

(No Model.)

2 Sheets—Sheet 1.

F. B. KNIGHT.
CONVEYING APPARATUS.

No. 602,085.

Patented Apr. 12, 1898.

Fig. 1

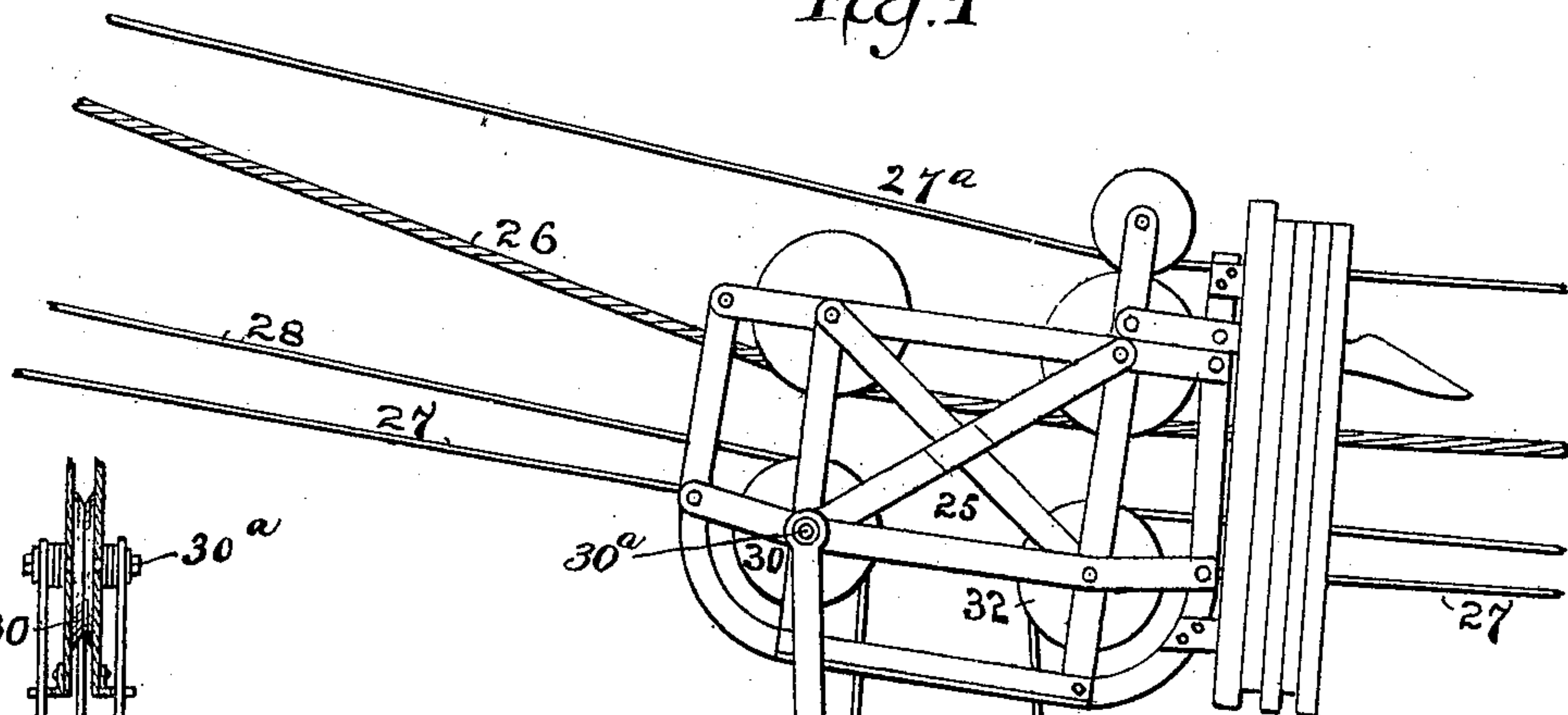


Fig. 3

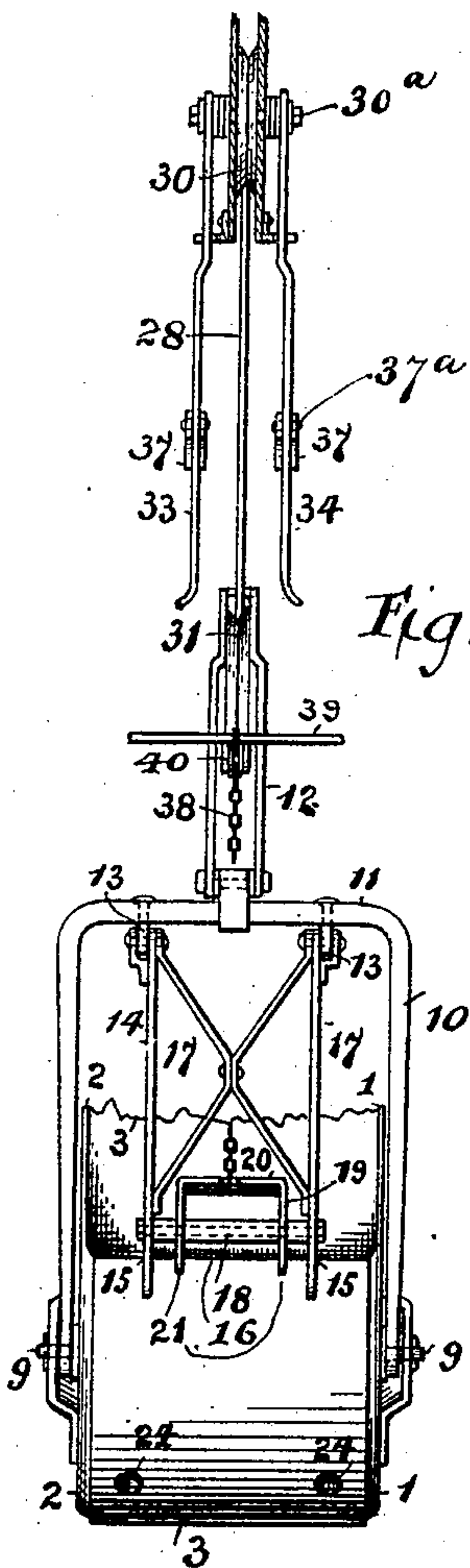
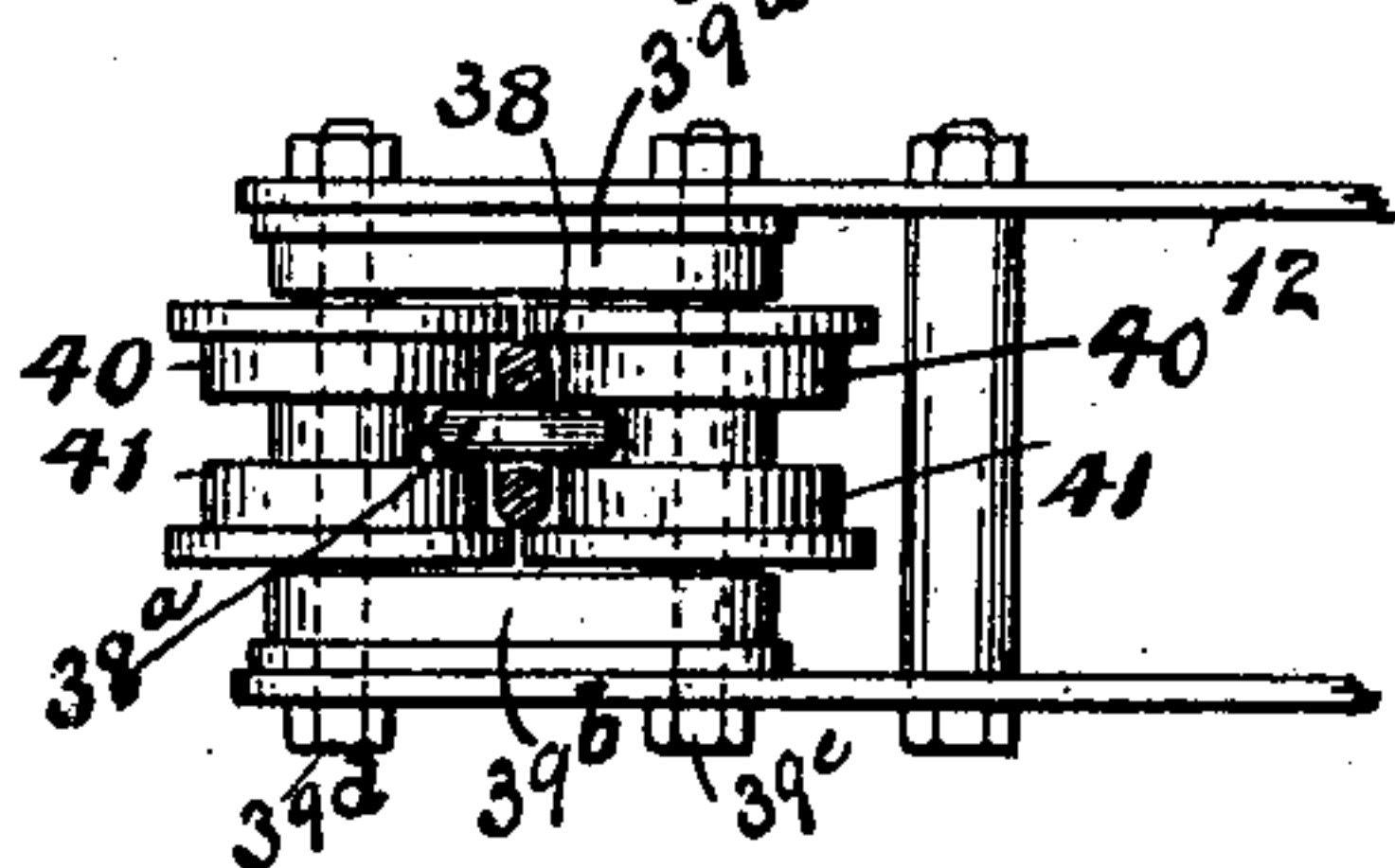


Fig. 4



Witnesses
Geo. Wadman
M. Wilson.

Inventor
Frank B. Knight
By his attorney
Lafford & Bull

(No Model.)

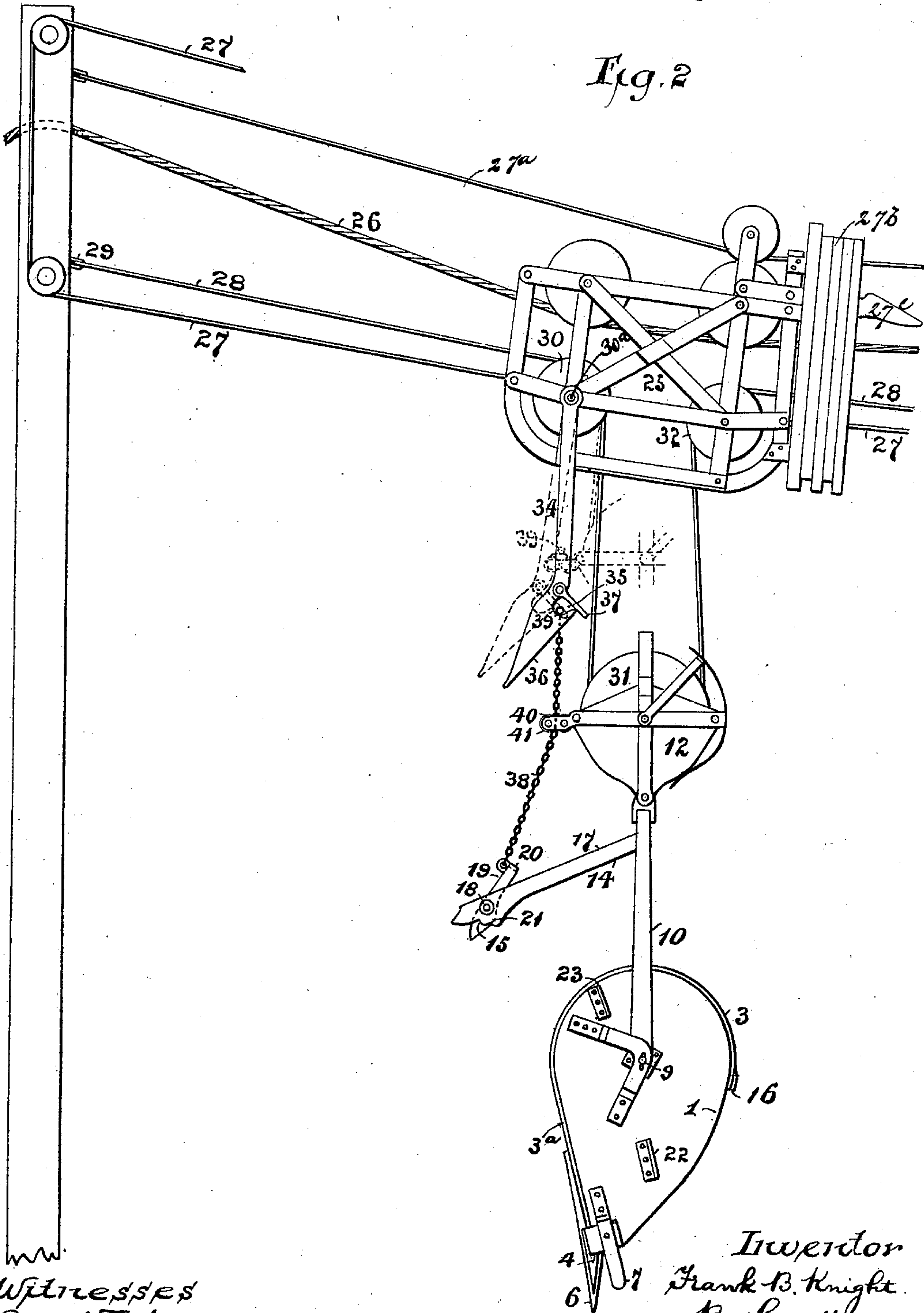
2 Sheets—Sheet 2.

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Fig. 2



Witnesses
Geo. Wadman
M. Wilson

Inventor
Frank B. Knight.
By his attorneys
Lafford & Bull.

UNITED STATES PATENT OFFICE.

FRANK B. KNIGHT, OF BROOKLYN, NEW YORK.

CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 602,085, dated April 12, 1898.

Application filed October 5, 1897. Serial No. 654,100. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. KNIGHT, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Conveying Apparatus, of which the following is a specification.

The object of my invention is to so construct, connect, and operate a bucket as to adapt the same for excavating hard material and at the same time for being dumped at any desired point.

In the accompanying drawings, Figure 1 is a side view of the bucket and suspending apparatus in carrying position. Fig. 2 is a side view of the same in dumping position and also of one of the towers. Fig. 3 is an end view of a portion of Fig. 1. Fig. 4 is a plan view of a portion of the same.

1 and 2 are the side plates of a bucket. 3 is the plate constituting the bottom, back, and top of the same.

4 is the front edge, which is armed by the front teeth 6. The side plates 1 and 2 are also armed by the side teeth 7. The form of this bucket and the inclination and form of these teeth are as shown in the drawings, so that when the bucket rests upon the bank and is pulled forward by the fall-block 12 the teeth will enter and loosen up the dirt, so that it will be scooped into the bucket by the edge 4.

9 9 are pivots by which the unjointed rigid bail 10 11 is pivoted to the side plates 1 and 2 in such position that the center of gravity of the bucket lies between the pivots 9 9 and the forward edge 4, causing the bucket when free to revolve upon said pivots to assume the position shown in Fig. 2.

12 is a fall-block.

13 13 are eyebolts connected with the bail member 11 and to which is pivoted the latch-frame 17 17, provided with the shoulders 15, adapted to engage with a shoulder 16 on the top of the bucket and hold the same in the carrying position shown in Fig. 1. 18 is a rod extending between the members 17 17, to which rod is pivoted the trigger 19 20 21. The projections 21 21 on this trigger rest on the top of the bucket, which forms a fulcrum, so that when the opposite end of the trigger is pulled by the chain 38, attached to the cross member 20, the pin 18 is raised, so as to dis-

engage the shoulders 15 15 from the shoulder 16 and permit the bucket to revolve from the carrying position of Fig. 1 to the dumping position of Fig. 2.

22 and 23 are stops secured to the side plates of the bucket, so as to limit the extent of rotation in each direction.

24 24 are pockets adapted to hold handles, if desired, said pockets being located in the back plate 3 of the bucket, so that the handles will be removed from the edges, and the hands of the operator will thus be removed from the side of the bank when working close up to a bank.

25 is a carriage traveling on the cable 26.

27 is the endless traction-rope for moving the carriage.

27^a is a rope for supporting the fall-rope carriers 27^b.

27^c is a horn fixed to the carriage by which said fall-rope carriers are also supported.

28 is a fall-rope supported on the carriage by the sheaves 30 and 32 and secured to the tail tower at 29. The fall-rope passes under the sheave 31 of the fall-block.

33 and 34 are pendent hooks pivoted to the carriage by the pin 30^a. Each of these hooks has a mouth 35 and an incline 36 below the mouth.

37 37 are mouth-guards pivoted on one side of the mouth at 37^a, and thence inclining downwardly and resting loosely on the lip 35^a at the opposite side of the mouth.

38 is a trigger-chain attached at one end to the trigger, as already described, (or it may be attached directly to the latch and the trigger omitted, as shown in dotted lines,) and carrying at its opposite end a cross-bar 39. The side members of the fall-block 12 are extended horizontally, so as to support the members 39^a and 39^b, which serve as a rest for the cross-bar 39.

39^c and 39^d are pins upon which are mounted guide-rollers. Each of these guide-rollers contains the side flanges 40 and 41, between which a groove is interposed, which coöperates with the chain member 38^a in such manner as to hold the cross-bar 39 substantially at right angles to the supporting-frame 39^a 39^b.

The operation is as follows: When the bucket, in carrying position, as shown in Fig. 1, has been conveyed by the traction-rope 27

to the point of the span where it is desired to dump, the operator stops the movement of the traction-rope 27 and hauls in on the fall-rope 28. As the fall-block is thus raised the cross-bar 39 strikes against the inclined surfaces 36 and swings the hooks 33 and 34 into the position shown in dotted lines, Fig. 2. Then the cross-bar 39 strikes against those parts of the guards 37 overhanging the lips 35^a and raises the guards. Then the cross-rod proceeds above the lips 35^a and the hooks 33 and 34 drop into the position shown in full lines, Fig. 2. Then the attendant stops hauling in on the fall-rope and pays out the same, so as to lower the fall-block. As the fall-block descends, however, the cross-bar is now held in the mouths 35. When the fall-block has descended a certain distance, by its movement relatively to the dumping-member actuator 33 34 the chain 38 is drawn taut, so as to pull the trigger and trip the latch 17. Thereupon the bucket dumps, because the center of gravity in the position shown in Fig. 1 is above and to the right of its pivotal supports 9. The operator now again hauls in on the fall-rope and this time raises the fall-block as far as indicated in dotted lines in Fig. 2, so as to lift the cross-bar 39 out of the mouths 35 far enough to permit the guards 37 to drop into their normal position, as shown in dotted lines in Fig. 2. Then the fall-block is allowed to descend, and as it descends the downwardly-inclined guards 37 prevent the cross-bar 39 from being caught in the mouths 35, so that the fall-block can be lowered to the ground at any point of the span desired. When this is done, the teeth 6 strike the ground first and the bucket will rotate in the bail 10, so as to rest upon its bottom 3^a. Then by moving the carriage 25 toward the head tower and at the same time lowering on the fall-rope the bail 10 will be caused to drop forward until the latch 17 reengages with the top of the bucket, and the bucket is thus rigidly held by the rigid bail 10 and the rigid latch 17, so that it will fill itself when pulled along the ground by the fall-block.

From the above description it will be understood that the chain 38 constitutes a dumping member and the hooks 33 and 34 a dumping-member actuator. These and other parts, however, are so arranged and combined as to differ from the construction shown in Miller patents Nos. 525,084 and 551,869, and I do not desire to be understood as claiming the construction shown in either of said Miller patents.

I claim—

1. In a hoisting apparatus, in combination, a fall-block, a bucket pivotally sustained by said fall-block with its center of gravity above said pivots, a latch whereby said bucket is maintained in a non-dumping position, a dumping member adapted for disengaging

said latch and a dumping-member actuator relatively to which said fall-block has a movement; said dumping member and actuator being adapted to interlock as the fall-block descends, substantially as described.

2. In a hoisting apparatus, in combination, a fall-block, a bucket pivotally sustained by said fall-block with its center of gravity above said pivots, a latch whereby said bucket is maintained in a non-dumping position, a dumping member adapted for disengaging said latch and a dumping-member actuator relatively to which said fall-block has a movement and a carriage supporting both said fall-block and said dumping-member actuator; said dumping member and actuator being adapted to interlock as the fall-block descends, substantially as described.

3. In a hoisting apparatus, in combination, a fall-block, a bucket pivotally sustained by said fall-block with its center of gravity above said pivots, a latch whereby said bucket is maintained in a non-dumping position, a dumping member adapted for disengaging said latch, a dumping-member actuator relatively to which said fall-block has a movement and a trigger connected with said latch and said dumping member; said dumping member and actuator being adapted to interlock as the fall-block descends, substantially as described.

4. In a hoisting apparatus, in combination, a fall-block, a bucket pivotally sustained by said fall-block with its center of gravity above said pivots, a latch whereby said bucket is maintained in a non-dumping position, a dumping member adapted for disengaging said latch and a dumping-member actuator relatively to which said fall-block has a movement and a rest connected with the fall-block whereby said dumping member is normally supported substantially as described.

5. In a hoisting apparatus, in combination, a fall-block, a bucket sustained by said fall-block, a latch whereby said bucket is maintained in a non-dumping position, a dumping member adapted for disengaging said latch, a dumping-member actuator relatively to which said fall-block has a movement and a guard whereby the mouth of said dumping-member actuator is controlled, substantially as described.

6. In combination, the hook 34, a projection therefrom carrying the inclined surface 36, a pivoted guard 37 lying across the mouth of said hook, a member 39, means for reciprocating said member relatively to said hook and dumping mechanism connected with said member, substantially as described.

FRANK B. KNIGHT.

Witnesses:

M. WILSON,
C. J. RATHJEN.