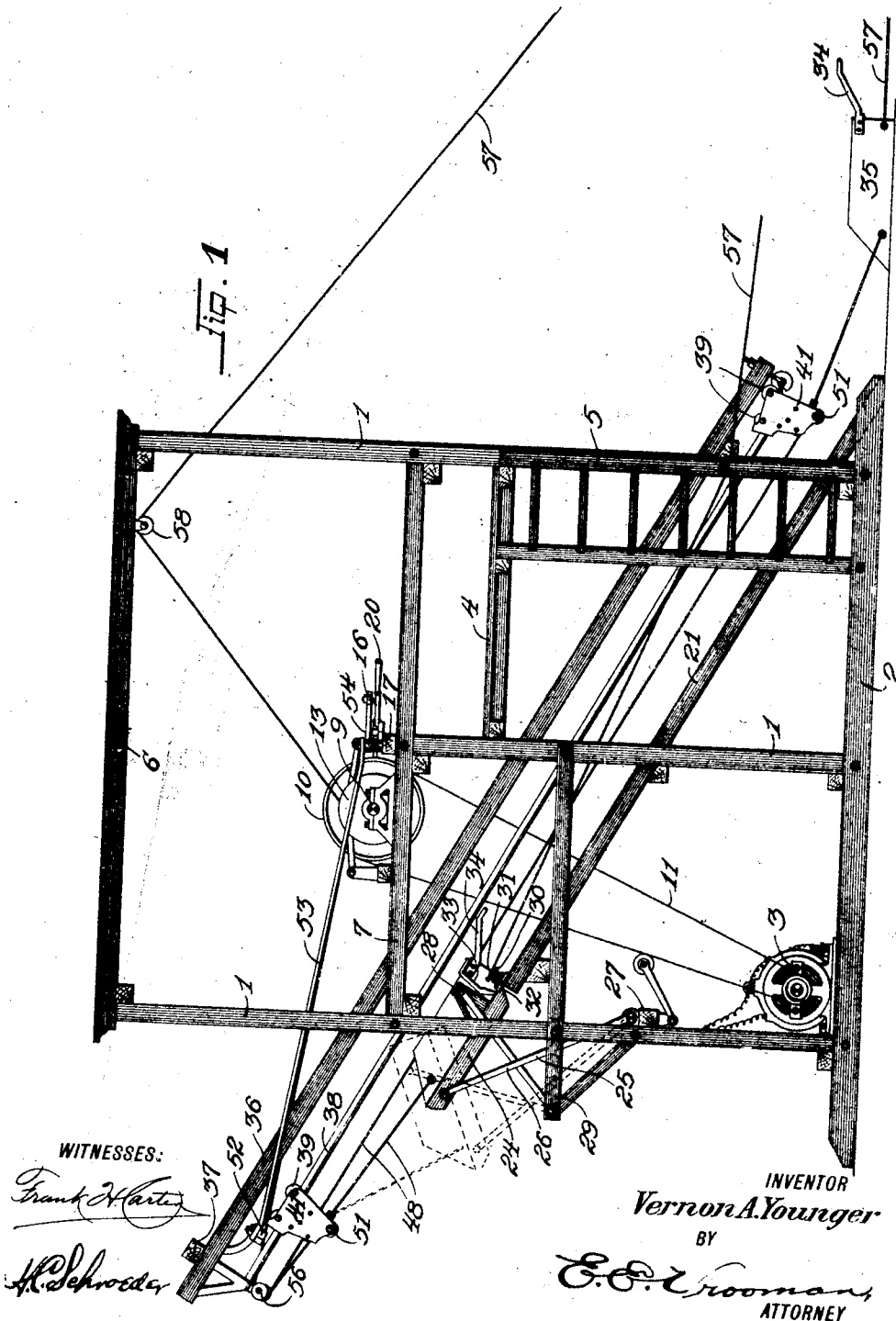


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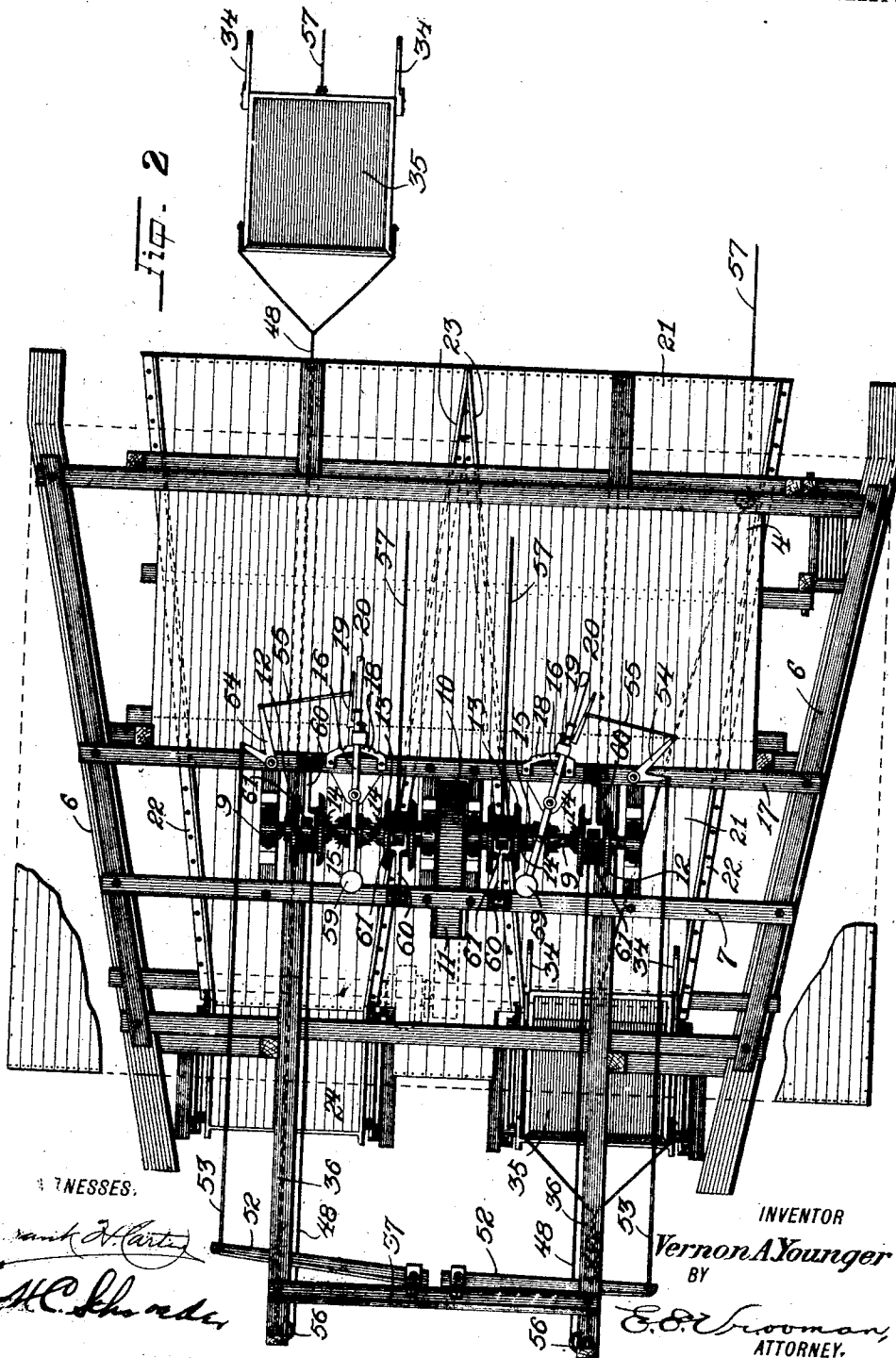


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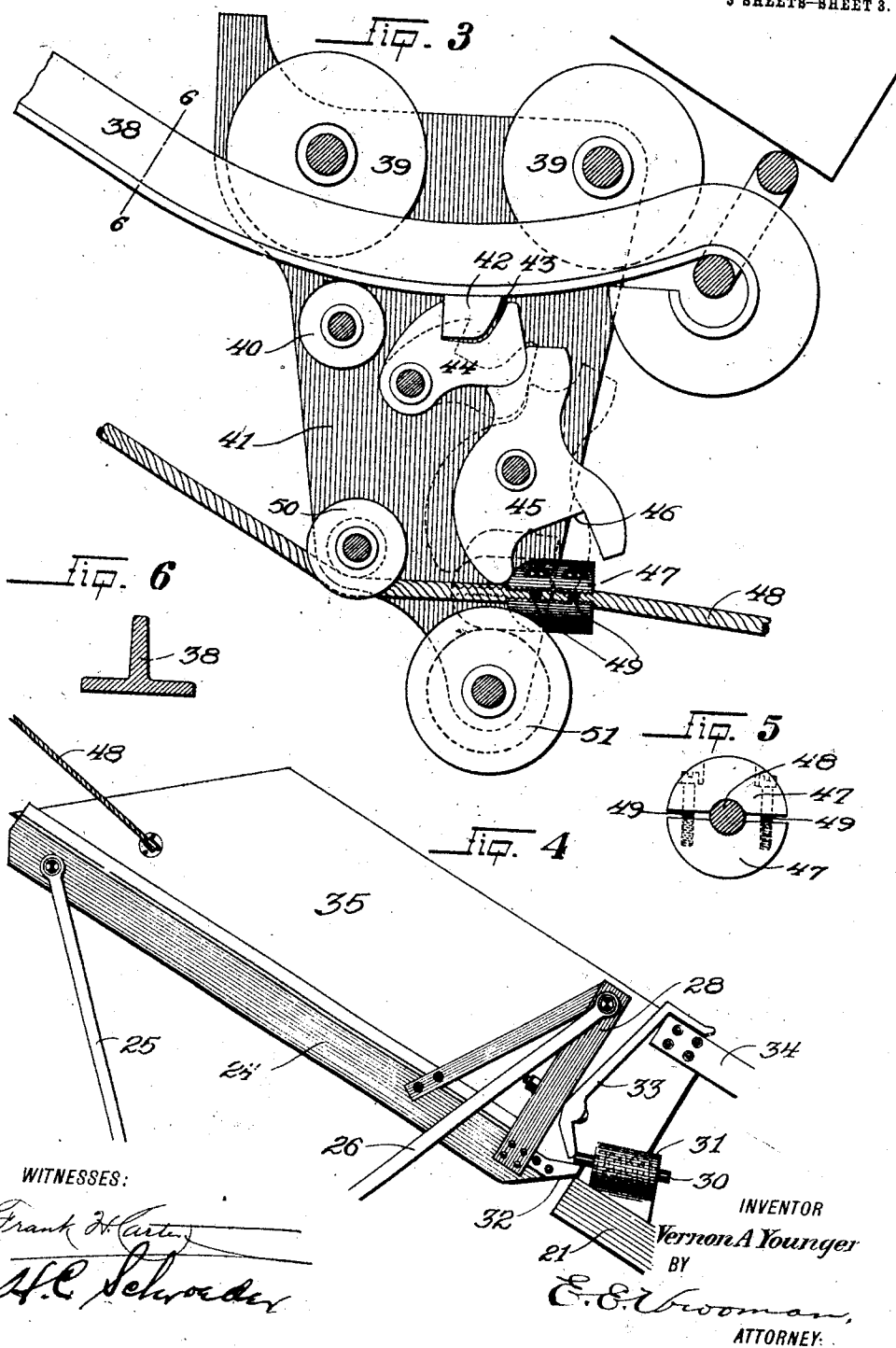


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3 SHEETS-SHEET 3.



# UNITED STATES PATENT OFFICE.

VERNON A. YOUNGER, OF SAN JOSE, CALIFORNIA, ASSIGNOR TO JOSHUA M. YOUNGER,  
OF SAN JOSE, CALIFORNIA.

## EXCAVATING-MACHINE.

977,920.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed September 4, 1909. Serial No. 516,169.

*To all whom it may concern:*

Be it known that I, VERNON A. YOUNGER, citizen of the United States, residing at San Jose, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Excavating-Machines, of which the following is a specification.

This invention relates to the subject of material conveying means for excavations wherein shovels are used for transporting the material, the shovels being connected to cables which carry them up an incline and cause them to dump their load from the top of said incline.

The principal object of the invention is to provide novel means for automatically dumping the shovels when they reach the top of the incline, and also to provide means for carrying the shovels to the dumping position, the operation of said carrying means being automatically reversed after the shovels have dumped their load so that said carrying means will return the shovels to their original position.

In carrying out the objects of the invention generally stated above it will, of course, be readily understood that the essential features of the invention are necessarily susceptible of changes in details and structural arrangements, one preferred and practical embodiment of which is shown in the accompanying drawings, wherein—

Figure 1 is a view in side elevation of the improved shovel dumping apparatus. Fig. 2 is a top plan view. Fig. 3 is a vertical sectional view of one of the carriers for automatically operating the mechanism which returns the shovels to their loading position. Fig. 4 is a detail side elevation of one of the shovel dumping devices. Fig. 5 is an end view of the clamping jaws secured to the hoisting cable shown in cross section used with the carriers. Fig. 6 is a cross sectional view of one of the tracks for a carrier.

Referring to said drawings it will be observed that the improved apparatus has been shown adapted for simultaneously handling two shovels, separate mechanism being provided for each shovel, said mechanisms being duplicates both in construction and operation, and therefore a detailed description of one will be sufficient for a thorough understanding of the invention.

In said drawings the improved shovel dumping apparatus has been shown as composed primarily of a main frame formed of vertical standards 1 which are mounted upon a suitable base 2 which supports an electric or other motor 3. Said standards 1 support a horizontally arranged platform 4 for the operator or operators to which a ladder 5 or the like leads. The platform 4 is preferably, but not necessarily arranged at the front of the skeleton frame formed of the said standards, the top connecting members 6, and the base 2. A beam support 7 is arranged slightly above and at the rear of the operator's platform 4 for a shaft 9 which is provided with a pulley 10 having a belt connection 11 with the motor 3. Said shaft 9, as shown in Fig. 2, is provided with four drums, which are arranged in pairs, the members of the pairs being designated by the numerals 12—13, respectively. Said drums are loose on the shaft 9. The inner end of the hub of each drum carries a clutch section 14 which is adapted to engage a clutch member or section 15 rotatable with, but longitudinally movable on, said shaft 9, to lock the selected drum to said shaft, in a well known manner.

The clutch sections 15 are provided with a lever 16 the forward portion of which is pivotally connected with a cross beam 17 of the main frame, said beams being provided with racks 18 for engagement with the pawls 19 of said levers, said pawls being arranged adjacent the handles 20 of said levers so that said levers and pawls may be manually manipulated from the operator's platform 4. A slideway 21 is supported on an incline by said main frame, said slideway extending from the front to the rear thereof, and is provided with guard flanges 22 at its longitudinal edges and is also centrally divided by the diverging flanges 23 to provide two runways which guide the shovels to the tilting platforms 24. Said tilting platforms are normally supported in alinement with their respective runways by means of the front and rear arms 25—26, the front arms 25 having their upper ends pivotally connected to the outer end of said platforms and their lower ends pivotally connected to a cross beam 27 of the main frame. The rear arms 26 have their upper ends pivotally connected to standards 28 at the inner end of the platforms 24, said arms crossing the

arms 25 and having their lower ends pivotally connected to the beams 29 which are above the beam 27 and project outwardly from the main frame. Each of the platforms 24 has its inner end beveled and said end is normally locked to the slideway 21 by means of the spring pressed pin 30 mounted in a tubular guide 31 normally held in engagement with the lip 32 projecting from said beveled end. The standards 28 carry a pivotally mounted tripping lever 33 the lower end of which is in contact with said pin 30 and the upper end of which is in the path of movement of the inner end of the handle 34 of the shovels 35, so that when said handle contacts with said lever, it will be rocked on its pivot to force the pin 30 from engagement with the lip 32, whereupon the weight of the shovel will cause the platform to rock upon its supporting arms 25—26 and drop to the position indicated by dotted lines in Fig. 1.

A beam 36 is supported by the main frame centrally above each runway of the inclined slideway 21, each of said beams having its upper end extended well beyond the upper end of said slideway, and are connected by the cross beam 37. Each beam is provided with a pendent track 38 preferably of an inverted T-shape, the base flange of which is engaged by the upper and lower rollers 39—40 of the carriers 41. The bottom surface of said base flange carries a pendent lug 42 which engages the notch 43 of a pivotally mounted cam 44 mounted in said carrier. Said cam 44 is normally held in engagement with said lug 42 by the cam 45 pivotally mounted in the lower portion of said carrier 41, said cam 45 being provided with a bifurcated lower end 46 which is in the path of movement of a pair of jaws 47 detachably held in clamping engagement with a hoisting cable 48 by means of the bolts 49, so that when said cam 45 is rocked by contact with said jaws, the cam 45 will be disengaged from the lug 42 whereupon said carrier will move with said cable. Guide rollers 50—51 are provided in the base of the carrier for the cable 48.

The cross beam 37 carries two oppositely projecting pivotally mounted tripping levers 52 the outer ends of which project across the tracks 38 and are in the path of movement of the carriers 41. Each lever 52 has a rod connection 53 with a bell-crank lever 54 mounted on the cross beam 17 which in turn has a rod connection 55 with the pawl 19 of levers 16, so that when the levers 38 are rocked by contact with a carrier, the levers 16 will be rocked to automatically shift the clutch section 14 from one drum to the adjacent drum.

The drums 12 are for hoisting the shovels, and the drums 13 for returning the shovels to their loading position, a separate cable

being employed for each drum. The cables 48 which cooperate with the drums 12 for hoisting the shovels, have one end fastened to said shovels, said cables passing through the carriers and over a pendent pulley 56 at the outer end of the tracks 38, and from said pulley the cables extend to and wind about the drums 12. The cables 57 which cooperate with the drums 13 to return the shovels to their loading position have one end fastened to the rear of the shovels and pass through an anchored block or pulley (not shown) and are then extended to and through a pendent pulley or block 58 in the top of the main frame and from said pulley 58 to the drums 13 and are wound thereon in a direction opposite to that which the cables 48 are wound upon the drums 12.

Incidental details may be employed in connection with the drums 12—13 such as a counterweight 59 for balancing the shifting levers of the clutch sections 14 and a pivotally mounted lever 60 carrying a roller 61 for pressing on the cables wound upon the drums to properly space the convolutions thereof.

It will be seen from the foregoing that when a shovel is about to enter its runway, the jaws of the hoisting cable will contact with and carry the carrier 41 along the track 38 so that when said shovel reaches the tilting platform and is dumped thereby, the carrier will be in contact with the tripping lever which shifts the clutch section from the hoisting drum 12 to the lowering drum 13, so that the shovel will be automatically returned to its loading position by said drum 13 and cable 57. When the shovels have been returned to their loading position, the clutch section 14 is manually shifted from drum 13 to the idle position indicated at the right hand side of Fig. 2 until the shovels are loaded, after which said clutch section is further shifted to engage with drum 12.

What I claim as my invention is:—

1. A device of the character described comprising a slideway; raising and lowering drums carried by said slideway, separate cables for each drum, shovels connected to said cables, shovel dumping means at one end of said slideway, tracks carried by said slideway, a carrier mounted on each track, and means carried by the cables of the hoisting drums for causing said carriers to render the hoisting drums idle and the lowering drums active after the shovels have been dumped.

2. A device of the character described comprising a slideway provided with runways, a raising and a lowering drum for each runway, shovel dumping means at one end of each runway, a cable for each drum, a shovel connected to the cable of each raising and lowering drum, a track arranged

above each runway, a carrier on each track, means carried by the hoisting cables for engaging with said carriers, shovel dumping means at the upper end of each runway, and  
5 tripping mechanism actuated by said carriers for rendering the raising drums idle and the lowering drums active after the shovels have been dumped.

3. A device of the character described,  
10 comprising a slideway provided with runways, a track supported above each runway, a carrier normally fast on said track, raising and lowering drums for each run-  
15 way, a cable for each drum, a shovel connected to the cable of the drum of each runway means carried by the hoisting cable for releasing the carrier from the track, and causing the same to travel with said cable,  
20 means for automatically dumping the shovels, and means actuated by said carriers for rendering the raising drums idle and the lowering drums active after the shovels have been dumped.

4. A device of the character described  
25 comprising an inclined slideway provided

with runways, a raising and a lowering drum for each runway, a shaft on which said drums are loosely mounted, a slidable clutch between each raising and lowering  
30 drum, a cable for each drum, shovels connected to the cables of the raising and the lowering drums, a shovel dumping platform carried by each runway, a track supported above each runway, a carrier on each  
35 track, tripping mechanism at the upper end of said tracks connected with said clutches, and means carried by the hoisting cables for engaging with said carriers to cause the same to actuate the tripping mechanism  
40 after the shovels have been dumped and thereby cause said clutches to release the raising drums and engage with the lowering drums.

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

VERNON A. YOUNGER.

Witnesses:

J. M. YOUNGER,  
H. C. SCHROEDER.