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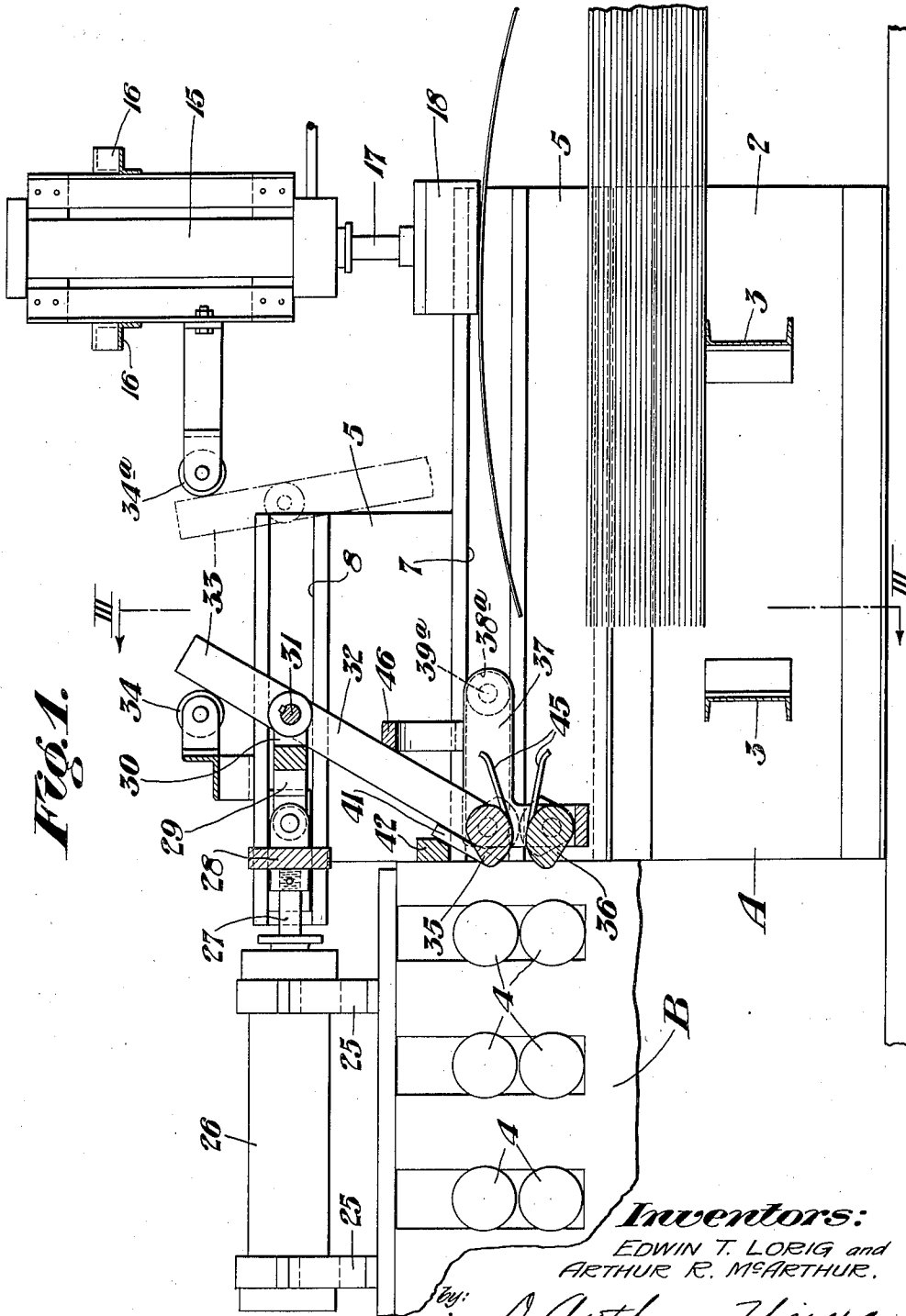
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1,706,533

FEEDING MECHANISM

Filed Jan. 14, 1928

4 Sheets-Sheet 1.



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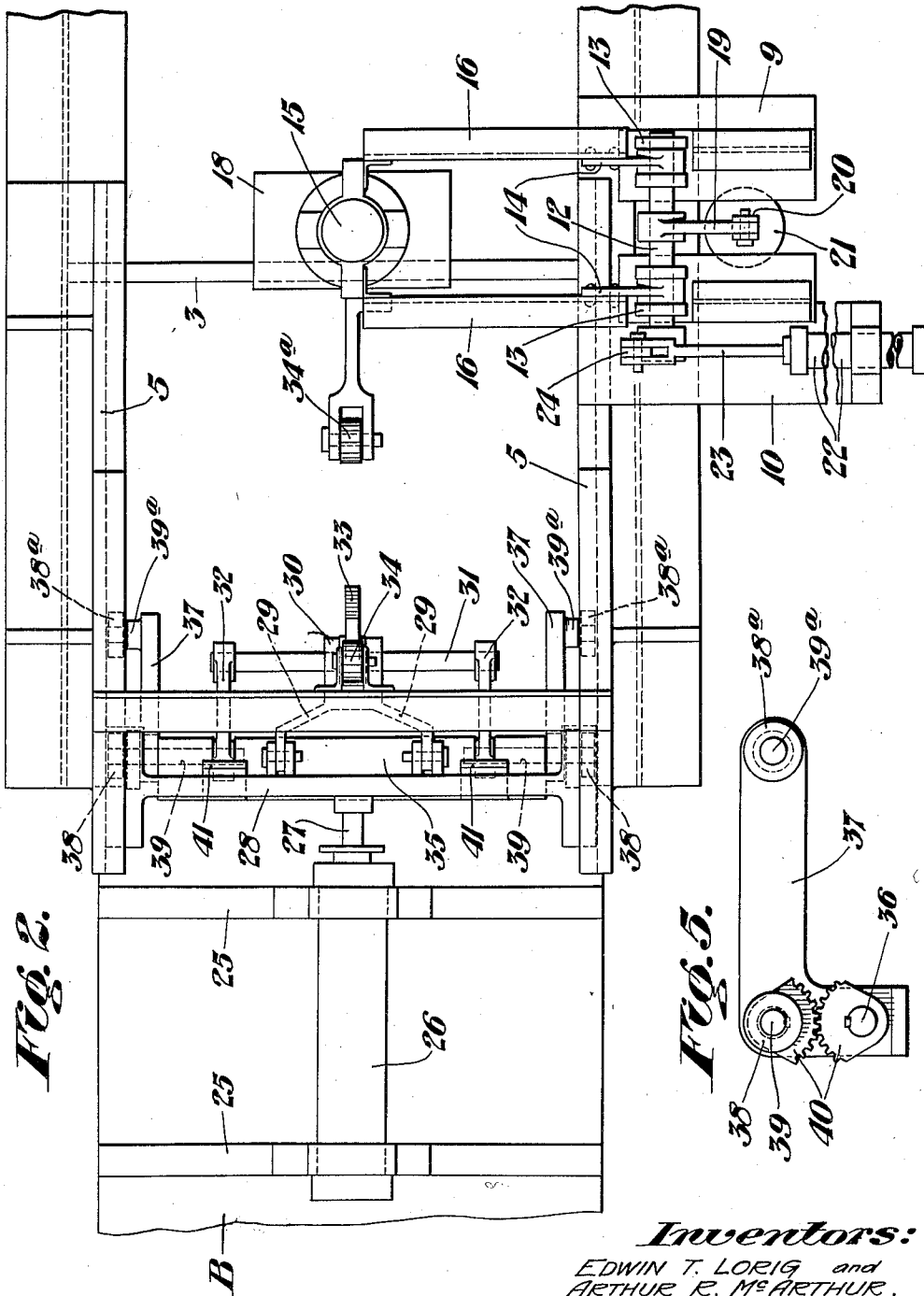
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4 Sheets-Sheet 2



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4 Sheets-Sheet 4

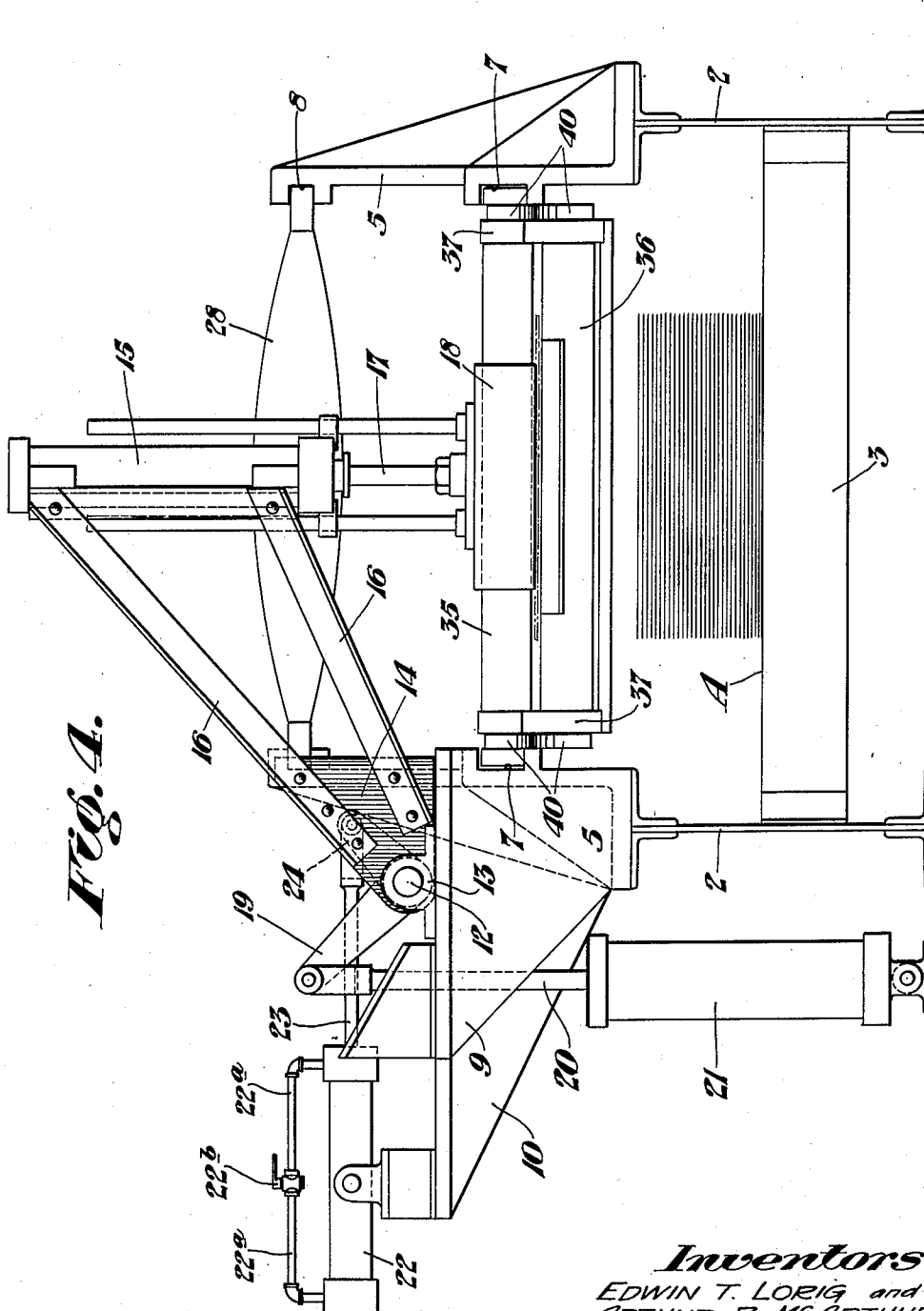


Fig. 4.

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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM.

Application filed January 14, 1928. Serial No. 246,770.

This invention relates to strip feeding mechanisms and, while not limited thereto, relates more particularly to a feeding mechanism for feeding long steel strips to a cutting-up shear, and has for its object the provision of an improved form of apparatus which is entirely mechanical in operation.

Another object is to provide an apparatus of this class composed of few parts and of general sturdy construction so as to withstand the rough usage it is subjected to in mill operation.

A further object is to provide a strip feeding mechanism having the novel design, construction and combination of parts hereinafter described.

In the drawings—

Figure 1 is a side elevation, partly in section, of a feeding mechanism constructed in accordance with this invention.

Figure 2 is a plan thereof.

Figure 3 is a sectional elevation taken on the line III—III of Figure 1.

Figure 4 is a rear end elevation.

Figure 5 is an enlarged detail view showing the manner in which the jaws are connected.

Referring more particularly to the drawings, the letter A designates the bed on which the strips to be sheared are piled. The bed A comprises a pair of side girder members 2 and transverse supporting beams 3.

The letter B designates the shear feed table which is of standard design and includes a plurality of pinch rollers 4 for pulling or feeding the strips into the shear (not shown).

At the shear end of the bed A the side girders 2 are provided with vertical extensions or additional side-plates 5 in the form of castings which have longitudinal vertically spaced guide grooves 7 and 8 therein for a purpose to be described.

Supporting brackets 9 and 10 are secured to the right-hand side-plate 5 (looking from the shear). A shaft 12 is journaled in bear-

ings 13 on the brackets 9 and 10 and bracket-plates 14 are pivoted to the shaft 12.

A fluid pressure cylinder 15 is secured to the plates 14 by angle braces 16 and is adapted to be normally positioned vertically over the pile of strips on the bed A. The plunger 17 of the cylinder 15 has a magnet 18 secured to its lower end which is adapted to engage and lift the topmost strip of the pile when the plunger 17 is reciprocated.

In order to permit the placing of successive piles of strips on the bed A it is necessary to swing the cylinder 15 and magnet 18 back out of line with the bed A and, therefore, the shaft 12 is provided with a lever 19 which is connected to the plunger 20 of a fluid pressure cylinder 21 which is adapted to be operated to pull down on the lever 19 and thereby rock the shaft 12 so as to swing the bracket-plates 14 and cylinder 15 rearwardly.

A cushioning or check-cylinder 22 is mounted on the bracket 10 and has its plunger 23 connected to a lever 24 keyed on the shaft 12. The cylinder 22 has ports at each end connected by a conduit 22^a controlled by a valve 22^b so that as the plunger is reciprocated fluid will be forced out of one end and into the other, thus preventing the sudden movement or drop of the cylinder 15 and its associated parts.

Suitable bridge pieces 25 are mounted across the sides of the shear feed table B and support a fluid pressure cylinder 26 which has its plunger 27 connected to a cross-head 28 slidably mounted in the guide grooves 8 in the side-plates 5.

The cross-head 28 is provided with a pair of pivoted bracket arms 29 supporting a bearing 30 for a shaft 31. A pair of lever arms 32 are keyed to the shaft 31 and depend therefrom, and a shaft rocking lever 33 is keyed to the shaft 31 and projects upwardly therefrom into the path of roller stop members 34 and 34^a.

A jaw carriage, comprising a pair of cam-shaped jaw roller members 35 and 36

journalled in side pieces 37, is slidably supported in the guide grooves 7 in the plates 5 by the rollers 38 and 38^a. The rollers 38 are journalled on shafts 39 mounted in the upper jaw roller 35 while the rollers 38^a are journalled on stub-shafts 39^a mounted in the forward ends of the side pieces 37.

The levers 32 have their lower ends pivotally connected to the shafts 39 and are adapted to propel the jaw carriage assembly toward and away from the shear table when the cylinder 26 is operated.

The jaw rollers 35 and 36 are connected together by gear segments 40 and the upper jaw roller 35 is provided with actuating lugs 41, adapted to be engaged by the levers 32 at the pile end of the travel of the jaw assembly and by a stop bar 42 at the shear end of the travel of the jaw assembly so as to rotate said jaws to cause them to grip and release the lifted strip.

Guide flanges 45 are formed integral with the jaw rollers 35 and 36 and serve to guide the end of the lifted strip or plate into the bite of the jaws 35 and 36.

A stop or supporting bar 46 is bridged across between the side pieces 37 to support the levers 32 during the travel of the carriage assembly.

In operation, the topmost strip of the pile is engaged and lifted by the magnet 18, fluid is then admitted to the cylinder 26 so as to cause the plunger 27 to move the cross-head 28 and its associated parts, including the levers 32 and rock arm 33, away from the feed table B, or toward the lifted plate. The levers 32 which are pivotally connected to the shafts 39 and, therefore, the jaw carriage assembly will be moved forward or toward the lifted strip as the cross-head 28 is advanced.

As the cross-head 28 is advanced the end of the lifted strip will enter between the guide-flanges 45 and then between the jaw rollers 35 and 36 and said jaw rollers will be advanced a material distance onto the strip. After the lifted strip has entered between the jaw rollers 35 and 36 and adjacent the limit of advance of the cross-head, the lever or arm 33 will engage the stop 34 so as to cause said lever or arm 33 to be rocked or moved rearwardly. As the lever 33 is moved or rocked rearwardly the shaft 31 will be rotated counter-clockwise so as to rock the levers 32 rearwardly, causing them to engage the actuating lugs 41 and thereby rotate the jaws 35 and 36 so as to cause them to engage or bite the lifted strip.

As the levers 33 and 32 are rocked rearwardly, the shaft 31 and its supporting arms or brackets 29 will move upwardly.

After the jaw rollers 35 and 36 have engaged the lifted strip the magnet 18 will preferably be deenergized by means (not shown) and the cylinder 26 will be reversed

so as to move the cross-head 28 and its associated parts in the reverse or rearward direction toward the shear table. This reverse movement will convey the strip which is gripped by the jaws 35 and 36 toward the table B and into the bite of the pinch rollers 4.

During the rearward travel of the cross-head 28 the lever 33 will be engaged by the stop 34 and rocked in a forward direction so as to rotate the shaft 31 clockwise and thereby rock the levers 32 forward or away from the lugs 41. Continued rearward movement of the cross-head 28 will move the lugs 41 into contact with the stop bar 42 which will cause the jaws to rotate to open position and release the strip so that the pinch rollers 4 may feed it to the shear.

While we have shown and described one specific embodiment of our invention it will be understood that we do not wish to be limited thereto since various modifications may be made without departing from the scope thereof, as defined in the appended claims.

We claim—

1. A strip feeding mechanism comprising the combination with at least one pair of pinch rollers, of magnetic means for engaging and lifting the topmost strip from a pile, a pair of gripping jaws, fluid pressure operated means for moving said jaws toward and away from said pinch rollers, one of said jaws being adapted to pass above and one below the lifted strip when they are moved away from said rollers, means for automatically causing said jaws to grip the lifted strip at a point intermediate its ends adjacent the limit of the movement of said jaws away from said pinch rollers, and means for automatically releasing said jaws at the limit of their movement toward said rollers.

2. The combination with a pile of strips adapted to be sheared into sheets, of a strip feeding mechanism comprising the combination with a shear feed table having at least one pair of pinch rollers, of vertically movable magnetic means for engaging and lifting the topmost strip from the pile, power means for raising and lowering said magnetic means, other power means for swinging said magnetic means out of line with said pile of strips, a pair of gripping jaws, means for moving said jaws toward and away from said pinch rollers.

3. A strip feeding mechanism comprising the combination with at least one pair of pinch rollers, of magnetic means for engaging and lifting the topmost strip from a pile, and a strip gripping and propelling means, said gripping and propelling means comprising a carriage, a pair of cam-shaped gripping jaws rotatably mounted in said carriage, fluid pressure operated means for

propelling said carriage toward and away from said pinch rollers, one of said jaws being adapted to pass above and one below the lifted strip, means for automatically rotating said jaws to grip said lifted strip when said carriage approaches the limit of its movement away from said pinch rollers, and means for automatically rotating said jaws in the reverse direction to release said lifted strip when said carriage approaches the limit of its movement toward said pinch rollers.

In testimony whereof, we have hereunto set our hands.

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