

APPLICATION FILED OCT. 29, 1907.

Patented Feb. 1, 1910.

4 SHEETS—SHEET 1.



W. P. Burke
Edw. D. Spring

John Ashford
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J. ASHFORD.
CONVEYER.
APPLICATION FILED OCT. 29, 1907.

948,085.

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4 SHEETS—SHEET 2.

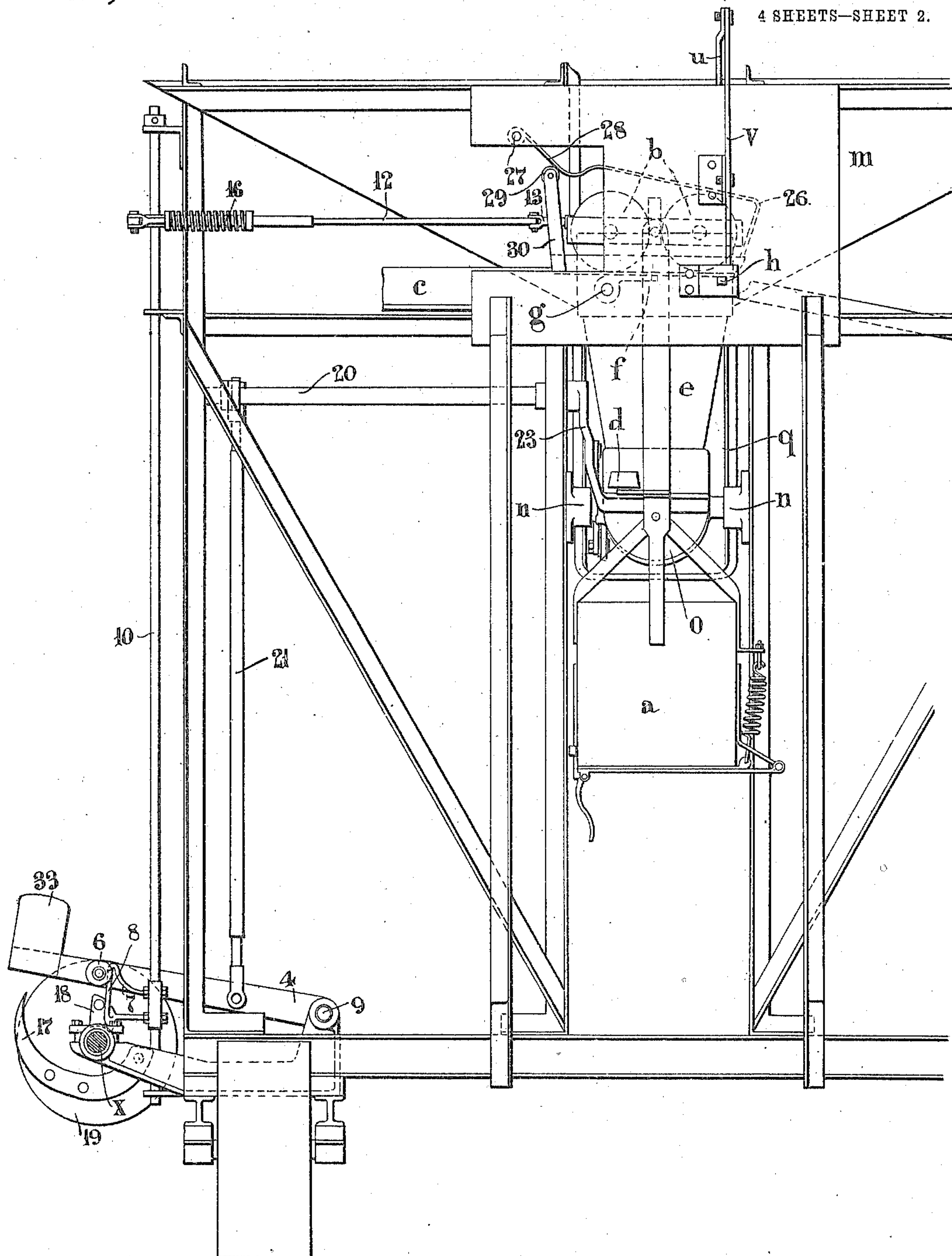


Fig. 2.

WITNESSES

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4 SHEETS—SHEET 3.

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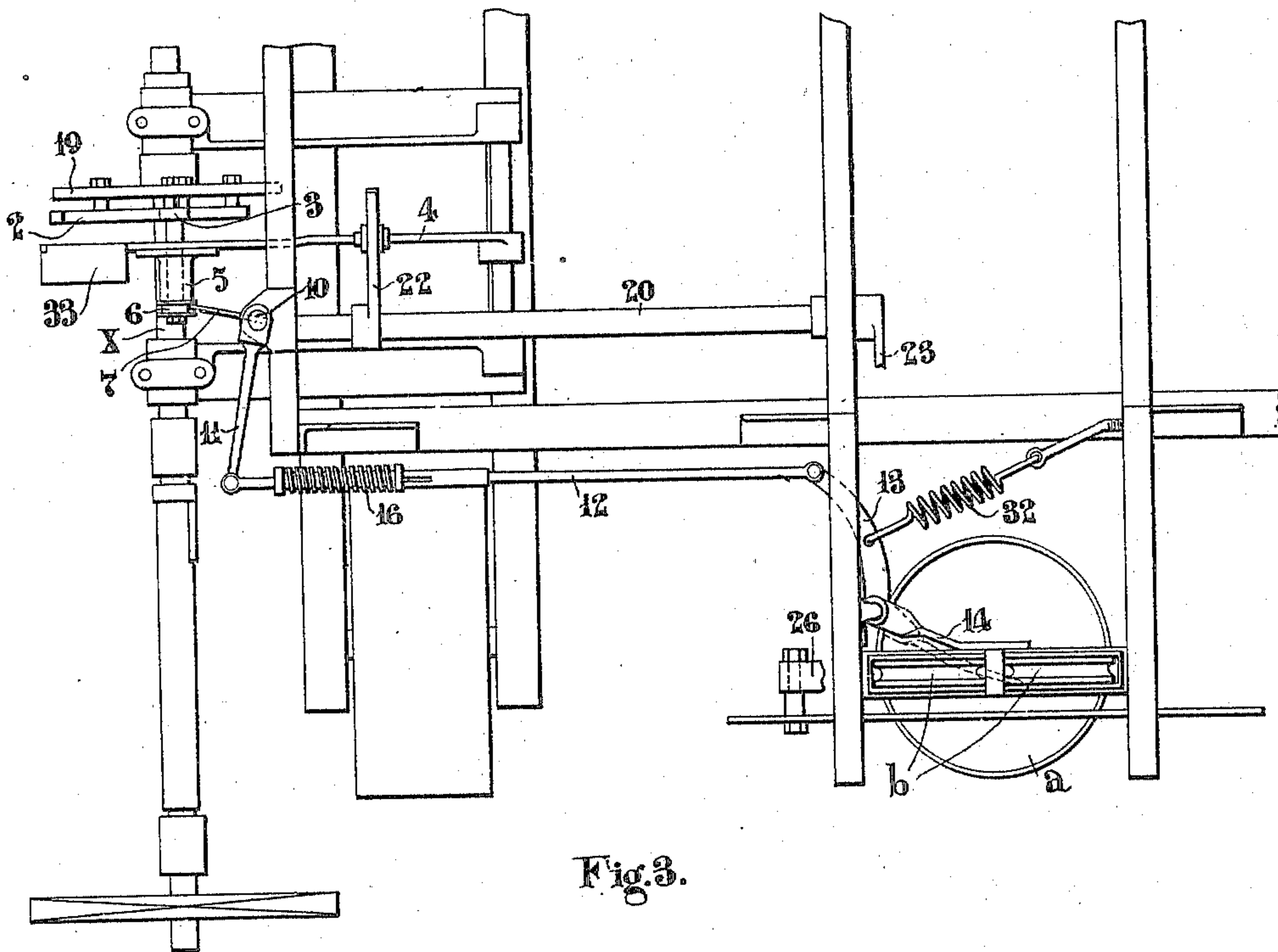


Fig. 3.

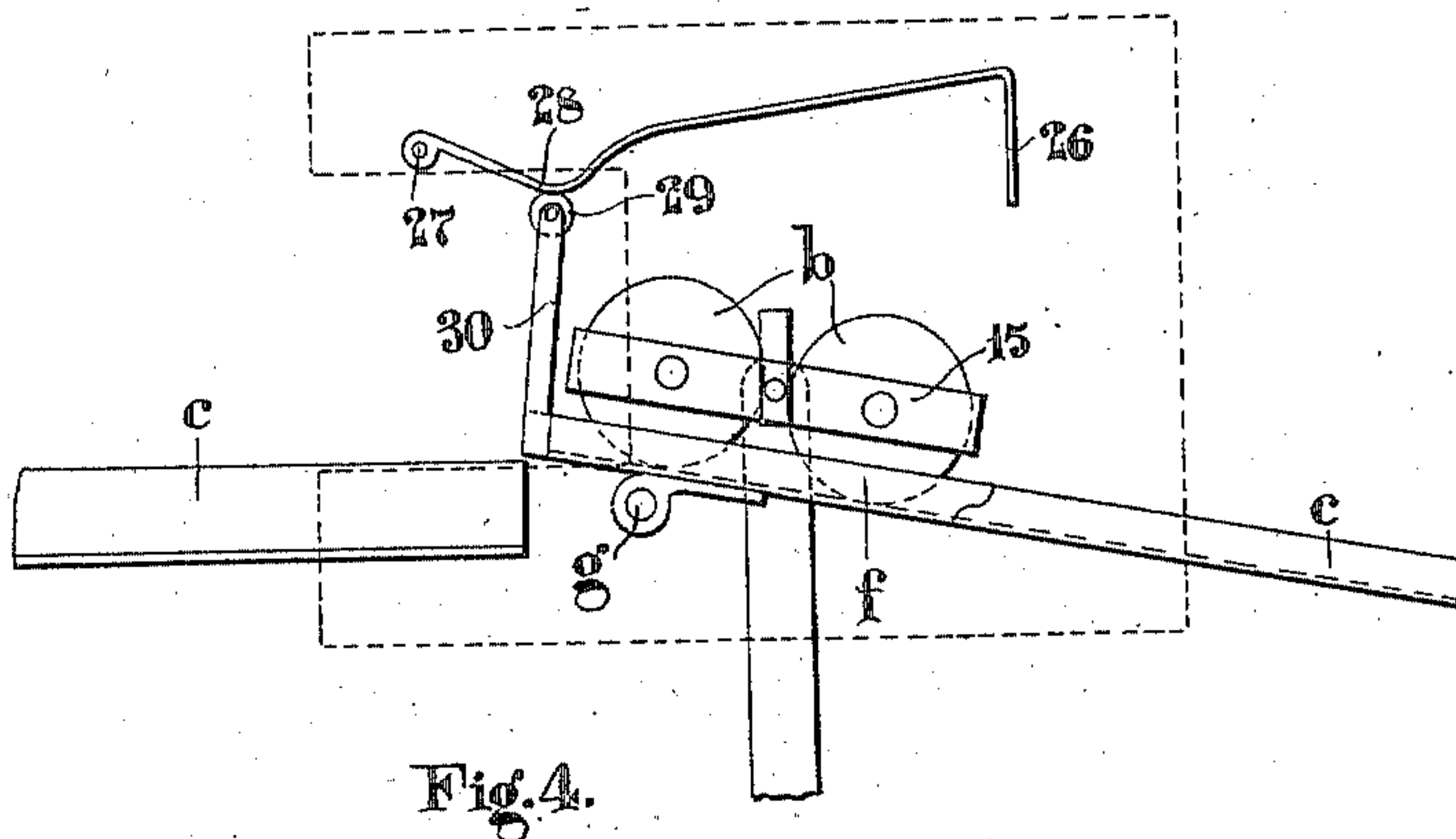


Fig. 4.

WITNESSES

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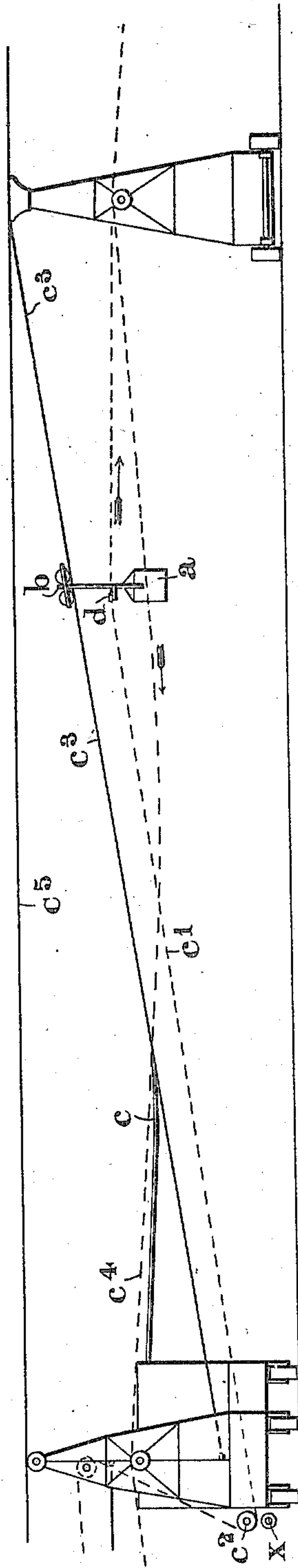


Fig. 5.

WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN ASHFORD, OF AMRITSAR, INDIA.

CONVEYER.

948,085.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed October 29, 1907. Serial No. 399,733.

To all whom it may concern:

Be it known that I, JOHN ASHFORD, a subject of the King of Great Britain and Ireland, and residing at Amritsar, Punjab, India, mechanical engineer, have invented certain new and useful Improvements in and Relating to Conveyers, of which the following is a specification.

This invention relates to the type of conveyer employing skips, buckets, wagons or the like, running upon over-head or ground wires or rails.

The object of the invention is to provide mechanism whereby at any desired loading point, the skip or wagon is automatically stopped, filled with a measured quantity of the material to be conveyed, and restarted again.

In carrying the invention into effect in one convenient manner as applied to skips or wagons drawn by a continuously moving wire or rope, each skip or wagon is adapted to be disengaged from its propelling wire and be brought to rest beneath filling chutes and hoppers, at the same time automatically setting in motion the loading mechanism. After the loading operation is finished, the mechanism, in returning to its original position, releases the skip or wagon so that it may run down an incline and be again engaged with its propelling wire or the like and conveyed away to any desired point.

Referring now to the accompanying drawings which illustrate one convenient form of apparatus constructed according to the invention, Figure 1 is an end elevation, partly in section, of the loading and despatching mechanism adapted for a skip or bucket running upon an overhead rail or wire; Figs. 2 and 3 are respectively side elevation and plan of the same; and Fig. 4 is a detail side elevation of the rail portion upon which the skip is supported during its filling operation showing the rail in its tilted position. Fig. 5 is a diagrammatic side elevation illustrating the method of propelling the receptacles or skips.

The skip, *a*, is suspended from wheels, *b*, adapted to run along the rail, *c*. In the apparatus illustrated the skip is propelled along the rail by a traveling rope or wire adapted to engage and disengage rollers *d*, carried by the skip in a manner more fully described in the specification of my concurrent application No. 399,732.

As an empty skip approaches the loading

mechanism, its propelling means are automatically disengaged and it is brought to rest beneath the chute *e*, by mechanism hereinafter described. The wheels, *b*, of the skip, when in this position, rest upon a short length of rail, *f*, which is pivoted upon a fulcrum *g*, a little to the rear of the center of the skip. This rail, *f*, is held in position by means of a catch *h*, while the skip is being filled, the catch being automatically released at the correct moment as hereinafter described, whereupon the weight of the loaded skip causes the rail, *f*, to tilt to any desired angle. Simultaneously with the releasing of this catch, *h*, a stop, which is adapted to retain the skip in its position of rest, is also automatically removed in a manner hereinafter more fully described. The skip is then free to run down the inclined rail, *f*, on to the main rail, *c*, and put into driving connection with the propelling wire or rope *c* (shown dotted in Fig. 5) by the engagement of said rope with the rollers *d* which are preferably conical as shown in Fig. 1, so as to grip the rope between them. The rope *c* is kept continuously running by being passed about a pulley *c*² driven from the main driving shaft *x* of the apparatus. The skip *a* passes from the rail *c* on to a fixed wire or rope *c*³ which is supported on the main standards and is thus conveyed to the point of discharge. The return of the empty skips is accomplished in a similar manner by the return portion *c*⁴, of the propelling rope, the skips being supported on the return portion *c*⁵ of the fixed wire or rope. The filling hopper, *m*, is loaded up with the material that is to be carried away, either by manual labor or by any mechanical appliance. The hopper terminates at its lower extremity in a chute, *e*, from which the material is discharged into the skip. This chute is supported by trunnions, *n*, about which it may oscillate or rotate. The lower end of the chute, *e*, is provided with a door, *o*, which is closed in the normal position of the chute, and at the same time, the upper part of the chute coincides with the opening in the bottom of the hopper. The top of the chute, *e*, and bottom of the hopper, *m*, are each struck to a radius from the center of the trunnions or pivots, *n*, of the chute, and at the rear of the chute is attached a curved shield, *q*, struck to the same radius. The chute normally lies in an inclined position, as shown in full lines in Fig. 1, but when

the skip advances into loading position, mechanism, hereinafter described, is automatically thrown into action which causes the chute to revolve upon its trunnions until it reaches an approximately vertical position, as shown in dotted lines in Fig. 1. As this movement takes place, the door, *o*, at the bottom of the chute, *e*, opens, thus allowing the contents of the chute to stream out into the skip, and simultaneously the curved shield, *q*, attached to the rear of the chute, *e*, closes the opening, at the bottom of the hopper. In this manner the quantity of material delivered to the skip is the measured quantity contained within the chute, *e*. After a pause of sufficient duration for the contents of the chute, *e*, to be completely discharged into the skip, the chute is automatically returned to its normal position, the bottom door, *o*, being simultaneously closed. The chute thereupon receives a further supply of material from the hopper ready for the next skip. The release of the tilting rail, *f*, is accomplished by the chute, *e*, as it returns to its normal position, any convenient levers or other devices being employed for actuating the retaining catch, *h*, of the tilting rail. For example, a projecting part of the chute is adapted to engage a tongue, *r*, on the lever, *s*, but to freely pass such tongue as the chute moves into its discharging position. Upon the return movement, however, the tongue engages a stop on the lever, *s*, and the lever is thus moved laterally upon its pivot, *t*. By means of further levers, *u* and *v*, the bolt or catch, *h*, is moved out to release the pivoted rail, *f*. The catch, *h*, is returned when the rail rises again, by a spring, *w*. As the skip leaves the tilting rail, *f*, such rail is returned to its initial position by any convenient counterbalancing device.

I will now describe the preferred means by which the oscillation of the chute, *e*, is accomplished and controlled. A motion shaft, *x*, arranged in any suitable position adjacent the loading point is continuously driven by any suitable means. It may for example be conveniently driven by the rope or wire which propels the skips in apparatus such as above described, the rope being suitably diverted so as to pass around a driving wheel on the shaft, *y*. A cam 2 is provided on this motion shaft adapted to be engaged by a sliding or otherwise laterally movable, roller 3 such roller being mounted on a lever 4. This lever is preferably not moved laterally itself but is provided with a sleeve 5 through which a short spindle, carrying at one end the roller, 3, is adapted to slide. The other end of the spindle is provided with a grooved collar 6, which is engaged by a loop-shaped lever 7, the outer part 8 of which is curved to a radius struck from the pivot 9 of the lever 4, whereby such lever

7 is always in engagement with the collar 6. The lever 4 is provided with a weight 33 adapted to counterbalance the chute, as will be hereinafter more readily understood.

The lever 7 is rigidly connected to a vertical shaft 10 which is further connected by levers 11 and 12 to a bell-crank lever 13, 14, the arm 14 of which normally lies in the path of the skip-supporting frame 15. By means of this mechanism the skip, as it runs into position beneath the chute, *e*, actuates the loop-shaped lever 7 to slide the roller, 3, into the path of the cam, 2. As it is possible that the latter would, at this time, not be in a position to receive the roller, 3, the lever 12 is made telescopic and fitted with a spring 16, such spring being compressed under these circumstances until the cam 2 has rotated sufficiently to receive the roller. The spring 16 then acts to move the roller into position. The cam 2 consists of two portions 17 and 18 suitably carried by a cam plate 19. The part 17 is adapted to engage the top of the roller 3 and draw it down, while the part 18 is adapted to engage the bottom and raise it. This vertical motion is transmitted to the rocking shaft 20 by a connecting rod 21 and lever 22, and upon the rocking shaft is fixed an arm 23 carrying at its outer end the door, *o*. The lever, 24, for oscillating the chute, *e*, receives its motion from this lever 23 through a link 25.

The skip is preferably adapted to leave its propelling wire or rope some distance in front of the loading position and run on by its own momentum, actuating the arm 14 and coming to rest against the stop 26 beneath the chute.

The stop 26 is pivoted to the frame-work at 27 and is actuated to release the skip simultaneously with the tilting of the rail, *f*. This actuation may be accomplished for example, by forming a sloping or cam-like surface 28 upon the stop lever which is engaged, when the rail tilts, by a roller 29 carried on the end of an arm 30 rigidly fixed to the tilting rail. The weight of this stop, 26, may also be adapted to serve as the counterbalance for the tilting rail, *f*, to return it to normal position when the skip has run off. I also prefer to employ a catch for positively locking the stop 26 against upward movement during the loading operation to prevent any possibility of a release of the skip. This catch 31 may be pivoted to the lever, *u*, as shown clearly in Fig. 1 and connected to the lever, *s*, by a link 32. In the position illustrated the stop 26 is prevented from rising by this catch 31.

To positively prevent the cam roller from coming out of engagement with the cam when in operation, a locking device is preferably provided such as described in the specification of my aforesaid concurrent application, and consists of a lever fixed to the

upper end of the shaft 10 such lever being locked by a detent which is released at the desired time by a rod connected to the cam lever, 4.

5 In the operation of the device an empty skip, *a*, is conveyed toward the loading mechanism until a point is reached where its momentum will be just sufficient to carry it to the loading point unaided. The pro-
10 pelling means are then automatically disconnected and the skip runs on, actuating the arm, 14, for setting the cam roller, 3, and coming to rest on the rail section, *f*, against the stop, 26. The cam, 2, which revolves
15 continuously now actuates the roller, 3, to depress the connecting rod, 21, thus raising the chute into its vertical position and simultaneously opening the door, *o*. The con-
20 tents of the chute are then discharged into the skip, the cam, 2, soon afterward raising the rod, 21, and returning the chute, *e*, and door, *o*, to their normal positions. In re-
25 turning, the chute actuates the lever, *s*, as described, and frees the locking catch, 31, and catch, *h*, from the stop, 26, and tilting rail, *f*, respectively. Simultaneously the locking device for the cam roller is released. The rail then tilts on its pivot and raises the
30 stop, 26, so that the loaded skip can run down by gravity on to the main rail, *c*, again. The impulse thus given must be sufficient to carry the skip forward until it en-
35 gages the propelling means. The portion of the rail on to which the skip runs after leaving the pivoted inclined portion may also be inclined as shown in Fig. 4, for any desirable distance. As soon as the skip moves away from the chute the arm, 14, is released and the roller, 3, moved out of en-
40 gagement with the cam, 2, by the spring, 32, (see Fig. 3) through the mechanism above described. The rail, *f*, also moves into its normal horizontal position again and the catches, 31 and *h*, are re-set by the
45 spring, *w*. The parts are now in position to receive another skip.

It is to be understood that the invention is not limited to the details above described as many analogous mechanisms may be em-
50 ployed for carrying out the individual operations of the various parts of the apparatus. For example, clutches or like gearing may be employed instead of the sliding roller for throwing the cams into operation
55 with the chute and such clutch gearing or sliding roller may be operated by a tipping rail instead of the bell crank lever, 13, 14 if desired. Further, the chute, *e*, may be adapted to completely revolve instead of
60 oscillating, the material being discharged through the charging opening.

The whole apparatus is mounted on a framework which may be fixed so as to form a permanent part of the track or aerial way
65 when the loading point is fixed, or the

framework may be mounted on wheels and moved along to any desired loading point in which case it is preferably arranged on a branch or loop of the main track to which the skips or wagons may be diverted in any
70 convenient manner.

Although I have described apparatus which is more particularly adapted to a conveyer of the overhead or aerial wire type, the apparatus can be readily modified and
75 adapted to suit the loading of tubs or small trucks or wagons as employed in mining work. Further I do not limit the use of my improved apparatus with any particular
80 system of haulage or propelling mechanism for the skips or wagons so long as such propelling mechanism is adapted to be thrown out of action when the skip or wagon ap-
85 proaches the loading point and to come into action again when the skip or wagon has left the loading point.

The discharge of the material from the skips or wagons may be accomplished at any desired point and in any desired man-
90 ner, automatically or otherwise, as this forms no part of the present invention.

Having now described my invention what I claim as new and desire to secure by Let-
ters Patent is:—

1. Conveying apparatus comprising a re- 95
ceptacle for the material to be conveyed, means for normally propelling said recep-
tacle, means for arresting said receptacle at a fixed point, means for automatically load-
ing the receptacle at said point, and means 100
independent of the normal propelling means for automatically restarting the loaded re-
ceptacle toward a discharging point.

2. Conveying apparatus comprising a re- 105
ceptacle for the material to be conveyed, continuously running means for propelling said
receptacle, means for disengaging the pro-
pelling means from the receptacle, means for
arresting said receptacle at a fixed point,
means for automatically loading the recep- 110
tacle at said point and means, independent
of said continuously running means, for
automatically restarting the loaded recep-
tacle toward a discharging point.

3. Conveying apparatus comprising a re- 115
ceptacle for the material to be conveyed, continuously running means for propelling said
receptacle, means for disengaging the pro-
pelling means from the receptacle, means for
arresting said receptacle at a fixed point, 120
means for automatically loading the recep-
tacle at said point, means for automatically
restarting the loaded receptacle, and means
for reengaging the continuously running
propelling means with the receptacle when 125
restarted.

4. Conveying apparatus comprising a re-
ceptacle for the material to be conveyed,
means for normally propelling said recep-
tacle, means for arresting said receptacle at 130

a fixed point, means set in operation by the receptacle for automatically loading the receptacle at said point, and means independent of said continuously running means for automatically restarting the loaded receptacle toward a discharging point.

5. Conveying apparatus comprising a receptacle for the material to be conveyed, means for propelling said receptacle, means for arresting said receptacle at a fixed point, a stop for positively preventing forward movement of the receptacle beyond said point, means for automatically loading the receptacle at said point, means for automatically releasing said stop after loading, and means for automatically restarting the loaded receptacle past said stop.

6. Conveying apparatus comprising a receptacle for the material to be conveyed, means for propelling said receptacle, means for arresting said receptacle at a fixed point, a pivoted stop normally lying in the path of the receptacle and preventing forward movement thereof beyond said point, means for positively locking the stop when in its normal position, means for automatically loading the receptacle, means for releasing said locking means after loading, and means for simultaneously removing the stop from the path of the receptacle and restarting the loaded receptacle automatically.

7. Conveying apparatus comprising a receptacle for the material to be conveyed continuously running means for propelling said receptacle, means for disengaging the propelling means from the receptacle, means for arresting said receptacle at a fixed point, a stop for positively preventing forward movement of the receptacle beyond said point, means for automatically loading the receptacle at said point, means for automatically releasing said stop after loading, means for automatically restarting the loaded receptacle, and means for reengaging the continuously running propelling means with the receptacle when restarted.

8. Conveying apparatus comprising a receptacle for the material to be conveyed continuously running means for propelling said receptacle, means for disengaging the propelling means from the receptacle, means for arresting said receptacle at a fixed point, a pivoted stop normally lying in the path of the receptacle and preventing forward movement thereof beyond said point, means for positively locking the stop when in its normal position, means for automatically loading the receptacle, means for releasing said locking means after loading, means for simultaneously removing the stop from the path of the receptacle and restarting the loaded receptacle automatically, and means for reengaging the continuously running propelling means with the receptacle when restarted.

9. Conveying apparatus comprising a receptacle for the material to be conveyed, means for propelling said receptacle along a track, means for arresting said receptacle upon a pivoted section of the track, means for automatically loading the receptacle when arrested upon said section, and means for automatically tilting said section to permit the restarting of the loaded receptacle by gravity.

10. Conveying apparatus comprising a receptacle for the material to be conveyed, continuously running means for propelling said receptacle along a track, means for disengaging the propelling means from the receptacle, means for arresting said receptacle upon a pivoted section of the track, means for automatically loading the receptacle when arrested upon said section, means for automatically tilting said section to permit the restarting of the loaded receptacle by gravity, and means for reengaging the continuously running propelling means with the receptacle when restarted.

11. Conveying apparatus comprising a receptacle for the material to be conveyed, means for propelling said receptacle along a track, means for arresting said receptacle upon a pivoted section of the track in a position where the weight tends to tilt said section, a catch normally supporting said section against tilting, means for automatically loading the receptacle when arrested, and means for releasing said catch when the receptacle is loaded.

12. Conveying apparatus comprising a receptacle for the material to be conveyed, continuously running means for propelling said receptacle along a track, means for disengaging the propelling means from the receptacle, means for arresting said receptacle upon a pivoted section of the track in a position where the weight tends to tilt said section, a catch normally supporting said section against tilting, means for automatically loading the receptacle when arrested, means for releasing said catch and permitting the loaded receptacle to restart by gravity, and means for reengaging the continuously running propelling means with the receptacle when started.

13. Conveying apparatus comprising a receptacle for the material to be conveyed, means for propelling said receptacle along a track, means for arresting said receptacle upon a pivoted section of the track, means for automatically loading the receptacle when arrested upon said section, means for automatically tilting said section to permit the restarting of the loaded receptacle by gravity, and a stop for positively preventing forward movement of the receptacle beyond said point until said section is tilted and returning the track section to normal position by its weight.

14. Conveying apparatus comprising a receptacle for the material to be conveyed, continuously running means for propelling said receptacle along a track, means for disengaging the propelling means from the receptacle, means for arresting said receptacle upon a pivoted section of the track, means for automatically loading the receptacle when arrested upon said section, means for automatically tilting said section to permit the restarting of the loaded receptacle by gravity, a stop for positively preventing forward movement of the receptacle beyond said point until said section is tilted and returning the track section to normal position by its weight, and means for reengaging the continuously running propelling means with the receptacle when restarted.

15. Conveying apparatus comprising a receptacle for the material to be conveyed, means for propelling said receptacle, means for arresting said receptacle at a fixed point, means for loading the receptacle at said point, a movable arm engageable by part of the receptacle as it approaches said point, continuously running mechanism for actuating the loading means, means for rendering said mechanism operative by movement of said arm, and means for automatically restarting the loaded receptacle.

16. Conveying apparatus comprising a receptacle for the material to be conveyed continuously running means for propelling said receptacle, means for disengaging the propelling means from the receptacle, means for arresting said receptacle at a fixed point, means for loading the receptacle at said point, a movable arm engageable by part of the receptacle as it approaches said point, continuously running mechanism for actuating the loading means, means for rendering said mechanism operative by movement of said arm, means for automatically restarting the loaded receptacle, and means for reengaging the continuously running propelling means with the receptacle when restarted.

17. Conveying apparatus comprising a receptacle for the material to be conveyed, means for propelling said receptacle means for arresting said receptacle at a fixed point, a movable arm engageable by part of the receptacle as it approaches said point, continuously running mechanism for actuating a pivoted chute so as to discharge its contents into the receptacle and return it to normal position, means for rendering said mechanism operative by movement of said arm, and means for automatically restarting the loaded receptacle.

18. Conveying apparatus comprising a receptacle for the material to be conveyed continuously running means for propelling said receptacle, means for disengaging the propelling means from the receptacle, means for arresting said receptacle at a fixed point, a

movable arm engageable by part of the receptacle as it approaches said point, continuously running mechanism for actuating a pivoted chute so as to discharge its contents into the receptacle and return it to normal position, means for rendering said mechanism operative by movement of said arm, means for automatically restarting the loaded receptacle, and means for reengaging the continuously running propelling means with the receptacle when restarted.

19. Conveying apparatus comprising a receptacle for the material to be conveyed means for propelling said receptacle, means for arresting said receptacle at a fixed point, a main hopper and pivoted chute arranged at said point, means for opening communication between the hopper and the chute when in normal position, means for opening communication between the chute and receptacle by tilting said chute, means for automatically tilting the chute to load the receptacle, and means for automatically restarting the loaded receptacle.

20. Conveying apparatus comprising a receptacle for the material to be conveyed continuously running means for propelling said receptacle, means for disengaging the propelling means from the receptacle, means for arresting said receptacle at a fixed point, a main hopper and pivoted chute arranged at said point, means for opening communication between the hopper and the chute when in normal position, means for opening communication between the chute and receptacle by tilting said chute, means for automatically tilting the chute to load the receptacle, means for automatically restarting the loaded receptacle, and means for reengaging the continuously running propelling means with the receptacle when restarted.

21. Conveying apparatus comprising a receptacle for the material to be conveyed, means for propelling said receptacle, means for arresting said receptacle at a fixed point, a movable arm engageable by part of the receptacle as it approaches said point a continuously running shaft, means on said shaft for engaging mechanism connected to receptacle loading means, yieldable means operated by said arm for accomplishing the engagement, and means for automatically restarting the loaded receptacle.

22. Conveying apparatus comprising a receptacle for the material to be conveyed continuously running means for propelling said receptacle means for disengaging the propelling means from the receptacle, means for arresting said receptacle at a fixed point, a movable arm engageable by part of the receptacle as it approaches said point, a continuously running shaft, means on said shaft for engaging mechanism connected to receptacle loading means, yieldable means operated by said arm for accomplishing the

engagement, means for automatically re-starting the loaded receptacle, and means for reengaging the continuously running propelling means with the receptacle when
5 restarted.

23. Conveying apparatus comprising a receptacle for the material to be conveyed, means for propelling said receptacle along a track, means for arresting said receptacle
10 upon a pivoted section of the track, a pivoted chute for discharging the material into the receptacle, means, controlled by the receptacle, for oscillating said chute, means for normally retaining the pivoted track section
15 in a horizontal position, means, actuated by the chute in returning to its normal position, for releasing said track section, and means for allowing the said section to tilt under the weight of the receptacle and permit
20 restarting thereof by gravity.

24. Conveying apparatus comprising a receptacle for the material to be conveyed, continuously running means for propelling said receptacle along a track means for disengag-
25 ing the propelling means from the receptacle, means for arresting said receptacle upon a pivoted section of the track, a pivoted chute for discharging the material into the receptacle, means, controlled by the re-
30 ceptacle, for oscillating said chute, means for normally retaining the pivoted track section in a horizontal position, means, actuated by the chute in returning to its normal position, for releasing said track section,
35 means for allowing the section to tilt under the weight of the receptacle and permit restarting thereof by gravity, and means for reengaging the continuously running propelling means with the receptacle when re-
40 started.

25. Conveying apparatus comprising a receptacle for the material to be conveyed, a continuously running cable means for connecting said receptacle with said cable,
45 means for automatically disconnecting said receptacle from said cable as it approaches a fixed point, means for arresting the receptacle at said point, a shaft driven by said cable, means actuated by the receptacle, dur-
50 ing its arrest, for causing said shaft to set in operation means for loading the receptacle at said point, and means for restarting the loaded receptacle.

26. Conveying apparatus comprising a re-
55 ceptacle for the material to be conveyed, means for propelling said receptacle, means for arresting said receptacle at a fixed point, a pivoted chute supported at said point above the receptacle for transferring the ma-
60 terial from a main hopper to the receptacle, means for automatically tilting said chute into its discharging position, a door at the lower end of said chute, means for automatically opening said door during said tilting,
65 a shield for preventing the escape of mate-

rial from the main hopper during said tilting, and means for restarting the loaded receptacle.

27. Conveying apparatus comprising a re-
70 ceptacle for the material to be conveyed, means for propelling said receptacle, means for arresting said receptacle at a fixed point, a continuously running shaft, a cam mounted on said shaft, a pivoted chute for loading
75 the receptacle at said point, means for tilting said chute, means for throwing said tilting means into and out of engagement with said cam, means for automatically controlling said engagement by the movement of the
80 receptacle, and means for automatically re-starting the loaded receptacle.

28. Conveying apparatus comprising a re-
85 ceptacle for the material to be conveyed, continuously running means for propelling said receptacle, means for disengaging the propelling means from the receptacle, means for arresting said receptacle at a fixed point,
90 a pivoted chute supported at said point above the receptacle for transferring the material from a main hopper to the receptacle, means for automatically tilting said chute into its discharging position, a door
95 at the lower end of said chute, means for automatically opening said door during said tilting, a shield for preventing the escape of material from the main hopper during said tilting, means for restarting the loaded re-
100 ceptacle, and means for reengaging the continuously running propelling means with the receptacle when restarted.

29. Conveying apparatus comprising a re-
105 ceptacle for the material to be conveyed, continuously running means for propelling said receptacle, means for disengaging the propelling means from the receptacle, means for arresting said receptacle at a fixed point,
110 a continuously running shaft, a cam mounted on said shaft, a pivoted chute for loading the receptacle at said point, means for tilting said chute, means for throwing said tilting means into and out of engagement with
115 said cam, means for automatically controlling said engagement by the movement of the receptacle, means for automatically re-starting the loaded receptacle, and means for reengaging the continuously running
120 propelling means with the receptacle when restarted.

30. Conveying apparatus comprising a re-
125 ceptacle for the material to be conveyed, means for propelling said receptacle along a track, means for arresting said receptacle on a pivoted section of said track, a stop for positively preventing movement of said re-
130 ceptacle beyond said section, a catch for holding said section horizontal, a main hopper and pivoted chute arranged adjacent said section, means for automatically tilting said chute to load the receptacle when at rest on said section, means for automatically

releasing said stop and catch, means for allowing tilting of the pivoted track section under the weight of the receptacle and thereby restarting the receptacle by gravity, and
3 means for returning said track section to horizontal position after the receptacle has moved therefrom.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN ASHFORD.

Witnesses:

C. S. MALLER,
A. R. MILES.