

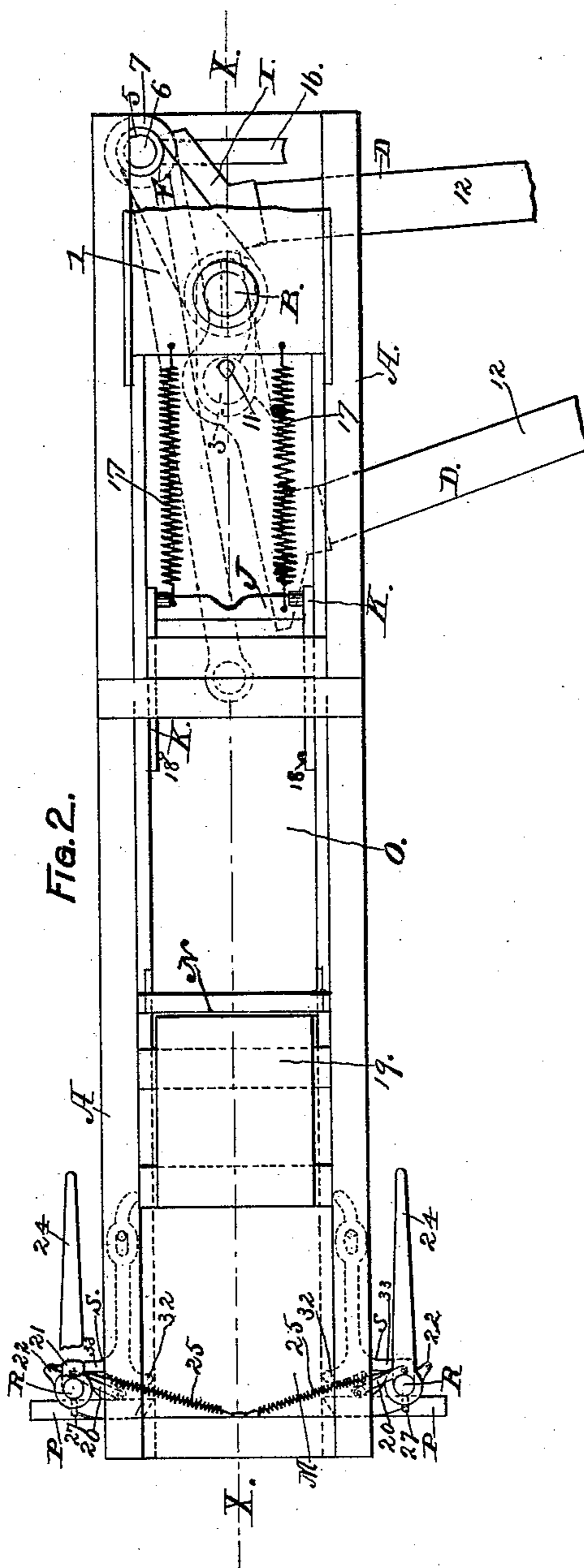
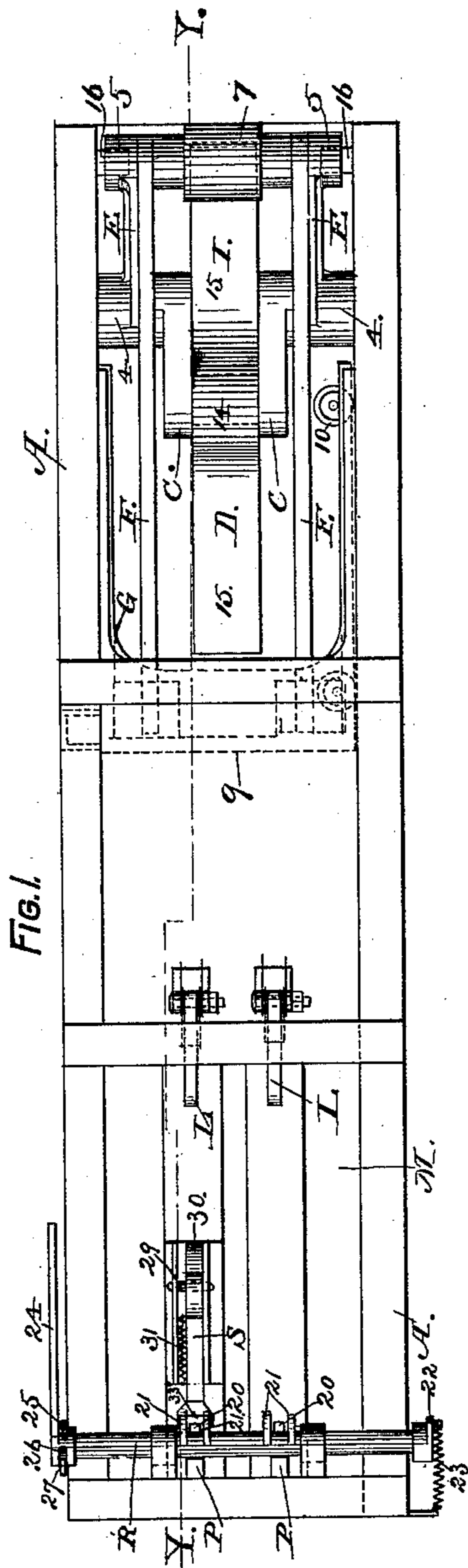
(No Model.)

2 Sheets—Sheet 1.

H. V. & C. F. SCATTERGOOD.
BALING PRESS.

No. 422,320.

Patented Feb. 25, 1890.



WITNESSES:

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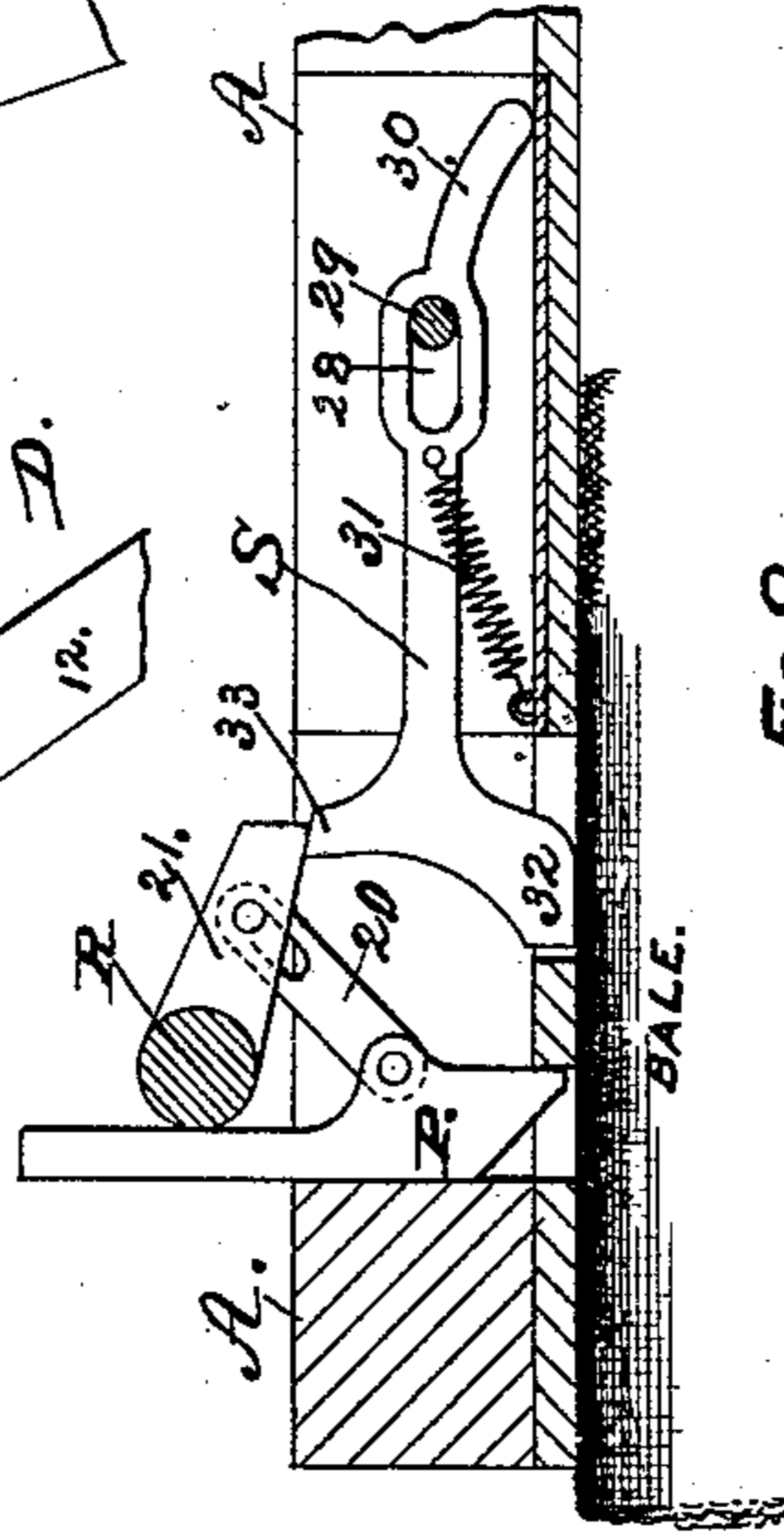
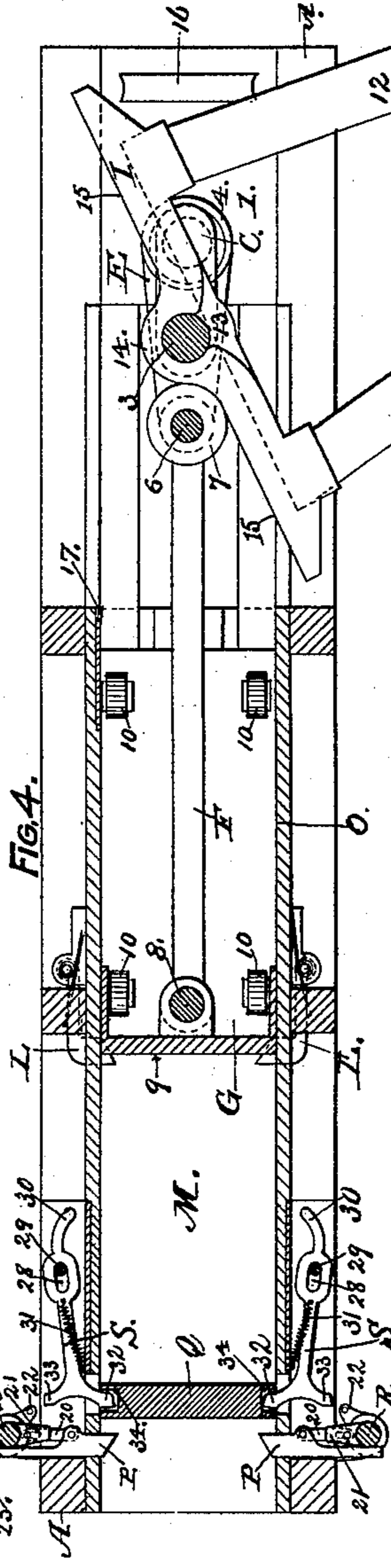
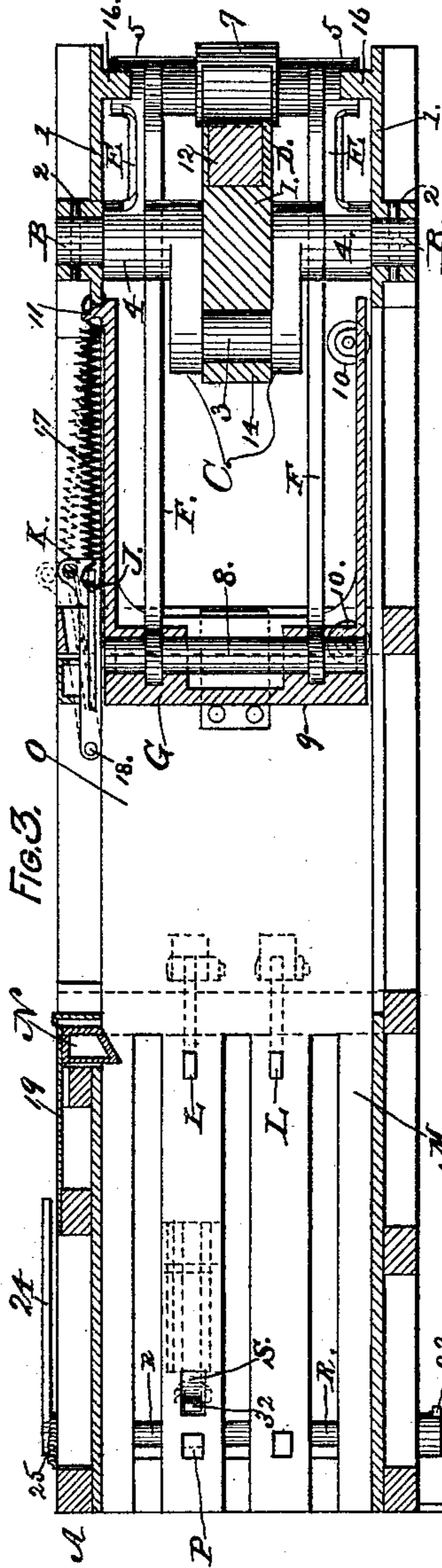
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UNITED STATES PATENT OFFICE.

HENRY V. SCATTERGOOD AND CHARLES F. SCATTERGOOD, OF ALBANY, NEW YORK, ASSIGNORS TO WALTER M. BROWN, OF SAME PLACE.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 422,320, dated February 25, 1890.

Application filed October 12, 1889. Serial No. 326,802. (No model.)

To all whom it may concern:

Be it known that we, HENRY V. SCATTERGOOD and CHARLES F. SCATTERGOOD, both of the city and county of Albany, in the State of New York, have invented new and useful Improvements in Baling-Presses, of which the following is a full and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 is a side elevation of our press. Fig. 2 is a plan view, showing the toggle-joint of the plunger-operating mechanism at the opposite side of the press from the position in which it is shown in Fig. 1. Fig. 3 is a longitudinal section of Fig. 2 at the line X X. Fig. 4 is a horizontal section, taken at the irregular line Y Y on Fig. 1, but with the plunger at the extremity of its inward stroke and its operating mechanism in a corresponding position. Fig. 5 is a perspective view of one of the division-blocks for separating the bales. Fig. 6 is an enlarged and detached side elevation of the upper portion of one of the shafts for our automatic locking device; and Figs. 7 and 8 are enlarged and detached plan views of the locking arms and detents for automatically stopping the outward movement of a division-block, said figures, respectively, showing a locking-arm in a protruded and an intruded position.

Our invention relates to improvements on that class of baling-presses in which advantage is taken of the resilient power of the compressed material to effect the outward stroke of the plunger of the press, and in which the toggle-joint of the plunger-operating mechanism is not continuously connected with the sweep, to which the animal-power is attached, for the purpose of operating the press; and our invention consists of the novel construction and combination of parts herein shown and described, and particularly pointed out in our claims.

As represented in the drawings, A designates the frame-work or body of our press, said frame-work being made in the usual form of such structures, excepting in those parts which are changed to suit the specially-designed features of our invention.

B is a stationary shaft-like bar, which is se-

cured in a fixed position in the bosses of the cross-ties 1 by means of cross-pins 2 or other suitable fastenings. Said shaft-like bar is provided with a crank-like bend C, whose throw is permanently turned toward the baling-chamber of the press, and the fixed pivot 3 of said crank-like bend forms the center on which the sweep D swings to operate the plunger-operating mechanism. The body of the shaft-like bar B, both above and below the crank-like bend C, forms centers for the swinging cranks E, which form portions of the toggle-levers for operating the plunger of the press. The hubs 4 of said cranks fit loosely upon the body of the shaft-like bar B, so that said cranks will swing freely thereon, and the opposite end of each crank is provided with an eye 5, in which a wrist-pin 6 is secured, so as to form the centers for the outer ends of the pitmen F. Said pitmen, in conjunction with the swinging cranks E, form the toggle-levers by which the plunger of the press is forced inwardly. An anti-friction roller 7 is loosely fitted to revolve on the wrist-pin 6, so as to receive the thrust of the sweep of the press in a comparatively frictionless manner. The opposite end of the pitman F is jointed by a pin 8 to the plunger G, the latter being preferably made of metal, and also preferably in the form of an open-sided box, whose head 9 forms the pressing-surface of said plunger, whose lower plate is provided with rollers 10, to reduce the friction of said plunger in its reciprocations in the press, and whose upper plate is provided with a stud or hook 11, for a purpose hereinafter explained.

D is the sweep of the press or the lever to which the animal-power for operating the press is applied. Said sweep is preferably made in the form of an A-frame composed of two side pieces 12, which are joined together at the outer ends, their inner ends being fitted to enter sockets or seats in a yoke I. The latter contains a centrally-located U-shaped opening, which is provided with a binder 13, so as to form a bearing or journal-box which fits the fixed pivot 3, so as to allow the sweep D to swing freely thereon. The face of the yoke I has a convex swell 14, that corresponds to the journal thereof on said

fixed pivot and its flanks 15, which extend in a straight line directly from the opposite sides of said convex portion, said line being in effect a straight line which radiates from 5 and passes through the center of the fixed pivot 3. Said flanks are fitted to bear successively against the anti-friction roller 7 on the wrist-pin of the swinging cranks E, so as to impart the required movements to the toggle-joints for effecting the inward strokes of 10 the plunger.

It will be noted that the yoke I has no permanent connection with the toggle-joint, but only operates the latter while in contact there- 15 with, and it will also be noted that the pivotal centers for the swinging cranks E and for the sweep D are formed by a single piece of the form hereinbefore described, thereby combining extreme strength with great simplicity of construction, and so that said centers are fixed at different points on the center line of the press, whereby the leverage of said sweep is rendered constantly variable, and will be least when said cranks are at the 25 extremity of their outward movement at either side, one of said positions being shown in Fig. 2, in which the uppermost cross-tie 1 is partially broken away to more clearly show the position of said cranks, and the greatest 30 leverage of said sweep will be attained when the friction-roller 7 is carried closely by the convex swell 14, so that the center lines of the swinging cranks and pitmen will range in a direct line, as shown in Fig. 4, at which 35 point the plunger G will be at the extremity of its inward stroke. When the swinging cranks E are at the extremity of their outer movement on either side of the center line of the press, the eyes 5 of said cranks will come 40 in contact with stops 16, formed on the cross-ties 1, whereby the movement of said cranks will be terminated, and when the plunger G has nearly reached the extremity of its outward stroke it comes in contact with a spring 45 17', which gradually retards its movement and prevents the eyes of the swinging cranks from striking too heavily against the stops 16.

J is a cross-head that is fitted to slide in the guides K, which are pivoted, as at 18, to 50 the frame-work of the press, so that said guides can be swung upward, as indicated by dotted lines in Fig. 3, when occasion requires. Said cross-head is connected by springs 17 to the frame-work of the press 55 contiguously to the shaft so as to normally draw the cross-head in that direction. Said cross-head is fitted to engage with the stud 11 of the plunger G when the latter is near the termination of its inward stroke, and the 60 continued movement of said plunger will cause the springs 17 to be elongated, so that when the plunger is freed from the control of the toggle-levers, the resilience of the springs will aid in effecting the rebounding move- 65 ment of said plunger toward the power end of the press.

By raising the cross-head J to the position indicated by dotted lines in Fig. 3 it will be carried out of the path of the stud 11, and the rebounding movement of the plunger G 70 will then be effected by the resilience of the compressed material.

When preferred, the cross-head J may be dispensed with and the springs 17 may then be secured directly to the plunger and to the 75 frame-work of the press, so that they will at all times aid in producing the rebounding movement of the plunger.

L designates spring-actuated retainers whose points enter the sides of the press and 80 extend into the baling-chamber M, to prevent the successive charges of the material which have become compressed from following the plunger on its outward strokes.

N is a folder, which is located at the charging end of the baling-chamber M, and is 85 secured to the upper side of the frame-work A by the spring 19. The lower face of said folder is beveled upwardly toward the charging-opening O, and the purpose of said folder 90 is to fold down any loose parts of the material at the upper side of that end of a bale as each successive charge is forced into the baling-chamber.

P are dogs or detents which are fitted oppo- 95 sitely in the vertical walls of the press, near the discharging end of the baling-chamber M, said dogs being fitted to slide laterally into said baling-chamber for the purpose of holding in position, to form a stationary head 100 against which the bales are compressed, one of the movable division-blocks Q which separate the bales from each other in the operation of forming the same. Said dogs are connected by links 20 to arms 21, which are on the 105 vertical shafts R, that are journaled to the outer side of the frame-work, adjacent to the discharging end of the baling-chamber. The lower end of each shaft R is provided with an arm 22, which connects with a spring 23, 110 whose opposite end is attached to a fixed point on the frame-work A, and the effect of said springs is to rock the shafts R, when the latter are left free to move, so as to throw the dogs P inwardly into the position shown 115 in Fig. 4. To the upper end of each shaft R a lever 24 is loosely fitted, so that the shaft can be turned freely in the hub of the lever, each of said levers being connected by a spring 25 to the upper side of the press, and 120 the hub of each lever being provided with a slot 26, through which projects a pin 27, which is secured to the shaft. Said levers nominally remain in the position shown in Fig. 2, where the pin 27 will be at the end of 125 the slot 26, to effect the turning of the shaft to retract the dogs P into the position shown in Fig. 2, and when this retraction has been accomplished the levers will return to their normal position. 130

S designates locking-arms, which are provided with slots 28, through which pivot-pins

29 pass, so that each of said arms can have both a swinging and a sliding movement as occasion may require. A tail-piece 30, formed on the forward end of each of said locking-
 5 arms, is fitted to strike against the side of the plate to which said arm is pivoted, and thereby the opposite end of the latter is prevented from swinging out too far, and each of
 10 said arms is provided with a spring 31, which has one end attached to the frame-work of the press, so that thereby the locking-arm will be drawn normally toward the discharging end of the press. A toe 32 is formed on each of
 15 said locking-arms to extend inwardly toward the baling-chamber M, and a heel 33 is also formed on each of said arms to extend outwardly. Said toe is fitted to enter pockets 34, formed in the opposite edges of the division-
 20 blocks Q when the latter have nearly reached a position at the discharge end of the baling-chamber to serve as a head against which a bale can be compressed, at which point the locking-arms S will swing inwardly, their toes
 25 32 entering the pockets of the division-blocks so as to release the dogs P, which are forced inwardly by the action of the springs 23, in the manner presently described, in time to debar the further outward movement of said
 30 division-block, at which time the division-block and the locking mechanisms will be in the positions shown in Fig. 8. While a compressed bail is still in the baling-chamber M and after said bail has been tied off, the division-
 35 block can be released from the hold of the dogs P, and this is effected by turning the shafts R by means of the levers 24, so as to retract said dogs into the position shown in Fig. 7, and as soon as this retraction occurs the resilience of the compressed material
 40 will cause the bale to expand lengthwise to the limit of the ties around it, and by this expansion the division-block will be ejected from the open end of the baling-chamber, and the compressed material, by closing over the
 45 openings through which the toes 32 enter the baling-chamber, will prevent said toes from entering said chamber. After the toes 32 enter the openings 34 in the division-block Q the pressure applied to the material in the press
 50 will cause said division-block to move toward the discharge end of the press until its further movement is arrested by the dogs P, and in making this last-named movement the plate on the innermost side of the open-
 55 ings 34 will be brought to bear against the convex edge of the toes 32, whereby the locking-arms S will be forced to swing outwardly, so as to bring the toes 32 to bear against the outer sides of the bale. Then on turning the
 60 shafts R to effect a retraction of the dogs P the arms 21 will first engage with the adjacent edge of the heels 33 to push the locking-arms S endwise until the arms 21 are carried beyond the outer end of the heels 33, and
 65 then the resilience of the springs 31 will draw said locking-arms back into a position where

the arms 21 will bear against the outer end of said heels, so as to retain the ends of the toes 32 in contact with the sides of the bale in the baling-chamber until the next division-
 70 block is carried into position to release said locking-arms and dogs in the manner hereinbefore described.

With the understanding that the sweep D swings from one side of the press to the opposite side, the crank-pin of the crank C
 75 forming its pivotal center, and that a division-block is inserted through the charging-opening O to lie at the charging end of the baling-chamber M just before the beginning of the
 80 formation of each bale, the operation of our press will be understood from the following statement: While the plunger E is at the outer extremity of its stroke, as shown in
 85 Fig. 3, the swinging cranks E being in a corresponding position at either side of the center line of the press, a charge of material is fed into the charging-opening O and the sweep D is moved in the direction required
 90 to force the plunger G inwardly. At the beginning of said movement of the sweep the friction-roller 7 will bear against the yoke 1, near one of the extremities of the latter, where the sweep will exert its least leverage, the resistance of the material being then at a
 95 minimum. By the continued movement of the sweep the friction-roller 7 will be carried nearer the middle of the yoke 1, and thereby the leverage exerted by said sweep will be constantly increased until the center lines of
 100 the swinging cranks E and pitmen F range in a direct line, and at that point the leverage of the sweep will reach the maximum and the plunger G will be at the innermost extremity of its stroke. At this point there occurs
 105 a slight cessation in the movement of the plunger, while the friction-roller is in contact with the convex surface of the swell 14, and after passing this point the plunger will rebound by the resilient action of the springs
 110 17, or of the compressed material, whereby the plunger will be returned to the outer extremity of its stroke with the toggle-joint in a corresponding position at the opposite side of the press. These operations are continued
 115 until a bale of the required size has been formed. Then another division-block is forced into the baling-chamber M, and is held therein by the spring-retainers L until the ties are passed around the bale and fastened thereon.
 120 Then the shafts R are partially rotated to draw back the dogs P, so as to release the division-block that has been serving as a head to compress the bale against, whereupon the endwise expansion of the compressed bale will forcibly
 125 eject said division-block from the open discharge end of the baling-chamber M. The endwise expansion of the compressed bale causes the compressed material at the sides of the bale to cover the openings in the sides
 130 of the baling-chamber, through which the toes of the locking-arms S intrude, and there-

by the latter are prevented from swinging inwardly to release the dogs P until a new bale, now in the process of formation, has pushed the finished bale far enough out of the discharge end of the baling-chamber to allow a succeeding division-block Q to reach a position where its pockets 34 will be ready to receive the toes 32 of the locking-arms. When this point is reached, the springs 23 will cause the shafts R to make a partial rotation to force said locking-arms to swing inwardly, thereby carrying the toes 32 into the pockets 34, freeing the arms 21 from the heels of the locking-arms S, thereby effecting a forcible movement of the dogs P inwardly to debar the further movement of the division-block Q, which then becomes a stationary head to receive and resist the pressure applied to the material in the bale. The finished bale, which protrudes from the open end of the baling-chamber M, is removed therefrom by hand in time to allow the free escape of a division-block when the latter is ejected by the expansion of the next succeeding bale.

25 We are aware that Letters Patent No. 408,115 covers a construction which comprises the combination of a reciprocating plunger, a toggle-joint having one end jointed to said plunger and the other end jointed to a fixed pivot, and a sweep fulcrumed on a fixed pivot located between the pivot for the toggle-joint and the reciprocating plunger, said sweep being provided with a head having at each end a finger or horn, which extends toward the plunger, the points of said fingers being fitted to take against the knuckle of the toggle-joint before contact is made between said knuckle and any other part of said head; but we do not claim such a construction, as it is open to many objections; but

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a baling-press, the combination of a shaft-like bar B, provided with a crank-like bend C, both being integral and held in a stationary position, whereby a fulcrum for the operating-sweep and pivots for the toggle-joint are formed at different points on the center line of the press, the fulcrum for said sweep being nearest the plunger of the press, swinging cranks loosely fitted on the pivots on the body of said bar, pitmen jointed to the swinging end of said cranks and to the reciprocating plunger of the press, said swinging cranks and pitmen forming a toggle-joint by which said plunger is forced inwardly, and an operating-sweep which is fulcrumed to the crank-like bend C, and is provided with lateral arms or flanks whose faces correspond to radial lines drawn from the center of the fulcrum for said sweep, said flanks being fitted to take alternately against the knuckle of said toggle-joint, as herein specified.

2. In a baling-press, the combination of a reciprocating plunger G, a shaft-like bar B,

provided with a crank-like bend C, both being integral and held in a stationary position with said bend turned toward the baling-chamber of the press, a toggle-joint having one end pivoted to the body of said bar and its opposite end pivoted to said plunger, and an operating-sweep D, fulcrumed to the bend C, and provided with lateral arms whose flanks 15 correspond to radial lines drawn from the center of the fulcrum for said sweep, and are fitted to bear intermittently against the knuckle of said toggle-joint, as herein specified.

3. In a baling-press whose plunger-moving mechanism is fitted to intermittently engage with the operating-sweep, the combination of a reciprocating plunger provided with a stud or spur, a cross-head fitted to move in guides which are pivoted to the press-frame, and rebound-springs which connect said cross-head with a fixed part of the press, the spur on said plunger being fitted to engage with said cross-head when the guides in which the latter move are moved inwardly, and said guides being fitted to carry said cross-head clear from the path of said spur, as and for the purpose herein specified.

4. In a baling-press, the combination of a division-block for separating the bales, spring-actuated shafts provided with arms to which are attached dogs or detents for retaining a division-block in the baling-chamber adjacent to the discharge-opening of the latter, each of said shafts being provided with an arm which is connected by a spring to a fixed part of the press, and each shaft being also provided with a lever for turning the shaft on its axis, fitted thereto in such manner that said shaft can make a partial revolution in the hub of the lever without moving the latter, said spring-actuated shafts and their arms, the dogs, and the connections from said arms to said dogs forming a locking mechanism, whereby said dogs are held in their intruded position, as and for the purpose herein specified.

5. In a baling-press, the combination of spring-actuated shafts provided with arms that are connected to dogs or detents which are fitted to slide laterally in and out of the sides of the baling-chamber, a division-block provided with pockets in opposite edges, and locking-arms fitted to swing and slide at opposite sides of the press, each being provided with a heel and a toe, as herein set forth, the arms on said shafts being fitted to bear against the outer end of said heels while said locking-arms are retained in their outmost position, whereby the dogs are held in their protruded position, and said toes being fitted to enter into the pockets of the division-block, thereby releasing said arms from said heels, so as to permit the intrusive movement of said dogs, as and for the purpose herein specified.

6. In a baling-press, the combination of
spring-actuated shafts R, dogs or detents P,
connected to said shafts, hand-levers 24,
loosely fitted to said shafts, springs 25, con-
5 necting said levers to a fixed part of the
press, division-block Q, provided with pock-
ets 34 in its opposite edges, and locking-arms
S, connected by a spring 31 to a stationary

part of the press, each of said locking-arms
being provided with a toe 32 and a heel 33, 10
as and for the purpose herein specified.

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